STUDY ON THE SPECIFIC POLICY NEEDS FOR ICT STANDARDISATION

Final Report

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PART I.   INTRODUCTION

1. OBJECTIVE OF THE STUDY

This is the report of the Study on the specific policy needs for ICT Standardisation (ENTR/05/59).

The European Commission wishes to use standardisation as a policy tool for encouraging the competitiveness of the European Industry, taking into account both the global context and the ICT context. More specifically, the European Commission wishes to use a European ICT standardisation system, responding to the expectations of industrial and societal stakeholders, a tool to support and complement various European policies such as the Competitiveness policy set by the Lisbon agenda, Industrial policy, the Health policy, eLearning, eAccessibility etc.

For this reason, the objective of the Study is to provide a thorough analysis of the current state-of-play of the European ICT standardisation policy and to bring forward recommendations for its future development.

More specifically, the Study:

1. Provides a thorough analysis of the present characteristics of the ICT standardisation landscape, and the expected developments within this field over the next 10 years.

2. Identifies, in the future ICT landscape, the new requirements to be addressed by standardisation policy, in order to strengthen the competitiveness of the EU industry, while also responding to stakeholders' needs as well as societal and market requirements;

3. Explores the alternatives for a standardisation system, based on the complementarity of the policy formulated by the public actors and the operational structures established by the private sector;

4. Assesses the current EU ICT standardisation policy and its legal framework with a view to accommodating these new requirements, specified above;

5. Elaborates on the alternatives for the future EU ICT standardisation policy and its integration to other EU policies (notably research and innovation) from the point of view of the requirements, specified above;

6. Distinguishes the specific standardisation policy measures and their legal requirements, available to be implemented within the future EU ICT standardisation system;

7. Analyses how public authorities could more efficiently use standards in support of EU policies and legislation;

8. Identifies policy measures to better promote the results of the EU standardisation system and to increase their impact on a global level; and

9. Provides recommendations for future policy actions in the field of EU ICT standardisation.

2. BACKGROUND OF THE STUDY

The EU policy maker is of the opinion that the EU standards-setting policy, in its present structure and organisation, cannot satisfy adequately the requirements of a market that is subject to rapid technology developments and a multitude of standards-setting initiatives driven by specification providers, such as consortia and fora. These doubts find their basis in *legal, policy and market-related* concerns as they have been expressed in a number of recent policy documents of the EU institutions:

From a *legal* perspective, the EU policy maker expresses doubts about whether the regulatory framework underpinning the standardisation policy in Europe today is still sufficient to cover the new

role entrusted to EU standards-setting procedures (especially, their role as "supportive mechanisms" of the EU policy and legislation in general)[1]. From a *policy* perspective, new measures should be identified to make the EU standardisation policy and its system "more participatory and credible" to the EU market players and "more competitive" at the international level. From a *technical* side, the standards-setting philosophy in the ICT sector must target efficient and real-time implementations in order to offer a constructive support to other policies and to encourage investment in the R&D area.

Against these requirements, the Commission expressed that there is an "enormous potential" for the improvement of the European standardisation system. Along the same lines, it stressed that (in the ICT sector), the Commission "will seek to initiate a strategic review", together with Member States and stakeholders, "that would target how all players involved in standardisation could better match the challenges responding to societal and market needs, thus providing efficiently elaborated specifications in the IT sector"[2]. Also the EU Council, in its conclusions of 2004, invokes the "need for optimisation" of the EU standardisation system[3].

This Study comes as a follow-up to the above considerations. Its first aim is to identify *what works well and what works wrong* in the practice of the EU standards setting in the ICT area today. Beyond that, it identifies some concrete measures for improvement of the current standardisation procedures in order to make them respond to the challenges of globalisation.

3. METHODOLOGY

For performing the study, the multidisciplinary project team consisting of experts with a legal, engineering and policy background combined desktop research with field research.

The project team also gathered considerably feedback from all involved participants. The feedback has been collected through different channels, such as questionnaires and an interactive website. More input was received, through position papers, from individuals that are being regarded as, standardisation-related, experts in their field.

The project team was, furthermore, supported by a Steering Committee consisting of representatives of all parties involved in the standardisation process, and by so-called "working group" meetings with the involved participants to discuss specific topics. The appendices to this report contain the materials gathered throughout the study.

4. TERMINOLOGY USED

Common understanding - Ensuring a common understanding of the facts and the issues involved starts with a common understanding of the terminology used. The field of standardisation is broad and many terms are being used having different connotations. For the sake of clarity, the project team consistently chose to use the following terms in the following meaning. Since the study starts from the analysis of the current legal framework, the terminology of the Directive 98/34 and its definitions have been used as a starting point.

The participants

- **Participant(s)**: when the word 'participant' or 'participants' is used in this study, it refers to all involved in the standardisation discussion (as stakeholders, consortia, fora, policy makers, ESOs, etc)

- **Stakeholder:** refers to those who are not directly involved in the standards setting process itself but have an interest in the results of standardisation efforts. A distinction can be made

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[1] Commission Staff Working Document, *The Challenges for European Standardisation*, p. 9.
[2] Commission Communication on the role of European Standardisation in the framework of European policies and legislation, COM (2004) 674 final, p. 9.
[3] Conclusions of the Council of 17 December 2004, p. 7.

between public interest stakeholders (consumers, SMEs, environment, etc) and industry stakeholder (large industries).

- **Standard Development Organisation (SDO):** Organisations defining standards having established specific rules for their development and approval. These rules can either follow internationally recognized procedures (consensus, openness, etc.) or be the result of an established process over the years. Furthermore, these organisations have attained a relevant recognition over the years and could be considered mature organisations. Their fields of work have enlarged with time and form well established and reasonable wide parts of the technical reality today.

- **Formal SDOs**: International Standardisation Bodies, European Standardisation Bodies, and similar entities from other world regions or countries.

- **Non-formal SDOs:** SDOs from the private sector (IETF, IEEE, ECMA International, OMA, etc.)

- **Specification providers:** organisations (mainly representing the industry, with input also from academia) that define standards for a short range of technical issues. Most of the times, these organisations are rather young and are at a stage of being established in the world (as well as their issues). A natural evolution would be to become non formal SDOs as the organisations get older, get a world coverage, and the narrow subject starts to have important ramifications and gets wider (OASIS, W3C, etc.).

- **Consortia, fora:** includes non formal SDOs and specification providers, used in places were it is not so relevant to distinguish between them

- **International Standardisation Body:** Organisations established at world level (ISO, IEC, etc.) due to agreements between countries.

- **European Standardisation body (or European Standardisation Organisation (ESB or ESO)**: The three formally-recognised standardisation bodies in Europe: CEN, CENELEC and ETSI. as referred to in Annex I of directive 98/34;

- **National Standards Setting Body (NSB)**: Formally appointed national standards setting organisation, established in the EU Member States, as referred to in Annex II of directive 98/34.

Standards and technical specifications

- **Technical specification (or specification)**: a specification contained in a document which lays down the characteristics required of a product such as levels of quality, performance, safety or dimensions, including the requirements applicable to the product as regards the name under which the product is sold, terminology, symbols, testing and test methods, packaging, marking or labelling and conformity assessment procedures.

- **Standard**: a technical specification approved by a recognised standardisation body for repeated or continuous application, with which compliance is not compulsory and which is one of the following: international standard, European standard, national standard.

- **International standard**: a standard adopted by an international standardisation organisation and made available to the public.

- **European standard**: a standard adopted by a European Standardisation Body and made available to the public.

- **European Norm (EN)**: A standard developed by a European Standardisation Body on the basis of the New Approach.

- **National standard**: a standard adopted by a National Standardisation Body and made available to the public.

- **Standards programme**: a work programme of a recognised standardisation body listing the subjects on which standardisation work is being carried out.

Policy related terms

- **EU Policy(-ies)**: a set of common policy objectives the EU wants to reach (e. g. ensuring competitiveness, the creation of an internal market, ensuring products meeting safety & security requirements). This set of policy objectives can change throughout the lifetime of the EU. Standardisation can be used as a tool for reaching these policy objectives apart from other instruments, such as drafting legislation, funding projects or educational activities.

- **Standardisation policy**: The policy relating to the use of standardisation as a tool for reaching the EU policy objectives as defined by the EU policy (e. g. by obliging the use of standards in public procurement, by funding standardisation initiatives, by creating a standardisation system, by leaving it up to the market).

- **Standardisation system**: The operational/organisational structure of standards-setting activities in the European Union. It is the well-defined set of rules and procedures the EU has in place for fulfilling the formalised part of the standardisation policy.

Definition of a standard – There does not exist any standardised definition of a "standard". Definitions of a standard can be found in public policy documents, legal texts and normative documents adopted by standards setting organisations.

At an EU level, standards are being described in a number of Community legal acts, although not in a totally uniform way[4]. However, the European definitions of standards basically reflect the intrinsic characteristics of a standard in the definitions of international standardisation organisations, such as ISO. Accordingly, the European Norm EN 45020 employs the ISO definition: "a document established by consensus and approved by a recognised body that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context."[5]

A less technical description of a standard has been given by NORMAPME as "A standard is an agreement between the parties involved, such as manufacturers, sellers, purchasers, users and regulators of a particular product, process or service. It contains a technical specification or other precise criteria designed to be used consistently as a rule, guideline, or definition. Its adoption ensures to all operators a clear reference in terms of technical specifications, quality, performance and reliability. Its objective is to ensure that products and services are suitable for their purpose and they are comparable and compatible. Standards are a summary of best practice. Their creation arises from the experience and expertise of all interested parties and they are drawn up to meet the demands of society and technology. Any standard is the result of a collective work that involves national standardisation bodies, producers, users, research organisations, and consumers."[6]

Different types of standards and different taxonomies – Within a standardisation context, different types of standards exist such as communication standards, application standards, testing standards, product standards and management standards. Several taxonomies exist trying to classify the diversity on standards in a logical order.[7]

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[4] Amongst these acts: EC Directive 98/34/EC, art. 1; Council Decision 87/95/EEC, art. 1(3); Annex III of Directive 93/36/EEC.

[5] EN 45020:1998 'Standardization and related activities - General vocabulary' (ISO/IEC Guide 2:1996

[6] www.normapme.com

[7] This study will not discuss the different taxonomies, their advantages or disadvantages. For more information on this topic, see e.g. De Vries, H.J., (2006). IT Standards Typology. In: Jakobs, K. (Ed.). Advanced Topics in Information Technology Standards and Standardization Research, Vol. 1, pp.1-26.

The participants – Within a standardisation context many actors are involved. Throughout this study, we call all actors together 'participants'. The following table gives an overview of the participants involved and their respective roles.

PARTICIPANTS										
Standard Development Organisations					Stakeholders			Policy Makers (Public authorities)		
Formal SDOs			Specification providers		Public interest stakeholders	Industry stakeholders				
			Non-formal SDOs			Solution providers	Solution users	International policy makers	Regional policy makers	National policy makers
			Consortia (fora)							
International Standardisation bodies	European Standardisation Organisations	National Standardisation Bodies								
ISO, …	CEN, Cenelec, ETSI	AFNOR, DIN etc.	IETF, IEEE, etc	Oasis, W3C, etc	Normapme, ANEC, ECOS, etc	EICTA, BSA, etc	CEFIC, COCIR, etc	UN, etc	EU, US, China	EU Member States

PART II.   THE EU ICT STANDARDISATION LANDSCAPE

1. THE ICT LANDSCAPE: CURRENT STATUS AND TRENDS

1.1   Current status

The current ICT landscape has been formed by a fast growing rate of activity in the past decades. The stable computing islands of computing that marked the late 1980s have been changed into a worldwide environment, fast paced and completely heterogeneous[8]. End-users are offered a variety of choice between ICT solutions with different performance records, costs, interoperability or convergence capabilities and varying technical or operational security.

ICT has already a major contribution to the European and world GDP. This contribution comes from products and services based on hardware and software in areas of Information Technology and Telecommunications: computers, communication equipment, general IT equipment, electronics and components, software, IT services and telecommunication services[9].

The typical characteristics of the ICT arena nowadays are:

Focus on software - We have been witnessing a move from hardware to software with the consequences of a faster sequence of new updates and a greater problem on the control of the overall behaviour of the system/device that before was guaranteed by certification. With the move to software, certification for example, must handle the functionality of the equipment whereas before the focus was on electrical compliance.[10]

Distributed networks - The access to information that was until quite recently stored in one physical place and which still reflects the usual way of working, is changing to an access to information that can be anywhere and not all in the same place. The IT area was (and still is to a certain extent) centered in local process of information due to the existence of the Personal Computer (PC) and the general acceptance of an operating system and desktop applications, but it is gradually moving to distributed cooperating applications over the network.

Horizontal impact - ICT has become a horizontal discipline applied to almost every sector of the economy. The increase in use of ICT is not only due to technologic developments but also mainly because of the broader scope where ICT can be applied.

Convergence – Convergence has taken up as a trend where some technologies having distinct functionalities evolve to technologies that overlap, i.e. multiple products come together to form one product, with the advantages of each initial component. We have especially been witnessing the merging of the Information Technology area with the Telecommunications area.

Liberalisation - The telecommunications sector, because of its converging activity currently being called the electronic communications sector, has also changed dramatically in the past years. Until the 1980s the electronic communications market was governed by national players typically having a monopoly position. The national operators had their own R&D structures, even production lines for products, and the certification entities in some European countries were very connected to the

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[8] As stated in *Standardisation: a failing paradigm*, article of Carl Cargill and Sherrie Bolin, delivered to Federal Reserve Bank of Chicago and to the Ministry of Information Industries (MII) in China. Same statements in Commission Communication on *the role of European standardisation in the framework of European policies and legislation,* COM (2004)674 final, p. 6.

[9] Information and Communications Technologies, OECD Information Technology Outlook, OECD 2006

[10] As a side note, it is noteworthy to refer that the certification "business" is also somehow lost in the transition because the network technology has become global and the national certification bodies have seen their importance and even usefulness diminish.

operators. Given the size of the networks large investments in R&D were possible because the returns were more or less predictable. Each operator (especially in Europe) had a preferred equipment manufacturer as its main supplier.

Less stable market - The liberalisation waves in the sector changed the industry but also changed the 'stable' way this economy was working. The competition between operators lowered their profit margins and made any decisions on investing in R&D more difficult to facilitate. The R&D structures owned by each operator had to play in global markets instead of developing features of their own networks.

1.2 The next decade

It is always difficult and risky to predict future trends, and in the ICT sector the task is even greater. The following sub-sections contain assumptions on the future and have been based on researching various study documents, published by the European bodies, the OECD and other organisations. These assumptions must be considered with caution!

1.2.1 Connected society and globalisation

Connected society - The rapid spread of broadband, wireless technology and other next-generation networks (such as optical fibre) have paved the way for the connected society, where people and devices are connected anywhere and anytime. The figures speak for themselves: at the end of 2005, OECD countries had 158 million broadband subscribers out of 271 million Internet subscribers[11], so that almost every European home and enterprise will have access to broadband internet access[12]. As for wifi, in January 2006 the worldwide number of hotspots already surpassed the 100,000 milestone, a growth of 87% compared with January 2005[13].

Globalisation - In addition to being a prerequisite for ubiquitous networks and the changes in delivery models (see below), the connected society allows for true globalisation: interdependence, integration and interaction among people and companies in disparate locations, effectively giving rise to the increased delivery of outsourcing and off-shoring. With the help of the internet and low-cost infrastructure like Voice-Over-IP, outsourcing and offshoring have spread to core business services and are no longer restricted to manufacturing. The number of service jobs outsourced is expected to continue to rise, reaching 4.1 million by 2008[14]. According to Gartner[15], by 2015, 30 percent of traditional professional IT services jobs will be delivered from emerging, rather than developed, markets.

1.2.2 New computing paradigms

SaaS and SOA - Having made the transition from host-based systems to client-server relationships and subsequently multitier IT architectures, software as a service (SaaS) and service-oriented architectures (SOA) are predicted to become the computing paradigms of the next decade. In a service oriented environment, computing resources are made available as independent services that can be accessed without knowledge of the underlying platform implementation. Software as a service is therefore characterized by so-called "loose coupling" of applications, replacing monolithic application architectures, so that business rules are being abstracted to improve the autonomy and reusability of the core items. Service oriented architectures are set to influence the development of

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[11] OECD Information technology outlook 2006, page 185
[12] Information Society Technologies Advisory Group (ISTAG), "Shaping Europe's Future Through ICT", 2006, ftp://ftp.cordis.europa.eu/pub/ist/docs/istag-shaping-europe-future-ict-march-2006-en.pdf
[13] "Worldwide Wi-Fi Hotspits Hits the 100,000 Mark", *jiwire.com/press-100k-hotspots.htm*
[14] McKinsey Global Institute 2005
[15] David W. Cearley, Jackie Fenn, Daryl C. Plummer, "Gartner's positions on the Five Hottest IT Topics and Trends in 2005"*, gartner.com/resources/125800/125868/gartners_positi.pdf,* page 5

enterprise IT systems over the coming years: by 2010, 80% of application software revenue growth will come from SOA-based products[16].

Grid computing - At the hardware side, grid computing is expected to become the next logical evolution in enterprise IT infrastructure. By breaking down large data sets into many smaller ones and by performing several computations in parallel, grid computing takes advantage of many networked computers to solve large-scale computation problems. By thus building an IT infrastructure of granular components, new vistas of raw computer power arrive.

Virtualisation - The need for more computing power has also led to virtualisation technologies, whereby one single physical server hosts multiple software-created virtual servers. This way, the use of several under-utilized physical servers is avoided and server utilisation is significantly optimized. Together, grid computing and virtualisation allow computing to go beyond physical, isolated boxes.

Nanotechnology - the manufacturing of products smaller than 100 nanometres—also promises to revolutionize multiple industry sectors by developing new products such as paints, medicines, clothing, foodstuffs, packaging and aerospace. In the IT-sector, nanotechnology will pave the way for smaller and faster computers with larger memories than allowed by current micro-transistors, e.g. through soft lithography and self-assembly of nanoscale components. Nanotechnology is expected to represent a market of more than 1 trillion USD by 2015[17].

1.2.3   Changes in delivery models and business models

Disintermediation and re-intermediation - The internet has changed traditional delivery methods, boosting both disintermediation and re-intermediation. Disintermediation occurs when companies deal directly with customers, effectively cutting out the middleman. Through the use of modern communication technologies, producers, publishers and vendors enter into direct contact with customers, irrespective of both parties' geographical location, while such contacts would in the past have occurred through various distribution models[18]. This allows for diminished distribution costs. For example, upstart music bands now directly sell their music to their listeners; goods and services are sold directly through a variety of electronic auctions; innovative computer and software vendors sell directly to the end-user.

Re-intermediation, on the other hand, is the introduction of new intermediating parties in the value chain. Due to the overwhelming amount of relevant and irrelevant information and the sheer amount of potential counterparties, information searching and central information assembly (e.g. through web portals and search engines) have become important value added services. As quality of information, tailored to personal or business requirements, will become an important asset, re-intermediation may provide key values to customers.

New or changing roles - Even with these changes there are just a few new entrants in the value chain. What is happening is an adaptation of the old participants to the new roles. The role of the distributor, and in some cases the retailer, is being taken by publishers either directly or via Internet Service Providers (ISPs). ISPs are trying to get the portal business to replace the role of the distributor, industries are entering the content business. In general, many of the traditional participants remain important in the altered value chain. A notable exception is the retailer, and particularly the small retailer. Large physical retailers have often successfully expanded services to become online as well as offline intermediates (e.g. Virgin Megastores). Examples of changing to new roles are: ISPs, mobile operators, specialized content distribution portals (e.g. HighWire Press), and established firms in other sectors (Starbucks in music or Coca-Cola in games) which have entered in some digital content markets as new intermediaries. Re-intermediation involves different

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[16] David W. Cearley, Jackie Fenn, Daryl C. Plummer, *o.c.*, page 4
[17] OECD (2004a), OECD Information Technology Outlook.
[18]   See   M.   HAMMER,   "Out   of   the   box: The   Myth   Of   Disintermediation", *informationweek.com/794/94uwmh.htm*

participants, and it also requires, for example, DRM and payment providers, content marketing, rights acquisition and management, advertising, billing management, and access management.

New business models - These changes on the traditional delivery models bring also new business models with them. New online-enabled revenue models include retail purchase, subscription fees, pay-per-play, advertising and new services including selling and/or renting digital objects and players. Currently, the most successful emerging model is the "pay monthly" subscription model (e.g. subscription-based access to premium casual games), but it is expected that a mixture of the models will succeed.[19] One technical achievement is expected to produce significant changes in revenue models – the widespread of micropayment systems for mass-market customers.

1.2.4   *Commoditisation and consumerisation*

Commoditisation - As an ongoing trend, information technology is seen as a commodity. Many technology segments are already commoditised. PCs – once large and expensive devices – have for example become commodities, where buyers essentially get the same "product" irrespective of the vendor. Due to the rise of the internet, which depends on shared protocols that define the interfaces and datatypes rather than the internals of those components, it is expected that commoditisation will also extend to software[20].

Consumerisation - A related phenomenon is the consumerisation of IT, a trend whereby enterprise computing uses technologies that have roots in consumer applications. Compared to enterprises, consumers have quickly adopted new technologies (e.g. wireless networking, blogging, Voice-Over-IP, instant messaging, use of smart phones and "Web 2.0" technologies) and better keep track of technology product cycles (e.g. updated versions of hardware and software). In comparison, enterprises tend to be slow to decide, slow to execute and slow to communicate.

Due to the greater involvement of consumers and end-users in the creation and distribution of digital content (see below – *Involvement of end-users*) it can be expected that the adoption of new technologies will further develop, so that consumerisation will flow in even faster cycles in the future, as new and easier communication technologies will allow for an ever quicker adoption of new technologies.

1.2.5   *Convergence and integration*

Convergence - In the area of information technology, convergence is usually used to designate multi-functionality, as the telephone, display screen, computer, internet access, and video camera all merge into a single device[21].

While a lot has been written about convergence – in particular convergence of television and computers – it seems to finally have taken off. Over the last years, personal video websites have appeared, interactive television (idTV) has been distributed to consumers, large film studios have released on-line movie distribution plans, traditional TV stations have started to broadcast programmes over the internet, personal "videocasts" have been introduced, UMTS-enabled cell phones have gained TV capabilities and devices have appeared that allow customers to remotely watch television programs. Although a lot of improvements still have to occur, and it is yet to be seen whether internet-through-television will gain market share, significant steps have been already taken towards convergence of media.

Integration - Integration and convergence is also visible in other areas. Modern mobile phones, for example, integrate telephone capabilities with voice / memo recording, playing music and listening to

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[19] Information and Communications Technologies, OECD Information Technology Outlook, OECD 2006, page 188.

[20] Tim O'Reilly, "Tim O'Reilly in a Nutshell", *oreilly.de/oreilly/oreilly_inanutshell.pdf*, page 21

[21] Alfred NORDMANN, "Converging Technologies – Shaping the Future of European Societies", *www.ntnu.no/2020/pdf/final_report_en.pdf*, page 16

radio, scheduling appointments, taking and viewing photographs and videos and music, showing street maps, etc. Similar integration exists in portable computers and game consoles.

Through integration and convergence, the ICT-industry becomes part of a **borderless digital ecosystem**, where companies are increasingly defined by their role within the converged value chain (e.g. as developer, content provider, manufacturer or operator) rather than by traditional market segments[22].

1.2.6 Focus on digital content

Driving force - Large infrastructural investments and technological improvements in network throughput and hardware capabilities have enabled the development of advanced digital content, such as digital books, music and videos. The internet allows new distribution (e.g. streaming radio) and financing possibilities (e.g. subscription- and advertisement-based) that will lower entry barriers for creation and distribution. Digital content is therefore already the driving force behind the knowledge economy, as a shift is taking place from the manufacturing of physical items to the manufacturing of intangible information.

Personalised content - Together with the shift in delivery models, digital content also allows for the creation of personalised content and services tailored to the needs of the individual user. Instead of selling high-value goods or content to large audiences, providers will in the future gain profits from selling large quantities of personalized content or services to consumers. The challenge is to make this "long-tail"[23] of niche and personalised content and services profitable.

Internet service providers, mobile operators and specialised content distributors are therefore becoming increasingly important, although a shift to user-centric (e.g. peer-to-peer) distribution and creation models may also occur. Estimates for digital content applications suggest that global interactive entertainment software sales will significantly rise between 2005 and 2010 (from USD 18 billion to USD 26 billion)[24], and will represent more than half the total interactive entertainment market.

Diversity of contents- Computer games, an important part of today's digital content, have already surpassed film box office ticket sales, and are expected to also surpass total revenue figures of the recorded music industry[25]. Interestingly, computer games are also used in other areas than entertainment (such as education and health) and have even given rise to alternative realities where land can be bought and services are delivered. Virtual reality is increasingly used in the entertainment industry in the form of 'mixed-reality' techniques that bridge the real world of scenes and actors with the flexible and limitless space of virtual reality where everything is possible[26]. Digital music has already become a mainstream distribution channel and is currently the fastest growing channel for music. The same is expected for digital video. Finally, mobile content (from ringtones to video clips and wallpaper) is expected to be a major driver of growth.

Protection - Easy copying of digital information without any loss of quality has urged the need for copy protection schemes and digital rights management (DRM). Nevertheless, digital content markets require interoperable and compatible standards for content and hardware. Although incompatible digital rights management schemes and software and hardware currently reduce user possibilities, it is expected that political pressure and/or spontaneous market reactions will give rise to more uniform standards.

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[22] Information Society Technologies Advisory Group (ISTAG), *o.c.*, page 17

[23] C. ANDERSON, "The Long Tail", 2004, *wired.com/wired/archive/12.10/tail.html*

[24] OECD 2006, *o.c.*, page 185

[25] OECD 2006, *o.c.*, page 186

[26] Information Society Technologies Advisory Group (ISTAG), *o.c.*, page 7

1.2.7 Involvement of end-users

Peer-to-peer networks- Individuals are becoming more and more involved in information technology, not only in their role of passive end users, but also in their role of active participant or information provider. The trend of end-user involvement has been booming with the advent of the internet, in particular since the rise of peer-to-peer networks. These peer-to-peer networks, while contested due to the often illegal nature of the files exchanged, are now also used for commercial and non-commercial content production and legal delivery[27]. Videos, dvds and large software packages will be distributed through such networks, shifting the burden of making content available from central servers to a grid of users helping each other downloading content.

Active participation - The involvement of end-users is also very clear under the participative "**Web 2.0**" paradigm[28]. Web 2.0, being the purported successor of the "old" internet (version 1.0), refers to the active participation of Internet users in creating content, customising the Internet and developing applications for a broad variety of fields. This paradigm is characterized by the fact that users own and control the data social-networking aspects[29].

In contrast with the "old" internet, where one party – typically the website administrator – would deliver information, users participate in and control Web 2.0 websites, such as social networking websites, virtual communities, video sharing websites, podcasts/videocasts and online collaboration tools. The mass availability of cheap and powerful cameras (often embedded in mobile phones) combined with easy editing software, allow consumers to easily create content and contribute to existing content.

Even when end-users are not contributing to community projects, they tend to create and distribute their digital creations. **Weblogs** ("blogs"), already surpassing sixty millions in mid-2006[30], are one of the most popular forms of self-expression. In a related area, **citizen journalism**[31] – whereby non-professional journalists contribute news stories, photos or videos – is also taking off, using *inter alia* weblogs to publish news facts. However, despite the sheer quantity of examples that indicate that user-generated content accounts for a respectable percentage of today's digital content, the size and impact of these user-generated contributions are still unclear and it is yet to be seen how the participant digital economy will develop.

Collaborative working - Even when the question therefore remains whether (and to what extent) user-generated content can compete with professional content, it should be recognized that the new internet technologies made available under the Web 2.0 umbrella, in particular when combined with service oriented architectures, will change the way work is delivered. In the future, collaborative working will certainly increase. For example, according to Gartner[32], within ten years, 80% of the work performed by employees will be collaborative rather than people working alone.

Open source - Greater participation and involvement of end-users is also evident in the rise of open-source software. As is commonly known, this software is developed and owned by "the community". While open source was initially mainly developed by volunteers, there is a continuing transition from volunteer to professional, as open source is used increasingly in companies that then become motivated to participate in its continued development[33]. Consequently, the **open source** development model has also changed the software engineering model (see above – *New computing paradigms*).

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[27] S. PRENTICE, M. McGUIRE, "Don't overlook legitimate uses of file-sharing technology", *gartner.com/DisplayDocument?ref=g_search&id=482048*

[28] T. O'REILLY, "Design Patterns and Business Models for the Next Generation of Software", 2005, *oreillynet.com/pub/a/oreilly/tim/news/2005/09/30/what-is-web-20.html*

[29] See en.wikipedia.org/wiki/Web_2.0

[30] Estimate from Technorati blog search: *technorati.com/about*

[31] J.D. LASICA, "What is Participatory Journalism?", *ojr.org/ojr/workplace/1060217106.php*

[32] Press release, www.gartner.com/press_releases/asset_152230_11.html

[33] B. PERENS, "The Emerging Economic Paradigm of Open Source", *perens.com/Articles/Economic.html*

As a result, open source software is now widely used in a variety of domains. Forrester Research estimates that at least 50% of companies it recently surveyed are using open source in some fashion[34]. By 2008, 95% of Global 2000 organisations will have formal open-source acquisition and management strategies that address the challenges and opportunities of open source software[35]. These results are not surprising, as already more than 50% of all domains on the internet are for example hosted by the Apache open source webserver[36], and similar figures exist for email servers.

1.2.8   Smart objects and ambient intelligence

Ambient intelligence - Increased computing power, further miniaturisation and integration has brought computers and appliances into every human domain. In the concept of ambient intelligence, humans are surrounded by computing and networking technology that is unobtrusively embedded in their surroundings. This way, computers will be integrated into the environment, rather than being distinct objects. The emphasis is therefore put on user-friendliness, efficient and distributed services support, user empowerment, and support for human interactions[37]. While being currently limited in quantity and functionality, it is hoped that ambient intelligence will enable people to interact with information-processing devices more naturally and casually than they currently do, and in whatever location or circumstance they find themselves.

Artificial intelligence - Natural interactions with computing devices are also supported by further research in artificial intelligence to automate tasks requiring intelligent behaviour. Artificial intelligence – while currently still perceived by most individuals as being science-fiction – is already used in numerous applications, such as speech recognition, optical character recognition, data mining, e-mail spam filtering (see below) and natural language processing. Other applications include computer games and human-computer interactions.

Ubiquitous networks - Ambient intelligence and artificial intelligence go hand in hand with ubiquitous networks, whereby networked, mobile, seamless embedded objects invisible to the user provide real-time tracking, storing and processing of information related to persons and objects. Together with other sensor technologies, Radio Frequency Identification (RFID) – tracking and tracing objects through the use of small tags applied to them – is an important way to achieve the further realization of ubiquitous networking, as it is expected to generate productivity, accuracy and speed benefits in supply chain management and asset allocation. RFID is consequently poised for growth, promising greater reliability and efficiency then traditional bar codes. In vital sectors such as medical appliances RFID tags will become an indispensable technique for identifying dangerous substances and detecting human errors. As current technical problems are slowly being overcome, it is estimated that the market will hit $7 billion by 2008.[38].

Location-based services - RFID tags and other computing devices have also led to location-based services, which follow the location of objects and users through a variety of position-determining technologies. The two most common current applications are navigation and asset tracking, although it is poised to give rise to an expanding market of new applications.

1.2.9   Security

Due to the increased reliance on information technology and digital content, the value of information has increased significantly. However, together with this shift in value assessment, comes the increased potential of damages due to lost, incomplete or damaged information and unauthorized access or distribution.

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[34] For an overview of some examples, see M. RAND, "Open Source Invades the Enterprise", 2001, page 1, *forbes.com/2005/11/01/bow051101011.html*

[35] David W. Cearley, Jackie Fenn, Daryl C. Plummer, *o.c.*, page 2

[36] Netcraft web server survey December 2006, *news.netcraft.com/archives/web_server_survey.html*

[37] Information Society Technologies Advisory Group (ISTAG), "Scenarios for Ambient Intelligence in 2010", *ftp://ftp.cordis.lu/pub/ist/docs/istagscenarios2010.pdf*

[38] "RFID Forecasts, Players & Opportunities 2005-2015", IDTechEx.com, 2005.

Information security - The IT-industry is therefore quickly becoming aware of the necessity of information security, which not only needs to cover the information itself, but all associated software, hardware and infrastructure that facilitate its use. Information security will not only need to protect computers against well-known threats (such as computer viruses, worms and trojan horses), but also against newer threats such as botnets and spyware, which may prove to be even more harmful. The growth in malicious software has made the information security industry grow 13.6% in 2005, with revenue totalling $4 billion and further double-digit growth predicted in the short term[39]. As part of this grow, further reliance on technologies to improve authentication (such as biometry), is expected.

Spam - Increased information security is also associated with the increased need to effectively fight unsolicited emails (spam), which is the largest source of the aforementioned computer threats. Spam has increase with over 86% in 2006, largely due to the increased sophistication of botnets[40]. It is estimated that about 90% of all emails sent every day, consist of spam. Newer and better technologies will need to be, and are currently being developed in order to fight spam.

DRM - Information security also deals with limiting access to content. Advanced encryption and digital rights management (see above – *Focus on digital content*) will prevent unauthorized access. While new television sets and video players are already incorporating new types of DRM today, these technologies are expected to be further enhanced and applied to all kinds of digital content from digital music to e-books, videos and computer games. A JupiterResearch study's revenue projections call for the DRM-market to grow to $274 Million in revenue by 2008[41].

Privacy - Finally, information security is also intrinsically associated with protecting the privacy of individuals. Ubiquitous computing, location-based services and increased use of computing devices in every sector threaten the privacy of each individual, as more and more information is being stored and processed. While privacy is still being perceived of minor importance by most individuals, concerns in this area are growing. Finding the right balance between processing information and protecting individual users' privacy is therefore a challenge to be undertaken by the IT-industry, otherwise everyone's individuality is threatened to be lost because everything is observable and recordable[42].

1.3 New challenges for ICT standardisation

The current and future developments in the ICT sector clearly impose challenges to the standardisation area. As seen above, the use and development of ICT has become a rapid evolving, global and cross-sectoral matter. ICT is more and more focused on services, the use of ICT is becoming ubiquitous, reason why the term "the internet of things" is becoming introduced. The next decades of ICT development seem to be following the same course.

The following trends may be identified as a challenge for efficiently policing standardisation efforts:

Pervasiveness of ICT - ICT has become a horizontal subject having a great influence in several other areas of business such as toys, construction, health, etc. As a consequence, the ICT standardisation community is in a constant change. In the ICT sector there is no stable (standardisation) community, the way it still exists in other more traditional sectors such as construction, machinery or pharmaceuticals. The pervasive nature of ICT requires ICT-related standardisation efforts to be taken in any possible economic area (from household instruments such as a fridge to business processes such as electronic invoicing) making it very difficult to delimit the scope of working areas and responsibilities.

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[39] Gartner, "Market Share: Anti-virus (Enterprise and Consumer), Worldwide", 2005
[40] Messagelabs Intelligence: 2006 Annual Security Report, page, *messagelabs.com/publishedcontent/publish/threat_watch_dotcom_en/intelligence_reports/2006_annual_securi ty_report*, page 3
[41] JupiterResearch, "Digital Rights Management for the Enterprise", *jupitermedia.com/corporate/releases/04.07.07-newjupresearch.html*
[42] B. SCHEINER, "The Eternal Value of Privacy", Wired, 2006, *wired.com/news/columns/0,70886-0.html*

Globalisation - Market globalisation has been boosted by the rapid expansion of ICT. This sector has not only opened new commercial perspectives to traditional industry (i.e., manufacturing and selling at a distance, revolutionary internal working) but has been grown itself to a strong indicator of national prosperity.[43] Rapid technological advances have indeed increased the tradability of services and make it possible to provide from remote locations many ICT-enabled services that do not require face-to-face contact or material products.

As to standardisation, the globalisation of the market requires the creation and implementation of standards that can be widely used without local or even regional restraints. As a result, the needs for regional anchoring of standards has steadily decreased. Interoperability of products and services becomes key in a world where these products and services are being used on a global, cross-border scale.

High pace of ICT development - ICT is subject to short life-cycles with even shorter exploitation records. Because of the high competitiveness in the sector, the need for upgrades becomes sometimes inevitable even before putting the product on the market. Migration and product evolution have become more popular to ICT manufacturers and product developers, to the detriment of product stability and long-term recognition.

Due to the fast pace of ICT related development of products and services and their short time to market, the activity of standards development in this area needs to follow a much faster rate than in other areas. The industry has not waited for the formal standardisation bodies to adapt their procedures. They created their own consortia and fora, and not hindered by the public interest requirements of formal standardisation bodies (waiting periods, involvement of public interest *stakeholder*s, …) allowing them to go much faster and be more flexible. Consortia and fora currently constitute the base for around 60% of the standards produced today in the ICT area (such a high percentage is not seen in other economic sectors).

Service oriented - Current and future ICT related industry is much more focused on the provision of services than on products. From a technological viewpoint, software has gradually gained place against hardware solutions.

The standardisation efforts have traditionally been product oriented. It is a challenge for standardisation organisations to adapt their procedures and readjust their efforts towards the standardisation of services.

Shift to new countries - New countries start to have each time more a relevant role in world terms (especially China, India and Korea). After the period of strong foreign investments on the manufacturing of low added value products in these areas, native relevant organisations start to exist that produce high value products. The EU has recognised that "*Recently, the spectacular growth of other markets, particularly in Asia and Latin America, is pulling production, research and standardisation activities towards these regions.*"[44]

In term of standards development, the entrance of new players from the Asian countries may indeed be expected. It is expected that they will enter the standardisation arena to push forward their products in the same way established industrial organisations from developed countries do nowadays. At global terms it is likely that they will join existing organisations, just increasing the number of players, instead of creating new ones. The usual standardisation organisations will soon have to include new partners and the consensus building processes will certainly evolve and become more complex.

More players - The ICT business is a fragmented market with aggressive competitors. Due to the technological developments (Internet, GSM, etc.) new and global equipment suppliers entered the

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[43] ICT is an area with a high level of globalisation seen by the usual indicators: trade is generally growing faster than production, cross-border merges and acquisitions (M&As) are high, and export-oriented foreign direct investment (FDI) is very dynamic.

[44] Commission Communication "Challenges for the European Information Society beyond 2005" COM(2004) 757 final, p. 9.

market and gained importance. The number of entities participating in the setting up of the standards grew dramatically and so did the number of organizations. The great importance that ITU-T and CEPT (which later transformed into ETSI) had at those times is now spread over a greater number of organisations (for instance, IETF standardises issues for Internet, 3GPP for GSM, etc.). The range of participants got also larger (researchers from all around the world, developers from SMEs, consultants, etc.). Industry, in the past at least, did not participate in the technical consensus building.

Interoperability - Information technology has evolved from stand-alone or closed user systems to a mass-market product. The need for components to work together and, ultimately, to be embedded into more advanced technical solutions have never before been so crucial to the commercial success of a product.

Due to the high demand of interoperable products and services, standardisation activities have been set up on different levels

From a standardisation perspective, interoperability poses important challenges. Standardisation is, indeed, being regarded as an essential tool to foster interoperability but it is insufficient for achieving network interconnection and interoperability of services at international level. Furthermore, achieving a sufficient level of interoperability at the network/device/service/application level is a complex matter involving various types of actions and various types of actors.

2. THE CURRENT EU ICT STANDARDISATION POLICY AND SYSTEM

To remain effective, the EU standardisation policy and its system must respond to new realities: the formation of an enlarged Europe, the emergence of a global market for products and services, the legitimacy gained rapidly by new technologies.

The following chapter describes the current EU ICT standardisation policy and its system, and how it wants to accommodate the above identified challenges imposed by the current and future ICT developments.

The chapter starts by describing how the policy makers want to use standardisation as a tool for reaching common policy objectives. It further describes the current standardisation system, with a special focus on the New Approach. The chapter then analyses how and to what extent the existing EU standardisation system has been tackling the specificities of ICT. The chapter is closed with a SWOT analysis (Strengths, Weaknesses, Opportunities and Threats) of the current ICT standardisation system of the EU.

2.1 The EU standardisation policy as basis for the EU standardisation system

2.1.1 The EU policy on standardisation

Serving EU policy objectives - The European Union has always been interested in the role of standardisation for supporting European Union policies on different levels and in different sectors. Especially since the mid-1980s, with the adoption of the New Approach model, the European Union policy makers have made an increasing use of standards in support of its policies and legislation.

The European policy makers identify different objectives that standards could serve, and hence, which the policy maker should pay attention to when developing or maintaining a standardisation policy[45]:

-   Standards enhance the safety of products

-   Standards encourage economies of scale

-   Standards enable manufacturers to comply with European legislation

-   Standardisation promotes the interoperability of products and services

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[45] CEN, Compass, European Standardisation in a nutshell, September 2004, p. 2.

- Standards encourage greater competition

- Standards facilitate trade by diminishing trade barriers

- Standards promote ecological safety and sustainability

- Standards safeguard the environment

- Standardisation reflects research and development

- Standardisation promotes common understanding

Standardisation as a policy tool - Broadly speaking the European Union policy makers want to use standardisation as a tool for reaching two main policy objectives. On the one hand the completion of the Internal Market and on the other hand the support of European policies in the areas of competitiveness, ICT, public procurement, interoperability, environment, transport, energy, consumer protection, etc.[46]

The current EU standardisation landscape is characterised by the co-existence of those objectives. Interesting to see is that whilst the first objective is being accommodated by using a regulated approach, i.e. the New Approach model, the second objective is not necessarily being reached by using a regulated approach. Some policies have called for a regulated approach, such as consumer protection, others have not.

EU ICT standardisation policy - As regards to ICT, the EU policy makers have acknowledged that ICT plays an important role in reaching the general EU objectives, especially through the setting of the Lisbon Agenda.[47] As a result, the EU policymakers have developed different initiatives for promoting the use and development of ICT, such as encouraging innovation by investing in research and development, creating a sound legal framework that takes the ICT into account (Directive 1999/93 on electronic signatures, Directive 2000/31 on electronic commerce, Directive 2000/46 on electronic money, Directive 2002/21 on a common regulatory framework, etc.).

Different initiatives have also been undertaken for promoting efforts to be undertaken in the field of ICT standardisation. As will be noted below, standardisation is by the EU policymakers, indeed, being regarded as an integral part of the EU initiatives to achieve the Lisbon goals. These ICT-standardisation related initiatives can together be called the EU ICT standardisation policy. Question is to what extent this ICT standardisation policy is still apt to deal with the new challenges imposed by the current and future ICT landscape. This question will be dealt with in the following section.

2.1.2   *The current EU ICT standardisation policy*

Lisbon Agenda - The current European Union ICT standardisation policy is heavily influenced by the Lisbon Agenda created in March 2000. The EU political leaders have set a new goal for the European Union, to be reached within a period of 10 years. This agenda wants to make the European Union "*the most competitive and dynamic knowledge-based economy in the world, capable of sustainable growth with more and better jobs and greater social cohesion.*" The 'Lisbon strategy' covers such matters as research, education, training, Internet access and e-business. It also covers reform of Europe's social protection systems, which must be made sustainable so that their benefits can be enjoyed by future generations.[48]

i2010 - With the re-launch of the Lisbon Strategy in early 2005, the European Commission decided to start a new initiative aimed at boosting competitiveness in the ICT sector.[49] The new programme *i2010* (or European Information Society 2010) intends to create an internal market for electronic

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[46] See the statement made on http://ec.europa.eu/enterprise/standards_policy/index_en.htm
[47] See below.
[48] See http://ec.europa.eu/growthandjobs/key/index_en.htm
[49] Communication "i2010 – A European Information Society for growth and employment"

communications and digital services and make the European Information Society as inclusive and accessible as possible[50].

Standardisation is being regarded as an integral part of the EU to achieve the Lisbon goals "*by carrying out better regulation and by simplifying legislation, by increasing competitiveness of enterprises and by removing barriers of trade at international level.*"[51]

It is interesting to note that the Commission in its Communication "Challenges for the European Information Society beyond 2005" annexed to the i2010 programme, especially referred to the use of standards as a tool for ensuring ICT interoperability. In this respect, the Commission explicitly mentioned the important role the European Standardisation Organisations CEN, CENELEC and ETSI need to play in this area, without forgetting the input of the **stakeholder**s. Also interesting to note is that the Commission explicitly mentioned the introduction of open standards in areas having particular public policy relevance[52].

Related policy documents - Different policy papers were produced by the EU institutions supporting the idea of standardisation as a policy tool for achieving the Lisbon goals of 2000 and 2005:

- The Council Resolution of October 1999 on "the Role of Standardisation in Europe" and the Council Conclusions of March 2002 in which the Council acknowledged the important role of standards and invited the Commission to analyse the current situation of European standardisation and to respond to the challenges the European standards system is faced with.

- The Commission response to these Council initiatives in 2004: on 18 October 2004, the Commission adopted a Communication on "the Role of European Standardisation in the Framework of European Policies and Legislation" accompanied by a staff working paper dealing with "The challenges for European Standardisation". Both documents analyse the current situation of European standardisation and identify the key areas where the European standardisation system and the instruments available to European standardisation policy can and should be further improved.

- The Council Conclusions of December 2004 on "European Standardisation", in which the Council acknowledged the Commission's findings and invited the Commission to pursue the activities proposed in the Communication and in the staff working paper.

- The 2006 "Action plan for European Standardisation", developed by the Commission in conjunction with European Free Trade Association (EFTA), the European Standards Organisations (ESOs) and National Standards Bodies (NSBs), the Member States and stakeholders. The Action Plan reflects in operational terms the Commission's Communication and the Council Conclusions and must be considered in liaison with these two documents. It outlines the most important actions to be performed and identifies the key players for every action, it is not exhaustive, however.

- The 2006 "ICT Standardisation Work Programme", of 16 March 2006, developed by Directorate General Enterprise and Industry, further complementing the 2006 Action Plan.

In its 2004 Commission Staff working document, the Commission expressed doubts about whether the regulatory framework underpinning the standardisation policy in Europe today is still sufficient to cover the new role entrusted to EU standards-setting procedures (especially, their role as "supportive mechanisms" of the EU policy and legislation in general)[53]. From a policy perspective, new measures

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[50] For more details on the eEurope 2005 Action Plan: see
http://europa.eu.int/information_society/eeurope/2005/index_en.htm and
http://europa.eu.int/information_society/eeurope/2005/doc/all_about/com_eeurope_en.doc
[51] Commission Communication on the role of European Standardisation in the framework of European policies and legislation, COM (2004) 674 final, p. 2
[52] Commission Communication "Challenges for the European Information Society beyond 2005" COM(2004) 757 final, p. 10.
[53] Commission Staff Working Document, *The Challenges for European Standardisation*, p. 9.

should be identified to set the EU standardisation policy and its system *more participatory and credible* to the EU market players and *more competitive* at the international level. From a technical side, the standards-setting philosophy in the ICT sector must target efficient and real-time implementations in order to offer a constructive support to other policies and to encourage investment in the R&D area.

Against these requirements, the Commission expressed that "*there is an enormous potential for the improvement of the European standardisation system*". Along the same lines, it stressed that " (in the ICT sector), *the Commission will seek to initiate a strategic review, together with Member States and stakeholders, that would target how all players involved in standardisation could better match the challenges responding to societal and market needs, thus providing efficiently elaborated specifications in the IT sector*"[54]. On the other hand, in its conclusions of 2004, the EU Council invokes the "*need for optimisation of the EU standardisation system*"[55].

2006 Action Plan - In the 2006 Action plan, the authors reiterate that standardisation is necessary to pursue the implementation of E-Europe and i2010. Main areas are e-government and modern online public services, secure information infrastructure, e-health, e-learning, interoperability platforms, broadband access at competitive prices, e-inclusion[56].

Important is that the Action Plan also confirms the basic principles of standardisation as "[…] *a voluntary, consensus-based, market driven activity*". The Action Plan also refers to the important role of the stakeholders in the European standardisation efforts: "*Standardisation is carried out by a number of* stakeholders *(manufacturers, service providers, users, authorities) who reconcile their positions. Thus the main influence and input on the work in the ESOs must originate from the* stakeholders."[57]

2006 Work Programme - The 2006 Action Plan has been complemented by a 2006 ICT Standardisation Work Programme. One of the prime objectives of this Work Programme is to further promote the use of ICT standards in support of EU policies and legislation as set out in the above mentioned 2004 Commission Communication.[58] The 2006 ICT Work Programme extends its coverage to new legal and policy domains which have recently emerged and thus were not yet addressed. Important is that priority will be given to standardisation actions aiming at ensuring interoperability, facilitating ICT uptake in key areas (e.g. e-business, e-health, etc.), and ensuring accessibility.

The documents also identify the different actors (Directorates-General, ESOs) involved in taking up the actions. The proposed actions, especially the ones identified in the Work Programme, are very much in line with some of the identified challenges, such as the intake of the development of new technologies (e.g. NGN and Grid computing) and the issue of supporting European policy domains outside of the New Approach (e.g. eInclusion, eHealth).

One ICT standardisation policy? - From the above, it may seem as if there exists one consistent EU ICT standardisation policy. This seems however not to be completely true in reality. Because of the special nature of ICT (global, pervasive, new players, time demands, …), throughout the years different steps have been undertaken by different relevant players (ESOs,, EC directorates general) for encompassing the needs of the ever changing ICT landscape without being able to pay attention to a long term strategy: ad hoc initiatives have been taken to react to immediate concerns without ensuring a long term approach and a proper embedment in the existing standardisation legal framework and relating policy.

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[54] Commission Communication on the role of European Standardisation in the framework of European policies and legislation, COM (2004) 674 final, p. 9.
[55] Conclusions of the Council of 17 December 2004, p. 7. (see also http://europa.eu.int/comm/enterprise/standards_policy/role_of_standardisation/doc/council_ccl_en.pdf).
[56] Action plan 2006, p.9
[57] Action Plan 2006, p. 3-4
[58] European Commission (Enterprise and Industry Directorate-General), 2006 ICT Standardisation Work Programme, 14 p.

Initiatives for structuring the different actions along the lines of a long term policy vision, such as the recent 2006 Action Plan for European Standardisation and the related 2006 ICT Standardisation Work Programme, indeed fulfil a streamlining function. Still, we are of the opinion that these documents remain focussed on collecting and structuring the different standardisation efforts, and do not cover some open issues, such as the debate on a structured inclusion of other standardisation participants than ESOs into the standardisation work or the debate on the difference in legal value of the standardisation deliverables.

2.1.3   The current EU standardisation system

One of the tools for policy makers to reach their policy objectives through standardisation is to establish a standardisation system. A standardisation system is a well structured set of procedures, organizations and deliverables being put in place for developing standards.

Need for European layer - Since the 1970s, the European policy makers have established a standardisation system that is based on a cooperation with professional standards bodies. The public interest argument is one of the reasons why a European standardisation system was founded, next to an already existing global standard system and the national layer. One of the reasons for having a European layer is exactly to safeguard European cultural, linguistic and regulatory needs, and to ensure that European end-user requirements, especially of SME's and administrations are fed into global standards.

Voluntary basis and public interest - The European standardisation system is based on a set of principles and procedures that enable economic participants (industry, SMEs, consumers or professional bodies, NGOs, public interest organisations, governmental authorities, etc.) to establish and agree on important criteria for products, services and processes. These criteria are embodied into European standards. Important is that the development of standards within the European standardisation system is a voluntary activity by and for the parties interested in drawing up common standards and technical specifications in response to their needs[59]. In its 1992 Resolution, the EC Council recognised that European standardisation, while organised on a voluntary basis, also serves the public interest.[60]

New Approach - The current European standardisation policy, including the ICT domain, is framed by the Council Directive 98/34. In the European arena, the main element of this policy is the formal recognition of three European Standards Organisations, CEN, CENELEC and ETSI, active in different degrees in the ICT domain. This recognition entails an institutional and financial support at the European level, aiming at improvements in responsiveness, efficiency and visibility and at providing the possibility for the Commission to financially support specific standardisation activities in support of EU legislation or policies.

2.1.4   EU standardisation system principles

Basic principles - The EU standardisation system is based on some basic principles of "transparency, openness, consensus, independence of vested interests, efficiency and decision-taking on the basis of national representations"[61]. These principles together relate to the more general principle of

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[59] Report from the Commission to the Council and the European Parliament of 26 September 2001 on *Actions taken following the resolutions on European standardisation* adopted by the Council and the European Parliament in 1999.

[60] Council Resolution of 18 June 1992 on *the Role of European Standardisation in the European Economy*, OJ 1992 C 173/1, recital 8

[61] Council Resolution of 18 June 1992 on *the Role of European Standardisation in the European Economy*, OJ 1992 C 173/1, recital 8 and 9. These principles are reiterated in the Council's Resolution of 1999 on the role of standardisation in Europe. This Resolution indeed confirmed that "standardisation is a voluntary, consensus-driven activity, carried out by and for the interested parties themselves, based on openness and transparency, within independent and organised standards organisations, leading to the adoption of standards, compliance with which is voluntary". See Council Resolution of 28 October 1999 on the role of standardisation in Europe,

accountability. The organisation and decision-taking process of the European standardisation today is actually enshrined in these basic principles:

(a) **open and transparent working platforms:** anyone who has an interest in, or will be affected by a standard should be able to contribute to its development. The groups formed to work on a standard should be *representative* and *inclusive*. Working tools should favour participants' representation, working procedures and documents must be publicly available. The dissenting opinions must be heard and all interested communities must in principle be given the opportunity to express their views on a reasonable time. Stakeholders representing societal interests (or, otherwise, the public interest), such as consumer, health, environmental and safety organisations, reinforces the quality of consensus and makes the standards more representative.

(b) **interested parties:** The EU standardisation is for most sectors a market-driven and self-funded activity. Proposals for new standards projects may be made by the constituencies of the standardisation organisations, by international organisations or by European trade, professional, technical or scientific organisations. Constituencies are practically asked to provide all competent experts from the specific areas affected by the standards-setting proposals and to give all parties concerned the opportunity to take part in the standardisation process. The importance of participation of the communities representing public interest objectives has been highlighted above. Draft standards are made available at national level for public comment before approval.

(c) **neutral and independent standards organisations**: Three formal standards-setting organisations, CEN, CENELEC and ETSI, have been recognised by law (Annex I of Directive 98/34) to partner with the Community.

(d) **an adoption mechanism based on consensus**: decisions concerning the approval of standards for publication must be reached on the basis of evidence of consensus amongst the concerned parties. In practical terms, consensus is sometimes measured against the absence of sustained objection from major parties[62]. Consensus as meant in the standardisation decision-making mostly reflects "*a general agreement, characterised by the absence of sustained opposition to substantial issues by any important part of the concerned interests and by a process that involves seeking to take into account the views of all parties concerned and to reconcile any conflicting arguments*"[63].

(e) **voluntary implementation**: in principal, standards are not mandatory and no market player shall be enforced to implement them as a sole means to prove compliance with legal requirements. There are certain exceptions to this rule: standards become compulsory if specific legislation refers to them as obligatory.

WTO principles - The European principles are similar to the principles as found in the WTO Agreement on Technical Barriers to trade (TBT-agreement).[64] The rules and the guiding principles of the standardisation process set out in this agreement cover also the ICT area. A *Code of Good Practice for the Preparation, Adoption and Application of Standards* by standardising bodies, which

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OJ 2000, C141/1, recital 11.

[62] As expressed in Commission's report on the Efficiency and Accountability in European Standardisation under the New Approach, COM (1998) 291final, p. 9.

[63] This definition of consensus is provided in EN 45020:1993, n°. 1.7., reference in *Legal aspects of standardisation in the Member States of the EC and EFTA*, vol. 1, Harm Schepel, Josef Falke, European Communities 2000, p. 19, footnote 107.

[64] Code of Good Practice for the Preparation, Adoption and Application of Standards, Annex 3 to WTO Agreement. The Agreement on Technical Barriers to Trade - also known as the TBT Agreement is an international treaty of the World Trade Organization. It was negotiated during the Uruguay Round of General Agreement on Tariffs and Trade, and entered into force with the establishment of the WTO at the beginning of 1995.

is open to acceptance by private sector bodies as well as the public sector, is included as an annex to the agreement.[65]

Six essential elements for international standards-setting work are defined in Annex 4 of the TBT Agreement, namely[66]:

(a) **Transparency**: all essential information about work programmes, proposals of standards or other deliverables, and their final results shall be made *easily accessible*.

(b) **Openness**: Membership to international standardisation work should be open on a non-discriminatory basis and in relation to all stages of standards development, from proposals of standardisation work to voting and adoption of standards. The opportunities to participate shall be meaningful.

(c) **Impartiality and consensus**: The standardisation procedure shall not be conducted in a way to award a special privilege to a particular supplier, country or region.

(d) **Effectiveness and relevance**: International standards need to be relevant and to respond effectively to regulatory and market needs, as well as scientific and technological developments. The relevance implies the obligation of having the standards revised.

(e) **Coherence**: Signatories shall avoid duplication of, or overlap with, the standardisation work of other international standardising bodies. In this respect, it is essential to establish co-operation is essential between relevant regional or national parties.

(f) **Development dimension**: Developing countries should not be excluded from the process because of lack of resources.

The principles adopted in relation with the WTO TBT are in line with Europe's thinking on international standards, and they are consistent with the basic principles respected by the European standards bodies and their national members.[67]

2.2   New Approach: basis of the EU standardisation system

New Approach – We are nearly two decades far from the introduction of an *harmonised EU standardisation* system under "the New Approach". The latter represents a turning point to the history of European standardisation since it sets out the intrinsic characteristics of standardisation in the Single Market: the principles of the harmonised 'standards-setting', its deliverables ('EU norms') and its institutional basis (the three European standards organisations).

The EU standardisation system has been legally enshrined in what is commonly known as the "New Approach Model". The legal basis of the New Approach Directives is clear: in view of the establishment of the internal market, article 95 of the EC Treaty requires the Commission to ensure a high level of protection in the legislative proposals it puts forward concerning health, safety, environmental and consumer protection. Once adopted, the New Approach Directives are total harmonisation Directives: their provisions supersede all corresponding national provisions.

The rules and principles governing the EU standards setting within the internal market are laid down in the *Council Resolution of May 1985* on a New Approach to technical harmonisation and standards. This Resolution is further implemented by the *EU Directive 98/34/EC* laying down a procedure for the provision of information in the field of technical standards and regulations and of rules on Information Society services (known as the "New Approach" or "Transparency" Directive)[68]. The

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[65] The TBT Code of Good Practice has so far been accepted by 151 standardising bodies, governmental and non-governmental from 110 countries.

[66] Decision of the TBT Committee on principles for the development of international standards, guides and recommendations with relation to art. 2, 5 and Annex 3 of the Agreement.

[67] European Commission Staff Working Paper, *European policy principles on international standardisation*, 26 July 2001, SEC (2001) 1269.

[68] Directive of the European Parliament and the Council of 22 June 1998, OJ L 204 of 21 July.1998, as amended by Directive 98/48/EC of the European Parliament and of the Council of 20 July 1998.

New Approach strategy illustrates a very effective and efficient co-regulatory approach in domains related to the protection of health, safety and security.

The introduction of standards under the "New Approach" formula covers wide groups of products (toys, medical devices, lifts, etc.) in traditional business sectors (construction, machinery, equipment, etc.). From the date of the entry into force of the New Approach, around 20 New Approach Directives have been adopted[69]. With an amendment by Directive 98/48/EC, the scope of the "Transparency Directive" was extended to cover information society *services*. However, the Directive still does not apply to radio and television broadcasting services.

New Approach Principles - The following four principles established by *the Council Resolution of May 1985* underpin the standards-setting philosophy under the New Approach:

(a) Legislative harmonisation is limited to the adoption of *essential requirements[70]* that products should meet in order to enjoy free movement within the internal market.

(b) Standards and technical specifications are a means to address the essential requirements.

(c) Standards-setting activities in the framework of the New Approach are entrusted to organisations competent in the standardisation area.

(d) The adoption of standards, including in the context of the New Approach, remains voluntary. However, the Resolution obliges Member States to recognise to standards adopted under the New Approach a "presumption of conformity". Practically, this presumption means that, if the producer follows the said standards, he does not need to prove how his product complies with the legal rules. Adherence to the said standard implies automatically adherence to the legal requirements.

Field of scope - Furthermore, the Resolution sets out the criteria that must determine the industry areas in which this approach should apply.

Accordingly, the areas in question should not call for an exhaustive regulation: domains in which public authorities should maintain intact their responsibility for protection of their citizens should be inappropriate for tackling only "essential" requirements.

Secondly, the area should have in itself a "potential" or "capacity" for standards-setting work. Domains or activities that must be strictly regulated throughout the European Union are definitely out of the scope of application of the New Approach.

Thirdly, the New Approach should target areas in which strict law-making at a Community level has not yet been well advanced. The fourth criterion should determine whether, in the selected areas, products must be sufficiently homogeneous to allow "essential requirements" to be defined[71].

Finally, there must be sufficient grounds to consider that the existence of different regulations could constitute in practice an internal market barrier. If this justification does not appear in an obvious way, there should at least be felt the need to protect an essential public interest in a uniform way throughout the Community.

Basic rules of standards making - Along with the recognition of these principles, the "Transparency" Directive sets out the basic rules of standards-making at EU and national level. The

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[69] As an example of New Approach Directives we can state "The Low Voltage" Directive (73/23/EEC as consolidated), the "Safety of Toys" Directive (88/378/EC as consolidated), the "Pressure Equipment" Directive (97/23/EC), etc. The entire list of these Directives can be found on the website of the European Commission, Enterprise DG, at: http://ec.europa.eu/enterprise/newapproach/standardisation/harmstds/reflist.html..

[70] As specified in the recommendation, these requirements concern first of all product safety, but can also address any other requirement of general interest, such as product quality, security, environment-friendliness, user-friendliness, etc. or other functionalities depending on the nature of the product and the sector in question.

[71] However, this criterion does not preclude standardisation under the New Approach targeting a single type of product if the rest of criteria are fulfilled.

act introduces a specific process for informing the EU Commission and Member States of any national initiatives that are taken with a view to developing draft standards or technical regulations.

Concurrently, the Directive has an impact on the organisation of standards-setting initiatives undertaken at the EU level, because, *inter alia*:

(a) It subjects national standards-making activities or legislation that refers to or encourages the use of standards to *a priori* communication and examination by the EU Commission and the rest of Member States (notably art. 2, §§1 and 3, art. 8);

(b) It recognises the *pre-eminence* of standardisation work that is prepared or carried out at EU level within the European standardisation bodies over any other similar or conflicting activity that may be undertaken at national level. Accordingly, Member States are called neither to object to any standardisation discussion initiated at EU level nor to undertake any action which may prejudice this initiative (art. 4, §1).

(c) It sets out the formation of a standing committee to consult the EU Commission on the implementation of the Directive, in particular regarding new initiatives for standards-setting work that should be taken at EU level ("Consultative Committee 98/34", art. 6 §2).

(d) It formalises the preparation of European standards through explicit requests that the Commission addresses to the European standards institutions, the so-called "mandates" (art. 6, §3, first indent).

(e) It imposes standstill obligations: Accordingly, in the course of preparation of EU standards by the European standards bodies, the national standards organisations must refrain from any work or initiative that could hinder or prejudice the harmonisation sought at EU level (art. 7, §1).

(f) It confirms the pre-eminence of EU standards over national standards: Thus, new or revised national standards that are adopted by national standards bodies must be completely in line with European standards if they exist (art. 7, §1).

(g) It recognises the formal European standardisation bodies: Accordingly, the EU standardisation work detailed in the Directive is entrusted to three organisations: CEN, CENELEC and ETSI (Annex I).

2.3 The *participants* in the standardisation system

The EU standardisation system is characterized by the involvement of a variety of participants responsible for setting out the policy objectives (European public authorities), organizing the standardisation efforts (ESOs), ensuring the protection of societal interests (public interest stakeholders), and adopting the deliverables (NSBs).

2.3.1 The European Standards Organisations

Three recognised bodies – The EU standards-setting is organised on the basis of independent and statutes-based procedures adopted by the three recognised standardisation bodies in the EU: the European Committee for Standardisation (CEN), the European Committee for Electrotechnical standardisation (CENELEC) and the European Telecommunications Standards Institute (ETSI). These three organisations are recognised by Community law as 'European Standards bodies or organisations (ESOs)'[72].

CEN and CENELEC are basically functioning on national representation at the consensus building level and at the implementation level. ETSI is based on a direct participation of participants and produces ETSI deliverables that do not necessarily need implementation in the national standards catalogues.

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[72] Annex I of Directive 98/34/EC of the European Parliament and of the Council laying down a procedure for the provision of information in the field of technical standards and regulations.

According to the organisations' statutes, "*the closest possible liaison shall be maintained in areas where the technical work of these organisations is found to overlap*"[73]. The co-operation between the three ESOs on subjects of common interest or in common technical areas is organised according to more detailed rules laid down in the statutes.

In response to market developments, such as the rise of consortia, the ESOs are constantly trying to improve and adapt their procedures. Examples of these are the creation of new deliverables, such as CEN CWAs (Workshop Agreements), ETSI TS (Technical Specifications) and GS (Group Specifications), and the provision of a platform for banking software source code in a CEN Workshop.[74]

(a) **CEN -** According to CEN's statutes, its mission in any sector apart from the electro-technical one may be summarised *inter alia* in: the harmonisation of national standards published by CEN members, the promotion of uniform implementation of international standards published by CEN members, the preparation of European Standards "*de novo*" where no appropriate international or other standards exist, support for worldwide standardisation in the International Organisation for Standardisation (ISO), co-operation with the EC and the EFTA so that European Standards (EN) and Harmonisation Documents (HD) can be referred to in their directives or other instruments"[75]. The members of CEN are primarily the standards-setting organisations of the EU and EFTA countries. Yet, CEN's organisational structure comprises the status of associate and affiliate member, counsels and other liaisons[76].

(b) **CENELEC -** Standardisation-setting in the electrotechnical sector is managed by CENELEC. The managerial structure and technical organisation of CENELEC mirrors this of CEN's. CENELEC's members are again the national standardisation bodies of EU and some EFTA countries, which contribute to the creation/harmonisation of electrotechnical standards through delegations in the Technical Committees (TCs). Like CEN, the mission of CENELEC is primarily to develop voluntary standards in the electrotechnical sector and to promote them at an international level in close co-operation with the International Electrotechnical Commission (IEC).

(c) **ETSI -** The European standardisation organisation with the shorter history is ETSI. Its statutory task is to produce standards in the telecommunications sector and in areas common to telecommunications, information technology and broadcasting in co-ordination with CEN and CENELEC. ETSI's task is to build upon world-wide standards, existing or in preparation. Its activities should contribute to the production and the promotion of new harmonised worldwide standards[77].

Contrary to CEN and CENELEC, ETSI grants full membership status not only to National Standards Bodies (note that NSBs are not necessarily member of ETSI), but to a whole range of other organisations, such as manufacturers, network operators, administrations, service providers, research bodies and users - in fact , "all key players in the ICT arena"[78]. Basically, full member status can be obtained by a legal person, be it an association, a company, a grouping, an organisation or a public authority. However, liaisons with ETSI through another status (associate membership or observership) is also possible. In ETSI, the preparation of standards and other relevant deliverables is entrusted to the "Technical Organisations", being statutory organs which

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[73] Art. 4.2, clause 4.2.1.1. of CEN/CENELEC Internal Regulations - Part 2: Common Rules for Standards Work.

[74] These new procedures and deliverables are being debated below under subsection 2.5 "Deliverables in the standardisation " on page 30.

[75] Article 4, CEN/CENELEC Internal Regulations Part 1A.

[76] For more information, see: http://www.cenorm.be.

[77] Art. 2; ETSI statutes as adopted by the General Assembly on 19 April 1996, reference found in *Legal aspects of standardisation in the Member States of the EC and EFTA*, vol. 1, Harm Schepel, Josef Falke, European Communities 2000, p. 11, footnote 52.

[78] As quoted from ETSI's website, http://www.etsi.org.

provide a structure in which experts can work together "efficiently and effectively". The Technical Organisation itself is sub-divided to other types of technical bodies - technical committees and partnership projects[79].

2.3.2   National Standards Bodies

Influential role - With the creation of the three ESOs and the implementation of the New Approach, the EU standardisation activities have moved substantially from the national level to the European and international level.[80] However, NSBs still have an influential role to play on the European standards setting scene, given that the subsidiarity principle gives Member States responsibility for the implementation of the policy at the national level. As such, there is a close relationship between the Member States, their NSBs and the ESOs.

Some examples - The influence of the NSBs can be evidenced through the following examples:

- In most of the working structures of the ESOs, NSBs support the technical work undertaken in the technical committees or similar working structures (i.e. by submitting proposals for standards-setting, sending delegations to these committees, providing secretarial support to them, etc.).

- NSBs establish the permanent link between market players, in particular SMEs, and public interest groups;

- NSBs are in charge of advising the national market about standardisation activities, outcome of standardisation actions and deliverables;

- NSBs maintain "the authority" in terms of the adoption of European standards (ENs): notably, they carry out at national level the activities related to standstill, public enquiry, establishment of the national position for the vote on Draft ENs. Also, they are responsible for ensuring the transposition of ENs after their adoption and the withdrawal of respective national standards.

- NSBs contribute to the financing of ESOs and may act as an intermediary for the acquisition of standards by market players[81].

Important, however, is that the role of National Standards Bodies in ETSI differs from the their role in CEN/CENELEC: CEN and CENELEC are federations of national organisations with a reduced power level of the Central Secretariat, while ETSI is an organisation ruled by the General Assembly (GA) accessible to all ETSI members.

2.3.3   The public interest stakeholders

Protection of societal interests - To note is that societal interests (safety and environmental, consumer protection, privacy and security concerns, etc.) are in principle echoed in the current standardisation system through a possibility by the stakeholders to participate in the standards-setting process at the level of ESOs.

Different possibilities of access and active involvement of public interest groups are offered taking into account the working structure in each ESO. The frequency and quality of participation of these constituencies in the EU standardisation system increases the latter's political acceptability. Organisations defending the public interest can in principle be included in the standardisation process through the full membership status in ETSI or the associate status in CEN/CENELEC.

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[79] More detailed information about this subdivision and the role of each working group can be found in *Legal aspects of standardisation in the Member States of the EC and EFTA*, vol. 1, Harm Schepel, Josef Falke, European Communities 2000, p. 14 and ff.

[80] This study focuses on the role of the NSB rather than the role of the Member State.

[81] Such power is however relative, taking into account the differences that exist in terms of financing and funding, as well as availability of the adopted standards, between CEN/CENELEC and ETSI.

Set-up of specific organisations - A number of organisations representing sector-specific public interests have been set-up and are financially supported through Commission funds in order to improve participation in the standardisation activities of ESOs. These stakeholders are, for instance, the *European Association for the Co-ordination of Consumer Representation in Standardisation* (ANEC) and the *European Office of Arts/Crafts and of SMEs in standardisation* (NORMAPME), the European Environmental Citizens Organisation for Standardisation (ECOS) etc. A list of the public interest stakeholders can, for example, be found on the website of CEN.[82]

2.3.4 The EU public authorities

Double role – The EU public authorities have a double role to play in the current EU standardisation system. On the one hand, they formally take part in the standards-making process as any other market actor. In this case, amongst other, they act as an authority with a duty to protect the public interest. Public authorities are also directly involved in the standardisation process through the issuance of mandates.

Most often, public authorities have to reconcile in the standardisation process the achievement of Single Market objectives with the safeguarding of fundamental community interests, i.e. proprietary interests on standards vs. the citizens' interest in the dissemination of innovation. Their legitimate right to participate in the standardisation process has been denoted since standardisation has been considered as a key instrument to attain other Community policy objectives, apart from the Single Market[83].

Formal objection possibility - Under the New Approach, if the public authorities consider that a harmonised standard does not entirely satisfy the essential requirements of the regulatory framework (the said "New Approach" Directive), the publication of the references of the standard concerned or its relevant parts can be withdrawn. This is done through a "standards safeguard clause" which is also called a "formal objection". Given the two-fold responsibility that public bodies are now called to take over in the achievement of other community objectives through standards-setting, additional mechanisms are being explored to improve the current system of objections[84].

2.4 Procedures in the standardisation system

Based on efficiency and accountability - The ESOs have established internal working procedures based on the EU standardisation principles of efficiency and accountability[85].

In the internal working rules of ESOs, the accountability principle is reflected in:

- Institutional rules relating to questions such as access to membership, access for EU-based interest groups, dialogue with public authorities, etc..

- Possibility of all interested parties to participate effectively in standardisation work, under fair conditions.

- Need to verify consensus through national public enquiry, the establishment of consensus through national representation, and, in certain countries, the need to make standards available in the national language.

- The obligation for NSBs to transpose European standards in an uniform way, and to withdraw conflicting national standards.

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[82] www.cen.eu (see "associates").

[83] Report from the Commission to the Council and the European Parliament of 26 September 2001 on *Actions taken following the resolutions on European standardisation* adopted by the Council and the European Parliament in 1999, p. 9 and ff.; on the basis of Council Resolution of 28.10.1999, OJ C 141, 19.05.2000.

[84] *Ibid.,* p. 12.

[85] See PART II.2.1.4 "EU standardisation system principles". See, in this respect, General Guidelines for the co-operation between CEN, CENELEC and ETSI and the European Commission and the European Free Trade Association, 28 March 2003, p. 1, point 1.

Similarly, the efficiency principle means that internal working procedures with ESOs should actually result to:

- Standards-setting of a high-quality that are delivered in time.

- Building of consultation mechanisms that allow quick and direct public access (i.e. through electronic procedures, etc.).

- Identification of appropriate decision-taking systems wherever consensus-based solutions cannot practically work.

- Development of standards with concrete and effective implementation targets.

- Efficient roll-out of standards on the market, enabling massive and low-cost adoption[86].

Core procedure rules - To meet the above prerogatives, the ESOs strive to follow a number of core procedural rules enshrined in their internal regulations (technical working procedures, rules of procedure, etc.), such as:

- Draft standards become available for public comment before approval for a certain time period.

- Existing European standards must be reviewed at reasonable intervals and if necessary, they shall be revised.

- Decisions on standards adoption are subject to an appeals procedure. Other *action or inaction* of the organisations may also be subject to appeal.

- Efforts of chairpersons of technical committees shall exhaust all possibilities of obtaining consensus in the adoption of standards.

- Members of ESOs are subject to a standstill obligation during the period in which ENs are under preparation within technical committees;

- Once standards are adopted, all members are obliged to transpose them (even if they objected to their adoption during the standards-setting procedure); etc[87].

2.5 Deliverables in the standardisation system

The European Standardisation Bodies produce a variety of standardisation related deliverables. The traditional deliverables of the EU standardisation process in support of legislation are harmonised standards (ENs) as defined in the Directive 98/34, although "new deliverables" such as ETSI Technical Specifications (TSs) and CEN/CENELEC Workshop Agreements (CWA) have been developed in response to evolving market requirements.

Harmonised standards remain the main tool in support of the New Approach legislation. The "new deliverables" are mainly considered in support of non New Approach legislation on a case-by-case basis. An assessment of these new deliverables is being done in the next section.[88] Below follows a short description of the deliverables produced by the three ESOs.[89]

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[86] Analysis of these principles is based, inter alia, on Commission Report, Efficiency and accountability in European Standardisation under the New Approach, COM(1998) 291final, p. 4-6.

[87] To note that these rules stem from the ESOs internal regulations; they are mentioned herein on indicative basis only and do not discuss preclude procedural differences that are likely to exist between the different ESOs and/or their organs.

[88] See 3.2 "Introduction of new deliverables" on page 38.

[89] The text of this subsection is based on *Legal aspects of standardisation in the Member States of the EC and EFTA*, vol. 1, Harm Schepel, Josef Falke, European Communities 2000, p. 96-100, the CEN website (www.cen.eu) , the CENELEC website (www.cenelec.org) and the ETSI website (www.etsi.org).

2.5.1 CEN deliverables

CEN's products are the European Standards and other approved documents available for purchase from their National Members.

- **European Standards (ENs)** are drafted as a general rule. ENS are adopted after a European-wide public enquiry and a formal weighted vote of the members (i.e. the NSBs). Members are then obliged to implement European Standards by giving them the status of national standards. The members must transpose the final text ratified by vote into national standards – translating them if desired – but without deviation or alteration, and retain the prefix EN in the national designation: e.g. BS EN 1234, NF EN 1234, DIN EN 1234. Thus the number and technical content of the standard are exactly the same throughout Europe.

- **Technical Specifications (CEN TSs)** – TSs are established as prospective standards for provisional application in technical fields where the innovation rate is high or where there is an urgent need for guidance under condition that the safety of persons or goods is not involved. TSs do not have to be adopted by the members, but they must be announced and made available. These documents were formerly knows as European Prestandards (ENVs). For reference reasons, some ENVs are still available for the present.

- **Technical Reports (CEN TRs)** – are reports for information and transfer of information. These reports (also called CEN reports or CRs) may be adopted by the Technical Board of CEN with a simple majority decision in cases where it is considered urgent or advisable to provide information tot the members.

- **CEN Workshop Agreements (CWAs)** – are consensus-based specifications, drawn up in an Open Workshop environment with unrestricted direct representation of interested parties. New Workshops may be proposed by any company, group of companies, association, CEN Member, CEN Techical Committees or by public authorities.

2.5.2 Cenelec deliverables

CENELEC's standardisation products are typically the following deliverables:

- **European Standards (ENs) -** It is a normative document available, in principle, in the three official languages of CENELEC (English, French and German) that cannot be in conflict with any other CENELEC standard. EN's are the most important deliverable published by CENELEC. Its development is governed by the principles of consensus, openness and transparency, a national commitment to implement it in each and every one of the countries member of CENELEC, its technical coherence regarding both national and European levels. Before its implementation, the EN must follow the following steps: Drafting by a CENELEC Technical Committee or Working Group, Inquiry at national level, a formal vote followed by a standstill at national level and the final approval by the Technical Board before its implementation in all member countries.

- **Harmonization Document (HD)** – The HD has the same characteristics as the EN except for the fact that there is no obligation to publish an identical national standard at national level (may be done in different documents/parts), taking into account that the technical content of the HD must be transposed in an equal manner everywhere.

The EN and the HD are referred to commonly as "standards" and must be implemented in all CENELEC member countries, who must also withdraw any conflicting standards. There are a few differences in the implementation process of EN's and HD's. Basically, the EN must be transposed as it is, not adding or deleting anything. The process for HD's is a bit more flexible. It is the technical content that must be transposed, no matter the wording or how many documents are made of it.

In addition to these two major deliverables, CENELEC also produces and approves documents with a different objective and target:

- **Technical Specification (TS) -** A TS is a normative document produced and approved by a Technical Committee (not by CENELEC as such). Several of the compulsory requirements needed to have a standard do not apply to Technical Specifications: there is no standstill, no public enquiry, the vote does not follow the same rules as in the CENELEC Technical Board (where it is weighted). A TS must only be produced in one of the official languages and its maximum lifetime is reduced to two or three years. Technical Specifications are explained in terms of supporting the European Market and act as a guidance method towards evolving technologies and experimental circumstances that would not gather enough consensus as to publishing an EN. A TS may not be in conflict with any other CENELEC standard. If a conflicting standard (EN) is published in the meantime, then the TS must be withdrawn.

- **Technical Report (TR) -** A Technical Report is an informative document on the technical content of standardization work. Only required in one of the 3 official languages, a TR is approved by the Technical Board or by a Technical Committee by simple majority. No lifetime limit applies.

- **Guides (G) -** CENELEC Guides are informative documents related to the "internal system". They may specify information about standardization principles and guidance to standards writers. Guides must be approved at General Assembly or Technical Board level. No lifetime limit applies.

- **CWA – CENELEC Workshop Agreement -** CWA's are an agreement developed and approved by a Workshop through consensus reached among identified individuals and organizations. They must be published at least in one of the official languages. Revision is possible.

2.5.3   ETSI deliverables

The ETSI Technical Bodies produce different types of deliverables, such as ETSI Technical Specifications (TSs), ETSI Standards (ESs), ETSI Guides (EGs), European Standards (ENs) and ETSI Technical Reports (TRs). When choosing the deliverable type, the Technical Body (TB) has first to decide whether the final document to be produced is intended to contain mainly informative or mainly normative text.

- **European Standard (telecommunications series), EN -** An ETSI deliverable containing normative provisions, approved for publication in a process involving the National Standards Organizations and/or ETSI National Delegations with implications concerning standstill and national transposition. The ENs format should be chosen if it is intended to cover regulatory type approval or ONP-related matters or if it is intended for use as a harmonised standard. Typical examples are radio-related and terminal equipment standards.

- **Harmonized Standard -** An EN (telecommunications series) which has been entrusted to ETSI by a mandate from the European Commission under European Directive 98/48/EC (latest amendment to Directive 83/189/EEC) and has been drafted taking into account the applicable essential requirements of the "New Approach" Directive and whose reference has subsequently been announced in the Official Journal of the European Communities.

- **ETSI Technical Specification (TS)** - An ETSI deliverable, containing normative provisions, approved for publication by a Technical Body. The TS format should be chosen, in general, as the default deliverable type. It can be made publicly available immediately after the TBs approval.

- **ETSI Standard (ES) -** An ETSI deliverable, containing normative provisions, approved by the TB for publication by application of the Membership Approval Procedure. The ES format should be chosen if it is required to reach a common position on a matter of strategic importance, which may be submitted to the ITU or other Standardisation Body.

- **ETSI Guide (EG) -** An ETSI deliverable, containing mainly informative elements, approved for publication by application of the Membership Approval Procedure. The EG format should be chosen when the subject matter gives guidance to the work of the whole or major parts of the Technical Organisation, or if the content is of general interest within ETSI.

- **ETSI Technical Report (TR) -** An ETSI deliverable, containing mainly informative elements, approved for publication by a Technical Body. The TR format should be chosen when the document contains information which is useful for reference purposes, but which typically, only affects the technology area of the originating TB.

2.6 ICT standardisation under New Approach

The legal model of the New Approach has been successfully used in the ICT area in three main cases: a) the harmonisation of requirements imposed on low-voltage electrical equipment, b) the regulation of the electromagnetic compatibility of equipment and c) the mutual recognition of conformity of radio equipment and telecommunications terminal equipment.

We describe briefly below the way in which standards are introduced in these cases and the added-value attached to such standards as is expressly recognised in the respective legal acts.

2.6.1 The Low Voltage Directive

The Low Voltage Directive (LVD) 73/23/EEC[90] covers electrical equipment designed for use with a voltage rating of between 50 and 1000 volt for alternating current and between 75 and 1500 volt for direct current (art. 1 of LVD). This act is one of the oldest Single Market Directives and was adopted before the introduction of the "New" or "Global" Approach. However, the LVD does have "New Approach" characteristics, given that: a) it prescribes the essential health and safety requirements which electrical low voltage equipment[91] must meet; b) it refers to "harmonised standards" as a means for ensuring compliance with the essential requirements.

The essential safety requirements and the safety objectives are provided in the LVD's text in an exhaustive way, meaning that Member States cannot impose stricter requirements (art. 2 and 4 LVD) to product manufacturers. Further, the LVD stipulates that competent national authorities must not impede the placing on the market and the free movement of electrical equipment which complies with safety provisions incorporated into harmonised standards. Although the LVD does not link the adoption of "harmonised" standards to a specific process (given that no formal "New Approach" process had yet been enacted at the time of adoption of the LVD), it specifies the conditions that should be met in order to qualify a standard as harmonised. Accordingly, "*standards shall be regarded as harmonised once they are drawn up by common agreement between the bodies notified by the Member States in accordance with the procedure laid down in Article [...], and published under national procedures*" (art. 5, §2). The same article implicitly sets out the obligation to keep standards updated in the light of technological progress. It finally stipulates that the list of harmonised standards and their references shall be published in the Official Journal *for information purposes.*

One of the elements that are assessed as positive in this LVD is the scheme of self-declaration that it introduces in relation to conformity assessment[92]. The self-declaration scheme means that the manufacturer ascertains that his product satisfies the prescribed essential requirements in a written declaration of conformity. In this written statement, the manufacturer must include a list of the harmonised standards he follows. Alternatively, he must describe (e.g. by reference to other technical

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[90] As amended by Council Directive of 19 February 1973.

[91] The scope of the Directive covers electrical equipment designed for use with a voltage rating of between 50 and 1000 V for alternating current and between 75 and 1500 V for direct current (art. 1 of LVD).

[92] As noted in outline information about LVD that can be found at: http://ec.europa.eu/enterprise/elect_equipment/lv/index.htm.

specifications) the solutions adopted to satisfy the safety requirements addressed in the Directive (Annex III, B. and Annex IV of the LVD).

2.6.2   The Electromagnetic Compatibility Directive

The purpose of the Electromagnetic Compatibility Directive (EMC Directive 83/336/EEC) is to provide clear requirements of electromagnetic compatibility for equipment intended to be connected to radio or telecommunications networks or electrical supply networks in order to prevent electromagnetic disturbance. The EMC Directive was subject to a review and will be replaced by the Directive 2004/108/EC on the same subject matter from 20 July 2007.

As the old EMC Directive, Directive 2004/108 ("new EMC Directive") is based on the New Approach. This is clearly stated in Recital 12 of its text, which also sets out expressly that *CEN, CENELEC and ETSI are recognised as the competent institutions in the field of this Directive for the adoption of harmonised standards*. The Directive also clarifies the meaning of harmonised standards and what "*compliance with a harmonised standard*" means[93]. It stresses nevertheless that compliance with a harmonised standard is not compulsory (article 6, §1) and denotes that the added-value of meeting harmonised standards is the presumption of conformity deriving from them. References of harmonised standards adopted in the framework of this Directive are published in the Official Journal (article 6, §2).

Compared to the old Directive, the new EMC Directive identifies important changes regarding the assessment of conformity of the product with the essential requirements. Regarding the relation of standards and conformity assessment, the Directive points out that *the correct application* of harmonised standards must be regarded as *equivalent* to the carrying out of an assessment (Annex II, §1). If no harmonised standards are used, manufacturers are obliged by other techniques (appropriate testing, preparation of a technical file, notification to competent bodies, etc.) to demonstrate the compliance of their equipment to essential requirements.

2.6.3   The Radio and Telecommunications Terminal Equipment Directive

The Radio and Telecommunications Terminal Equipment Directive (R&TTE Directive, 1999/5/EC) defines clear rules for the placing on the market and putting into service of all products using the radio frequency spectrum (car door openers, cellular phones, etc.). It also applies to all equipment attached to public telecommunications networks (ADSL modems, telephones, telephone switches, etc.).

Following the "New Approach" model, the Directive provides the definition of "harmonised standards" by confirming their non-mandatory use (art. 2, point h)). It sets out a list of essential requirements (article 3) and confirms the presumption of compliance of apparatus that meets the relevant harmonised standards (article 5). In addition, if a manufacturer has applied the harmonised standards he may choose not to go through the conformity assessment procedure(s) described in the Directive (article 10, §4).

Also, in Recital 26, the R&TTE Directive sets out some principles that should underpin the standardisation procedure for the adoption of the standards foreseen in the Directive. First, the Directive draws a dividing line between the responsibilities of the standardisation bodies and those of the regulator. It renders the European standardisation organisations, notably ETSI, accountable for drawing up standards with a clear content and for updating them "as appropriate". Secondly, given the highly technical and complex nature of the standards in question, the Directive requests the active participation of experts drawn from amongst the economic players in the standards-setting process. Thirdly, the Directive recognises that compliance to the legal requirements may imply the adoption, amendment or interpretation of the corresponding standards through swifter procedures than by following the normal New Approach procedure laid down in the "Transparency" Directive. This is

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[93] Following Recital 13, "compliance with a harmonised standard means conformity wit hits provisions and demonstration thereof by the methods the harmonised standard describes or refers to".

the only point of the text about which the R&TTE Directive talks about the adoption of "other" standardisation procedures rather than the New Approach that may be justified in view of the urgency of the matter. The text does not provide more precisions in this respect. However, it appears, that the Directive recognises that the deliverables of such "other" procedures may also lead to "recognised" standards for the implementation of the legal prerogatives.

2.6.4 Other examples

Interesting to note is that this New Approach model has also been used for initiating standardisation activities outside the typical field of application of the New Approach. Examples of using the model in support of non-New Approach legislation are the standardisation activities carried out in support of the Electronic Signatures Directive 1999/93/EC and the Telecommunication Framework Package Directive 2002/21/EC.

Whilst for New Approach legal acts the standards referenced are harmonised standards (ENs), this is not necessarily the case for the non-New Approach legal acts. These legal acts do not require ENs and allow the use of "new deliverables" such as ETS, CWA, TS or guides.

The issues relating to the use of the New Approach model outside of the traditional legal framework has further being described in the first Interim Report.

3. THE EU RESPONSE TOWARDS THE ICT RELATED CHALLENGES

The EU policy makers, together with the ESOs have extensively been engaged in initiatives for encompassing the ICT related challenges. Throughout the years, a proper response has been sought, by:

- adopting specific legislation aiming at the ICT standardisation area (Council Decision 97/95)
- introducing new deliverables (CWAs, ETs)
- creating consultation and coordination bodies (SOGITS, ICTSB)
- involving industry in the standardisation work (Workshops, co-operation agreements)
- delegating representatives to other regions (China) and organisations (ISO)
- setting up marketing activities, etc.

The following subchapters will look at the initiatives more closely and assess their effectiveness.

3.1 The Council Decision on ICT standardisation

Already 20 years ago, a specific legal instrument covering the ICT standardisation area was introduced by the European policy makers: Council Decision 87/95/EC on standardisation in the field of information technology and telecommunications.[94]

The complexity of the technology in the ICT area and the fact that a great deal of standardisation work is being carried out at international level encouraged the adoption of this specific Council decision. It was also found that the New Approach reference tools (at that time, regulated by directive 83/189) could not address with precision all issues that were important for standards-setting activities in information and communications technology. On the other hand, the operation of standards-making described in the "Transparency" Directive has on many occasions been slower than what was technology demanded.

All these reasons justified the adoption of a number of rules that could better accommodate the needs of regulatory and technical harmonisation in the ICT field than the "Transparency" Directive. The

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[94] Council Decision of 22 December 1986, L 036 of 07 February 1987.

most salient improvements that the Decision 87/95 brings to the standardisation landscape along with the generic requirements of the New Approach[95] are as follows:

(a) **Recognition of new deliverables**: Besides the definition of the "standard" which is practically identical to that of the "Transparency" Directive, the Decision recognises expressly the notions of "European pre-standard"[96], "functional standard" and "functional specification". These three deliverables are believed to be formal outputs of the standardisation activities undertaken by the European standards institutions in the ICT area. The drafting of pre-standards is justified in cases in which the adoption of European or international standards is subject to excessive delays. On the other hand, functional standards are adopted for ensuring systems interoperability (or interconnectivity of open systems in the case of functional specifications in the telecommunications area).

(b) **Setting interoperability as a standardisation objective**: Data and systems interoperability is recognised as a goal to achieve through standardisation work (article 2, point b)). The Decision clearly enumerates amongst its aims the need "to facilitate the exchange of information throughout the Community, by reducing the obstacles created by *incompatibilities* arising from the absence of standards or their lack of precision" (Annex, article 1). However, the interoperability concept is not defined in the Decision's text as such.

(c) **Recognition of European Standards Organisations (ESOs):** The Decision entrusts explicitly the technical work in drawing up European standards or functional specifications to "*the competent European standards organisations*" or "*specialised technical bodies*" (articles 2 and 4). The Decision uses both terms to assign the technical work related to standards-setting to CEN, CENELEC and CEPT (now ETSI)[97].

It is noteworthy that the Decision grants to the above-mentioned technical bodies wide competences in the area of standards setting. CEN, CENELEC and CEPT are competent not only for *the drafting* of European standards and pre-standards but also for activities related to the *application* of standards and their *promotion*. Such activities especially cover conformity assessment, certification, the development of test-beds, the encouragement of standards' use in public sector orders and technical regulations (article 2, c) and d)).

(d) **Introduction of mandates:** According to the Decision, the Commission issues *requests* to the EU standards bodies to carry out a specific standardisation activity for the development of European standards in the ICT sector (article 4). The agreement of two committees is necessary to issue such requests: the Consultative Committee 98/34 and the standing committee provided in this Decision (SOGITS committee, see below).

(e) **Establishment of the SOGITS committee**: An advisory committee, called the "Senior Officials Group on standardisation in the field of Information Technology" (SOGITS), is set up to assist the Commission in the pursuance of the objectives of the 87/95 Decision. This Committee enjoys a wide consultative role for almost all matters specified in the Decision, especially the issuance of mandates in the area of ICT and the implementation of standards-setting and standards-related activities (see above). Like the Consultative Committee 98/34, the SOGITS committee consists of representatives appointed by the Member States, who may be assisted by technical experts or advisers.

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[95] The Decision states explicitly that the standardisation process described in the "Transparency" Directive applies also in the adoption of standards in the ICT area (art. 4).
[96] The "European pre-standard" is defined as a standard adopted under the reference EPS in accordance with the statutory rules of the standards bodies with which the Community has concluded agreements (art. 1, n° 8).
[97] ETSI had not been founded at the time of publication of the Decision but it is however recognised as the formal European standards organisation in the area of electronic communications by the "Transparency" Directive. The European Conference of Postal and Telecommunications Administrations (CEPT) created the European Telecommunications Standards Institute (ETSI) in 1988 and it transferred to it all standards-setting activities of the telecommunications domain.

(f) **Pre-eminence of international standards**: The Decision clearly sets out that standards-setting work undertaken at European level must subordinate international standardisation activities. Accordingly, standardisation programmes that determine the European standardisation work on an annual basis must be based on international standards and must take into account relevant international standardisation activities (art. 2 (a) and b)). Along the same lines, it is not justified to start work through a Commission's mandate in the telecommunications area as far as an international standard exist and to the extent that its provisions do not necessitate any further interpretation. In other words, the clear provisions of an international standard must be adopted "*as is*" in the EU standard or other specification which transposes it at European level. Accordingly, European standardisation work is justified only for clarifying or completing the respective provisions of an international standard while avoiding divergence from it (article 2, b)).

(g) **Enhanced co-operation between ESOs**: According to the Decision, the technical competences of standardisation bodies in the ICT area are often overlapping. In order to avoid work duplication on matters of common interest, the Decision lays down the obligation for ESOs to collaborate closely. To this end, the Directive foresees also that standardisation activities may be undertaken jointly by the ESOs and initiatives in common may be discussed at an early stage (Recital 2 and 4).

(h) **Obligation to refer to standards in public procurement procedures:** The decision obliges Member States to ensure that reference is made to European standards and European prestandards, or international standards when accepted in the country of the contracting authority, in public procurement orders relating to information technology (article 5).

The principles of the Council Decision have ten years later been reiterated by the Council Resolution of 1999. This act recognised the impact of technological progress on the concept of standardisation at a global level and urged the ESOs to continue to develop *new policies* to adapt to evolving market needs[98]. It also requested the Commission to examine how a Community framework of principles for the use of new deliverables of standardisation should be developed and to explore whether differences between standardisation in the ICT and other sectors could be addressed. This Council Resolution turned out to be an action plan for all players involved in European standardisation, especially the ESOs.

If in the Council Resolution, the Council reckons only the need to diversify the end-products of ESOs, two years later, the Commission goes even further than the Council's suggestions. After taking into account that market requirements has changed due to the ICT invasion, it recognises the need to redesign not only standardisation products, but also *policies, processes and organisational structures* to better respond to the changing environment[99].

Further policy documents continue to refer to the need to work together with players outside of the standardisation system and to take stock of the expertise and deliverables created by these players. It is for example noteworthy that the European Parliament stresses in 2006 that, apart from European standards, *international and other standards* strengthen the European internal market.[100]

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[98] Council Resolution of 28 October 1999 on *the role of standardisation in Europe*, esp. recitals 7 and 13-15.

[99] Commission Communication on the role of European standardisation in the framework of European policies and legislation, COM (2004)674 final, p. 6.

[100] See in this respect, Note from General Secretariat to the Council on the *Outcome of the European Parliament's first reading on the draft Decision on the financing of the EU standardisation, 2005/0157 (COD), Brussels 22 May 2006*, p. 6. Also, Report of the Parliament, Committee on the Internal Market and Consumer Protection, session doc. final of 27.03.2006.

3.2   Introduction of new deliverables

3.2.1   Description

As a reaction to the considerable time overhead required to formally initiate, approve and publish standards, the ESOs have introduced so called "fast track" procedures to accelerate the adoption of standards. The deliverables stemming from the fast track procedure are being called Workshop Agreements (CEN/CENELEC) or Technical Specifications (CEN/CENELEC/ETSI).

With this new product, the ESOs try to respond efficiently to those cases where short product life cycles would not allow to follow the traditional standardisation process. The fear existed that if the ESOs would not introduce fast track procedures, the market would start to prepare proprietary company specifications, which later become *de facto* standards. The open process of Workshops exactly aims at bridging the gap between industrial consortia that produce *de facto* standards with limited participation of interested parties, and the formal European standardisation process which produces standards through consensus under the authority of the CEN members.[101]

Consensus based open platforms - The standardisation work through Workshops can actually begin if certain conditions are met (no existence of previous standard, establishment of a standards-setting "business plan", sufficient interest of other market players in the given standardisation activity, etc.). The Workshops are defined as consensus-based and open working platforms in which standards can be adopted by a dedicated number of market players. Access to these workshops is also open to participants outside Europe. With a rapidly growing global standards market, CEN has indeed decided to open the workshop process to non-European interest groups, in order to benefit from international developments in standardisation. However, unlike private consortia, the Workshop mechanism tries to achieve a reasonable balance between openness/transparency and time/cost efficiency in the standardisation process.

No "standard" status - Although in the customary language the deliverables of these Workshops (Workshop Agreements - CWAs) are "standards", they are not formal norms (standards meant as ENs) in the sense that they have not gone through the traditional standardisation process (consultation of National Standards Bodies, national voting, etc.). Since their adoption, Workshops have mainly been used for standardisation in the ICT area.

3.2.2   Concern

Workshop Agreements and Technical Specifications represent the direct response of CEN, CENELEC and ETSI to the global challenges of the ICT market (especially the need for speed) and the influence of consortia in the development of specifications outside the European or international standardisation organisations.

The Workshop, for example, provides an alternative to the formal and rather rigid standardisation process of the Technical Committees. To a certain extent, it mirrors the "consortium" rationale, since it promotes the idea that any market player having an interest in a standardisation activity or result may initiate standards-setting work. On the one hand, the CWA meets market demands for a more flexible and timelier alternative to the traditional ENs. On the other hand, it still possesses the authority derived from the openness of participation and agreement inherent in the operations of recognised standardisation organisations.

Despite the good intentions of the European policy makers and the ESOs when creating this possibility, we note that many issues arise such as the non existence of a clear definition of the legal value of CWAs and of the CWA concept. Furthermore, CWAs and TSs are not assigned the status of a formal standard (EN). Hence, the obligation placed upon CEN Members to withdraw pre-existing national standards conflicting with the adopted standards does not apply in the case of CWAs and

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[101] *Legal aspects of standardisation in the Member States of the EC and EFTA*, vol. 1, Harm Schepel, Josef Falke, European Communities 2000, p. 97.

TSs. Also, the fact that CWAs are published at national level in CEN member catalogues adds uncertainty as to the legal value of these deliverables. It has been noted that users of standards have problems understanding the different legal value between an EN and a CWA, although both have been published in the catalogues.

3.3   Introduction of consultation and coordination bodies

3.3.1   Description

SOGITS - The Council Decision 87/95 established an advisory committee, the so-called 'Senior Officials Group on standardization in the field of Information Technology' or SOGITS. This committee should assist the European Commission in the management of the activities relating to ICT standardisation. For example, the European Commission should first consult SOGITS before issuing a mandate to the ESOs. On a more general level, SOGITS assists the Commission when determining Community priorities. The SOGITS committee consists of representatives appointed by the Member States, who may call on the assistance of experts or advisers. The Committee shall meet at least twice a year.

ICTSB - The ICTSB (ICT Standards Board) is an initiative from the three ESOs with the participation of other specification providers from the industry, some non-formal SDOs and public interest organisations as partners or observers. Its aim is to co-ordinate specification activities in the ICT-area. The ICTSB has been created as a response to the need for speed in creating ICT standards and the need to take stock of the know-how and experience of other players than ESOs in the standardisation process.

Stakeholders – Apart from the already existing procedures for involving public interest stakeholders in the standards marking process, public interest stakeholders are in practice often already being consulted by the Commission authorities before any mandate has been issued. These consultation rounds prove to be very practical and useful for both the stakeholders and the European Commission, allowing the Commission to take into account possible concerns and suggestions from the relevant stakeholders. No legal obligation exists however for involving the stakeholders already in the early process of drafting a mandate.

3.3.2   Concern

SOGITS - As to SOGITS, we note that the SOGITS committee has not convened for the past six years although all participants have identified the need for such a platform. Furthermore, we note that the members of SOGITS are restricted to representatives of the Member States. Industry experts and other relevant parties are not part of SOGITS (unless they are being called upon by a Member State representative). Currently, Member States are only consulted via the so-called 98/34 Committee. It is formed by representatives appointed by the Member States who may call on the assistance of experts or advisers and by representatives of the standards institutions referred to in Annex I (the three ESOs). It is general to all standardisation fields and it is not proving to be efficient in embracing all the ICT complexity.

Stakeholders - The European Commission, when preparing a mandate for standardisation to support legislation, often asks the opinion of relevant stakeholders. This consultation round is however legally or policy wise not obligatory and only depends of the good will of the responsible EC public servant, leaving too much space for a fragmented approach.

ICTSB – The ICTSB initiative is being regarded as a very good first step for tackling some challenges imposed by ICT (especially, the time issue and the market players issue). However, the role of ICTSB is currently restricted to acting as a co-ordination point and facilitating of exchanges of views between the member organisations and with other interested parties. It only makes proposals and recommendations for consideration by the member organisations and others. ICTSB does not

have a right on its own to start standardisation activities but always has to fall back on the three ESO's or other participants. It has also been noted that no relevant standards requirements have been brought to ICTSB any longer by its members.

3.4 International cooperation efforts

3.4.1 Description

The effect of the globalisation in the ICT area to the European perspective is the greater increase of importance of the activity outside the EU standardisation system. It is not realistic to assume that global organisations can be formed under the auspices of the ESOs for every area of ICT, such as the 3GPP is from ETSI for cellular networks.

International cooperation has already been sought by the ESOs with other international standardisation bodies. The abovementioned Dresden Agreement and Vienna Agreement are examples of how European standardisation makers are trying to synchronize European standardisation efforts with the international efforts, typically by introducing the possibility to develop standards in one body and to approve them by parallel voting in both.

3.4.2 Concern

The international agreements seem to be only focussed on specific deliverables. The Vienna Agreement between CEN and ISO for example only concerns the development of European Norms. It is not sufficiently clear whether other products than ENs may be developed under the Vienna agreement. Although, in practice, it may seem to be generally possible to integrate other deliverables under the Vienna agreement, the procedures to be followed are not clear and procedural guidance may be necessary on a case-by-case basis.

Furthermore, apart from entering into international agreements with institutionalised standardisation bodies, the European policy makers and the ESOs should certainly be concerned about the drafting of standards and specifications on a global level by organisations outside of the traditional standardisation circles (see further under PART III.2 "A Regional policy in a global context" on page 56).

3.5 Attention for standardisation efforts outside the system

3.5.1 Description

The support of the market of standards-setting procedures that take place outside the remit of the formal standardisation system has become a common practice in the ICT area. These tendencies are not fully reflected yet in the EU standardisation policy and its legal framework.[102]. Still, many initiatives have been undertaken for encouraging co-operation between the EU policy makers and the ESOs on the one hand and the specification providers on the other hand.

Upgrade to formal standards -It is true that specification providers that carry out quite often core standardisation activities in the ICT area are deprived by any *de jure* authority over standards-setting in the EU area. Deliverables of these platforms have no formal legal recognition if they remain "consortia standards". However, these deliverables can become legally recognised when they are upgraded into "formal standards" following the normal procedures of the ESOs.

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[102] Although the New Approach Resolution of 1985 already states that: "*for specific sectors of industrial activity other competent European bodies (than CEN and CENELEC) for the drawing up of technical specifications could be involved*", Council Resolution of 7 May 1985 on a new approach to technical harmonisation and standards, A. Justifications, third indent, (2).

Indirect inclusion – Also, "indirect" ways of inclusion of consortia efforts have been followed, such as participation of these entities in consecutive R&D programmes such as the IST FPs, and co-operation through informal consultation procedures and through ICTSB (see above).

3.5.2　Concern

Although initiatives have been undertaken on an EU level, the feeling remains that further work should be done for fully taking stock of the work and efforts performed by specification providers outside the remit of the current EU ICT standardisation system.

Also, the current initiatives do not take a sufficiently clear position towards the issue itself. Although, policy makers do refer to the need to involve other specification providers than ESOs, the legal framework has not adapted to this situation and leaves uncertainty as to the level of incorporation of the work and activities of these participants. This concern has been further elaborated in several chapters of PART III below.

3.6　Using New Approach model outside the New Approach scope

3.6.1　Description

Success of New Approach - The New Approach model has proven its success for matters falling inside its scope of application, also in the field of ICT.　Examples of legal acts with the New Approach characteristics using harmonised standards are the Radio and Telecommunication Terminal Equipment Directive 9(R&TTE) 1999/5/EC, the Low Voltage Directive (LVD) 73/22/EC and the Electromagnetic Compatibility Directive (EMC) 89/336/EC.

Because of its success, policy makers have tried to use elements from the New Approach model for standardisation activities that are outside of the scope of application of the New Approach directive. This "ad-hoc" regulation basically consists of EU Directives that require transposition in the Member States' legal system in order to become "national law". These Directives primarily serve internal market objectives; they are however not New Approach legislation. These acts pose the legal framework for adoption of harmonised rules at EU level for the given product and/or service.

Examples of legal acts with non New Approach characteristics but using standards, are the Electronic Signatures Directive 1999/93/EC and the Telecommunication Framework Package Directive 2002/21/EC. Whilst for New Approach legal acts the standards referenced are harmonised standards (ENs), this is not necessarily the case for the non- New Approach legal acts. These legal acts do not require ENs and allow the use of "new deliverables" such as ETS, CWA, TS or guides.

Some of these legal instruments address services for which ICT solutions enact as enabler but ICT is not their prime objective (privacy, VAT). Nevertheless, in some other cases, the functional requirements that can be covered through ICT are inherently linked to legal requirements (electronic signatures, regulation on electronic communications, etc.).

Use of the New Approach technique - Like in the New Approach technique, these acts address standards and standardisation as complementary to legislation. Accordingly, standards are recommended as a legally-safe way for implementing the legal requirements although they are not prescribed as the only means for achieving this compliance. And again as in the New Approach, not all standards can ensure *in an undisputed manner* the correct implementation of the legal requirements, but only the ones that are officially published on the EU Commission's initiative[103].

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[103] This does not mean that standards which are not published in the Official Journal are deprived from any legal value. However, non-published standards cannot benefit from the advantages that the legislative text may attach to the published standards (being primarily the presumption of conformity with the legal requirements, facilities regarding cross-border recognition of products or services integrating the standards or with respect to conformity assessment procedures, etc.).

In the subsections below, we discuss the most important "ad-hoc" ICT regulation with an impact on ICT standards.

3.6.2 Example: Electronic Communications

Standardisation work related to the area of electronic communications is primarily based on the Electronic Communications Directive (Directive 2002/21/EC, "Framework Directive").[104] The Directive aims at establishing a harmonised framework for the regulation of electronic communications networks and services especially in view of the convergence between the telecommunications, media and information technology sectors[105]. Concurrently, the Directive introduces a set of rules and procedures that national regulatory authorities must abide by in order to ensure market transparency, fair competition and streamlined implementation of the Directive's requirements.

The Framework Directive refers explicitly to standards in article 17 and, implicitly, to clauses imposing harmonisation requirements (e.g., regarding radio frequencies management or numbering issues). A first principle confirmed by this act is that standards "*provide a basis for encouraging harmonised provision of electronic communications networks and services*". However, standardisation should primarily be regarded as a market-driven process (Recital 30). When regulatory authorities adopt regulations with a view to implementing the Directive's requirements, they must make them "technology neutral" (article 8, §1, Rec. 18). It is noteworthy that the Directive sets forth interoperability of services and equipment as an overarching target of the harmonisation sought (article 8, 17, 18…).

As far as the EU standardisation policy is concerned, the Framework Directive puts an obligation on the European Commission *to draw up and publish a list of standards and/or specifications* as a means to achieve the harmonisation objectives of the Directive (article 17 §1). It also allows the Commission to request the elaboration of European standards by the European standards organisations. These standards-setting requests will be introduced to the ESOs following the traditional, "New Approach" procedure [thus, issuance of mandates, including consultation of the Committee 98/34 and the standing committee formed by this Directive (Cocom Committee)]. The standardisation programmes for the elaboration of recognised standards are explicitly confined to the ESOs (CEN, CENELEC and ETSI are named in the Directive as the competent bodies in this regard).

The Framework Directive clearly sets out that standards deriving from this process, especially the ones published in the Official Journal, remain voluntary. However, the use of these standards must be *encouraged* by public authorities to the extent strictly necessary to ensure interoperability of services and to improve freedom of choice for users. It is important to note that the Directive permits the adoption of standards to become compulsory in exceptional cases. Accordingly, the Commission may render the said standards mandatory if interoperability problems persist due to an insufficient implementation of the referenced standards by Member States (article 17, §4). However any decision to impose such standards is subject to a specific procedure (publication of a notice in the Official Journal, express indication, prior public consultation of the parties concerned, etc.). Finally, the Directive acknowledges the Commission's responsibility to remove from the published list any standards that can no longer contribute to the attainment of the legal objectives (interoperability, enhanced technological development, better choice for consumers, article 17, §§ 5 and 6).

In response to the requirements of the Framework Directive, the Commission issued a list of standards[106] to replace the former standards' list that was valid under the old regulatory framework[107].

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[104] Directive 2002/21/EC on *a common regulatory framework for electronic communications networks and services*, 7 March 2002, L 108 of 24.4.2002.
[105] It is to be noted that the Framework Directive is one of the five Directives consisting the new regulatory package on electronic communications networks and services. Standards addressed in this Directive encompass also requirements tackled by the other four Directives.
[106] *List of standards and/or specifications for electronic communications networks, services and associated*

Further, for the purpose of implementation of relevant provisions in the Framework Directive and the Universal Service Directive, the Commission identified and published by a decision the minimum set of leased lines with harmonised characteristics and associated standards[108]. As noted in this decision, the list refers to voluntary standards and forms an integral part of the general list of standards of the Framework Directive.

The list of standards under the Framework Directive was formulated as *an interim list*, since it covers both the former regulatory framework on telecommunications and the new legislative package. Moreover, it provides a *selective list* of standards due to be revised regularly. The standards referred to in the Commission's publication encompass a broad spectrum of electronic communications networks, electronic communications services and associated services, such as:

- Network access and interconnection;

- Number portability in fixed and mobile public networks;

- Unbundled access to local loop;

- Use of electronic communications services by disabled users;

- Implementation of data protection requirements in the electronic communications sector (e.g. calling and connected line identification services);

- Distribution of digital broadcasting services, including digital television broadcasting (new item).

Most of the standards figuring in the list are ETSI deliverables: primarily European Norms (ENs) and to a lesser extent Technical Specifications (TS) or other informative documents. On the other hand, the Commission's document specifies that this interim list would be subject to regular revisions to take into account requirements resulting from new technologies and market changes.

The Commission launched the review process in May 2003 which consists primarily of the following stages[109]:

(a) The Commission issued a mandate (M328) to the ESOs.

(b) ETSI set up special working groups, *the Operational Co-ordination Group on Electronic Communications Networks and Services Directives (OCG ECN&S) and Special Task Force 254 (STF 254)*, to work on the mandate. CEN and CENELEC were invited to contribute and nominated experts.

(c) ETSI provided a draft list of candidate standards, but also identified a large number of issues that required further clarification, including legal interpretation.

(d) The standing committee under the Framework Directive (Cocom) set up a group of experts from national administrations and regulators, tasked with an advisory role on the matter. This group is called the Cocom Expert Group on Standardisation.

(e) A public consultation on the subject matter is launched by the European Commission.

(f) The Cocom Expert group issues a guidance paper on the subject (February 8, 2005).

(g) ETSI responsible bodies (under 2) will issue the draft revised list of standards.

(h) The Cocom Expert Group and the Cocom itself will again be consulted on the ETSI's draft revised list of standards for further decision-making.

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facilities and services, OJ C 331 of 31.12.2002.
[107] Directive 90/387/EEC on open network provision, known as the "ONP Directive" applied only to the telecommunications sector. It was further amended by Directive 97/51/EC.
[108] Commission Decision of 24 July 2003, OJ L186 of 25 July 2003.
[109] See also Commission's website:
http://europa.eu.int/information_society/policy/ecomm/info_centre/documentation.

(i) The list of standards will be decided upon by the Commission after consideration of the position of Cocom.

3.6.3   Example: Digital TV

Digital television broadcasting services falls under the scope of the regulatory package on electronic communications, namely the Framework Directive (art. 18).

The Directive emphasises that interoperability in the provision of digital television broadcasting services should be enhanced. The implementation of open application program interface (API) can be a tool to achieve the interoperability goal[110]. To this end, the Directive lays down the obligation of Member States to encourage operators to implement open APIs which *conform to standards or specifications adopted by European standards organisations* (Recital 31, article 18 §1).This requirement reflects the general principle of the EU standardisation policy enshrined in the New Approach of encouraging open standards.

The meaning of the "open standard" is not defined in the Framework Directive, although an open standard is implicitly meant to be the opposite of a "proprietary" standard (article 18, §2). In the context of the digital interactive television services, the EU Commission seems to qualify as open standards those which are developed by European standardisation bodies through open and transparent procedures[111]. On the other hand, the Directive encourages providers of proprietary APIs to ensure transparency of their technical specifications so that content providers can build interactive applications that function with these proprietary standards (article 18 §2).

Against this background, the digital interactive TV represents a reference case in which the Commission has actually looked into the possibility *of* making the use of specific standards for APIs *mandatory*. In fact, the Framework Directive contains a specific clause that justifies the compulsory application of interactive television standards on strictly limited cases. Accordingly, open standards may be mandated if the Commission considers that adequate interoperability has not been achieved for digital interactive television services across Europe (article 18 §3).

The Commission has examined the possibility in applying this provision twice[112]. In both cases, it was however concluded that there was no clear necessity to impose any standard by legislation[113]. For the time being, one only standard is published in the OJ as reference standard for digital television interactive services, the ETSI TS 102 819, the Multimedia Home Platform (MHP) standard. The adoption of this standard remains however voluntary. At the time of publication of the interim list of standards under the Framework Directive[114], this standard was the only open standard for APIs adopted by ESOs.

Taking into account recent technological developments[115], the Commission is now in the process of amending the list of standards. In an initial stage, a mandate was issued to the ESOs in 2003 inviting them to explore standardisation possibilities for digital interactive television services in support of the requirements of the Framework Directive (article 18)[116]. However, regardless of the results of the ESOs' standardisation activities, any amendment to the list of standards also requires the opinion of

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[110] Open APIs facilitate interoperability, i.e. the portability of interactive content between delivery mechanisms, and full functionality of this content on enhanced digital television equipment.

[111] Commission Communication on reviewing the interoperability of digital interactive television services pursuant to Communication COM (2004) 541, COM (2006) 37 final, p. 10.

[112] See relevant Commission Communications, COM (2004) 541 final on interoperability of digital interactive television services and COM (2006) 37 final on reviewing the interoperability of digital interactive television services pursuant to Communication COM(2004) 541.

[113] The arguments that the Commission services put forward to justify their decision not to impose any standards, as well as the analysis of the legal constraints of mandating standards by regulation will be discussed in the 2nd interim report.

[114] See above subsection PART II.3.6.2 on page 42.

[115] E.g., the adoption of MHEG-5 and WTVML by ETSI.

[116] M/331 rev.

Member States via the Cocom Committee and its expert group as it was discussed above. A roadmap for the promotion of High Definition Television specifications (HDTV) has also been submitted to the Cocom committee for review.

In its last Communication on digital interactive television services, the Commission reaffirms its intention to support in this area the implementation of open standards that are developed by ESOs[117].

3.6.4   Example: Electronic Signatures

The EU legal framework for the provision of electronic signatures' and related services was established by Directive 1999/93/EC ("eSignature Directive")[118]. A first objective of this law is to contribute to the cross-border legal recognition of electronic signatures and of services related to their creation (notably, certification-related services). A second purpose is to ensure that electronic-signature supporting products, equipment and services (e.g. electronic signature creation devices, certification services) can move freely within the Internal Market as long as they meet the legal requirements set by the Directive.

The Directive claims to be technology neutral, although important concepts (e.g. this of "advanced" or "qualified" electronic signature) are inherently linked to the security model of public-key infrastructure (PKI). On the other hand, the Directive addresses in several places functional / security requirements providing a good field for standardisation work[119].

The development of standards to implement the functional requirements of the eSignature Directive is set out in explicit terms in the Directive's text only with regard to two items: the creation of secure signature-creation devices and the use of trustworthy systems and products in the creation of qualified certificates by CSPs (article 3, §5). However, it is evident from the Directive's wording that there is room for implementation of standards in relation to other items relating to the electronic signature process as a whole or the creation of certificates.

3.6.5   Concern

The New Approach techniques have already proven their success in the ICT area for matters that fall under the scope of the New Approach (e.g. R&TTE directive, EMC directive, LVD directive). The policy makers have tried to copy the success of the New Approach model, or some techniques related to it, to areas that legally do no fall under the scope of the New Approach.

The advantage of this strategy is that the impact of the EU policy maker's objectives on the standardisation activities could be broadened, by defining the basic legal principles along which lines standardisation activities could be initiated. The side-effect of these ad-hoc initiatives, is however, the creation of uncertainty as to the procedures (which are not completely the same as under the New Approach) and to the legal value of the created deliverables (which are not European Norms as under the New Approach).

A second concern is that the initiatives to use the New Approach techniques outside of its scope have not been taken in a consistent matter. This shows again the pragmatic but fragmented approach taken by the EU policy makers in trying to get a grip on the changing demands of the ICT landscape.

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[117] COM (2006) 37 final on reviewing the interoperability of digital interactive television services pursuant to Communication COM(2004) 541, p. 9.

[118] Directive 1999/93/EC on a Community framework for electronic signatures, 13 December 1999, L 13 of 19 January 2000.

[119] For instance, to determine the legal value of an electronic signature, service providers and end-users should verify whether the functional requirements of the "advanced" or "qualified" electronic signature have been fulfilled (e.g. use of qualified certificates and secure electronic-signature-creation devices). There is also a need to check if the CSP having issued the said certificate has utilised trustworthy and secure technology, etc. The organisational and functional requirements that CSPs and electronic signature products must fulfil are laid down in an exhaustive way in the Directive's annexes.

Example - An example of this pragmatic but fragmented approach is the initiative to launch standardisation work in the electronic signature area. Looking for a possibility to reach its policy objectives in the most efficient way (in this case, creating an internal market for electronic signatures) the European policy makers decided to use more or less the same instruments as known in the New Approach area (reference to standards making in legislation, mandating of ESOs, referencing of recognised standards in Official Journal) for an activity which does not form part of the New Approach.

By using New Approach instruments in support of legislation falling outside of the scope of the New Approach (in this case, the eSignature directive 1999/93), the EU policy makers tried to broaden their influence on ICT standardisation issues which historically would not have been part of the EU standardisation system. Since on the one hand, New Approach mechanisms have been used, but on the other hand, the deliverables do not gain the same value as New Approach deliverables, the market of users and providers is uncertain as to the use of the standardisation results in the field of electronic signatures.

3.7 Introduction of other policy techniques

3.7.1 Description

Apart from organizing a standardisation system, policy makers have different alternatives to reach their policy objectives. Examples of these are: not interfering with the standardisation activity and let the market decide, funding activities of other specification providers than the ESOs, participating in the standardisation activities of bodies that do not form part of the standardisation system, etc.

It seems that European Union policy makers make use of these instruments for reaching their policy objectives when the standardisation system does not allow or would not be the most efficient tool to have an impact on the standardisation activities.

Two examples of standardisation efforts outside of the standardisation system undertaken by the EU policy makers can be noted:

Referring to other specification providers - A number of legal texts recognise the existence of other standards-developing bodies or specification providers than ESOs, although still in isolated cases. These texts, in their final or draft version, demonstrate however the on-going tendency of the EU legislator to widen little-by-little the scope of standardisation bodies to include other platforms of standards-making than ESOs. For example, the EU Decision adopting a multi-annual Community action plan on the safe use of the Internet encourages industry self-regulation and standards in many ways. In particular, it underlines the need for promoting to consumers rating systems and filtering tools to better control the content of information. The Decision states as a reference example of such a system the platform for Internet content selection standard (PICS) *that was launched by the international World Wide Web consortium with Community support[120].*

Funding of other specification providers - In recent years the emergence has been noted of EU R&D projects which support the implementation of standards set by other organisations; examples are the policy initiatives and subsequent actions in support of IPv6 and the Recommendations concerning the implementation of WAI guidelines. These efforts have merit because they bring the European community of researchers, industrial researchers, etc., to fora that might be more advanced than the European ones, but they are pursued without a clear policy strategy.

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[120] EU Decision 278/1999/EC of 25 January 1999 adopting a multi-annual Community action plan on promoting safer use of the Internet by combating illegal and harmful content on global networks, L033 of 6/2/1999, Recital 15.

3.7.2 Concern

The EU policymakers have broadened their impact on standardisation activities by going outside of the formal standardisation system. The current EU ICT standardisation policy is indeed covering more activities than the ones undertaken within the formal EU standardisation system.

Although we understand that the current standardisation system does not always allow or is not always the most efficient tool for reaching the EU policy objectives, we are concerned about the ad-hoc approach taken by the different directorates-general towards the use of standards and specifications produced outside of the standardisation system and the co-operation with other specification providers than the ESOs, an approach which is not always consistent with the long-term standardisation policy. The idea of funding standardisation related research projects, for example, is not supported by European legislation or a common European policy towards ICT standardisation, and thus leaving too much room for diverging initiatives within the different directorates-general of the European Commission.

Furthermore, we are concerned about the value of the deliverables produced throughout these activities. As to the initiatives undertaken by EU policy makers to fund research projects in which non ESO standardisation organisations are also present, we understand that, by doing this, the EU is able to gain advantage from the standardisation work undertaken by non ESOs for reaching its policy objectives. The disadvantage of this approach is, however, that this kind of standardisation work is happening on the sideline, and does not gain the same value as standards being elaborated within the ESOs.

3.8 The current ICT standardisation policy: a picture

3.8.1 A formal standardisation system completed by less formal policy techniques

Based on the above descriptions of the activities undertaken by the EU policy makers and the ESOs, we can conclude that they have approached the ICT standardisation landscape in a double way, on the one hand by adapting the formal standardisation system, and on the other hand by performing ad-hoc initiatives that do not fall under the system but also have an impact on the standardisation efforts in the EU.

As a result, the current reality of the EU ICT standardisation policy can be described as covering both the formal standardisation system (i.e. an "institutional" part) and a whole range of loose activities relating to standardisation (i.e. an "informal" part).

Institutional part - The institutional part is based on the EU standardisation system, Europe has a direct impact, and its main achievement is the New Approach legislation. However, the New Approach legislation cannot be applied to every issue and efforts within this part started to be done in not covered issues. These efforts can be divided as being a support for legislation (examples are the Electronic Signature Directive and the Electronic Invoice Directive) or a support for policies (The EU eHealth policy).

Informal part - The informal part is currently based on ad-hoc initiatives undertaken by different EU policy actors trying to keep an impact on standardisation efforts outside of the formal standardisation system or even deciding that Europe should not have an impact on the standardisation efforts (hands-off approach). This part of the EU ICT standardisation policy ties up with mainly non-ESOs organisations and the influence is performed by supporting European participation in these bodies, funding R&D activities in which these bodies are also represented, referring in policy documents and legislation to standards created outside of the system, etc.

It can be described with the help of the following figure:

EU POLICIES						
Some of them regulated (medical devices, R&TTE, data protection, eSign)			Some of them not regulated (competitiveness, eHealth, i2010)			
EU ICT STANDARDISATION POLICY						
EU Formal Standardisation System			EU informal Standardisation structure			
Direct impact			Indirect impact			No impact
98/34 New Approach	Ad-hoc initiatives: Eg. eSign eInvoice	eHealth eAccessibility	Participation in non ESO activities	funding R&D	Referring to existing non-ESO standards	Hands off
Support of legislation		Support of policy	Support of policy and legislation (e.g. IDABC, safer internet, …)			
Players: ESOs and only to a limited extent non ESOs			Players: non ESOs and only to a limited extent ESOs			

The relevance of this figure is the importance in the world today of the lower grey area and the absence of a clear ICT standardisation policy from Europe towards it.

3.8.2 Moving borderlines

Looking at ICT standardisation efforts being undertaken at an EU level, we notice that because of the cross-sectoral nature of ICT, standardisation efforts find themselves both in the regulated sector as in the non-regulated sector. Moreover, we notice that the borderline between the regulated sector and the non-regulated sector is moving. Indeed, some areas of ICT standardisation that used to fall in the non-regulated area, can shift into the regulated area because of changing policy objective of the European Union.

Example - One example that could be referred to is the use of RFID (Radio Frequency Identification). Up to recently, standardisation efforts on RFID were undertaken outside of the regulated area (e.g. GS1, but also ISO/IEC JTC1). The European Union is, however, currently investigating the need for moving the RFID standardisation efforts into the regulated area because of concerns relating to data protection. As RFID standardisation has always been regarded by the European Union as an activity relating to a good functioning of the market (non-regulated sector), nowadays it looks like RFID standardisation should ensure the compliance with the EU legal framework on data protection.

RFID is just one of possibly many examples that are likely to reach a large number in the future. For instance, the imposition of minimum requirements on quality of service that telecommunication services based on IP (i.e., VOIP) must have to be used in the Internal Market is another. The mechanisms the EU can have in these cases are not trivial and must be clarified in the near future. For instance, in order to achieve this objective, the European Union does not necessarily need to shift the area from the non-regulated sector to the regulated sector (avoiding considering a popular technology illegal, suddenly). It could try to influence the non-regulated standardisation efforts, e.g. by funding projects in the area of RFID standardisation or by being present in the non-regulated

sector and actively participate in the consortia standardisation efforts. This is hard to achieve as it needs prompt reaction to the technical developments and a clear direction of the objectives to pursue. It is probably another area where a European structure with a strong commitment from the Member States might exercise its powers.

4. SWOT ANALYSIS OF THE CURRENT EU ICT STANDARDISATION LANDSCAPE

4.1 Strengths, Weaknesses, Opportunities, and Threats

The following table describes in SWOT format the issues that have been identified in the sections 2 and 3 of this chapter. A SWOT analysis is a strategic planning tool used to evaluate the Strengths, Weaknesses, Opportunities, and Threats involved in any situation requiring a decision.

More specifically, SWOTs are in this case:

- Strengths: attributes of the policy that are helpful to achieving the objective.

- Weaknesses: attributes of the policy that are harmful to achieving the objective.

- Opportunities: external conditions that are helpful to achieving the objective.

- Threats: external conditions that are harmful to achieving the objective.

4.2 Tabled SWOT analysis

STRENGTHS	WEAKNESSES
• Public interest taken into account • NA is still innovative policy instrument • ESOS as objective party • New procedures adopted for adapting to ICT (e.g. Fast track) • International agreements in place • EU standards are a strong product (quality, public interest), also outside EU • Legal basis for consultation platform (SOGITS)	• Public interest procedures often hindering factor • NA too much focussed on traditional sectors • ESOS seen as not involved in economic reality • New procedures do not go far enough • International agreements limited in scope • Too regional • Marketing • No coherent ICT standardisation policy (symptomatic approach) • Legal framework not in line with reality • SOGITS not convening
OPPORTUNITIES	THREATS
• ESOs willing to adapt • All relevant participants on "speaking terms" • Legal framework open for review • EU standards can become on a global level synonym for quality standards (taking into account other than only industry interests) • Easy revitalisation of SOGITS • Opening SOGITS to other than NSBs	• Overtaken by specification providers • Overtaken by speed • Overtaken by other regio's (esp. Asia) • Becoming irrelevant

5. INTERMEDIATE CONCLUSION

5.1 New Approach model sufficiently armed to cover ICT?

5.1.1 Successful instrument

With the advent of the New Approach, the dividing line between standards and legislative requirements is clearly set. The legislation sets out legal requirements - standardisation helps to implement these requirements and to prove conformity with the legislative imperatives. The driving force of standards-setting shifts from the national public authorities to market actors gathered together in *open and transparent* working environments in the ESOs. The management of the EU standardisation process becomes the responsibility of the three ESOs - CEN, CENELEC and ETSI. Specific principles underpin the adoption of harmonised standards and steer the "standards-making" process: *consensus-based* procedures which take place within *independent and recognised* standards organisations and which lead to *voluntary adoption* of the standards produced.

The basic structure of the New Approach legislation has proven to work well for non-ICT areas, and even ICT areas (EMC, LVD, R&TTE directives) up to the recent past. It can be seen as the establishment of minimum legal requirements for the use of a technology that is loosely coupled with a voluntary technical standard developed through formal SDOs. It balances well the role of government and the private sector by using technical standards to create a "safe harbour" that business may use to presume compliance with requirements of a directive.

The question arises, however, to what extent these principles can continue be used in an ICT context. In other words, if the New Approach is also an adequate instrument for setting up standardisation activities in the ICT area.

5.1.2 Concerns

It is clear that standards can help policy makers in supporting their policy objectives related to legislation. This type of strategy works well in areas where material products exist and can be prohibited and redrawn from the market (safety, ecological, compliance, etc.). It is also an *ex-ante* procedure: rules are established beforehand or can be easily changed on the course of new events. However, an ICT product or service downloaded from a remote place might need a different approach.

ICT raises other types of attention points - Another ICT characteristic is the type of attention points that rise. Unquestionably, a product that is scientifically proven to harm health is easily forbidden and taken out of the market (for instance, small pieces in toys for infants are broadly recognized as dangerous and forbidden).

ICT products can be questionable more in terms of cultural values: user privacy concerns, lack of a *minimal* bandwidth to provide a telecommunications service, ethical values in games, etc. This poses new problems: first, these concerns are not absolute and depend on the region of the world, and sometimes even on the countries in Europe; second, the ICT products are pervasive and can be downloaded from anywhere; third, ICT products can achieve popularity very quickly, becoming a standard *de facto*, not giving time for drawing legislation, or stealing acting space for a late legislation.

Procedural issues - Also, some elements of the "New Approach" standardisation system seem to raise with the time certain concerns when applied in the ICT sector. The "New Approach" standards are basically related to products and to their capacity of ensuring a level playing field for the manufacturing and marketing of goods in traditional sectors of the EU economy (machinery, construction products, toys, packaging, etc.). The real authority of Member States is not totally set aside - standards are granted the status of EU norms once requirements about public enquiry and voting by national representations are met. On the other hand, the respect of the procedural steps

enounced in the New Approach costs in *time, versatility and* lose gradually *the trust* of industrial participants who prefer swift standardisation mechanisms and ready-to-implement deliverables.

In other words, the emergence of new needs raise questions as to whether the *'New Approach rationale'* is fully adequate to cope with them. In the traditional standardisation approach, the emphasis has until now been placed on products. However, *the sector of services*, being a major driving force of the EU economy, is also subject to harmonisation requirements with which service providers have to comply with. The need for *less time-consuming standardisation procedures* that would take place in less formal but flexible working platforms become increasingly popular especially in certain areas of business, like in ICT. In the standardisers' mindset, *efficiency* in the process of standards' adoption and serious *commitment* of the participating parties to the work produced often prevail to the requirements of openness and transparency.

International - In addition, societal and economical changes on an international scale, such as the proliferation of technology-integrated services and the globalisation of policies, production systems and markets, make obvious the necessity to better profile the EU standardisation system on the global arena. From the European Single Market being the prime focus of the New Approach, standardisation needs are now being directed towards the Global Market formed at a universal level. The search of a *cohesive standardisation policy* that would be capable of promoting "*the European interest*" on the international scene is required with more intensity by the EU market economy.

5.2 Current approach: restricted to curing symptoms

It is noted that the EU policy makers and, especially, the ESO's have undertaken considerable efforts for adapting their rules and procedures to the ever changing ICT standardisation landscape. It is, however, generally felt that these efforts do not sufficiently cover the demands of the European policymakers for ensuring that the European policy objectives can indeed be reached through the help of ICT standardisation.

5.2.1 Symptomatic approach

One of the reasons for the only moderate success of the current approach is in our opinion that the initiatives have been taken in a very pragmatic but as a result also fragmented way. Ad hoc initiatives have been taken to react to immediate concerns or symptoms without ensuring a long term approach and a proper embedment in the existing standardisation legal framework and relating policy. As a result of this organic, symptomatic approach, it is also difficult to gain a clear understanding of the EU ICT standardisation landscape.

We have noted the initiatives for structuring the different actions along the lines of a long term policy vision, such as the recent 2006 Action Plan for European Standardisation and the related 2006 ICT Standardisation Work Programme. The documents also identify the different actors (Directorates-General, ESOs) involved in taking up the actions. The proposed actions, especially the ones identified in the Work Programme, are very much in line with some of the identified challenges, such as the intake of the development of new technologies (e.g. NGN and Grid computing) and the issue of supporting European policy domains outside of the New Approach (e.g. eInclusion, eHealth).

Although we very much welcome these initiatives, we are of the opinion that these documents remain focussed on collecting and structuring the different standardisation efforts, and do not cover some open issues, such as the debate on a structured inclusion of other standardisation participants than ESOs into the standardisation work or the debate on the difference in legal value of the standardisation deliverables. Examples of these symptomatic and fragmented approach are the standardisation initiatives around electronic signatures, the funding initiatives of R&D programmes, and the way how participants are involved in the formal standardisation process.

Example: Electronic signatures - An example of this pragmatic but fragmented approach is the initiative to launch standardisation work in the electronic signature area. Looking for a possibility to reach its policy objectives in the most efficient way (in this case, creating an internal market for

electronic signatures) the European policy makers decided to use more or less the same instruments as known in the New Approach area (reference to standards making in legislation, mandating of ESOs, referencing of recognised standards in Official Journal) for an activity which does not form part of the New Approach. By using New Approach instruments in support of legislation falling outside of the scope of the New Approach (in this case, the eSignature directive 1999/93), the EU policy makers tried to broaden their influence on ICT standardisation issues which historically would not have been part of the EU standardisation system. Since on the one hand, New Approach mechanisms have been used, but on the other hand, the deliverables do not gain the same value as New Approach deliverables, the market of users and providers is uncertain as to the use of the standardisation results in the field of electronic signatures.

Example: funding of research projects - Another example of this pragmatic but fragmented approach is the initiatives undertaken by EU policy makers to fund research projects in which non ESO standardisation organisations are also present. By doing this, the EU is able to gain advantage from the standardisation work undertaken by non ESOs for reaching its policy objectives. The disadvantage of this approach is that this kind of standardisation work is happening on the sideline, and does not gain the same value as standards being elaborated within the ESOs. Moreover, the idea of funding standardisation related research projects is not supported by European legislation or a common European policy towards ICT standardisation, and thus leaving too much room for diverging initiatives within the different directorates-general of the European Commission.

Example: stakeholders' involvement - A third example is the initiative to involve stakeholders in the formal standardisation process through a consultation round before issuing a mandate to the ESOs. The European Commission, when preparing a mandate for standardisation to support legislation, often asks the opinion of relevant stakeholders. This consultation round is however legally or policy wise not obligatory and only depends of the good will of the responsible EC public servant, leaving too much space for a fragmented approach.

5.2.2   Half-way solutions

A second reason why we think the current approach towards EU ICT standardisation is not as successful as it should be, is that most of the past and current initiatives have not gone far enough in finding an appropriate answer to the challenges imposed by the changing ICT landscape.

Example: ICTSB - By way of example, we refer to the establishment of the ICT Standards Board (ICTSB). Although this initiative is a very good first step for tackling some challenges imposed by ICT (the time issue and the market players issue), we feel that it is now time to move the role and function of ICTSB to an higher level. ICTSB only acts as a co-ordination point and facilitates exchanges of views between the member organisations and with other interested parties. It only makes proposals and recommendations for consideration by the member organisations and others. ICTSB does however not have a right on its own to start standardisation activities but always has to fall back on the three ESO's.

Example: CWA - Another example is the introduction of alternative standardisation deliverables such as CEN Workshop Agreements (CWA).We note that many issues arise such as the non existence of a clear definition of the legal value of CWAs and of the CWA concept. Furthermore, CWAs are not assigned the status of a formal standard (EN). Hence, the obligation placed upon CEN Members to withdraw pre-existing national standards conflicting with the adopted standards does not apply in the case of CWAs.

Example: Vienna agreement -Another example is the international agreements to provide the possibility to develop standards in one body and to approve them by parallel voting in both. The Vienna Agreement between CEN and ISO for example only concerns the development of European Norms. It is not sufficiently clear whether other products than ENs may be developed under the Vienna agreement. One opinion is that it is generally possible to integrate other deliverables under the Vienna agreement but procedural guidance may be necessary on a case-by-case basis.

5.3 Summary

Face to the challenges imposed by the changing ICT landscape and the ICT standardisation landscape, the current European standardisation system has already provided first responses. However, this has until now be done rather fragmentally and under the pressure of the new reality.

Indeed, although many initiatives have been undertaken by EU policy makers and ESOs for adequately responding to the challenges, they have led to a scattered range of often halfway measures. Moreover, some of the initiatives are missing a legal basis, and are more specifically not supported by Directive 98/34 and Council Decision 87/95. Or otherwise said, the current legal framework has not adapted to the current practices that have been legitimately undertaken by the EU policy makers and ESOs in their need to adapt to the changing demands of reality.

We think that an ICT standardisation policy based on pragmatic but less coherent initiatives, with sometimes half-way solutions, which are not always covered by a legal basis does not suffice for building a strong and competitive ICT standardisation policy for Europe. Therefore, we think that, even after the extensive and valuable work already carried out by the policy makers and ESOs, some challenges still remain.

PART III.   CHALLENGES FOR EU ICT STANDARDISATION POLICY

1. INTRODUCTION

1.1   Objective of the study

The objective of this study is to identify how the EU ICT standardisation policy could better accommodate the EU policy objectives, especially in relation to the Lisbon agenda. After an analysis of the ICT standardisation landscape including the EU's response to challenges imposed by the changing ICT landscape (Part II), we now identify the challenges that still remain and that may hamper the EU ICT standardisation policy to remain a successful policy instrument also for the future.

This identification of issues was based on a broad survey of relevant participants through questionnaires, by interviews conducted with individuals that are regarded as experts in their field and by the participation in three workshops organised by the European Commission in which relevant participants could proactively discuss and come forward with their ideas and concerns.

1.2   Current landscape

Characteristics of ICT - As seen above the ever changing ICT landscape is characterised by some very specific elements that oblige actors in the field of standardisation to react and assess their position towards ICT standardisation. The characteristics of the current and future ICT landscape could be summarized as follows: globalisation of products and services, diversity of market players, software-oriented, cross-sectoral, and ubiquity.

Characteristics of ICT Standardisation - As to the standardisation area, as a result of the specificities of this ICT landscape, we have been witnessing a rise of *de facto* standards, the creation of standards outside of formal standardisation bodies, the increase of standardisation activities in Asian countries and the rise of non-formal ICT standardisation bodies with a global reach (IETF, W3C, OASIS, etc.).

Policy makers to take account of changing landscapes - If an actor in the field of standardisation would like to keep an influential role in ICT standardisation it should ensure it considers the current and future characteristics of the ICT landscape and the current and future characteristics of the standards development in the ICT sector.

Within a EU context, the EU policy makers have been using standardisation as one of the instruments to reach their policy objectives. If the EU policy makers want to keep benefiting the most of this policy instrument, they should ensure that their standardisation policy takes into account the new challenges imposed by the current and future ICT landscape.

EU response to changing landscapes - The ESOs together with the European policy makers have already intensively been engaged in adapting their policies and procedures towards these changing demands. Examples of these efforts are the use of fast track procedures, the involvement of different stakeholders in the standardisation process, the installation of a dedicated platform (ICTSB), the delegation of representatives to Asian countries, the translation of standards developed by non-formal standardisation organisations into ESO standards, and the marketing of European standards on international level.

Is the EU response sufficient? - However, it is generally felt that these efforts do not sufficiently cover the demands of the European policymakers for ensuring that the European policy objectives can indeed be reached through the help of ICT standardisation. The current EU responses have, in our opinion, been made on a too ad hoc basis and miss a structured approach. Furthermore, we think

that the initiatives that have been undertaken by the EU policy makers do not go far enough. By way of example we refer to the lower legal value adhered to deliverables that passed the fast track. This track is typically being used for ICT standardisation activities and results in ICT standardisation deliverables, i.e. CWAs, that are legal speaking of lower value than ENs.

1.3 Remaining challenges

The following issues have been identified as the most pertinent challenges for the EU standardisation policy in the field of ICT. These issues are further being elaborated in the next chapters:

- *Regional character:* The EU ICT standardisation policy is being confronted with different challenges as to their role and influence on a global market. A first challenge is how to make sure EU standardisation initiatives can take stock of standardisation processes and deliverables created outside of the EU standardisation system. A second challenge is to marry the regional policy objectives of the EU with the global nature of ICT standards. A third challenge is to find ways on how to create a global acceptance and use of EU standards

- *Mandating:* The EU ICT standardisation legal framework currently does not allow mandates to be issued to non-ESOs. By not being able to mandate non ESOs, the EU policy maker may risk not to gain advantage from the know-how and expertise that has already been built up outside of the ESO community, nor influence their activity towards European interests.

- *Standardisation organisations:* EU ICT standardisation does not sufficiently take stock of standards developed outside of the standardisation system. The procedures for incorporating these standards into the EU standardisation are being regarded as cumbersome and not friendly towards the original standards developing organisation.

- *ICT Users:* Although consumers and SMEs are formally represented in the EU standardisation process, it is felt that because of the huge impact of ICT on the user (consumer/SME) the representation of these stakeholders is currently not sufficient. When discussing user representation, the level of involvement should be balanced against the specificity of the user needs (direct/indirect).

- *ICT producers***:** SMEs as ICT producers are not well represented in the ICT standardisation process whereas the European Union is built on the SME market. SMEs should be encouraged to engage in standardisation activities. Also here, the level of involvement should however be balanced against the SME-producer needs. Standards might also be defined taking into consideration the size of SMEs (by for instance, defining sub-systems that can be built by smaller actors than monolithic systems), and the general access to standards should be facilitated taking into account the specific nature of SMEs.

- *R&D:* Research and development in Europe does not pay sufficiently attention to a future standardisation track risking a delay in bringing the standards to the market (standardisation gap) and thus creating a competitiveness issue.

- *Exploitation of EU ICT standards***:** Although many success stories relating to the use and adoption of EU standards can be noted, it is true that in the ICT sector many existing EU standards have not been widely taken up by the market. The most widely implemented ICT standards have been drafted by non-formal standardisation organisations.

- *Transparency:* The current EU ICT standardisation landscape is a rather blurred landscape without clear borderlines. The feedback received through the survey of relevant players and the discussions between the participating parties have indeed shown that there exists a lot of confusion relating to the standardisation processes, procedures and deliverables. This lack of clarity is due to the organic response by the EU policy makers and ESOs towards the challenges imposed by the ICT landscape. As a result of this organic approach, it is difficult to gain a clear understanding of the EU ICT standardisation landscape.

2. A REGIONAL POLICY IN A GLOBAL CONTEXT

2.1 What is the issue?

The EU ICT standardisation policy is being confronted with different challenges as to their role and influence on a global market.

Firstly, in order to have successful EU standards (i.e. standards that are adopted by the market), the EU standardisation efforts should take into account standardisation initiatives taking place on a global level. EU standards that are incompatible or inconsistent with technology solutions used in other parts of the world increase inefficiency and ultimately lead to fragmentation in the availability of key technology advancements. The challenge is to make sure EU standardisation initiatives can take stock of standardisation processes and deliverables created outside of the EU standardisation system.

Secondly, the EU policy makers would like to ensure their policy objectives, which are based on cultural values and traditions, some of them regarded as typical "European" values (e.g. data protection, consumer protection), are substantiated in the EU standards. The challenge is to marry the regional policy objectives of the EU with the global nature of ICT standards.

Thirdly, pushing EU standards on a global level are believed to improve competitive advantage for European businesses. EU policymakers are therefore interested in making sure that an uptake of EU elaborated standards happens on a global level. The challenge is to find ways on how to create a global acceptance and use of EU standards.

2.2 ICT Standardisation is a global matter

Given that ICT and its market are global, the EU ICT standards have to prove their capacities on the international arena. If for the EU Internal Market, "successful" standards mean deliverables capable of attaining a harmonisation objective by decreasing the burden of regulation, what matters on the international scene is the capacity of EU standards to become "global referrals" for the international trade. If EU standards are not compatible or are inconsistent with technology solutions used in other parts of the world, EU standards would only remain regional standards decreasing their success and efficiency on a global market. This would ultimately lead to a fragmentation in the availability of key technology advancements and discourage the competitiveness of the European industry.

The New Approach legislation, facing mainly issues concerned with protection of health, security and safety, is very much based on setting the characteristics a product must have to afford free movement inside the European market. New products European users will use can be deployed and used at global scale and this new emerging model must be considered in legislation.

Up to now, many initiatives have already been undertaken for improving international cooperation between standards setting organisations. These initiatives have been enshrined in European and international legislative acts and policy documents.

2.2.1 Council Decision 87/95

The pre-eminence of international standards in the information technology and telecommunications area is already confirmed by the Council Decision 87/95/EEC.[121] The Decision sets clearly out that standards-setting work undertaken at European level must take into account international standardisation activities. Indeed, article 2 of the Decision explicitly states that the ESOs "*shall base their work on international standards, draft international standards or international technical specifications in telecommunications.*" It continues by stating that "*Where an international standard, draft international standard or international technical specification in telecommunications offers clear provisions allowing its uniform application, these*

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[121] See PART II.3.1 "The Council Decision on ICT standardisation" on page 35.

*provisions will be adopted unaltered in the European standard, European prestandard, or telecommunication functional specification. Only where such clear provisions do not exist in the international standard, draft international standard or international technical specification in telecommunications, th*e *European standard, European prestandard, or telecommunication functional specification will be written to clarify or, where necessary, supplement the international standard, draft international standard or international technical specification in telecommunications while avoiding divergence from it.*" The Decision also states in the same article that "*the same bodies shall be invited to prepare technical specifications which may form the basis of European standards or European prestandards in the absence of, or as a contribution to the production of, agreed international standards for the exchange of information and data and systems interoperability.*"

The principles laid out in the Council Decision of 1987 fully align with the international commitments that the European Union has taken in 1995 through the WTO Agreement on Technical Barriers to Trade.[122] This Agreement requires of its signatories *inter alia* that technical regulations and international standards should be developed and implemented in a non-discriminatory manner, and without creating unnecessary obstacles to trade[123]. It also recommends the recourse to international standards wherever possible while drafting technical regulations.

According to the agreement, WTO members are obliged to use existing international standards as a basis for their technical regulations, except when such international standards would be an ineffective or inappropriate means for the fulfilment of the legitimate objectives pursued.

The substantive provisions of the Code of Good Practice sets out the following rules:

(a) Standards should not be developed with a view to creating unnecessary obstacles to trade (letter E).

(b) International standards that have been adopted or are in the course of development should be used as basis of any further/similar standardisation work initiated by any regional or national standardisation bodies (letter F).

(c) Regional standardisation organisations shall participate as much as their resources permit so, to the standardisation programmes carried out by the international standards-setting organisations (letter G).

(d) Any duplication of, or overlap with standardisation work undertaken by other signatories to the agreement should be avoided (letter H).

2.2.2   Cooperative agreements

The ESOs have also concluded a set of agreements with their counterparts at the international level (ISO, IEC and ITU) to avoid duplication and speed up standardisation work. These agreements establish the systematic, legal framework of the EU standardisation policy to take over international standards and/or to contribute to the international standards making process. They provide the possibility to develop standards in one body and to approve them by parallel voting in both.

Such agreements allow for joint programmes and joint publications of standards (IS/ENs) between the signing parties. Actually, these agreements work both ways: they recognise the primacy of

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[122] Code of Good Practice for the Preparation, Adoption and Application of Standards, Annex 3 to WTO Agreement. The Agreement on Technical Barriers to Trade - also known as the TBT Agreement is an international treaty of the World Trade Organization. It was negotiated during the Uruguay Round of the General Agreement on Tariffs and Trade, and entered into force with the establishment of the WTO at the beginning of 1995.

[123] See in this regard, Commission's Communication on the role of European standardisation in the framework of European policies and legislation, COM (2004) 674 final, 18.10.04, p. 6.

international standards, but they also recognise that particular needs (of the Single European Market for example) might require the development of standards for which a need has not been recognised at the international level. This happens especially if international standards are not considered appropriate because they do not meet the objectives of the EU regulation or merely because international standards do not yet exist (some examples are Mobile, TETRA, DVB, DECT, legal interception, etc).

Reference examples of such agreements are: a) the Vienna Agreement between CEN and ISO; b) the Dresden agreement between CENELEC and IEC and c) the MoU Telecommunications Sector between ETSI and ITU-T.

Vienna Agreement (ISO – CEN) - Given the primacy of international standards, the lead in the standardisation work to be carried out is in principle assigned to an ISO committee. Nevertheless, a work item may directly be entrusted to a CEN committee in cases of "mandated" standards that are requested for implementation of EU regulation, generally directives, if certain conditions are met. There must be sufficient evidence to demonstrate that the ISO committee cannot fulfil the content and timeframe required for implementation of the regulation in question. It is noteworthy that a European mandate does not necessary "open the door" for CEN to take the lead of the standardisation work required. It simply means that if ISO takes on the work, the standardisation activity must be completed in time to meet the European requirements. The agreement discourages in a sort that European members of parallel ISO-CEN committees move a specific work to CEN alone if the ISO committee is meeting the European needs of content and timeliness (as far as an EU regulation is concerned).

The above rule concerns primarily the development of European Norms. It is not sufficiently clear whether other products than ENs may be developed under the Vienna agreement. One opinion is that it is generally possible to integrate other deliverables under the Vienna agreement but procedural guidance may be necessary on a case-by-case basis.

Dresden Agreement (IEC – CENELEC) - When the need for new work items arises with CENELEC (incl. the revision of existing standards), CENELEC has to ascertain first whether the IEC can undertake the work. Standardisation activities that have primarily an EU origin (e.g. in response to the requirements of an EC Directive) shall be submitted to IEC if at least 5 National Committees are willing to actively participate in the IEC's work. The only constraint to that is if IEC is unable to carry out the required standardisation work according to CENELEC's planning requirements.

MoU Telecommunications Sector (ETSI - ITU-T) - This agreement concerns mainly the mutual use of deliverables and their availability to the counter-party according to the IPR rules stipulated in the MoU. Other provisions refer to mutual access to the organisations' work programmes or the exchange of experts.

Cooperative agreements with non-institutionalised bodies - ETSI has signed a number of co-operation agreements and memoranda of understanding with external bodies that are non-formal standardisation organisations, such as fora and consortia, R&D bodies and other specification providers (e.g. Agreement on the co-operation between ECMA (currently, ECMA International) and ETSI on standardisation in the field of telecommunications). The purpose of these agreements is typically to cover the development and promulgation of European telecommunications standards and other deliverables on an agreed joint work programme, and the promotion of their acceptance by world-wide standardisation bodies.

The ETSI – ECMA (International) agreement, for example, states that its purpose is:

- to define a process for developing a joint programme of work;

- to ensure that there is synergy both at European and global level between standards developed for the public and private/corporate domain;

- to enable experts to participate in the agreed joint programme of work, via either ETSI or ECMA;

-   to avoid each organisation working separately in the same area;

-   to ensure standards and other deliverables are produced in the organisation with the greater competence;

-   to help ECMA standards and other deliverables to become European Telecommunications standards and other deliverables via ETSI, where appropriate;

-   to help ETSI standards and other deliverables to become international standards via ECMA, where appropriate.

ETSI seems to be the only ESO having entered into cooperation agreements with other non-formal standardisation organisations and specification providers (consortia and fora). The other ESOs restrict their cooperation to collaboration agreements with industry and public interest stakeholders.[124]

Furthermore, the other ESOs seem not to allow the same degree of cooperation as the ETSI co-operation agreements. CENELEC for example enters under its conditions in cooperation agreements with organizations interested in supporting and contributing to the European electrotechnical standardization. The cooperation is however, limited to "advice, suggestions and proposals with respect to CENELEC activities". Also, "the copyright of CENELEC publications, whatever their origin, remains the exclusive property of the CENELEC members".[125] CEN has the instrument of Associate Members. These organisations undertake to promote CEN and European standardization., they participate in the General Assembly (without voting rights), sit on the Administrative Board when policy matters are being discussed, sit on the Technical Board and any other technical body and receive all relevant documentation and information, including draft standards.[126] The list of Associate Members does currently not contain any non formal SDO or specification provider.

2.2.3   Concerns

Agreements between ESOs and other international standardisation organisations seem to work efficiently allowing for the transposition of international standards into European Norms and the uptake of European standards on a more global level. Nevertheless, as it will be pointed out below, concrete problems, such as maintainability, may become hard to manage.

In the ICT area, important standards-setting initiatives take place outside the scope of international standards bodies, often undertaken by organisations acting on a global level with an important market impact (e.g. W3C, IETF, OASIS). Apart from ETSI, however, no other ESO has entered into agreements with non-formal standardisation organisations. The agreements and rules typically only express rights and obligations enshrined into the "institution-based" standards-setting system in Europe and worldwide.

If we are to underpin our standards structure in a world that is moving to commercially based global fora, then we need to look to seeding mechanisms that will help all the bodies work together more easily, and also allow public authorities to easily review what is going on. We should thus look to stimulating light and agile mechanisms to allow standards bodies, industry and appropriate organisations and authorities to meet and resolve issues. This would underpin both the European standards structure and create alliances that would concentrate and specialised the work under certain topics minimizing the number of organisations working independently and with duplication.

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[124] In practice, an ESO like CEN collaborates or liaises on a case by case basis with non-formal standardisation organisations and specification providers (e.g. OASIS, W3C, Dublin Core) and CWAs do cross-refer to their deliverables.
[125] CENELEC Guide n° 14 The concept of Cooperation Agreements, articles 2 and 5. A list of cooperating organisations can be found on www.cenelec.org (cooperating organisations).
[126] www.cen.eu (members).

The EU policy maker could for example think about to what extent the other ESOs could also enter into ETSI-like agreements with non formal standardisation bodies ensuring a good synergy between the activities of formal and informal standardisation organisations.

2.3 The priorities of the EU regional standardisation policy vs. the global dimension of standards

2.3.1 Description

Often, standardisation efforts are being based on policy objectives or practical needs, having a regional character. These efforts do not necessarily have a global impact or are globally relevant.

Examples in the European Union are those standards that are needed to support cross-border business or services within the EEA, and thus to remove or prevent barriers to trade (eg European electronic invoice, eAccessibility). Other EU examples are standards that are needed in support of European regulation as a subset of the single market objective (eg Electronic Fee Collection), standards for end-users taking into account cultural, social, moral and linguistic issues (eg Nordic subset of UBL), or standards taking into account of national requirements (eg eHealth).

International standardisation organisations would not necessarily be able or willing to initiate standardisation activities stemming from regional demands or take into account regional characteristics in on-going standardisation activities. It is also relevant to note that the timing to initiate these initiatives will be much sooner in Europe (given its characteristics) than worldwide.

Also, the closer one gets to application standards (the "e" environment – eBusiness, eHealth, eGovernment, eLearning, eAccessibility) the more regional work is needed to complement the global work. Including every local variant in the main standard becomes excessive and cumbersome for a global body – and is therefore better done by a local body in each region.

It has already been noted that the international agreements the ESO's have entered into allow deviations from the international standardisation work on an exceptional basis only and must be justified in a transparent way. For example, the Vienna agreement recognises that standards setting may be entrusted to CEN if there are particular "European" needs, esp. in support of the legislative framework. On the other hand, ISO's aim is to develop standards that are *relevant globally* which means that they need to be consistent with (or at least not contradictory to) national and regional legislation around the world. "*Unfortunately, because there are different approaches to regulation and reference to standards in different parts of the world, this may not always be possible*"[127].

2.3.2 Concerns

We think it is necessary to stress the regional character of standardisation when it comes to safeguarding typical European values and characteristics. Leaving standardisation work to global organisations only, whether they are institutionalised or not, would cause the risk of these particularities not to be taken into account.

Therefore we think there will always be a clear need for bodies that have a tangible European edge, i.e. regional bodies such as ESOs. These regional bodies should make sure that the European voice is heard on a global level whenever necessary and relevant.

In the same time, when drafting European standards or influencing global standardisation efforts, the global applicability of standards should always be taken into account, especially from an interoperability perspective.

Furthermore, it should be investigated which areas for standardisation are indeed in need for a typical European approach and which are not. The actions should be carefully chosen, based on a classification taking into account the subject for standardisation, the type of activity (standards

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[127] Quoted from Q&A part of the agreement.

development, the standards use and the clarification of an existing standard), and the bodies that generate these standards (Europe based, centered outside Europe, or with work spread across the globe).

2.4 Pushing EU standards to a global level

2.4.1 Description

The market adoption of EU standards on a global level is believed to improve competitive advantage for European businesses. EU policymakers are therefore interested in making sure that an uptake of EU elaborated standards happens on a global level. An example of a successful move from the regional scene to the global scene is the GSM standard.

If a solution to solve the internal market becomes successful it could very well have the necessary characteristics to be adopted worldwide. This is even more true for regions that do not have any solution for the problem yet. As a hypothetic case consider China and eHealth. If a solution is found to be popular in Europe, it could be followed by China, for instance. If Europe fails to get into a harmonised system, other regions will develop it first.

Two possibilities typically exist for promoting a widespread adoption of EU standards: First, by marketing the use of EU standards outside of Europe (direct approach). Second, by having EU standards transposed by other standardisation organisations into globally accepted standards (e.g. ISO) or into regionally accepted standards (e.g. SAC in China).

2.4.2 Concerns

Currently there exist already agreements between the ESOs and different standardisation organisations for reciprocal adoption of standards. There also exist marketing activities around the adoption of EU standards outside of Europe. Still, we are of the opinion that more work could be done in promoting a wide adoption of EU standards.

A strategy should be developed identifying which standards could be potential global successes, based on different criteria (uniqueness, interoperability, advantage for EU industry, …) . Only on standards with a high score, efforts should be focussed.

This exercise of drafting a score board could be done by identifying the strengths of the European industry. As Europe cannot take on the world at everything this suggests that we need to decide what our expertises are, and focus on these.

2.5 Conclusions and recommendations

ICT standardisation takes place in a global environment. Not adapting to the global environment by actively participating in global standardisation activities, may cause the European standardisation work, including its safeguards, to become irrelevant. We, therefore, think that the EU ICT standardisation policy should contain a (or revise its) strategy relating to its impact on global standardisation.

Focus on regional whilst not forgetting the global character - The strategy should take into account that there is a need to stress the regional character of standardisation when it comes to safeguarding typical European values but that it would be unrealistic to try to influence global standardisation processes. Although the aim should not be to try to convince the world to adopt regional focussed standards, it should at the same time be ensured that the regional interests are not being forgotten in global standardisation initiatives. A major role would be to play for the ESOs representing these regional efforts. Other standards, however, that are maybe less focussed on European values or characteristics but that could promote the competitiveness of European industry should be prompted on a global level (as it has been done for GSM, for instance).

Broaden the co-operation agreements - The influencing activities should not be limited to other institutionalised standardisation organisations (such as ISO, IEC, etc), but also by influencing other non formal bodies acting on a global level (W3C, OASIS, IETF). The EU policy maker could for example think about to what extent the other ESOs could also enter into ETSI-like agreements with non formal standardisation bodies and specification providers ensuring a good synergy between the activities of all relevant standardisation participants.

Classification - Part of the strategy should also be to draft a classification covering the different reasons for standardisation and on which level (national, regional, global) the standardisation would have to take place. The classification should identify which European standards could be potential global successes, based on different criteria (uniqueness, interoperability, advantage for EU industry, …) . Only on standards with a high score, efforts for upgrading them to a global level should be focussed.

3. MANDATES IN AN EU CONTEXT

3.1 What is the issue?

The use of mandates is a powerful tool in the possession of the EU policy maker to support its legislative or policy objectives. By issuing a mandate the EU policy maker is able to initiate or to influence the standardisation process on a certain topic. The rules and procedures on using mandates find their basis in the Directive 98/34 and also in the Council Decision 87/95.

The concept of mandates as such is currently not being questioned by the policymakers nor the other participants. Different issues relating to the mandating process are however being seen as questionable. More specifically, the fact that a mandate can only be directed towards the three ESO's seems to be at stake. Currently it is indeed not possible to issue mandates for standardisation work directly to other standardisation organisations than ESOs. By not being able to mandate non ESOs, the EU policy maker may risk not to gain advantage from the know-how and expertise that has already been built up outside of the ESO community.

3.2 Definition and legal basis

In principle, the European Commission allocates standards-setting work to standardisation organisations through the issuance of mandates. The mandate actually represents *a request* by the policy maker to competent technical bodies to carry out standardisation tasks. Such tasks may consist of: (1) mandates to check the feasibility of standardisation, (2) mandates requesting the elaboration of a standardisation programme, and (3) mandates for the development and adoption of European standards.

Under the New Approach, the mandate has taken the form of *an order/invitation* that the Commission addresses to the competent European standardisation bodies (ESOs), being CEN, CENELEC and ETSI, for the adoption of harmonised standards.

The mandates as tools of standardisation work are formally recognised in law. The New Approach Resolution has set out that "the quality of harmonised standards must be ensured by standardisation mandates, conferred by the Commission, the execution of which must conform to the general guidelines which have been the subject of agreement between the Commission and the European standardisation organisations"[128].

The "Transparency" Directive spells out the core procedural steps of the mandates' publication: a) opinion of the 98/34 Consultative committee before the issuance of mandates (article 6 §3); b) obligation of standstill on Member States from any standardisation work that risks to conflict with or prevent the execution of the mandate at a European level (article 4 §1d). Noteworthy is that although no legal obligation exists, draft mandates are often drawn up by the Commission services through a

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[128] Council Resolution of 7 May 1985, Annex II, point 4.

process of consultation with a wide group of stakeholders before they are being sent to the 98/34 committee.

In legal terms, the mandate represents a mechanism *to delimit areas of competences between the regulator and standards bodies*. By using the mandate request, the Commission (and through the Committee, national public authorities) asks the ESOs to draw up technical specifications that meet the requirements addressed in legislation. Mandates reflect the interface between determining legislation/policies and standards-making activities. They are mechanisms to move the standardisation communities, but *they are not legal acts per se*. Thus, in order to determine if a standard developed on the basis of a mandate actually complies with the legal requirement, one should not look back at the terms of the mandate but at the provisions of the regulatory act. Thus, mandates do not replace the law nor shall be regarded as the correct interpretation of the legal requirements.

In practical terms, the content of mandates specifies the expectations of the regulator towards the ESOs. It indicates as precisely as possible what is being asked of the standards organisations and the legal framework within which the standards have to be presented. The ESOs are not obliged to accept the mandate. Thus, they cannot be bound by a mandate as long as they have not accepted it. But once they accept the mandate, the ESOs undertake a commitment to complete by themselves or their members the work required within the agreed time-limits. To note is that in practice, a mandate is almost never rejected by the ESOs.[129]

In operational terms, after its acceptance, the mandate is considered as a contract between the EC and/or EFTA and ESOs and is thus binding on both parties. As a consequence the deadlines set in the mandate for the submission of deliverables are contractually binding and must be respected.

3.3 Mandates in the ICT area

The use of mandates in the ICT area is legitimised by Council Decision 87/95/EC *on standardisation in the field of information technology and telecommunications*. Article 4 of the Decision provides that the Commission *shall entrust* the technical work to the competent European standards organisations or specialised technical bodies *requesting* them, if necessary, to draw up European standards or functional specifications. (It is relevant to note that the Council Decision extended the ability to issue a mandate to "specialised technical bodies", to include CEPT that was not an ESO at that time.) Similarly to the "Transparency" Directive, the Decision lays down the basic procedural steps that should be followed for the issuance of the mandate (e.g. consultation of the so-called SOGITS committee and the 98/34 Standing Committee).

All mandates currently issued in the ICT area are addressed exclusively to the three ESOs (CEN, CENELEC and ETSI).

In practice, the usefulness of applying a mandate procedure is being decided by the European Commission services, more specifically the services requiring standards in co-operation with the unit responsible for ICT standardisation. The draft mandate is prepared by the Commission services. Prior to the submission to Member States the draft is generally discussed with the ESOs in view of an agreement. When the mandate covers a new domain, the request issued by the mandate is rather general:

1. analyse the political context from the perspective of the possible role of standardisation

2. identify the already existing initiatives on regional, EU, national and international level in order to avoid duplication and in order to identify whether the existing specifications satisfy the EU needs

3. identify possible standardisation gaps

4. issue recommendations for standardisation work

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[129] One example is the refusal to accept the mandate on standardisation work related to PABX.

These four questions generally constitute the part 1 of the mandate, which is followed by a Member States consultation. The European Commission, indeed, needs to consult the Member States before mandating the technical work to the competent ESOs (article 4 of the Council Decision 87/95). This consultation is typically being done through the SOGITS committee. The Committee currently only consists of representatives appointed by the Member States, who may however call on the assistance of experts or advisers. Its chairman shall be a representative of the Commission. In reality, though, this committee has not convened since several years. In part 2, the mandate requests the preparation of a technical Work Programme (WP) followed by the execution of the WP.

Mandates have for instance been issued to allocate specific standardisation tasks to the ESOs on data protection, electronic signatures, on digital TV and interactive services, in the field of harmonised standards for the implementation of the R&TTE Directive or in the domain of learning and training technologies and educational multimedia software. On the other hand, standardisation requirements arising from framework programmes such as eEurope also serve as a legal basis of the issuance of mandates[130].

A mandate may have as a legal basis not only an already voted and formal act (such as a Directive) but also the preparatory document before final adoption (e.g. a draft Directive). In this sense, a common position (COM) can already justify the beginning of the standardisation work under a mandate. This is particularly important for fast-paced business sectors, like ICT, whereby law comes after technological developments.

Under the New Approach, the deliverables of standardisation work described in a mandate are European norms (ENs) or ETSI standards (ESs). However, in the ICT standardisation practice, mandates have been used for elaboration of deliverables other than ENs and ESs.

3.4 Concerns

3.4.1 The ESO exclusiveness

As set out above, mandates in the ICT area assign standardisation work exclusively to the three ESOs. The fact that non-formal SDOs cannot be directly mandated is often being regarded with frustration by the industry for different reasons:

- *Financial*: The limitation of mandates to the ESOs has a financial dimension. In principle, the issuance of mandates justifies the financial support of the bodies entrusted with the required standardisation tasks. Limiting mandated standardisation work to the ESOs means in practice that only the ESOs may benefit from the Commission funds that can be used to execute the mandate.

- *No reference*: Non-formal SDOs are often frustrated that their work is being used as a basis for a European deliverable but that no reference is being made to their authorship.

- *Double work*: Often similar work has already been carried within a non-formal SDO but this work is not being used within the ESOs.

- *No impact*: Within the group of non-formal SDOs it is felt that only a small group of experts is being asked to participate whereas a framework would be necessary for working more efficiently. The stakeholders are frustrated that their input is restricted to consultation, but without having access to the text drafting.

Putting in perspective - Although the frustration of the non-formal SDO's and specification providers may be genuine, the assumptions should be a little bit adjusted. For example, as to the finance issue, it should be noted that mandates do not automatically involve financial support. There indeed exist mandates without funding and there is funding without mandates. As to the issue of authorship, it is indeed correct that all deliverables need to be revamped into a European deliverable (EN, CWA, etc.) and that it is not possible to keep the original name and author of the standard. It

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[130] The entire list of mandates issued to ESOs can be found in DG Enterprise homepage at: http://ec.europa.eu/enterprise/standards_policy/mandates/index.htm.

should however be noted that ETSI has entered into different co-operation agreements in which it is stated that reference will be made to the non formal SDO as the originator of the deliverable. As to the impact issue, although it is indeed true that the legal framework does not allow a direct mandate to be issued to other organisations, this does however not mean that other organisations or stakeholders cannot get involved in the standardisation process. In most mandates there is, for example, a clause on cooperation (e.g. to organise an open workshop).

Opinion - Still, we think the current ICT standardisation policy could take the work of the non-formal SDOs and specification providers more into account than this is currently the case. At this moment, these actors are only indirectly involved in the standardisation work and their efforts seem not be valued at the same level as the ESOs.

We think that not using this expertise and know-how does not advance the EU policy makers objectives. Therefore, knowing that mandates are an important tool for policy makers to drive standardisation efforts, the tool could be improved by getting participants more directly involved in the standardisation work, not only on the consultation level but even on the standards creation level.

3.4.2   *Unclear legal basis*

As commented briefly above, it seems that there is no clear legal basis requiring the use of mandates in all policy and regulatory areas, apart from the New Approach. Furthermore, there seems not to be a legal obligation for the European Commission to involve the stakeholders in the consultation procedure.

Reach of mandates unclear - In the European Commission's document *Role, preparation and monitoring of standardisation mandates under the New Approach*, it is argued that *any type of publication* by the ESOs may be the subject of a standardisation mandate if other deliverables other than ENs/ESs better suit the needs connected with specific sectors[131]. On this point, the document concludes that, *for the sake of clarity, it may be useful to draw up a mandate for each request from the public authorities to the ESOs for normative documents (including the new types of deliverables)*. This last sentence seems to imply (as is our view) that there is no clear legal basis imposing the use of   mandates (and of all the corollary procedure of Committee consultations), in view of the preparation of other standardisation outputs and not formal European standards[132]. In our view, this conclusion could also have been drawn from the interpretation of Decision 87/95/EC.

It should, therefore, be looked into whether the mandate mechanism has to be used in a selective way in the light of the needs of the specific policy area. In this case, there is a need to define the criteria that will determine the kind of standardisation work that must be subject to the "mandates" procedure. Furthermore, there is a need to clarify the types of deliverables that must be addressed through the "mandates" procedure.

No legal obligation to involve stakeholders - The consultation procedures of the stakeholders are not based on a legal obligation but only depend of the willingness of the responsible issuer of the mandate. We question if this practice would be sufficient to tackle the challenges imposed by the current and futures ICT landscape.

It is felt that the European policy makers could more efficiently use standardisation as a tool if all involved participants (European Commission, Member States, Industry, Consumer organisations, and standardisation bodies) could come to an agreement before the mandate is issued, that the proposed standardisation effort is needed and will improve the observed deficiencies. This goal can be achieved with a timely involvement of the interested parties on European and national levels.

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[131] Document n°. SOGS N 404 of 24 April 2001. Although the document deals mainly with mandates under the New Approach Directives, it states that it can serve as a guide for mandates in other fields relating to legislation outside the New Approach and in support of Community policies outside Community legislation (p. 3).
[132] Idem, pp. 9-10.

3.5   Conclusions and recommendations

The mandating system is a strong policy instrument in the hands of the European Commission. Currently, however, the mandating system is restricted in its application (New Approach) and its procedures are not in line any longer with the ICT landscape (only consultation of national representatives; only direct involvement of ESOs for standards setting). The mandating system should allow for more flexibility if it wants to remain a strong policy instrument.

Although, it is true that in practice, mandates are also being used outside of the New Approach model, and stakeholders are being consulted, the legal system itself (more specifically Council Decision 87/95) has not created this possibility. The fact that the current practices are not being backed up by the law creates legal uncertainty for all participants.

Confirmation - Therefore, we would firstly recommend to confirm by law that mandates can be used outside of the New Approach model. This could be done by amending article 4 of Council Decision 87/95 and adding a phrase that the issuance of mandates is not restricted to support of New Approach legislation.

Consultation - Secondly, we would plead for having a more structured and institutionalised involvement of the relevant stakeholders from industry and public interest groups by inclusion of a new clause in Council Decision 87/95 requiring the European Commission to consult the relevant stakeholders before finalising the mandate. This could, for example, be done by amending article 4 (add a clause that the Commission should also consult the relevant stakeholders) or article 7 (add a clause that SOGITS also consists of stakeholders and not only the national representatives and representatives of the ESOs) of the Council Decision.

The involvement of the stakeholders could be restricted to consultation only or could go further and even include their involvement in the standards drafting process. Their involvement in the standardisation process is further being discussed in section 5 of this chapter: "Intake of Consortia".[133]

Revitalisation - Thirdly, we think that the SOGITS Committee should be revitalised because it is a valuable platform for gathering considerable feedback relating to the usefulness and scope of a standardisation activity in ICT. The specific nature of the ICT landscape cannot be fully covered simply by a general purpose committee such as the 98/34 Standing Committee. If the SOGITS committee would be further opened to other stakeholders than only national representatives (our second recommendation), then this Committee could not only grow into an important counselling body towards the Commission but also become a platform for discussion between national administrations, the European Commission and stakeholders representing the industry and the public interest. Revitalising SOGITS would be possible without having to change the Council Decision or any other legal instrument. As the Committee is chaired by the Commission (article 7.1), the Commission is able to convene the Committee.

We do not think that any of the above mentioned recommendations to change Council Decision 87/95 would prejudice the application of Directive 98/34 (article 9 of the Council Decision), since they merely change the involved actors without undermining the basic principle of the Directive. However, we would recommend having the legal services of the European Commission check thoroughly any possible conflicting issues between the different legal instruments.

4.   INTEROPERABILITY

4.1   What is the issue?

Interoperability within an ICT environment is a condition sine qua non. Without interoperability, systems and services are not able to work together providing a harsh environment for the users. In terms of the European region, lack of interoperability would disturb the creation of an internal market

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[133] See page 74.

with consequences for the competitiveness of the European industry. Standardisation plays an important role in ensuring interoperability. For the EU policymakers it is, therefore, of utmost importance that a climate is being created in which interoperability standardisation activities can take place.

The recent past has shown us that interoperability for the telecommunications sector has been a successful story in Europe. However, as to the IT sector, the case is very different. First because an infrastructure upon which consensus can be made does not exist; second because it is newer than Telecommunications; third because the subject "functionality" plays a completely different role.

4.2 Interoperability, some definitions

Interoperability has been a major theme of discussion for some years now. As systems become more complex and the need to work together to achieve each time more demanding tasks is expected, the term "interoperability" identifies the working area that should make this possible. However, the problem is far more complex than a simple technical problem.

To start with, although there is a "common" understanding of what interoperability means the precise definition varies from organisation to organisation and even inside organisations. For instance, there is the following definition (IEEE 90): "*Interoperability is the ability of two or more systems to exchange information and to use the information that has been exchanged.*" EICTA[134] defines interoperability as "*The ability of two or more networks, systems, devices, applications or components to exchange information between them and to use the information so exchanged.*"

From the sphere of ETSI, an organisation which can be considered more concerned with telecommunications, there are at least three definitions:

- From the TIPHON project: "*Interoperability is the ability of two systems to interoperate using the same communication protocol.*"

- From the Technical Committee TISPAN of the Next Generation Networks (NGN): "*Interoperability is the ability of equipment from different manufacturers (or different systems) to communicate together on the same infrastructure (same system), or on another while roaming.*"

- From 3GPP, 3rd Generation Partnership Project: "*the ability of two or more systems or components to exchange data and use information.*"

With such broad scope of definitions the technical communities of the area went further in detail about interoperability. There have been defined four categories of interoperability. The following definitions were used by ETSI[135]:

- technical interoperability – is usually associated with hardware/software components, systems and platforms that enable machine-to-machine communication to take place,

- syntactical interoperability – is usually associated with data formats. Certainly, the messages transferred by communication protocols need to have a well-defined syntax and encoding, even if it is only in the form of bit-tables. However, many protocols carry data or content, and this can be represented using high-level transfer syntaxes such as HTML, XML or ASN.1,

- semantic interoperability – is usually associated with the meaning of content and concerns the human rather than machine interpretation of the content, and

- organisational interoperability – as the name implies, is the ability of organizations to effectively communicate and transfer (meaningful) data (information) even though they may

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[134] EICTA – European Information and Communication Technology and Consumer Electronics Industry Association.
[135] ETSI White Paper Nº. 3 Achieving Technical Interoperability – the ETSI Approach. October 2006

be using a variety of different information systems over widely different infrastructures, possibly across different geographic regions and cultures.

It is also worth mentioning a division in levels: content interoperability, service interoperability, device interoperability, and finally device to device interoperability (when two devices are connected together).

It is generally accepted that technical interoperability is centred on (communication) protocols and the infrastructure needed for those protocols to operate. Interface Description Languages cover the cases where the interaction is local rather than remote and fulfil the same role as the infrastructure.

In this chapter we claim that the notion of infrastructure can be generalised and applied to the other categories of interoperability as well. An infrastructure at semantic level would then be the set of rules and definitions that would make possible systems to become interoperable at this category. Defining and maintaining an infrastructure at this level is a rather difficult task: the compliance to hardware and low level software is easier than compliance to a higher and more functional level; and the consensual recognition of an entity that defines the semantic infrastructure for a certain area is difficult to achieve.

In terms of EU policy it can be said that technical interoperability is a problem that is mostly solved. It is a market issue and should be combated by anti-trust measures if distortions of the market appear. Therefore, this chapter is more concerned with semantic interoperability issues.

4.3   Concern for interoperability at policy level

At policy level the subject of interoperability has deserved some references in Communications from the Commission. The following two examples demonstrate how far the Commission intends to go to establish interoperable environments.

In the Communication (Communication "i2010 – A European Information Society for growth and employment"), the Commission states "*Digital convergence requires devices, platforms and services to interoperate. The Commission intends to use all its instruments to foster technologies that communicate, through research, promotion of open standards, support for stakeholder dialogue and, where needed, mandatory instruments. Such a policy mix was the foundation of Europe's mobile telephony success. Under i2010, the Commission will also seek to establish a comprehensive approach for effective and interoperable digital rights management.*" (page 7).

"*As ICT based applications become more available, there is an increasing need to make them compatible: e.g. the convergence between fixed and wireless networks and between telecommunications and audiovisual provision. Interoperability has many facets: for network operators, it means to be able to interconnect with other networks; for content or service providers, it means being able to run a service over any suitable platform. For consumers, it means the ability to purchase a device and use it to access services and download content from different sources. In general, interoperability and standards are elaborated and chosen by market operators. It is expected that the work of the European standardisation organisations, CEN, CENELEC and ETSI under eEurope 2002 and 2005 will continue in relation to the new priorities. In addition, governments must follow progress in this area attentively. In some circumstances, they may find it necessary to support stakeholders in their search for common solutions. In some areas, which have particular public policy relevance, it may be necessary to require the use of open standards.*" (p.10 Commission Communication "Challenges for the European Information Society beyond 2005" COM(2004) 757 final)

4.4   Two areas for Interoperability

A first angle to analyse the problem is to notice how different interoperability can be, even inside ICT. The reality is completely different between the Telecommunication sector and the Information Technology sector.

4.4.1   The Telecommunications case

The various categories applied to Telecommunications – It can be said that interoperability in Telecommunications is mostly technical. Higher categories (syntactical or semantic) have to do with what is called "signalling" and this area is also subject to strong specification in the standards.

Inherent incentive - Considering the Telecommunication sector, since its beginning, more than a century ago, it was important that telephone devices could connect to each other to be useful. ITU-T (or CCITT at the time) issued "recommendations" that countries were not forced to adopt. Non adoption of the recommendations would mean that they could not connect to anyone else, so the incentive to adopt the recommendations was high. Therefore, there is a "hidden" mandatory practice that goes well beyond the voluntary nature of the standards. Moreover, in those days, and for decades, the ability to interconnect was basically electrical compliance of equipments, making the interoperability task somehow trivial.

Certification – The task of certification was not performed by ITU-T but by national certification entities. Naturally, each European country had its own national certifying entity to verify the compliance of the products (telephones, PABX, etc.) that were sold in the country. Meanwhile, the software began to be an important piece in the Telecommunication sector bringing more flexibility but also increasing the interoperability task. The ISDN (Integrated Services Digital Network) initiative was European driven and its deployment was difficult: different European countries had slightly different profiles and agreement was hard to achieve. This difficulty can also be interpreted by the existence of several entities (national ones) setting up profiles instead of a unique entity followed by everybody.

GSM example - The GSM network can be considered the following European endeavour in the area of a common network after the ISDN experience. It is also an excellent example in terms of interoperability. The cellular reality is much harder than the fixed telecommunications reality. For the fixed telecommunications, different profiles of the national networks could be solved with the introduction of gateways at the borders. With the cellular networks the compatibility has to be at terminal level. It is much harder to achieve. The first interim report discussed already the GSM case. It is relevant to stress here the move from the Commission, Council, Telecoms, and ETSI on mutual recognition of conformity of telecoms terminals going beyond the closed reality of national certifiers. A European common practice was established "above" the reality of each country. Moreover, in practice, and over the times, there is the recognition today that 3GPP has a leading role on validation and certification using ETSI's PTCC (Protocol and Testing Competence Centre). This aspect gets an even greater importance because of its truly market recognition - the industry is committed and maintains a budget for this task. A sustained reality for this kind of interoperability was created.

Easy - Even with all these hurdles the reality for interoperability in Telecommunications is "easy". There is an infrastructure, the network, and the various equipments must be able to connect to it. The other categories than the technical are "thin" categories. Moreover, there is an entity that decides the evolution of the network and the industry recognises its legitimacy (eg. the 3GPP for the GSM/UMTS case). New functionalities for the network are very cautiously introduced also because the investments can be prohibitive in changing an infrastructure. The myriad of new functionalities that the research community propose and simulate find a very hard path towards the implementation in real systems.

4.4.2   The Information Technology case

The IT case is very different. First because a physical/low level infrastructure upon which consensus can be made does not exist; second because it is newer than telecommunications; third because the subject "functionality" plays a completely different role. We will analyse each issue at a time although they are much intermixed.

No stable infrastructure - The IT case covers areas such as access to content (with issues of content coding and presentation, application presentation and execution, transmission formats, copy

protection, DRM, etc.); application integration; core services that form the "glue" for the application integration (data description languages, file formats and schemas); presentation tools (office applications, content, codes, e-mail files, etc.); etc.

In such areas the rapid advances of technology and the ever growing expectations of the users towards the services to be provided create a very adverse environment to define a stable reference "infrastructure". A new functionality introduced into a product (or service) is more cherished by the market than the ability to interact by freezing the specifications for a while. A notable example is the constant evolution of media players driven by private enterprises without much wide consensus. The creation of a general infrastructure (at semantic level) that covers such a wide range of areas as the ones described in the last paragraph is unfeasible. A possible solution might be the definition of an "infrastructure" specific to each area: eHealth, eInvoicing, eLearning, etc., and solve partial problems prior to the creation of a "general purpose" infrastructure that would make all and each area interoperable with each other. The main problem here is the recognition by the relevant players of the entity that controls the infrastructure and decides upon its evolution. The analysis of the Telecommunication case above showed that ITU-T played this role with general recognition, the ISDN case showed a not so clear environment, and the cellular case showed that 3GPP is playing this role in a very efficient way with general recognition.

Young age of IT - The definition of a "controlling" entity for specific sectors of the IT area is also more difficult due to the young age of IT compared to telecommunications and the changes the world has witness recently. The world has changed deeply and consortia, industrial alliances, etc. start to exist with relevant work and recognition. For the Telecommunication sector the actors were ITU-T and the operators and the division of the work was clearly defined. For IT the situation is even harder because the role international formal SDOs play is not so recognized due to the fact that they fail on getting a general and effective acceptance of their decisions by the relevant players. We are seeing that industrial alliances are making a better job in controlling sudden technological advances to create the necessary stability for products to emerge. An example is the ZigBee Alliance for sensor networks. Others exist.

Diversity of participants – Therefore, the creation of a reputable "controlling" entity is not a trivial task: it can happen that for a certain area an SDO (either formal or non-formal) is recognised as a leading entity by the market. In this case this SDO alone might control the evolution of a certain infrastructure. In other areas the participation of different players might be important to achieve market credibility in a different form than just an SDO. For example, take the case of eHealth. Certain participants such as software houses or hospitals might be more comfortable to discuss requirements at the level of an alliance and leave the standardisation effort to an SDO that also participates in this alliance. The main motivation in choosing such a role is the degree of involvement of these kinds of participants - they want to be present when the major decisions are taken, but cannot afford (or simply are not interested) on the major work of defining the details of the standard. In terms of the EU ICT standardisation policy and depending on the specific policy area where standardisation is being performed either of the above forms (a recognised SDO or an alliance) should be considered as possibilities to foster (semantic) interoperability (see below *The role of the Commission in a market oriented interoperability discussion*). The proper role of the Commission must also be different depending on the specific policy area: the Commission must have an active role in areas where the governments and public authorities are directly involved, but should only be a catalyst for areas where the private sector must find its own solutions.

4.4.3   Is Interoperability an issue?

The final goal of interoperability deserves the outmost respect. All systems must interact creating a better world. The problem is how to converge to this goal in the real world. The past has showed us some lessons.

The typical behaviour of the formal SDOs is to aim for the perfect, completely clear standard that will be implemented by the market. Standards must be well-specified; completely non ambiguous;

designed to be flexible; robust and predictable even for the cases so common of standards being used in different contexts than the ones used to write them. There is the recognition that this is not feasible, so a feedback mechanism with input from the implementers and the market is used to update (maintain, improve) the standard. New versions are created by the recognised formal SDO and the world will take these decisions and implement the new (better) version.

The attitude is always one of perfection as these lines from the white paper on interoperability from ETSI[136] show[137]:

- develop clear requirements;

- develop a comprehensive architectural overview, including clear identification of interoperable interfaces;

- concentrate on specifying the right things, i.e. interoperable interfaces, and resist detailing internal implementation;

- use good protocol design techniques, such as

  o separation and description of normal behaviour and behaviour under error conditions;

  o full specification of options, including consequences of not implementing options;

  o development of (interoperability) profiles, where appropriate;

  o full specification of data (messages) and the encoding of that data;

- plan for validation and testing.

Such a correct attitude is only feasible when the different participants (and most notably the industry) recognise the control of the technology to that specific organisation.

Even so there is the recognition in the same white paper that "*it is impractical to prescribe a rigid process for performing effective yet economic validation*", and "*testing will not eliminate all possible instances of non-interoperability.*"[138]

Flexible processes complemented by coding implementations - When we consider the standards that made success in harsher areas where an entity to control the process was not yet established and recognised at the time we can see the importance of having coding implementations prior to the approval of the standard. Probably the standards themselves are written in a poorer way compared to the ETSI guidelines above but the coding implementations complement most of the deficiencies. It can also happen that some less defined issues in the standard start to have a concrete interpretation after the implementations are written[139]. The point is that the fact that some players invested in producing a coding implementation could mean that the time to market of the standard might be shorter. Unfortunately it is not a sufficient condition as a great number of IETF Request For Comments that have not caught the market attention can prove. Little by little the SDO gets general recognition as a controlling entity for that standard. Interoperability stops being a general and vague problem and starts to be an incremental problem based on some reality that is being created. The process is very cumbersome and completely market oriented. Another way to achieve general recognition from the players is the organisation of *interoperability events* (ie, fairs) to test the various implementations from the industry. It starts to create a community of interested players.

In such a market oriented environment the influence of what can be understood as a European position has to be made via the European players. They have to believe that the European values are

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[136] ETSI White Paper nº. 3, Achieving Technical Interoperability – The ETSI Approach, October 2006.

[137] Although the document refers to technical interoperability, most of this applies to semantic interoperability as it is a methodological approach.

[138] ETSI White Paper nº. 3, Achieving Technical Interoperability – The ETSI Approach, October 2006.

[139] We are not assuming that the coding implementations are "reference implementations".

an added value for the products and impose them. This is a weak form of exercising policy and our recommendations to involve the players intend to solve this problem as well.

Role of the market - The main argument defended here is the role of the market to achieve interoperability by creating initial cases and not a general and vague discussion, or the creation of a general platform for all kinds of system that will always be undermined by the technological (or functional) evolution. If the Commission and the Member States are involved at the initial phase showing willingness and consensus to advance in a certain area, "the role of the market" can be influenced. Obviously, it makes more sense in areas where the public authorities have a more direct interest, as it will be explained below. In any case, the market has to fulfil its role: all interoperability mechanisms thereafter, including testing and certification, will have to be sustainable by the market players.

In this respect the current reality shows two successful examples and one not so good from ETSI. Consider the cases of GSM, HiperMAN/WiMAX, and IPv6. The first two examples created resources with expertise in designing test suites paid by 3GPP and WiMAX Forum members. Their suites are seen as valuable for the market and paid for. The IPv6 test suites are paid by the Commission and EFTA in the expectation that they will be actively supported in the future by the players, probably from the IPv6 Forum… If this is not the case, the effectiveness of such an effort remains doubtful. In terms of policy we can consider this case as belonging to symptomatic measures not aligned with a clear policy. In the first two examples there is European expertise and recognition. The IPv6 technology belongs undoubtedly to IETF and it is questionable whether efforts in testing are the most priority issue in Europe. What would happen if the European direction diverges from the IETF one?

Creation of communities – One of the challenges facing Europe is how to create a dynamic drive that will aggregate the various players and create the market conditions to set unique European solution in spite of the interests of each country. The existence of recognised "controlling" entities is probably stronger in creating communities and consensus (because it is a market solution and technical issues might dilute more the political interests) than legislative acts to force the deployment of standards. The first Interim report covered the example of EuroNCAP[140] with some detail and its contribution to car safety. It is again a solution from the market (cherished by the Commission) that achieved recognition. If Europe succeeds in creating these entities with great involvement of the European industry and other players much of the "action" will start to emerge here. These entities might also be responsible for other "functionalities" such as certification, testing, etc., following the Telecommunication examples showed in the last paragraphs.

4.5   The role of the Commission in a market oriented interoperability discussion

The question is how the European policy makers should position themselves for reaching their policy objectives in such a market oriented area of standardisation. We will assume that the purpose of any intervention is to create an internal market for a certain area, to enforce the European values in the products that will be generated, and/or to boost the industrial participation of European enterprises. Two areas for the policy makers to intervene can be distinguished: a direct one and an indirect one.

Direct driver -The direct area refers to products for which the EU public authorities are clients. For instance, e-procurement. For such cases, it is assumed that a controlling entity can be chosen (or created) to drive the process. The Commission, as a technology user might even have the lead in the creation of such entity. The commitment from the Commission and Member States to pursue into a certain direction, either by issuing legislative acts or other forms of expressing their will should be used to try to achieve market recognition for the entity. For these kinds of direct areas, the enforcement stated in article 5 of the Council Decision 87/95 makes an even greater sense. The ideal scenario is for the Commission to create an environment that would be the catalyst of action from the industry (a little bit similar to the one created by the interest of the monopolists telecommunication

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[140] European New Car Assessment Programme

operators at the time of GSM, that led to a strong investment in research and products by the manufacturers, by knowing that the operators would buy the products).

By having a direct interest on the outcome of the work (possibly reinforced with *minor* financial aspects) the Commission should have a controlling role on the representation of the players in these entities and on the methods of work. For instance, create guidelines to keep it open to interested players; make sure that the European values of coherence, transparency, openness, consensus, independence of special interests, efficiency expressed in Directive 98/34 are followed; enforce the standards development work to be based on collaborative tools to reduce the costs and, therefore, be affordable to SMEs; etc.

The direct area is the simplest one but even though this task should not be underestimated. It is important to realise that up to now no real internal market exists yet for a service in the IT area in Europe. The GSM is an example from the Telecommunication area (the "easier" one). The difficulty resides mainly on how to "enforce" a voluntary standard in every European country? The legislative path, by referencing the standards in law is not completely adequate as it is proven by the eSignature directive. Its path is far from lean: the standards that are referenced in law are so general that do not enforce (or hint) for any particular kind of implementation and the whole process is taking too much time to be implemented, and can produce non-interoperable products. In order to achieve successful cases the first step might be the creation of a consensus at higher level on requirements (a European Committee with the active participation of the Member States) and then the technical delegation to an operational entity that would have the surveillance of the Commission and the recognition of the players (these ideas will be further explored in part IV).

Indirect driver - The indirect area is much more complex. It refers to policy areas that are no longer a monopoly of the Member States, or the Commission. A good example is the eHealth sector. Any definition in these areas has to be recognised by the interested players (including the final costumers/consumers – in this case the hospitals). They must recognise that further investments on their IT structures will be beneficial to them as well; otherwise no implementation will create a vast market, or the process will be so slow that Europe would not be in a leading position. In the indirect area it is even more relevant to have "controlling" entities recognized by the players (with their participation) that would drive the process, create a stable "infrastructure" for products to emerge without frequent changes and versions. Depending on the specific area an SDO can perform the role if it is recognised by the market, or a new organisation aggregating the active actors must be created. The role of the Commission here is much harder: it cannot "impose" the recognition of this organisation to the market but might create the conditions by providing a kick-start action.

Alliances - For the sake of clarity let's call these "controlling" entities as "alliances". The choice of policy areas where efforts should be made in starting alliances has also to take into consideration industrial policy concerns. These are choices that should be taken at the highest level showing also commitment of the Member States to move to a harmonised environment letting the industry offer products and solutions. Just to give an example of an area that could be covered by this kind of procedures and where there is a current lack of decisions is a European solution in the area of SSL certificates that is currently led by one company, VeriSign.

For both direct and indirect areas the technical specifications created under the auspices of these alliances must have a coding implemented prior to the approval of the specification. It is important to refer again that alliances should drive the processes but are not necessarily SDOs or specification providers. Standards would emerge from the most adequate SDO (preferably represented at the alliance), or be joint standards from more than one SDO.

4.6   Conclusions and recommendations

Lack of interoperability would disturb the creation of an internal market with consequences for the competitiveness of the European industry. Therefore, it is necessary that the EU ICT standardisation policy takes interoperability as a first class issue. However, the EU ICT standardisation policy should be different depending on the specific policy areas involved. New Approach issues and public

policies should have a direct participation of the Commission, but other areas must be left to the market and the role of the Commission should be a catalyst one. For the latter the EU ICT standardisation policy should create a fertile environment for ensuring that interoperability standardisation can take place.

In our opinion, when developing a strategy for interoperability standardisation in the ICT sector, it would be interesting to follow the telecommunication experience, i.e. having organisations that are recognised as having a leading role in establishing the progress in a specific area. These organisations might be SDOs (formal or non-formal) if they start to have general recognition, or alliances integrating SDOs and other participants.

The precise recommendations are much intermixed with other areas of this study such as mandates, consortia, or organisational structures to exercise the EU ICT policy but the main lines regarding interoperability are the following:

- Creation of a high level (policy and strategic) committee integrating Member States and other participants to define the areas of activity (with concerns on industrial policy as well).

- Creation of an operational committee to handle implementation issues such as identifying if an SDO can perform the job, if an alliance must be created, etc..

- For the direct area create an alliance per policy area, co-ordinated by the Commission services to define requirements for the standards and supervise their definition (the relevance of having coding implementations prior to the approval of standards should be seriously assessed).

- For the indirect area get the necessary involvement of the Member States at the higher level committee to provide "strength" to the SDO/alliance in order to establish itself in the market.

Note that the tasks of these committees are much broader than dealing with interoperability issues. Parts IV and V will integrate all these issues.

5. INTAKE OF CONSORTIA

5.1 What is the issue?

Nowadays much of the relevant work in ICT standardisation is being performed by non-formal SDOs and other specification providers. The current EU ICT standardisation policy was designed at a time when this phenomenon was not so important and in practical terms it is unable to influence it, or take advantage of it. An understanding of the reality is necessary and ways to integrate their efforts and skills should be performed.

5.2 Consortia: short description

The first observation about the "consortia" reality is the recognition that there is a myriad of different organisations that are included in this study under the heading of consortia. Their universe is very dynamic (with creation and destruction of organisations over the time) and they are so different that the definition of a grid to qualify them would be a major task itself.

Diversity - Just to give some examples, consortia can be created as a consequence of an initial project, as an association of industries, as a merger of prior organisations, as a group of limited number of partners, etc. Their membership can be formed exclusively by industries, exclusively by individuals, or a mixture of both. In the latter case voting rights can be by member, or certain types of members (normally the individuals) have no voting rights. Their size and influence is also very disparate. A statement made in 2005 for the US reality[141] showed that there were more than 450 independent specification providers active in the US, although approximately 20 of them developed about 80% of the standards in the US. Another point where there is some difference is in the

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[141] Statement of Dr. Hratch G. Semerjian, Acting Director, National Institute of Standards and Technology, May 11, 2005 before House Science Committee of the US Congress.

technical scope of their activities. In this study we decided to distinguish between consortia that are performing standards on a wide range of issues (and called them non-formal SDOs) from the ones that are still very focused on a narrow range of technical issues (and call the specification providers). Both have their virtues although the ones that are still focused on narrow subjects are still very dependent on the success of that precise technology.

Concentration and specialisation - Apparently the number of independent specification providers has decreased lately. Probably the world is witnessing the classical phenomena of concentration and specialisation of an activity, after an initial typical period of enthusiasm. A limited number of organisations achieved already a global recognition for certain areas. Well-known examples are: 3GPP on cellular networks[142], IETF on Internet network technologies, and IEEE on Local Area Networks. A common important characteristic is their willingness to be viewed as global organisations and, in some cases, their reluctance to approach the formal world (or regional) system of standards. This consolidation process had one virtue amongst others: the suspicion of vested interests of industries in creating consortia and specification providers can now be easily recognised by assessing the world credibility that the organisation achieved.

It was stated already in the report that the importance consortia currently have is also due to their advent in the US as an outcome of the market forces in a country that recognises these forces over government regulation. It is also a fact that the major ICT industries (large and medium enterprises) are based in the US. It is thus natural that most of the consortia are US based. Europe also has some very active ones (eg. OMA (Open Mobile Alliance), ECMA International, etc.) but in a lesser number. Two interesting situations are nevertheless happening: (a) consortia aim at acting at a global scale and want to have "action" worldwide. They are not so eager to be accredited by ANSI anymore and some make a point on opening offices worldwide; and (b) the US government tries to redouble efforts to make the US system more accessible to players outside the US, and to help them understand their system better in order to increase their willingness to adopt the standards approved by their consortia and attract "action".

5.3 Challenges for Europe

Involvement of consortia - Consortia cause important challenges for the European Union. One of the major tasks is how to have the involvement of the European participants in those organisations that aim to become global, and start to attract "action" to Europe (for Europe the problem should not be the rejection of consortia based on their origin). This is a difficult task for different reasons:

(a) First, because standardisation and product development are closely linked. Only in the areas where the primary technological development is taking place in Europe there would be a strong likelihood that the standardisation of that technology would also take place in Europe. It is a result of being on the forefront of technology and market (there are examples where Europe has a major role). Therefore there must be a slow process of raising the technological expertise in Europe.

(b) Second because the industrial structure in Europe is based on SMEs. SMEs usually do not have the ability to monitor and make long range technical decisions. It is recognised that participation in standardisation activities is a proportionally bigger investment in time and resources for individuals and SMEs than for the larger organizations. In cultural terms the interest of European SMEs to participate in standards development is also much more reduced than in the US. Furthermore, only a small percentage has the ability to participate in the global processes of standardisation. Some global consortia adopted already collaborative tools as the natural way to produce standards making the member participation less costly.

(c) Third, the European research community, usually more internationalized than the industry, is already participating worldwide shortening the gap and paving the way to the future.

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[142] 3GPP is a partnership of regional organizations.

Standards as a market – Another challenge is that standards production has to be viewed as a market itself. Formal, non-formal SDOs, and specification providers are competing to attract expertise in a certain area, achieve a critical mass and establish themselves as the driving force behind a technology. Several issues are important here: the type of interlocutors, easiness to achieve consensus, external credibility of the consensus building process, IPR conditions, in some cases the potential to arrive to formal international specification providers in a speedy way, and even the personality of the managers on top of the organisations. This is the environment where ESOs must compete if they want to achieve intervention in less regulated (or more market oriented) areas. The current landscape proves that they are not winning this challenge.

Bottom-up process - Another important challenge is the fact that ICT has become an activity where the bottom-up process is paramount. It is not longer an area where the "regulating" role of standards is the major one (as for bolts or bricks). Communities of technical experts and stakeholders define and implement the future needs and products setting up their timings. The traditional position of formal SDOs in defining the reality from a top-down approach seems to be no longer valid. This is true for the Information Technology sector but it will also be for the Telecommunication sector as future services will also become each time more independent from the platforms (see, for instance the IMS (IP Multimedia Subsystem) for cellular networks). ETSI and 3GPP have successfully created an environment and *modus operandis* that is not the traditional one in formal SDOs and has been proving to be the correct one. The control of the IMS introduction will be a challenging task in the future.

Success formulas? - As for any other market activity the path to success is not always swift and clean. Two examples illustrate that there are not success formulas owned by organisations: IEEE had some success at the time of Ethernet, Token Ring and Token Bus but remained more or less in hibernation in Local Area Networks until the advent of WiFi. It is clear now that they succeeded to keep the "action" in the LAN area since then; another aspect of the difficulties is the case of IETF. Although the internet network standards from IETF are broadly recognised, the number of IETF standards with very little impact in the world is very large.

Need to increase participation - Given these arguments, it is clear that the standard activity of consortia that are non formal SDOs is not a transient phenomenon in ICT and it is doubtful that it will eventually converge to the formal system in the future. Therefore, consortia must be considered as "a fact of life" in the sense that Europe must learn how to interact with them, and not fight for their elimination, or integration into the EU standardisation structure. A first step is to increase the European participation. This is a slow process and is more related to the ICT policy in Europe and not so much with the ICT standardisation policy. The current ICT policy must be pursued and enhanced[143]. Any other kind of swifter measures as ad-hoc initiatives to finance European participation at institutional level do not really come from the industry and will fail in the long term. In the meantime, the best Europe can do is to integrate their efforts within European industrial and standardisation policies to contribute to shorten the gap between the consortia and industries. Our recommendations go in this direction.

5.4 Accreditation of consortia

Analysing the major consortia it is important to notice their position facing the formal standardisation system. Some organisations feel that a certain relationship is relevant and others do not.

First group - In the first group one can see the establishment of fast track agreements to have the non-formal SDO standards approved as an international standards, or the willingness to offer their specifications to the ESOs. We can also see bilateral agreements with formal SDOs (ETSI in the case) that might be interpreted either because a real technical cooperation is felt as necessary, or because it is necessary to be involved at that level to have influence towards the Commission. Given this attitude, if the question of referencing the standards in law ever arises, the IPR concerns do not seem to be a problem. Probably the main concern here would be the issue of maintenance of the

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[143] OECD Information technology outlook 2006

standards (see below). A European ICT standardisation policy for this group is easier to envisage due to their interest to participate.

Second group - The second group contains consortia that do not feel the need to pass their standards through the international formal system, nor feel any need to approach government authorities. Their arguments, which can be very acceptable, are the fact that their standards are limited to technical issues[144] and they do not intervene directly in social or politically sensitive issues. It is a "new" process and considering the market view of standardisation the path to be recognised at global level as the leader entity in one technical area is more difficult. The most well-known case is IETF and the internet network technologies, although IEEE and the Local Area Network technologies is also a good example.

Criteria for acceptance? - Due to its worldwide acceptance of the standards, an analysis of whether the standard processes meet European and WTO requirements and values in order to accept them makes relative little sense. Either, it does not make sense to establish some European structure of accreditation or definition of European profiles towards these standards on the pure basis of being designed outside Europe. As long as these standards cover the area of "pipes and wires" they should be viewed as a market issue. Therefore, the position of Europe and the Commission should also be based on market rules: if there is a need to reference them in law, it should be kept in mind that the standards lists are updated regularly and other standards might be referenced in the future (in any case such references must always be considered as exception cases); if services originated from these communities fail to comply with minimal requirements in Europe the capacity of the European industry must be accessed in order to start efforts to build competing services. For instance, imagine that a Voice Over IP service gets successful in Europe and the quality of service is under what it should be expected. Either there is the ability of the industry (preferably European and with some "kick-start" from the Commission) to construct a better service to compete with the existent one or any measure solely based in law to forbid the exploitation of the existent service might not work. This Voip example is fairly easy and refers to "pipes and wires". The problem of Europe being invaded by other products through the telecommunication infrastructure will become more serious in the future and it is not a specific problem of ICT standardisation policy. Each time more the world is changing from manufacture of physical items to high-values intangibles: on-line games, music, scientific publications, and mobile and user created content[145]. When and if the values conveyed in these products go against the European values some new actions must be devised.

Agreements - An interesting issue is to assess the long term willingness of consortia to set agreements with formal SDOs to have their standards approved as regional or international standards. Is it a transient phenomenon? Probably we are witnessing a transient phase due to the tradition of having standards approved in this way and less care will be given to this issue in the future. Probably the regulating nature of Europe (and the importance given to ESOs) and its current share of the world market still induce this behaviour but as other regions start to be important other ways of proceeding will come out. We will see below that these recognitions have some hurdles but the point here is how Europe should behave. Clearly this is not a general problem of standardisation but is confined to ICT. As ICT is becoming global, so are its problems/features. If the market starts to widely adopt standards from consortia a position from Europe of ignoring them just enlarges the number of subjects for which the official standardisation policy will have problems. This is in line with the following argument: "If some technology from consortia gets market approval and starts to be used, why the consortia community aims at having formal SDO (or ESO) approval anyway?" This might lead to independent developments from the consortia without any influence of Europe apart from the willingness of European participants to interpret and apply what they think the European values are. The other extreme, giving too much attention to consortia, can also be problematic. There is a myriad of consortia and the plain recognition of them all could give voice to minor organisations not so representative of the European industry (and possibly with vested interests).

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[144] What is sometimes called as "*pipes and wires*" citing Jane Winn, in a position paper written as a contribution for this study.

[145] OECD Information technology outlook 2006

5.5 Acceptance of consortia work

How can then the acceptance of the work made by consortia be performed? The problem of the recognition of deliverables drafted by consortia by a European certification entity should then be put into perspective. The US reality in this respect is the accreditation by ANSI subject to what is called the "Essential requirements". Overall it is not a very successful process and several consortia were not even willing to apply. The transposition of such procedure to Europe seems inappropriate due to the evolution of the world and the relative importance of the American experiment. What seems to be important is the willingness of certain consortia to work with Europe, the Member States and the Commission. Integrating efforts should be made with them and assume that consortia not willing to participate will develop "pipes and wires" standards.

An alternative form to integrate the work of consortia than accreditation is to find ways of close cooperation. Two scenarios are considered: the existence of the alliances proposed in the previous section, or a not so tight environment.

The first scenario is easier. For the direct area, the area where the Commission and governments are clients of the products, the Commission and the Member States should define "best practice" rules that should be followed by consortia in order to participate[146]. The main idea is to exclude organisations that are not representative of the industry and would provide little added value to the work. Standards produced under the auspices of the alliances would have enough credibility to be used by the Commission and Member States at policy level and even legislative level.

If the creation of alliances is not found to be feasible they should participate at the level of co-ordination. Ignoring them just puts them outside of any European policy. Work seen as relevant should be considered to be part of the list of standards used in policy or legislation. "Relevant" means both work technically sound and performed in a way that it is recognized as following the European values.

Citing standards from consortia in law raises the problem of maintainability of the standards. This might be a false question due to the speed of the technological in ICT and the fact that lists are intended to be updated regularly. Various situations can happen:

1. If a standard gets outdated with time and the consortia is willing to update it (the normal case), then no problem exists.

2. If a standard gets outdated with time with no organisation assuming its upgrade and the market just ignoring it, then the problem of maintainability does not exist and the standard should be redrawn from the list.

3. If a standard is not updated by the original organisation but there is interest in the market for an improved version, it is assumed that the market interest will trigger the interest of some entity (formal or non-formal) to follow on the work. Two situations can happen: either the Intellectual Property Right of the standard is "free" (because the original organisation just gave it away preserving the copyrights) or not (but even though it was decided to include it in the list). The first situation has no problems. Regarding the second, it is questionable if a new standard with different characteristics (even based on a previous one) violates the IPR of the original one. Just to give an example, consider eHealth and a certain standard defining interfaces and data. It is questionable if the organisation that specified it has IPR over any new form of definition of interfaces and data for the eHealth business for ever and ever…

4. If a standard is not updated by the original organisation either because it does not exist anymore or it is not willing to do so and no other organisation is willing to update it then an ESO must take the responsibility. ESOs have obligations and one of them is to provide standards seen as public interest ones. In this case, the ESOs have to get the job. There are some more considerations here: the IPR problems are similar to the cases referred in 3; and the fact that the

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[146] Such as the ones described in annex 3 of the WTO agreement on technical barriers to trade ("Code Of Good Practice For The Preparation, Adoption And Application Of Standards"))

ESOs get a task that did not belong to them in the first place is similar to the maintenance of a standard originated in an ESO when the original team is not available anymore. It should not be a major problem.

It is important to realise that the current situation of fast track agreements is not a very clean procedure either. When an ESO approves as European Standard, a standard coming from a consortia there is no expertise at the ESO to maintain the standard either. One of the above alternatives has to be chosen. The case is even worse when the original standard is modified as it has already happened with an international organisation. In this case the international standard is not recognised by the authoring consortia as belonging to it, and the international SDO did not really defined the standard in the first place.

5.6   Coordination activities

One criticism to the appearance of consortia is the fact that they disperse the expert community and prevent them of joining formal SDOs to pursue the work there. Sometimes even the same type of work is being done by more than one SDO. Therefore duplication of work happens making the system inefficient in this aspect. This is probably true but should be considered a fact and handled appropriately. What is needed then is a mechanism to coordinate their activities and partly reduce the duplication.

This coordination effort is not a real need in market terms (where the survival rule often applies) but can be welcomed if it brings efficiency. Europe can be at the forefront of this effort. First because of its heritage of government participation in the market; second because there is already some successful attempts performed by the ICTSB (Information & Communications Technologies Standards Board). These kinds of activities help in bringing some order in an environment without many rules and have the advantage of incorporating non-formal SDOs. In this respect, in terms of adaptability to a new system Europe has shown an appropriate reaction.

One can say that the issue of referencing non-formal standards in law is just a "small" step that needs clarification when compared to bringing together formal, non-formal SDOs, and specification providers to strategically plan their activities.

It might be the case that the relevance given to the actual work of the ICTSB in the previous paragraphs is overdue. Nevertheless such idea should be cherished and made semi-institutionalized. A forum with such characteristics could be an operational platform to pursue high-level policies decided at higher level. It is also a place where the voice of certain stakeholders such as consumers and SMEs could be heard.

5.7   Conclusions and recommendations

The role played by consortia in the ICT area has to be considered as the beginning of a new way to perform standards in the world. It is unwise to think they will eventually disappear or be integrated into the formal structure.

The main issue to consider is the division between consortia that want to cooperate with the Commission under the cultural and societal rules that have been created in Europe over the years, and those that do not feel any advantage on it. As long as this latter group performs "pipes and wires" standards, the Commission should see it as a market issue that should be handled in market terms.

Ignoring the problem, i.e., not taking into account their contribution in the EU ICT standardisation policy, simply creates an area where there is no influence of the public authorities and the Commission. This is problematic because certain consortia are performing relevant work in social or politically sensitive issues. It also makes problematic the use of their standards. The current situation makes little sense because the Commission and public authorities pretend not to see (in formal terms) what the consortia produce and have to accept their work due to the forces of the market (for the cases which become successful). Moreover, certain issues such as maintainability of standards have

not been deeply analysed failing to recognise that the current situation is not either totally simple and lean.

Therefore, mechanisms to incorporate some of the consortia in discussion forums at higher level at the European level should be devised. Cumulatively, their work should also be recognised. Incorporating new "players" in the field makes co-ordination tasks desirable but Europe has been proving that in this respect it was able to find a workable solution that deserves to be supported and given a more formal role.

6. RELATION BETWEEN R&D AND EUROPEAN STANDARDISATION

6.1 What is the issue?

This section addresses the question posed in the call for tenders, i.e. how can standardisation be used as a means to leverage the results of EU R&D projects[147]. First an overview is provided of the Commission's concerns regarding the link between R&D and standardisation. Next, two assumptions are identified which underlie the Commissions problem definition. Then, ways are discussed to diminish the barriers and increase participation of researchers in European standardization. More specifically, problems are discussed in transferring the output of EU R&D projects to the standards arena. Finally recommendations are made.

The insights and recommendations in this section of the report heavily lean on the work of two EU projects that specifically aimed to research the relation between R&D and European standardisation, i.e. the COPRAS and the INTEREST project.[148]

6.2 Current state-of-play

6.2.1 Previous policy and project activities

Systematic link between R&D and standardisation - At the time of the fourth EU Framework Programme (1994-1998) a systematic link existed between research and standards policy. E.g. the RACE programme on communications provided important contributions to standardization, "(…) *for example concerning the specification of the GSM, where standards and research proceeded in parallel*". In 1998, a Commission document (COM98 (31))[149] concluded that more monitoring and coordination is needed between the Research and Technology Development (RTD) and standardisation programmes.

A number of activities have taken place since then. CEN has established the CEN-STAR adhoc group to strengthen the link between normative research and standards activities within CEN, and e.g. has introduced "*a mechanism for the identification and the development of a method for prioritisation of co-normative research requirements to support the standardisation programmes*".[150] Furthermore, CEN/ISSS has improved the standards/research interface in electronic commerce-related IST projects (C-ECOM project, IST FP 5).

Recent study projects - More recent, two EU projects have been finalised that were funded within the 6th Framework which re-address the standardization and R&D link, the COPRAS project and the INTEREST project.

COPRAS ("*Co-operation Platform for Research and Standards*"), whose members are the three ESOs, The Open Group and W3C, has provided dedicated help in linking IST projects to standards organizations. It has done research on the relevance of standards to IST projects throughout FP6, and

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[147] Tender Specifications, p.44.
[148] The INTEREST project examines the overall relation between research and standardisation. The COPRAS project studies ways to improve the contribution of EU-sponsored research to standardisation.
[149] COM98(31).
[150] INTEREST, 2007, p.9.

their understanding of the problems and issues. It has provided generic guidance material to help such projects in the future.[151]

The INTEREST (*INTEgrating REsearch and STandardisation*) project's aim has been, in particular, to identify relevant dimensions to be considered to successfully integrate research and standardisation. These dimensions have been used to develop a generic taxonomy that links research output to Technical Committees in CEN, ETSI and CENELEC. In addition, two manuals have been developed that can foster the integration of research and standardisation, one aimed at R&D organisations and researchers and another for standards setting bodies.[152]

6.2.2   Current EU concerns

Fading link between R&D and standardisation - Incidental EU projects aside, after the FP4, policy on the R&D-standardisation link faded to the background until the Commission (2004) and the Competitiveness Council (2006) again drew attention to the importance of standardization in supporting innovation.

Two types of relationships - As the following quote implies, the Commission identifies two types of relationships between standardisation and innovation (here equalled to R&D): "*Standards play an important role for innovation, thus influencing business investment decisions on R&D. As a source of the most up-to-date technical knowledge, standards broaden the knowledge base of the economy and can integrate new technologies and research results harmoniously into the design and development process of new products and services*"[153].

That is, on the one hand, standards result from R&D and provide input to standardisation processes (i.e. innovative standards: *integrate research results*, incorporate *up-to-date technical knowledge*), and on the other hand, standards are used in the R&D process and may function as a platform for innovation (*important role for innovation*). The Commission interest currently lies in the former area, as its motives for addressing the relationship indicate.

Issues - Given the dual competitive-collaborative economic relations between regions of the world, about which more is said in the next subsection[154], one of the reasons for the European Commission's interest in the relationship between standardization and R&D, is that R&D projects sponsored with European money are (a) not delivering the expected benefits for European industry, benefits that could take shape via standards or otherwise in new markets. Several sources argue the value of disseminating and consolidating the results of EU R&D project via standards[155].

Moreover, (b) where European R&D projects do lead to standards, the knowledge seldom finds its way to (European) standards bodies. It is often fed, without overt recognition, into the committees of standards bodies in other than the European region.

At present, another closely related problem is emerging, one which in first instance concerns the ESOs, but will soon impact the whole EU. That is, (c) acquiring the necessary technical expertise for European standardization, which is sparse as it is, will in the near future become a grave problem due to the lack of engineers in technical sciences and the prognosed retirement of many active experts now shouldering most of the standards work. In areas where there is a need for standardisation, it is a waste of resources not to use the results of EU research.

In terms of the conceptual framework of the INTEREST project (2007), the Commission's focus is on knowledge transfer from R&D to standardisation (upper arrow in figure below) in terms of 'Research Output Push' (a&b) as well as 'Standardisation Input Pull' (c).

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[151] Extracted from Ketchell (2007).
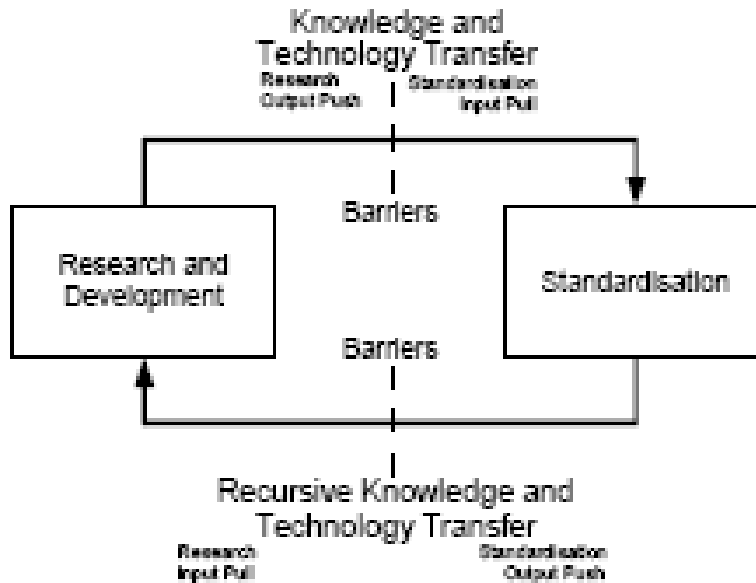[152] INTEREST, 2007, p.6.
[153] Commission of the European Communities, 2004b, p.6.
[154] See subsection 6.2.3 "Principled questions" on page 82.
[155] COPRAS, 2006b, p.5; Commission of the European Communities, 2004a, pp.16-17.

Source: INTEREST project, Fraunhofer ISI

Figure: Knowledge and technology transfer (source: INTEREST project, 2007, p.8)

R&D output and standardisation input - Against this background, the question 'How can standardisation be used as a means to leverage the results of EU R&D projects[156]?' can be further specified into

-   *Research output push:* How can knowledge from EU R&D projects be transferred to achieve state-of-the-art standardisation?

-   *Standardisation input pull:* How can industry researchers as well as academics be involved more closely in standardisation and how can barriers for participation be taken away.

The questions reframe standards as R&D output, a matter which needs to be done with caution. Design by standard committees may need to be avoided, as an example where R&D formed direct input for standardisation showed.[157] In the discussion that took place at the final COPRAS conference[158], participants remarked that one often cannot tell what comes out of an R&D project; that the usability of R&D should lie at the heart of the decision to standardise and that the transition from research to standards making should be a business decision; and that the difference between a technology- and a standards-oriented platform should not be diminished. Indeed, "*the direct transformation of research results into workable standards will hardly be possible in most cases. Rather, research findings typically need to be complemented by real-world implementation experience* (…)." (INTEREST, 2007, p108)

6.2.3 Principled questions

Inter-regional perspective - Before examining the relationship between standards and R&D more closely, we put the European findings into inter-regional perspective. Current statistics indicate that Europe's R&D intensity is behind those of other regions. See the figure of the OECD (2006). Against this background the Competitiveness Council (2006) has identified pro-active standard-setting as a strategic priority in enhancing the EU's competitiveness.

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[156] Tender Specifications, p.44.

[157] E.g. Datex I experiences into Datex II). (INTEREST, 2006)

[158] COPRAS, 2007.

Figure 1. **R&D trends in major OECD regions, 1991-2004**

1. Gross domestic expenditure on R&D as a percentage of GDP.
2. Data are adjusted up to 1995.
3. Data are EU15 to 1994 and EU25 from 1995.
4. USD of 2000 in purchasing power parities (PPP).

Source: OECD, Main Science and Technology Indicators database, June 2006.
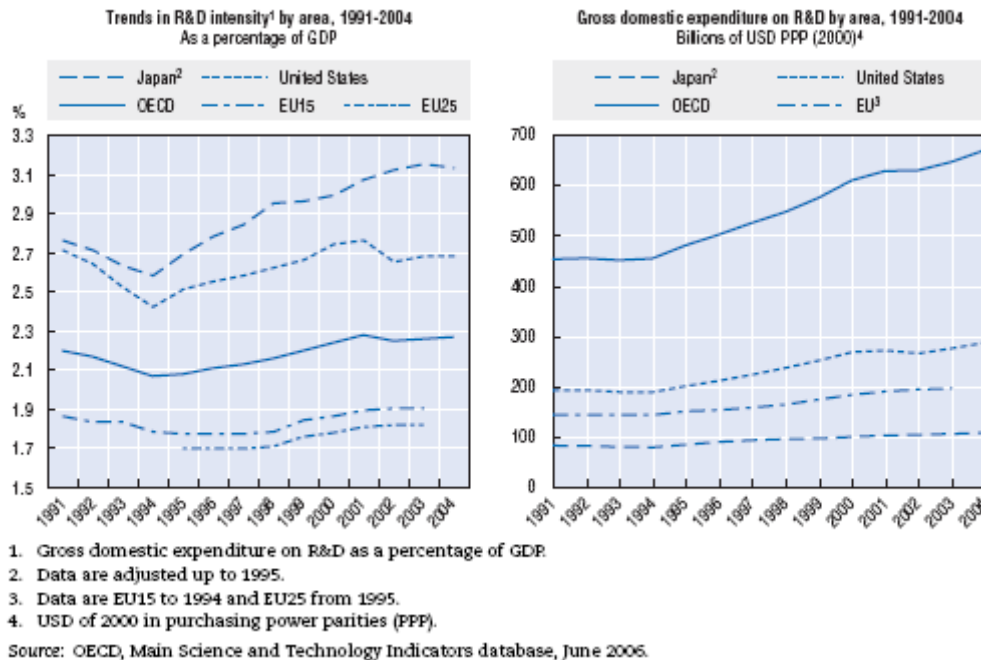
Two policy assumptions – The inter-regional competitiveness lies at the heart of two main policy assumptions as set out by the European Commission (Commission, 2004): "early standardization is best for European industry" and "European standards are best for Europe". We will further elaborate on these two policy assumptions below.

Early standardization is best for European industry - Using standards as way to leverage R&D results, as the Commission proposes, inherently means 'early standardisation': standardisation takes place at a very early stage of technology development. The INTEREST project (2007) speaks of pre-normative RTD, which generates new information or knowledge for future standards, and co-normative RTD, in which R&D is carried out in support of current standardisation programmes.

Where the innovation process and standardisation proceed more or less in parallel, committee standardisation can in effect become a vehicle for a claim to market for EU industry. This type of high-end standardisation requires the participation of high level researchers[159].

There exist several, less market-political arguments in favour of early standardisation. Technology and market coordination by means of standardisation *must* take place at a very early stage for the sake of interoperability and to pre-empt difficult negotiations based on vested interests. At such a stage pre-normative R&D is a 'pre-competitive' enterprise, in the wordings of FP4[160]. Moreover, "*The current pace of technological development forces standardization and research to proceed in parallel - starting standards activity early provides better chances for being successful*." (COPRAS, 2007).

Side-effect of early standardisation - A side-effect of pre- and co-normative R&D may be 'staking the market', which is a well-known strategy (e.g. DVD recordables war), and sometimes successful. However, policy makers, will need to decide (a) whether normative R&D, assumes – correctly or incorrectly – a European ICT industry, is to the benefit of European industry (who benefits from such

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[159] In these circumstances, for example, the Commission issued the GSM mandate to ETSI. It was a "targeted R&D initiative to speed up the standardisation work" (Commission of the European Communities, 2004a, pp.16-17).
[160] This was a topic touched upon at INTEREST, 2006.

a strategy?); and (b) whether it collides with Dresden Agreement, the Vienna Agreement and the WTO Code of Good Practice (2006)[161].

Early standardisation not suiting all ICT - Moreover, let us briefly call to mind literature in respect to timing of standardization because early standardisation may not suit all ICT. The technology life cycle contains different stages (See figure below).[162]. Standardization at an inappropriate time can lead to economic inefficiency. Too early standardization may prematurely lock an industry into a technology[163], precluding experience with the diversity. Or, in short, pre- and co-normative standardisation differs distinctly from the type of standardisation that results from repetitive use of a specification, which the formal definitions usually refer to (i.e. the need for a standard should be based on the expectation of repetitive use of the specification). Is repetitive use of the R&D outcome to be foreseen?
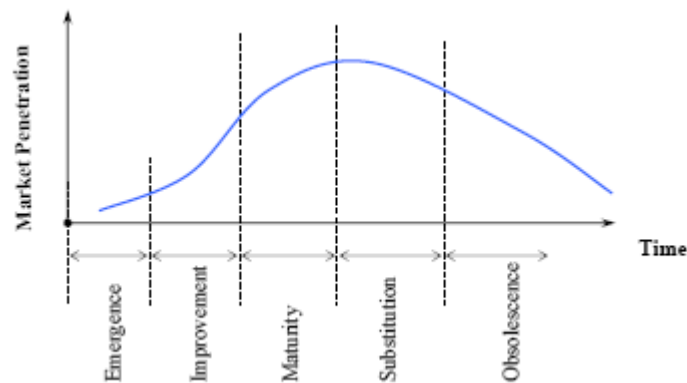
Figure: Stages of technology maturity (Sherif, 2006b).

European standards are best for Europe - (see also the section in this report on the regional-global issue). There is some understandable discomfort where public money spent on European R&D projects are fed into the committees of standards bodies with other than European identities. However, the underlying question should maybe be posed in a different way, i.e.: *wherein does the European interest lie regarding standardization,*

- does it lie in developing standards, implementing them, or using standard-compliant products and services?

- does it lie at doing so at the European and/or at the international level?

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[161] WTO, 2006.

[162] An example of identified stages is: Emergence, Improvement, Maturity, Substitution, Obsolescence (Betz, 1993). The figure stems from Sherif (2006b).
Different angles exist on the role of standardisation during the technology life-cycle. E.g. Sherif (2006a) argues that at each stage a different type of standardisation is needed (i.e. *Anticipatory standards* specify the production system of the new technology; *Enabling standards* refine the system; *Responsive standards* codify knowledge already established in practice through precursor products or services.). The INTEREST project takes a slightly different angle, concludes that different types of standards play a role in different stages of innovation. For example, terminology standards are already required at an early stage of basic research into new technologies. (INTEREST, 2005b, p.9, p.40)

[163] It may narrow down innovation – although it also may prevent duplication of research work.

The dilemma is summarized in the matrix below:

Stand. Stage / Standard Body Identity	Standards Development	Standards Implementation	Use of Standard-compliant products
European (ESOs)	A	B	C
International / other	D	E	F

Table: European interests, in what way and where are they best served?

At present, in relation to R&D, Commission documents imply that the European interest is best served by feeding EU R&D results into European standards bodies (cell A). There is an argument to be made for each cell. Each cell invites a different R&D-related ICT standardization policy. In other words, this assumption should not be taken for granted.

6.3 Research: Motives and barriers to standardisation

No general conclusions - Looking at R&D organisations that are already involved in standards work, to what degree is level of R&D (i.e. patents as an indicator thereof) related to participation? There appears to be no straightforward relationship. The R&D intensity of companies has no significant impact on the likelihood of them joining standardisation.[164] Therefore no general conclusions can be drawn at this level.

Main motives – More directly applicable information exists on the individual level that is on how industry researchers as well as academics can be involved more closely in standardisation. The INTEREST project examined the motives and barriers to participate in standardisation in all areas of research, including ICT. This was done to better understand the barriers for the transfer of research outcomes to standardisation. The main points are summarised in the following. The main *motives* to participate are[165]:

- Addressing or solving a specific technical problem.

- To improve the dissemination of research results, positive feedback can be generated for own research activities, incl. improving chances of future R&D funding, and commercialisation of research results.

- Opportunity to improve the collaboration and links with other researchers and developers, which means that the process itself is of value for the participants' research activities.

Main barriers - The main barriers to participate are[166]:

- Contributions to standards rank lowest among all channels of recognition for research work (they are highest for scientific publications and success in raising external funds).

- Participation is too costly for researchers in terms of time and money and in the light of the lack of recognition gained by contributing.

- Perception of discrepancy between the timing and speed of research processes and standardisation processes (too time-consuming).

- The additional work required to adjust research results to fit standards requirements.

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[164] Blind and Thumm, 2004.
[165] INTEREST, 2005b, p.23-26.
[166] INTEREST, 2005b, p.40, p.42, p.43.

6.4 Standardisation: Input from EU funded projects

Which barriers exist to bring the results of EU-funded research projects, in particular, to standards fora? The COPRAS project focused on this question. In the following we summarise their main findings and present their conclusions[167].

Standardisation gap - One of the most crucial problems is that in the planning and start up phase EU projects lack information about standardisation[168]. If the interface between R&D and standardisation is not organised at this early stage, there will be a delay in standardisation. COPRAS refers to the time gap between the end of the R&D project and the start of standardisation as the "*standardisation gap*":[169] Moreover, by the time the research project is ready to contribute to the standards committee, the R&D project may have no resources left to make the contribution. That is, sometimes the standards process comes too late: the project closes and has no further resource to submit results.

Furthermore,

- For some projects, standards are irrelevant;

- For those where standards are a relevant issue, roughly half have little or no idea how to go about putting their work to standards bodies;

- Some projects know which standards group(s) they are targeting. Many are completely confused given the fragmented nature of the ICT standards arena;

- Often their outputs might be relevant to several different bodies and consortia. How can projects be helped through this jungle?

- Some projects build the standards activities into their action plans and sometimes the cost is recovered. More usually, no provision is made and the project partners have no funding for standards work to promote their results.

Still many barriers - The COPRAS report concludes that there are still many barriers for projects participating in standardization such as membership fees and confidentiality rules relating to project output. There are currently no mechanisms available to determine whether there are standards available or standards organisations active in the specific area of an IST research project[170].

Suggestions - Furthermore, COPRAS suggests that some dedicated support for standardisation be organised at the end of R&D projects through separately funded calls[171]. It further concludes that additional ways of identifying requirements from standards organisations to IST research at an early point in time could greatly improve the standardisation potential of research output.

6.5 Recommendations for EU policy

The following recommendations focus on how to increase the input of R&D in European standardisation. They target different audiences (individual researchers, R&D projects and research organisations) and EU policies, in particular, EU ICT standardisation policy, innovation policy, and education policy. The first set of recommendations stem from the INTEREST project (INTEREST, 2007); the second set, which focuses on increasing contributions from EU projects stems from the COPRAS project (Ketchell, 2007); the third set of recommendations address the standards bodies (INTEREST, 2007), and are as such of indirect interest to the Commission; we end with some overall recommendations.

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[167] COPRAS, 2005b, 2006a, 2006b; Ketchell, 2007.
[168] COPRAS, 2006b.
[169] COPRAS, 2006a, p.6.
[170] COPRAS, 2005b, p.12.
[171] COPRAS, 2006a, p.7.

6.5.1 Recommendation stemming from the INTEREST project

Financial Support and Funding

- Because hardly any research funding organisation considers standards as a legitimate and valuable tool for dissemination, policy makers should integrate standards-related aspects into their funding principles, and promote standards as part of project evaluation and in calls for proposals for funding. Standardisation aspects may be part of the evaluation criteria of the proposal.

- For a higher percentage of normative research, part of an R&D programme's budget could be managed by ESOs (or SSBs) and spent on projects with a potential for standardisation.

Positive evaluation of standardisation work

- Considering the public good character as well as the role of standards as means of technology transfer the contribution to standards and standardisation should play a role in evaluating research institutions receiving public funding.

- Research organisations should also honour standardisation work more and consider standardisation work as criterion for internal evaluation like patents.

Education and training

- Integrating standardisation in curricula should be encouraged as such knowledge is a pre-condition for awareness in future generations of researchers.

- Training researchers in what active participation entails, and possibly how to co-ordinate standardisation activities in their project is the second step.

Monitoring of R&D Activities

- More comprehensive standards foresight approaches are needed to determine future R&D trends and research policies, which should try to involve active researchers directly via surveys or workshops.

6.5.2 Recommendations relating to EU R&D projects stemming from the COPRAS project

Specifically with regard to improving the interface between EU R&D projects and standards bodies, the COPRAS project recommends [172]

- Supportive tools are needed to help projects find the right standards organization;

- Interfacing with standardization should remain an important aspect of European research programmes

- Continuation of COPRAS' efforts are needed to bring European research and standardization closer together

- European research programmes should provide mechanisms to give research projects additional resources in situations where standards work exceeds a project's lifespan;

- The Commission should improve training of its Project Officers in standards issues.

6.5.3 Recommendations aimed foremost at the standards bodies

The recommendations below address the policies of the standards bodies rather than the Commission's standardisation policy, and are therefore of indirect interest to the Commission. They stem from the INTEREST project (2007).

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[172] INTEREST, 2007; Ketchell, 2007.

Awareness of standards

Low awareness of the benefits of standardisation work leads to a low participation of researchers in standardization. Awareness can be raised by e.g.

- co-locating standards events with scientific conferences;

- raising the perceived value of standards as sources of information;

- highlighting the benefits of participation in terms of exchange of knowledge and opportunity to meet potential collaborators

Adaptation of standardisation processes

- To better suit the needs of researchers the standards processes would need be briefer (e.g. 'New Deliverables') and focus on pro-active standardisation.

- To avoid delay in establishing a new WG or Work Item before R&D results can be fed into the standardisation system ad-hoc groups might be installed that follow the same procedures as 'normal' WGs but (initially) operate outside the TC/WG structure (or mechanisms like 'Workshops' (CEN) or 'Industry Specification Groups' (ETSI))

- Temporary individual committee membership would considerably lower the barrier to standardisation for researchers, and would enable them to contribute precisely to those aspects of a standard for which their research is important.

Closer integration of research and standardisation

- Exchange of personnel between research organisations and standardisation organisations should intensify the relationship between research and standardisation.

- Encouraging the sharing of facilities of research and standardisation organisations is an option. This would provide the opportunity to test research results in specific standardisation facilities.

- Co-operation between professional associations and standardisation organisations should be encouraged.

6.5.4 Overall recommendation

Finally, recently some well-founded and useful complementary guidelines have been issued to improve the relation between Research and Standardisation in Europe. These are

- Standardization guidelines for IST research projects interfacing with ICT standards organizations (http://www.w3.org/2004/copras/docu/D15.html)

- Two INTEREST manuals for Integrating Research and Standardisation (INTEREST, 2007): Guidelines for research organizations and Guidelines for standardisation organisations

We recommend that these guidelines are used to support the improvement of research/standards interfacing in FP7. The European Commission should enable (horizontal) support actions building upon the achievements of the two projects as an onset towards building a more structural and long-term relationship between the two realms, EU pilot projects be instigated and supported that implement and evaluate these guidelines in standards bodies and research organisations.

7. THE INVOLVEMENT OF USERS IN THE STANDARDISATION PROCESS

7.1 What is the issue?

Users are not always well presented in ICT standardisation activities. Consumers and SMEs find it difficult or are not interested to participate in standardisation, whereas industry users remain only focussed on their sector-specific interests.

The lack of sufficient user representation in standardisation activities is often being questioned as a handicap of the standardisation structure. When setting an EU ICT standardisation policy, it should however be investigated if user representation is indeed always necessary in every standardisation activity and which level of user participation would be necessary. Possible a more differentiated ICT standards policy is needed, i.e. one that distinguishes more sharply between the type of users, the type of standardisation activities and the level of involvement.

7.2 Different types of users

'Users' are not a homogeneous group. A first distinction can be made between direct users of standards, i.e. standards implementers, and indirect users of standards, i.e. users of standard-compliant products and services.[173] Moreover, also within these categories there are large differences (See Table 1 column 2).

Category ICT *stakeholder*s		Involved in Standards Development		
ICT producers (Direct users of ICT standards, i.e. implementers)	Large enterprises	100		
	SMEs		15	
ICT users (Indirect users of ICT standards, users of standard-compliant ICT)	Large organisations		10-20	
	SMEs			5
	Consumers			5
	Authorities		25-30	

Table: Estimated[174] proportion of companies/people currently involved
in standards development in Europe (orange).

7.3 Consumers and SMEs as ICT users

In the following, 'political minorities' are focused on, that is the different categories of indirect users, notably those with little influence, i.e. SMEs and consumers. We will explore if and in what manner EU policy needs to address these stakeholders, and do so by examining and where possible challenging a number of the Commission's powerful policy assumptions. (A description of current user-related ICT standardisation policy, and the views of SMEs and consumers are included in Annex).

7.3.1 Fiction of balanced national representation

Inclusion at two levels - An important element of openness and democratic feature of the formal standardisation system is its inclusiveness towards minority stakeholders.[175] Where CEN and CENELEC are concerned inclusion plays a role at two levels, at the European level and at the level of their members, the national standards bodies. The latter coordinate the 'balance of national interests' and the voting on European standards (Commission, Guidelines, 2003). Therefore, the

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[173] Jakobs (2005).
[174] Estimations of a representative of the European SME organisation (private communication, F. Posthumus, 2007).
[175] Commission, Challenges, p.14; Commission, Annex to COM (2004) 674 final, p.5

inclusiveness of the European system largely hinges on whether or not minority stakeholders participate and have a say in determining the national position.

No real participation on national level - In reality consumers and SMEs hardly participate in national standardisation[176]. ANEC's experience is that *"the national opinions are often determined by business interests and minority views (e.g. from consumers) are "filtered out" by the system. These national imbalances are further amplified at the European or international levels."*[177].

No real participation on European level - The same lack of user representation is true at the European level despite the efforts of NORMAPME and ANEC.[178] For the moment, we can therefore conclude that the 'balance of national interests' cannot serve as a 'democratic legitimisation' of European standardisation. Worse, such rhetoric covers up the reality that the national layer cannot be used as a fall-back option for lack of minority participation in European standards committees.

Two further questions - The 'fiction' of a balanced representation[179] raises two questions. Firstly, why does the official Commission uphold the rhetoric and sustain the policy on which it is based? This question will be addressed when discussing the default regulatory angle of the Commission. Secondly, is lack of balanced representation at the national level really a problem, and if so, why? This question will be addressed in the section on 'normative representative democracy'.

7.3.2   *Default regulatory regime for ICT*

Need for political respectability - The answer to the above question, why the Commission sustains policy based on the 'balance of national interests', partly lies in the need for political respectability in situations where standards are needed for regulatory purposes. Moreover, since the regulatory regime is adopted as default for standardisation in the ICT area, as we will argue below, the rhetoric of a balanced national interest is also more difficult to change.

Apart from the use of standards for public procurement, the Commission identifies the three standards application contexts:

-   Standardisation in support of regulation/legislation (including New Approach standards)

-   Standardisation in support of EU policies in the *ICT area* (e.g. Information Society)

-   Standardisation in support of the *European market* (e.g. removing barriers to trade and increasing the competitiveness of European industry; Commission, Annex to COM (2004) 674 final, p.16)

In the regulatory context, accountability and political legitimacy of the European standardisation system are important. The New Approach "delegates powers from the legislator" to the ESOs (ANEC, 2005b, p.2-3). To acquire democratic legitimacy, the standardisation process must be open to interested parties. The necessity of democratic accountability is clear (Commission, Annex to COM (2004) 674 final, p.5).

But (a) is the necessity of democratic accountability equally clear for the setting of policy and market support? And (b) how relevant is the European regulatory context in the field of ICT standardisation anyway? The first question (a) will be discussed in the section about normative democracy.

Relevance of legal context for ICT ?- Regarding the second question (b), there are different ways of assessing the current situation. On the one hand, according to the Commission there is "a whole set of new legislation in which Europe-wide codes of conduct under the aegis of the ESOs are being used" such as the Directive on Data Protection, the Directive on Electronic Signatures, the Directive on E-invoicing, and the new regulatory framework for electronic communications networks and

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[176] Commission, Annex to COM (2004) 674 final, p.5

[177] ANEC, 2006c, p.14

[178] E.g. http://www.etsi.org/ictroadshow/presentations/ug_ presentation_karine_iffour_cph.ppt

[179] Werle & Iversen, 2006, p.28

services (Commission, Challenges, 2004, p.12). Indeed, standardisation mandates[180] are used to support these Directives.

On the other hand, in the area of ICT few New Approach mandates are issued. Examining the Commission's database on mandates in the policy area of ICT, of the twelve mandates none are New Approach mandates[181]. That is, the regulatory context is hardly relevant for ICT standardisation.

Despite its lack of relevance for ICT overall, the default regulatory regime not only requests political accountability of formal standards outside the regulatory context, but also of other, non-formal new deliverables (see e.g. Commission, Decision, 2006).

7.3.3   Normative representative democracy

Inconsistency - At present the ESOs have democratic procedures in place for developing formal standards regardless of the expected context of standards use. The Commission, which in the past years prompted the ESOs to develop new deliverables in response to the rise of consortia, presently encourages them to extend the inclusive approach to the non-formal and New Deliverables and discusses their possible use in regulatory contexts. There is some inconsistency among these manoeuvres. We focus in this section on the side effects of the Commission's normative stance towards inclusion.

The Commission treats democracy as a self-evident, desirable governance regime for standardisation. However, in the mostly non-regulatory area of ICT, the desirability of democracy is a normative assumption. Democracy needs to be argued.

Necessity of 'democratic procedures? - What do we mean by democracy? Here, it suffices to define the involvement (i.e. participation and influence) of political minorities as the essence of democracy in standardisation. Several explicit and implicit arguments in favour of democracy have already been noted, namely

- involvement of minorities for the purpose of democratic legitimacy in regulatory settings of standards use

- involvement of minorities because the potential economic and societal impact of ICT standards on indirect users is vast; taking into account the requirements of these minorities will improve standards and diminish the negative consequences

- involvement of minorities in standardisation will increase their support for and implementation of standards, an assumption that will be examined in more detail further on.

Arguments pro - The first argument has been discussed sufficiently. Standardisation is here a derivative regulatory activity and therefore requires the same political legitimacy as regulation would, namely democratic legitimacy. Indeed, in these situations a less inclusive approach would seem questionable (e.g. New Deliverables; Jakobs, 2006b).

However, the necessity of 'democratic procedures' is less clear where standards are used to support other EU policies (e.g. e-government or industry policies). They need to be argued, and *can* be argued. For example, those who are affected by a standard should have a say in its development (i.e. the second argument above). As Jakobs (2005, p.5) puts it: "*users* (…) *are the ultimate sponsors of standardisation (the costs of which are included in product prices).* (…) *Moreover, users will suffer most from inadequate standards that will leave them struggling with incompatibilities*". User

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[180] In the framework of European standardisation the word 'mandate' is being used as 'request' (it stems from the French word 'mandat' and is not related to the English word 'mandatory'). That is, the resulting standards are voluntary.
[181] The database was consulted 9-3-2007. http://ec.europa.eu/enterprise/standards_policy/mandates/ The only New Approach mandates in the field of ICT are on Radio and telecommunications terminal equipment (1999) and, if one wants, on Electromagnetic compatibility (1989). (http://www.newapproach.org/Directives/DirectiveList.asp)

interests and societal interests are most likely to be best furthered by means of democratic procedures (i.e. the notion of 'democratic technology' applies here; Iversen et al., 2004).

Arguments in favour of minority involvement can also be of a pragmatic nature, as is the case with the third argument. Here, participation of (sizeable) minorities is viewed as a vehicle for wider standards implementation. However, this argument illustrates the optionality of user involvement. For, if there were another vehicle to better achieve wide implementation, minority involvement would likely be by-passed.

Arguments contra - On the other hand, there are also arguments that are indifferent to or against a pro-active approach to user involvement. An implicit but often heard argument at the turn of the century was that user involvement weighs down the standards process and makes consensus more difficult. A stronger argument would be that the user interests are already championed by industry, because their livelihood depends on taking user requirements into the process. For example, EICTA, an organisation that represents the ICT and Consumer Electronics Industry located in Europe, closely links their business interest to user expectations (EICTA , 2006, p.5). Moreover, reality also shows that standards which originally developed as specifications in a closed, not particularly democratic environment, may still work very well in addressing user needs (e.g. TCP/IP).

Balanced approach - The current gap between democratic standards procedures and standardisation practice needs to be bridged where regulatory use of standards is concerned (i.e. *active democracy*: extra effort must be made to realise democratic aims). But, for other uses of standards, such as procurement and policy support, where the democratic route is not explicitly chosen no change of policy is needed in this respect. *Passive democracy* suffices - by which we mean easy access to participation by minorities (e.g. no membership fees, no hurdles) without putting in any extra effort to increase user involvement. In the latter case a distinction between types of standards, such as new deliverables, consortium standards and formal standards, is counter-productive (Jakobs, 2006b).

Whatever choice the Commission makes, ICT standards policy must take into account the actual field of forces such as

- Europe's dependency on dominant stakeholders. Industry shoulders most of the standards work. It needs to understand and to a degree support the Commission's arguments.
- Dominant stakeholders' access to other standards settings. In practice the ESOs only develop a select part of the ICT standards relevant to Europe. The remainder is either developed in committees of the formal international standards bodies and ICT consortia, or are *de facto* standards. If dominant stakeholders do not support the EU's argument in favour of standardisation-wide user involvement, they will back out.
- The Commission's influence on ICT standardization internationally should not be overestimated.[182]
- Most indirect standard users do not want to participate in standardisation (see below); even direct standard users, e.g. ICT-SMEs, who are aware of what standards are and of their benefits, do not enter when the ESOs open their doors for participation[183].
- Indiscriminate normative democracy reinforces symbolic user representation.

7.3.4   *Do users always want to participate?*

Users sometimes want to participate in standardisation but are excluded in a passive way (e.g. too high costs for joining) or actively (e.g. closed group). However, more commonly indirect users, that is, individual consumers and SMEs, do not want to participate, or at least not in all standards areas.[184] The EU hardly addresses this issue, assuming, apparently, that users would want to participate – and if not, this is due to lack of awareness, which can be created, and interest, which can be raised.

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[182] E.g. the feasibility of integrating consortia in the European standards system, as was suggested, is highly unlikely (Commission, Annex to COM (2004) 674 final, p.16)
[183] Workshop Discussion, 1 March 2007.
[184] Jakobs, 2003.

Awareness - Incidental EU projects to raise user awareness have little impact. A more structural approach is needed. This is recognized by many Asian countries (e.g. APEC countries) but is neglected by Europe. Europe dearly needs education about standardization, starting with regular education (e.g. primary school, secondary school, vocational training, university students including e.g. MBA students, PhD students and post-docs, teachers and university professors), but including job training (e.g. for standards developers, implementers, corporate managers, managers of functional units, researchers, policy makers, public administration, lobbyists e.g. for an industry sector, and media people), and education for the wider public[185].

Not in all areas - "*Consumers or end-users do not in general choose to participate in the standards process for all of the goods they might consume or use.*"[186] IT users, like IT producers, must perceive a direct stake in the standards process to participate. For example, why would the majority of SMEs, who only use IT to support their primary business process participate? Participation is only worthwhile if a particular standard content is crucial for a company's product or organisational process. SMEs whose core-business lies elsewhere should therefore probably not participate in technology-oriented IT-standardisation (e.g. standards like the basic XML or EDIFACT standards). However, their involvement is crucial for e.g. information content-oriented standards (e.g. XML applications for a particular domain).

Or, as was stated during a SME standardisation seminar: "*EAN* [i.e. the 'barcode organisation'*] cooperates with users on standards. We distinguish two kinds of standards: technical standards (e.g. XML) and conventions about how to deal with technical standards. We address the latter. Together with user organisations we explore what users want to use these barcoding standards for and how to deal with them (functional specifications). (…) We help SMEs to specify their needs, to model processes for which interoperability is required, and to develop agreements. The contribution of these companies should be restricted to what they need and do. The translation of these specs into technical options should be assigned to technical people. (...) We want to separate technology (…) as much as possible from the requirements of companies.*"[187]

Participate during the whole standards process? - What can users contribute to standardisation? There are two genuine user domains, requirements and operating experience[188]. If users have little inclination to participate because their immediate stake is not clear but a user view is desired, there are three specific periods in standardisation relevant for user participation: the requirements setting stage, the final validation process (ICT Standards Board, 2005, p.24), and the standards maintenance stage. Their participation could be restricted to these periods.

That is, although participation in standardisation is usually understood as partaking in the whole standard's trajectory, select participation which focuses on specific moments may better suit the interests of these indirect users and of the standards committees.

There is one caveat concerning the requirements stage, which applies to users as well producers: "*meaningful requirements are not necessarily available prior to system use*"[189]. Neither stakeholder group has any experience up front, and therefore the expected and stated users requirements may be off target.

7.3.5   *Delegating responsibility for the public interest to stakeholders*

Delegation principle - It is salient that in EU documents related to standardisation, ICT policy included, hardly any reference is made to the European Commission's and Member-States' responsibility to argue public interest issues themselves in standards committees – irrespective of the

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[185] De Vries & Egyedi, 2007.
[186] ICT Standards Board, 2005, p.24.
[187] Ir. O. van Mechgelen. Extract from the round-table debate of the seminar "SME frustrations using IT: Is standardisation the solution?" 25th of October 2002, Delft University of Technology, the Netherlands.
[188] Jakobs, 2006b, p.33.
[189] Jakobs, 2006b, p.33.

context of use of these standards (regulation or not). The same applies to the authorities own interests as a large ICT user. This responsibility is delegated and externalised to the European standards bodies and to 'minority' stakeholders. The latter two stakeholder categories are called upon to defend e.g. environmental concerns in standardisation (e.g. Commission, General guidelines 2003.)

The ESOs are requested to provide the right institutional conditions for full participation of all stakeholders (Commission, Decision 2006). For this reason the EU has recently decided to provide more substantial financial support to CEN/CENELEC/ETSI. But it also means that the Commission's approach of strengthening the institutional conditions rather than participate and support on standards content (e.g. expertise and influence) will be continued.

Delegation strategy sufficient? - Does this delegation strategy suffice to promote public interest issues in standardisation? Probably not. Inherently the political negotiating position of minority stakeholders is weak to start with. Furthermore, their lack of presence and influence in standards committees indicates that also in practice the current strategy is a flawed one.

In sum, strengthening the conditions for minority stakeholder participation only partly assuages the problem of weaving public interests into standards. Where clear public interest issues are concerned the input and participation of EU and Member-State level representatives is needed to secure the societal value of resulting standards.

7.4   Industry players as ICT users

Large ICT users - The section before dealt with specific issues relating to so-called minority users of ICT, i.e. SMEs and consumers. This section deals with specific issues relating to the large industry players as users of ICT. The distinction between a large industry player and an SME is the threshold of employees, the turnover and the annual balance sheet.[190]

Large industrial organisations are all heavily relying on ICT, and are, hence, concerned by standardisation activities undertaken in the ICT sector. It has been noted that this group of users has not been standing on the sideline but is becoming more and more influential in the standardisation area (see the table above). Indeed, the producers of technology are not only deciding the standardisation agenda, but also the large users of technology, even in the sense that one can speak of a shift in standardisation work from technology producers to large technology users. Examples of this shift are the activities undertaken in the field of electronic invoicing, ebXML (eBES) and health informatics.

This active participation in standardisation work by this group of users is however limited to ad hoc industry-related fields. Only when concerns are at stake for a specific industry, that industry group would become active in the standardisation area. Examples of these industry interest groups as CEFIC (European Chemical Industry Council), COCIR (The European Coordination Committee of the Radiological, Electromedical and Healthcare IT Industry), FIEC (European Construction Industry Federation) or EUCOMED (European Medical Technology Industry Association).There does not exist any general ICT industry users group that is coherently and consistently monitoring the interest of the large users on a cross-industry (horizontal) level.

Concern - Consumers and SMEs have been able to organise themselves on a horizontal (non-industry specific) level to protect their interests as users when it comes to standardisation (ANEC, NORMAPME). This organised centralisation of interests strengthens the power of the group of users it represents and allows a better protection of their interests. The organisation is able to be accepted as a spokesperson towards public authorities, standardisation organisations and specification providers, ensuring that their voice is heard. Currently, the before mentioned consumer and SME representative organisations are formally accepted as stakeholders in the European standardisation

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[190] An SME is being defined as an enterprise which employs fewer than 250 persons and which has an annual turnover not exceeding EUR 50 million, and/or an annual balance sheet total not exceeding EUR 43 million. See article 2 of the annex to the Commission Recommendation 2003/361/EC of 6 May 2003 concerning the definition of micro, small and medium-sized enterprises, *O.J.,* L124/36.

process (e.g. through consultation procedures, participation in ESOs (CEN associates; CENELEC Cooperating Organizations or ETSI full member).

Currently, no organisation exists representing in the standardisation area the large industry players as ICT users on a horizontal level. The lack of such a general representative organisation, risks that the voice of the large ICT users is not being heard outside of specific, industry focussed standardisation areas. Furthermore, European policy makers would not be able to benefit from receiving advice from a dedicated group representing large ICT users when setting and implementing an EU ICT standardisation policy.

We would, therefore, recommend large organisations to organise themselves on a cross-industry level for representing their interests as ICT users in the standardisation area. If these industries would be able to organised, they could even be part of the policy making process.

7.5   General observations

7.5.1   Participation implies acceptance and implementation?

A main argument for participation of any stakeholder, but in particular direct standard users in standards development, is that it increases the acceptance of these standards and makes their implementation more likely[191].

Obstacles - However, there are practical factors, obstacles related to each of the core elements of (a) participation, (b) acceptance, and (c) implementation, which raise doubt about the causality in this line of reasoning:

(a) There are more forceful reasons than participation to support a certain standard. For example, where competing standards exist, the standard may be chosen by other, important players in the company's value chain; or, the market dominance of a *de facto* standard or the rising popularity of a competing committee standard may determine a standard's use;

(b) acceptance of a standard and commitment to implement is more likely to depend on the awareness of a standard's importance and on its usability (e.g. simplicity and ease of implementation) than on participation;

(c) the implementation of standards concerns, in particular, the direct standards users. In EU policy documents direct and indirect standards users are often not distinguished. Therefore, no clear distinction is made between standards implementation and market adoption of standard-compliant products. The "participation – acceptance – implementation" type of reasoning may work for direct standards users, but hardly for indirect standards users. For the latter the link between participation and the adoption of standard-compliant ICT depends too much on intermediate, contingent factors (i.e. participation …- ….-….- adoption).

Need to have distinct policies - In other words, the logic of 'participation in order to increase implementation' has its vulnerabilities. To strengthen the link between participation and implementation, these vulnerabilities would need to be addressed in unison. Moreover, a distinction needs to be made between direct and indirect users, and standards implementation and the adoption of standard-compliant products, respectively. Distinct policies are needed for the two.

7.5.2   Overemphasis on standard 'development' in Europe

Many of the previous assumptions lead to an overemphasis of EU standardisation policy on standards development - to the detriment of attention for standards implementation. For example, in the previous section 'participation in development' is a door towards securing implementation, which distracts attention from specific implementation-oriented measures. Likewise, the implicit adoption of a regulatory regime for ICT standardisation overly draws attention to representation issues in

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[191] EU ESAP objective; Commission, Annex to COM (2004) 674 final, p.5; ICT SB, 2005, p.24.

standards development. User issues related to standards *implementation and maintenance* have received very little attention from policy makers. Moreover, since Europe preferably develops ICT standards at the international level the emphasis on developing standards in Europe seems misplaced. This, too, is a reason to focus more on an implementation-oriented ICT standards policy.

7.6 Conclusions and recommendations

Gap - There is a large gap between, on the one hand, the inclusive aims of European standardisation policy and, on the other hand, the low level of actual user participation (i.e. indirect users: IT consumers and SMEs). Users generally do not want to participate. The gap is one between principle and practice. To bridge this gap, attempts have been made to mould practice to fit the standardisation principles.

Failed attempts to bridge the gap - These attempts have largely failed because, firstly, the assumptions on which these principles have been built are questionable, such as user awareness and willingness to participate in standardisation, and the inclusion of user interests at the national level (i.e. the pillar of CEN and CENELEC standardisation).

Secondly, the EU applies inclusion principles indiscriminately. Europe may be too tied up in a politically correct rhetoric and 'democracy *per se'* in regard to standardisation. The level of democracy needs to be argued and rooted in standardisation practice if policy is to go beyond reinforcing symbolic user representation.

Main recommendation - This section's main recommendation for user-related EU ICT standardisation policy is that policy should specify the level of user involvement that is necessary in the standardisation process. Standardisation policy should specify the aspects of user involvement which European standardisation wants and needs (e.g. representation or influence?), which standards fora these aspects preferably apply to (i.e. realistically and focused), and in what manner and at what moment user involvement is required (e.g. user representation in requirements, validation and maintenance phase?).

7.6.1 Necessary or desirable user involvement

Where user involvement is necessary, a more substantive and active inclusive approach is needed. From the European point of view, a focus on strengthening indirect user participation at the European level would seem most effective.

Examples of policy focus that strengthen the participation of SMEs and consumers in European standards committees and their position are[192]:

- support user groups in selecting standards committees dealing with issues of user/public interest (drawing the line between mandated and not-mandated work may be too crude)

- strongly improve the financial conditions for minority participation, and more so where the European Commission delegates responsibility for public interest issues to the European standards bodies and 'minority' stakeholders

- provide for a more active input and participation from the EU and Member-State government representatives to secure the public interest in standards (e.g. EICTA, 2004, p.18).

- support ESOs in allowing user representatives to participate free of charge in all technical committees dealing with standardisation work of public/ SME interest

- support ESOs in making draft standards dealing with subjects of public/ SME interest available free of charge on the Internet.

- implement monitoring of national and EU level 'balanced representation' in European standards committees where user involvement is necessary (e.g. ANEC, 2006c, p.3)

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[192] e.g. ANEC, 2006c; NORMAPME/ANEC, 2007; Jakobs, 2005; Egyedi, 2003; EICTA, 2004.

- Where user involvement is desirable but optional a passive approach to user inclusion suffices. That is, users must be able to participate but no norms need to be met for representation and influence (e.g. no monitoring takes place). In this area of ICT the distinction between standards source and status is irrelevant (e.g. ESOs formal and new deliverables, consortia, proprietary standards). The Commission may want to mediate for European users with standards consortia on whether free membership can be provided for the umbrella organisations of consumers and SMEs.

Furthermore we would foster a coherent involvement of industry users: Industry users of ICT should organise themselves as a cross-industry ICT users alliance. This ICT users alliance:

- would be able to protect the general standardisation interests of ICT user

- would be able to function as a spokesperson to the policy makers;

- could be directly involved in ICT policy and strategy decisions, as this is currently the case with SME and consumer stakeholders

7.6.2   Awareness and education

If the conditions for user participation were favourable, would there still be a lack of users in standardisation? Lack of participation by direct as well as indirect users is caused to a large degree by lack of awareness of the importance and benefits of standards. This is a general problem that is reflected in the shortage of standardisation experts internationally. The shortage of experts will become even more acute as those who at present participate, i.e. mostly older people, retire.

To address this shortage of experts and want of users, the overall level of awareness, knowledge and expertise needs to be raised. The European body of expertise needs to be strengthened and disseminated in a structural way by introducing standardisation in regular education from the primary school upwards and expanding training for standards professionals.

7.6.3   One ICT standardisation policy?

Lastly, the ICT standardisation policy will need to differentiate much more than before. ICT standardisation policy measures must distinguish between direct and indirect users, and between implementation and adoption of standard-compliant products, respectively. It must take into account the differences between categories of users (e.g. the interests of SMEs and consumers diverge on the importance of design for all), and between standards development and implementation (e.g. in respect to the needs of ICT-SMEs). For the sake of argument, effective policy on standards *implementation* may ultimately be more decisive for the European information society than involving users in their development.

8. IMPLEMENTATION OF STANDARDS

8.1   What is the issue?

Although many success stories relating to the use and adoption of EU standards can be noted, it is true that in the ICT sector many existing EU standards have not been widely taken up by the market. (e.g Hiperlan). The most widely implemented ICT standards have been drafted by non-formal standardisation organisations (e.g. Wifi, XML).

The question therefore arises if the EU ICT standardisation policy should pay more attention to the exploitation of its results and get more involved in implementation issues.

8.2 Standards are made to be used

Certainly everybody agrees that "*unless standards are used, then the money spent on developing them will have been wasted*"[193]. At this moment, too many European standardisation initiatives do not find their way to the market. Different reasons can be identified. By way of example we refer to the Hiperlan experience.

The "Hiperlan" story - The development of Hiperlan fitted in the general climate of the beginning of the 1990s. Following the success of the GSM standard the general policy at the time was to develop single European radio standards, which then were given preferential market access by regulators through harmonized frequency allocations.

However, the scope was completely different. Hiperlan did not fit into any infrastructure, or said in a more precise way, in any 'network compatibility framework'. Its usage would have to create its own way of interacting, much in the same was as the IEEE 802.11 did.

Fuelled by the success in technological terms of GSM, the Hiperlan was a technically superior piece of work that would need a strong effort from the industry for its implementation. But this time there were no guarantees of purchase of equipment by operators and the market would have to be created by the purchases from the individual users throughout the world. The technical possibilities of the standard would inevitably be used in the future. However, they were far ahead of the state of the art in the Internet (for instance in relation to quality of service) and the state of the art of the computer applications. After almost fifteen years they still are. It is another case that can suffer the critics of being a technological gadget that users might not be interested.

On the other hand, the IEEE 802.11 was a very simple standard that could be implemented easier (meaning lesser R&D investment). The chipset was created by the US industry and its availability contributed also to a greater disbelief of the Hiperlan.

It is interesting to see the pragmatic approach of the IEEE 802.11 standard. It works but it does not offer any guarantees in terms of quality of service. This profile fitted very well in the state of the art of the Internet at the time (and even today). New versions of the standard are now being produced to tackle this problem and some of the solutions of Hiperlan are being adopted.

Possible reasons for failure - In conclusion, the lack of belief of the European industry led to a lack of consensus and no investments were performed to incorporate the unique chipset built in IT equipment. This is a problem of the industry itself and could not be overtaken by any specific public governance policy. Some questions can be stated in helping to understand the process and provide guidelines for a future EU standardisation policy:

- Why did the industry invest in such a visionary standard if they did not want to implement it after all?

- Was the industry the real leader of the standardisation process?

- If the obligation to implement the standard had existed, would the industry have been willing to spend efforts on producing the standard that would not be published due to lack of implementation?

- Were the persons involved directly on the standard definition using resources (funding) that were alien to the industry creating therefore a specification without the sensitivity of an industrial project?

8.3 Reasons for success

Although the good technical quality of a standard, should be a prime reason to be taken up by the market, the abovementioned example of Hiperlan shows that quality of the standard does not always suffice for also becoming successful in its implementation. The following actions have been

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[193] *Keith Dickerson*, in a position paper written as a contribution for this study.

identified as possible additional success factors for advancing the uptake of EU standards and deliverables (outside of the New Approach framework): "Marketing and education", "Public procurement" and "Free availability of standards". We will further elaborate on these critical success factors below.

8.4   Marketing and education

New Approach model not necessitating marketing efforts - Up to recent times, the European Standardisation Organisations and the EU policy makers did not have to be too much concerned about the implementation of their standards, because standardisation work was heavily focussed on the New Approach model. Indeed, although the New Approach standards referenced in legislation are to be adopted on a voluntary basis, the market usually chooses to implement these standards because of the presumption of conformity with the essential requirements of the law.

Other deliverables need more efforts to be taken up by the market - Now that the European standardisation process is more and more being used for creating standards outside of the New Approach model, especially in the ICT sector, a legal incentive for the market to adopt European standards does not exist any longer. The non-New Approach standards (whether they are European Norms or new deliverables) are now competing with other standards available on the market. It is noteworthy that even standards or new deliverables that are produced following more or less the same principles as the New Approach model (e.g. electronic signatures in support of the eSignature directive, and referenced in the Official Journal) are not able to get the same attraction as New Approach standards.

Although extensive marketing activities have already been undertaken for promoting the use of European standards and other European standardisation deliverables, it is felt that more work could be done in this field.

Promotional activities - On the one hand, more promotional activities should be undertaken, both within the EU and on a global or regional level depending on the choices made (see "A Regional policy in a global context" on page 56.). Too often, standards tend to be forgotten after they have been created. This is especially the case if the initiative to draft a standard does not come from the market itself (as is the case in consortia and other specification providers) but as a result from a policy action (e.g. standards drafted to produced products and services in line with European data protection legislation).

Intrinsic measures - On the other hand, more intrinsic measures should be made as regards to the way European standards are currently being drafted. We are of the opinion that it is very difficult to have the market adopt European standards, if they do not feel they are actively and directly involved in the standards setting processes themselves. Therefore, it will, also from a marketing perspective be necessary for the ESOs to co-operate more closely with the market players.

Education - As to education, we believe that there is still much room for educating market players, researchers and direct users of standards on how to implement European standards. For this discussion we refer to the section on "The involvement of users" on page 88.

8.5   Public procurement

Public procurement is an important sector of the European economy, entailing 16.3% of the Community GDP. If public procurement contracts would consistently make use of European standards, market adoption of European standards would be flourishing. In reality, public authorities do not always refer to European standards when launching a tendering procedure.

We are of the opinion that it does not make sense to oblige member states to make reference to European deliverables simply for the sake of it. The quality and usefulness of the European deliverable should be so that the choice for referring to them is self-evident. We are of the opinion that if our other recommendations are being taken into account, especially on the more direct

involvement of other players, European standards would become more competitive with other global standards.

On the other hand, if the European and national governments, the actual initiators of most of the EU standardisation work do not make use of the European deliverables, how can they expect the market to use these standards? Therefore, we think that governmental bodies indeed should be obliged to make use of European standards, unless they can explain that other standards are more relevant for a specific circumstance.

If we look at the legal framework, it is noteworthy that public authorities are currently already being obliged to refer to European standards in their public tendering procedures.

Council Decision 87/95 - Council Decision 87/95 contains a clause stating that "[…] *Member States shall take the necessary steps to ensure that reference is made to European standards and European prestandards as described in Article 2 (b)* [and] *international standards when accepted in the country of the contracting authority in public procurement orders relating to information technology so that these standards are used as the basis for the exchange of information and data for systems interoperability.* […] (article 5).

Public procurement directives- Furthermore, the European Public Procurement directives[194] also explicitly require public administrations to refer to standards in their tendering documents. Public administrations are all public authorities (member States, regional or local authorities and their associations), public organizations and undertakings, and also undertakings operating in water, energy, transport and the telecom sector, on the basis of special rights granted by the Member State.

In the contractual documents, the contracting entities must refer to national standards implementing ENs, European Technical Approvals, or common technical specifications (specifications drawn up by a procedure recognized by the Member States for uniform application in the Member States and published in the Official Journal). When an EN is available, a derogation from the obligation to refer to this EN is permitted only under certain strict conditions.[195]

However, it looks like public administrations do not always refer to European standards in their tendering procedures. We believe that this lack of referring is not necessarily caused by a well-formed opinion about the quality of the relevant European standard. We believe that it is probably closely linked to the marketing issue of European standards. Many international standards are more known than European standards and are being referred to by the tendering authority.

Public procurement by EU institutions - As to the European institutions, it looks like public procurement procedures do not always refer to European standards in their tendering procedure (e.g. IDABC). However, European institutions are bound by more or less the same rules as the above described public procurement procedures.[196] It should be further investigated to what extent internal actions can be taken for informing colleagues from European institutions about the existence of relevant European standards or for convincing them about the value of these standards.

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[194] The Public Procurement Directives (as defined by the so-called "Legislative Package") refer to the specific obligations of the public contracting entities, the various procedures (open, restricted, negotiated) that must be followed to award contracts (supply, civil engineering works, services) and the establishment in the European Union (EU) of a system of legal remedies in order to examine appeals of the contractors.

[195] This is the case if the innovative nature of the project makes the use of products covered by the EN not appropriate, the EN does not include provisions for establishing conformity, or if technical means to do this do not exist, or by using the EN, the contracting authority would be obliged to buy products incompatible with equipment already in use; pay a disproportionate cost; or encounter disproportionate technical difficulties (but only as a part of clearly defined strategy with a view to change-over, within a given period, to ENs).

[196] See article 5.6 of Council Decision 87/95. See also Council Regulation (EC, Euratom) No 1605/2002 of 25 June 2002 on the Financial Regulation applicable to the general budget of the European Communities and Commission Regulation (EC, Euratom) No 2342/2002 of 23 December 2002 laying down detailed rules for the implementation of Council Regulation (EC, Euratom) No 1605/2002 on the Financial Regulation applicable to the general budget of the European Communities.

8.6   Free availability of standards

One of the founding principles of the EU standardisation policy is that "standards are produced by everybody to be used by everybody". This means that the ultimate objective (and ideal) of the current EU standardisation policy is to elaborate standards that reconcile in a rational way industry's priorities with public interest objectives so that the end-deliverables of standardisation could be used without proprietary restrictions as widely as possible. On the other hand, the products of industry and of the mind in Europe and worldwide are based on the respect and recognition of proprietary rights.

FRAND - To facilitate the integration of proprietary elements in the ESOs' IPRs when appropriate, the Commission determined a while ago a set of rights and obligations to be respected by both standards makers and intellectual property right holders[197].

In this respect, European standard-making bodies must strive to give access to all persons wishing to use European standards. Such standards should be made available on "*fair, reasonable and non-discriminatory" terms (FRAND rule*), regardless of whether the users participate in the work of the standard-making body or not, but taking into account the circumstances of the use. While the standardisation work is carried out, best efforts should be made to identify holders of any IPRs that may be referred to the standards under preparation. Towards right holders, the ESOs should grant "*fair conditions*" especially regarding the time allocated to them to report on proprietary work that may come in conflict with the standards under development, as well as when negotiating licenses with them.

On the other hand, right holders should use best efforts to identify in a timely manner any IPR which may have an impact on the undergoing standardisation work. They should offer fair, reasonable and non-discriminatory monetary or non-monetary terms for the license to use any IPR. Licenses that may be granted in this sense must basically be regarded as irrevocable. Against these generic IPR principles, the three ESOs have designed their own IPR policies. The basic rules integrated in the IPR policies of CEN and ETSI have already been described in the first Interim Report.

Free of charges - Against these FRAND principles, we notice that one of the obstacles in the ICT area, especially in the research area, is that the mere obtaining of a standard, without implementing the specifications in products or services, is not free of charges. National Standardisation Bodies charge a fee for sending a copy of a standard. Although the fee is not always very high, asking a price for downloading a standard, without implementing it, is invoking a negative reaction in the ICT community. If standards are not being downloaded, their contents are not being discussed, and the standards would lose an important means of gaining more visibility, with all the potential consequences to successful implementations.

A characteristic of ICT is the participation of an active and broad community in the development of products, ideas, solutions, etc. It is not a community so closed as for other standardisation areas. In the past, standards were bought by interested parties that found the investment worthwhile given the expected profits on manufacturing the products. This is not the business model for ICT. Free availability of standards by certain organisations has led to a greater dissemination of the specifications and independent work on improving them. By becoming an object of study the suggestions of improvements coming from outside the original organisation just help to make the standard more popular and improve it. It is unquestionable what the research community has done on studying the dynamics of the control engine of TCP, for instance. It has become a very powerful piece of the current success of the Internet. The improvements were so relevant that no competing standard got such level of sophistication and efficiency. It should also be stressed that this "independent" and free work could not have been made by any single enterprise due to the amount of investment that they would represent.

Over time the importance of the free availability of standards has caught the attention of various SDOs. IEEE, for instance, has fees on its standards but decided to turn the most popular ones free

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[197] *Intellectual property rights and standardisation,* Communication from the Commission, COM (92) 445 final, 27.10.1992, p.32.

after a certain (short) period of time. ETSI went even further and has its standards free just after approval.

The situation in Europe is quite complex. NSBs disseminate EN and charge them. Other deliverables such as CWAs are generally free. The current business models, if they exist at all, are quite cumbersome. Consider the following example that although it is not the rule for CWAs it is a reality. Certain CWAs are freely available but if a person wants to know who participated in its definition, then it has to purchase this information. As examples consider CWA 14167-1 on digital signatures

> *A list of the individuals and organizations which supported the technical consensus represented by this CEN Workshop Agreement is available to purchasers from the CEN Central Secretariat.*

Or CWA 15292 on data protection that states:

> *A list of the individuals and organizations which supported the technical consensus represented by this CEN Workshop Agreement is available to purchasers from the CEN Management Centre. These organizations were drawn from the following economic sectors (Oil, Law, IT vendors, Automotive, Telecommunications, Consultants, Health and Data Auditors).*

New business model - In terms of policy it is important to realize the business model underneath each area, and for ICT all European standards (for all types) should be free subject to the usual copyright rules of not modifying them. This might pose some problems to the business models of the National Standards Organisations but an inappropriate business model is also a reason for failure, and new forms of income must be devised.

It is interesting to see the case of scientific literature publishers. The reality has changed dramatically. Nowadays, digital libraries are getting an impact that is difficult to predict how the evolution will be. Editors try to conceive new business models based on the importance and relevance of their titles and the interest of the market. Agreements with large clients (sometimes an entire country) are common, and are a way to preserve the business once based on the paper edition.

Another interesting consideration is about the fact that legislation is free of charge. Standards are referenced in law but then citizens have to pay for them…

8.7   Conclusions and recommendations

We believe that critical success factors for the implementation of standards are efforts undertaken in the area of marketing and education, public procurement and the availability of the standards.

Although extensive marketing activities have already been undertaken for promoting the use of European standards and other European standardisation deliverables, more work should be undertaken for promoting the deliverables on a European but also on a global scale. Furthermore, we believe that the industry should be more directly involved in the standards setting processes. Without active participation of the industry, the industry players will not have any incentive to implement these standards in their products and services. As to education, we refer to the section on "The involvement of users" on page 88.

Public procurement procedures already contain obligations for public authorities, both on EU level, national level and local level to refer to European standards. Still, we notice that not all public authorities chose to refer to existing European standards but instead refer to competing standards. We believe that this is due to a lack of knowledge about the existence of relevant European standards, and public officials should be made more aware of the European standards portfolio.

As to the availability of standards, we are of the opinion that the business model of having an income by selling standards is not appropriate to ICT anymore. The input from several communities (research, open software, etc.) is each time more relevant and the free availability of standards is a necessary condition to give visibility to standards.

9. COMPLEXITY OF THE ICT STANDARDISATION LANDSCAPE

9.1 What is the issue?

The current EU ICT standardisation landscape is a rather blurred landscape without clear borderlines. The feedback received through the survey of interested players and the discussions between the relevant players showed that much confusion exists relating to the standardisation processes, procedures and deliverables. This lack of clarity is mostly due to the organic response by the EU policy makers and ESOs towards the challenges imposed by the ICT landscape resulting into a patchwork of ad hoc rules and practices. It is, therefore, for non-specialists in the field difficult to gain a clear understanding of the EU ICT standardisation landscape and to react appropriately.

9.2 Complex legal framework

The ICT standardisation activities in the world have been changing dramatically over the years. In terms of the European legal framework, the major references, i.e. Directive 98/34 and Council Decision 87/95, are already quite old, and the reality is now very different. The afore mentioned legal acts have been governing, at a satisfactory level it must be said, the traditional areas of standardisation, through the legal technique of the New Approach. Nowadays, the legal model implemented by the New Approach reference acts and implementing Directives is seen as not entirely meeting the new legal and policy requirements of the ICT area.

EU policy makers and ESOs have already been very active in adapting their policies and procedures to the new reality but they are constantly confronted with the boundaries of the legal acts limiting them in their efforts. The result is that the very efficient, "lean and mean", standardisation system has been loaded with practices for responding to the new challenges that do not necessarily find their legal basis in the Directive or the Council Decision (e.g. consultation of stakeholders by the Commission prior to issuing a mandate, e.g. mandating outside of New Approach). An incoherence between ad hoc practices and the legal framework leads to an ambiguous system resulting in legal uncertainty for all players involved and an inefficient ICT standardisation system in the EU.

The feedback received through the survey of players and the discussions between the relevant stakeholders have shown that there indeed exists a lot of confusion relating to the standardisation processes, procedures and deliverables. This lack of clarity is due to the organic response by the EU policy makers and ESOs towards the challenges imposed by the ICT landscape.

As one respondent representing the industry mentioned: "*The existence of multiple ESO's/consortia has created a confusing quilt-work of interests in certain domains, particularly "interoperability". We also find the involvement and influence of European Commission representatives creates additional confusion. We believe better overall coordination and more defined responsibilities regarding standardisation amongst the ESO's/consortia is necessary. For example, both CEN and ETSI have had interoperability forums operating from time-to-time.*"[198] Or as one national authority identified as a drawback of the current EU ICT standardisation landscape: "*The proliferation of competing standards given the work produced in consortia, the uncertainty about the legal value of standards in areas not covered by the New Approach, the lack of education and awareness actions about standardisation activities carried out by ESOs*".[199] This lack of transparency raises concerns as one consumer representative pointed out in its response to the questionnaire: "*From a consumer point of view, the lack of transparency and consensus involved raises concerns because they impede proper consumer participation.*"[200]

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[198] Questionnaire, the respondent did not want to have his identity made public.
[199] Questionnaire, Slovenian Institute for Standardisation.
[200] Questionnaire, ANEC.

9.3 Complex ICT standardisation policy

Although it may seem as if there exists one consistent EU ICT standardisation policy, this is not true in reality. Within the ICT area, and because of the special nature of ICT, throughout the years different fragmented steps have been undertaken by different participants (ESOs,, directorates general) for encompassing the needs of the ever changing ICT landscape without, however, taking into account a long term strategy.[201]

We acknowledge the various efforts that have been undertaken, such as the 2006 Work Programme, for trying to establish a coherent policy. Still, we feel that the EU ICT standardisation policy is not any longer one clear long term strategy. The current ICT standardisation policy is characterised by symptomatic responses to evolving challenges, and has lost its holistic approach. Different Directorates General may have different agenda's and policy objectives and are using different tools for supporting ICT standardisation in a specific area. Examples are the non-consistent use of standardisation terminology in legal documents[202] and the use of specific standardisation techniques outside their remit[203]. This leads to confusion towards the outside world.

9.4 Conclusions and recommendations

The current EU ICT standardisation policy is characterised by a diversity of ad hoc initiatives trying to encompass the ICT challenges, and is not fully compatible any longer with its legal basis. Therefore, a coherent and consequent long term strategy should be built up, taking into account the new and future ICT landscape. Also, educational efforts should be undertaken for explaining the system to all relevant parties affected by standardisation (industry, users).

Take a holistic approach - ICT is no longer a sectoral issue but a horizontal one, concerning the activities of many teams and directorates within the EC, the policy needs to include the necessary coordination between the different participants.

We recommend to create a coherent and consequent EU ICT standardisation policy for supporting EU policy objectives (regulatory issues, competitiveness, trade, …) that encompasses the challenges of the ever changing ICT landscape and takes into account the differences between standardisation objectives, areas of standardisation, and types of standards, followed by a coherent and consequent implementation. For creating this coherent and consequent ICT standardisation policy, an open discussion between the national and EU policy makers, especially within the European Commission itself, will have to be initiated.

Assessment of current legal framework with a focus on simplification – A gap analysis should be made of the practices that are in place and the laws on which they are based, including an assessment of the need for incorporation of the identified practices in the legal framework, and a subsequent amendment of the relevant legal instruments, if necessary. Furthermore, the current standardisation procedures and standardisation deliverables should be assessed on their harmonisation and simplification opportunities. Too many procedures and too many types of deliverables exist in the current standardisation system, creating confusion on their applicability and legal value in the market.

We would therefore recommend to include a new work package "Legal gap analysis" in the next version of the 2006 ICT Standardisation Work Programme. Those practices that are assessed as necessary or useful should be kept and formalised in legislation, practices that are assessed as unnecessary or unwanted, should be stopped. Based on this gap analysis, the European Commission could start drafting proposals for amendments to the existing legislation. The exercise could be done

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[201] See also PART II.5 "Intermediate Conclusion" on page 50.

[202] At an EU level, standards are defined in a number of Community legal acts, although not in a totally uniform way. Amongst these acts: EC Directive 98/34/EC, art. 1; Council Decision 87/95/EEC, art. 1(3); Annex III of Directive 93/36/EEC. The eSignature directive, for example, uses the term "generally recognised standards".

[203] New approach techniques, such as referencing of standardisation deliverables in the Official Journal, have been followed for standardisation efforts that do not fall under new approach (eSignature, eInvoicing, …).

based on article 9 of Council Decision 87/95 stating that every two years the Commission shall submit a progress report to the European Parliament and the Council on standardization activities in the information technology sector. This report shall refer to the implementing arrangements adopted within the Community, the results obtained, the application of those results in public procurement contracts and national technical regulations and, in particular, their practical significance for certification.

Revitalising the Council Decision 87/95 - It has been noted that whilst Council Decision 87/95 on standardisation in the field of information technology and telecommunications is still valid, major parts of it seems to be forgotten and are not any longer applied. Examples of "forgotten" rules are the clauses relating to the convening of SOGITS, the clauses on public procurement, and the clauses on synchronisation with international standardisation work.

Leaving the Council Decision as it is, without bringing its rules into effect creates legal uncertainty for all participants involved. Therefore, the European Commission should in our opinion take a firm decision on reactivating the Council Decision or not. In case the Commission deems the Council Decision still to be valid and relevant, it should take the necessary actions for applying the rules laid out by the Decision. In case the Commission is of the opinion that the Council Decision does not have any value any longer, it should take the necessary actions for withdrawing the Decision.

In our opinion, the Decision, even in its current unmodified stage contains valuable and relevant principles (e.g. the convening of a consultation body) that should be kept. Therefore we would recommend a revitalisation of the Council Decision 87/95 by applying its relevant principles again and by creating awareness about its existence in the relevant communities. A revitalisation of the Council Decision 87/95, together with a light review of some of its clauses would give the EU policy makers a strong policy instrument for taking up the challenge of ICT standardisation in Europe.

Education – The rules and procedures entailed by the standardisation system will never loose a certain degree of complexity due to the nature of standardisation itself. Therefore, a major role should be reserved for explaining how standardisation works, what the impact of standardisation means, and how one can be involved in standardisation. Education efforts should be undertaken by the public authorities and by the standards development organisations and specification providers to ensure that standardisation does not remain the field of standardisation experts only but that the system is transparent to anybody who is affected by standardisation efforts.

This education about standardization could start with regular education (e.g. primary school, secondary school, vocational training, university students including e.g. MBA students, PhD students and post-docs, teachers and university professors), but should certainly include job training (e.g. for standards developers, implementers, corporate managers, managers of functional units, researchers, policy makers, public administration, lobbyists e.g. for an industry sector, and media people), and education for the wider public[204].

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[204] De Vries & Egyedi, 2007.

PART IV.   MODEL FOR FUTURE EU ICT STANDARDISATION POLICY

1. MODEL BASED ON GENERAL PRINCIPLES OF STANDARDISATION

We propose a model for developing an EU ICT standardisation policy that would be more fit to respond to the challenges imposed by the changing ICT and ICT standardisation landscape. The model encompasses the issues identified in Part III of this report, with respect for the European and international standardisation principles as laid out by the Council Resolution on European standardisation of 1999 and the WTO TBT agreement.

The EU standardisation principles confirm that standardisation is a voluntary, consensus driven activity, carried out by and for the interested parties themselves, based on openness and transparency, within independent and recognised standards organisations, leading to the adoption of standards, compliance with which is voluntary. The WTO considers transparency, openness, impartiality, consensus, effectiveness, relevance and coherence as key principles that should apply to international standardisation.

The proposed model pivots around these EU and WTO standardisation principles, and is based on the following elements:

- ensuring that all interested parties can have their say in the standardisation process, from the policy and strategy level to the operational level, and from the drafting to the implementation phase (openness, transparency and consensus, carried out by the interested parties);

- ensuring that standards can be developed by the most appropriate party, under the condition it meets the relevant quality criteria for EU standardisation (effectiveness, relevance, independent and recognised standards organisations, impartiality);

- ensuring a synergy between European and international standardisation work (effectiveness, relevance);

- ensuring a proper implementation of developed standards, not by obliging their use, but by undertaking proper promotion and education activities (voluntary compliance); and

- ensuring the establishment of an efficient and understandable standardisation mechanism (transparency and coherence).

2. ELEMENTS OF THE PROPOSED MODEL

The current EU ICT standardisation landscape is marked by an institutional part (the formal standardisation system) and an informal part (loose set of standardisation related initiatives). The informal part is becoming more and more important and should be given the necessary attention by the EU ICT standardisation policy. We think that the best way to synchronise the new tendencies is to integrate them in the institutional part, i.e. using the standardisation system as the basis for European standardisation efforts, but adapting it to the new reality.

Therefore, we would propose to establish a levelled decision making process, to adopt an open minded and realistic approach as to the role of European standardisation in the world, to directly involve other organisations than ESOs in parts of the standardisation process, to promote the adoption of the voluntary standards by making them freely available, etc.

The proposed model would continue to preserve public oversight of critical standard setting processes, can set standard strategies for Europe, can help to increase the rate of adoption of EU standards in global markets, and can also help in establishing political consensus to pave the way to

the introduction of new products in a multinational region. Direct intervention in the market would be kept to a minimum to allow the EU businesses to be competitive globally.

By adopting elements of this model, we believe that the current valuable EU standardisation system – including its mechanism of co-regulation – can continue to be an efficient and proper answer to the changing market conditions described in Part III of this report.

2.1 Introduction of levelled decision making platforms

Decisions regarding ICT standardisation should be taken at three decision levels: policy, strategy, and operational. We will assume first that each level has a distinct identification (or platform) from the others.

2.1.1 Policy platform

For creating a coherent and consequent ICT standardisation policy, an open discussion between the national and EU policy makers, especially within the European Commission itself, will have to be initiated. This initiative could formally take place in a policy platform for ICT standardisation. This platform would be hosted by the European Commission and consist of European Commission officials and national representatives who could together define a long term EU ICT standardisation policy.

Participants - The policy platform is a high level platform to set major lines for the future and resolve (possible) problems at political level. It should therefore include the European Commission and the Member States only. ESOs, industry and public interest stakeholders could be asked to provide relevant input to the platform.

Tasks– The policy platform is responsible to set long term policies for Europe. Its tasks are:

(a) identification and differentiation of policy areas where different degrees of intervention should be exercised (for instance, legislation, regulation, public procurement, digital signatures, eHealth, etc.);

(b) clarification of the areas that fit entirely or partially in the public policy area, and clarification of the areas that do not fit at all and must be defined under the issues of competitiveness and market;

(c) setting short, medium and long term priorities in the various policy areas (it should take into account industrial policies such as the ability of the European industry to respond to the requirements, and commitments from the Member States to be active in the implementation of the chosen areas);

(d) identification of areas where further integration of the internal market must be pursued;

(e) identification of problems where the application of (European) standards in public sector orders are not followed appropriately.

2.1.2 Strategy platform

The strategy platform is a formal place where stakeholders and public authorities can dialogue on the future directions of standardisation efforts based on the strengths and interests of the stakeholders and based on the envisaged short, medium and long term policy objectives.

Another objective of this platform is to establish the necessary consensus between the players to create the conditions to launch investments in new initiatives. Most of the times, the market alone cannot make technical evolutions due to "chicken-and-egg" situations.

Consider the following two examples. One of the successes of GSM was the agreement on frequency bands throughout Europe, and the agreement and the commitment of the operators on the yet to standardise technology. Another example refers to the Internet. In technical terms, the Internet is

blocked. Standards on IPv6, IntServ, DiffServ, Mobile IP, etc. have been defined for years now but their deployment will not happen due to the lack of investments of the ISPs. One ISP will not start an investment because it cannot take advantage of it if all the other ones do not invest. All the recent evolutions of the Internet are performed by overlay networks, in order to not demand changes at the core. The strategy platform can then be a forum where concertation can be achieved and programmed to enable long step endeavours.

Participants– The strategy platform is composed by the Member States, the European Commission, ESOs, non-formal SDOs, specification providers, public stakeholders (e.g. ANEC and NORMAPME), and industrial stakeholders. The inclusion of the non-formal SDOs and the specification providers is subject to their willingness to participate and the approval from the European Commission that they follow the EU or WTO TBT standardisation principles in their procedures. The inclusion of the public and industrial stakeholders is subject to their willingness to participate and the approval of the European Commission.

Tasks – Once the major lines of activity are defined, as well as the main guidelines regarding horizontal aspects such as interoperability, user participation, etc. by the policy platform, it is up to the strategy platform to come up with requirements and conditions on how to proceed to implement the policy objectives.

The main tasks of the strategy platform could consist of:

(a) creating the necessary consensus between the Member States, the European Commission and other represented players for the creation of a unique vision of the solution to the problem to resolve (e.g., in terms of requirements and commitment);

(b) guaranteeing that the requirements due to the diversity of the European reality are turned into advantages for the products and standards and not regional handicaps. If a product or a standard is able to incorporate the requirements of a multinational region as Europe, it will stand and win at global level;

(c) synchronising the work with international standardisation organisations;

(d) setting up conditions to improve interoperability of the standards to be developed (various scenarios can be considered, ranging from an overambitious one where an open infrastructure can be created to support *all kinds* of services, up to vertical infrastructures per sector controlled by alliances or associations);

(e) promotion of arrangements that go beyond the framework of industrial standardisation but depend on the agreements concluded in particular fields of professional activity and contribute to the efficient exchange of information (e.g., travel agency transactions, money transactions, etc.);

(f) the management of the work programmes;

(g) proposing co-operation activities in the standardisation area with other regions of the world; and

(h) monitoring the implementation of standards belonging to approved policy areas, identify obstacles and propose solutions to eliminate them.

It is also a duty of the strategy platform to propose lines for the future to be approved by the policy platform. Amongst them are the following:

(i) preparation of work programmes and proposal of priorities; and

(j) preparation of reports describing the execution of the activities in the field of ICT.

It is important to note that we see this platform as having an advisory role. Decisions taken at this level should always be approved by the policy platform, the European Commission, or even in a more formal way (Council, Parliament).

In Practice – From a practical viewpoint, the policy platform and the strategy platform could be part of one organisational entity. This entity could be called a High Level Strategy Group on ICT Standardisation. The above called policy platform would be a sub-group of this High Level Strategy Group on ICT Standardisation whose participation is limited to public authorities discussing on policy issues. It would convene less frequently as the scope of their decisions is longer in time.

2.1.3 Operational Platform

The operational platform is an execution body but it has also an advisory role concerning operational issues.

Participants– The operational platform is composed by the European Commission, ESOs, non-formal SDOs, specification providers, public interest stakeholders (e.g. ANEC and NORMAPME), and industrial stakeholders. At operational level, the presence of the Member States it is not seen as relevant. The inclusion of the non-formal SDOs, the specification providers, and the stakeholders uses the same procedure as for the strategy platform and it makes sense that the same entities are represented at both platforms.

Tasks – The operational platform receives the decisions approved at higher level. One type of decision can be the willingness to pursue the standardisation activity in some area without any attached mandate. This can be the result of a consensus on a general policy area where it was decided that the market should have the lead. The operational platform must decide which standardisation body (or a joint effort of more than one) should specify the standard. This is very much a co-ordination tasks of the standardisation activity.

Another type of decision is the willingness to mandate on a certain subject. The operational platform should propose the text of the mandate and suggest the target organisation (or organisations) for that mandate. The final decision to issue the mandate lies within the European Commission.

The operational platform should also take care of other operational issues. The main tasks are then:

(a) co-ordinate standardisation activities identified by the strategy platform that are not subject to mandates;

(b) propose texts and target organisations for the mandates that the European Commission is willing to perform;

(c) execution of the work programmes;

(d) detailed report describing the execution of the activities and the practical results of their implementation; and

(e) proposals of new areas where general policies should start.

2.2 Open minded and realistic approach towards global position of EU standards

ICT standardisation takes place in a global environment, with different players involved and different interests at stake. Not taking this reality into account and not taking efficient and coherent actions towards these players would risk European interests to become ignored and finally EU ICT standardisation to become irrelevant on a global level.

Therefore, an open minded and realistic approach towards the role of EU ICT standardisation in a global environment should be part of the EU ICT standardisation policy. This approach should be coherent with the policy objectives and not only be based on ad hoc initiatives.

Currently, different initiatives have been undertaken for allowing a global impact of the EU standardisation efforts, such as entering into cooperation agreements on different levels and with different players, or delegating EU representatives to standardisation organisations or regions.

Still, we think that work has to be done in strengthening the role of EU ICT standardisation on a global level. Certain agreements are valuable, should remain and even get stronger. Others were performed as a symptomatic reaction and are probably better handled in a different way.

Cooperation with formal SDOs– ESOs have an important role in standardisation in Europe and have established agreements with international SDOs, which should continue and be strengthened. These are the cases of the Vienna Agreement, the Dresden agreement and the MoU in the Telecommunications Sector. There are areas of ICT where these arrangements respond quite well to the requirements of the reality.

Cooperation with non ESOs– However, for certain areas of ICT, the reality is not any longer the creation of standards by experts, that will be implemented by the industry and get revised due to the feedback from their utilisation. The Study has shown that the industry prefers to drive the process and created what was called non-formal SDOs and specification providers to define the standards. The consequences of this choice were serious and two of them are relevant to this section: the starvation of expertise from the formal organisations, and the creation of standards outside of the formal system. It was described that the reaction of the formal system was to try to integrate somehow the non-formal system. In the case of ESOs, the cooperation between the formal system and the "non-formal" system was based on agreements. "Fast track" procedures were also defined within ESOs and within international SDOs. It is a complex and cumbersome solution, as the Study has demonstrated. We do not believe that it will stand for many more years. Therefore, a better way to integrate the "non-formal" system than the usage of the cooperation agreements was proposed with the platforms. It is not a solution at global level (because the institutions are European institutions), but would allow Europe to take more advantage of the "non-formal" world in a coherent way and possibly bring "action" to the region.

NSB cooperation– The role of the National Standardisation Bodies (NSBs) in these specific areas of ICT seems to be somehow emptied due to these choices of the industry to perform the standards. In future terms it is difficult to identify a clear role for NSBs in these areas: they might change dramatically and start acting based on the rules of consortia to attract the action. This seems unrealistic due to the impact on their structural organisation that works very well for other areas. Our opinion is that NSBs should focus on the areas where their work is valuable instead of aiming at covering the whole reality using the same rules and procedures.

Regional cooperation – Another level of co-operation is the co-operation between regions in the world. There are different aspects here: certain consortia act at global level and their willingness to participate in the European platforms provides already a global dimension and a certain cooperation. Another kind of co-operation is between formal organisations from other parts of the world – for instance, China, India, Korea, United States, Australia, etc. Europe has already a representative for standardisation issues in China. Such initiatives should continue and cover other regions, but it should be borne in mind that its importance might be more relevant for the formal system of standardisation and the issues that work well under its scope. Once again, as for NSBs, different problems and realities should be addressed differently. Strategic co-operation based on the identification of areas where the European industry can actively participate and gain from mutual endeavours should be one objective of the action of the representatives.

2.3 Transparent and diversified use of mandates

The use of mandates is a very valuable tool in the hands of the European Commission to exercise an active role in the standardisation process in public policy areas. Without mandates, the European Commission would not be able to directly initiate standardisation initiatives in those areas and its role would be restricted to a more persuasive, more passive, role.

Therefore, we think that the mechanism of mandates should continue to exist, although in an updated form.

- Currently, the mandating mechanism is formally restricted to New Approach standardisation activities, although, in reality mandates are also being used outside of the scope of the New

Approach on an ad hoc basis (e.g. eHealth, electronic signatures, eInvoicing). We think that the model should formally allow the use of mandates outside of the scope of New Approach.

- Currently, the issuance of mandates is restricted to ESOs only. We think that the model should allow for some standardisation related activities and in some circumstances the European Commission to mandate other organisations than ESOs.

We would plead for a differentiated approach towards the use of mandates, based on the policy objectives to meet, the work to be mandated and the players to whom the mandate can be issued.

Who to classify?– The existence of the platforms defined above can help to put the various problems in perspective and provide different answers to different problems.

Regarding the ICT reality, it is expected that activity in market oriented policies will gain an ever growing share of the total activity which makes the reaching of consensus at the strategy platform more relevant than the concrete issuance of mandates. For the non-regulated part of ICT, mandates should be issued with very precise objectives. It is expected that their numbers tend to be small.

This is an area that is unquestionable outside the New Approach one. For each objective, the best organisation (the one which proves to have more expertise in the field) should be chosen, regardless of being an ESO or not. It is important to note that mandates are not orders given to organisations, and their acceptance by non-ESOs organisations should imply their commitment to the spirit of the legislative acts. Ex-post assessments of these initiatives would be valuable to understand the efficiency and the benefits of mandating non-ESOs organisations.

The proposed model should incorporate a classification of policy areas (New Approach, Public interest, other policy areas) and then define what level of involvement could be necessary (Studies, Recommendations, drafting of standard, etc) by which entity (ESO, non-ESO). The classification should be drawn up by the policy and strategy platform and could take into account the following differentiation as a starting point:

Type of standardisation area / Type of mandated work	New Approach	Public interest	Other policy areas
Studies	ESOs	ESOs / Other organisations	No mandating
Recommendations for standardisation work	ESOs	Other organisations	No mandating
Standardisation	ESOs	Other organisations	No mandating

2.4 Increase the voluntary adoption of European standards

2.4.1 Marketing efforts

A parallel effort to the creation of standards that aim at global level, is to support their implementation in Europe and, if relevant, in other regions of the world. Without any doubt the standards need to have technical merits and need to have caught the attention of the market as a first step. It is always easier and more successful to "sell" a good product. Throughout Part III of this report, a series of recommendations were written on this respect and are summarized here.

Looking at the past, some success stories happened but under very specific conditions: New Approach standards got market acceptance due to their legal framework. Although the New Approach standards referenced in legislation are to be adopted on a voluntary basis, the market usually chooses to implement these standards because of the presumption of conformity with the essential requirements of the law. GSM was already deeply analysed in the first Interim Report and

in this one and it is very much a result of very special conditions unlikely to happen again. For areas slightly co-regulated or without regulation, new approaches must be defined. However, one condition seems to be necessary: the (European) market has to accept the standard in the first place. Products following the standard will then be made and sold.

As a main measure, a European industrial policy for ICT must be defined to identify and select areas where Europe is at an advantageous position and prepare other areas where work must be done to improve them and place them at global level. The policy and strategy platforms seem to be places to discuss these issues. Means to improve them can be investment in R&D programmes, the trial of new initiatives of associating know-how (Integrated Projects, European Technological Platforms, etc.), industrial alliances on vertical issues, etc.

The identified potential global successes should be subject to promotional activities involving commercial policies and the representative for standardisation issues in other regions.

Public procurement is an area where public administrations are direct clients and can force the establishment of the market for European products and standards. Once again, consensus at the policy and strategy platforms can induce a positive drive for the market.

2.4.2   *Free availability of standards*

Certain areas of ICT involve an interested community that can add value to the standardisation process without being formally involved in it. This is not seen in other areas of ICT and surely not in other standardisation areas (construction, transportation, security, etc.).

In Part III of this report, some considerations are given to the importance of the research community to bring standards to the global discussion and to improve them in ways that are not affordable to any enterprise. This is probably an excellent way to provide visibility to a standard, the cost of which would have to be compared to the income provided by the collection of fees from the NSBs or other SDOs.

Therefore, the proposed model would allow free availability of standards developed by SDOs operating in Europe in the ICT area. It is clear that launching this model would have an impact on the business model of SDOs whose income is dependent from the sale of standards. Therefore, a discussion should be launched with all relevant players, possibly in the policy and strategy platform to find an appropriate business model including new forms of income.

PART V.   RECOMMENDATIONS

1. LIST OF RECOMMENDATIONS

Recommendation 1

The European Commission, together with the Member States, should establish an innovative and consistent ICT standardisation policy and should subsequently implement it in a coherent and co-ordinated manner. The new ICT standardisation policy should differentiate between policy areas as follows:

- the domain covered by the general legal framework as defined by Directive 98/34, with specific focus on the Internal Market and the protection of health and safety;

- the EU legislation and EU policy covering public interest domains, such as data protection, consumer protection, eInvoicing, etc.;

- general EU policies ensuring competitiveness of the European market in a not so regulated environment (i2010, eHealth, etc.); and

- horizontal policies that have relevance to the standardisation policy as a whole (e.g., R&D, industrial, users' involvement, etc.).

Depending on the areas, different actions for the EU ICT standardisation policy should be defined. The policy should be fully in line with the standardisation principles laid out by the Council Resolution (1999), the WTO TBT agreement (1995) and the Global Standards Collaboration (GSC) open standards Resolution (2005)

Recommendation 2

The European Commission should reinforce the dialogue with the European Council and the European Parliament about ICT standardisation policy and the subsequent use of ICT standards in EU policies.

Recommendation 3

The European Commission should foster a high level strategy dialogue between Member States, technology providers, technology users, public interest organisations, SDOs and specification providers. The dialogue should focus on the effective implementation of ICT standards, identify policy priorities for standardisation, advise on international relations, and potential co-operation, in view of making effective use of all available resources and providing policy makers with the required standards. The organisational implementation of this dialogue should allow an institutional dialogue between Member States and the European Commission on matters within their specific responsibilities.

Recommendation 4

The high level strategy dialogue should be complemented by a platform permitting an organisational dialogue between SDOs and specification providers, technology users and providers, and public interest organisations. The platform should decide on practical matters and co-operation issues in view of implementing the standardisation priorities and possible accompanying measures.

Recommendation 5

To rapidly respond to the needs for standardisation set by i2010 and the innovation policy, the new ICT standardisation policy of the European Commission should build upon the synergies provided by a better integration of European Standardisation Organisations and relevant consortia & fora activities in the domain. A further integration of fora and consortia by including deliverables within the EU standards catalogue or by direct mandating of fora and consortia, should, however, take into account the specific requirements set by Public Authorities for standards to be used in association with EU legal and policy acts. A differentiation of criteria for this integration and the use of the deliverables should be done in accordance with the differentiation suggested in Recommendation 1.

Recommendation 6

The European Commission should respond to the growing "user" impact on the effective implementation of standards. In its response, the European Commission should differentiate between:

- the industrial users of ICT solutions; and
- other indirect users of ICT solutions and standards such as consumers and SME's.

Especially the concept of "inclusive standardisation process", one of the European standardisation principles, would benefit from further clarification in accordance with the specific needs of each category.

Recommendation 7

The European Commission should include in the new ICT standardisation policy a clear vision on the desired impact of the EU ICT standardisation efforts on a global level, focussing on the protection of EU cultural interests in international standardisation work and on the promotion of European standards to international level for reasons of competitiveness.

Recommendation 8

In view of promoting an increased implementation of European standards and subsequently to increase interoperability of applications and services, the European Commission, the Member States and all public administrations should refer to European standards in the procurement of ICT products, services and applications. The reference to European standards needs to be re-enforced in general through European public procurement legislation.

Recommendation 9

The European Commission should re-enforce the relation between R&D and standardisation; the results of the COPRAS and INTEREST projects need to be further analysed and integrated in the new ICT standardisation policy.

Recommendation 10

The European Commission should include, in the new ICT standardisation policy, tools that promote the use and implementation of European standards. It is recommended to consider measures in following domains:

- a coherent and harmonised (free) availability policy for standards/specifications established by all standards/specification producing organisations within the European standardisation system;

- a coherent and harmonised intellectual property rights (IPR) policy to be implemented by all standards and specification providing organisations within the European standardisation system;

- coherent, transparent accessibility and participation policy for all standards/specification providing organisations within the European standardisation system;

- evaluation of the effects of partition of systems via the standardisation definition in order to make them more assessable to SMEs;

- specific measures that allow increasing trust and stability prior to the implementation of standards such as: conformance testing, certification aspects, interoperability testing, mandatory implementation prior to the final acceptance of the standards (either simple coding implementation or reference implementation), etc.

2. RATIONALE AND IMPLEMENTATION OF THE RECOMMENDATIONS

Recommendation 1
The European Commission, together with the Member States, should establish an innovative and consistent ICT standardisation policy and should subsequently implement it in a coherent and co-ordinated manner. The new ICT standardisation policy should differentiate between policy areas as follows: • the domain covered by the general legal framework as defined by Directive 98/34, with specific focus on the Internal Market and the protection of health and safety; • the EU legislation and EU policy covering public interest domains, such as data protection, consumer protection, eInvoicing, etc.; • general EU policies ensuring competitiveness of the European market in a not so regulated environment (i2010, eHealth, etc.); and • horizontal policies that have relevance to the standardisation policy as a whole (e.g., R&D, industrial, users' involvement, etc.). Depending on the areas, different actions for the EU ICT standardisation policy should be defined. The policy should be fully in line with the standardisation principles laid out by the Council Resolution (1999), the WTO TBT agreement (1995) and the Global Standards Collaboration (GSC) open standards Resolution (2005)

Why: The current ICT standardisation policy is characterised by symptomatic responses to evolving challenges, and has lost its holistic approach. Furthermore, the EU policy makers within the European Commission do not always look in the same direction when defining their vision on ICT standardisation, reason why it is difficult to speak about one clearly delimited EU ICT standardisation policy. The characteristics of the standardisation procedures and the involvement of the European Commission is different depending on the classification of a certain policy (New Approach, public interest, or addressing competitiveness). A clear definition of these aspects will establish the playing rules for all players in the field.

How: For creating a coherent and consequent ICT standardisation policy, an open discussion between the national and EU policy makers, but also within the European Commission itself, will have to be initiated. This former initiative could formally take place in the policy platform for ICT standardisation explained in the model (and below). The latter should be a consequence of the conclusions of the former and is restricted to the European Commission. The involvement and the activeness of the European Commission participation in a certain policy area should depend on its classification according to the above mentioned metrics.

Recommendation 2

The European Commission should reinforce the dialogue with the European Council and the European Parliament about ICT standardisation policy and the subsequent use of ICT standards in EU policies.

Why: The discussion on the future of ICT standardisation remains restricted to a limited group of standardisation experts and stakeholders, who are directly involved in standards setting activities. The ICT standardisation discussion should now be broadened to a higher political level. The identified challenges and proposed actions for adapting the current EU ICT standardisation policy should be encapsulated in the broader policy of the EU and therefore need to be put on the agenda of EU policy makers who are not active in the field of standardisation.

How: The European Commission could submit a progress report (including a work programme) to the European Parliament and the Council on standardization activities in the ICT sector. This information exercise could for example be done based on article 9 of Council Decision 87/95, requiring the European Commission to report to the Parliament and the Council every two years on a.o. the implementing arrangements adopted within the Community, the results obtained, and the application of those results in public procurement contracts.

Recommendation 3

The European Commission should foster a high level strategy dialogue between Member States, technology providers, technology users, public interest organisations, SDOs and specification providers. The dialogue should focus on the effective implementation of ICT standards, identify policy priorities for standardisation, advise on international relations, and potential co-operation, in view of making effective use of all available resources and providing policy makers with the required standards. The organisational implementation of this dialogue should allow an institutional dialogue between Member States and the European Commission on matters within their specific responsibilities.

Why: The specific characteristics of ICT call for a dialogue platform amongst the participants to be established. Currently the single committee on standardisation that convenes is the 98/34 committee. It has a wide range of concerns, covers issues related to the New Approach legislation, and does not fulfil the needs of ICT (the incorporation of relevant players for setting up consensus, etc.). Therefore, a platform with the referred participants is seen as valuable to set strategies and achieve consensus in a multinational region such as Europe. Nevertheless, political tasks – such as the definition of high level policies and their prioritisation – should remain as a task for the Member States with the help of the European Commission. This calls for a more restricted platform that should convene less frequently. We recommend it to be a sub-committee of the first one. This subcommittee, named policy platform, is therefore restricted to the European Commission and the Member States. A general description of the tasks of the committees is included in Part IV (Model) of this report.

How: The "spirit" of the Council Decision 87/95 is still very relevant, but in practical terms much of what it is stated is not followed nowadays. Instead of simply revitalise it, some minor changes can be made to upgrade it to the current reality. Some clauses must be assessed towards their long-term

relevance and some amendments should be adopted to incorporate the platforms mentioned in this Recommendation. This work could be performed as a work package to be included in the next version of the ICT standardisation work programme. Meanwhile, it is probably worth mentioning that the SOGITS committee can be invited to convene again by simple invitation of the European Commission, and other participants than the representatives of the Member States can be invited using the figure of experts or advisers. Putting this recommendation in practice using such a technicality should only be considered as a transient mechanism towards a more systematic and clean legal framework.

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Recommendation 4

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The high level strategy dialogue should be complemented by a platform permitting an organisational dialogue between SDOs and specification providers, technology users and providers, and public interest organisations. The platform should decide on practical matters and co-operation issues in view of implementing the standardisation priorities and possible accompanying measures.

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Why: Europe has had a past (and is still having a) positive experience on co-operation in the field of standardisation that should be cherished and strengthen. Strategic decisions taken at higher level should be followed up at operational level in an institutional way to be consequent. Activities such as the monitoring and control of the decisions need a more specific platform than the high level strategic one. Part IV of this report describes the main tasks assigned to this operational platform.

How: The legal framework for the operational platform should come from the update of the Council Decision 87/95. As it is expectable that it might take some time, a possible interim mechanism might be the use of the current ICTSB. Almost all of the players proposed for the operational platform have currently a sit on ICTSB.

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Recommendation 5

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To rapidly respond to the needs for standardisation set by i2010 and the innovation policy, the new ICT standardisation policy of the European Commission should build upon the synergies provided by a better integration of European Standardisation Organisations and relevant consortia & fora activities in the domain. A further integration of fora and consortia by including deliverables within the EU standards catalogue or by direct mandating of fora and consortia, should, however, take into account the specific requirements set by Public Authorities for standards to be used in association with EU legal and policy acts. A differentiation of criteria for this integration and the use of the deliverables should be done in accordance with the differentiation suggested in Recommendation 1.

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Why: Relevant ICT work is being done by non-formal SDOs and specification providers outside of the formal standardisation system. Ignoring such work at policy level and consider it just at market level was shown in this Study not to be the best approach. Nowadays informal ad-hoc contacts between the European Commission already take place and it is relevant to make them part of the EU ICT standardisation policy. The incorporation of the non-formal system raises some problems that

must be solved (their procedures, the degree of incorporation of their deliverables, the conditions for mandating, etc.). Some of these were deeply analysed in this Study. A complete clarification must be done in order to quickly integrate their efforts in the European ICT standardisation policy.

How: The inclusion of consortia & fora must always be based on their willingness to participate. Their involvement and participation should always go via the strategy platform, in order to take the most of their activity along the strategic lines of Europe. The European Commission should define the necessary requirements that it expects consortia & fora to have in order to be entitled to be invited. These requirements should be based on the set of internationally accepted standardisation principles (Council Resolution, WTO TBT and GSC). It should define and propose to the Parliament the guidelines for the changes needed on the legal framework to incorporate the work of consortia & fora. It is recommended that their work will always be performed outside the New Approach initiatives, which minimizes the changes to the legislation. The operational platform should advise the European Commission on the assignment of tasks (including mandates) to consortia and fora.

Recommendation 6

The European Commission should respond to the growing "user" impact on the effective implementation of standards. In its response, the European Commission should differentiate between:

- the industrial users of ICT solutions; and

- other indirect users of ICT solutions and standards such as consumers and SME's.

Especially the concept of "inclusive standardisation process", one of the European standardisation principles, would benefit from further clarification in accordance with the specific needs of each category.

Why: A large gap exists between, on the one hand, the inclusive aims of European standardisation policy and, on the other hand, the low level of actual user participation: SMEs and consumers are underrepresented in standardisation activities, whereas industrial ICT users' efforts are limited to sector specific standardisation involvement.

To bridge this gap, attempts have been made to mould practice to fit the standardisation principles. These attempts have largely failed. Where user involvement is necessary, a more substantive and active inclusive approach is needed. From the European point of view, a focus on strengthening indirect user participation at the European level would seem most effective.

But even if the conditions for user participation were favourable, there would still be a lack of users in standardisation. This is caused to a large degree by lack of awareness of the importance and benefits of standards. Therefore, the overall level of awareness, knowledge and expertise needs to be raised.

How: Examples of policy focus that strengthen the participation of political minorities in European standards committees and their position have been given in the report. We would, also, recommend large organisations to organise themselves on a cross-industry level for representing their interests as ICT users in the standardisation area. As to awareness creation, the European body of expertise needs to be strengthened and disseminated in a structural way by introducing standardisation in regular and advanced education.

On a policy level, the EU ICT standardisation policy will need to differentiate much more than before. ICT standardisation policy measures must distinguish between direct and indirect users of

standards, and between implementation and adoption of standard-compliant products, respectively. It must take into account the differences between categories of users (e.g. the interests of SMEs and consumers diverge on the importance of design for all), and between standards development and implementation (e.g. in respect to the needs of ICT-SMEs). For the sake of argument, effective policy on standards implementation may ultimately be more decisive for the European information society than involving users in their development.

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Recommendation 7

The European Commission should include in the new ICT standardisation policy a clear vision on the desired impact of the EU ICT standardisation efforts on a global level, focussing on the protection of EU cultural interests in international standardisation work and on the promotion of European standards to international level for reasons of competitiveness.

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Why: ICT is already a global activity, and the justification and market importance of regional products is hard to impose. Not adapting to the global environment by actively participating in global standardisation activities, may cause the European standardisation work, including its safeguards, to become irrelevant. The strategy to participate in global standardisation activities should take into account that there is a need to stress the regional character of standardisation when it comes to safeguarding typical European values. The complex multinational structure of the European region should be taken as an advantage to create standards that can more easily integrate the diversity at global scale. Excellent standards that find their way to the European market are easily deployed at global scale providing a head advance to the European industry.

How: A global impact strategy should be developed by the EU and national policymakers together with ESOs and relevant industry and public interest stakeholders. This strategy should include a methodology for classifying standardisation activities on their regional and on their global impact. The classification should identify, on the one hand, those international standardisation activities (performed by international standardisation bodies but also by consortia or fora) that do not fully take into account the European regional interests (culture, economy) and identify, on the other hand, the EU standardisation activities that would benefit from a global acceptance. The criteria to be used for the classification should be carefully chosen (global impact criteria such as uniqueness, interoperability, or advantage for EU industry; regional impact criteria such as data protection, consumer protection issues). Only on standardisation activities with a high score, efforts for influencing the international standardisation activity or for upgrading a European standard to a global level should be focussed.

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Recommendation 8

In view of promoting an increased implementation of European standards and subsequently to increase interoperability of applications and services, the European Commission, the Member States and all public administrations should refer to European standards in the procurement of ICT products, services and applications. The reference to European standards needs to be re-enforced in general through European public procurement legislation.

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Why: Public administrations also act as important market players when buying ICT related products and services. If public administrations would refer to European standards in their public procurement procedures, a market uptake of European standards could certainly be expected. We are of the opinion that it does not make sense to oblige member states to make reference to European deliverables for the sake of it. The quality and usefulness of the European deliverable should be so that the choice for referring to them is self-evident.

We are of the opinion that if our other recommendations are being taken into account the EU would create standards that are competitive with other global standards. However, if the European and national governments – the actual initiators of the EU standardisation work – do not make use of the European deliverables, how can they expect the market to use these standards? Therefore, we think that governmental bodies indeed should be obliged to make use of European standards, unless they can explain that other standards are more relevant for a specific circumstance. Legal obligations already exist (Council Decision 87/95, public procurement directives). However, it looks like many Member States have forgotten to apply this rule and often refer to standards developed outside of the EU standardisation system, although an EU alternative standard could have been taken. Furthermore, as to the use of European standards by European institutions, it looks like public procurement procedures do not always refer to European standards either.

How: Public authorities should be reminded about the legal rules and their implications on the use of standards in the public procurement processes. This information could be done through official communications from the European Commission to the national authorities, but also internally on EU administrative level. Furthermore, information workshops and publications should be initiated on the use of standards in public procurement procedures. It would, however, be relevant to organise a consultation of public authorities on the reasons why often no reference is made to European standards in tendering documents (lack of knowledge about existence of relevant European standard, deliberate choice to use other standard). This consultation could be launched as a new Work Package in the next version of the Standardisation Action Plan.

Recommendation 9

The European Commission should re-enforce the relation between R&D and standardisation; the results of the COPRAS and INTEREST projects need to be further analysed and integrated in the new ICT standardisation policy.

Why: R&D projects sponsored with European money are not delivering the expected benefits for European industry, benefits that could take shape via standards or otherwise in new markets. Moreover, where European R&D projects do lead to standards, the knowledge seldom finds its way to (European) standards bodies. It is often fed, without overt recognition, into the committees of standards bodies in other than the European region. Also, another closely related problem is emerging, one which in first instance concerns the ESOs, but will soon impact the whole EU. That is, acquiring the necessary technical expertise for European standardization, which is sparse as it is, will in the near future become a grave problem due to the lack of engineers in technical sciences and the prognosed retirement of many active experts now shouldering most of the standards work. In areas where there is a need for standardisation, it is a waste of resources not to use the results of EU research.

How: As a recommendation for closing the gap between R&D and standardisation, we would support the recommendations made by the COPRAS (COoperation Platform for Research And Standards)

project: COPRAS proposes early contacts between the standardisation groups and the R&D projects. Furthermore, it suggests that some dedicated support should be integrated at the end of projects, through separately funded calls for tender, with "standards support" as a specific set of calls for tender. It further concludes that additional ways of identifying requirements from standards organisations to IST research at an early point in time could greatly improve the standardisation potential of research output.

Also, to improve the relation between Research and Standardisation in Europe, we recommend that the guidelines produced by COPRAS and INTEREST (INTEgrated REsearch and STandardisation) are used. These guidelines are the "Standardization guidelines for IST research projects interfacing with ICT standards organizations" and the INTEREST manuals for Integrating Research and Standardisation. The European Commission should enable (horizontal) support actions building upon the achievements of the two projects. EU pilot projects should be instigated and supported that implement and evaluate these guidelines in standards bodies and research organisations.

Recommendation 10

The European Commission should include, in the new ICT standardisation policy, tools that promote the use and implementation of European standards. It is recommended to consider measures in following domains:

- a coherent and harmonised (free) availability policy for standards/specifications established by all standards/specification producing organisations within the European standardisation system;

- a coherent and harmonised intellectual property rights (IPR) policy to be implemented by all standards and specification providing organisations within the European standardisation system;

- coherent, transparent accessibility and participation policy for all standards/specification providing organisations within the European standardisation system;

- evaluation of the effects of partition of systems via the standardisation definition in order to make them more assessable to SMEs;

- specific measures that allow increasing trust and stability prior to the implementation of standards such as: conformance testing, certification aspects, interoperability testing, mandatory implementation prior to the final acceptance of the standards (either simple coding implementation or reference implementation), etc.

Why: The uptake of standards from the market and the consequent construction of products are getting more complex than before. Strong investments in ICT by users, operators, ISPs, etc, are hindering the swift deployment of new standards. This is not a problem restricted to Europe, but it is our opinion that some actions can be made to enlarge the visibility of European standards and turn the European standardisation system more competitive. This Study has identified some of them that we recommend. It is also worth to consider the importance and impact of taking into consideration the smaller size of SMEs (the majority of the European economy) in the definition of standards following the usual partition of systems that proved well in the telecommunication sector.

How: The practical suggestions of this recommendation are very different in nature, but were identified as the major issues to be covered in the near future. Discussions at the proper level should be initiated by the European Commission in order to get into decisions using the more appropriate means.

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STUDY ON THE SPECIFIC POLICY NEEDS FOR ICT STANDARDISATION

Final Report

ANNEX A: Bibliography

Brussels, 10 May 2007

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1.   Policy texts

Name	Date	Reference
Action Plan for European Standardisation	April 2006 (final)	Action Plan 2006
Council conclusions on European standardisation	21-22 December 2004	Council document 14790/2/04 REV 2
Communication from the Commission to the European Parliament and the Council on "The role of European standardisation in the framework of European policies and legislation"	18 October 2004	COM (2004) 674 final
Commission's staff working document "The challenges for European standardisation"	18 October 2004	Annex to COM (2004) 674 final
Council conclusions on the 'Integration of environmental aspects into European standardisation' have been adopted at the Council meeting of 4 October 2004.	4 October 2004	
Communication from the Commission to the Council, the European Parliament and the European Economic and Social Committee on the "Integration of Environmental Aspects into European Standardisation"	25 February 2004	COM(2004) 130 final
Report from the Commission of 2003-05-23 to the Council, the European Parliament and the European Economic and Social Committee on "The operation of Directive 98/34/EC from 1999 to 2001"	23 May 2003	COM (2003) 200 final
Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions "Internal Market Strategy, Priorities 2003 - 2006"	7 May 2003	COM (2003) 238 final
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STUDY ON THE SPECIFIC POLICY NEEDS FOR ICT STANDARDISATION

Final Report

ANNEX B: Field Expert Position Papers

Brussels, 10 May 2007

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I. KEITH DICKERSON

A NEW ROLE FOR EUROPEAN ICT STANDARDISATION

Abstract: This paper identifies the ICT standards requirements of the major European stakeholders, the current problems with European ICT Standardisation, and the challenges that any European ICT Policy must meet. It proposes new aims for a European ICT standards policy and a series of mechanisms to achieve these more effectively. These include a new structure for European standardisation which would go some way to meeting these challenges and result in a more favourable environment for stakeholders to get the standards needed to promote the competitiveness of European products and services.

1.   What do we need to Standardize?

ICT in the context of this paper is taken to mean the convergence of IT and telecommunications to provide advanced services and networks. The primary focus of the European ICT stakeholders at present is to develop the Next Generation Network (NGN). This will provide multimedia, video, and data services to customers and completely replace the existing PSTN and ISDN networks, providing equivalent but higher quality services more cost effectively. 100s of billions of Euros will be spent over the next 10 years on developing these networks and launching these services in Europe and ultimately in all countries worldwide. It will be a major standardisation effort involving service providers, equipment vendors, regulators and users, and will touch on all our lives.

An overview of the technology domains making up the NGN (based on the BT 21st Century Network) is shown in Figure 1. It can be seen that the network components (home, access, and core networks) as shown in the lower left of the diagram, are a relatively small part of the whole system. IT resources (processing and storage) are needed as well as a service execution and service delivery environment and a way of managing both the network and the enterprise (OSS). Many technology disciplines are needed and standardisation plays a large part in the ability to deploy them effectively.
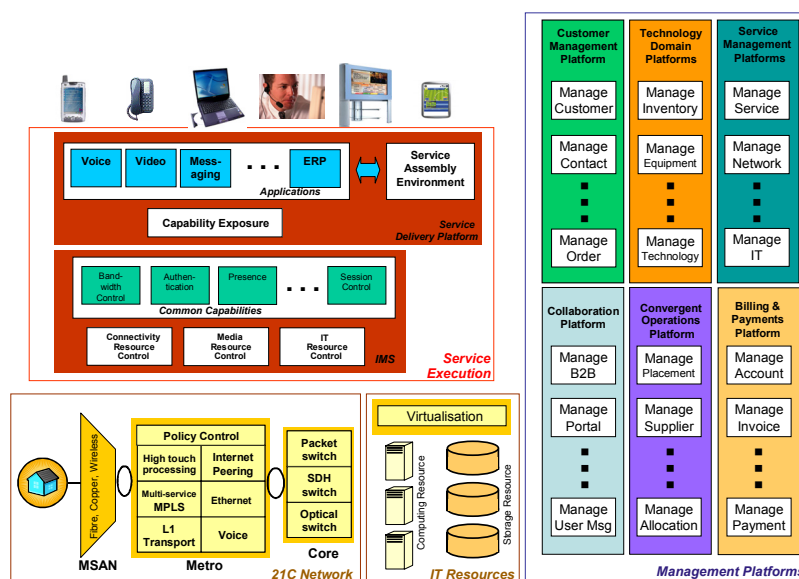

Figure 1 –Top-level Architecture of the NGN

The NGN is based on the following core concepts:

- An IP-based core network for *all* services. This could use an enhanced form of Diffserv or Multi-Protocol Label Switching (MPLS) to provide an acceptable level of QoS for real-time services.
- SIP as the protocol of choice for establishment of session-based services (VoIP, multimedia, etc.), including presence management.
- A core architecture based on the 3GPP IMS (IP Multimedia Subsystem), with extensions for access via Wi-Fi, GPRS, DSL, Ethernet, etc. This could mean that there will be little distinction between fixed and mobile networks within 5 years.
- Evolution to use IPv6. This will be essential for the enhanced addressing, autoconfiguration, and security features, and a mandatory feature of the 3GPP transport architecture.
- A residential access network converging on a DSL-based gateway – in BT's 21CN this is the Multi-Service Access Node (MSAN).
- Open APIs that will allow third party application providers to deliver services over the NGN.
- A common intelligence layer controlling all services, including real-time services currently provided by the PSTN/ISDN.
- A standards-based Home Gateway providing seamless access from wide area networks to home networking services.
- Operational Support Systems (OSS) based on a common set of components for all services (not stovepipes) and using directories, middleware, and B2B Gateway technology to provide communication between these services.

Recent technology developments that are important to the above include RFID, GRID and IPTV.

All of the above areas fall into the scope of 'ICT' standards, and so the environment in which ICT standards are developed, and the mechanisms through which they are developed, will be critical to the success of European industry and to the future competitiveness of European products and services on a very wide scale. Therefore, any European ICT standards policy must support the development of the NGN in the most effective way possible. It must allow all stakeholders, including service providers, equipment vendors, regulators and users to come together to agree the standards necessary to meet the full set of requirements. The standards must also be agreed in a timescale that meets the needs of these stakeholders (a very difficult task!).

2. So what are the problems with standardisation?

Why can't we have all this tomorrow and rely on the traditional standards processes for the standards we need to implement the NGN? There problems are described in the following sections.

2.1 Insufficient representation from Stakeholders

Service Providers used to drive the formal standards process in the telecommunications area. Due to overcapacity in the marketplace and the subsequent economic downturn, the service providers have had to reduce staffing levels drastically and (with some exceptions) have withdrawn from the standards process. This has resulted in a vicious circle where equipment vendors have to second guess what the operators need, leading to bottom-up solutions that don't interwork successfully or meet operator's needs. An example of this is Diffserv, which works reasonably well within a corporate or enterprise network. However, because there are no standardized classes of services between operators, it does not work for traffic sent between operator domains. An even more problematic example is fault management—a situation in which the IETF rarely considers operator requirements.

The IETF has been the driving force for the standardisation of new IP-based networks, which are providing the basis for telecom NGNs. Unfortunately, the IETF is working to a different business model and therefore providing standards that do not meet the needs of the telecom operators. Because vendors dominate the IETF, they have the ability to develop any "standard" they desire through "rough consensus and running code" (a process that requires demonstration of interoperable running code from at least two different vendors). This is covered in more detail later.

2.2   There are there so many Fora and Consortia these days – it's hard to keep track!

Many fora and consortia work at different levels in numerous overlapping technology areas relevant to ICT and networks. Over 500 are listed in web-based catalogues of fora and consortia such as ETSI's FORAwatch http://www.etsi.org/forawatch/, and, at one time (before the collapse of the dot com bubble), new fora and consortia were being created at the rate of at least one a week. It is impossible for service providers to keep track of all of these, and it is not clear to a service provider (or even to an equipment vendor) which group to work with for the standards they need. Vendors often create new fora to obtain a significant influence in the marketplace and to ensure that any resulting technical standards are based on their own product specifications.

2.3   The IPR Morass

One of the most important things to do when creating a new standards body or forum is to get the IPR policy right. This can make the difference between a smooth running and productive forum and one that can't and doesn't function effectively. It has been suggested that traditional standards bodies no longer work due to a complex mass of claims and counterclaims for IPR that are considered essential to a standard's implementation. These claims can delay implementation of a standard by up to four years, putting the future of traditional standards bodies at stake. In the future, only SDOs with successful IPR policies will survive.

The two major flavours of IPR policy are Royalty Free (RF) and Fair, Reasonable, and Non-Discriminatory (FRAND). FRAND (sometimes known as RAND) is the traditional model for IPR that has worked well for many years. Under this model, a "timely" declaration of any IPR thought to be essential to a standard under development must be made so that potential users can consider likely licensing royalties. Once the standard has been published, licenses must be issued fairly to all applicants, and the IPR holder cannot refuse to license the IPR to certain companies (non-discriminatory). If, during the standards development process, these terms are considered too onerous, there is an opportunity to specify alternative (possibly IPR-free, but less effective) technologies in the standard instead. However, standards bodies using the FRAND model have been accused of allowing IPR holders to withhold declarations until a standard is agreed upon, allowing the holders to make a "late" declaration so that unexpected royalties have to be paid (ambushing). In practice, the operation of a FRAND IPR policy is fraught with pitfalls because it depends on what is considered "fair and reasonable," whether declaration is necessary for all IPR or only that considered "essential" (without a clear definition of *essential*), and whether penalties are applied for non-declaration or for non-timely declaration.

For these reasons, fora and consortia are tending to move towards an RF model. In the pure RF model, any IPR essential to the use of a standard must be licensable without payment. Alternatively, any IPR thought to be essential to a standard under development must be declared within a specified time (e.g., three months). Any essential IPR that is not declared within the specified time becomes available RF to users of the resulting standards without payment. The W3C and IETF have recently made moves toward an RF policy, and fora such as OSGi and Liberty Alliance were expressly

created with this IPR policy in the first place. Sometimes exceptions are allowed. For example, W3C allows exceptions to its RF policy if a significant license holder has IPR that would otherwise constitute a roadblock to further development of a standard. This points to a major failing of the RF model — companies that have significant IPR in a standard under development will simply not join or will withdraw from membership of that body, often resulting in the establishment of a de facto or proprietary standard instead of a more open standard.

3.   How can we develop the Standards needed to Build the NGN?

Issues discussed in this section include the role of fora and consortia, the role of national, European and global standardisation, and leads on to the next section which describes how European ICT policy should address coordination of standards bodies and fora and promote legislation to solve the IPR problem.

3.1   Where should we develop Standards for the NGN?

It is often thought that the 'Internet' was standardised by a single body: the Internet Engineering Task Force (IETF). However, in practice the Internet relies on many different standards to provide the access networks, the terminal equipment and the servers required to use and operate it. The NGN has a much wider scope than the Internet and will require standards based on the work of an even greater number of fora and consortia.   Standards bodies and fora making a significant contribution to the standardisation of the NGN include:

- 3GPP – for mobility architecture
- ATIS – for US vendor and operator input to NGN
- CEN – for eBusiness and eMarketplace standards.
- CENELEC – for Home Networking and Cable TV standards
- DSL Forum – for remote configuration of terminals
- ETSI (TISPAN) – to extend the 3GPP IMS to provide fixed and broadband services
- IEEE802 – for WiFi and WiMAX
- IETF – for IPv6, SIP extensions and MPLS
- ITU – for architecture, access and transport standards
- Liberty Alliance – for single (secure) sign-on
- MEF – for Gigabit Ethernet
- MFA – for MPLS
- MSF – for verification and testing of NGN components
- OASIS – for ebXML
- OMA – for (fixed and) mobile applications, DRM
- Parlay – for open APIs for services (Open Services Architecture)
- TMF – for management (OSS) standards
- W3C – for privacy and web services

It can be seen that, although formal standards bodies are included in the above list, that are also many fora and consortia, which have been set up to standardise a specific component or aspect (e.g. OSS, security or privacy) of the NGN. The question arises: would all these fora and consortia have been set up in the first place if the European or global standardisation system had been effective enough to meet the needs of the stakeholders? Unfortunately the answer is yes, and there will be a continuing need to for fora and consortia, so this issue is dealt with first below.

3.2   *Is there a role for Fora and Consortia?*

The standards lifecycle (or food chain) is shown in Figure 2 [4]. This shows the definition of requirements for standards through to the specification of the architecture and systems, to the development of the protocols, and finally to the interoperability testing and certification. In parallel with these, run the putting in place of the regulatory framework and the marketing and promotion of the technology and resulting standards. This is applied to the NGN in Figure 2. It can be seen that there are many bodies involved and although there are overlaps between many of these bodies, there are too many functions to be carried out effectively in a single body. Carrying out the functions in different bodies can be more flexible and efficient, as the key players needed to participate in the work may be different at each stage.
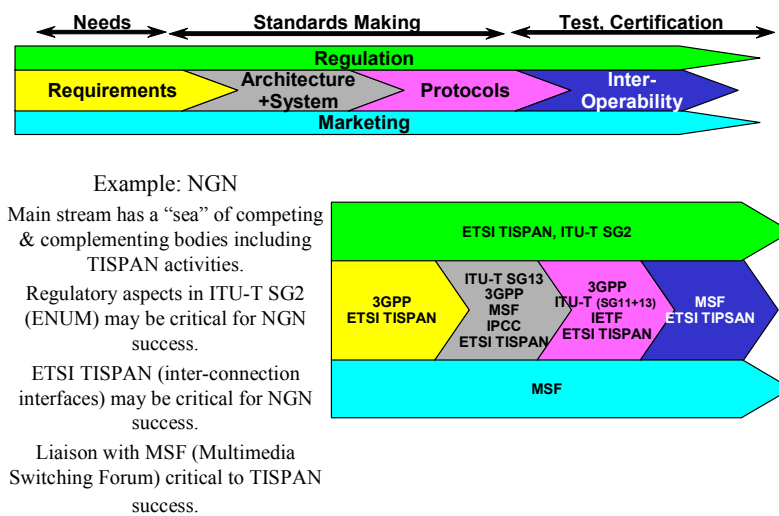
Figure 2 – Standards Life Cycle or Food Chain

Fora and consortia are created for many different reasons at different places in the above lifecycle:

- to promote a new technology (e.g., the Metro Ethernet Forum—MEF)
- to promote interoperability between standards (e.g., the Multiservice Switching Forum—MSF)
- to promote service provider requirements (e.g., FS-VDSL)
- because the formal standards bodies have refused to pick up the issues (e.g. DSL Forum)

It must be accepted that, despite their increasing number, fora and consortia have a valid place in the standards development lifecycle and will be around for many years to come. They often catalyze the development of technologies and specifications that are essential to the next generation of systems, and should therefore be supported provided they have the buy-in of the major players in their field. There will always be a need for fora and consortia to create consensus on the way forward in the standardisation of new interfaces and protocols for new technologies.

Fora and consortia act mainly (but not exclusively) at a global level. European stakeholders must always be free to set up and participate in these consortia, as their participation in industry leading consortia will benefit European competitiveness.

Although it is not possible to prevent the creation of fora and consortia, it is desirable to select a smaller number of fora to develop the standards for the major components of the NGN. For example, in the OSS area, the TMF acts as the focus for the generation of OSS frameworks and components, although it also relies on contributions from bodies such as OSS-J. However, fora and consortia that are not 'selected' may continue to operate, as they may feel they still have a job to do and a valid role to play as defined by their members. They will therefore continue to produce specifications that may compete with those from the selected fora.

Stakeholders therefore need to encourage fora to close down when they have finished their work, or merge with those selected. A successful example of this can be seen in "Layer 2" standards where the MPLS Forum, the Frame Relay Forum and the ATM Forum merged to form the MFA (MPLS and Frame Relay Alliance). Another example was the creation of the Open Mobile Alliance (OMA) in 2002 from the merger of seven smaller fora (including WAP Forum and LIF). After an initial hiatus, this merging led to much more efficient and effective standards development.

3.3   Promoting forum specifications to formal standards

Once a consortium specification is established in a particular market, it makes sense to try to globalize it so that it is applicable to equipment anywhere in the world. Standards globalization reduces the costs for service providers (provided regulatory or cultural constraints don't mean they can't use it), because it enables them to buy equipment from any vendor. It also makes sense for vendors, as they can then potentially sell their equipment to all operators. In addition, specifications from fora are often not recognised by regulators, whereas formal standards are. Therefore, it makes sense to try to fast track fora specifications through formal standards bodies which are more open, neutral, transparent, and permanent and will be there to maintain the standard once created.

Examples of successful processes include:

- European DVB agreement with ETSI
- Fast Track and PAS procedures in ISO/IEC JTC1
- Focus Group (A.7) procedure in ITU-T

There may also be advantages of combining the working methods of the fora (better governance, participation, speed, consensus between real actors, etc.) with the quality and permanence of the formal bodies (experience, public enquiry process, better ability to maintain, etc.).

3.4   Should ICT Standardisation be National, Regional or Global?

Another difference since the rise of the Internet is the increasingly important contribution of regional standardisation. The most important regional bodies for ICT Standardisation are:

- ATIS (Alliance for Telecoms Industry Solutions), based in the Washington and providing an umbrella organisation for ANSI and ANSI-accredited bodies such as IEEE. ATIS recently restructured and rationalised its committees and operates a Focus Group on NGN which has made a major input into ITU.
- ETSI (European Telecommunications Standards Institute) – one of the three ESOs and a founder member of 3GPP (3rd Generation Partnership Project). ETSI is the home of the TISPAN project which is extending the 3GPP architecture to fixed networks. It is also making a major input into ITU.
- CJK (China, Japan, Korea) – An emerging grouping for the Far East which will become increasingly influential due to growth rates in these countries (especially China) and their rapid

promotion and use of advanced services. These countries are driving the next generation of telecoms services, especially in the areas of mobile and broadband services.

However, notwithstanding the importance of these regional bodies, most stakeholders wants global standards for the NGN. Industry wants global standards because:

a) Service providers such as BT have global networks and want to deploy their services in any country in the world, without incurring the cost of creating variants for each.
b) For equipment vendors, regional markets are also too small. Vendors want to produce equipment that can be sold and used in any country in the world, as development cycles are long and cost of R&D for new products is high. The days when vendors could afford to produce different variants of the same equipment to cater for regional and local markets have long gone.

Globally, the most important body for the NGN is the ITU (International Telecommunications Union), although ISO and IEC play specific roles in areas such as web services and messaging. All the regional bodies described above, and many fora and consortia, contribute to the ITU so that global and not regional standards are produced, which guarantees that equipment and services based on these can be used anywhere.

3.5   Is there a role for National ICT Standardisation?

With the completion of the European Internal Market and the putting in place of a harmonised regulatory environment, there should be no role for NSBs in developing ICT standards. NSBs should instead:

1.   Disseminate standards information within their countries. This does not mean that NSBs should be allowed to charge for standards (standards should be available free on web sites) but that they should concentrate on adding value through, for example, proving translations or guides on the use of standards.
2.   Facilitate the participation of the right experts in standards bodies at European and global level. SMEs and users, for example, often cannot afford to travel to European and International standards meetings and the NSBs can facilitate their input through either direct funding or holding pre-meetings to get national views.

The philosophy of the US standardisation system is based on individual (or individual company) participation in standards bodies and fora rather than participation via a NSB. This is the most effective way of getting standards developed as it ensures that the right experts are participating in and developing the standards. There is *no* role for NSB participation in ICT Standards, either at European or global level, and it is essential that the individuals with the most appropriate expertise are able to participate in standards work directly, as this will lead to more rapid and applicable standards.

It is not a problem for Europe that there is no formal 'European' presence in global standards bodies or in consortia. It can instead work to the advantage of European stakeholders, in that in global standards bodies the European Union has 25 votes whereas the US has one. National coordination is rarely desirable or effective in any case, for example, when the US tries to coordinate ITU contributions on a national basis it often shoots itself in the foot and hinders US industry objectives as these are subverted to National political objectives. We certainly don't want that to apply in Europe!

4.   So what should be the role of European ICT Standardisation?

The above does not mean that there is no role for a European Standardisation System. There is a clear role for European standardisation as demonstrated well in the ETSI motto "Global Standards happen First in Europe".   In other words, European standardisation should drive global standardisation, and a strong European standardisation system gives European stakeholders the opportunity to influence global standards to ensure that they fully meet European requirements.

European industry is very effective at participating in global standards organizations and often has the largest number of representatives at key meetings. European industry drives standards in key areas such as Mobility (3GPP and ETSI TISPAN) and QoS for IP-based networks (IPsphere Forum). There are actually many European participants in the IETF although the most prominent ones are often bought by US companies (e.g. Cisco) - so it is the availability of capital that is the issue here. The problem of the European market being slower to take up ICT standards once developed has little to do with the standards processes per se – it has more to do with:

a)   The homogeneity (but not the overall size) of the European market compared with the US. The US has a more harmonised and contiguous market and so US industry has a larger critical mass of sales EU policy should focus on achieving a similar homogenised market for Europe, although it is recognised that language and cultural issues will fragment this to a greater extent than in the US. Note, however, that standards can and should be used to overcome these barriers, and the success of GSM shows that Europe can use standards more effectively than the US to provide a homogenised market.
b)   The availability of funding for start-up companies - start-up or capital venture funding is not sufficiently readily available in Europe compared with, say, California.

A European ICT Standardisation Policy should primarily be used to support the aims of i2010 and concentrate on public interest and competitiveness issues. It should then focus on setting up mechanisms that will provide maximum benefit for European stakeholders. This can be realised through a number of mechanisms:

1.   Improving the use of and access to standards.
2.   Improving links between R&D and standards.
3.   Improving coordination of standards between ESOs and fora.
4.   Establishing equitable IPR policies.
5.   Setting up a single ESO covering all ICT Standards.
6.   Accrediting fora and consortia to produce formal standards.

These are described in more detail below:

4.1   Improving use of and access to ICT Standards

It goes without saying that, unless standards are used, then the money spent on developing them will have been wasted. Therefore, information on standards should be disseminated as widely as possible and relevant standards should be easy to find and obtain. This is particularly true for ICT standards. Stakeholders (particularly industry) spends vast amounts of time and money developing ICT standards and should not then have to pay to get access to them. ICT standards should be freely available in electronic form and there should be *no* exceptions to this.

The EC should endorse and promote this policy and link any future funding for standards

organisations to their making their ICT standards freely available. This should, in particular, apply to CEN and CENELEC. No further funding should be available without their standards being a) available in catalogues of ICT standards and b) freely downloadable from web sites without charge. The EC should also set up a public portal for ICT standards where standards from all bodies relevant to a particular topic are listed and can be downloaded. This could also provide a place to share information on standards work programmes.

4.2 More effective downstreaming of R&D into ICT Standards

Europe spends many billions of Euros on the R&D Framework programmes. However, the benefits of these are not always apparent in improvements to European competitiveness.

The huge amount of R&D programme expenditure must be linked more effectively to ICT Standards. This would be made effective in 2 main ways:

1. Making information on standards available to EU R&D projects in a systematic fashion. This would stop projects re-inventing the wheel and creating specifications which duplicate existing standards unnecessarily. The proposed ICT standards portal would help with this but would not be sufficient.
2. Downstreaming the results of EU R&D projects into ICT Standards. The COPRAS project has shown that over 10% of EU R&D projects have results which are relevant to standards, and these should be helped to contribute their results to the appropriate standards bodies and fora in the most effective way. Funding should be provided to allow projects to continue to participate in ICT standards after the formal close of the project.

However, at the end of the day, the successful exploitation of R&D through Standards depends on more effective communication, interaction and interworking between DG Enterprise and DG Information Society within the EC. Budgetary changes and restructuring may be necessary to improve this as it should be realised that standards have a wider role in European competitiveness.

4.3 A Central role for Europe in coordination of ESOs and Fora?

Coordination between standards bodies and fora is not very effective at present. The role that some bodies play in the standards process is generally well recognised, for example, the IETF in the development of IP-based protocols or W3C in the development of Web-based protocols, whilst others are in direct competition. However with the convergence of the ICT industries, there is a danger that the ESOs (in Europe) or ISO, IEC, and ITU (globally) will develop standards and so called "new deliverables" that compete with each other, thus wasting the industry resources used to develop them.

It was for this reason that the ICT Standards Board (ICTSB) was set up in 1995. This involves collaboration between the three European Standards Organizations (ESOs) and around 20 fora and consortia in relevant areas including W3C, ISOC (the parent of IETF), Liberty Alliance, OMA, OASIS, and The Open Group. It therefore acts as a bridge between the formal standards bodies and the fora working in related areas. The mission of ICTSB is to analyze standards requirements from any competent source based on market needs, translate these into coherent standards work programmes, allocate work items to its members, and monitor progress to ensure the job is done. It has so far worked on standards for electronic signatures, Design for All, intelligent transport systems, smart houses and network & information security. However, ICTSB can only work properly if the members let it do so, and the EC should give it some teeth so that it can do its job of allocating work

to bodies effectively.

Membership of ICTSB is currently only open to standards bodies and fora that have some kind of European presence. However, it has been gradually extended to fora and consortia at a global level and could be effective at coordinating the work programmes of many more bodies worldwide.

An existing example of coordination between standards bodies at the global level is the Global Standards Collaboration (GSC). GSC meetings are held annually and involve all SDOs in the telecoms area. These include:

– ACIF Australian Communications Industry Forum
– ANSI American National Standards Institute
– APT Asia Pacific Telecommunity
– ARIB Association of Radio Industries and Businesses (Japan)
– ATIS Alliance for Telecommunications Industry Solutions (US)
– ETSI European Telecommunications Standards Institute
– ITU International Telecommunication Union
– TIA Telecommunications Industry Association (US)
– TSACC Telecommunications Standards Advisory Council of Canada
– TTA Telecommunications Technology Association (Korea)
– TTC Telecommunication Technology Committee (Japan)

4.4   Establishing equitable IPR policies

The ICT Standards market is moving towards RF—especially for IT, applications, and eBusiness areas—and simultaneously towards proprietary solutions to avoid the IPR morass.

Insisting on an RF IPR policy for all standards bodies may be counterproductive, as essential components of a standard may then be withheld by a significant license holder, potentially causing a roadblock to further development of that standard. In fact, insistence on RF policies could actually encourage the very thing that they are meant to prevent — lots of hidden IPR claims by companies who are not participating in the standards work. On the other hand, we must discourage companies from declaring IPR as "essential" when it is not, especially since the rules make it easy for them to do so. Many times, the IPR turns out not to be essential after all. Declarations of non-essential IPR should be discouraged, and IPR declarations in standards bodies should be the exception rather than the rule. Therefore, the ideal IPR policy may be a mixture of RF and FRAND, which encourages RF but allows for exceptions. This is perhaps best expressed in the CEN and CENELEC IPR policy, which follows rules developed by ISO and IEC. These policies expect RF to be the norm, but add: "If in exceptional cases, technical reasons justify the preparation of a European Standard in terms which include the use of a patented item, there is no objection in principle to such a step, even if the terms are such that there are no alternative means of compliance". It then goes on to specify standard FRAND terms…

Patent reform is at last being progressed in US Congress. A proposal has been made to reform the standards process so that stakeholders get together with IPR holders prior to a standard being developed. The royalty regime should be considered at the same time as the competing technologies that are available be used in the standard being developed, and could result in a 'bidding down' of IPR license fees for the winning technology. FTC Chairman, Deborah Majoras, is encouraging these discussions (see www.ftc.gov/speeches/majoras.htm), and states that such ex-ante discussions would not be treated as anti-competitive and restraints on trade.

This type of proposal is also the subject of the new ETSI IPR Group that has been set up following

the ETSI General Assembly in November 2005. A European ICT Standards Policy should support and encourage these initiatives rather than considering them as anti-competitive.

4.5   A single ESO for ICT Standards?

Currently there are 3 ESOs which, due to convergence, are active in the ICT sector:

- CEN/ISSS – for IT, eBusiness and eMarketplace standards.
- CENELEC – for Home Networking and Cable TV standards
- ETSI – for all Telecommunications standards

What is needed, as the ETSI HLRG report pointed out, is a seamless environment for the development of all ICT standards. The NGN needs seamless interoperability between the core, access and home networks and the CPE (terminals). There must be seamless interoperability between the home terminals (CPE) and the access network (the access network must be designed with the terminals in mind), with appropriate QoS for the services being supplied, and it must be possible to remotely manage the home terminals from the network across firewalls.

To get all this to work effectively it must be well coordinated and ideally the formal standards would be produced in a single body (not 3 as at present) with similar procedures and deliverable types being used. The standards should be produced in an environment that allows direct participation of the relevant actors (as for ETSI at present), not one which is mediated and controlled by NSBs and thus is perceived by the relevant actors to inhibit participation.

Many of the specifications will be produced by fora and consortia for the reasons given earlier, but these should be endorsed by a single ESO (as for DVB) using one set of procedures and deliverables. For example, there is little attempt at present to align the Smart House work in CENELEC with the NGN@Home initiative in ETSI or with DVB. European industrial competitiveness is suffering because of the ineffectiveness of the ESOs in this area (and in ICT standards generally).

4.6   Accreditation of Fora and Consortia to produce Formal Standards

To speed up this process, it should be possible to accredit fora and consortia that are sufficiently open and transparent to allow them to produce formal standards directly, and to be paid to produce standards to meet the needs of European mandates. There is little added value, for example, in ETSI spending time and resources in endorsing the W3C WAI specifications to turn them into formal standards, when W3C has already done all the work that is necessary through an objectively open and transparent process. The real question is what constitutes an open and transparent process and how would you recognise one?

The ICTSFG [2] looked at this in depth and concluded that an open standards process is one which is carried out in a public process and includes the following steps:

1.   Starting a project which includes agreeing on the scope and conducting a requirements gathering activity;
2.   Drafting the technical content of a standard and building consensus on it;
3.   Validating the contents of the draft. Often this is achieved through a public review process, but some organizations achieve it through ensuring that the activity is publicly known, and through the participants drawing up the specification being sufficiently representative in the first place;
4.   Verifying the interoperability of implementations. This may be achieved as an integral part of the process or left to the parties involved;

5. Ratification by the members through either a voting or formal consensus process;
6. Publication;
7. Maintenance.

Following this process, an open standard should be:

- developed and/or affirmed in a transparent process open to all relevant players, including industry, consumers, and regulatory authorities, as indicated above
- either free of IPR concerns, or licensable on a (fair), reasonable, and non-discriminatory ((F)RAND) basis
- driven by stakeholders, with user requirements fully reflected
- publicly available
- maintained

These definitions were modified slightly by the ETSI Open Standards Conference and endorsed by the Global Standards Collaboration but the concepts remain unchanged. It should be possible to apply these rules in a fair and unbiased manner to determine whether a forum is open and transparent and therefore to accredit it to produce formal standards. The ICTSB could form the basis of such an accreditation mechanism until the 'single ESO for ICT Standards' is set up.

5.   Recommendations

Top level recommendations arising from this paper are as follows:

1.   The EC should encourage attempts to make standards freely available to all. ETSI makes its standards freely available without charge but CEN and CENELEC (and the NSBs) charge for copies of standards. The EC should make the future funding of CEN and CENELEC dependent on their standards becoming freely available in electronic form.
2.   The EC should ensure that all stakeholders are able to participate effectively in standards bodies, by the allocation of appropriate funding if necessary.
3.   The EC should encourage and promote discussions towards a fair and equitable IPR regime where stakeholders get together with IPR holders prior to a standard being developed.
4.   A single body should be created at European level to develop all ICT standards. This should be based on the ETSI model of direct participation by stakeholders (rather than via NSBs). It should include the ICT parts of CEN (CEN/ISSS) and the parts of CENELEC dealing with home networking and cable TV distribution systems.
5.   ICTSB should have a stronger role in the coordination of ICT standards. It should have the role of accrediting fora which produce 'open standards' against clear guidelines. These fora should then be eligible for funding by EC to produce European standards (ENs) where relevant. This function may be subsumed into a European ICT Standards body once created.

6.   References

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7. Definitions

3GPP Third Generation Partnership Project (a consortium of five standards bodies including ETSI's creation of standards for Third Generation mobile networks).

API Application Programming Interface (allows a service to be invoked by software).

B2B Business to Business.

CEN Conseil Européen pour la Normalisation. Responsible for formal standardisation in areas other than electrotechnical and telecommunications.

CENELEC European Committee for Electrotechnical Standardization

COPRAS EU R&D Framework Programme project on Cooperation on Research and Standards.

ENs: European Norms - formal standards on the basis of the New Approach.

ESO European Standards Organization. The three formally-recognised ESOs in Europe are CEN, CENELEC and ETSI.

ETSI European Telecommunications Standards Institute (home of the GSM standards and the TISPAN project).

EU Standard Standard produced in accordance with the EU standardisation policy.

EU Standardisation The production/adoption of standards but only within the ICT broad subject area.

EU (or European) Standardisation Policy The policy framework governing standards-setting activities and standards in Europe, that is primarily defined by policy and legal instruments adopted by the EU institutions.

EU Standardisation System The operational/organisational structure of standards-setting activities in the European Union.

Fora & Consortia Standards-setting *organisations* that are primarily formed by private stakeholders with an interest in the development of a specific standardisation activity or standard.

FRAND Fair, Reasonable and Non-Discriminatory (sometimes known as RAND).

GSC Global Standards Collaboration.

GSM Global System for Mobile (basis of Second Generation mobile services throughout most of world).

ICT Information and Communications Technologies.

ICTSB ICT Standards Board.

ICTSFG ICT Standards Focus Group (a focus group of ICTSB).

IEC International Electrotechnical Commission

IETF Internet Engineering Task Force (the originator of the IP protocol).

IP Internet Protocol (the basis of all next generation voice and data networks).

IPR Intellectual Property Rights (covering copyright, patents, and trademarks).

IPv6 Version six of the Internet Protocol

ISO International Organization for Standardization

ISOC The Internet Society (parent body of IETF).

ISP Internet Service Provider.

ITU International Telecommunication Union (the originator of most globally recognised telecommunications standards).

LIF Location Interoperability Forum (now merged with OMA).

MPLS Multi-Protocol Label Switching (IETF standard for providing connection-oriented IP services).

NGN *Next* Generation Network (term used *primarily* in ETSI and ITU).

NSB National Standards Body established in an EU Member States (e.g. BSI, Afnor, DIN).

OJ Official Journal of the European Union.

OMA Open Mobile Alliance.

OSS Operational Support Systems (the components that a company uses to run its network and business).

PSTN Public Switched Telephone Network (sometimes known as POTS). Taken here to mean all existing circuit switched public networks including those based on ISDN and GSM.

QoS Quality of Service (defines the characteristics of a service, e.g., latency, error rate).

RF Royalty Free (referring to IPR included in a standard).

ROI   Return on Investment.

SDO   *Standards Developing* Organization (any organization that develops recognised standards).

SIP   Session Initiation Protocol (used to set up VoIP and multimedia calls over an IP-based network).

Standards   The deliverables of a standardisation activity, being formal ENs or pre-standards or technical specifications or any other types of outputs of a standardisation initiative (hence, standards in the wide sense of the term).

TISPAN   Telecommunications and Internet converged Services and Protocols for Advanced Networking

TMF   TeleManagement Forum (the origin of many new OSS standards/concepts).

VDSL   Very high speed Digital Subscriber Line (basis of providing >1 Mbit/s services to customers).

VoIP   Voice over IP (a method of transporting speech over the Internet).

Wi-Fi   Wireless Fidelity: a set of standards based on IEEE 802.11 for wireless local area access

II. HARM SCHEPEL

1. Question 1: the regulatory function of standards

1] Standardisation in Europe is perceived as a useful tool for implementing regulation (i.e., see electronic signatures directive, regulatory framework on electronic communications, etc.). In your view, is the "regulatory" function of standards important for Europe? How should this role be perceived in a revamped EU standardisation policy?

Ex.: this role should be strengthened; implemented through specific organisational structures (i.e. creation of an agency dealing specifically with "co-regulation"); or, inversely, we do not need standards to translate the legal requirements, etc.

Answer:

There is very little in the two examples provided to suggest that the regulatory use of standards in the ICT sector can be useful without being constitutionally questionable or legitimate without being useless. To start with the latter situation: Directive 1999/93 gives the Commission the right to publish references to 'generally recognised standards.' Electronic signature products that meet these standards then benefit from a presumption of conformity with certain requirements laid down in Annexes II and III of the Directive. Without the burden of any technical expertise whatsoever, it is very hard to imagine an electronic signature product that is not 'protected against modification', or that does not ensure that the secrecy of signature-creation data is 'reasonably assured.' It is also very hard to imagine a technical standard that does not ensure at least that much being 'generally recognised.' The point is easily generalised: when regulatory objectives coincide with market pressures, the regulatory use of standards is superfluous at best and may well be counterproductive in stifling innovation and slowing technological advancement. It is perfectly possible to manufacture a commercially viable lawn-mower that does not meet regulatory (safety) objectives: it is very hard to think of anyone being interested in using, buying or relying on an electronic signature product that does not at least reasonably ensure that the data used to generate the signature cannot be accessed by all and sundry.

To return to the illegitimate- or better: unconstitutional- use of standards: Article 17 of Directive 2002/2 instructs the Commission to draw up and publish a list of standards 'to serve as a basis for encouraging the harmonised provision' of electronic communications networks and services; Member States are to 'encourage' the use of such standards. The article goes on, however, to provide for the possibility of making the implementation of these standards *compulsory* if and to the extent such is 'strictly necessary' to ensure interoperability and to improve freedom of choice for users. In this case, the Commission not only has to follow the usual regulatory committee procedure but is also to 'invite public comment by all parties concerned.' Several issues arise from this. First, it is difficult to argue that this is 'implementation' and not an instance of delegated lawmaking. And this delegation of regulatory powers to private bodies is not just probably unconstitutional under the *Meroni* principles, but also deeply problematic from a practical point of view of legal policy: the decision to make the implementation of a standard compulsory is certainly a reviewable act under Article 230 EC. Given the potential economic consequences for determined groups of affected parties (for example, for manufacturers whose technology is excluded from the chosen standard), it is even not entirely impossible that private litigants would be granted standing to challenge the decision under Article 230(4) EC. What, then, would the European courts be expected to review? Just the Commission's handling of 'public comments'? The decision-making process in the regulatory committee? Could the Courts really stop short of reviewing the standardisation process in ETSI itself? Second, the arrangement undercuts at least one of the rationales of 'co-regulation,' the

efficient division of labour between regulators and standardisation bodies. The only way for the arrangement under Directive 2002/21 to have at least the appearance of constitutional respectability (and to resist actions for annulment) is for the Commission and the regulatory committee to re-enact the standardisation process. And in that case, it is hard to see what has been gained by the regulatory use of standards. Third, the arrangement raises an important substantive issue: choosing 'winning' technologies is generally not something one would want legislators to engage in. The balance between the sometimes competing values of ensuring interoperability on the one hand and of spurring innovation on the other is delicate and very easy to get very wrong in *ex ante* regulation. One could very well argue that an *ex post* case-by-case approach under general principles of competition law is better tuned for that kind of analysis.

The examples are illustrative or the problems inherent in the regulatory use of standards in the ICT sector, and suggest a rudimentary checklist:

a) is the co-regulatory framework responding to a real need in terms of market failure or externalities?

b) can the regulatory objectives be achieved by maintaining the principle that standards are of voluntary application?

c) can the regulatory objectives not be achieved better by the tools and procedures of antitrust law and policy?

Few issues would survive this checklist, one suspects, though there are certainly problems which might require regulatory involvement by the European institutions: Digital Rights Management could be an example. In these cases, there seems to be little reason to deviate from the standard New Approach arrangements of essential requirements, mandates, presumption of conformity etc. New institutional layers (an agency, for example) should be avoided: indeed, the one institutional issue of importance seems to be the awkward combination of 'comitology' and standardisation: given the nature of membership in ETSI and the Guidelines of Co-operation between the Commission and the standards bodies, introducing committees of Member States' representatives- be it in management or regulatory committee form- seems a needlessly complicated duplication of interest representation without any obvious benefits of added expertise.

2.   Question 2: referencing of standards

2]   Should standards be referenced in legislation (such as the OJ at the EU level)? If yes, what should such references mean in practice?

Answer:

The grandmother of the New Approach, the Low Voltage Directive, innocently announced that references to harmonised standards were to be published in the Official Journal 'for purposes of information.' It has become obvious, however, that publication is not as unproblematic as that.

In the case of standards which have been rendered compulsory- as under Directives 98/13 or 2002/2, publication of the references is probably insufficient from a constitutional point of view: binding legislation should be publicly available and accessible to citizens bound by it. The idea of binding regulation by commodity- or by means of copyright-protected material- is abhorrent to the rule of law. This problem is only confounded where the standard at issue is based on IP-protected technology.

Generally, however, it is hard to see how *any* publication of references to standards in the OJ can fall outside the category of 'all measures adopted by the institutions whatever their nature or form, which are intended to have legal effects', the ECJ's definition of a reviewable act under Article 230 EC. A presumption of conformity defines Member States' legal rights and obligations, and it is very well possible that an outvoted Member State could challenge it. It is even possible that a disgruntled and outvoted ETSI member could object to the Commission's publication of a reference to a standard.

The finer points of EU administrative law generally and of the standing requirements under Article 230 (4) in particular need not be discussed here. The fundamental point is that publication in the OJ of references is a measure which has legal effects and hence the Commission has to be able to resist judicial annulment. Since the Courts are extremely unlikely to scrutinise the technical contents of individual standards, the emphasis will be on procedure. And for the Commission to show that it has in place a system of due process- procedural guarantees of interest-representation and adequate expertise, availability of appeal- will require the formal system of ESO's to be used: I fail to see how the Commission's publication of references to 'generally recognised standards' elaborated by standards bodies that are not- as are the ESOs- tied to the European institutions by all sorts of formal and informal regulatory instruments- could ever survive an action for annulment.

3.   Question 3: ICT standardisation and the new approach

3] It is generally argued that the current policy approach to the EU ICT standardisation (principally based on the rules and procedures of the "New Approach") is not anymore adequate to accommodate the market needs against the fast-paced technological developments of the internet era. Do you share this view, and if yes, for which reasons?

You are invited to cover in your answer the following points*:*

a) Which issues (legal, operational, policy, etc.) would you consider as "barriers" for implementing a trustworthy and competitive standardisation scheme in Europe?

b) <u>Are there legal solutions to overcome such barriers and if yes, which are they?</u>

c) Based on your international research experience, would you consider that Europe could take the advantage of legal or policy solutions adopted in other countries (i.e. the market approach of the US system, etc.) and, if yes, which are these "best practices"?

d) In your view, should the European standardisation system undergo any changes to accommodate better the new requirements?

e) If the answer to the above question is yes, should modifications in the legal framework governing the EU standardisation policy be necessary and if yes, which are they?

You are welcome to illustrate your views with concrete examples of standardisation work undertaken in specific technical areas.

Answer:

The New Approach , however uneven in its application and ambiguous in the finer details of its legal set-up, is well suited for its purpose. If there is a genuine regulatory need for standards in the ICT sector in order to achieve legitimate public interest objectives which the market (and, by extension, the standards system) will not or can not produce adequately by itself, then the principles of the New Approach should apply. Any watering down of procedural requirements and guarantees in order to

accommodate 'fast-paced' technological development will do nothing but open up standards for judicial review under EU administrative law- a situation which is disastrous for the legitimacy of the system and otherwise counterproductive.

Outside this, fairly restricted, category of cases, however, it seems unduly burdensome and slow to have a 'standards policy' in the ICT sector that is built on the principles guiding the establishment of adequate safety for children's toys. The problem is, however, not so much with 'standards policy' per se, but with flanking legal arrangements. The 'market-based' US standards system, for example, is called such just because of the absence of public regulatory interference or support. But a close look at US standards bodies reveals procedural guarantees that are easily more robust and burdensome than the internal procedures of ETSI: punitive damages in tort law and treble damages in antitrust are a very powerful incentive for the establishment of due process.

4.   Question 4: International and foreign standards

4]   Certain ICT areas are traditionally standardized by certain organizations (IETF for Internet, IEEE for LANs, etc.). Most of them belong to the US standardization system (not European). As such, the standards are not legally recognised as European standards. How should Europe behave in such cases?

Ex.: Recognise the immediate legal value of these standards, accept their legal value through a specific   procedure,   other,   etc.

Answer:

In the interest of trade and global competition, it is hard to see why the situation in the ICT sector should be any different than that of any sectors governed by the WTO TBT Agreement. The first option has to be to engage the US bodies in standardisation at the international level. Still, failing that, and if these US standards are *de facto* international standards, the presumption must be in favour of adopting them as European standards. Not just under principles of world trade liberalisation but also from the point of view of antitrust law, the burden must be on European standards bodies to justify refusal to adopt these US-international standards.

Conferring 'legal value' to US standards by the European institutions will probably not survive judicial scrutiny: the European standards bodies will have to adopt the standards through their normal procedures and arrangements – and not just rubber stamp.

5.   Question 5: IPR policies

5]   It is also argued that IPR policies applied by consortia are quite often more attractive for industry than the RAND policy applied by ESOs. In your view, which is the IPR policy of standardisation processes which is best adapted to the needs of European policies within the framework of the EU IP legislation?

Is there any intermediary solution to strike the right balance between the proprietary interests of the standardisers and the RAND mode adopted by ESOs?

Answer:

I must admit I have very little patience for the incorporation of IPRs in standards generally, and that I

find the RAND policy rather generous, especially for intellectual property of active participants in the standardisation process. The balance is delicate, but surely standardisation should not be reduced to a cartel and bonanza of royalties: I, for one, would think that the GSM standard, for all its benefits, would still fall foul of any serious antitrust analysis in parts.

The current policy, as far as I'm concerned, seems about right: there must be a presumption against the incorporation of IPRs in standards, rebuttable on a showing of technical necessity. Participants in the standardisation process are under a duty of disclosure of any IPRs that might be relevant, and the stands body at large must exercise due diligence in finding out whether any other IPRs are involved. Both the incorporation of IPRs itself and the application of the RAND policy should be subject to much stricter competition law analysis and scrutiny than is now the case.

6.   Question 6: The authority of ESOs

6]   What is your view about the extensive authority of ESOs in EU formal standardisation today? For instance, ETSI aims to cover all aspects of standards setting, from defining European standards, to developing, certifying and testing them.

Please cover in your comment the following points:

a) In your opinion, should formal standards (thus, standards recognised as having a legal value) be only developed within ESOs?

b) If your answer to the above question is rather negative, which modifications should be made in the legal framework of EU ICT standardisation in order to recognise standards produced in other platforms (i.e. standards developed within consortia)?

Answer:

Much of the debate about decentralising the European standards system and introducing competition among various bodies has become a moot point in view of the centralising tendencies of international trade law and the structure of international standards bodies. A monopoly on the *adoption* of formal ENs, then, seems very hard to avoid, for reasons of both the international trade regime and of European law. On the other hand, the current practice of ETSI to be involved both standardisation from the ground up and engage in foster-parenting standards developed by consortia leads to obvious problems in terms of conflicts of interest (between ETSI and 'competing' consortia) and a potential for watered down procedural guarantees (in the case of ETSI 'rubber-stamping' consortia standards).

A solution could be either the American or Canadian system of accreditation of standards. Either a private body (US-ANSI) or a semi-public agency (Canadian Standards Council) could be envisaged that does *not* develop standards itself, but adopts as formal ENs standards established by various other organisations. This organisation would establish accreditation criteria for 'recognised standards developers,' draw up, enforce and review procedures for legitimate standards development, and organise European standards interests in international *fora*. The choice for ETSI would be, then, to either give up 'real' standardisation and turn itself into a supervisory body of sorts, or to be relegated to the status of one of several competing standards bodies.

7.   **Question 7: Future EU ICT standardisation policy**

7]   The current standardization policy in Europe, defined by the directive known as "The New Approach" (aimed at facilitating the mutual recognition of products within the European Community by the use standards), focuses mainly on the European Single Market. Compared to the more traditional industry sectors (machinery, construction products, toys, etc.) the ICT area has important characteristics that makes standards-setting different and difficult: global nature of the IT market, pervasiveness in other sectors, etc.

In your opinion what should be the main focus of the future European policy in ICT standardization?

Some examples are given below. Keeping in mind that they are not mutually exclusive, which ones, do you think, should be chosen as a policy target?

■   Create a consensus forum where European industry would set priorities for joint developments. Light structured Standards Developing Organisations (SDOs) would be formed and standards would come out from there.

■   Focussing on the use of standards for improving citizens' quality of life (by placing the emphasis on issues such as interoperability, etc), setting up major guidelines with minor intervention in the process.

■   Regulate and standardize only at large (spectrum allocation, frameworks for systems) and leave the rest to the market.

■   Take the position of "a large consumer", thus set clear objectives for further developments by the industry

■   Produce a drive to bring active European standardization people together in European SDOs (considering that there are currently dispersed over many world wide organizations) in order to create a momentum for greater activity in some areas in Europe.

■   Keep things as they are.

■   Any other scenario that you deem as appropriate. Please explain…

Answer:

The question is, naturally, impossible to answer without a clear conception of the ultimate objectives of a new European policy in ICT standardisation. If these include the slightest hint of either European protectionism or 'industrial policy'- or both, then some of the suggested scenarios may well be appropriate. In my view, the objectives of IT standards policy should coincide with the general objective of a competitive internal market characterised by a system of undistorted competition. This would include a balance between ensuring as much interoperability as possible and avoiding being locked into obsolete technologies, between the protection of investments made in research and development without unduly granting monopoly rents, and a constant drive towards increased consumer choice and lower prices. These, of course, are exactly the concerns that competition law is much better equipped to deal with than any EU standards 'policy'. Though much depends on the outcome of he European cement case, it is submitted that the single most important thing the Commission could do for European ICT standardisation is a radical overhaul of the standards chapter of its Notice on the application of Article 81 to horizontal cooperation agreements.

The current version effectively abdicates any serious analysis under competition law principles of standards bodies- and especially the formal standards bodies. First, the Commission classifies

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recognised bodies under Article 86 (2):

Agreements to set standards may be either concluded between private undertakings or set under the aegis of public bodies or bodies having been entrusted with the operation of services of general economic interest, such as the standards bodies recognised under Directive 98/34/EC. The involvement of such bodies is subject to the obligations of the Member States regarding the preservation of non-distorted competition in the Community.

Second, it considers that the conditions for an exemption under Article 81 (3) EC will be met almost automatically by recognised standards. For economic benefits to materialise an 'appreciable proportion of the industry must be involved in the setting of the standard in a transparent manner.' Whether the resulting restrictions on competition imposed are 'indispensable' for the attainment of those benefits is a matter of procedure as well:

All competitors in the market(s) affected by the standard should have the possibility of being involved in discussions. Therefore, participation in standard setting should be open to all, unless the parties demonstrate important inefficiencies in such participation or unless recognised procedures are foreseen for the collective representation of interests, as in formal standards bodies

Finally, it renders all these considerations superfluous by denying that recognised standards restrict competition at all

Where participation in standard-setting is unrestricted and transparent, standardisation agreements as defined above, which set no obligation to comply with the standard or which are parts of a wider agreement to ensure compatibility of products, do not restrict competition. This normally applies to standards adopted by the recognised standards bodies which are based on non-discriminatory, open and transparent procedures.

As such, the emphasis on procedure and not substance is surely right: as an American court famously held, a debate among engineers should not be construed as an antitrust claim. But procedural guarantees cannot- and should not- influence the analysis of whether or not a standard restricts competition under Article 81 (1) EC, and the thin varnish of public involvement in standards bodies cannot be used to avoid the proportionality analysis inherent in Article 86 (2) EC. Both from a point of view of the structure of EU competition law and from a point of view of solid standards policy, standards should be open to scrutiny under Article 81 (3). Admittedly, to import procedural guarantees into the analysis under Article 81 (3) may be considered a stretch, especially under the decentralised enforcement system. It may, then, perhaps bear some thought for the Commission to consider writing a tight and rigorous block exemption for standards.

III. BRIAN CARPENTER

1.   Question 1: Successful adoption of standards

1]   In your view, why are US standards or standards produced in specific consortia (e.g. IETF) often adopted with great success by EU market players?

Answer:

DISCLAIMER: All these answers are personal opinion and do not in any way represent the views of either the IETF or my employer.

Because they are pragmatic and based on "running code" (i.e. implement first, standardise after). Just consider the stupid variety of European telephone sockets resulting from the old monopolies - so the pragmatic, cheap RJ-11 is the de facto standard. It's the same throughout ITC technology.

2.   Question 2: Formal vs informal standardisation

2]   In Europe, policy makers and the market often talk about the existence of two opposing "philosophies" of standards development in the ICT area: the "formal, institutional" approach vs. the "consortium" approach.

The "formal, institutional" approach refers to standards that are produced by the three formally recognised European standardisation organisations (CEN, CENELEC and ETSI, called "ESOs"). Only these three bodies are formally recognised, hence can be referred to in European regulation. They are also the only entities receiving financial support by the EU institutions.

On the other hand, a plethora of other (sometimes conflicting) standards are produced within consortia. At present, consortium standards are not referred to in EU regulation, although they are often widely recognised and adopted by the market.

a) In your view is this "dual" situation beneficial for the ICT market?

b) If not, should this situation change and, if yes, towards which direction?

c) Should standardisation policy do something about it or probably better "leave the market to decide" with no involvement of the   European Institutions?

Answer:

a) No. Apart from safety and consumer protection standards, openly developed pragmatic standards will win every time. So the effort on "official" standards is largely wasted, and tends to solidify the market and damage innovation.

b) I believe less money should go into "official" standards. Interoperability does not benefit from official policy. Official policy should focus on ensuring that interoperability is not limited by any form of restrictive practices; this is not a standardisation issue. Interoperability is its own reward and will flourish in a free market.

c) Policy should

1. Encourage <u>openly developed</u> standards and of course open access to the results.

2. Discourage consortia with secretive standards development, where only paying members can see and comment on the standards under development. Such methods raise anti-trust concerns.

3. Encourage officially endorsed standards for safety and consumer protection (e.g.requiring ISPs to clearly publish details of their Internet service, and penalising those who sell a "walled garden" service under the name of Internet service, or other restrictive practices).

However, there is no requirement for specific technical standards to be "official" in themselves, except in the safety and consumer protection areas.

3.   Question 3: Presence of European players

3]   Some ICT areas are typically standardised by certain consortia or organisations (e.g. IETF for Internet, IEEE for LANs, etc.). Most of these organisations follow the approach of the US standardisation system. It is also striking that, in most of these organisations, there is already a strong presence of EU participants (companies and organisations) but there is not an effective presence of Europe as such.

a) How do you explain this fact?

b) Do you think that the type of participation of European professionals in foreign organisations should be a concern in a future European policy on standardisation?

Answer:

a) At least in the case of the IETF, there is no presence of any continent "as such." In fact if you talk to the IEEE, or ETSI, you will find they, like the IETF, consider that they are global in reach. So the "fact" doesn't need explanation - it isn't a fact, it's a category mistake (http://en.wikipedia.org/wiki/Category_mistake)

b) I think all standards of importance should be global, and the question should not be asked.

4.   Question 4: New technology requirements

4] As leading internet scientist, do you foresee any new technology requirements that standardisation can/should address?

Please also comment in your answer:

a) If you foresee such requirements, do you think that they can be met adequately by the current EU standardisation policy?

b) And/or probably, answers should be addressed at a global level? If yes, how (through which co-operation scheme at global level, etc.).

c) If there is a need for EU standardisation to closely co-operate with other global and international

platforms to respond to these challenges, please identify these platforms.

Answer:

There are probably hundreds, but they are likely to be invented by recent graduates in Shenzhen,

Bangalore, Helsinki or hopefully even Ouagadougou, not by old fogies like me.

a) Since I believe that the best policy is less policy, I don't think current policy is very relevant. If we want to encourage innovation, it's an open entrepreneurial environment we need, including a patent regime that doesn't encourage patent wars and patent farmers. Standards policy should be hands-off, and standards should not be tools used to preserve actual or de facto monopolies by blocking innovation.

b) Everything should be viewed at global level, nothing at regional level. Example: regional standards for mobility are simply absurd; thus regional standards for wireless are absurd; regional spectrum allocations are absurd; regional connector standards are absurd; regional materials safety standards are absurd.

c) There isn't, except perhaps to discourage regional standards and attempts by incumbent service providers to use standards to discourage innovation.

5.   **Question 5: What to expect from EU standardisation**

5]   **What do the internet scientists expect from the EU standardisation?**

Please cover in your response:

a) What is the stance of the internet community regarding a separate level of standardisation for Europe, "the EU standardisation"?

      * Ex.: do they find it useful / bad / with no-added value / they are simply indifferent

b) What should be the position of Europe regarding the Internet standardisation?

*Ex.: co-operate with IETF, encourage the creation of an internet standardisation body in Europe, legally recognise IETF standards in Europe.

c) Does the internet community (or do you personally) have any recommendations to make   on how to increase the visibility and reputation of the EU standards?

* Please enclose herein any articles, reports, communications or other policy documents which probably reflect your thoughts on the matter.

Answer:

Nothing, please.

a) Regional standards are actively bad: they fragment the market and promote protectionism.

b) Just encourage European engineers to participate in the IETF.

c) No

6.   Question 6: Future EU ICT standardisation policy

6]   The current standardization policy in Europe, defined by the directive known as "The New Approach" (aimed at facilitating the mutual recognition of products within the European Community by the use standards), focuses mainly on the European Single Market. Compared to the more traditional industry sectors (machinery, construction products, toys, etc.) the ICT area has important characteristics that makes standards-setting different and difficult: global nature of the IT market, pervasiveness in other sectors, etc.

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■   Regulate and standardize only at large (spectrum allocation, frameworks for systems) and leave the rest to the market.

■   Take the position of "a large consumer", thus set clear objectives for further developments by the industry.

■   Produce a drive to bring active European standardization people together in European SDOs (considering that there are currently dispersed over many world wide organizations) in order to create a momentum for greater activity in some areas in Europe.

■   Keep things as they are.

■   Any other scenario that you deem as appropriate. Please explain…

Answer:

I think I've answered that above.

- Foster global standardisation, stop regional standardisation

- Focus official standards on safety and consumer protection

- Foster an entrepreneurial culture that encourages innovation, and discourages use of patents and "official" standards to favour incumbents.

IV. MARIJKE DE SOETE

STANDARDISATION OF ICT WITH SPECIAL EMPHASIS ON ICT SECURITY

1.   Introduction

It is generally recognised that the main goal of ICT standardisation is to enable *interoperability*. Next to this it also brings a series of additional benefits such as

• Encouraging innovation and research and foster new markets, products and services;

• Creating trust and confidence in products and services;

• Expanding the markets, decreasing costs and increases competition;

• Helping to prevent duplication of resources and efforts.

Obviously, it is a waste of resources to produce standards which are not being used afterwards. Therefore the following three aspects of the standardisation process are very important:

• *Timeliness:* this means that a standard should become available on the market at the

appropriate time, according to the market needs;

• *Buy-in:* acceptance and usage by all stakeholders including industrial manufacturers, service

companies (e.g., network operators), governments, research organisations and consumers.This can be achieved by their early and full involvement in the standard production process while the latter is to be based on well-defined market needs;

• *Awareness:* the promotion and adequate maintenance of published standards is key to encourage their usage.

From the above one can immediately derive that standardisation is much more than technical expert work. To ensure that the goals and benefits mentioned above are met, the technical standardisation work needs to be complemented by the appropriate operating rules, policies and regulations. Let us now focus on the more specific aspects of standardisation of ICT security. First of all it should be stated that "security" is one of the most difficult domains in ICT standardisation. Indeed, there is the "sensitivity" aspect of the subject. This has seriously impacted the standardisation process in the eighties and early nineties where security by obscurity was still promoted by a number of governments and national security agencies. However, a major breakthrough in ICT security standardisation, more in particular in the field of cryptography, has happened after the publication of the OECD Guidelines on Cryptography in 1997. From then onwards, encryption mechanisms were added to the scope of ICT security standardisation organisations.

Next comes the fact that ICT security is a very fast evolving technology area. How to deal with the emerging threats in ICT security (based amongst others on the progress in cryptanalysis, fast increasing computer resources, etc.) is a serious problem for the standardisation in this domain. This

means that the ICT security standardisation processes need to be able to address regular updates and frequent revisions efficiently, in order to ensure the state-of -the-art and robustness of the published outcome of their work.

This clearly requires extra resources and collaboration in this area. The times where security was seen as a competitive factor are gone; also here the market is now crying for "interoperability" and global "open" solutions.

Recent events such as terrorist attacks have also put security on the radar screen of many governments and organisations responsible for policies and regulations. As a result extra resources have been put into the implementation of adequate preventive solutions. Needless to say, that a number of those solutions, such as passports, eID cards, biometrical recognition etc., need the appropriate support of ICT security.

Therefore, standardisation efforts on those aspects have been steadily increasing over the last years.

Let us have a closer look to the world of ICT security standardisation. The following section provides an overview of the key international and regional ICT security standards development organisations. Each organisation listed has a particular role in the development of ICT security standards in its domain, being it international or regional.

2.   Formal International Standards Development Organisations

2.1   *International Telecommunications Union (ITU-T).*

This organisation acts as a forum where governments and the private sector (industries) develop standards for global telecommunications networks and services. It is one of the Sectors of the International Telecommunication Union (ITU), an international specialized agency within the United Nations system. It has a dedicated Study Group 17 (SG 17) responsible for studies relating to security, the application of open system communications including networking and directory, and for technical languages, the method for their usage and other issues related to the software aspects of telecommunication systems.

2.2   *International Organisation for Standardisation (ISO) and International Electrotechnical Commission (IEC)*

ISO and IEC form the specialized system for worldwide standardisation. National Bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organisation to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest.

Other international organisations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. ISO and IEC have established a Joint Technical Committee: ISO/IEC JTC 1. This committee has responsibility for standardisation in the area of information technology. In other words, JTC 1 is to develop, maintain, promote and facilitate IT standards required by global markets meeting business and user requirements concerning:

• design and development of IT systems and tools

• performance and quality of IT products and systems

• security of IT systems and information

• portability of application programs

• interoperability of IT products and systems

• unified tools and environments

• harmonized IT vocabulary

• user friendly and ergonomically designed user interfaces.

Within JTC 1 are a number of technical committees of which Subcommittee 27 (SC27) is the lead subcommittee (SC) on IT security. SC27's area of work is standardisation of generic methods and techniques for IT Security. This includes:

• Identification of generic requirements (including requirements methodology) for IT system security services,

• Development of security techniques and mechanisms (including registration procedures and relationships of security components),

• Development of security guidelines (e.g., interpretative documents, risk analysis), and

• Development of management support documentation and standards (e.g., terminology and

security evaluation criteria).

Specifically excluded from the scope is the embedding of mechanisms in applications. Recognizing the global nature of security concerns following the 9/11 events, in January 2004 the ISO Council directed the Technical Management Board (TMB) to form a highlevel Strategic Advisory Group on Security (SAG-S). SAG-S was tasked to review ISO and other organisations' existing work related to security, assess the needs of relevant stakeholders, and recommend what additional standards work should be undertaken to support international standardisation needs related to security. The SAG-S noted that security is not limited to combating terrorism. The same means used to prevent or respond to terrorist events may be applied to natural or accidental disasters or cyber attacks. The AGS considered security to mean "the safety of a state, organisation or individual and protection against threats such as criminal activity, terrorism, attack, or natural disaster."

The AGS considered security standards in this broad context and produced their final report in January 2005. Currently, it is responsible for the coordination of the implementation of the recommendations and findings of that report.

3.   Other International Standards Bodies and Forums

3.1   Internet Engineering Task force (IETF)

IETF is a large open international community of network designers, operators, vendors, and researchers concerned with the evolution of the Internet architecture and the smooth operation of the Internet. It is open to any interested individual. The actual technical work of the IETF is done in its working groups, which are organized by topic into several areas (e.g., routing, transport, security,

etc.). Much of the work is handled via mailing lists.

The security work is organized in the so-called IETF Security Area. It consists of the Security Area Directors who are assisted by a Security Area Directorate. The directorate is composed of the working group chairs in the Security Area and a group of individuals who act as advisers to other areas of the IETF at the request of the Security Area Directors. The Directors and the Directorate are aided and advised by the Security Area Advisory Group (SAAG). The SAAG acts as an open forum for Security Issues. Anyone can join the SAAG mailing list and is welcome at the SAAG meetings held in conjunction to IETF meetings. Security Area Working Groups include the following:

• The XML Digital Signature Working

• Secure Mime Working Group

• IETF Open PGP

• IETF X.509 Public Key Infrastructure WG

• IETF Transport Layer Security (TLS) WG

• Securely Available Credentials (SACRED) Working Group

• Incident Handling Working Group

• Security Issues in Network Event Logging (SYSLOG) Working Group

3.2   Organisation for the Advancement of Structured Information Standards (OASIS)

OASIS (Organisation for the Advancement of Structured Information Standards) is a non-profit, international consortium that drives the development, convergence, and adoption of e-business standards. The consortium produces more Web services standards than any other organisation along with standards for security, e-business, and standardisation efforts in the public sector and for application-specific markets. Founded in 1993, OASIS has more than 4,000 participants representing over 600 organisations and individual members in 100 countries. It has a dedicated committee on security which develops security standards needed in e-business and Web services applications. Members define foundational as well as application-level specifications.

4.   Regional Standards Development Organisations

4.1   The European Telecommunications Standards Institute (ETSI)

The European Telecommunications Standards Institute (ETSI) is an independent, non-profit organisation, whose mission is to produce telecommunications standards for today and for the future. Based in Sophia Antipolis (France), ETSI is officially responsible for standardisation of ICT within Europe. These technologies include telecommunications, broadcasting and related areas such as intelligent transportation and medical electronics. ETSI unites 688 members from 55 countries inside and outside Europe, including manufacturers, network operators, administrations, service providers, research bodies and users - in fact, all the key players in the ICT arena.

ETSI plays a major role in developing a wide range of standards and other technical documentation as Europe's contribution to world-wide ICT standardisation. This activity is supplemented by

interoperability testing services and other specialisms. ETSI's prime objective is to support global harmonization by providing a forum in which all the key players can contribute actively. ETSI is officially recognised by the European Commission and the EFTA secretariat.

ETSI's security activities are mainly covered in the following groups: TC ESI on Electronic Signatures and Infrastructures and SAGE, the Security Algorithms Group of Experts.

4.2   European Committee for Standardisation (CEN)

CEN is a major provider of European Standards and technical specifications. It is the only recognised European Organisation according to Directive 83/189 (now called Directive 98/34/EC) for the planning, drafting and adoption of European Standards in all areas of economic activity with the exception of electro-technology (CENELEC) and telecommunication (ETSI). CEN has a particular responsibility due to the New Approach where standards define specific technical details in connection with European legislation.

The most important work with respect to security is executed in CEN TC 224 on Passports, Identity cards, Travel documents etc… and the special project on Network Security NISS.

4.3   American National Standards Institute (ANSI)

The American National Standards Institute (ANSI) coordinates the development and use of voluntary consensus standards in the United States and represents the needs and views of U.S. stakeholders in standardisation forums around the globe.

The Institute oversees the creation, promulgation and use of thousands of norms and guidelines that directly impact businesses in nearly every sector: from acoustical devices to construction equipment, from dairy and livestock production to energy distribution, and many more. ANSI is also actively engaged in accrediting programs that assess conformance to standards – including globally-recognised cross-sector programs.

The main accredited ANSI committee playing in the area of security standards is ASC X9: Financial Industry Standards. It is also interesting to notice that ANSI has established in February 2003 the Homeland Standards Security Panel (HSSP) after the 9/11 events. Its scope is to catalog, promote, accelerate and coordinate the timely development of consensus standards within the national and international voluntary standards systems intended to meet identified homeland security needs, and communicate the existence of such standards appropriately to governmental units and the private sector.

4.4   Regional Asia Information Security Standards (RAISS forum)

RAISS refers to Regional Asia Information Security Standards. This initiative was taken during Singapore's hosting of the ISO/IEC JTC1 SC27 Plenary and its Working Group meetings in April 2004. An online forum has since been set up with participation from various countries like Australia, Japan, Korea, Malaysia and Singapore. The aims of this Forum are to provide a platform for sharing of knowledge and learning experiences in regional economies on security standards development, adoption and deployment; and for the regional bodies to identify opportunities for regional collaborations to further the course of international security standards development and promulgation more effectively in the Asia region.

5.   Co-operation agreements

The International Committees ISO/IEC JTC 1 and ITU-T have a formal liaison established also at subcommittee level. At that level, dedicated liaison officers are appointed which are responsible for the coordination including the identification of cooperation opportunities between the committees.

Also some of the ETSI groups have a formal liaison to different committees in ISO/IEC JTC 1. The co-operation between ISO and CEN is defined through the Vienna agreements which were established in 1991 and revised in 2001. Essentially, the agreement recognises the primacy of international standards. But the agreement also recognises that particular needs (of the Single European Market for example) might require the development of standards for which a need has not been recognised at the international level. The prioritisation of ISO work is also such that in some instances CEN needs to undertake work which is urgent in the European context, but less so in the international one. As a result, the agreement sets out two essential modes for collaborative development of standards: the mode under ISO lead and the mode under CEN lead, in which documents developed within one body are notified for the simultaneous approval by the other.

The benefits expected from the use of this agreement in accordance with the "implementation guidelines" include:

• increasing transparency of work ongoing in CEN to ISO members, and their possibility to influence their respective standards;

• avoidance of duplication of work and structures, thus allowing expertise to be focused and used in an efficient way to the benefit of international standardisation;

• increasing the speed of elaboration, availability and maintenance of standards through a need to establish consensus only once.

OASIS is regularly co-operating with ISO/IEC and successfully tabled a number of its documents to become international standards under ISO/IEC.

At European level, the Joint Presidents Group (JPG) of CEN, CENELEC and ETSI was established. It offers a discussion forum to reach understanding on strategic issues affecting European standardisation and prepares agreements on common matters. In particular the JPG should assist CEN, CENELEC and ETSI to achieve the following objectives:

• technical work to be undertaken with due urgency preventing duplications and gaps in the work programmes, using international work as a basis wherever possible;

• common basic rules for procedures and presentation of European Standards to be developed and maintained to ensure consistency and coherence of the technical work;

• information on the technical work to be made available in a user-friendly fashion;

• accessibility by all social and economic parties to be promoted, for example through joint conferences and workshops;

• evolution of European standardisation to reflect political developments in Europe, the Single European Market, and on a wider level the European Economic Area in the context of world trade.

The JPG is supported in the field of ICT by the ICT Standards Board (ICTSB) which acts in order to:

• analyse and co-ordinate standards/specification requirements received from any competent source

and based on concrete market needs

• translate standards/specification requirements into coherent, approved programmes of standardisation

• allocate projects to the different production mechanisms of the participating organisations on a project management basis.

6.   Co-operation and co-ordination between "the security committees"

As already described in the introduction, "security" is one of the most difficult domains in ICT standardisation. The "sensitivity" aspect of the subject has prevented standardisation some security areas for many years. As an example, at the establishment of ISO/IEC JTC 1 SC 27 in the early nineties as successor to SC 20, it had to explicitly ban the standardisation of cryptographic algorithms for confidentiality purposes from its scope. It is only shortly after the publication of the OECD guidelines on cryptography in 1997 that SC27 could change that scope to include encryption algorithms.

Next, comes the fact that security is a very fast evolving technology area and that some recent events have impacted the needs for enhanced security in the society worldwide. Also legislation and regulations in a number of areas such as data protection and privacy, financial reporting, corporate security management and control, require ICT security support These factors have resulted in a dramatic increase on activities in security and safety and the related standardisation.

For instance, ISO/IEC JTC 1 /SC 27 has seen participation in their working groups growing from 40 early nineties to 130 experts nowadays, with a much better representation of all stakeholders.

At the level of International Security Standardisation there is a very close collaboration between ITU-T SG 17 and ISO/IEC JTC 1 SC 27. Not only is there active liaison and cross expert participation to the standards development work, some of the standards produced by one committee are being adopted and published as international standard by the other one (e.g., TR 14516: Guidelines on the use and management of Trusted Third Party services (= ITU-T X.842); IS 15945: Specification of TTP services to support the application of digital signatures (= ITU-T X.843), IS 15816: Security information objects for access control (= ITU-T X.841)).

This collaboration is not only at the standards development level but also in the specification of their respective security roadmaps the two organisations coordinate. For instance in October 2005, ITU-T has organized a security workshop in Geneva and invited all important standardisation committees on security to participate. As a result ITU-T SG 17 and ISO/IEC JTC 1 SC27 have further discussed their strategies and roadmaps and agreed on further collaboration to close the gaps in their respective roadmaps.

ISO/IEC JTC 1 SC27 and ITU-T SG 17 maintain also relationships with IETF on specific domains and topics of mutual interest in the security area. As an example, ISO/IEC JTC 1 SC27 and IETF have coordinated through their experts the development of the multipart international standard on Time Stamping (IS 18014). However, it would be beneficial to both IETF and ISO if the collaboration could be intensified.

The (formal) co-operation between the International Standard Development Organisations and the ESOs have, unfortunately, been less successful over the past decades.

Generally speaking one can notice a real lack of co-operation on the security front. For instance, the

official liaison between the Commission of European Communities and ISO/IEC JTC 1 has not encouraged the consultation or referencing of the ISO security standards in a majority of the security related work executed under ETSI.

With respect to CEN, one has to notice that, despite the Vienna agreements, there is hardly any co-ordination between ITU-T SG 17 or ISO/IEC JTC 1 SC27 and CEN security work. Amongst the three European Standardisation Organisations there has been a co-operation in the security area on a number of topics. The most famous one started following the mandate of the European Commission to support the requirements of the European Directive on Electronic Signatures 1999/93/EC. This Directive identifies requirements for certificates, certification service providers and signature creation and verification devices. Although standardisation initiatives in these areas had already been launched by standards and industry bodies at national, regional and international levels (such as the International Chamber of Commerce, IETF, W3C (World Wide Web Consortium), ITU-T) it was ascertained that they lacked the necessary consistency and coherence for long term validity and legal recognition of electronic signatures. On the other hand, the member states were required to legislate directive provisions by July 2001, which means that the necessary supporting standards needed to be available within a very short timeframe. To remedy this, the European ICT Standards Board, with the support of the European Commission, has launched an initiative bringing together industry and public authorities, experts and other market players: the European Electronic Signature Standardisation Initiative (EESSI), a joint CEN/ETSI activity. Its sole mission was the development of standards needed to implement the Directive on Electronic Signatures. In July 2003, the European Official Journal published references to some standards produced by EESSI.

With the publication of these standards, EESSI had fulfilled its mandate and consequently the EESSI steering committee was closed in October 2004, while ETSI is continuing work in this area. The maintenance of the standards and CWAs (CEN Workshop Agreements) produced by the EESSI workshop has been handed over to the normal standardisation work in ETSI/ESI and CEN TC 224. Any remaining co-ordination tasks in the area of electronic signature are now carried out by the Network and Information Security Steering Group (NISSG) of ICTSB. Maybe it is also worth noting that some of the CWAs have been presented now to ISO to be published as an International Standard through the fast track procedure.

Another example of co-operation between the ESOs is the one on network security. The European Commission issued in June 2001 a communication entitled "Network and Information Security: Proposal for a European Policy Approach". This communication included recommendations directed toward the European Standardisation Bodies for the further development of their relevant activities. Subsequently the terms of reference were agreed for a CEN/ETSI joint group on Network and Information Security, in order to study the issues raised by the communication. The group started its activity in July 2002 and produced the so-called NIS report specifying recommendations which was widely distributed for commenting. The final version of the report was agreed by CEN and ETSI and has been published in December 2003 as ETSI SR 002 298 V.1.1.1. The implementation of the recommendations is co-ordinated by the NISSG sub group of the ICTSB. NISSG was responsible to set the priorities within the recommendations and prepare an action plan for the required standardisation activity. It further needed to develop interfaces with the European Network and Information Security Agency (ENISA), and with equivalent bodies elsewhere such as ANSI/HSSP.

7.   Questions

1] Based on your involvement in both ESOs and international standardisation fora, such as the ISO, what is, in your view, the visibility and influence of EU standards:

a) on the international standards setting bodies (international organisations and renowned consortia such as IETF)?

b) global market players?

* If possible, please illustrate your answer with concrete examples of standards developed with European communities that have known a wide (international) success.

Answer:

In general one could state that the visibility and impact of the European Standardisation Bodies in international standardisation is rather limited. Apart from a few exceptions, of which the best example is given below, hardly any European standard in ICT has evolved into a globally recognised standard used by the markets worldwide.

The "internationalization of the GSM standard" has been the success story of ETSI of the last decade.

The standard was originally developed by ETSI as a European Standard in the nineties. In order to create a worldwide recognition of the standard and to have a global effort on the future standardisation for mobile telecommunications the 3rd Generation Partnership Project (3GPP) was established in December 1998.

This collaboration agreement brings together a number of telecommunications standards bodies which are known as "Organisational Partners" and which consists of ARIB, CCSA, ETSI, ATIS, TTA and TTC. The scope of 3GPP is to produce globally applicable Technical Specifications and Technical Reports for a 3rd Generation Mobile System based on evolved GSM core networks and the radio access technologies that they support (UTRA, GPRS, EDGE). The scope was subsequently amended to include the maintenance and development. In order to obtain a consolidated view of market requirements a second category of partnership was created within the project called "Market Representation Partners". A permanent support group called the "Mobile Competence Centre" (MCC) has been established to ensure the efficient day to day running of 3GPP. The MCC is based at the ETSI headquarters in Sophia Antipolis, France.

An example of a major European effort on ICT standardisation that has failed a "true" worldwide international recognition are the standards produced under EESSI. As mentioned in section 5 those standards were developed to support the implementation of the European Directive on Electronic Signatures 1999/93/EC. Although other regional committees such as ANSI X9 have done major efforts on the standardisation of digital signatures and certification authority services a similar worldwide co-operation success as the one with the GSM standardisation could not be reached.

As mentioned before, although official liaisons exist between the European Standardisation Bodies and the dedicated international security committees such as ISO/IEC JTC 1 SC27, there is a systematic lack of coordination between them. One of the reasons in the past could have been the different approach that the organisations have taken for the standardisation of cryptography. Where for instance ETSI has chosen to work with "secret" proprietary algorithms which are developed in a closed security group SAGE where only limited stakeholders had access to (e.g. the algorithms for GSM), ISO has followed a much more open approach (e.g., the register of cryptographic algorithms and the specification of encryption algorithms).

Another example is the development of the supporting standards under EESSI, where originally the published ISO/IEC JTC 1 SC27 standards on digital signatures were totally ignored. However, more recently we notice changes for instance with some of the CWAs developed under EESSI which are now in the standardisation process under ISO/IEC JTC 1 SC17.

Although there is still a lack of co-operation between ISO and the European Standardisation Bodies in the ICT security area, it is however interesting to notice that more and more coordination is done

between ISO/IEC JTC 1 SC27 and the security projects sponsored by the European Commission under the 5th and 6th framework such as previously RIPE and currently ECRYPT (on cryptoalgorithms) and PRIME (on identity management).

As more and more manufacturers are becoming worldwide market players, international standards that guarantee global interoperability in the ICT sector are key. Moreover the fact that ICT is a very faste volving sector with respect to technology changes implies serious (pre) investments and maintenance costs. Therefore the potential market size is of utmost importance for economy of scale purposes. That is why regional standards are less appealing to this industry. Moreover also consumers, as they become more technology aware (e-commerce, mobile, etc…) expect that solutions and/or equipment they use in Europe can also be employed when travelling or working elsewhere in the world which requires harmonisation of product and services based on international standards.

2] It is generally admitted that ICT standards serve a global market and, consequently, that it is vital for the European standardisation policy to "build co-operation bridges" with global organisations or international fora and consortia.

a) Do you share this view?

b) If yes, what concrete policy and organisational measures should be taken to this end?

c) Can you identify the international entities and consortia with which co-operation should be established as a priority?

Answer:

As our current world is evolving to a world without technological barriers and with the advent of ecommerce, mobile and wireless communications also a world without borders, worldwide standardisation to enhance global access to and interoperability of technical systems and equipment is a key factor. Also the increased mobility of consumers and awareness with respect to privacy and data protection requires harmonised products and services worldwide. Therefore regional standards such as the European ones, should be, if not derived, at least fully compatible with or compliant to international standards. This means that the necessary policies should be specified not only to enable these but also to actively promote and support these as well as to create the appropriate awareness amongst all stakeholders.

This means concretely that in Europe one standardisation body should be established that takes overall responsibility for the ICT sector and through different working groups address the different technology areas. That body should then actively participate in the relevant international standardisation bodies in the ICT sector. The most important international standardisation bodies which need to be covered are ISO and ITU-T while there also might be a need to co-operate with IETF or IEEE on specific topics.

A remaining problem of course is the different constitution and voting rights in the standardisation bodies. In some international standardisation organisations such as ISO, members are the individual countries and the voting system is based on one single vote per country irrespective of its size. In other bodies such as ETSI, members are manufacturers or service companies and the voting system is based on one vote per member but weighted according to the size of the member. This means if a single ICT standardisation body is established in Europe its constitution and voting process should be carefully analysed in view of its co-ordination and co-operation on international level. For instance with ISO/IEC a very good coordination would be needed between the national bodies (having each their own vote) and the "overall European ICT standards body" (having a coordinating role at

European level) , unlike for instance ANSI in the US that influences the one and only US vote at ISO level. On the other hand, with respect to the ISO/IEC voting process this could be seen as a great advantage and opportunity for Europe to align positions and votes amongst the member states and the European ICT standards body and hence have a serious impact on any voting outcome.

3] In your view, can we still talk about a "European" standardisation policy given that the ICT market and the users of ICT products and services are both global?

To respond this question, you have probably to take into account that:

a) According to the EU standardisation policy, standards play an important role not only for achieving internal market objectives, but also in order to implement the objectives of other EU policies (e.g. in the context of eEurope).

b) The preparation and implementation of standards in Europe should comply with specific regulations.

Answer:

There is a clear distinction to be made between technical standards and a standardisation policy.

Clearly the market is global and ICT is one of the most important enablers of this market. This means that both the ICT industry (containing manufactures and ICT service companies) and their consumers want their products and services to be based on global technical standards for a number of reasons such as interoperability, cost effectiveness, market size, etc….. . One should also take into account that only a few of the major ICT companies have their research and standards unit based in Europe, and hence they are mainly contributing to international standardisation efforts.

Nevertheless, there could be regional (e.g., in Europe) derivatives addressing some specifics or choosing certain options out of the global standards dictated by specific market or business needs.

However, these regional standards need to stay aligned (compatible) to and maintained according to the global standards.

With respect to a standardisation policy, Europe should have its own policy that is typically dictated by a mixture of political, technical, environmental and economical (business, market, financial) factors. This standardisation policy should ensure that standards are specified and used in Europe that meet the requirements specific for this region. These requirements may originate from different sources:

(i) The European directives and legislation have specified regulations in certain domains as transport, healthcare, finance, agriculture, etc…., that need technical ICT support (standards) for their implementations;

(ii) In the context of eEurope the European Commission have specified a number of policies that need the support of a set of technical ICT standards.

While the European standardisation policy should address the specifics, the usage of international, global, standards should be promoted at maximum as a starting basis. Where needed, European finetuning of these global standards should be done in a dedicated European standardisation body. If a gap is found between the European needs and the existing international standards, Europe could play the role of developing its own standard(s) and run it (them) afterwards through the

"internationalisation process" such as a the PAS procedure within ISO .

Moreover it is very important that the ICT standardisation policies address the needs of all stakeholders in the society: the governments, citizens (consumers), the manufacturers, service industry etc. Typically these standardisation policies should address implementation timelines, compliance including evaluation/certification, …. But they should at the same time also encourage stakeholders' interest in the standardisation process. Therefore it is very important that all appropriate stakeholders are invited to actively participate (contribute and review) in the definition of those policies.

4] If this question makes any sense according to your answer under Question 1:

In your view, what is needed from the EU standardisation today to make EU standards competitive and visible on the global market?

Answer:

As said before, the promotion of European standards only make sense if they fill a gap in the international standards work or if they are sufficiently ahead in timing, innovative or specific beneficial with respect to implementations compared to existing international standards or international standardisation work under development, while still responding to existing market needs.

Since, as mentioned before, in the international standardisation organisations the formal constitution and voting processes differ (in some organisations such as ISO the members are National Bodies, in others, such as ITU-T, the members are companies) it is for the EU standardisation very difficult to specify how to influence and create visibility for their work. However a few ideas are worth exploring:

(i) The creation of one European standardisation Body to strengthen forces, leverage at maximum existing expertise and avoid duplication and competition within the European standardisation efforts. This Body should be responsible for the definition of an overall European ICT standardisation strategy, ideally in coordination with DG Enterprise and Industry, which needs to be endorsed afterwards by the appropriate European instances.

(ii) Having the same experts active in the European and International Standardisation Committees representing all stakeholders. Moreover it is very important that experts are coming from "the field" and have experience with ICT implementation projects. The system of "EU sponsored consultants" that are currently active in some of the ESOs which lost track with real life experience (read ICT implementation projects) should absolutely be avoided. Moreover the experts are to be representative for all stakeholders in the ICT world: manufacturers, service companies, research, governments, consumers.

(iii) The development of a Standards Roadmap to assist the development of standards by bringing together information about (i) existing standards, (ii) status of current standards work and (iii) identified areas for future standardisation where work still needs to be initiated, in all key standards development organisations. In addition to aiding the process of standards development, the Roadmap will provide information that will help potential users of standards, and other standards stakeholders, gain an understanding of what standards are available or under development as well as the key organisations that are working on these standards.

As an example both ITU-T SG 17 and ISO/IEC JTC 1 SC27 are developing ICT Security Standardisation Roadmaps within their organisations. These roadmaps not only identify existing

collaborative projects but also help to identify possible opportunities for future collaboration.

A Roadmap could also contribute to the definition of an overall European ICT standardisation strategy (see (i)). It further could improve the coordination of ICT standardisation activities by providing an up-to-date summary of work that has been completed and work that is in progress across SDOs as well as identifying the major organisations participating in this work. By knowing what has been done already, and what work is in progress, it will be possible to avoid duplication of effort and also to identify gaps that need attention.

Needless to mention that a Roadmap would also require regular updates (at least twice a year) which means that an appropriate maintenance process needs to be put in place. (iv) The standards developed should be kept as simple as possible but still meeting the technical requirements (e.g., avoid to specify too many options which are difficult to handle interoperability). Moreover, user friendliness should be kept mind (e.g., some of the CWAs produced by CEN are extremely hard to read and implement). A process for quality assurance of the published standards should be put in place. Last but not least, special attention should be paid during the maintenance process with the revision of standards to backwards compatibility. Indeed, this together with the stability of standards (for at least a couple of years) is crucial for the market adoption. To support the migration between two versions of a standard a dedicated supporting policy stating the appropriate timelines is of utmost importance to guarantee success in and adoption by the market.

(v) The interaction between the European ICT standardisation efforts and ICT research needs to be intensified. This should not only happen through the EU sponsored research projects but in a more general framework. Possible sponsorship of researchers to the European ICT Standardisation Body needs to be analysed.

(vi) The European ICT standardisation Body should regularly organise "open" consultation workshops (e.g., as ITU-T and ETSI) on specific subjects to align its strategy and program of work.

Moreover, these workshops would help to check the adequacy and completeness of the standards created.

(vii) The European ICT standardisation Body should also create awareness. In many cases it is a lack of understanding or lack of expertise in applying standards which are blocking factors in the standards adoption process. In addition, the awareness process also helps to adjust the market expectations. Some means for creating awareness are:

- The creation and maintenance of a "user friendly" website providing correct and adequate information;

- The set-up of ICT roadshows on specific topics (e.g., the ETSI roadshows);

- The set-up of dedicated awareness workshops (e.g., the ISO/IEC JTC1 SC27 awareness workshop in December 2005)

- The publication of a periodical magazine.

5] Based on your experience within ESOs, how do you compare in terms of strength and weaknesses the US standardisation policy vs. the EU standardisation policy? Is there a third better alternative?

* The US approach to standards is mainly focussed on accreditation managed by ANSI. Several

Standards Developing Organisations exist under this system at the same level of recognition. On the contrary, the EU standardisation policy recognises three organisations as the formal standards bodies (CEN, CENELEC and ETSI, the "ESOs"). ESOs are the only organisations in Europe which can produce EU standards formally recognised.

Answer:

The US approach proves to be a good approach which books successes one after the other in international standardisation work.

The US National Standards Body ANSI plays a very important role in having an overall overview on all the standardisation work at national level. Moreover they are coordinating the on-going efforts, important liaisons between the different groups. They further define the strategy and identify gaps in specific areas such as security. But most important is there major role and impact on pushing the ANSI standards through the international standardisation process such as ISO. For many of their standards they succeed in following the so called ISO Fast track procedure which shortens considerably the "internationalisation process" .

Very important to notice is also that in international standardisation meetings the US speaks with one voice through ANSI that is coordinating the work of the different experts originating from a variety of organisations and /or institutions such as industry/manufactures, government, research and governmental organisations. This means that the management of all ballots and comments is very formally organised at ANSI level through the consultation of these experts. ANSI is also coordinating the proper representation of experts at the international meetings. Last but not least, ANSI is also able to provide the necessary funds to sponsor some of the activities.

The fact that ANSI is quite successful in their approach is the lack of a "unified" European position or counter proposal. Indeed very often, the European countries each come individually with their own proposal and are not able to defend a common European position. A typical example of this is shown for instance in the ISO banking committee TC 68 which is totally overruled by ANSI X9.

During the last years, because of the economical situation and the fact that in many European countries there is no sponsorship from the National Standardisation Body to the individual experts for international standardisation work such as in ISO, it is becoming increasingly difficult to attract and involve the appropriate experts. Companies do not see an immediate return of investment when allocating people to this type of activities while research institutes neither have the budgets for this.

This is unlike the approach in the US but also in most of the Asian countries such as Japan, Korea, China, etc… where there is a very strong push and involvement of the government (also financially) to get their experts involved in international standardisation work.

6] European enterprises are generally slow to market new ICT products for which standards are written. Is there any complementary policy related to the general standardisation policy in Europe that can be made to create industry consensus, or future market needs for the development of products?

You may also comment on the following point:

Do you think that recognising only a unique organisation for EU standards setting in ICT (i.e. ETSI, as opposing to lightweight consortium structures) is a strong or weak point in creating conditions for this consensus?

Answer:

Because of the global reach of many companies as well as products and services, the importance and value of European standards is questionable. It is clear that for manufacturers in the global open market where competition is increasing, revenue margins are decreasing, the economy of scale is of utmost importance. This is even enforced by the fact that ICT is a very fast evolving domain where pre-investments in regular revisions and product updates are required to keep up with the competition. Moreover, the large growing markets for most industries for the coming years are not to be found in Europe but in the Middle East, Asia Pacific and Latin America. Hence most of the important ICT players are investing in raising subsidiaries in these regions which intensifies the needs for global standards.

Hence the most important action is to improve immediately the coordination and co-operation between the European and International ICT standardisation work. Clearly the establishment of one single European ICT standards institute would considerable facilitate such an action.

With the publication of technical standards, more clear policies would be welcome, e.g., to what extend are standards informative or normative and if normative, how is it controlled; what are the implementation/migration; etc…

Also adequate policies on product and service evaluation/certification might be extremely helpful in some areas. It would strongly promote the technical standards as a reference basis for testing purposes. Needless to mention that mutual recognition between countries/regions is a must for a successful implementation of any evaluation/certification process. But such processes would help to create and enhance trust and confidence into ICT products and services in the society.

7] The current standardisation policy in Europe, defined by the directive known as "The New Approach" (aimed at facilitating the mutual recognition of products within the European Community by the use standards), focuses mainly on the European Single Market. Compared to the more traditional industry sectors (machinery, construction products, toys, etc.) the ICT area has important characteristics that makes standards-setting different and difficult: global nature of the IT market, pervasiveness in other sectors, etc.

In your opinion what should be the main focus of the future European policy in ICT standardisation?

Some examples are given below. Keeping in mind that they are not mutually exclusive, which ones, do you think, should be chosen as a policy target?

Create a consensus forum where European industry would set priorities for joint developments. Light structured Standards Developing Organisations (SDOs) would be formed and standards would come out from there.

Focussing on the use of standards for improving citizens' quality of life (by placing the emphasis on issues such as interoperability, etc), setting up major guidelines with minor intervention in the process.

Regulate and standardize only at large (spectrum allocation, frameworks for systems) and leave the rest to the market.

Take the position of "a large consumer", thus set clear objectives for further developments by the industry

Produce a drive to bring active European standardisation people together in European SDOs (considering that there are currently dispersed over many world wide organisations) in order to create

a momentum for greater activity in some areas in Europe.

   Keep things as they are.

   Any other scenario that you deem as appropriate. Please explain…

Answer:

As mentioned above, it is very important to create *one ICT standardisation entity* in Europe that would also actively participate in international standardisation work.

This body should first of consist of relevant active experts from different origin in Europe such as the industry, the research institutes, governmental organisations, etc…which would do their work in appropriate working groups to be organised according to the topics but in coordination with existing international committees such as the Sub Committees (SCs) under ISO/IEC and ITU-T. Typically, it should include also the experts which work in the international standardisation committees on these topics.

This body should be responsible to define *its own standardisation strategy* for the set of topics it is covering (as is the case within ISO or ITU-T) based on a consensus approach. In this way they would strive to a trategy which would be both market and technology driven. This strategy should be endorsed subsequently by the appropriate European instances which need to provide the necessary budgets to support the implementation of this strategy.

With respect to the implementation of the strategy priority should be given to an investigation of existing international standards material on the work to be covered. Only if gaps are identified it makes sense to develop a European standard to be submitted to an international standardisation process. In all other cases the re-use of a maximum of existing international material should be the policy with the specification of an appropriate European derivative as deemed necessary.

The European Standards body should also at least have a coordinating/supervising role in the ballot and commenting of standards produced in International Standardisation Committees. It should further coordinate and sponsor the representation of their experts in the international meetings while these experts should not only represent their country or company/organisation but also the "European Standardisation Body" (as ANSI is working today).

This European Standardisation Body should also ensure the liaison and coordination with other European standardisation activities in a number of "application" areas such as Healthcare, Automotive, Logistics, Finance and Insurance, etc….. , where ICT plays a very important role as enabling technology.

Another important area where a European standards policy could play a role is the mutual recognition throughout Europe of "Certified" or "Evaluated" ICT Products against specified standards. Still today there are a number of European countries that are overprotecting their own manufacturers and are not fully opening their market to suppliers from abroad. There should be a European Accreditation process in order to establish a network of recognised laboratories all over Europe dealing with ICT products. Clearly the existing national initiatives should be taken into account and adopted in such a process.

V. Taavi Valdo

1. General remarks on standardization policy

European standards are regional standards, no EU standards exist, and there is Europe beyond EU. Actually speaking there are few essential European standards (also national ones) in ICT because there is not European ICT, but global. Defining EU as specific European region or EU as federal country is not fruitful. Subsidiariti principles should follow. But there is defenetely usage and implementation of ICT standards in EU and EU as interested party with significant finance and organizational support in ICT standardization.

Common approach in all technology and business sectors should be followed: all sectors responsible for their standardization, but ICT standardization is specific horizontal support tool, sectorial approach should be limited. Only really specific problems should remain. European ICT standardization domain historical sectors shoud be reconsidered (CEN/ISSS technical committees).We must avoid creation specific, unsystematic contradictory confusing standards.

Sectorial approach, coherent competencies and experiences are important in implementation level: general standards, sectorial implementations. Key is cooperation: need for sectorial competence centers exist, but they should do their own part of work. Not to implement all from beginning. As example: information security aspects, digital signature and authentication. Cooperation should be stimulated, broader view and long-term view, not institutional view. May be Europe-wide interoperability demand from us actually minimizing profiles range of options, instead of tailoring for "e-specific" needs? There are basically no specific ICT standards requirements from specific business areas. Standards should basically cover highest requirements any business segment may have. These business areas will make use of the common format and schemas. Sometimes users have a concern ourselves regarding profiling of ICT standards. The profile they use is somewhat different from "normal" profiles. Often in gray implementation areas, what missing in standards scope (in formal and in forums as well).

ICT is mission critical, systems availability is essential for seamless functioning of society. Importance issues to name are security, privacy, and trust. Legal regulation needed; references to standards if there is threat to human lives, also environment, nature etc. Clear sharing of responsibility. References should be direct and in full text as part of legal acts. But: technology could not be enforced.

Planned economy does not fit in standardization environment. Voluntary and consensus, also result driven should remain as main policy.

1.1 Recommendations

We can follow success of European standardization bodies' models like ETSI and ECMA International, global approach, openness, and protection members' interest. To complement public interests direct public agencies participation is recommended. If specific ICT public interests needed to protect, it is possible to finance and to formulate them. Pan-European standards implementation projects should be conducted.

We can recommend layering approach in ICT standards: process layer, service layer, application

layer, technology layer.

Results definition in standardization is problematic. Consensus in development final stage is often formality. Only wide implementation gets real standards title and position.

Quality measures for ICT standards:

- Wider usage, implementation extent
- Development and implementation speed
- Scalability, flexibility
- Well known
- More interoperable-oriented

In short range standards implementation seems costly, but in long shot there is possible to cut costs and even to get invested money 5-6 times more back. Standardization can be definitely win-win situation.

Procedures of standardization should not pay attention to formal (dates etc) but essential, content-oriented results (quality, extent of client satisfaction.) between stages etc. Dates can be as provisional: to stop development if exceeded significantly. The standardization process should be flexible, allowing both for development of standards by the standardization bodies, as well as acceptance of standards created by non-formal standardization bodies (e.g. professional organisations, consortia).

2. The pros and cons of the current ICT standardization

Let's consider general pro and contra arguments of different interested parties participating in ICT standardization processes. Interested parties should find best forums in European ICT standardization to protect their interests and to bring out their opinions. Then it is possible to gain real usage of implementation the developed together standards and take advantage of the whole potential.

2.1   Pros

- We save time: using familiar standards enable faster launch systems into operation;
- We save money: by using great number of standard solutions there is lower need for training;
- Lower market barriers: no need for extraordinary effort while establishing cooperation with new partners;
- Longer productive phase of the systems life-cycle;
- Higher systems productivity and effectiveness;
- Better communication: common language, easy understandability and visibility;
- Getting connected: proved formats and models for transactions, common networked infrastructure;
- Clear work allocation and human resources employment: transparent role separation, no need for duplication or unnecessary parallel work.

2.2   Cons

- Implementing standards is costly: rearrangement need investments, audit and conformity assessment procedures are not cheap;
- Users have less choice: using only standardized solutions one may loose its possible

competition advantages on specialized sectors;
- Standards' contents and participation in standardization are tricky/complicated;
- Consensus-making take time: not always it is possible to wait results from standards development;
- Often specifications have multiple options: lot of possibilities and interpretation while implementing;
- Systems integration is not easy: too much incompatible standards in the field.

It seems that standards still have bright future: pros definitely prevail cons. Better communication between participants of standardization processes is needed urgently. It is substantial to define optimal variety of choice and specification depth. Let's find together new cooperation ways!

2.3 Some obstacles in ICT standardization:

- Difficulties understanding the standard
- Too rapid and not always justified standards revision process
- High cost of the standards
- Resistance to change, high cost of change management
- Need for organizational restructuring
- ICT companies reluctance to adopt fare procurement practices
- Characteristics of related technologies need to take account them

According to Ferguson & Linehan (IBM) one of the largest challenges in the computer industry today is complexity – in programming models, system designs, user interfaces, and standards. Complexity overwhelms users, limiting their ability to extract value from new technology. Complexity also challenges the pace and value of ICT standardization efforts.

IBM has proposed three principles that bring simpler approaches to business rules:

- Applyingservice-oriented architecture concepts to integration of rules for standards applications.
- Ensuring that standards for business rules integrate with model driven architectures and complement the capabilities of UML and related OMG Business Process and Rule standards and Web services standards.
- Focusing on a family of standards for rules that ensures a natural fit between the use cases and the technology. Different vendors will choose different engine technology (code generation, rule engines, etc.) to implement the Platform Specific Model. The Platform Independent Model needs to be a simple, natural fit for the important use cases.

This "simple things should be simple" approach reduces complexity, better matches common skill sets and enables intuitive, simple tools.

2.4 Enablers for creating fruitful standardization state of mind

- General awareness and acceptance/adoption of standard
- Piloting and demonstrations
- Reasonable standards revision process
- Financial backing, wider interest based sponsoring
- Managerial influence, real higher level support
- Visible contractual arrangements

3. Essence of ICT standardization, finding optimal scope

Specific for ICT:

- Quick development new technologies
- Innovative technology to market (often quasy-innovative, only slogans, minor changes)
- Cycles of development, generations, versions (used also as marketing tool)
- ICT convergation, horizontal pan-sectorial penetration

Actual development of new ICT specifications and standards proposals is based mostly on forums work. Standards development life cycle estimations: initial phase, innovation, and then formal status, recognition. Role of formal standardization is significant on finalizig stage of standars life cycle. Continuous development of new solutions, (certain image keeping?) in many companies: not all solutions get standards status, some of them de facto, some de jure.

Specific ICT trends, paradigms (and hypes!):

- Openness of development
- Best practices significance (as example British ITIL and German BSI)
- Forums creation of main market players, by sectors and by need/case (cooperative-willing)
- Service-oriented architectures of information systems
- Agile (light, quick) development

Developers of standardized documents should carefully define purpose and target audience of documents (see Figure).
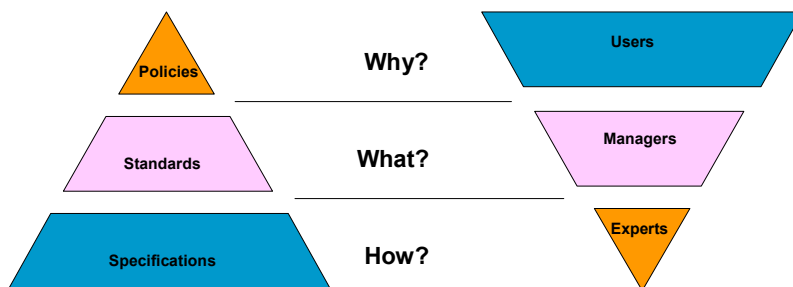
Figure. Developers of Standardized documents should carefully define purpose and target audience of documents. Common short text is more understandable for wide audience. The readers of specific large documents are few experts. Standards are placed somewhere "between". Often IT standards are too specific and complicated technical specifications.

Problem is that policies and legal requirements go too far to standardization scope; standardization goes to specifications' area. We need real standards and standardization.

No need for standards „production". We can produce specifications and reports, not standards (if only standards proposals). Developed documents should based on international best practices (incl all

kind of standards, state of art) but not be named as standards too early. They are rather agreements or intentions.

To produce specifications is one side of coin, but real challenge is to involve and agree all interested parties to follow these commonly developed specifications (on all parties understandable way). Tackling organizational problems rather than technological.

Most of IT "standards" is up to hundred page technical specifications, understandable only few experts. Actually these are not standards at all. Some standards miss records about actual implementation. Therefore our main task in Europe is to choose „real" standards and proved solutions for interoperability (nevertheless source, formal or consortia). Also it is important to develop guidelines and implementation support recommendations, utilities and tools.

Objectives of ICT standardization should be reconsidered:

- Better interoperability of information systems, availability
- More efficient data mining and delivery, better getting knowledge and comparability
- Clear system requirements
- Better usage of resources
- Efficient, qualitative activities
- Less risks
- Support new technologies
- System modularity
- Effective, cost effective development, exploitation and maintenance of systems
- Lower costs of system integration and management, minimizing parallel work

Benefits of participating in ICT standards programs are:

- Foster growth of ICT market worldwide
- Ensure interoperability with other vendors
- Enable new markets and opportunities for your company
- Utilize the widest variety of solutions, built upon open standards and enabling technologies
- Build and participate in a global and multi-vendor ICT systems
- Reduced development costs

3.1   How is the current EU standardisation policy perceived in the new EU countries by the industry and the public authorities?

Due to historical reasons it is better for new EU countries to continue from „clean desk policy" in ICT development and therefore take advantage latest ICT standards and systems implementation. In other words: use international standards.

Certain restriction is mandatory implementation of certain amount of European standards before gettng full CEN membership. Such formal mass-implementation is not good promotion of European standards real implementation. EU standards, especially in ICT area, are currently not very known (with few exceptions), but this is not critical. Especially development of protective standards may rather hinder ICT development in EU in the long run. "Success" of EU standardization should not be a goal, and it cannot be efficient as a goal. Being a leader in standardization seems rather a result of being on the forefront of technology and market. Therefore, it is vital to develop EU strength in the overall ICT area.

Proposals for creation general policy instruments from the innovation policy field that are aimed at supporting ICT standardization in new EU contries companies:

1. R&D funding
2. Demonstration and test centers
3. Technology transfer, partnership, networking
4. Provision of data, market analysis, supporting studies
5. Demand side initiatives
6. Incubators and innovation clusters

3.2   To what extent can the free availability of standards contribute to their wider use and implementation?

Proprietary technologies are typically into markets first. Formal (and also open) standards typically emerge much later in response to the results that occur after too many proprietary providers have been attracted to a given niche. They do not so much solve problems as provide consistent interfaces to help remove fragmentation. Public sector choices can influence through procurement policy, but still technologies have not achieved exceptional penetration despite being "standardized".

The best way to make standardization more influential is to make standards better available to organisations and people needing them. If this is not possible, the (EU) standardization bodies might provide detailed digests of standards that are widely and freely available (e.g. in the Internet), and are aimed at SMEs (also at individuals, where appropriate).

Significant, wide implication standards should be publicly available. In development stage should be appointed, also with compensation mechanisms for national standards bodies. Referenced in legal act standards, all harmonized standards should be freely available (stated in mandate stage).

3.3   What kind of added-value services can National Standards Bodies offer if standards become available for free?

For NSO-s business logic should be different then selling standards. Selling is secondary important result not aim of work. Common economic loss in case of closure is far more then sell profits. Opennes should be defined in starting development. We cannot depend on sells' incomes heavily. De facto standards are often available free in Internet, pricing do not support wider application of formal standards. But still: there is not free lunch. Companies are ready to pay reasonably, but on contract bases, not in advance. Quaranties, warranties, trust and confidence are some key words in this connection. Are NSB-s ready to make contracts on standards implementation in companies, taking responsibility? Aim should be to go step closer to real business, if talking about efficiency.

Main income sources for NSB-s

• State budget.
• project financing
• membership fees
• selling of services, education, consultations

Should be multi-user network and server-base solutions, licences for schools, universities, researcs and users. Using for non-profit, educational purposes, standardization produces public good with long-term usage for community.

4.   Role and competences of National Public Authorities in standards setting activities in Europe

The main preferences for standardization of the public sector in Europe are:

- general interests of the whole Region, state (security, quality, environment protection);
- inter-sectoral co-operation, a broader view;
- various services directed to the population, (i.a. business services);
- Global dimension, international co-operation and representation of the region

EU aim should be involvement, active participation in international standardization. Representing public sector and protecting European specific interests in ICT.

Common nominators (public interest) examples:

- Finance transactions
- Learning technologies
- Social, healthcare

The organisational structure of ICT standardization co-ordination in EU should be strongly decentralised. The development of information systems mostly falls under the responsibility of Member state IT managers in ministries, county governments, boards and agencies. The central co-ordination primarily deals with strategic planning, setting priorities and ensuring financing for these. In addition, creation of co-operation frameworks and ensuring their functionality as well as drafting IT-related legislation has traditionally been the responsibility of central co-ordination.

Formal standards are more significant for public sector, rather then private sector. Wider usage, penetration of ICT is challenge for ICT standardization development. Without the element of competition as a driving factor it is more difficult to find a business model for public institutions. The problem is that in many cases, the organization taking the cost is not the one harvesting the benefit. There is no bottom line incentive to provide services and data using a standardized interface.

Development of protective standards may rather hinder ICT development in EU in the long run.

Market driven standardization: for market players, companies' short term is better for self-economic, own business objectives, for making profit. But for long-term work for community: companies/owners have not interest and contributions. There are certain areas where market fails to agree by means of voluntary standardization.

Example of possible market forces failure (by Jane K. Winn, *University of Washington School of Law)* US Regulation Case Studies

- Electronic commerce authentication

Market is not producing standards only competing proprietary technologies

- Data protection

Failure of 25 year experiment in letting market decide appropriate level of protection produces epidemic of identity theft.

Formal, institutional approach and consortium approach are not opposite, they are complementary approaches. Acceptance of standards provided by the consortia might be fastened, allowing for more efficient use of standards in the legislation.

Developing legal acts, also standards and specifications is one side of the coin. But fundamentally different story is implementation them in real life, actual usage.

So the point is to keep both projects close to implementation side, evaluation and analyze from existing practices point of view.

Administrations, so EU should be reasonable conservative in supporting standards and technical solutions, only what are proven.

Main objective should be defining state level legislation preconditions with finding components to fit best ICT standards development objectives. Actually to develop as example, model ICT standardization legislation structure, identifying existing caps and grey areas. What is overregulated, what is under regulated? Helping countries to make comparisons and develop national legislation, finding proposals for EU level legislation.

All countries hav their regulations, special chapter for ICT needed.

Common harmonized legal environment should be our aim. Covering cross border, interoperability issues. Not to invent, but pick up and learn from existing, appointing possible caps/weaknesses and proposing common solutions. Looking into ICT standardization as a real business, it should be making profits and being successful. Lower barriers for SME-s entering in ICT standardization. In one sector there are standardized solutions at place, but in another sector similar solutions does not exists. Why?

5. Main focus of the future European policy in ICT standardization: create effective common, Pan-European standards implementation organization

Provision of Pan-European ICT standardization services is mainly an organisational problem. The provision of cross-border ICT standardization-connected services require that Member States and their standardization systems trust each other, it must be clear, who is entitled to use the services, who is responsible for the potential misuse of a standard/service, and who will take care of the legislation.

Each Member State has its own ICT standardization organisational unit/schema, rules for committee work, and middleware. In order to provide ICT standardization-connected services to administrations, citizens and enterprises running a middleware platform will not be sufficient - we will also need some organizational body functioning behind it.

Provision of Pan-European ICT standardization services is impossible without fixing rules, defining responsibilities and resolving organisational questions. All parties must trust each other. Centralyzing is not good approach, better is to cooperate.

We will need to establish an organisational body with the responsibilities facilitation of information exchange and support to the Member States to deliver ICT standardization services, standards implementation best practices to administrations, citizens and enterprises in cross-border dimension.

6.   Low visibility of existing standardization initiatives

Information of the existence of similar initiatives is missing. In some cases the competition is caused by rivalry among vendors. Some companies will participate in several competing standardization initiatives and in the end support the one that has the most momentum and support.

Standardization initiatives must be communicated and coordinated. A methodology for announcing standardization initiatives at a regional, national or global level is needed.

To avoid duplications it should be clear cooperation between EU ICT standardization-connected projects, agencies and efforts should be coordinated. Clearer research questions formulated. The actual ICT standardization task in European level should be tackled as one and whole.

IT is time to stop historical deviation in standardization field in Europe to three organizations (CEN-CENELEC-ETSI) and form one with newly erearranged work directions. ICT is one of important horizontal sectors.

Former "Diffuse project" objectives was to provide a single value-added entry point to up-to-date reference and guidance information on available and emerging standards and specifications. This neutral reporting on standards and specifications aims to facilitate the electronic exchange of information. New organization/community needed based on Diffuse project experiences.

European digital library of standards need to be established:

- Information models and data dictionaries
- Models of implemented systems (physical models)
- Data exchange standards
- Standard data (standard values.)
- Nomenclatural codes
- Metadata standards (data about data)

7.   Recommendations for ICT standardization bodies, technical committees

General recommendations to make technical committee work processes more effective:

- Draw up interested parties surveys, be active in partner choosing, and establish new contacts
- Improve external communication and information dissemination
- Use example success stories and, if possible, calculations to explain standardization benefits
- Establish solid collaboration with private sector and legislators
- Prevent domination of certain players
- Submit drafts for comments as early as possible
- Take a look, what is going on in neighboring technical committees
- Participate as mush as you can in international cooperation

Some technical committee key success factors:

- Neutrality
- Service orientation

- Added value to business, market and competition relevance
- Domain and background knowledge
- Open process from very beginning
- Wider perspective
- Understandable language
- Common benefits

Behavior and communication culture are as important as technical competence. All again we must rethink our ways of developing consensus and getting into agreements.

Important tasks for NSB:

- Information services
- Information of new projects, plans
- Information and communication with field, experts
- Coordination of standardization work participation
- Specific knowledge about standardization procedures, specific project management-like
- To separate sell departments from client services

NSB organization form: public agency should lead or special non-profit company by contract. Permanent responsibilities, committee secretariats, etc. need public financing. On some ICT sectors more activities, results are good and participation active, but big picture is missing, it is question of awereness.

Different forms of interest and partricipation should be at place: allowed and engouraged, coherent rules and attitudes, common understanding and acceptance.

We should offers different membership levels, providing a range of opportunities to meet the needs of various user groups, member companies. The category you choose will depend on the size and nature of your company, the depth of your interest in imaging, and the level of influence you'd like to have within ICT standardization (for example strategic, participating and associate members).

8. Some alternatives to consider in ICT standardization

The standardization is closely connected to product development and is an integral part of new solutions design. Publishing a new standard (especially in ICT domain) starts immediately its revision cycle. The objective is to predict more the future than look past. Formal standardization bodies have introduced interim or fixed date valid standard-like documents (e.g. CEN/CWA-s). The idea is to speed up consensus making process to respond market demand.

Despite of increasing importance of standardization and interoperability issues in modern networked IT world, it is not easy to understand the essence of matter. All again we should ask essential question: to be or not to be? Let's go through some hidden in standardization contradictions and dilemmas below.

8.1 Similarity vs. variety

Standardization helps us to struggle against/to handle the increasing intricacy and variety of the world. According to biologists, to produce variety is a fundamental characteristic of life. Man-

made technical systems are complex either. A common way of reducing variety is to apply the existing solution for solving recurrent task. The previously elaborated solution foreseen for repeated use is a standard solution. Practically it means learning from previous experience of forerunners. By that we cut down unnecessary variety.

By using standardized solution it is possible to reduce/decrease parallel variants and raise number of repeats. As a rule, standard solution is also cheaper then coherent tailored solution. That means that international standardization in the bigger markets is more profitable than national one. On the other hand, by example of the biological systems we must say that too radical reducing of variety is dangerous. Variety is also human being's essential need. We have reached to paradox of standardization. We want to reduce variety, but also demand more choices. Human being is playing dual role: as producers we try to use standardized ways and proven techniques; as consumers we demand unique solutions, we want options for choice. Of course, price plays important restricting role. Reasonable standardization is the way out of the problem. If cheapness gained via standardization is not comfortable for us, then it means that standardization is going too far. The question is how to define optimal subsystems in different contexts; to what extent it is reasonable to standardize or not (for example standardized brick, constructing module, room, apartment or house?)

8.2   Rigidity vs. flexibility

An example from the nature's flexibility is a cell as a small standard system, which is a building block for more developed and bigger organisms, also human being. Utilization of basic standard components is important also for IT infrastructure, for example success of Internet and simple TSP/IP protocol. Open solutions give us independence from supplier and platform. Still we must recognize, that quite a lot of big information systems are developed step-by-step, tailored from short-term needs. Developed that way close systems lack flexibility. According to investigations (T.Egyedi et al), standardization in one part of the system creates flexibility in another part. Using standards in system development improve system's flexibility. One standard building block helps us achieve better integration in different parts of big information systems. Gaining compatibility is essential to increase systems flexibility. Simple open interface standards are crucial while achieving interoperability.

8.3   Fast vs. slow

Generally there are two possibilities to develop new standards: one is to draw up the first version quickly (if needed, using fast-track or PAS procedure) and then attempt to reach consensus among all interested parties involved. Another way is standard's draft preparation properly, in detail, and editing with introducing comments and proposals from community (time-consuming consensus-setting process), but then faster developing the final version of standard and implementing it in practice. Actually, both methods demand approximately the same overall time. To accelerate standards development we can recommend new ways of specialist's involvement, let say by the standard, not by the domain technical committee as usual. Standardization makes the picture more clear and simple, helps to find problem's essence. Instead of everyone finding solution themselves, based on his/her own intelligence, standardization invites us to cooperate and helps disseminate information. Unfortunately some people always want to "fish in troubled waters", to mystify simple things, to waste time.

8.4   Close door vs open doors

There are two polar approaches to ICT standardization. One is traditional design by committee, starts with a cross-industry group of experts, takes various existing technologies as inputs, and over time creates a new specification. This processes working slowly but can be effective. The other extreme approach is work behind closed doors, publish it and inform the world.

Recommendation some-what between: to start editing in small, close groups/forums, then gradually open work, get internal stakeholders on board the vision and have them provide feedback and suggestions for improvement; take the result to selected external stakeholders and get their feedback; publicize a draft spec and get widespread feedback. Finally present well-formed result to a standards body for editing, checking and adoption.

Qualified people should take part in public review process. Better way is producing specifications via reasonably open process, then no single company can impose its own views and there has body responsible for ensuring the integrity of the results.

8.5   Product vs process standardization

Two types of technology drive the ICT standardization environment. Product technology results in new innovative standards, while process technology results in more effective ways of producing them. Innovation is the ICT standardization process by which businesses improve their competitiveness and profitability through the continuing adoption of relevant new products and ideas. Innovation is significantly driven by the market.

Process innovation can support and complements product innovation. Improvement in process technology can be independent from product innovation, but one other hand advanced process technology facilitates intensive product innovation. Product standardization and process standardization are in place also in ICT standardization itself: standards as documents/products and standardization as process.

8.6   Patents vs standards

Choosing options for protecting company solutions we can pick and choose two main ways. We can protect our trade secrets via effective patent policy, closing them or open our solutions for standardization. Both ways are proven to be effective while protecting market share and interests. Future in Europe is for open solutions, more and more market players are realized that. Company dominated standardization do not work any more. It is no need to feed layers and monopoles any more. De facto standards and monopolistic solutions may be a good pragmatic choice for minimizing cost and reducing variety, but only in temporarily basis.

8.7   Man vs. machine

Rather widespread is the technical-oriented approach to relations between technology and society. Systems are complicate, not cheap, and they are developed without taking into account social needs. But actual accent should be on human being: amateurs talk about systems, real professionals mainly about humans. Standardizing and automating routines leave more time for actual communication and consensus-making. Standards should be more human-centric, familiar for wide audience. Success story of several popular European standards (like GSM) tells us, that main focus must be concentrated on user's needs. Technical problems must be solved flexible, main thing is to get systems work and services into use. Such kind of pragmatic, oriented to gain real results approach is a key for European ICT standardization success, especially taking account limited resources. We must define and defend our real interests in ICT standardization field, despite of technological

dictate!

9. Problems to resolve

There exist different procedures and policies even between European standardization organizations. Standardization guidelines, directives and policies should be harmonized.

We can follow different IPR policies, tendencies to tighten IPR policies in last years.

Type of standard-like documents should have clear classification. Technical specification for example is different type document, not as immature standard as by now.

Positions and interdependencies legal acts indifferent level, contracts, obligations, technical norms, standards and standard-like documents should be rethinking in terms of information society and digital era.

No need of taking over international standards as European (it is step back, different life of document). Use authentic sources, no need for double work also taking over forums documents as European standards. Only, if needed in specific harmonization objectives, references in legal acts.

Most participants in formal standardization are from public sector. But even public sector is in near future more oriente in results gaining. It will be business-based. Bad signals for formal standardization! No time any more for standardization activities, all officials are really busy.

Participation from European experts in ICT standardization activities in the emerging fields should be encouraged and supported by all necessary means.

The IT industry has never been good at managing the development of standards.There is too much self-interest and the process of development is too slow for users that need a rapid solution to their technology problems. The situation is made worse with ICT standardization because political interest is added to the commercial interests to be served. The standards being developed by ISO, CEN and others are creating confusion without actually serving up a practical solution.

Common European ICT standardization language is poor working English. 80 % of participants work in foreign language environment. If not understood correctly, it leads to wrong decisions. Real possibilities have not reached. So wocabularies work, translation servicec in European level should be first priority. As legislation, call for tenders and many more documents, at least titles and abstracts, scope and introduction of standards should be translated in every member state official languages and should be freely available.

9.1 Conformity assessment

Fulfillment essential requirements of EU directives or/and technical norms in state level is specific legal corfomity aspect. It is legally binding system, not directly connected to standardization at all. Conformity clauses in terms of standards compliance is different then legal requirements.

Using third party trust services and different certification shemas is not reccommended; self declaration should be main tool, with clear responsibility. Certification scemas are burden to ICT companies. It is often expencive business, not efficient.

ICT standardization, ICT systems interoperability in key sectors should be considered as a necessary

European wide infrastructural element for enabling the information society. A legal system for cross border acceptance of ICT solutions should be installed in the European domain.

Implementation guidelines should be mandatory part of standards besides conformity clauses.

9.2 Users' involvement

Our aim should be to encourage European ICT standardization to implement a framework for end-user involvement in the standards setting process, to collaborate with relevant consumer groups, commitment to recognise the essential role that consumers play in ICT standardisation and hopes that European will effectively put it into practice.

ICT standard is *scalable* in the sense that it may be used by different levels and categories of the business communities and users, different views to one and same issue. Different standard's implementation guidelines needed for different user groups.

9.3 Compliance with existing standards

Standards seek to achieve alignment at the semantic level with the other standards. Semantic is important, also cultural interfaces. Need to clarify scopes, abstracts, terms and definitions, also standardized ones between them. Standard about standards, metastandards needed, because too much standards. Some translation centre between interfaces of standards. Implementation rules of different standards implementation in same functionality. Adoption in familiar environment is often better than changing the systems.

Mission of public sector is to produce queries about existing standards and best practices, EU research results as public information. Digital preservation of interests a range of different communities, each with a distinct vocabulary and local definitions for key terms. A glossary is included to convey exact meaning of many of the standardized terms, but it is important to draw attention to the usage of several key ones. To provide a common terminology made up of terms not already overloaded with meaning so as to reduce conveying unintended meanings.

Reasons to produce specific ICT standards profiles should be really significant and justified. There is needed to keep standard solution as universal and unified/stable as possible, especially taking account rapidly changing business environment. It should be pan-sectorial solution, not sector-specific.

Stakeholders' identification and description

This is an interesting further task for ICT standardization development. Leaders, visions, missions in organizations needed.

Stakeholders' participation aspect: rights and requirements should be balanced with responsibility.

Some key issues to consider:

- How to identify the stakeholders?
- How to better involve stakeholders?

We should take into account:

- ICT standardization practices and principles, common and/or of specific sector
- Users expectations, wishes, requirements
- Company owners (in country level citizen's) expectations and requirements
- Employees' expectations
- Society, law enforcement authorities, regulatory bodies requirements

We should be aware, that each of the stakeholder groups needs specific approaches to reach their needs and interests

- different channels and tools of communication,
- different information packages,
- different level of detailed description;

But all of them need clarity and transparency in the ICT standardization information. So it is really ambitious objective to cover different stakeholders' needs.

9.4   NEW approach, Global approach

Since 1987 some 25 Directives, adopted on the basis of the New Approach and the Global Approach (conformity assessment), have progressively come into force. These Directives have the dual purpose of ensuring the free movement of goods through technical harmonisation of entire product sectors, and of guaranteeing a high level of protection of public interest objectives. Innovative features of this legislative technique include the definition of mandatory essential requirements, the setting up of appropriate conformity assessment procedures and the introduction of CE marking. Business and industry are given a wide choice of how to meet their obligations. The European standards bodies have the task of drawing up technical specifications which offer one route to complying with these essential requirements.

Directives:

- New Approach directives (directives providing for CE marking)
- Directives based on the principles of the New Approach or the Global Approach, but which do not provide for CE marking
- Directives based on some principles of the New Approach and the Global Approach
- Other standards-receptive directives

Currently, there are no ICT oriented directives among referenced. No need to name mandatory technical specifications as "standards", it is misleading. If requirement, then requirement.

New approach could be implemented fulfilling only really essential requirements. Regulation and standardization are complementary means. Good regulatory practice could find scope on really essential necessary/mandatory field of application; determine play rules for market players.

Different approaches and policy instruments for legislators definitely needed. Using references to standards in technical regulations is good practice. It can see as tool for rising legislation quality. Especially important is determine scope for technical regulation. It is impossible to go too far with regulations. Using standardization mechanism is simple mask, it should be allowed only if really needed. So references in legislation to standards das not mean that standardizers take responsibility. Harmonizing attempts are trends for monoculture, if going beyond real market needs.

9.5   Education in standardization

Europa should educate international standardization participation experts for the following reasons:

- ICT globalization. Companies around the world are producing ICT products and services for global markets, with nessessary awareness and appreciation of international standards.
- Manufacturers are required to take international standards into consideration from the technological development stage.
- Change in the social environment. Standards are more as soft law that complements the existing legal system.

Human resource development is needed in the field of standardization. Shortages of human resources in this field are growing worldwide as standards take on new roles.

9.6   Critical success factors

Following factors may be critical to the successful implementation ICT standards within European organizations:

a)   Planned and implemented new standards, models, policies, objectives, and activities should reflect business objectives;
b)   An approach and framework to implementing, maintaining, monitoring ICT standards implementation should be consistent with the organizational culture;
c)   Visible support and commitment from all levels of management;
d)   A good understanding of the ICT standardization pleyrules and requirements;
e)   Effective marketing of new ways of doing business to all managers, employees, and other parties to achieve awareness and support;
f)   Distribution of guidance on ICT standardization policy and standards to all managers, employees and other parties;
g)   Provision to fund standards implementation activities;
h)   Providing appropriate awareness, training, and education;
i)   Implementation of a measurement system that is used to evaluate performance in standards implementation and feedback suggestions for improvement.

10.   Conclusions

It is not question of buying technologies but implementing new ICT technologies in organizational level. It is not so easy to switch on new standard/technology. Current organization of business is not suitable for new technologies adoption, new technologies demand time and new methodology, and leaders and administrations have not realized that yet, and that is why content is not developed sufficiently. For example, there are lot of virtual market ideas and business processes rearrangement products on the field, but all technologies available need much tailoring to meet actual business needs of enterprises. Additional necessary investments should make. ICT standardization is like ordinary infrastructure system; it needs investments in corporate level, technical maintenance, and security measures implementation.

Let us note that the development of culture based on new ICT standards implementation requires more time than is usually expected. The intellectual capital and professional staff are the key factors in the further ICT standardization development. Development of new ways of doing business taking advantage ICT possibilities should be evolutionary process. In all this ICT standardization community has role to play.

Development and use of modern ICT solutions will be facilitated. ICT-related research and development as well as innovation in the private sector will be promoted.

The best way to make standardization more influential is to make standards better available to organisations and people needing them. If this is not possible, the (EU) standardization bodies might provide detailed digests of standards that are widely and freely available (e.g. in the Internet), and are aimed at SMEs (also at individuals, where appropriate).

VI. VERINA HORSNELL

1. Summary

With respect to the current EU ICT standardization policy, this paper proposes continued support by the EU for: an inclusive information society; participation by SMEs and users in the ICT standardization process; increasing awareness of ICT standardization; and the ICT standardization infrastructure.

There needs to be better interaction between EU supported R&D and ICT standardization and better consultation by the EU with the ICT industry when developing legislation which requires ICT standards.

The EU should give encouragement to the ESOs to provide (where not already existing) the framework the ICT industry sees as appropriate to undertake ICT standardization. This would include: direct participation; more flexible processes; and a greater range of deliverables.

The EU should continue to support moves to make EU standards more accessible and should discuss with the ESOs the possibilities of making more deliverables available free of charge.

The EU should encourage improved cooperation between the ESOs and consortia and explore ways in which standards from well-respected consortia could be recognised for public procurement in Europe.

The EU should explore with the ESOs the possibilities of merging EU ICT standardization activities into one focal point

The EU should explore the possibilities for supporting European participation in international standardization activities

2. ICT standardization in Europe

Before discussing the European Union (EU) Standardization policy, some comments on the ICT standardization scene and the standards setting organizations (SSOs) in Europe.

I will refer to the international bodies, ISO, IEC and ITU, the European bodies, CEN, CENELEC and ETSI and the national standards bodies (NSBs) eg BSI (UK), ANSI (USA) as the formal bodies, and all other SSOs as consortia.

The members of ISO and IEC are NSBs world-wide. The members of the ITU are primarily national post, telegraph and telecommunications (PTT) administrations. Many NSBs are accredited/recognised by their governments.

CEN, CENELEC and ETSI are recognised by the EU as European Standards Organizations (ESOs). The members of CEN and CENELEC are the NSBs of the EU Member States. The members of ETSI are not only national administrations and some NSOs, but also individual companies and organizations that may be network operators, manufacturers, suppliers, etc. with some members in the SME (small and medium sized industry) category and representation from users.

In the EU, ICT standardization activities are partitioned between CEN, CENELEC and ETSI under Directive 98/34. Roughly, ETSI has responsibility for telecommunications, CENELEC for electrotechnical standardization and CEN the rest of IT standardization.

There are collaboration agreements between CEN and ISO (Vienna Agreement) and CENELEC and IEC (Dresden Agreement) which allow for joint work programmes and joint publication of standards (IS/ENs).

While an individual company can participate directly in the work of ETSI, it can only participate indirectly in the work of CEN or CENELEC through the NSB of the country (or countries) in which it trades. Furthermore, if its expert is chosen to representative the NSB, he/she has to carry the agreed views of the NSB to the meeting (and not that of the company). While many of the formal bodies facilitate standardization in-house, some, like ANSI, accredit other organizations, perhaps professional or trade organizations or consortia, to carry out national standardization work on their behalf.

It is often thought that the ICT industry is mostly based in the USA. However, in practise it is multinational, although certainly influenced by the US. Many of the larger companies are multinational and often engage in standardization in the countries in which they trade. There are some significant activities in the northern Pacific Rim, particularly ICT hardware and associated standardization activity. The ICT industry in Europe is small by comparison.

ICT standardization is demand driven and often tied closely to technology and product development. Much of the standardization work is undertaken by experts working on the related technology and products. The ICT industry has stated a strong preference for global standards

In the 1980s and the 1990s the ICT industry became increasingly dissatisfied with the ability of the formal bodies to provide the standards the industry needed flexibly and in a timely fashion. The standards development often got out of step with product development and became a business issue. This lead to the creation of consortia, (mostly in the USA), with lighter development and consensus processes where like-minded groups of companies came together to develop more quickly the standards they needed. While many of the consortia may be based in the USA, their membership is often global.

Formal bodies are usually required to ensure that representatives of all sectors of the given industry (in this case the ICT industry) including users, consumers, and Small and Medium-size Enterprises (SMEs) are invited to participate in their standardization work. While some consortia, eg IETF encourage wide-ranging and individual participation, others are very selective of their membership.

In Europe in 1988, with support from the EU, the European Workshop on Open Systems (EWOS) was set up under the auspices of CEN to develop Open Systems Interconnection (OSI) related profiles that took into account European specific requirements. Some of these profiles were later adopted as International Standard Profiles (ISPs) by ISO/IEC. EWOS operated on a lighter structure and allowed direct participation from the ICT community.

In 1997, CEN created CEN/ISSS (Information Society Standardization System) to manage all its ICT standardization activities. Apart from the more formal activities, CEN/ISSS also facilitates work of a pre-standardization nature often in business application areas through short-term workshops and focus groups. As in EWOS, these activities work on a lighter structure and allow direct participation. The deliverables are the agreements of the workshop members and named CEN Workshop Agreements (CWAs). Many of those published to date have been demanded by business sectors, eg

banking, furniture, etc to address ICT application needs in their sectors. Having not been subject to the formal voting, CWAs do not have the status of ENs, but nevertheless have value to the business areas in need of them. As the ability of CEN/ISSS to develop deliverables to meet industry needs was demonstrated, so the demand for its services has grown.

The success of the CEN/ISSS workshop structure has shown that the formal standards bodies can adapt to meet the needs of the ICT industry and now other formal bodies such as ISO, IEC and CENELEC are following the trend.

A significant difference in the approach to ICT standardization between the formal bodies and the consortia is the way in which they are funded. Sources of finance on which SSOs draw include membership subscriptions, sales of standards, sales of value added such as guidance material, provision of services such as certification or branding, government support, other sponsorship.

The NSOs are financed on a mixture of the above to cover costs but a significant income still comes from sales of standards.

The three ESOs are in part funded by its members, the NSBs, and the EU provides support to enable them to undertake the standardization it requires in support of the EU standardization policy.

Many consortia rely almost exclusively on members' subscriptions and sometimes services such as branding. Many offer their standards free of charge to members and often to the public at large.

ETSI, while having the status of an ESO, in some ways operates much more like a consortium with direct industry funding and participation, and provision of its standards free of charge in electronic form.

Because of the number of SSOs engaged in developing standards, ICT standardization activities have become somewhat fragmented leading, on occasions, to overlap and duplication of effort. On the other hand the need for applications standards in a variety of business areas is sometimes left unsatisfied.

We are witnessing a convergence of technologies that several years ago were quite distinct. This has meant that the boundaries of the responsibilities between CEN, CENELEC and ETSI are becoming blurred. This has lead to a lack of clarity over responsibility for areas of work. The activities of the three ESOs are coordinated through the CEN/CENELEC/ETSI Joint Presidents' Group.

Coordination mechanisms to bring together ICT SSOs which are essentially non-existent throughout most of the world. However, in Europe the creation of the ICT Standard Board some 10 years ago has enabled a continuing dialogue to take place between the formal bodies, the consortia active in Europe, representatives from the consumers, the SMEs and the European Commission and EFTA.

3. **Questions**

1] **Based on your experience in various EU and international standardisation activities, what would you consider as the major pros and cons of the current EU standardisation policy?**

You are invited to comment, *inter alia,* on:

a) The EU standardisation approach vs. standards-setting approaches in other countries, such as in the US.

* The US approach to standards is mainly focussed on accreditation managed by ANSI. Several Standards Developing Organisations exist which can technically "produce" standards according to principles defined by ANSI. However, ANSI does not write or create standards having no technical capabilities to do so. On the contrary, the EU standardisation policy recognises three organisations as the formal standards bodies (CEN, CENELEC and ETSI, the "ESOs"). ESOs are the only organisations in Europe which can technically "produce" EU standards that are formally recognised.

b) The role of EU standards as tools to support the implementation of EU legal requirements (i.e. EU Directives on electronic signatures, data protection, etc.) Do you support this role for EU standards? Should we keep this "co-regulatory" role of standards for the ICT area in a revamped EU standardisation policy?

c) In your view, are there any good paradigms from other non-EU countries that could be adapted with success to the EU standardisation situation (with regard to policy, laws, standardisation processes, etc.)?

Answer:

EU ICT standardization policy

I understand that the existing European Union (EU) ICT standardization policy has the objectives of supporting New Approach legislation, public procurement, enabling inclusivity, supporting standardization for emerging technologies, increasing ICT standardization awareness and supporting the ICT standardization infrastructure

New Approach legislation

The New Approach legislation, in particular, sets out requirements for harmonization of standards across the EU member states in support of commerce and trade within Europe and requires compliance to environmental, health and safety measures often through conformance to European Norms (ENs). With Enlargement, this is now being extended to the Accession Countries.

As and when new legislation is required, or legislation is revised, supporting standards may be necessary. Dialogue between the legislators and the ICT industry at an early stage is essential to ensure that any measures are achievable both technically and within the time limits set in the legislation. Unfortunately, the consultation process is not always as effective as it might be.

Consultation is even more problematic when the proposed legislation has been primarily focused on another sector. For example, legislation aimed at the power sector was found, somewhat late in the day, to have an impact on equipment produced by the ICT sector and to this point no consultation had taken place between the legislators and the ICT industry.

Better legislation and better supporting standards would result if there was more effective consultation by the EU with the ICT industry at the earliest of stages in the creation of additional or revised New Approach legislation.

Public procurement

Only standards produced by ESOs are legally recognised as formal EU standards, and hence for public procurement purposes within the EU member States. This has given rise to the question of recognition of non-ENs in EU public procurement (See question 2)

Inclusivity

The EU supported programmes such as eEurope and i2010 are aimed at developing an inclusive information society in Europe. While some progress has been made, from the point of view of the user and those representing the disadvantaged in the community, there are still many issues to address. Extending this to the new Member States may be a slow process.

User and SME involvement in standardization

Any open, full consensus standardization process must be inclusive of all interested parties. It is recognised that representation from the SME and user communities is often poor.

The ESOs are required to ensure that all interested parties have the opportunity to participate in their programme of work. For its part, the EU supports European associations such as ANEC (for users/consumers) and NORMAPME (for SMEs) through which these communities can be present.

Despite this encouragement and other previous initiatives such as the ICT Partnership, participation from users and SMEs in most standardization activities (except perhaps in some CEN/ISSS workshops) remains low. It is recognised that participation in standardization activities is a proportionally bigger investment in time and resources for individuals and SMEs than for the larger organizations.

Further ways in which SMEs and end users (especially those at a disadvantage), including those from the new Member States, may be assisted to participate, particularly in the requirements setting stage and in the implementation phases of the life cycle of a standard, need to be explored.

EU standards to support EU legal requirements

Some EU standards have been developed and used to support EU legislation in ICT related areas but which fall outside the New Approach. Developing these standards as tools to support the implementation of EU legal requirements has been something of a contentious issue within the ICTcommunity. To date the areas addressed have related to personal data protection and privacy, electronic signatures and copyright (digital rights management). In the case of data protection, while the legislators, administrations (eg Data Protection Registrars), consumers, user groups etc generally supported these moves, the ICT supply industry did not. In the case of copyright, the authoring representatives supported the moves while the media industry did not.

In general, as the ICT supply industry would prefer voluntary, self-regulation, there is some question over where the line might be drawn with respect to requiring standards to support EU legislation outside the New Approach

Whether or not standardization is appropriate in support of future legislation in these areas, each instance should be dealt with through effective consultation by the EU with the ICT industry on a case by case basis.

R&D and standardization

The ICT industry in Europe is small, but there are areas of ICT where Europe has taken a lead. The EU supports substantial research and development programmes, but to date often any requirement to assess the value of standardization as part of these programmes has been lacking. Although organizations like CEN STAR have continually highlighted the problems with the EU, the situation has only been improving slowly in recent years. More needs to be done to enable better linkages between ICT research and standardization. COPRAS, a project jointly undertaken by the three ESOs and two consortia active in Europe is a step in the right direction.

Independently, the EU has supported some actions to bring together the ICT and ICT application industries in Europe to assess the needs for and possibly undertake standardization in emerging areas of ICT.

Awareness of ICT standardization

The EU has supported initiatives to increase ICT standardization awareness and appropriate implementation of ICT standardization within the EU. It is generally accepted that the level of understanding of the use and benefits of ICT standardization in the wider community is low, especially amongst SMEs and end users. This will likely have an impact on the take up of standards.

The ESOs do not have the funding or the infrastructure to support an extensive awareness campaign. One off publicity activities will raise awareness for a short while, but lasting effects are doubtful.

ICT Standardization infrastructure

The ESOs were established to facilitate the development of standards in support of trade and industry in Europe. It is largely for the ESOs to determine their internal infrastructure and the processes under which they operate.

The EU in part supports the ESO infrastructure to enable the development of ENs as required by EU legislation and to undertake a range of standardization (including ICT) activities based on EU initiatives.

The ICT industry has indicated that the traditional methods of standardization are inadequate for the ICT sector. Both ETSI and CEN/ISSS have responded by providing infrastructures more acceptable to the ICT industry.

The EU standardization policy should continue to include support for the ESO infrastructure and encourage the ESOs to provide infrastructures within which the ICT industry would prefer to participate.

2] **Can you envisage any changes in the current standardisation policy that could enhance the commitment to, support and use of EU standards by market players?**

You may also cover in your answer:

a) Your opinion about the (co)-existence of the ESOs "standardisation approach" vs. "the consortium's standardisation approach" and how best to strike the right balance between these approaches.

b) According to the current standardisation policy only standards produced by ESOs are legally recognised as formal EU standards. Thus, other standards that are widely accepted by market players, such as IETF standards, are not immediately recognised under the EU standardisation policy. Please comment.

c) Some ICT areas are typically standardised by specific organisations (e.g. IETF for Internet, IEEE for LANs, etc.). Most of these organisations follow the approach of the US standardisation system. It is also striking that, in most of these organisations, there is already a strong presence of EU participants (companies and organisations) but there is not an effective presence of Europe as such.

- How do you explain this fact?

- Should EU standardisation policy do something about that problem or no action is necessary?

Answer:

Market players

Who are the market players (in Europe?) and why do many market players go elsewhere (consortia?) to develop the standards they require and implement?

The term "market players" is usually used as a collective for the larger ICT companies, but both the SMEs and the user community (both business and individual) should not be forgotten. Governments would be regarded as large users.

Many in the ICT industry especially multinational companies express a preference for global standards. They often do not see the need for separate (possibly different) EU standards, concerned that they may have to develop two versions of a product, one for the EU market, and another for the rest of the world. The need to vary the product for the European market was something that happened quite frequently in the 1980s and early 1990s and added significant cost.

Many ICT companies are more familiar with the consortia process, where they can participate directly, rather than the formal process, where often they cannot. They may pay more to participate in consortia, but in return they believe they are more likely to get the result they want (a more focused deliverable) and get better value in a faster, more flexible process.

Most consortia are smaller than the ESOs and the market players may consider they have more direct influence over the organization and its operation.

They may also believe that the consortia IPR policy is more acceptable to them than that of the ESOs.

The EU "standardisation approach" vs. "the consortium's standardisation approach"

The EU's "standardization approach" (with exceptions relating to ETSI and CEN/ISSS – see below) is taken to mean:

The members of the ESOs (in this case CEN and CENELEC) are National Standards Bodies (NSBs) of the EU Member States;

The NSBs are required to ensure that representatives of all sectors of the given industry (in this case the ICT industry) including users, consumers, SMEs can participate in their standardization work;

No direct participation by ICT companies at European level;

Full consensus process;

Final voting by the members (the NSBs);

The final deliverable is usually an EN;

IPR policy in common with most formal SSOs;

The NSBs, along with the EU fund the work of the ESOs;

The NSBs are funded by a mixture of membership subscriptions, sales of standards, sales of value added such as guidance material, provision of services such as certification or branding, government support, other sponsorship.

The EU "standardization approach" has often been considered somewhat slow and inflexible by the ICT industry, not keeping pace with technology developments. There is also the feeling that if the standards were issued in free of charge (possibly in electronic form) they would be more accessible to a wider community and get better usage.

There are a large number of consortia developing standards for the ICT market. Their standardization approaches vary quite widely. The following is a composite of what a consortium's "standardization approach" is taken to mean:

The members are primarily the ICT companies;

The consortia with some exceptions have no requirement to ensure that representatives of all sectors of the ICT industry are invited to participate in their standardization work;

Direct participation by ICT companies;

Flexible and timely process;

Final voting by the members;

Final deliverable is usually a consortium standard;

 IPR policy may differ from consortia to consortia and from the formal bodies;

The members (the ICT companies) fund the work of the consortia;

Consortia are funded by primarily by membership subscriptions, sometimes with provision of services such as certification or branding, and some sponsorship. They rarely sell their standards but often offer them without charge to members, and often the public at large.

Co-existence of the two approaches within ESOs

ETSI's mode of operation, and also that of CEN/ISSS, the ICT arm of CEN, has taken elements from both the EU standardization approach (in cases where the final deliverable is an EN) and the consortia standardization approach (for many of their other activities and deliverables).

ETSI offers its deliverables free of charge in electronic form. Where a Workshop activity (including publication) has been fully funded, CEN/ISSS has been able to offer the resulting CEN Workshop Agreement (CWAs) free of charge.

ETSI has lead the global market in some telecommunications technology areas, producing deliverables that are acceptable world-wide, for example the work on GSM.

CEN/ISSS has been a market leader in developing application CWAs in some business areas (particularly eBusiness) and has been successful in attracting ICT users from those areas world-wide to participate in the standards process. In particular, work on EDI messaging etc., was initiated in Europe with some work currently being undertaken by CEN/ISSS.

Both organizations have successfully achieved a good compromise between the different approaches. Market players are making commitments, supporting, and are involved in the development and use of EU standards (in the widest sense) in both ETSI for telecommunications and in CEN/ISSS for ICT applications for business areas .

There are differences between the ways in which the ICT and other sectors meet their standardization needs. The larger ICT companies have clearly indicated the kind of environment in which they prefer to develop ICT standards. It seems unlikely that they will change their minds, so the alternative is to change the current environment to make it more hospitable to their requirements. Where this has already happened, the results are positive. ETSI and CEN/ISSS already attract international membership and participation.

If the ESOs wish to retain their ICT standardization activities, they need to continue their efforts to provide an infrastructure and procedures within which the ICT industry would be willing to work. Making changes to move towards a more ICT industry friendly environment is at the discretion of the ESOs, but should be encouraged by the EU.

Co-existence of ESOs and consortia

Most ICT standardization effort is undertaken within consortia mostly driven by the more significant market players. Some consortia, for example ECMA International, are well respected and many of the standards they produce are readily accepted into the formal process by the likes of ISO, IEC, CENELEC and ETSI through fast track procedures. The consortia often have resources available to them (both expertise and funding) from market players that the ESOs do not. The existence of the ICTSB has enabled communication at a political level between the ESOs and consortia in Europe not possible elsewhere. Better interaction at working level between the ESOs and consortia should be encouraged

Changes in the current standardisation policy that could enhance the commitment to, support and use of EU standards by market players

Need for EU standards?

If ICT industry want global standards, the question arises 'should any ICT standardization be taking place in Europe?' The answer could be yes for:

Standards called in legislation where no International Standards exist;

Standards in technology areas where Europe has taken a lead:

Application standards to meet the needs of specific business sectors:

Standards required by users and SMEs not available elsewhere:

Standards to meet European specific needs (but only on a very exceptional basis).

Transposition of ISs to ENs

The process of wholesale transposition of ICT International Standards (ISs) (eg from ISO and IEC) into ENs as practised by CEN and CENELEC, up into the 1990s, increasingly raised concern within the ICT industry. It is understood that the reason for transposition was to enable those standards to be recognised in legislation and public procurement. However great confusion in contractual situations was caused because of the time delays between the publication of the IS and the equivalent EN. When further amendments, corrigenda, or further editions to the IS were published before the publication of the EN, the result was very messy. The practice was also very costly in resources for the ESOs and their NSBs. CEN standards are only rarely called in legislation. A transposition policy developed within CEN advised transposition of ISs to ENs only with good justification. In CENELEC the situation is a little different as many more standards within the scope of CENELEC are called in legislation. Where ISs can be recognised in public procurement this has all but eliminated the need for transposition of ICT ISs in ENs by CEN.

Recognising non-EN standards in public procurement

According to the current standardisation policy only standards produced by ESOs are legally recognised as formal EU standards. Thus, other standards that are widely accepted by market players, such as those from IETF and W3C, are not immediately recognised under the EU standardization policy.

Organizations like IETF and the World Wide Web Consortium (W3C) are globally known and the work they do well respected. The particular EU legislation was created before such organizations gained their current status, and the existence of such respected SSOs outside of the formal structure was not anticipated. The deliverables from IETF and W3C are the subject of rigorous processes and are widely used.

Moreover some of their deliverables could have a valuable role to play in support of EU initiatives and public procurement. For example with respect to eAccessibility, W3C leads the field with their Web Accessibility Initiative (WAI) Guidelines. Users and disability rights organizations in Europe are pressing for these guidelines to be used in public procurement.

However, current EC policy does not allow for their use in public procurement.

It has been suggested that these standards be submitted to an ESO for adoption. This would mean handing over full control and responsibility for the standards to a regional body. A step international organizations such as IETF and W3C may not wish to take.

Some mechanism needs to be found so that these and other standards of proven value from respected consortia could be used for public procurement in the EU.

It is suggested that the EU might explore the ability to formally recognise such contributions for public procurement on an exception basis without the need for them to be adopted by one of the three ESOs.

EU participation in consortia rather than ESOs

It is noted that there is a strong presence by EU companies and organisations in consortia but not in the formal European ICT standardization activities.

One explanation, already discussed, is the ability of these companies and organisations to participate directly in the standardization process in consortia. There is the belief that the deliverable, over which the companies and organisations have better control, will be completed in a more timely fashion via a lighter more flexible process.

In addition, most ICT companies would wish to ensure that they made the most effective use of their standardization resources in line with their business strategy. Once they have identified which standardization efforts have an impact (positive or negative) on their business goals, and located the focus of those efforts, that is where their standardization resources would be directed. It would not make business sense to participate in a duplicate activity because it was based in Europe.

Hence because they want to influence the standardization work at source, and because they can participate directly, EU companies and organisations will send their experts to participate in consortia activities wherever and whenever they meet if it make good business sense.

As to whether the EU standardisation policy should say something about this, perhaps one should view a strong presence of EU participants (companies and organisations) in consortia as a positive rather than a problem and find ways to support European participation and influence in global ICT activities.

3] Based on your business experience, what are, in your view, the main obstacles that the European businesses have to cope with at the stage of implementation of EU standards?

Answer:

Implementation of EU standards

In the ICT sector, it is mostly those companies/organizations involved in the development of a standard that go on the implement the standard in products or services. Most of the standard development takes place in consortia. These companies/organizations supply the experts (mostly people involved in developing the products and services) to write the standards. The likelihood that the standards will be implemented is then high because their production has been market-driven in line with the strategies of the participating companies or organizations.

Interestingly, some consortia insist that at least one implementation of a standard needs be demonstrated before the standard is published. This could lead to a more useable portfolio of standards.

Mostly in the EU, as elsewhere, there is no obligation to implement a standard except:

For a product to be marketed in the EU, it must comply with relevant existing legislation and conform to the supporting standards.

Apart from supporting EU legislation most, but not all, other EU ICT standards development is voluntary and market-driven. A standard is more likely to be implemented in a product if it is cited in (public) procurement.

In comparison with the world-wide portfolio, very few ICT standards are prepared in the EU.

Many of these are prepared within ETSI by market players. It is assumed that largely being market-driven there is a high level of confidence of implementation.

A significant number of the remaining EU standards are ISs published by CEN and CENELEC under the Vienna and Dresden Agreements. These may or may not be implemented in Europe but could be implemented elsewhere.

It is not known if the EU has undertaken any studies on the implementation of European ICT standards. Some national standards bodies (eg BSI) have attempted to determine which of the ICT standards they have published have been implemented and where and how many implementations. The information collected has been patchy and the results inconclusive.

It appears not to have been the usual practice of the formal SSOs to track the usage of a standard once completed. They facilitate the creation of standards in the expectation that they will be implemented.

There may also a perception within the formal SSOs that poor sales of a particular standard equate to low implementation. While this could be true of some standards, in other cases, while there may be only one or two implementations, the products, features or applications based on that standard may be widely used.

The main obstacles that the European businesses have to cope with at the stage of implementation of EU standards

Given that there may be a few cases where a standard may for some reason or other not be implementable, the main obstacles to implementation of EU standards can include:

standard does not meet the business need;

the need to meet difficult criteria in standards supporting legislation;

the need to conform to conflicting standards;

interoperability and compatibility;

standard development out of phase with life cycle of a product;

IPR issues;

lack of knowledge about standards relevant to businesses' activities

cost of a standard.

Standard does not meet the business need

It has been stated earlier that the main demand is for market-driven, globally relevant ICT standards. For a standard to be used by any organization, it must be seen to fulfil their business requirements,

In the past some standards were prepared because they were perceived as good to have and not because they fulfilled any market need. Some were honed to near technical perfection but were complex and difficult to implement.

Meeting difficult criteria in standards supporting legislation

As indicated in Question 1, the opportunity given to the ICT industry to review and comment on draft legislation before it is finalised was, on occasions, patchy. The ICT industry concerns were often focused on limits/tolerances set in the legislation (eg emissions, vibration, noise) which were difficult to achieve and timescales for implementation of and compliance to a Directive which were difficult to meet. On occasions different Directorates have prepared Directives covering the same area where requirements were not identical, and there have been instances where Directorates responsible for other sectors have prepared legislation which impacted the ICT sector. The EU Standardization Policy could address the issue of better consultation between the Directorates and the ICT industry to reduce such problems.

Conformance to potentially conflicting standards

As ICT products become more complex, it is possible that they may need to conform to a range of standards from different SSOs.

The New Approach Directives have sought to harmonize requirements and standards throughout the European Union. Multinational ICT companies are active world-wide. European enterprises can and do operate outside Europe. Less attention has been paid to whether EU legislation may have resulted in standards whose requirements conflict with those of International or other standards used elsewhere.

This could lead to the necessity to produce more than one version of a product, one for Europe, and

one or more for elsewhere with a resulting negative business impact on the companies concerned.

Interoperability and compatibility

ICT standardization activities are fragmented and as products become more sophisticated and complex, so the number of standards on which they are based are likely to come from an increasing number of sources whether formal SSOs including the ESOs, or internationally accepted consortia such as IETF, W3C, OMA, etc. This will increase the likelihood of problems of interoperability and compatibility.

Product life cycle and standardization

Where appropriate, the development of an ICT standard should be closely linked to the product development and life cycle. Out-of-phase development, particularly delayed development of a standard can impact the product development and its profitability. If the ESOs cannot demonstrate that they can produce standards in a timely fashion then European businesses will look elsewhere to develop the standards they need.

Where the development of a standard has failed to keep up with product development it is unlikely to be implemented. Possible outcomes are that the product(s) will not conform to the standard as published, or that the technology on which the standard is based would be overtaken by newer technology.

For the product developer, there is the dilemma of going ahead and marketing a product before the standard is ready and anticipating what it contains, or delaying developing and marketing a product until the standard is ready, possibly losing market advantage.

Intellectual property rights

In recent years a number of issues with respect to intellectual property rights have emerged. While most formal SSOs operate under an IPR policy with common elements, the IPR policies of the consortia may differ. Conditions attached to the IPR policy could deter implementation of a standard. Some more complex ICT products (eg mobile phones) now integrate a range of features. This could lead to the need for multiple licensing agreements (and associated costs) to be taken into account.

Lack of knowledge about standards relevant to businesses' activities

In addition, where a standard could have been implemented by SMEs or end users not involved in the standards process, they may just be unaware of the standard.

Cost of a standard

As many consortia provide copies of their standards either free to members, or free to all comers, the cost of purchasing a standard from a formal SSO has become something of an issue especially to SMEs and to users. As many formal SSOs price their standard on the basis of the number of pages, the more substantial and complex standards also cost more.

4] **Taking into account your answer under Question 1:**

Are there any policy approaches from other non-EU countries or international fora that you would like to see transposed (if necessary, after adaptation) to the European standardisation policy?

Answer:

Use of direct participation, more flexible processes and a greater range of deliverables.

The ICT industry has stated a preference for global ICT standardization. In some instances a legitimate case can be made for undertaking standardization work in the EU: EU legislation may require supporting standards where there are no International Standards; the ICT industry in the EU has taken a lead in a technology area; or exploring the standardization needs in emerging areas of technology.

While it should be recognised that most ICT standardization takes place outside the formal SSOs, the ICT industry is more likely to become involved in EU standardization activities where there is direct participation, more flexible and timely processes, and a greater range of deliverables aimed at the global market. While it is up to the ESOs to determine how they operate, they should be encouraged to review their approach to ICT standardization.

Put international standardization first

Given the preference of market players for global standards, should the EU give priority support to ICT standardization activities where the outcome would be applicable for the global market?

Are CEN and CENELEC making full use of mechanisms such as the Vienna and Dresden agreements to promote EU standards onto the global market?

Should the EU support participation in international standardization?

Access to and cost of standards

With ICT standardization split across three ESOs and a number of consortia active in Europe, it is not always clear to the uninitiated where relevant standards might be identified and obtained. The EU has encouraged the SSOs in Europe, through the auspices of the ICTSB to develop a single portal through which the searcher may be directed to the appropriate catalogue.

As indicated earlier, users are demanding that standards be made available free of charge, often in electronic form. While, because of their funding models, many consortia are able to do this, many SSOs rely on the sale of standards as part of their income to support the development of standards. It is not clear how this issue can be resolved without impacting the income of some ESOs.

5] **European enterprises are generally slow to market new ICT products for which standards are written. Is there any complementary policy related to the general standardisation policy in Europe that can be made to create industry consensus, or future market needs for the development of products?**

You may also comment on the following point:

Do you think that recognising only a unique organisation for EU standards setting in ICT (i.e. ETSI, as opposing to lightweight consortium structures) is a strong or weak point in creating conditions for this consensus?

Answer:

Slow to market

The statement: "European enterprises are generally slow to market new ICT products for which standards are written" could be interpreted in a number of ways.

It could mean that:

European Enterprises are not participating in the standards development and don't start to develop their product until after the standards is written and published

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or

European Enterprises business practices are not so efficient as those enterprises elsewhere that get their products to market faster

or

Many European Enterprises are not marketing ICT products at all

I would challenge the statement which ever way it should be interpreted. It is not clear on what grounds/studies this statement is based, who are the European enterprises referred to, and to whom are they being compared.

As noted before, the European ICT sector is small in comparison with the global ICT market, and like the ICT industry world-wide would prefer global standards to reflect their potential market.

Complementary policy

Standardization and product development are closely linked. As indicated in Question 2, ICT companies would wish to use their standardization resources effectively and participate where the primary action is.

Only where the primary technological development is taking place in Europe would there be a strong likelihood that the standardization of that technology would also take place in Europe.

Complementary actions could be to focus support on areas of ICT where development in Europe is in advance of elsewhere and to encourage better interaction between research and standardization. It should always be borne in mind that the ICT industry would only be persuaded to participate in standardization in Europe where the final product can demonstrate global appeal.

Only by stimulating and supporting the indigenous ICT industry in Europe and hence generating a larger pool of expertise is the level of ICT standardization in Europe likely to increase.

Creating industry consensus

That ICT companies/organizations work together in consortia world wide to develop ICT standards indicates a certain level of industry consensus.

One can point to good examples of where ICT standardization activities are being facilitated in Europe with international participation in specific core technical and application areas both in ETSI and in CEN/ISSS. However there does seem to be a lack of awareness within the ICT industry of the extent to which both ETSI and CEN/ISSS exhibit flexibility by offering a wide range of processes and deliverables to suit most needs.

That more is not made of these mechanisms, and also that there is a low level of ICT standardization activity, is probably in part down to the size of the ICT industry in Europe and lack of expertise in many technical and application areas.

Post the ICT standardization conference in Belgium, in 1994, (often referred to as Genval) an industry consensus mechanism, the High Level Strategy Group (HLRG) was created to bring together ICT industry leaders to identify trends and propose emerging areas of technology where standardization would be required. It was not found possible to engage market leaders either at all or for any length of time to identify market trends and standardization requirements and the HLRG became largely populated with Company Standards Managers and finally disbanded.

It also became clear that some companies were unwilling to divulge business strategies to competitors.

What has proved more enduring is the European ICT Standards Board (ICTSB) created at roughly the same time. This has enabled a continuing dialogue to take place between the formal bodies, the consortia active in Europe, representatives from the consumers, the SMEs and the European Commission and EFTA.

Continuing and improved coordination at a political level (such as in ICTSB) between all the SSOs active in Europe should be supported.

Unique organisation for EU standards setting in ICT

The question asked was: "Would recognition by the EU of a unique organisation for EU standards setting in ICT (i.e. ETSI, as opposing to lightweight consortium structures) be a strong or weak point in creating conditions for industry consensus."

As mentioned earlier ETSI already operates with a mixture of formal and consortium features, so the reference is unclear.

The ICT industry has made it very clear that, in general, they prefer global standards and do not see the need for EU standards. It is unlikely that they would support any additional standardization structures that attempt to proliferate EU ICT standardization activities. Reducing the activities to a single focus may be seen as a positive step.

Currently the European Union has recognised three organizations, CEN, CENELEC and ETSI to produce EU standards. Since the division of ICT standardization activities between the three was determined around 1990, the explosion in technical developments and particularly in convergence between previously separate technologies, the distinctions between telecommunications, electrotechnical and the rest of ICT related standardization has become blurred.

This has lead to issues between CEN, CENELEC and ETSI over responsibility as new standardization work emerges. Bringing together all ICT standardization activities of the three ESOs may certainly help to resolve some of these issues.

6]   In your view, which policy actions would enhance the competitiveness, use and visibility of European standards on the global ICT market?

Answer:

Enhancing the competitiveness, use and visibility of European standards on the global ICT market?

The main difficulty with trying to enhance the competitiveness, use and visibility of European standards on the global ICT market is that the ICT industry has a strong preference for global standards. It is therefore only in areas where global standards do not exist where such actions may have some success. Both ETSI (with GSM), CEN/ISSS (with business applications), and previously EWOS (with ISPs), have demonstrated that this can be done.

In examining what EU standards exist, I make the following observations:

The New Approach harmonisation activities and supporting standards have been targeted at and are applicable to the EU only.

ETSI has international membership, undertakes a variety of promotional activities, and has established cooperation agreements with over 50 organizations world-wide, all of which gives ETSI increased visibility outside the EU.

CENELEC transposes, where necessary IEC ISs to ENs only developing ENs where ISs do not exist.

The CEN ICT transposition policy limits the number of ISO IS transposed to ENs and the main focus of its ICT activities is CEN/ISSS. Its CWAs have been developed mainly for ICT applications where gaps have been identified by business communities.

Outside this very few EU standards are prepared.

ISs transposed to ENs will already be visible on the international stage.

Given this scenario, the focus of any actions should be in support of a small selection showing the best of original EU standardization work.

It was noted earlier that the New Approach legislation has on occasions set requirements different to those elsewhere leading to the necessity to produce more than one version of a product, one for Europe, and one or more for elsewhere. Actions to reduce differences in these requirements would have a positive impact on European enterprises.

An action to encourage better interaction at working level between the ESOs and consortia could lead to better visibility of EU standardization outside Europe.

Actions to support greater European participation and influence in the international standardization activities would lead to better recognition of European standardization expertise in the global ICT market.

7]   The current standardization policy in Europe, defined by the directive known as "The New Approach" (aimed at facilitating the mutual recognition of products within the European Community by the use standards), focuses mainly on the European Single Market. Compared to the more traditional industry sectors (machinery, construction products, toys, etc.) the ICT area has important characteristics that makes standards-setting different and difficult: global nature of the IT market, pervasiveness in other sectors, etc.

In your opinion what should be the main focus of the future European policy in ICT standardization?

Some examples are given below. Keeping in mind that they are not mutually exclusive, which ones, do you think, should be chosen as a policy target?

■   Create a consensus forum where European industry would set priorities for joint developments. Light structured Standards Developing Organisations (SDOs) would be formed and standards would come out from there.

■   Focus on the use of standards for improving citizens' quality of life (by placing the emphasis on issues such as interoperability, etc), setting up major guidelines with minor intervention in the process.

■   Regulate and standardize only at large (spectrum allocation, frameworks for systems) and leave the rest to the market.

■   Take the position of "a large consumer", thus set clear objectives for further developments by the industry

■   Produce a drive to bring active European standardization people together in European SDOs (considering that there are currently dispersed over many world wide organizations) in order to create

a momentum for greater activity in some areas in Europe.

- Keep things as they are.
- Any other scenario that you deem as appropriate. Please explain…

Answer:

Consensus forum

With respect to the creation of a consensus forum where European industry would set priorities for joint developments, such a consensus forum (HLRG) was created some 10 years ago. HLRG was not sustainable because it failed to attract European industry leaders to participate on a continuing basis.

While European industry is likely to have a preference for light structured Standards Developing Organisations (SDOs), I believe that they would prefer to create their own SDOs rather than have them provided. The development of individual standards is essentially a bottom-up process.

What may have more success is the provision of environments such as that created by CEN/ISSS with the infrastructure in place where the ICT industry can come and prepare the deliverables they require.

There are now a growing number of commercial organizations offering to provide the ICT industry with all they require to establish and run a consortium.

In Europe, CEN/ISSS has successfully been offering such a service for a number of years. It is noted that others SSOs, eg BSI are now following suit. This framework should continue to be encouraged.

Citizens' quality of life

Would see as a priority actions to focus on the use of standards for improving citizens' quality of life (by placing the emphasis on issues such as interoperability, etc), setting up major guidelines with minor intervention in the process

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In addition need to support users and SMEs both in the requirements setting and in the standards development process.

Minimal regulation

Would support moves to regulate and standardize only at large (spectrum allocation, frameworks for systems) and leave the rest to the market

Large consumer position

I do not believe it to be viable for the EU to take the position of "a large consumer" to set clear objectives for further developments by the industry as the industry would prefer to set its own objectives.

Enticing European standardization people back from consortia

Again I do not see that a drive to bring active European standardization people together in European SDOs (considering that there are currently dispersed over many world-wide organizations) to create a momentum for greater activity in some areas in Europe would be viable. Market players would remain 'where the action is'.

However, because of the fragmentation in the industry, The EU policy should help avoid duplication, overlap and non-compatible solutions by encouraging both cooperation at a management/political level between the formal SSOs and consortia and joint activities at the working level. Creating additional standards development groups at working level would be counterproductive and would not attract away the experts from the primary focus of activities.

Keep things as they are

As the ICT environment changes, EU policy should change in line with new situations and developments. There is always room for improvement

Any other scenario that you deem as appropriate

Actions considered in other questions:

Need to increases awareness of ICT standardization within all sectors of the community on a continuing basis. It appears that one-off efforts have a limited effect,

Need for continuing support for the ESOs to undertake legislation related standardization and standardization on behalf of the community (such as the eAccessibility programme)

Support for R&D on emerging ICT technologies in Europe coupled with strong linkages, where appropriate, to associated standardization effort.

Support ICT development and associated standardization in Europe where ahead of the rest.

Consider bringing together the ICT standardization activities of the three ESOs

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Support European participation in International standardization to increase European influence.

VII. JANE K. WINN

1. The characteristics of the ICT standards-setting in the US

1] Could you please present succinctly the characteristics of the ICT standards-setting in the US?

In 1835, de Tocqueville made this observation about American society:

Americans of all ages, all conditions, and all dispositions constantly form associations. They have not only commercial and manufacturing companies, in which all take part, but associations of a thousand other kinds, religious, moral, serious, futile, general or restricted, enormous or diminutive. The Americans make associations to give entertainments, to found seminaries, to build inns, to construct churches, to diffuse books, to send missionaries to the antipodes; in this manner they found hospitals, prisons, and schools. If it is proposed to inculcate some truth or to foster some feeling by the encouragement of a great example, they form a society. Wherever at the head of some new undertaking you see the government in France, or a man of rank in England, in the United States you will be sure to find an association.

I met with several kinds of associations in America of which I confess I had no previous notion; and I have often admired the extreme skill with which the inhabitants of the United States succeed in proposing a common object for the exertions of a great many men and in inducing them voluntarily to pursue it.[1]

This observation remains relevant in understanding the US standard-setting philosophy of letting voluntary, private organizations take the lead in standard developing, and allowing many different private standard developing organizations (SDOs) compete. The proclivity de Tocqueville describes is reflected in the traditional US system for setting industrial standards by means of a large number of independent, private organizations, and continues in the ICT arena today in the form of informal SDOs that solicit participation from individuals around the world, and in the form of consortia and alliances formed among selective groups of enterprises.

The US policy of letting the private sector take the lead, not merely in setting standards, but in determining the appropriate institutional form that SDOs should take, reflects a widely-held belief among Americans in the efficacy of markets as a governance institution. While most countries have adopted a more centralized approach to standard setting that involves a greater degree of government oversight of the process, the US is generally content to allow many independent, private organizations to compete in setting standards, even when it is obvious that not all will succeed, and notwithstanding any waste of resources that may result from duplication of efforts and confusion among prospective standards users. This reflects the widely held conviction among Americans that the invisible hand of the market will do a better job of sorting out which standards are appropriate than any government agency or political process could.

The manifestation of this philosophy in the world of standard developing is well known: over the last century, hundreds of independent, private SDOs have been established by US businesses, and have contributed standards to the US economy and the economies of its foreign trading partners. While there is no formal limitation on the number of these private SDOs that can be established,

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[1]Alexis de Tocqueville. *Democracy in America*. Volume II, Section 2, Chapter 5 (1840).

there are practical constraints in terms of attracting members and resources. Although hundreds of private SDOs are active in the US today, only a small handful are responsible for the overwhelming majority of standards issued.[2] The membership criteria and procedures of these organizations are set by their stakeholders: SDOs in the US system may be accredited by the American National Standards Institute (ANSI) if their procedures meet ANSI minimum due process requirements.[3] One benefit of ANSI-accreditation is the opportunity to have standards recognized as "American National Standards." Not all private-sector SDOs in the US seek ANSI accreditation, however. Some SDOs that originated in the US, such as the Internet Engineering Task Force (IETF), are open and participatory in structure, but have informal procedures. In addition, many standards are developed by consortia, or groups formed in order to develop a particular standard or set of standards.[4] Because the US system relies on the *de facto* authority of market forces to set standards rather than relying on the kind of formal, *de jure* authority that distinguishes European national standards bodies (NSBs) and European standards organizations (ESOs), standards developed within the US system, whether by traditional SDOs, informal SDOs or consortia, may be referred to in this paper as *de facto* standards.[5] In addition, SDOs within the US standard system will be referred to collectively as "private SDOs" unless it is necessary to distinguish between traditional ANSI-accredited SDOs, informal SDOs and consortia.

The US embrace of informal SDOs and consortia in recent years is yet another reflection of the conviction that market outcomes are preferable to government intervention, unless it can be clearly shown that there is a market failure producing concrete harms suffered by end users. The openness and due process obligations of traditional SDOs that comply with ANSI's Essential Requirements may divert their focus from market conditions. As a result, businesses that identify a need for a specific standard in order to bring a new ICT product or service to market may prefer to work through informal SDOs or consortia because they can be more responsive to conditions in IT markets than traditional SDOs. Consortia in particular often have the advantage of a narrower focus, exclusive membership, streamlined procedures, and greater buy-in from the management of members resulting in a higher likelihood that the resulting standard will achieve widespread implementation. However, the simplified, streamlined structure of consortia can also give rise to problems for their members: there may be a greater risk of their procedures being manipulated by one or a handful of members, or there may be inadequate attention to compliance procedures.[6]

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[2] There are currently more than 450 independent, private-sector SDOs active in the US, although approximately 20 SDOs develop about 80% of standards in the US. Statement of Dr. Hratch G. Semerjian, Acting Director, National Institute of Standards and Technology, May 11, 2005 before House Science Committee of the US Congress.

[3] These are known as "Essential Requirements" and include: interested parties should receive reasonable notice of the proceedings and participation should be open to all who are affected by the standard being developed; no one individual or organization should be able to dominate the process; competing interests should be considered, and the process should try to achieve a balance among those interests; procedures should be documented in writing; decisions should be made through consensus; and records of deliberations should be kept and an appeal process should be provided

[4] There are at least 150 consortia standard development activities currently underway in the US. Statement of Dr. Hratch G. Semerjian, May 11, 2005. A list of many consortia is available at ConsortiumInfo.org at http://consortiuminfo.org/links/.

[5] In the US, standards developed under market constraints with minimal political oversight are referred to as "bottom up" standards, while those developed within systems that subject market forces to significant political oversight are referred to as "top down" standards.

[6] Carl Cargill, "The Informal Versus the Formal Standards Development Process: Myth and Reality," in Steven M. Spivak and F. Cecil Brenner, *Standardization Essentials: Principles and*

a) Comment on the differences of the US standards-setting "philosophy" (policy and organisational system) compared to the European standardisation approach.

US and EU standards policies differ because the US "market-oriented" approach treats competition among private entities as a governance mechanism equivalent to government regulation, while the EU "institutional" approach does not. The US emphasis on market governance mechanisms permits *de facto* standards to be recognized as equivalent to or even preferable to *de jure* standards, if the results are responsive to market conditions. By contrast, the EU approach places a greater emphasis on formal guarantees of openness, transparency, consensus and the participation of all interested parties than does the US. This emphasis on politically accountable governance processes leads to a preference for some form of *de jure* standards and a mistrust of strictly *de facto* standards that were not developed within a framework that insures a broader definition of the public interest is used.

Although the strengthening of international trade law in the area of technical barriers to trade has curtailed the freedom of national governments to use technical standards as a tool of industrial policy, national governments can still exercise considerable regulatory authority in the area of industrial standards. It is more difficult for national governments to exercise authority over many ICT standards because adoption of ICT infrastructure standards is now largely determined by market forces operating in global arenas. When many individual decisions regarding ICT standards are aggregated in global markets, the result may be strong positive and negative network externalities that drive larger numbers of end users toward a common standard. The result may be "network effects" that are too powerful for regulators in national markets to withstand. US markets for ICT technologies resemble unregulated global markets because of the US policy of keeping direct government oversight of ICT markets to a minimum, and deferring as much as possible to market outcomes. This creates an "institutional isomorphism" between US and global ICT standards markets which facilitates the transmission of standards that have emerged in US markets into global markets, and vice versa. By contrast, EU ICT standards policy is an element of industrial standards policy, which in turn is part of industrial policy generally. In this regard, the EU approach is closer to the approach of most trading nations than is the US approach, because the US is relatively unique among advanced industrialized nations in rejecting the idea of establishing a national industrial policy. The similar attitudes towards national industrial policies and standards policies between the EU and most trading nations creates a different kind of "institutional isomorphism" that facilitates the transmission of EU industrial standards to the markets of its trading partners, a fact that the US government and businesses have noticed with growing alarm in recent years.[7]

US and EU standard developing processes can also be distinguished on the basis of how participants communicate with their leaders: US standard setting processes encourage the use of "exit" as a strategy for signaling dissatisfaction with an organization, while EU processes encourage the use of "voice."[8] Exit is associated with the discipline of markets, because organizations that are in decline lose participants or customers. Leaders in such a system receive a clear signal regarding the level of dissatisfaction with the products or services they offer, but may receive little specific information about what is causing the exodus. Voice is the strategy of communicating complaints or proposals for change by means of political processes, and is a more likely strategy to be adopted if participants or customers feel loyalty to an organization that is currently failing to meet the needs of constituents, and are willing to work to reform the organization. Leaders of systems that rely on participants to bring problems to their attention benefit from more detailed information about how the organization is failing to meet their needs, but to the extent that the loyalty of participants prevents them from exiting the system, they may fail to respond adequately to the feedback that they receive.

Practice. New York: Marcel Dekker, Inc., 2001, 257-265.

[7] Semerjian, *supra* note 2.

[8] Albert O. Hirschman, *Exit, Voice and Loyalty*. Cambridge: Harvard University Press, 1970.

b) Comment on the advantages and drawbacks of the US standardisation approach compared to the standardisation procedures underpinning formal standardisation in Europe ("the institutional approach"). Please explain and comment on the role of NIST and ANSI in the development of standards in the US.

The EU approach relies more heavily on centralized formal institutions such as NSBs and ESOs as governance mechanisms while the US approach relies more heavily on markets as a governance mechanism. This resembles the distinction drawn in institutional economics between hierarchies and markets.[9] Market governance mechanisms are generally preferred to hierarchical mechanisms in the US, notwithstanding extra costs incurred to develop redundant or conflicting standards, because they can adapt more quickly to changing market conditions. The US system does not require a high level of commitment among participants to public institutions and the public interest, but rather encourages participants to remain focused on private business objectives. Because the US government's strategy is to support the pluralistic system as a whole, however, individual participants in the US system may receive less public support in international arenas than foreign competitors.[10]

The US perspective on the rise of consortia and other informal, private SDOs as leaders in the ICT standard developing arena is not unlike the US perspective on antitrust and competition issues: unless and until it can be shown that end users have been disadvantaged, or any specific laws violated, any private sector outcome will be presumed to be the result of competitive markets and therefore superior to any outcome imposed by regulators. In a similar manner, the growth of consortia and informal *de facto* SDOs, while possibly a cause for concern among traditional SDOs, is generally recognized by US businesses and policy makers as an appropriate exercise of initiative by private sector parties. The growth of consortia is relatively uncontroversial in the US in the context of a larger embrace of "deregulation" and the concomitant strengthening of private property rights and private contracts.

Institutional economics predicts that integration of economic activity into formal institutions such as corporations or government agencies (or formal *de jure* SDOs) will occur naturally whenever the administrative costs of many separate transactions are too high, or the risk of opportunistic behavior on the part of some participants cannot be controlled any other way. In international arenas, integration of standard developing activities within the administration of national economic policies may make it easier to articulate clear strategic priorities and respond in a coherent, decisive manner to competition from other countries or regions.[11] Central coordination of standard developing efforts can also eliminate duplication and help control conflicts of interest among participants, and thus improve the efficiency of the process. However, if institutional governance mechanisms diminish attention to changing market conditions, the net effect of central coordination may nevertheless be reduced efficiency.

Participants in the EU standards system often take different factors as well as a larger number of factors into account in pursuing their mission than do participants in the US standards system. The

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[9] This tracks the distinction between firms and markets first made in Nobel laureate Ronald H. Coase, "The Nature of the Firm," *Economica*, 4:368-405 (1937), and now recognized as a foundational element of the discipline of institutional economics. See., *e.g.,* Oliver, Williamson. *The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting*. New York: Free Press, 1985.

[10] For a summary of the advantages and disadvantages of "top down" versus "bottom up" approaches to standardization by a US expert on consortia, see Andrew Updegrove, Top Down or Bottom Up? A Tale of Two Standards Systems." Consortium Standards Bulletin, Vol. IV, No. 4, Apr. 2005, available at http://www.consortiuminfo.org/bulletins/pdf/apr05/trends.pdf.

[11] *Id.*

trend in public discourse in the US in recent years has been to equate market outcomes with the larger social good in a wide range of situations that observers outside the US find problematic. As part of this trend, there has been a more pronounced turning away from government programs designed to redistribute wealth or manage risk at a societal level in the US than in other advanced industrialized societies. By contrast, the political consensus in most European countries remains committed to preserving a major role in some form for government intervention in support of broad social objectives.[12] From this perspective, the US approach to ICT standards treats government attempts to regulate the process of setting ICT standards as a problematic and misguided attempt to regulate what is by nature a private process. The attempt is problematic because it introduces distortions into markets, resulting in the inefficient allocation of resources, and misguided because it is doomed to failure. The EU approach to ICT standards treats the work of *de jure* SDOs as an essential element of social and economic policies because it permits, if necessary, the content of ICT standards to be harmonized with larger social policy objectives. From the EU perspective, the role of consortia in defining ICT standards is problematic because they are directly accountable only to their stakeholders and to market forces. The frequent successes of ICT standards developed by informal SDOs in global markets raises concerns about the legitimacy of greater integration of European markets in to global markets.

Of course, most economic activity is too complex to capture in a simple dichotomy between markets and hierarchies, and standard developing is no exception. Economists recognize that between markets and hierarchies are found many other forms of economic organization such as strategic alliances, joint ventures or long-term trading partner relationships.[13] It may be helpful to think of informal SDOs and consortia developing ICT standards as examples of such hybrid forms of business activity. While consortia clearly do not fit into the formal *de jure* order imposed on ESOs and NSBs, neither do they fit well into the model of private SDOs operating under the aegis of ANSI in the US because of their greater freedom to restrict their membership and take other steps to maintain a narrow focus. With regard to the development of ICT standards used in global markets, consortia and informal SDOs may be considered hybrid governance institutions that have developed in response to conditions of rapid technological innovation and the absence of a central regulatory authority in those markets,[14] rather than as just another element of the US market-oriented system. The EU response to informal SDOs and consortia might be different if they are viewed as a new form of global governance mechanism rather than merely a new regulatory challenge thrown up by a competitor. Possible strategies for harnessing the work of "global" informal SDOs and consortia to better serve EU policy objectives are discussed further in Section 7 below.

In light of the US commitment to letting the private sector lead in standard developing, the status of the National Institute for Standards and Technology (NIST) as a US government agency is paradoxical, given that other advanced industrialized countries have turned their NSBs that once operated as government agencies into independent entities. NIST's unusual status is a reflection of the history of its relationship with US industry and the US government. NIST's predecessor, the National Bureau of Standards (US NBS) was established to prevent variations in state weights and measures from creating impediments to interstate commerce, but its role came to include testing products used by government agencies. In 1918, the US NBS worked together with voluntary,

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[12] Ragnar E. Löfstedt and David Vogel, "The Changing Character of Regulation: A Comparison of Europe and the United States," with Commentaries by Ortwin Renn, David Slater and Michael D. Rogers, *Risk Analysis* 21:3 (2001): 399-416.

[13] Walter W. Powell, "Neither Market nor Hierarchy: Network Forms of Organization." *Research in Organizational Behavior* 12 (1990): 295-336.

[14] Oliver Williamson, *The Economic Institutions of Capitalism: Firms, Markets, Relational Contracting*. New York: Free Press, 1985.

consensus SDOs from the private sector to establish the American Engineering Standards Committee, which later became the American Standards Association and then the United States of America Standards Institute before finally assuming its current title, ANSI, in 1969. During the 1920s, President Herbert Hoover was committed to making standards an integral part of US economic policy, and gave the NSB a leading role in standard developing. Consumer advocates lobbied for the US NBS to expand its testing to cover products consumed by the public, not just the government. A backlash against the threat of such activism came during the Depression, when the US NBS's budget and personnel were slashed and it was at risk of being disbanded.[15]

According to Professor Samuel Krislov, "[a]lthough open and public at first glance, NIST is a strange operation."[16] This is due in part to NIST's need to define a mission that allows it to sidestep political controversy, which has led it to focus on scientific research, basic measurement standards and standards for government use. Avoiding political controversy related to standards in the US is not easy, however. In 1983, the FTC issued a report recommending that NIST be made subject to FTC oversight to minimize the risk that it might be manipulated by business interests, although this proposal was rejected by the Reagan administration, presumably on the grounds that business input into NIST processes was something to be encouraged. As recently as 1995, there was once again considerable political support for disbanding NIST altogether as part of a program of reducing the scope of federal government activities and delegating more to state and local governments. In such an environment, it is not surprising that NIST's role in the US bears little relationship to the roles that NSBs play in European countries.

Just as NIST has no clear counterpart in any other country, ANSI represents a unique form of national standards body. ANSI is a private, non-profit organization whose mission is to coordinate the work of the many private SDOs in the US. It acts as a clearinghouse within the US system disseminating information about American National Standards and international standards to US stakeholders. ANSI's "Essential Requirements" focus on whether a private SDO has implemented procedures for assuring an acceptable level of transparency and accountability and for controlling conflicts of interest.[17] These requirements impose substantial obligations on private SDOs that may slow down their work or make consensus more difficult to achieve. Nevertheless, many well-known and influential SDOs working in the area of ICT, such as the Institute of Electrical and Electronics Engineers (IEEE) and InterNational Committee for Information Technology Standards (INCITS),[18] are ANSI-accredited. However, ANSI's authority is limited to those private SDOs that choose to comply with its requirements, and it lacks the authority of European NSBs to review the content of standards and require the withdrawal of conflicting or overlapping standards because many standards are never submitted to it for review.[19] Given that the benefits of having a standard designated as an

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[15] US Office of Technology Assessment (OTA), *Global Standards: Building Blocks for the Future*. Washington D.C.: Government Printing Office, 1992.

[16] Samuel Krislov, *How Nations Choose Product Standards and Standards Change Nations*. Pittsburgh: University of Pittsburgh, 1997.

[17] The current version of ANSI's "Essential Requirements" were issued in 2006; this document is based on procedures that were formalize in 1974 in response to public perceptions that formal standard developing processes did not always treat all stakeholders fairly. Robert G. Dixon, Jr., *Standards Development in the Private Sector: Thoughts on Interest Representation and Procedural Fairness* Quincy, MA: National Fire Protection Association, 1978.

[18] INCITS was known as the Accredited Standards Committee X3, Information Technology from 1961-1996, and as the Accredited Standards Committee NCITS, National Committee for Information Technology Standards from 1997-2001.

[19] William E. Kelly, "Resolving Standards Conflicts: Key to U.S.-Europe Foreign Trade", *Washington Legal Foundation Legal Backgrounder*, September 5, 2003, 18:36 available at http://www.wlf.org/upload/9-5-03kelly.pdf. If a conflict is identified between a proposed ANS and an existing ANS, the conflict must be resolved before the proposed ANS can be approved. ANSI Essential Requirements 4.2.1.1(d) (2006).

"American National Standard" may be limited in the absence of any authority to harmonize the content of such standards, some private SDOs may feel that the costs of ANSI recognition outweigh the benefits.

One shortcoming of the US system is the tendency for administrative processes in government or business to be converted into adversarial contests and litigation.[20] While this proclivity is widely recognized in the US, the question of whether it is a "bug or a feature" is very controversial. Critics of "adversarial legalism" argue that the US system relies too heavily on lawyer-dominated litigation to determine outcomes in areas of policy making, policy implementation, and dispute resolution.[21] While this litigation orientation may provide greater political access to certain disenfranchised groups than most bureaucratic systems can offer, it comes at a high cost to US society, including direct financial costs, delays, uncertainty, and the erosion of trust and goodwill.[22] The costs associated with the greater reliance in the US on litigation and adversarial proceedings to resolve issues of standards law and policy may cancel out some of the benefits of the US market-oriented system, such as greater responsiveness to market conditions, flexibility in institutional relationships and speed of processes.

The US system also lacks a mechanism to cut through the Gordian knot of competing claims of intellectual property rights (IPR).[23] Because a commitment to "deregulation" in a modern economy necessarily entails a parallel commitment to rigorous enforcement of private entitlements, the US has generally been an enthusiastic supporter in recent years of expanding the scope and intensity of IPR claims under US law and in international arenas through its participation in organizations such as WIPO and its support of international treaties such as TRIPS. If competing IPR claims become too difficult to resolve, the effectiveness of the US standardization system may be undermined. The complexity and scope of IPR problems facing consortia are illustrated by the ongoing litigation between the US Federal Trade Commission (FTC) and Rambus regarding its patents and its contributions to the development of a dynamic random access memory (DRAM) standard by the Joint Electron Device Engineering Council (JEDEC).[24]

c) On which aspects would you like to be critical about EU standardisation?

The conventional US critique of the EU standards system is that the effort to make it politically accountable amounts to a disguised system of "taxation," in the first instance of the direct participants which are EU businesses, and in the second instance of the consumers of EU goods and services who must pay higher prices as the businesses that sell to them recoup their compliance costs.[25] Public oversight of the EU standards system is likely to slow down processes, and require those who implement the resulting standards to internalize costs that the more market-oriented process in the US would permit to be externalized. In addition, it may complicate the process of

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[20] Harm Schepel, *The Constitution of Private Governance: Product Standards in the Regulation of Integrating Markets*. Oxford: Hart Publishing, 2005.

[21] Robert A. Kagan, *Adversarial Legalism: The American Way of Law*. Cambridge, MA: Harvard University Press, 2001.

[22] Supporters of the US system counter that such assertions are largely ideological and impossible to prove. William Haltom and Michael McCann, *Law's Lore: Tort Reform, Mass Media, and the Production of Legal Knowledge*. Chicago: University of Chicago, 2004.

[23] See, generally, Mark A. Lemley, "Intellectual Property Rights and Standard-Setting Organizations," *California Law Review* 90:6 (2002): 1889-1980.

[24] The administrative law judge's initial determination that JEDEC's IPR policy was not binding on Rambus because it was too vague was recently overturned on appeal to the FTC but is being appealed again to a US federal court of appeals. Information about the Rambus litigation is available at http://www.ftc.gov/os/adjpro/d9302/index.htm (accessed August 1, 2006).

[25] In the US, this is known as "taxation by regulation." Richard A. Posner, "Taxation by Regulation," 2 *Bell Journal of Economics* 2:1 (1971): 22-50.

building consensus by requiring attention be paid to social or political issues in addition to business and engineering issues.

In order for EU policy makers to find a way to preserve public oversight of critical standard setting processes while at the same time increasing the rate of adoption of EU standards in global markets, they should continue to look for ways to expand new systems of co-regulation that can combine the responsiveness to market conditions of informal private SDOs with politically acceptable means of assuring a minimum level of transparency and accountability. The ICT Standards Board and European Telecommunications Standards Institute (ETSI) clearly represent moves in this direction because their structures combine selected elements of the consortium model of standard developing with elements of *de jure* ESOs.

d) You are welcome to illustrate your comments with concrete examples (e.g. by citing "success stories" of standards developed under the "American" or "European" approach and state the reasons behind this success).

Some notable successes of the US system include:

• **IETF's Internet Protocol Suite:** The IETF's four-layer model has been widely used as a framework in global ICT networks in place of the more complex seven-layer OSI model.
• **World Wide Web Consortium (W3C) digital signature standard:** The W3C's standard for signing objects is widely used in electronic commerce applications while the more complex EESSI standard is not.
• **Open Financial Exchange (OFX):** This is an XML standard developed by a consortium of US personal financial management software developers which has now been widely adopted by thousands of US financial institutions, making it possible for US consumers to download financial data from any US financial institution into a single personal financial management program.
• **National Automated Clearing House Association:** NACHA has successfully combined the roles of regulator, SDO and trade association, and its "stakeholder council model" has been used with success in other areas.[26]
• **Section 508**: Based on a US government policy that US government IT must be accessible to the disabled; it has helped to build markets for accessible products based on voluntary consensus standards by directing procurement spending. The relationship between this public sector mandate and private sector obligations under disability laws has been allowed to evolve through litigation and judicial precedent rather than setting an additional government mandate. The W3C's Web Accessibility Initiative is now involved in the process of updating Section 508, and there has been extensive dialogue between US and EU stakeholders with regard to harmonizing accessibility standards.
• **Microsoft Windows**: This is perhaps the archetypical example of a proprietary *de facto* standard that has created a "virtual" ICT network of interoperable personal computers. Its success is due in part to the fact that, in combination with Microsoft Office programs, it offers less sophisticated end users an integrated solution that is easier to implement than combinations of products from different sources whose interoperability is based on standards.
• **Apache Web Server and Linux Server:** These are examples of open source software programs that are so widely adopted that they in effect create non-proprietary *de facto* standards.
• **NIST 800 Series:** Pursuant to the Federal Information Security Management Act of 2002, NIST developed federal government computer security policies and standards that are available to the public without charge from the NIST Web site; even though written for public sector use, they have become *de facto* standards for information security in the US private sector.

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[26] Johns Hopkins University Center for the Study of American Government, Johns Identity Management Systems and Governance in the 21st Century (April 2003) available at http://www.jhu.edu/~pgp_as/government/idmgmt.pdf.

Some notable failures of the US system include:

- **2G mobile phones**: The negative consequences for US consumers of the US policy of allowing competition among different 2G mobile phone standards, including high prices and poor service as a result of fragmentation and redundancy in the construction of networks, are well known.
- **User ID and password authentication:** The US policy of letting the market decide what standard of authentication is appropriate for online commerce has resulted in near universal use of one of the weakest possible forms of online authentication whose vulnerabilities have long been recognized.
- **Information privacy and identity theft:** The US policy of letting the market decide the degree to which personal financial information should be commodified and allowed to circulate among businesses, combined with poor information security practices among US businesses, has produced an epidemic of identity theft in the US. However, in 2006, ANSI and the Better Business Bureau will launch a new standards panel to coordinate standards development activity in the area of identity theft prevention and identity management.[27]
- **Internet Corporation for Assigned Names and Numbers (ICANN):** The US attempt to formalize the IETF model of governance for the global system for managing domain names has failed to meet the expectations of most stakeholders outside the US, and many in the US as well.

Some notable successes of the EU system include:

- **GSM:** This is the best-known and most important success of the EU ICT standards system.
- **ETSI:** Because its structure is more flexible than that of the more traditional ESOs, ETSI is capable of working more quickly and building consensus more effectively.
- **Society for Worldwide Interbank Financial Transfers (SWIFT)**: A successful European example of something resembling the NACHA "stakeholder council model" developed decades ago that now oversees the global market for cross-border funds transfers.

Some notable failures of the EU system include:

- **Open System Interconnection Model:** This was a European effort to combat the growing influence of informal ICT SDOs such as the IETF with a more traditionally organized process which ultimately was not successful.
- **European Electronic Signature Standardization Initiative:** This attempt to bring a modified form of the New Approach process to the ICT standards arena has not been successful. This may have been because its objectives were set by regulation, not developed in response to market conditions, and it was designed to promote a particular technology and business model that are not responsive to market demand for strong authentication systems.
- **eEurope Smart Card initiative:** The effort to popularize smart cards as part of the Fifth Research Framework Programme has not been as successful as expected.
- **Bill of Lading Electronic Registry Organization**: Established by SWIFT & TTC using something like the "stakeholder council model" to manage electronic bills of lading for international commerce, BOLERO has not gained the market share its sponsors expected.

One *de jure* international ICT effort for which the final outcome is not yet clear:

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[27] Email correspondence with ANSI, September 8, 2006.

- **Electronic Business Extensible Markup Language (ebXML):** In 2001, after only 18 months of work, the United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT) and the Organization for the Advancement of Structured Information Standards (OASIS) issued standards for a framework for the exchange of business documents using XML standards in lieu of older "electronic data interchange" (EDI) standards. Five years later, however, it is unclear how much impact this framework is having on electronic commerce.

2. The US Legal framework

2] Please describe the legal framework of the ICT standardisation policy in the US.

The legal framework of ICT standardization policy in the US consists of:

- **Antitrust:** Participants in any SDO must take care not to engage in "per se" violations of US antitrust law, such as engaging in price fixing. In addition, standard developing processes must not be used to exclude competitors from relevant markets, or to abuse monopoly powers based on intellectual property rights such as patents.[28] Although antitrust laws are not now enforced as vigorously by the FTC or Department of Justice as they once were, competitors have standing under US law to raise antitrust claims, so private antitrust litigation remains common. In addition, improper attempts to manipulate standard setting processes may result in enforcement actions by state regulators or in liability under state unfair competition laws.
- **Unfair competition:** Participants in standard developing processes must not engage in unfair or deceptive trade practices under the FTC Act or state unfair competition laws.
- **Intellectual Property Rights (IPR):** The owner of a patent covered by a standard must set terms for licensing the standard that do not violate antitrust or unfair competition laws. In an effort to reduce the chances that a patent owner may "hold up" those wishing to implement the standard, most SDOs have formal IPR policies that require participants to disclose IPR that may be covered by the standard before the standard is completed. The SDO may also hold a copyright in the text of a standard, and trademark rights related to use of a mark indicating conformity with the standard.
- **National Cooperative Research Act of 1984 (**subsequently amended and renamed the National Cooperative Research and Production Act of 1993 (NCRPA)): This law clarifies the application of antitrust laws to the work of standards consortia, and provides that consortia that have filed a notification of their activities with the US Department of Justice will only be liable for actual damages in the event an antitrust violation is found rather than treble damages.
- **National Technology Transfer Advancement Act of 1995 (NTTAA):** In combination with Office of Management and Budget (OMB) Circular A-119, this act requires US federal agencies to rely upon private voluntary standards whenever feasible rather than undertake public sector standard development activities.[29] The federal government also supports the work of private SDOs by sending thousands of employees to participate in hundreds of standard setting efforts.
- **1998 Amendment to Section 508 of the Rehabilitation Act of 1973:** This law requires federal agencies to insure that the information technology they use is accessible by federal employees and citizens with disabilities. Even though it does not apply to the private sector, Section 508 leveraged the purchasing power of the federal government to create a market for accessible technologies that are now widely used in the private sector. The Architectural and Transportation Barriers Compliance Board developed standards to facilitate the implementation of Section 508.

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[28] A concise overview of US antitrust laws applicable to standard developing activities is available at the ConsortiumInfo org Web site at http://consortiuminfo.org/laws/.

[29] This policy was first established in 1982, but was largely ignored for the first decade it was in place. Harm Schepel, *supra* at 87. NIST prepares annual reports on the implementation of NTTAA which are available at http://standards.gov/NTTAA/agency/index.cfm.

Although US policy now favors the use by government of voluntary, consensus standards rather than public sector development of standards, in many instances, many government agencies do continue to develop their own standards.[30]

It is noteworthy that the US lacks any co-regulation mechanism equivalent to the EU "New Approach" which permits coordination of legislative and standard developing activities.[31] The culture of adversarial legalism in the US makes such systems difficult to establish and even more difficult to maintain. Furthermore, many US businesses have not forgotten intense conflicts that emerged during the 1970s and 1980s when federal agencies responsible for environmental, occupational and consumer safety issued onerous regulations implemented in the form of mandatory technical standards.[32] As a result, many US businesses would strenuously oppose as a matter of principle any new attempt to coordinate regulatory oversight by government agencies with standard developing processes. In addition, the US has not entered into any formal relationships with ISO or IEC along the lines of the Vienna Agreement between ISO and CEN or the Dresden Agreement between IEC and CENELEC. This is because the US supports a *de facto* definition of "international standard" that corresponds to the current US practice of allowing private SDOs to develop standards which may then be widely adopted in the US and around the world, rather than centralized *de jure* procedures for establishing "international standards."

3.   US standardisation policy revision plans

3] Tendencies to revamp the US national standards strategy seem to gain place. Although, in the past, the US government policy was not to be involved in standards development, this attitude may have changed over the last years. Could you please give us more information on such revision plans?

In 1992, the OTA noted with concern the absence of a formal national standards strategy in the US.[33] This absence has now been remedied by the development of a US standards strategy that focuses on the efforts of private SDOs, and that casts the US government in a supporting role. In response to concerns of US businesses that the lack of a national focus on standards was undermining US competitiveness in foreign markets, ANSI facilitated the development of a "National Standards Strategy for the United States" (NSS) which was published in 2000.[34] This strategy reiterates forcefully the US commitment to a decentralized, market-driven standards system controlled by the private sector. It also notes persistent problems with the US standards system, including the lack of public subsidies for the creation of what is generally recognized to be a "public good,"[35] and the frustration among US businesses with the problems of duplication and overlap in the US standards.

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[30] In particular, the US Department of Defense has historically been a major developer of government standards. Robert B. Toth, "The U.S. Standardization System: A New Perspective," in Steven M. Spivak and F. Cecil Brenner, *Standardization Essentials: Principles and Practice*. New York: Marcel Dekker, Inc., 2001. 257-265.

[31] Jane K. Winn, "US and EU Regulatory Competition and Authentication Standards in Electronic Commerce," *Journal of IT Standards and Standardisation Research* (forthcoming 2006), http://ssrn.com/abstract=901324.

[32] Alan S. Miller, "Environmental Regulation, Technological Innovation and Technology Forcing," *Natural Resources and Environment,* 10 (1995): at 64.

[33] OTA, *Global Standards: Building Blocks for the Future*. Washington D.C.: Government Printing Office, 1992.

[34] National Standards Strategy for the United States, available at www.ansi.org/nss/.

[35] Economists define "public goods" as non-rivalrous, non-exclusive goods, such as national defense or fresh air. Market incentives may fail to provide adequate rewards for production of public goods, so they are often produced at public expense. See generally, Tyler Cowen, ed., *Public Goods and Market Failures: A Critical Examination*. New Brunswick, NJ: Transaction Publishers, 1991.

The NSS strongly endorsed the policies behind the NTTAA: reduction of public sector standard developing through greater public sector reliance on standards developed by private SDOs, combined with the participation as stakeholders of government representatives in the activities of private SDOs. In 2003, the US Department of Commerce announced a federal "Standards Initiative," which resulted in the publication of a report in 2004, *Standards and Competitiveness—Coordinating for Results: Removing Standards-Based Trade Barriers through Effective Collaboration*.[36] This report largely echoed the findings of the NSS, and also describes Department of Commerce programs to help US businesses compete more effectively in global markets.

In 2005, ANSI published a revised national strategy, the United States Standards Strategy (USSS), after nearly two years of discussions among stakeholders. An effort was made to make these discussions more inclusive, so input was solicited from as wide a range of stakeholders as possible, including representatives of consortia as well as consumer groups. While there might appear to be conflicts of interest between traditional ANSI-accredited SDOs and more agile consortia, the USSS focused on clarifying the common interests of both constituencies rather than examining in depth any issues that might divide them. As a result, the USSS treats all "market-driven" standards as part of the US system, whether they are developed by ANSI-accredited SDOs or other groups. As a practical matter, because the US approach to standard developing is "sector-specific," traditional SDOs and consortia generally operate in different sectors of the US economy. This may help prevent potential conflicts among more and less formal SDOs from becoming actual conflicts. One focus of the revised strategy was on finding ways to safeguard the role of the US system of *de facto* international standards in global commerce, given the growing competition from *de jure* standards developed in Europe and China.[37]

a) Should the US policy attitude to standards be changed and, if yes, to which direction?

The fundamental US commitment to letting the private sector lead in standard developing and limiting government involvement to a supporting role is unlikely to change at any point in the foreseeable future. Even a change from a Republican to a Democratic administration is unlikely to have much impact on US standards policy.[38] Given this political reality, any new direction in US policy in the future will likely to be to redouble efforts to make the US system more accessible to stakeholders outside the US, and to help them understand the system better in order to increase their willingness to adopt US standards. In addition, efforts to leverage procurement spending by government at federal, state and local levels to promote wider adoption of US standards could also be increased. Given the widespread hostility among US businesses to the use of standards in regulatory mandates, and the sensitivity of US regulators to that sentiment, it would be quixotic to suggest that the US move closer to the *de jure* standards systems found in other countries.

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[36] Available at http://www.technology.gov/reports/NIST/2004/trade_barriers.pdf

[37] "Examples of [standards issues dealt with by the US Department of Commerce on behalf of US industry] include a desire for the Department to focus on China as the primary market where the United States should attempt to influence standards development and trade policy relating to standards; counter the aggressive promotion of European standards throughout the world; limit the potential for EU block voting on standards in international standards development organizations; increase pressure on countries to implement their World Trade Organization (WTO) or Free Trade Agreement (FTA) obligations; and coordinating more closely interagency on standards issues." Statement of Dr. Hratch G. Semerjian, May 11, 2005. While the NSS was only translated into Spanish, the USSS was translated into both Spanish and Chinese.

[38] See, e.g., the "market-oriented" approach taken in William J Clinton and Albert Gore Jr, Framework for Global Electronic Commerce (Washington DC, July 1, 1997).

Because US policy with regard to antitrust and competition issues varies over time, in the future, US regulators might adopt a more critical perspective concerning competition and the role of proprietary technologies that become *de facto* standards, *de facto* standards developed by closed consortia, *de facto* standards developed by informal, open SDOs, standards developed by ANSI-accredited organizations, and *de jure* standards. In 2003, the FTC issued a report examining the proper balance between patent law and competition policy, and held public hearings on "Standard-Setting Practices: Competition, Innovation and Consumer Welfare."[39] In addition, some local US governments have begun focusing on the relationship between open standards, open source software and public access to public records.[40]

b) Can any features of the European standardisation approach serve as good examples for implementation in the US or international standardisation policy?

One feature of European standardization policy that the US might find helpful is the basic structure of New Approach legislation: a statute that establishes minimum legal requirements for the use of a technology that is "loosely coupled"[41] with a voluntary technical standard developed through conventional standard setting processes. The New Approach framework balances the roles of government and the private sector by using technical standards to create a "safe harbor" that businesses may use to establish compliance with requirements of a directive if they wish rather than a mandate. Delegating responsibility for developing standards in support of legislation to an ESO allows for transparency and accountability, while publication in the Official Journal provides an efficient means of removing obsolete standards and replacing them with newer ones. The regulatory framework is not currently used in the US to coordinate legislative and technical standard setting processes, and provides a good example of the innovative models of "co-regulation" or "effective governance" that have emerged in the EU in recent decades.[42] The US relies instead on a collection of *ad hoc* approaches to coordinating standards development and legislation, which may suffer from problems of transparency and accountability in the process of selecting standards, of preventing technological obsolescence, and of determining ownership rights in the text of the standard itself.[43]

It seems unlikely, however, that the New Approach could be successfully transplanted in the US. Because ANSI is not the functional equivalent of an ESO or a "national standards body" such as BFI, AFNOR or DIN, it would be difficult to delegate the work of developing standards to ANSI.[44] The US never faced a problem of technical standards as a barrier to interstate commerce equivalent to the challenge faced by the EU in building the internal market because the US economy has been functionally integrated for more than a century. Whenever state governments threaten to fragment

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[39] Information about the FTC's activities in the area of IPR, competition and standards are available at http://www.ftc.gov/opp/intellect/index.htm.

[40] See, e.g., Shane Peterson, "Formatting for the Future," *Government Technology*, Aug. 31, 2006, available at http://www.govtech.net/magazine/story.php?id=100356.

[41] See generally, Doug Kaye, *Loosely Coupled: The Missing Pieces of Web Services.* Norwood, MA: RDS Press, 2003.

[42] Deate Kohler-Koch and Berthold Rittberger, "Review Article: The 'Governance Turn' in EU Studies," *Journal of Common Market Studies*,. 44:1, (2006);. 27-49.

[43] Some of these issues were raised but left unresolved by the Fifth Circuit Court of Appeals in Veeck v. S. Bldg. Code Cong. Int'l, 293 F.3d 791 (5th Cir. 2002) (holding that although the private SDO that developed construction standards adopted by local governments as their building codes retained its copyright in the text of the standards, a Web site operator was nevertheless allowed to publish them on the Internet over the objection of the SDO).

[44] There are however some precedents for delegating standards development work related to regulations to ANSI such as the 2001 Memorandum of Understanding between ANSI and the Occupational Health & Safety Administration, available at http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=MOU&p_id=323.

that integrated national market, the Commerce Clause of the US Constitution can be invoked to stop them. In addition, there is a pervasive and high level of disillusionment among US businesses with regard to past attempts by the US government to coordinate legislative mandates and technical standards.[45] During the 1960s and 1970s, the scope of federal regulatory authority was greatly expanded, and agencies such as the Occupational Safety and Health Administration, the Consumer Product Safety Commission and the Environmental Protection Agency unleashed a flood of regulations that referenced technical standards. There is considerable public and academic support in the US now for the proposition that the cost of compliance with many of these regulations greatly exceeded the benefits, and that they often created perverse incentives that made the original legislative objectives more difficult to achieve.

Market failure may occur in ICT markets characterized by strong network effects in the absence of an effective method of overcoming "lock-in" to one market-defining standard which then impedes movement to a more recent, improved standard developed. One way to minimize the risk of lock-in is to develop a clear, credible transition strategy that both producers and end users support. The GSM "success story" provides an example of the benefits of a clear transition strategy developed through public-private cooperation that minimizes lock-in problems, just as the US experience of migrating from analog to digital mobile phone standards provides an example of the costs of not having such a strategy.[46] Few Americans find the GSM example persuasive, however, because they generally have a higher level of anxiety than do Europeans about the possibility of "regulatory failure" if government is allowed to be involved in developing ICT standards, and a lower level of anxiety about the costs of market failure.[47]

c) Should the legal framework be also revised and, if yes, what changes must be envisaged in your view?

One challenge facing the US system of deregulation, strong private property rights and "market-driven" standards is finding the right balance between the scope of IPR and the character of standards as public goods.[48] In the world of real property, the US Constitution recognizes the right of government to take private property for public use, provided appropriate compensation is paid. It is possible that some analogous power of "eminent domain" may be required to counterbalance the proliferation of IPR claims in standard developing processes.[49] Efforts in this direction may already be emerging in Europe. The firestorm of criticism that followed the recent French attempt at legislation requiring Apple to adopt open standards for its iPod, decried as "state-sponsored piracy" by Apple, indicates how controversial any such effort would be, however.

4.   European adoption of US standards

4] Certain ICT areas are traditionally standardised by certain organisations (IETF for Internet, IEEE for LANs, etc.). Most of them belong to the US standardisation system. As such, the standards are not legally recognised as European standards, contrary to the standards produced within ESOs. How should Europe behave in such cases?

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[45] Peter Menell, "Introduction," in Peter Menell, ed*., Environmental Law*. Aldershot, UK: Ashgate, 2002.

[46] Jacques Pelkmans, The GSM Standard: Explaining a Success Story." *Journal of European Public Policy* 8:3 (2001): Special Issue 432-453.

[47] Furthermore, changing conditions in the EU make it unlikely that efforts to reproduce the GSM model in Europe will succeed either.

[48] Philip J. Weiser, The Internet, Innovation and Intellectual Property Policy, *Columbia Law Review* 103:3 (2003): 534-613.

[49] Janice M. Mueller, Patent Misuse Through the Capture of Industry Standards," Berkeley Technology Law Journal 17:1 (2002): 623-684.

If in the absence of a "technical regulation" (as defined in the WTO Technical Barriers to Trade Agreement) that mandates use of a European standard, EU businesses are free to choose the ICT standard that best meets their needs, then the fact that many widely adopted ICT standards originated in the US system rather than the EU system is an economic, not legal issue. In order to determine how Europe should behave if standards originating in SDOs with ties to the US are more widely adopted than competing European standards, it is first necessary to determine whether Europe supports the work of ESOs as an end in itself, or because the success of ESO standards is a proxy for the success of European businesses. If EU policy is based on a commitment to the ESO process per se, then until global ICT markets can be regulated effectively, the adoption of ESO standards in global markets will increase only if Europe can find a way to reduce the implicit taxation embedded in ESO ICT standards. As long as participants in unregulated global markets are free to choose between informal "market-driven" standards that focus narrowly on business and technical concerns, and formal European standards that reflect political as well as business and technical concerns, market-driven standards are likely to be more popular.[50]

If European policy is focused on promoting the competitiveness of EU businesses in global markets, and the success of ESO standards is only relevant as a proxy for that, then the European focus might shift from finding ways to preserve the jurisdiction of ESOs to finding ways to increase the participation of EU businesses in the work of informal SDOs and consortia. Businesses that participate in developing standards that later achieve widespread adoption often enjoy competitive advantages over other businesses, especially those that contribute to the development of standards that are not implemented. To the extent that European businesses participate in the work of NSBs, and NSBs in turn contribute to the work of ESOs, then asking for industry contributions to the development of standards that are unlikely to succeed will disadvantage European businesses in global competition. Greater European participation in the work of informal SDOs and consortia would help level the playing field between those businesses and their US counterparts, and might lay a foundation for the creation of successful consortia under the leadership of European businesses in the future. The cooperation between UN/CEFACT and OASIS to develop the ebXML standard might be a model for such cooperation.[51]

Would you recommend any changes in the current EU standardisation policy and its legal framework that would open the way to recognition of other standards not produced within ESOs?

In the context of ICT standards competition between the US and EU, it might benefit EU policy makers to switch from an *ex ante* focus on supporting competing standard setting efforts to an *ex post* focus on supporting the adoption of the most promising products of informal SDOs and consortia that are consistent with broader EU policy objectives within the EU.[52] This would require switching from a system of accountability based on Hirschman's concept of "voice" to one based on "exit." Such a system would allow the US market to bear most costs associated with duplication and overlap while securing for EU markets the benefits of ICT standards that were responsive to market conditions.[53] If

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[50]This is based on the assumption that, in the absence of legitimate safety or health concerns, it would be very difficult for EU countries to prevent European businesses from choosing non-ESO ICT standards by instituting technical regulations without violating their WTO obligations.

[51] Although the ebXML standard was completed in record time for an ISO project, it is too soon to say whether it will be a success or failure of the European standardization system. Microsoft and IBM withdrew their support from the project when it was completed as a result of IPR policy issues, which may limit how widely the standard is adopted.

[52] This has already happened in some areas, e.g., use of ISO 9000 in place of EN 29000. Christopher Hodges, *European Regulation of Consumer Product Safety*. Oxford: Oxford University Press, 2005, page 69.

[53] A similar dynamic is now at work between US and Canadian pharmaceutical markets: US citizens

the criteria that EU policymakers would apply *ex post* were widely known, then informal SDOs and consortia targeting global markets would have an incentive to try to comply with those criteria *ex ante* if that would improve the odds that their standards would achieve widespread global acceptance.

Such *ex post* criteria might focus on the openness of development procedures and the accessibility of the technology covered by the standards. In advocating that the scope of the NTTAA be expanded to cover more than just standards developed by traditional SDOs, Carl Cargill suggested that the following criteria could be used to determine whether to treat the work of informal SDOs and consortia as equivalent to the work of ANSI-accredited SDOs:

- Have a formal legal structure and well-defined, fair procedures;
- Have a clear, enforceable IPR policy that requires at a minimum "reasonable and non-discriminatory" (RAND) licensing of IPR included in its specifications;
- Not impose arbitrary restrictions on membership; and
- Have mechanisms for policing conformance with its standards.[54]

Dissemination of such criteria could not guarantee that "market-driven" standards would always be developed to meet EU needs, however. Such a system of *ex post* support for standards developed by others would have to be used in combination with efforts of ESOs whenever necessary to insure EU strategic objectives could be met. If such a system of *ex post* review of ICT standards produced by informal SDOs and consortia were combined with a system for increasing EU participation in those organizations, then the odds that resulting standards would meet the minimum standards of EU regulators might be increased. Such a strategy could only succeed if some means of overcoming European "NMH" (not made here) sentiments can be found.

5. Participation of public interest in EU standardisation

5] As an e-commerce specialist focusing, *inter alia*, on the concerns of public interest communities like consumers, how do you assess the present participation of public interest in EU standardisation?

The difficulty and expense of participating in standard setting processes combined with the large size and diffuse common interests of groups such as consumers makes it very difficult to find ways to involve representatives of those groups directly in standard developing.[55] Although participation of European public interest groups in standardization processes may be limited, as a result of the work of organizations like ANEC, it is nevertheless much greater than the participation of similar groups in US standardization processes. There is no direct analogue to ANEC in the US system because the work of ANEC is subsidized by the Commission and the EFTA. By contrast, among the many US consumer advocacy organizations that focus on social issues related to the use of information technology, it is unclear whether any of them are active participants in ICT standard developing processes in the manner of ANEC, with the exception of a handful of privacy advocates who participated in the development of the P3P standard.[56] From the US perspective, what matters most

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bear the majority of research and development costs for new medicines by paying high prices; Canadian health care regulations permit Canadian citizens reap the benefits of that research at a much lower price.

[54] Carl Cargill, The Role of Consortia Standards in Federal Government Procurements in the Information Technology Sector: Towards a Re-definition of Voluntary Consensus Standards Organization, submitted to House Subcommittee on Technology, Environment and Standards, June 28, 2001, available at http://www.house.gov/science/ets/etshearings.htm.

[55] Dixon, *supra* note 17.

[56] Consumer advocacy groups focusing on information technology issues in the US include the

is whether consumer interests are taken into account in the development of standards rather than whether consumer advocates actually participate. In a "market-driven" system, product vendors who compete successfully are presumed to have internalized the interests of their customers, and to be acting as their agents during standard developing processes. Under conditions of market competition, consumers can stop buying products, or "exit" their relationship with merchants, to show their dissatisfaction. If markets are not competitive, then some system to allow the consumers' "voice" to be heard in standard developing might be more effective.

a) What role, if any, should social responsibility play in ICT standards setting?

While recognizing that any technical standard may have social implications under certain circumstances, it is nevertheless possible to distinguish between technical standards that affect matters largely of interest only to engineers in their professional capacity, and technical standards that have a relatively direct and significant impact on social relations. For purposes of this position paper, ICT standards that fit into the former category can be referred to as "pipes and wires" standards, while those that fit into the latter category can be referred to as "interface" standards. Social responsibility issues generally play little role in setting standards for pipes and wires. One reason the IETF has been very effective in setting standards that are widely adopted in global markets is the informal consensus among its members, that its jurisdiction is limited to pipes and wires issues and that it should steer clear of trying to set standards that bear a direct relationship to socially or politically sensitive issues.

With regard to interface issues, the policy calculus may be quite different for at least two reasons. First, the impact on members of society may be greater, and second, national regulators may be more able to influence decisions regarding standards for technologies that are visible or tangible for end users in much the same way that they can influence decisions regarding standards for industrial products. The need to translate dignitary issues such as data protection or accessibility for the disabled into requirements for end user software interfaces is more obvious than the need to translate them into engineering standards for integrated circuits or routers. For example, during the development of the ebXML standard for electronic commerce, every effort was made to insure that products based on the standard would meet the needs of businesses in developing countries as well as those in advanced industrial economies. If the social objective to be achieved is important enough, then EU businesses and consumers can legitimately be asked, and are likely to accept, higher costs of products based on standards that incorporate consideration of social responsibility issues.

b) How can the participation of societal groups in the EU standardisation system be increased?

In order to determine whether strategies to increase participation are warranted, it is first necessary to determine whether participation in standardization is valued as an end in itself, or as a proxy for insuring that the interests of societal groups are taken into account while standards are under development. If direct participation is the objective, then a switch from an *ex ante* process focused on the technical standard setting process to an *ex post* process of focused on the decision whether to mobilize European support for a completed standard might provide increased opportunities for participation. If the objective is insuring that the interests of societal groups are taken into account by participants, then focusing on the openness of informal processes and guarantees of access to the technology covered by a standard may be a more effective policy than promoting direct participation by representatives of societal groups. If the EU chooses to focus on insuring that "exit" as a method that consumers and other end users of products based on ICT standards can use to signal their

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Electronic Privacy Information Center, the Center for Democracy and Technology, the Consumers Union and the Consumer Project on Technology.

dissatisfaction, then it is essential that there be competition.

c) How has societal participation in the US standardisation system been resolved?

During the 1970s, the work of private SDOs in the US came under an unusual degree of public scrutiny following public disclosures of a large number of "horror stories" involving a variety of allegedly serious failures in private standard setting processes.[57] These horror stories included examples of some firms manipulating SDO processes in order to shut certain competitors out of specific markets; delays of many years in finalizing revisions to standards sought by consumer groups; and promulgation of standards that on their face were inadequate to fulfill their purpose. It was at this time that ANSI first formalized the due process requirements that today are known as "Essential Requirements." Congressional hearings were held to investigate the magnitude of the problem, and proposals to expand the jurisdiction of the FTC to include oversight of SDO processes followed, but these were ultimately not acted upon.

In 1990, in one of the first in-depth studies of the US standards system undertaken by a social scientist, the author noted that "remarkably little is known about the institutions that generate the overwhelming majority of standards."[58] This observation may be even more true in the US today than it was then as a result of the rise of informal SDOs and consortia, because their processes may be harder for the public to understand and monitor than those of traditional private SDOs. In the absence of another wave of disclosures of serious problems associated with the US system resulting in high profile demands for fundamental reforms of the system, it is unlikely that opportunities for public participation in private standard setting processes will be increased through industry self-regulatory efforts or legislative mandates.[59]

The US has a handful of official mechanisms for insuring that consumer interests receive some representation within the US standards system. Perhaps the most important US government agency focused on ICT standards issues from a consumer perspective is the FTC.[60] In recent years, the FTC has undertaken major initiatives in the areas of information privacy, controlling unsolicited commercial e-mail, identity theft and computer security. While these efforts have had a major impact on the terms of public debate in the US, and in some instances, helped contribute to important new legislation to protect consumer interests, they have not included a focus on standard development issues. The ANSI Consumer Interest Forum (CIF) allows consumer interest groups to play an active role in the work of ANSI.[61] According to the ANSI Web site, "[t]he CIF is also the U.S. link to ISO COPOLCO (Consumer Policy Committee of the International Organization for Standardization). COPOLCO provides a forum for the exchange of information and experience on consumer participation in the international standardization work of ISO and, by liaison, in IEC (the

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[57] Dixon, *supra* note 17 at 8-10.

[58] Ross E. Cheit, *Setting Safety Standards: Regulation in the Public and Private Sectors*. Berkeley: University of California, 1990, page 5.

[59] The process of minimal oversight in anticipation of problems followed by ad hoc, post hoc legislation enacted with little depth or analysis represents a particular "risk regulation regime" that is often found in the US. Such a risk regulation regime is suited to a culture where there is a high degree of fatalism about the risks involved. Christopher Hood, Henry Rothstein, and Robert Baldwin, *The Government of Risk: Understanding Risk Regulation Regimes*. Oxford: Oxford University Press, 2001, at page 13. The relevant risk here is that of market failure, which in light of the US propensity to believe that markets are self-equilibrating, is often treated as an unanticipated event when evidence of it is found.

[60] See generally www.ftc.gov (accessed August 1, 2006).

[61] See ANSI Consumer Affairs Overview
http://www.ansi.org/consumer_affairs/overview.aspx?menuid=5 (accessed August 1, 2006).

International Electrotechnical Commission)."[62]   ISO has undertaken standards activity on customer satisfaction, including guidance for organizations on how to develop codes of conduct, complaints handling mechanisms, and external customer dispute resolution systems, in response to COPOLCO's calls, which CIF supported, to develop standards to increase consumer confidence in e-commerce.[63]

d) Based on your experience, can you identify any "best practices" on this issue (from the US or of another non-EU country).

One factor contributing to the success of the IETF is that it tries to avoid developing standards in areas known to be controversial. When ICANN was organized, an effort was made to mimic the structure of the IETF (in particular, its guiding principles of "rough consensus and running code"). ICANN was assigned a much more politically sensitive role than that assumed by the IETF, however, and has been dogged by controversy since its founding. This suggests that a governance structure that works well in the world of global "pipes and wires" ICT standards cannot easily be transferred to the world of "interface" standards.

Section 508 has succeeded in fuelling the growth of a market for accessible information technologies, which then lowers the cost to private sector end users of acquiring accessible technology. The standards were developed by the Access Board, a public sector standard developing organization with input from subject matter experts and representatives of stakeholder groups. The US and EU have engaged in discussions regarding harmonization of accessibility standards, and the Commission has committed its support to "eAccessibility" projects.[64] In 2006, the Access Board announced its plans to update Section 508 standards, and has included an informal SDO, the Web Accessibility Initiative organized by the W3C, in that process. This is an example of leveraging public procurement budgets to support the growth of markets for products that help achieve social and political goals.

6.   Impact of EU standardisation

6]   In your view, what is the impact of the European standardisation on the international standards-setting arena?

The impact of European standardization in the international standard setting arena has been greatest in the case of GSM. In addition, EU hybrid SDOs such as ETSI and the ICT Standards Board have enjoyed more success in developing standards designed for adoption in global ICT markets than have traditional ESOs.

a) The reasons behind the impact, or the absence of (any) impact, of the European standards on the global market.

In an unregulated environment, such as that found in many global ICT markets, any SDO that tries to balance competing market demands and public interests in the standards it develops will face the

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[62] It is unclear, however, how much impact the ANSI CIF is having on the terms of public debate surrounding standardization issues in the US, however, as a search for "Consumer Interest Forum," the "All News" database in Lexis-Nexis, which contains two decades of news, produced no stories. The US Consumer Product Safety Commission (CPSC) maintains an active outreach program through its Web site, telephone hotline and publication services.

[63] Email correspondence with ANSI, September 8, 2006.

[64] The Communication to the Council, the European Parliament, the Economic and Social Committee, and the Committee of Regions, regarding eAccessibility, was adopted on 13 September 2005, COM(2005) 425

unenviable task of trying to persuade entities that currently are subject to little or no "taxation by regulation" to submit voluntarily to a higher level of such taxation. For example, even though at one level, the OSI project was intended to focus on pipes and wires technology, the work was done within a framework of political accountability that slowed down the process and resulted in final products that were less responsive to market needs than the competing IETF standards. The higher costs to potential adopters of the OSI standard delay and mismatch represent the implicit tax.

b) How should the visibility and competitiveness of European standards be enhanced at a global level?

Continuing to streamline the processes of hybrid EU SDOs such as the ICT Standards Board and ETSI as well as to continuing to engage with counterparts in other countries that favor *de jure* over *de facto* systems are obvious strategies. In addition, a policy of encouraging greater participation by EU stakeholders in *de facto* "global" SDOs with roots in the US system might increase the number of EU stakeholders willing and able to start up and successfully manage their own consortia.

c) Can you state any "best practices" on this issue from the US or other non-EU countries?

The NTTAA provides indirect public sector support for standards developed by private SDOs in the US, striking a balance between responsiveness to market conditions and accountability to political requirements that is more market-oriented than current EU systems. However, just as legislation based on the New Approach is unlikely to be politically viable in the US, an EU version of the NTTAA is unlikely to be viable in Europe, especially given the limited role played in Europe today by private SDOs.

7.   Future EU ICT standardisation policy

7]   The current standardization policy in Europe, defined by the directive known as "The New Approach" (aimed at facilitating the mutual recognition of products within the European Community by the use standards), focuses mainly on the European Single Market. Compared to the more traditional industry sectors (machinery, construction products, toys, etc.) the ICT area has important characteristics that makes standards-setting different and difficult: global nature of the IT market, pervasiveness in other sectors, etc. In your opinion what should be the main focus of the future European policy in ICT standardization?

• Increase the participation of EU stakeholders in *de facto* global SDOs to promote the competitiveness of EU businesses in global markets.
• Develop *ex post* criteria that reward *de facto* global SDOs for establishing open procedures and maintaining open access to technologies covered by standards in lieu of trying to expand direct *ex ante* participation by political institutions.
• Leave the development of pipes and wires ICT standards to "market-driven" SDOs wherever possible, while providing *ex post* EU support only to those standards that meet both political and economic requirements.
• Review intellectual property and competition laws and policies in relation to policies to support growth of open standards and insure that consumers and end users have meaningful opportunities to "exit" relationships with producers of products that do not meet their needs.
• Continue to streamline ESO procedures for developing ICT standards to preserve necessary competencies in the event *de facto* global SDOs fail to develop standards that meet EU needs.
• Develop procedures to facilitate *ex ante* input from societal groups into standard setting processes whenever EU end users are willing to pay an implicit "taxation by regulation" to guarantee the supply of public goods or to safeguard fundamental dignitary values.

- Leverage public procurement budgets in order to support the growth of markets for products that help achieve social and political goals such as data protection and accessibility.

VIII. CARL CARGILL AND SHERRIE BOLIN

1. Question 1: Concerning the U.S. Standardisation Policy

The question posed to us reads: "Could you please describe the major characteristics of the U.S. standardisation policy?" In asking this question, the creators of the study have illustrated, as clearly as possible, the profound difference between the United States and Europe with regards to standards and standardization.

Bluntly, and basically, there is no officially stated and supported "U.S. standardization policy".

The phrase "standardization policy" is defined – in the introduction – within the context of Europe. The definition reads:

> *EU (or European) Standardisation Policy: The policy framework governing standards-setting activities and standards in Europe, that is primarily defined by policy and legal instruments adopted by the EU institutions*".

Using this definition, and substituting the appropriate geographic terms, one has a statement that reads *"U.S. Standardization Policy: The policy framework governing standards-setting activities and standards in the U.S., that is primarily defined by policy and legal instruments adopted by U.S. Institutions"*.

The concept of a "policy framework" is antithetical to the "standards philosophy" of the United States, which is, we believe, based on a simple philosophical approach and upon a singular and unusual piece of legislation. The "basic philosophy" guiding U.S. standards is a belief that the providers operate under conditions of "good will and enlightened self interest", and will use standards appropriately as business conditions warrant. Where there is a legislatively mandated or driven standardization policy, it is largely focused on regulatory standardization, which adds an entirely different level of complexity to the issue. (These standards would be safety, environment, homologation, environmental and similar standards that are subject to legislation and clearly impact the public good.) While the European approach seems to favour the use of European Standards Organizations (ESOs), supported and enabled by a governmental directive, and the use of national body Standards Development Organizations (SDOs) as agents, the U.S. approach is one of benign neglect on the part of the government and encouragement of the private sector to create and fund whatever it needs. This has led, of course, to an innovative approach to standardization.

An examination of the Information and Communications Technology (ICT) arena in the U.S. shows astonishing complexity. There are multiple layers of standardization and standardization organizations that occur randomly with little or no coordination or oversight. There are four basic variants of SSOs (Standards Setting Organizations, an all inclusive term for organizations who create standardized specifications) within the ICT industry:

(1) trade associations

(2) formal SDOs

(3) consortia

(4) alliances

Each of these organizations fits into the "standardization value chain", and each represents an evolution of some aspect of the standardization process. A simplistic and quick set of examples (not supported by research) includes: [1]

1. Trade Associations: In the late 1880s, the creation of "professional associations" that established standards was driven by a need for a method of training and providing advice to hands-on practitioners. ASTM and ASME were developed to provide useful information to people who did not have the time to learn by experience.

2. Formal SDOs: The creation of standards development organizations (circa 1920) was a response to the insufficient number of professional associations willing to develop standards, or, more positively put, the need for increased standardization as society grew more complex and interdependent. In many circumstances there wasn't enough interest to start an educational society, but there was enough interest to create standards. During this time, the Department of Commerce led a "Crusade for Standardization" to reduce waste and make the U.S. more efficient and democratic. While this started the trend towards actual standards organizations, the need for this activity in an industrialized society contributed to its expansion and growth.

Over time, formal organizations became significantly more complex and increasingly Byzantine in their processes. This was partially driven by a need to "do good", but more often by a need to avoid governmental interference in commerce. The "Plywood Case" and the "Automatic Gas Vent Damper Case" brought into question the ideas of a truly legitimate and balanced standards process in the U.S., and hearings by the FTC were initiated in 1978. In 1983, over 100,000 pages of testimony were finally released. It was during this time that ANSI began to "Update America's Voluntary Standards System", which helped to head off two Congressional bills to regulate the standardization system. The rules created during this time assured the complex, multilayered, slow consensus process.

3. Consortia: Sometime in the 1980s it became apparent that the rules were becoming irrelevant and cumbersome. They were being used to slow or otherwise stop standardization in the IT sector. As a result, and as a combination of numerous factors, consortia appeared. It wasn't that the consortia were substantially quicker,[2] it's just that the companies participating were generally like-minded. The payment of "dues" reinforced this like-mindedness, leading to the cry that consortia are "pay to play and not really open". This commonality also made discussions more cohesive, making consortia appear more productive.

4. Alliances: As they aged, of course, consortia became somewhat structured but the need for informal, less-structured standards setting venues still existed. To fill this need, the concept of alliances was developed. These alliances serve as less complicated consortium that tend to have a more narrow focus than a typical consortium and hence are" lighter weight" in maintenance requirements.

The reason that consortia and alliances prospered is complex, but their case certainly wasn't hurt by an action of the U.S. government which passed the National Cooperative Research Act (NCRA) in 1984. In 1993, the NCRA was amended and renamed the National Cooperative Research and Production Act of 1993 (NCRPA). The NCRPA encourages joint research and development by providing some protection to participants in activities such as consortia. Additionally, Section 12(d) of Public Law 104-113, the *National Technology Transfer and Advancement Act of 1995,* enables any organization so desiring to seek legal protection by meeting simple criteria to become a "consortium". The NCRA – in effect – gave the private sector the right to circumvent the formal SDO arena. Prior to the NCRA, SDOs alone could protect the participants from threats of antitrust. The NTTAA allows nearly any organization to seek the status of a consortium. It is these acts that

form the second leg of the U.S. standardization policy in the ICT domain.

It is of interest to note that the majority of ICT standards are now created in consortia, bypassing the formal bodies (ISO and national body based) nearly completely. Further, a large majority of these consortia are U.S. based, although there are some notable exceptions such as Open Mobile Alliance and ECMA. The reason for this is not hard to fathom – most medium and large ICT companies are U.S. based, and the use of consortia by these companies has become part of their culture.

The U.S. standards setting approach, therefore, can be characterized as one marked by nearly complete governmental non-interference, unless the standards setters want something from the government. There are rules about procurement (Office of Management and Budget Circular A119 specifies the use of formal standards in governmental procurements,) but these are more honoured in the breach than in the practice. The rationale for this lack of use is – simply – that the formal organizations no longer produce the standards needed for ICT practice or commerce. Nearly every standard associated with the World Wide Web is consortia based; operating systems are consortia based – if standardized at all; and most other system components (absent commodity products, such as storage) are standardized in one of the variant standardization options.

The role of ANSI approved committees in ICT is shrinking substantially, with the exception of the standards produced by the IEEE. In this case, however, there is no cause for rejoicing by ANSI, since the IEEE is desperately trying to declare itself a "transnational standardization organization" and not bound by ANSI rules or royalties. Tied to this is the fact that ANSI's most significant "draw" is the right to grant the title "American National Standard" to a specification. This title, however, has relatively little attraction to a specification that is attempting to portray itself as international and ubiquitous.

Finally, in examining the U.S. standardization policy, the role of the National Institute for Standards and Technology (NIST) should be explored. One needs only to look at the budget that Congress has provided to quickly determine its relevance. NIST's 2007 budget is down somewhere between 5% and 22%, depending upon the data points used. NIST does not develop standards; they have the ability to act as an "honest broker" and cause some level of cooperation between the various factions. At their current budget levels, however, they are constrained to merely maintaining the status quo. And while they are valued as a participant in SSOs, they do not have a significant role in them due in part to their often inability to vote other than "abstain" on contentious industry issues.

The U.S. standardization setting policy is set mainly by businesses that fund and participate in standards setting activities. Their changing needs spur the evolvement of the U.S. standardization system. The U.S. government does little to help establish a national standardization framework that might strengthen the efficacy of standards efforts or reward results, which should be measured in the number of implementations. Instead, it offers cursory and theoretical protection from antitrust to groups of companies that perform their activities under the SSO label. As a result, numerous SSOs have been created, each serving the needs of a select few, and most competing against similar efforts that favour alternative intellectual property. Rather than facilitating innovation through collaboration and the channelling of resources into additional development efforts, the highly competitive U.S. standardization environment actually increases the need to invest resources redundantly, often for opposing efforts that cancel one another out.

A standardization policy framework created by businesses and implemented by the government could address this problem. The framework could establish simple criteria that organizations must meet to be called an SSO and thus qualify for perhaps increased government protection and antitrust immunity. A key criterion should be that a specific number of competing implementations must

result from a standardization effort. If done correctly and without undue bureaucracy, this framework might strengthen the U.S. standardization system by allowing companies to invest resources in more focused efforts that produce faster and possibly more market-relevant results.

2. Question 2: Different Approaches to Standardisation

Again, the statement of this issue – the internecine warfare between standards types – masks the larger issue. The discussion should be about the difference between "Things that are standardized" and "Things that are not", rather than about "Processes for standardizing things". The amount of anguish that proponents of both camps have spent decrying the other's processes could have been much better spent in understanding their discipline, changing market needs, and the benefits of standardization. However, studying standardization is complex and difficult, while criticism of a process is relatively easy, especially when one is not constrained by facts.

Turning to specific points in the question,

1. Does the "duality" benefit the ICT market?

The answer is absolutely. Absent consortia, there would be very few standards in the ICT arena. Drawing from the response to the first question, consortia fill a market need for vendors (providers, creators, productizers, or however you refer to them). And since these vendors are the primary movers of standardization in the ICT sector, the increased use of consortia and alliances is and will continue to be a fact of life. Further, for companies and even governments to execute an effective standardization strategy, choices must be available. A key choice at the beginning of any standardization effort is to look at which organizations offer the processes, environment, disclosure rules, IP treatment, and member draw to meet specific needs. So while duality serves a purpose now, this should morph into plurality where standardizers can choose between a variety of organizations. Just as the market benefits when consumers have different solutions to choose from, so should the standardization infrastructure and the ICT industry prosper as new standardization models become available. The countries and regions that support this growth are likely to attract a higher number of standardization activities to their domain and, hopefully, produce higher quality standards.

The problem with consortia, alliances, and emerging standardization models, is, of course, judging their legitimacy. In the world of formal standards, the output of an organization was considered legitimate because there was a transparent process with certain rules that gave assurance that the organization was, at least on the face of it, paying attention to the public good. We tend to equate transparency with fairness. However, as more countries and industries participate in standardization, often ones that have different needs from the original developers of the current standardization system, existing rules may no longer guarantee an equitable or fair environment. Transparency does not in fact ensure equality or the overall promotion of public good. The Jim Crow laws in the U.S., the denial of the vote to women, and unrepresented taxation were built on transparent processes that yielded inequitable results.

So the policy question for Europe is how to legitimize standards setting organizations, regardless of the form they take. In a somewhat heretical statement, *we believe that the solution to the problem lies within the public, as opposed to the private, sector.* This belief is derived from the observation that:

Other goods, like education and *standards*, are impure public goods. These combine aspects of both public and private goods. Although they serve a private function, there are also public benefits

associated with them. Impure public goods may be produced and distributed in the market or collectively through government. ***How they are produced is a societal choice of significant consequence.*** (U.S. Congress 1992, p.14, footnote 23, emphasis added).

It is the authors' contention that the approach favoured by formal SDOs – the complex, balanced, and reasoned set of rules – is probably unnecessary. A much more benign solution is possible. We propose that the European standardization policy accept **any ICT standardization body** if it can meet six criteria. Any organization meeting these criteria would gain substantial benefits through preferential treatment of its legal status, protection of members from antitrust, tax benefits for participants, and so on. The new criteria would be as follows:

1.   The SSO must develop technical specifications.
2.   The SSO must be some type of legal entity (understanding that this criteria needs expansion and validity).
3.   The SSO must have a well-defined, legally acceptable set of procedures and processes.
4.   The SSO must have a clear and legitimate IPR policy that requires, at a minimum, ex-ante RAND licensing of all IPR included in its specifications.
5.   The technical specifications created by the organization must undergo widespread, web-based public review and then be implemented by two or more competing entities prior to specification release.
6.   There should be reference implementations, competing implementations, and test methods to validate conformance as appropriate.

These attributes focus not on the SSO and the process of the SSO, but rather on the production of potentially interoperable specifications. The process (item 3) needs only to preclude the ability of the providers to gather to work mischief (apologies to Adam Smith). The key to this entire definition (and the public good component) lies in item 5, which requires that the output, not the input, of the SSO be examined. If only one company (due to say, restrictive licensing or technological capability) can implement a standard, then the standard may not really be open, no matter how many people worked on creating it.

The creation of a legitimization body – or certifying authority – along with a package of benefits within the confines of European Institutions should not be too difficult. However, the focus should be on expediency, since it is the authors' contention that the legitimacy of standards hangs in the balance. By healing the process differentiators in SSOs, the European standardization policy could significantly strengthen the entire standardization arena.

3.   Question 3: The Standardization Environment

To answer this question, we're going to take liberties with the definition of "the standardization environment" and interpret it broadly as applying to all of society, rather than narrowly, as applying only to standards participants. By the standardization environment, we'll implicate and take into account social, economic, technical, legal, and political frameworks as they apply to the ICT environment.

Starting with a direct bias, we believe that **standards are an impure public good** – that is, there are only a finite number of them that can be absorbed, they have a significant impact on society as a whole, and they are capable of being misused by the private sector. As a public good, they are subject to governmental oversight, review, and management in the public interest. In this, we believe that we differ from many of our U.S. colleagues. However, we are convinced that society – as a whole – can

benefit from standards. It is also our contention that the current standardization system is heavily biased in favour of producers, to the possible detriment of other segments of society. One needs only to look at the current IPR regime in SSOs to understand our concern. When the term RAND or FRAND can only be understood by teams of lawyers, when the complexity of patent pools and cross licensing discourage market entrants and, thus, adequate competition, and when entire nations feel threatened by royalty payments – then one can safely draw the conclusion that the current standardization system is failing both public and private good

That being said, and if the argument is granted, then the political, legal, and economic implications also emerge. Standards can create, drive, and limit markets, depending upon the outcome of the standardization processes. They can implicate the legal system (one need only to look at the Rambus versus FTC in the U.S. to understand that) with their creation, distribution, and implementation. And, if they are seen as threatening national sovereignty (as with China versus Google), their political impact can become clear.

Given the broad interpretation of standards environment, it is clear that standardization has moved from a small technical field in ICT to a broad, all encompassing activity. The reason for this is complex, but is basically centered on the need for interoperation, interconnectability, and ubiquity. These needs are not only for the actual technology but also for the producers and users of that technology.

The producers are, or should be, competing in completely new markets. Not only must companies protect their market share from traditional competitors but also from companies in previously segregated industries. For example, phone companies must now compete with Voice over IP to provide calling services, they must compete against cable and satellite to provide Internet access, and they even compete against camera companies for digital photography. As technology progresses and becomes more intermingled and convoluted, the standardization environment must provide the right conditions, processes, and infrastructure to enable inter-industry collaboration. Further, it must also facilitate the convergence of industries in a way that helps those industries to overcome the challenges inherent in different cultures, rules, priorities, and perception of user needs. Until those challenges are addressed, the chances of achieving successful technical collaborations among competitors are minimal.

User needs for standardization have grown tremendously over the last 20 years as the use of personal computers, the World Wide Web, and the Internet have exploded. Where before a computer was a luxury, it is now considered as necessary as a television in western countries. Access or lack of access to a computer and the Internet has created social divide. Nations are rushing to make their citizens computer literate. More and more standards are needed to make it possible for an increasing number of devices to interoperate and communicate. The pressure on the system will increase as time passes. Our research indicates that by 2010, each individual may have between 200 to a 1000 technical devices uniquely associated with him or herself. This includes devices embedded in or related to credit cards, keys, cars, medical devices, phones, computers, houses, offices, identity badges, and memberships. It will be impossible for an individual to manage the interconnects personally. Instead, the devices will have to be managed automatically in a standard and consistent fashion, with the operative word being "standard".

Unfortunately, the SDOs (and many SSOs) of the world are still operating under rules originally crafted to ensure that fossil fuel power plants are safe. In-person meetings, paper ballots, arcane rules, participation requirements, and other collaborative obstacles still mark their processes – many of which are leftovers from the 1970s. There are still national bodies despite the success of ETSI in creating a pan-European telephone system.

The standards environment is far removed from where it was 10 years ago; society now depends on standards to allow progress to occur. The biggest change is that ICT standards matter to a wider and larger constituency because ICT matters to a wider constituency. Standardization, as a discipline, has not kept pace with its new role. It continues to cocoon, watching in dismay as new and different approaches for solving interoperability problems – including the emergence of proprietary software and systems – emerge and grow. Until the ICT industry accepts that standardization is not merely a technical discipline, and that any standard has social, legal, cultural, and economic implications as well as technical considerations, the standardization environment will never reach maturity nor serve as a coherent policy tool. To paraphrase Clemenceau , standards are too important to be left to industry. They must become a cornerstone of economic and social policy.

4.   Question 4: Can European Standardisation Cope?

Depending upon your definition of cope, the following answers apply:

If cope means to continue to limp along, responding to social, legal, and economic crises in a piecemeal fashion: *Yes*

If cope means to maintain parity with the U.S. and China in standardization: *No*

If cope means to assume a leadership position and serve European interests: *No*

Explanation:

Europe does not have the consortia systems or the industry of the U.S. to improve its position in standardization on a technical front. Neither does it have the centralization nor the economic incentive of China to challenge it. What Europe has is the social and political acumen to understand how standards can and should work as a social/economic/unification tool. The European nations also have the experience in making standards work as a tool of industrial policy. If Europe was to focus on these aspects of standardization, it could assume a leadership role.

Europe can gain leadership, for example, through the way its government evaluates and treats standards setting organizations. Europe is well-positioned to establish the "standard" for legitimization of standards setting organizations as the authors proposed in the answer to question one. Using some of the basic principles from the New Approach, Europe could provide a broad definition of a legitimate SSO and establish conformance procedures. Organizations who then wished to be recognized as "legitimate" could then determine how best to meet that criteria while also achieving member goals. Those organizations that conform would receive benefits such as a higher level of antitrust protection, tax cuts, eligibility for European funding towards research or specific standards activities, and perhaps even act as a standards developer to meet identified European regulations or to assess conformity. By opening up European standardization opportunities to other, less formal organizations in this manner, Europe could potentially attract innovative models of standards setting organizations and new standards activities that may meet changing market needs more effectively. Further, as producers increasingly learn to develop and maximize their standardization strategy, they will shop globally for the ideal standards setting organizations. Thus, Europe could leverage its New Approach to attract and possibly lead the standardization industry. This system would combine some of the free market principles that have stimulated innovation in the U.S. with a degree of central control that allows countries such as China to take more unified actions. The balance between freedom and unification is difficult to achieve. If Europe can successfully create this balance, it will be well-positioned to lead standardization efforts as industries converge and technologies proliferate.

5.   Question 5: Usefulness of a "European" Standardisation Policy

The only reason that one might have to respond with a negative to this question is if one considers that standards are merely technical specifications produced by U.S. companies. If, however, one takes the view – espoused throughout this paper – that standards are multifaceted and a matter of public good – then the answer is, "It is absolutely essential that Europe have a valid standardization policy".

A technical standard is a method of making a machine work or systems work together. These types of standards can be developed in a variety of ways. However, the careful crafting of the standardization environment is necessary to permit these standards to be developed and deployed in a way that benefits society. This is where a standardization policy is essential. As an example, if the standardization policy requires that all citizens of "greater Europe" have the right to information in their own language, the standards that are necessary to enable this policy to come into being will have to be created and employed. Standardization can be and should be used to unify an audience – whether nation states or an industry or a social movement.

Additionally, as this paper has repeatedly stressed, standardization, and thus a standardization policy, can serve as a strategic change agent to unify markets, industries, and people; to create competitive advantage; and to promote innovation. For example, Europe can increase innovation by using standardization to affect long term structural improvements that are fundamental to further follow-on developments. This is evinced in the technical and market advantages that derived from ETSI standardization of GSM telephones across Europe. By making the mobile a ubiquitous device, the ability to use it for more than merely "voice telephone" service came into being. It had the secondary effect of making telephones into multiuse devices that can send instant messages, access the Web, and even take and transmit photographs. By unifying the European market under this standard, ETSI was able to more quickly advance adoption and innovation of mobile technology. Further, it enabled the companies who developed and implemented the standards to gain competitive advantage.

Can standardization be used as a change agent if it is bound by specific regulations? In the case of the telephone example above, one can only wonder if a regulation would have ever appeared in time and in relevance to this market. Specific standards development activities should not be bound to regulation. It may be used to propose solutions to meet a regulation, but a standard should never *be* a regulation. However, the overall guidelines for standardization might be bound to at least voluntary policy compliance such as we suggested previously. Rather than requiring standardization efforts to meet specific guidelines—guidelines that might not reflect or adequately adapt to market needs—Europe could provide incentives for SSOs to meet broad guidelines that protect and promote the public good. These guidelines should extend beyond public safety to elements such as innovation, competitive pricing, accessibility, and availability.

Finally, the environment into which specifications are to be deployed must also be considered. This environment includes not only the technological aspects of ICT, but should also include all of the other areas that we've discussed. The lesson from efforts such as Open Systems Interconnect (OSI) should go a long way towards convincing legislatures that, in many cases, the creators of standards (primarily vendors) don't have a clue about what the market wants. At the same time, the success of programs like ISO 9000 in promoting quality among SMEs should not be overlooked. Standards that create equitable access to ICT, govern royalties, discourage censorship, and decrease or eliminate the digital divide are all possible. A standard does not need to be technical. It can refer to a behavioural standard (encouraging social responsibility), a management standard, or even a guide to suggested best practices. In all of these areas the European Commission has not only the need, but the duty, to persevere with standardization through a sound and innovative standardization policy.

6. Question 6: Global Competitiveness and Visibility

There are several ways for the EU to make its ICT standards more globally visible and competitive. The proposal depends entirely upon whether or not the European Community wants to use standardization in ICT to unify or if they want to use it to divide.

Let us explain this comment by using an example which is obscure, but which has the ability to impact any business trying to use standardization. It has to do with the IPR rules of SSOs. Let us assume that there is an European software SME that wants to create a product in the wireless and Internet space, which also uses attributes of the World Wide Web. As this company tries to implement a service, software, or hardware system based on standards , they would be using standards generated by W3C, OMA, IETF, ETSI, ITU, and probably ISO. If we assume for a moment that the specifications produced by these organizations can technically interoperate, it would be impossible for a company to create a seamless system because of the differing organizational IPR rules. Some are Royalty Free, some are FRAND, some are RAND, and some are ex-ante RAND. Disclosure and licensing agreements do not match – the company will have to negotiate with each and every contributor to the specifications. Just to make it more complex, W3C and the IETF operate under U.S. law, OMA under UK law, ETSI under French law, and ITU and ISO under Swiss law. This is important because where organization rules are not adequate, national law is the basis for negotiation. (Think of the Rambus issue, which was originally decided by the Federal Trade Commission (FTC), the Administrative Law Judge of the FTC, and then the full FTC. This issue impacts all DRAM and DDRAM providers. Yet it is under the jurisdiction of the U.S., because JEDEC, the SSO in question, is U.S. domiciled.) Each nation treats IPR just slightly differently.

So, to make European standards leaders in the global market, make them easy to use. Give them a common technical framework so that a user knows what the standard does and how it interoperates with other standards. Enable testing and certification abilities for creators and users of standards so that when a provider asserts compliance, there is away for the users to validate the claim. Make available a database of products which are certified to meet the specification. Establish a common IPR framework. Provide a set of profiles showing where standards are to be used and how they are helpful to business. Focus the efforts on SMEs and SME supplier/consultants, not on fortune 500 companies. SMEs usually don't have the ability to monitor and make long range technical decisions – they rely on vendors. Give them the options; educate them on what it is they have, what is available, and when they can/should use them. Make sure that the standards that you create are implementable in an interoperable fashion. Ensure that there are at least two viable and independent implementations of every standard BEFORE it is approved. Maintain and make available a list of legitimate SSOs. Finally, to quote from Jim Burrows, the former director of the National Computer Systems Laboratory at NIST—"Specify and buy the products that are standards based. If you've insisted that the vendors invest in the standard, reward them for implementing it."

Basically, the only thing that you need to do to make European standards most valuable and admired is to ensure that the European standardisation policy allows and helps standards fulfil their intended function —to serve as a useful management tool for business and as a risk reduction tool for users.

It's really not that hard – it is merely a matter of having the will to use standards are they are supposed to be used while disallowing spurious reasons for failure to develop or implement them.

7. Question 7: Focus of European Policy for ICT Standardisation

To begin, we'd like to question an assertion made in the preamble to this question. The statement is

"Compared to the more traditional industry sectors (machinery, construction products, toys, etc.) the ICT area has important characteristics that makes standards-setting different and difficult; global nature of the IT market, pervasiveness in other sectors, etc."

This is nonsense. The same claim can be made for the auto and aircraft industries, the chemical industries, or any of a host of other industries. The only possible ICT differentiators are its rapid pace of change and the absence of traditional heavy industrial life cycle considerations. However, it must be kept in mind that the ICT standardization life cycle isn't exactly a speed demon either. Assuming that a specification can be developed in two years (a questionable assumption), that the standardized specification can be productized in two years (average turn time for significant [large] technical issues in companies), and that a user can implement the new technologies in a year, **you're looking at a five year window from start to initial implementation for nearly all activities in ICT standardization.** While the industry may change quickly, standards in the industry don't. One needs only to look at the longevity of the language FORTRAN (originated in 1956) to understand how slowly things really change.

However, the similarity of ICT to the needs of other industries that participate in global trade does not preclude a change in policy. Indeed, we recommend that Europe should target several policy changes to strengthen its ICT (and perhaps all) standardization efforts. As stated previously, standardization can serve as an industrial policy tool, an impure public good, and as a mechanism for creating competitive advantage at the company, national, and regional levels. Policy changes that produce improvements in each of these areas would position Europe as a premier standards leader in the global market. These efforts are not mutually exclusive—endeavours to improve one area should improve all areas.

First, we suggest that the European ICT standardization policy should call for more government involvement. This could occur at several levels. One level is for the government to provide and encourage funding for research and educational efforts in standardization. For example, there is still doubt among many that standards yield either public or private benefits. While we intuitively believe that it builds bigger markets, increases competitiveness (thus lowering consumer prices), and stimulates innovation, there is very little proof. Both government and businesses need solid proof of standardization benefits to justify resource investments in standardization activities. To date, there is very little research that objectively addresses this need or that provides a valid economic model for cost-benefit analysis of either standardization in general or of specific standardization efforts. Further, additional resources from government and industry need to be put into education. This should occur not only in formal education, but in informal efforts (e.g., workshops, conferences, books, etc.) that educate and inform current professionals. We would caution that these efforts need to not only encompass how to interact within an SSO, but also how to use standardization strategically on a business and political level. While the input of more traditional standardizers and academia should be valued, education efforts need to also include the insight of experts who understand how standardization can and should be used strategically as an industry/ policy/public good/business tool.

Second, Europe needs to increase the attractiveness of its standardization activities to the global community. As companies learn to use standardization more strategically, they will shop around for the best forum in which to focus specific efforts. Taking into account features such as processes, pace, IP and disclosure policies, types of members, distribution means, and marketing methods, companies and even industries will choose the most advantageous SSO, often regardless of location. Location is further negated if SSOs take advantage of the very technologies they are standardizing to diminish the need for member travel and to facilitate online collaboration. If Europe can offer a variety of legitimate SSO options that embrace market needs (and anticipate future needs) then it will attract global standardization participants and leaders. Taking this a step further to offer innovative standardization models not featured elsewhere will attract even more standardizers to the European

market.

However, offering a menagerie of standardization options can backfire if not done correctly. It is here where European standardization policy can add value. As suggested previously in this paper, the European government should, with the input of industry, establish simple criteria for qualifying as a legitimate standards setting body. Leaving aside the archaic distinctions between formal SDOs versus consortia, these criteria should establish simple qualifications for legitimacy. The key is to make legitimacy criteria simple enough to understand and implement. If the need for lawyers occurs, than this effort will fail. While the criteria should truly ensure legitimacy, it should do so at a high enough level to allow for innovative approaches to standardization. As an example, consider the auto industry. There are specific standards that all cars on the road must meet. Policy does not distinguish between whether the car is a BMW or a Ford. All cars within a country, or a region, must meet identified standards but the policy does not stipulate how a standard is to be met. Automakers can innovate, and thus gain competitive advantage and add value to the market, in the process of meeting required and industry standards.

The establishment of SSO criteria can have another benefit for Europe. In the U.S., the standardization industry is stymied by competition among SSOs. These organizations focus on competing efforts and businesses feel compelled to join many of them. Thus, standardization has become a multilateral tug of war with resources spread thin to cover all possibilities. While the establishment of legitimacy criteria would not completely eliminate competition among SSOs, nor should it as some degree of competition is healthy, it would diminish the number of competing organizations. Resources could then be invested in more varied standardization activities, rather than on the same type of activities across competing organizations.

Finally, Europe should offer a standardization system that embraces innovative models but also allows participants to easily understand and identify those models. A database that allows potential participates to search for specific qualities in an SSO (whether those qualities are specific policies or technological focus) would make Europe's system more user friendly. If SSOs applying to meet the legitimacy criteria also complete a brief questionnaire in which their answers could be automatically entered into a database, this would make setting up a search process relatively simple. Standardizers could then search by key words or even use a simple wizard to generate a list of SSOs that meet their needs.

Finally, consideration needs to be given to countries and regions who are either new entrants to the standardization industry or who are changing their standardization focus. As the BRIC (Brazil, Russia, India, and China) countries increase their participation and change their strategies from followers to leaders, for example, they will require new models and rules that accommodate their needs. The traditional SDO rules that favour G8 countries will no longer suffice and, if not addressed, could fracture the standardization industry further. It would not be unreasonable for China to develop and attempt to increase global adoption of its own national standards if it cannot find satisfaction in the current standardization system. Europe, through a simplified, open, and flexible standardization system could serve as a leader in bringing divergent worldwide country needs together in a way that actually enhances collaborative opportunities and results.

While we could expand indefinitely on other suggestions for European ICT standardization policy focus, the gist of our recommendations comes down to one principle: Europe can gain a competitive edge in standardization by making its standardization environment more user friendly and strategically advantageous for participants. We believe that opening up the standardization industry to innovation while providing some clear and simple controls for legitimacy will position Europe as a premier environment for global and local standardization.

1   There is precious little research on standardization. It is a topic easily misunderstood by many academics who approach it with simplistic economic models. The reality of standardization is that it is a multidisciplinary topic; one needs only to examine "The Standards Edge" series of publications by one of the authors to understand the breadth and depth of topics which bear on standardization. There are some attempts in Europe to study this topic, but they usually get caught up in the internecine wars that seem to shake standardization on a regular basis.

2   Another of those areas where rigorous academic intervention would be good. Are consortia quicker? And what does "quicker" mean? We don't know. We just tend to talk in generalities in the industry, because we really can't define many of the questions to which we need answers.

STUDY ON THE SPECIFIC POLICY NEEDS FOR ICT STANDARDISATION

Final Report

ANNEX C: Responses to Questionnaires

Brussels, 10 May 2007

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I. LIST OF STAKEHOLDERS

1.   STANDARDS AND SPECIFICATIONS-SETTING ORGANISATIONS

N°.	Entity	Description	Contact person
01	funStep (http://www.funstep.org)	Platform is actually a completed standardisation project, targeting interoperability amongst software solutions. It brings together software vendors, manufacturers, retailers and technology developers in order to developing common standards for interoperability. The interesting part of FunStep is the experience gained by initiating a R&D project and broadening the resulting consensus from an industry point of view, followed by regional standardisation up to Internet standardisation in ISO and setting up support mechanisms for the implementation of the standards.	Ricardo Conçalves (Uninova) / Maroia José Nunez (AIDEMA)
02	Open Applications Group (http://www.openapplications.org)	Non-for-profit open standards group building process-based XML standards (OAGIS standards). Standards developed, a.o., OAGIS XML, standards for e-payments based on XML. Location: USA.	Through the OASIS contact person
03	OASIS (http://www.oasis-open.org)	A non-for-profit global consortium that drives the development, convergence and adoption of standards for e-business and web-based services. It consists of approx. 5,000 participants representing 600 organisations in 100 countries. Committees, a.o: e-commerce, security, law and government, etc. OASIS also hosts the website of ebXML initiative (www.ebxml.org). Location in Europe: France (Paris) & Netherlands (Maarn).	- James Bryce Clark, Director of Standards Development: - Patrick Gannon, President and CEO - Carol Cosgrove-Sacks: Senior adviser, represents OASIS to European and international org., teaches in the European College of Bruges, comes often to Brussels.
04	OMG (http://www.omg.org)	Object Management Group: Open membership, not-for-profit consortium that produces and maintains computer industry specifications for interoperable enterprise applications. Amongst its members large companies in the computer industry: EDS, Sun Microsystems, Telefonica, the Open Group, Unisys, VISA international, W3C Consortium, IBM, Alcatel, etc. It has produced the CORBA specification based on the standard protocol IIOP. Location: USA	Ken Berk, Vice President of Business Development
05	IEEE Standards Association (www.standards.ieee.org)	The Institute of Electrical and Electronics Engineers Inc. is a leading authority on areas ranging from aerospace systems, computers and telecommunications to biomedical engineering, electric power and	

	Organisation	Description	Contact
		consumer electronics among others. IEEE standards represents a globally recognised standards-setting body which develops consensus standards. Almost 15,000 IEEE members worldwide. It has produced more than 870 standards and 400 more are under development. Members, a.o.: Siemens, Microsoft, Panasonic, Nortel, HP, etc. Location for standardisation activity: New Jersey, USA.	
06	IETF (http://www.ietf.org)	The Internet Engineering Task Force is a large open international community of network designers, operators, vendors, and researchers concerned with the evolution of the Internet architecture and the smooth operation of the Internet. Amongst its working groups: "Applications", "Security", "Internet", etc.	Brian Carpenter, current Chair - Contact the Directors of each "Area" and the Chairs of the Working Groups, a.o.: - Russ Housley, Director of the "Security" Area - Joseph Reagle, Chair of the XML Signature WG
07	The Open Mobile Alliance (http://www.openmobilealliance.org)	The mission of OMA is to facilitate global user adoption of mobile data services by encouraging interoperability across devices, geographies, service providers, operators, and networks, while allowing business to compete through innovation and differentiation. OMA has grown to more than 300 companies representing mobile operators, device and network suppliers, IT companies and content providers, such as: Alcatel, Vodafone, Nokia, Ericsson, Microsoft, Motorola, Orange SA, SK Telecom. Location: La Jolla, Canada.	- Seith Newberry, General Manager - Carl Cargill, Chief Standards Officer, Sun Microsystems - (through contact with ETSI)
08	The Wi-Fi Alliance (http://www.wi-fi.org)	A global, non-profit organisation with the goal of driving the adoption of a single worldwide-accepted standard for high-speed wireless local area networking. More than 250 members, a.o., Dell, Fujitsu, Gemteksystems, Kodak, Lexmark, Nikon, Olivetti, etc. The goal of the organisation is to develop universal specifications and follow-through with rigorous testing and Wi-fi certification of wireless devices. The organisation supports standardisation via certification.	Frank Hanzlik, Managing Director
09	MFA Forum (http://www.mfaforum.org)	It is an international, industry-wide, non-profit association of telecommunications, networking and other companies focussing on the deployment of multi-vendor, multi-service networks and inter-working solutions. Members of the Forum include: AT&T, Alcatel, Calix, Cisco Systems, Siena, MCI, etc. It delivers standards through a number of working groups (on applications, interoperability, etc.).	Carsten Rossenhoevel, Chair of the Interoperability WG.
10	GS1 (http://www.gs1.org)	GSI is a global organisation with presence in about 100 countries. Its main activity is the development of the GS1 System, a series of standards designed to improve supply chain management. Amongst its deliverables, there are the GS1 BarCodes and the GS1 eCom system (for	Etienne Boonet, General Director of GS1 BELUX

		electronic communications between businesses). Much of the development is initiated by its Member Organisations (MOs). Companies wishing to use the GS1 System should apply for membership to a Member Organisation or one of the Global offices if there is no Member Office. One of the GS1's global offices is located in Brussels.	
11	RosettaNet (http://www.rosettanet.org)	RosettaNet is a standards organisation focussing on standards development for collaborative commerce. RosettaNet standards-setting activities focus on business frameworks to allow individual companies to enhance the interoperability of business processes across the global supply chain. In this role, RosettaNet supports its members in the implementation of standards through the development of tailor-made solutions. Members can participate in standards development and implementation efforts. The activities are based on programs. While central offices of the organisation are in the USA, there are affiliates all over the world, including Europe.	Donald Tsusaki, Vice-President, RosettaNet Europe
12	The World Wide Web Consortium (http://www.w3c.org)	W3C develops interoperable technologies (specifications, guidelines, software, and tools) for web services. Amongst its activities figure the Wide Accessibility Initiative (WAI), the development of HTML communications tools, various XML working groups, initiative in privacy and P3P, etc. The deliverables of the working groups are technical reports, OSS, web-based standards and validation services. EMEA offices of W3C are located in Sophia-Antipolis, France.	- Daniel Dardailler, Associate Chair for Europe. - Rigo Wennig, Policy Adviser
13	The Telecommunications Industry Association (http://www.tiaonline.org).	TIA represents suppliers of ICT serving the global marketplace. Standards-setting is one of the core businesses that the association develops for its members. It has elaborated GLOBALCOMM, having become the trademark of the association. TIA represents the communications sector of the Electronic Industries Alliance (EIA). TIA is accredited by the American National Standards Institute (ANSI) to develop voluntary industry standards for a wide variety of telecommunications products. Members can directly influence the development of technical standards by participating in the association's 70 standards formulating groups. Its board of directors is composed of 35 members, being leader companies in the ICT area, a.o., Tyco Electronics, Sisco, Motorola, Lucent Technologies, Lexcom Telecommunications, etc. The association's international office is based in Beijang, China.	Matthew Flanigan, President

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#	Organisation	Description	Contact
14	Mobile Electronic Transactions Limited (http://www.mobiletransaction.org)	MeT is a non-profit organisation aiming at building user-friendly, secure and interoperable methods of purchasing goods and services using a mobile device. It gathers together Ericsson, NEC, Nokia and Panasonic and is open to any handset vendor. It has developed many specifications, esp. in the area of mobile ticketing.	Merja Enroos, Project Officer
15	The PKI Forum (http://www.pkiforum.org)	The OASIS PKI Member Section was established as PKI Forum in 1999 to foster support for standards-based, interoperable public-key infrastructure (PKI) as a foundation for secure transactions in e-business applications. The OASIS PKI Member Section brings member organizations together with a view to increase knowledge about PKI and to initiate studies and demonstration projects to show the value of interoperable PKI and PKI-based solutions. The group collaborates and cooperates with appropriate standards and testing bodies to promote the adoption of open industry standards. The membership list of the PKI Forum includes Cisco Systems, Cryphomathic, Cybertrust, EdiEyes, GeoTrust, Oxford University, Cybertrust, etc.	- Through the OASIS contact - Hans Nielsen, security and standards expert
16	iNTERFACEWARE (http://www.interfaceware.com)	The company is committed to simplifying the exchange of electronic healthcare data not only through the provision of technology, support and service, but also by providing documented processes and guidelines. It is a solutions provider for the HL7 standard, incl. support through tailor-made interfaces, testing tools, etc. It is based in Toronto, Canada.	Eliot Muir, CEO
17	IHE (http://www.ihe.net)	IHE is an initiative by healthcare professionals and industry to improve the way computer systems in healthcare share information. IHE promotes the coordinated use of established standards such as DICOM and HL7 to address specific clinical needs in support of optimal patient care. To this end, IHE engages the efforts of numerous stakeholders, including care providers, medical and IT professionals, professional associations and vendors.	
18	The Electronic Business XML Initiative (http://www.ebxml.org)		
19	Swift (http://www.swift.com)	Supplying messaging services to banking institutions	
20	EPC (http://www.epcglobalinc.org)	Development of standards for the electronic product code (EPC) used in support of RFIDs.	
21	The 3rd Generation Partnership	3GPP is a collaboration agreement that was established in December	Through ETSI

	Project (3GPP), (http://www.3gpp.org)	1998, bringing together a number of telecommunications standards bodies which are known as "Organisational Partners". The current Organisational Partners include: ARIB and TTC (Japan), CCSA (China), ETSI (Europe), ATIS (US), TTA (Korea). In the scope of 3GPP activities are included the development of globally applicable technical specifications and technical reports for maintenance and development of the GSM and radio access technologies. A permanent project support group called the "Mobile Competence Centre (MCC)" has been established to ensure the efficient daily running of 3GPP. Location: ETSI headquarters in Sophia Antipolis, France.	
22	The Digital Video Broadcasting Project (DVB), (http://www.dvb.org)	DVB is an industry-led consortium of over 270 broadcasters, manufacturers, network operators, software developers, regulatory bodies and others in over 35 countries committed to designing global standards for the global delivery of digital television and data services. The DVB Project is the hub of the DVB activities. Quite usually, the modules that are developed within the projects are upgraded to standards within CENELEC and ETSI. The project is collocated at the headquarters of the European Broadcasting Union, Geneva, Switzerland.	- Peter MacAvock, Executive Director (macavock@dvb.org). - Georg Luettecke, Philips DE
23	The Liberty Alliance (http://www.projectliberty.com)	A consortium representing organisations from around the world with the objective to address the technical, business and policy challenges around identity and identity-based Web services. Members work closely together to build open standard-based specifications for federated identity and identity-based Web services. The project provides also a platform for interoperability testing. The members of Liberty Alliance are today more than 150 companies, non-profit and government organisations from around the globe. A.o.: FranceTelecom, Intel, IBM, Ericsson, NTT, RSA Security, Sun Microsystems.	Roger K. Sullivan, Vice-President.
24	The COPRAS Project (http://www.w3.org/2004/copras/about.html)	COPRAS is a support action project in the EU 6th Framework Programme, aiming to improve the interfacing, cooperation and exchange between IST research projects and ICT standardization. The project is led by a consortium between CEN/CENELEC and ETSI, W3C and the Open Group.	Bart Brusse (CEN Secretariat) No major input on standardisation policy but important to underline the link R&D and standardisation
25	The Support-EAM Project http://www.support-eam.org	Being initiated as an IST project under the 6th framework programme, the objective of Support-EAM is to create an e-Accessibility Quality Mark for web services. Amongst its objectives figure the elaboration of a	Dominique Burger, President, Association BrailleNet.

	harmonised methodology used for assessing web accessibility and the an accessibility certification scheme.

2. FORMAL STANDARDS-SETTING ORGANISATIONS

N°.	Entity	Description	Contact person
01	CEN/CENELEC		- John Ketchell, Principal officer Pre-standards - James Boyd, Responsible officer for Standardisation in ICT
02	ETSI	ETSI is an independent, not-for profit formal European standardisation organisation whose mission is to develop ICT standards (in domains such as telecommunications, broadcasting, and related areas such as medical devices and intelligent transportation).	- Yves Chauvel, Director of European Co-ordination
03	ISO		
04	ITU		
05	IEC	The International Electrotechnical Commission (IEC) is the leading global organization that prepares and publishes international standards for all electrical, electronic and related technologies. These serve as a basis for national standardization and as references when drafting international tenders and contracts. Through its members (i.e., National Electrotechnical Committees), the IEC promotes international cooperation on all questions of electrotechnical standardization and related matters, such as the assessment of conformity to standards, in the fields of electricity, electronics and related technologies. Location: Geneva, Switzerland.	Michael Casson, Standards Development Manager
	JTC1/IEC		

		Joint Technical Committee of ISO and IEC on information technology.	
06	Association of Radio Industries and Businesses, Japan (http://www.arib.or.jp)	The prime missions of Arib is the promotion of the efficient use of radio spectrum and the management of radio frequencies. The organisation conducts studies and R&D, establishes standards, provides consultation services for radio spectrum co-ordination, co-operates with other overseas organisations and provides frequency change support services for digital terrestrial television broadcasting. These activities are conducted in co-operation with and/or participation by telecommunications operators, broadcasters, radio equipment manufacturers and related organisations, as well as under the support by the Japanese Ministry of Internal Affairs and Communications. Location: Tokyo, Japan	Tetsu Tanaka
07	The Telecommunication Technology Committee, Japan (http://www.ttc.or.jp)	Being a private standardisation body, the purpose of this committee is to contribute to standardization in the field of telecommunications by establishing protocols and standards for telecommunications networks and terminal equipment, etc. as well as to disseminate those standards.	Hisashi Sakaguchi
08	China Communications Standards Association (http://www.ccsa.org.cn)	Formally recognised body by the Chinese government, CCSA carries out research and survey activities in relation to the Chinese standardisation system on communications. Amongst its objectives, CCSA has to organise its members into participating in such activities as drafting standards, soliciting comments, co-ordination, verification, standards consistency testing, interconnection and inter-working tests.	Shizhuo Zhao
09	Telecommunications Technology Association, Korea (http://www.tta.or.kr)	TTA is a non-governmental standardisation body in the area of electronic communications, recognised by Korean law. It co-operates with companies, organisations, and groups concerned with information and telecommunications, such as network operators, service providers, equipment manufacturers, academia, R&D institutes and participates in international fora, such as ITU.	
10	ATIS (http://www.atis.org), USA	ATIS develops and promotes technical and operations standards for the communications and related ICT industry. Its members are over 1,100 industry professionals from more than 350 communications companies that participate in standards-setting through 22 industry committees. The body is accredited by ANSI.	Susan Miller, President

Steve Barclay, Technical Manager |
| 11 | The Global Standards Organisation | GSC is an initiative of ITU, ETSI, the US Committee T1 and the Japanese TTC, for the regular exchange of information and work | To be contacted through the ETSI contact person. |

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N°.	Entity	Description	Contact person
	(http://www.gsc.etsi.org)	programmes in a number of agreed high-interest technical areas. Its goal is to promote global standards in these areas of common interest.	
12	The National Institute of Standards and Technology (http://www.nist.gov)		Mary Saunders
13	The American National Standards Institute (http://www.ansi.org)	The American National Standards Institute (ANSI) is a private, non-profit organization that administers and coordinates the U.S. voluntary standardization and conformity assessment system. The Institute's mission is to enhance both the global competitiveness of U.S. business and the U.S. quality of life by promoting and facilitating voluntary consensus standards and conformity assessment systems, and safeguarding their integrity.	Andrew Undegrove, Member of the ANSI Board
14	Formal standardisation body, Canada		
15	Formal standardisation body, Australia		

3.   STANDARDS-SETTING/SUPPORTING ORGANISATIONS

N°.	Entity	Description	Contact person
01	The Internet Society (http://www.isoc.org)	A professional membership society with more than 100 organisations in over 180 countries. It acts as a facilitator and co-ordinator of internet-related activities around the world. It is the organisation home for the groups responsible for Internet infrastructure standards, incl. IETF and IAB (Internet Architecture Board). It is the sole formal financial support of IETF, apart from its members' contributions. Location: USA but also based in Switzerland.	Mr. Matthew Shears, Director of Public Policy, Geneva.
02	The Open Group (http://www.opengroup.org)	It is a vendor-neutral and technology-neutral consortium, whose vision is "boundaryless information flow". It enables access to integrated information, within and among enterprises, based on open standards and	- Prof Ms Borka Jerman Blazic, member of ICTSB

#	Organisation	Description	Contact
		global interoperability. One of its products, i.e. the certification programme S/MIME. It is constituted of fora in various activity branches. The role of each forum is to guide development and adoption of industry directives and standards. The Open Group represents as a cost-effective solution to form and run special interest groups and consortia. Success stories: Bluetooth, IBIX, UNIX.	
03	ECMA (http://www.ecma-international.org)	Industry association dedicated to standardisation of ICT and consumer electronics. Amongst its aims is to develop, in co-operation with the national, European and international organisations standards and technical reports in the above fields. Also, to influence the environment in which standards are applied. More than 370 ECMA standards and 90 technical reports have been published, of which 2/3 have been adopted at international level. On-going standardisation work in the telecommunications area. Location: Geneva, Switzerland	Jan van den Beld, Secretary General
04	ICTSB (http://www.ictsb.org)	Initiative from the three European ESOs and a number of standards providers (partners) with a view to co-ordinate standards-setting activities in the field of ICT. ICTSB is dealing with Design for All and Assistive Technologies (DATSCG), Intelligent Transport Systems (ITSSG), SmartHouse Standards (SHSSG), and Network & Information Security (NISSG). It has completed its co-ordination work on Electronic Signature (EESSI) and has contributed to the discussion on ICT standardization (ICTSFG). The ICTSB is also involved in the political initiatives such as eEurope by providing direct support.	Keith Dickerson, ICTSB Chairman
05	The Asian PKI Forum (http://www.asia-pkiforum.org)	The Asia PKI Forum is an international organisation bringing together the Japanese, Chinese, Korean, and China-Taipei PKI fora. Its purpose is to promote joint-work to secure interoperability among country's/area's PKIs as the infrastructures in the Asia/Oceania Region. Members are participating through working groups: The Legal Infrastructure WG, the Business Case WG, the Interoperability WG and the World Wide Collaboration WG.	Macico Morishita, Japan PKI Forum ?
06	The IPv6 Forum (http://www.ipv6forum.com)	The IPv6 Forum represents a world-wide consortium of leading Internet vendors, Research & Education Networks with the view to improving the market and user awareness of IPv6. Amongst its objectives, figure the promotion of new IPv6-based applications and global solutions, and the interoperable implementation of Ipv6 standards. The organisation is	- Latif Ladid, President - Prof Paul van Binst, (member of the Board of the

N°.	Entity	Description	Contact person
		registered in Luxemburg.	Belgian Broadband Platform)
07	The European Coordination Committee of the Radiological, Electromedical and Healthcare IT industry (http://www.cocir.org)	COCIR is a non-profit trade association representing the medical technology industry in Europe. It seeks to promote the development of harmonised international standards (link to activities – harmonisation) and regulatory control which respect the quality and effectiveness of the medical devices and healthcare IT systems without compromising the safety of patients and users and promote the free worldwide trade of these products. Its secretariat is based in Brussels, Belgium.	Nicole Denjoy, Secretary General
08	UN/CEFACT (http://www.unece.org/cefact)	UN/CEFACT, a United Nations body, has a global remit. It encourages close collaboration between governments and private business to secure the interoperability for the exchange of information between the public and private sector. It has developed: i) The UN Layout Key for Trade Documents, which is the foundation for the EU's Single Administrative Document (SAD), ii) UN/EDIFACT, the international standard for electronic data interchange, iii) numerous trade facilitation recommendations. It is now drawing up the next generation of trade facilitation and e-business standards and tools.	Contact to be established through CEN (John Ketchell)

4. STAKEHOLDER ORGANISATIONS

N°.	Entity	Description	Contact person
01	ANEC (http://www.anec.org)	ANEC defends consumer interests in standardisation and certification. Secretariat location: Brussels, Belgium.	Dr. Gottlobe Fabisch, Director of Secretariat
02	Global Commerce Initiative (http://www.gci-net.org)	GCI is the single unifying force that brings manufacturers and retailers together and improve consumer value in the overall retail supply chain. It is a global user group, not a standardisation body. It works with member companies, associations, ECR initiatives and existing standard bodies to facilitate and recommend optimum, commercially viable voluntary	Through the GS1 contact

		standards and key business processes for implementation by commercial users.	
03	The European Broadcasting Union (http://www.ebu.ch)	The European Broadcasting Union (EBU) is the largest professional association of national broadcasters in the world. Cooperation in the technical sphere is one of the EBU's major activities. The Union is in the forefront of research and development of new broadcast media, and has led or contributed to the development of many new radio and TV systems: radio data system (RDS), digital audio broadcasting (DAB), digital television (DVB), high- definition TV (HDTV). Location: Geneva, Switzerland.	- Jean Réveillon (Secretary General) - Jacques Briquemont (Brussels office) - Philip Laven, Member of ICTSB
04	The European Payments Council (http://www.europeanpaymentscouncil.org)	EPC is the decision-making and coordination body of the European banking industry in relation to payments. EPC consists of 64 Members coming from 27 European countries. It is composed of banks or banking associations representing all sizes and sectors of credit institutions across the market. Its secretariat is located in Brussels, Belgium.	Charles Bryant, Secretary General
05	The European Communications and Consumer Electronics Industry Technology Association (http://www.eicta.org).	EICTA is an association of over 30 national technology associations from 26 European countries and gathers together more than 10,000 enterprises in Europe. It represents the voice of the digital technology industry. The Technical and Regulatory Policy Group (TRPG) aims to identify and address the barriers to technical harmonisation and regulatory obstacles hindering the development of the European digital technology industry. It looks into standardisation in technology and interoperability issues. The secretariat of EICTA is located in Brussels, Belgium.	Tony Graziano, Director Technical and Regulatory Affairs.
06	The European Road Transport Telematics Implementation Co-ordination Organisation	ERTICO is a public/private partnership working to facilitate the intelligent, safe and clean mobility of people and goods in Europe. It defines the necessary European framework conditions for the deployment of intelligent transport systems and services (ITS). It participates in a number of projects, such as e-safety, GST and GST open systems, etc. The Secretariat is located in Brussels, Belgium.	Rachel Boyer, Head of Office
07	The European Office of Crafts, Trades and SMEs for	NORMAPME has as mission to defend the interests of all European SMEs in the standardisation process. Its members represent over 11 million enterprises in all European countries, including all EU and EFTA member states.	L. Koutsogiannis, Director Freek Posthumus

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	Standardisation (http://www.normapme.com)		
08	The Global mobile Suppliers Association (http://www.gsacom.com)	GSA is the forum for, and represents, the leading GSM/3G suppliers world-wide. It is an organization created to meet suppliers' needs and already represents over 80% of GSM/3G market share globally. Membership is open to all suppliers of GSM/3G systems, devices, services, applications and solutions from across the entire supply chain. It also facilitates networking and dialogue between member companies for information sharing, business development opportunities, and access to the global market. Location: UK.	Alan Hadden, President
09	The GSM Association Europe (http://www.gsmworld.com/gsmeurope)	GSM Europe is the public face of European mobile operators and the key representative forum for the European wireless industry. It provides a platform where operators can meet, share information, expertise and national experiences in selected areas. The associations' members may participate in working groups, in areas such as: regulation, m-commerce, health and environment, etc. The European office of the association is based in Brussels, Belgium.	Kaisu Karvala, President (Brussels) Niklas Henricson, Vice Chair GSME M-Commerce Working Group
10	The UMTS forum (http://www.umts-forum.org)	It is an open, international body for promoting the global uptake of UMTS third generation (3G) mobile systems and services. The scope of its activities includes providing marketing input to technical standardisation bodies and streamlining lobbying activities on behalf of the 3G mobile market. Its members are both stakeholders from regulatory authorities, as well as electronic communications operators and manufacturers. The Forum's secretariat is based in London, UK.	Jean-Pierre Bienainmé, Chair Bosco Fernandes, ICT Group Chair
11	The Internet Law and Policy Forum (http://www.ilpf.org)	ILPF provides a forum for identification and exchange of best practices in the internet area, from a legal, policy, technology and legal perspective. Members contribute to the work through working groups, experts' workshops and annual conferences. Amongst the Working Groups figure: electronic authentication, privacy, self-regulation. Companies participating in the ILPF are: Oracle, Fujitsu, NTT, Veritas, etc.	Andrew Konstantaras, Executive Director

12	The Mobile Financial Services Form http://www.mobeyforum.org)	The Mobey Forum is a global, financial industry-driven forum, whose mission is to encourage the use of mobile technology in financial services. The membership encompasses leading financial institutions and mobile terminal manufacturers, such as ABN-Amro, Bank of Ireland, BBVA, HSBC, la Caixa, Nokia, Nordea, etc.	Merja Enroos, Project Manager
13	The Online Privacy alliance, http://www.privacyalliance.com	The objective of this group is to lead and support self-regulatory initiatives with the aim at fostering privacy online. The Alliance brings together 30 global corporations and associations who support the development and used of best privacy practices and of user empowerment technical tools. Apple Computer, AT&T, Dell, Cendant, Boeing, DoubleClick, Ebay, EDS, Disney, Yahoo, advertising organisations, etc.	Christine Varney (Hogan and Hartson, USA)
14	European Association of the Internet Service Providers (http://www.euroispa.org)	EuroISPA is the pan-European association of the Internet services providers associations of the EU countries. Member ISPs associations are members of EuroISPA. The association's secretariat is based in Brussels, Belgium.	Richard Nash, Secretary General
15	The Information Systems Security Association (http://www.issa.org)	ISSA is an international organisation of information security professionals and practitioners. It provides educational forums, publications and peer interaction opportunities. In its international board participate Dell Computers, Forrester Research, Symantec, etc.	Louis Gamon, International Director of Europe/Africa (Reading, London)
16	The World Information Technology and Services Alliance (http://www.witsa.org)	WITSA is a consortium of over 60 information technology (IT) industry associations from economies around the world. Amongst the goals of the consortium is to encourage cross-industry and government co-operation to enhance information security and to safeguard the viability and continued growth of the internet and e-commerce. Members participate through Task Forces, i.e. the one on e-commerce.	John Higgins, Chair of the Task Force on e-commerce.
17	The Association of Computing Machinery (http://www.acm.org)	ACM delivers resources that advance computing as a science and a profession. ACM provides the computing field's premier Digital Library and serves its members and the computing profession with leading-edge publications, conferences, and career resources. Its members, both academics and professionals may participate in ACM's activities through the organisation's many Special Interest Groups (SIGs). These groups cover 34 distinct areas of information, such as programming languages,	To contact Chairs of SIGs related to standardisation, such as: Michael Wellman and Irene Frawley (Chairs of SIG on e-commerce).

#	Organization	Description	Contact
		graphics, mobile communications, e-commerce, etc. The head offices of ACM are located in New York, USA.	
18	The Computing Technology Industry Association (http://www.comptia.org)	COMPTIA	H Lueders
19	European Telecommunication Informatics Services (http://www.etis.org)	ETIS – based in Brussels	
20	EUROSMART (http://www.eurosmart.com)	European Smart Card Industry Association, basis in Brussels	
21	The Global Mobile Suppliers Association (http://www.gsacom.com)		
22	The International Telecoms User Group (http://www.intug.net)		
23	European Network and Information Security Agency (http://www.enisa.eu.int)		Andreas Mitrakas, Legal Officer
24	The Information Security Forum (http://www.securityforum.org)	Based in London	contact through ENISA
25	The European Software Association http://www.europeansoftware.org	Brussels	- Katrijn Otten, Secretariat - Eilert Hanoa (BSA Norway), CEO Mamut

26	The Business Software Alliance (http://www.bsa.org)		- Chris Ouwinga, former EU official
27	The European Chemical Industry Council (http://www.cefic.be)		
28	The European Committee of Domestic Equipment Manufacturers p://www.ceced.org)	CECED represents the household appliance industry in Europe. CECED members are European manufacturers of household appliances and national associations.	
29	The International Test and Evaluation Association (http://www.itea.org)	The International Test and Evaluation Association (ITEA), is a not-for-profit educational organization founded to further the exchange of technical information in the field of test and evaluation. Its members include professionals from industry, government, and academia, who are involved in the development and application of policy and techniques used to assess the effectiveness, reliability, and safety of new and existing systems and products.	
30	EURATEX (http://www.euratex.org)	EURATEX represents the interests of the European textile and clothing industry.	
31	European Competitive Telecommunications Association (http://www.ectaportal.com)	ECTA is an association which looks after the regulatory and commercial interests of new entrant telecoms operators, ISPs and suppliers of products and services to the communications industry. ECTA now has some 150 member companies - operators, service providers and suppliers as well as National Associations of such who all contribute towards regulatory policy development and participate in our comprehensive range of networking events, conferences, seminars, briefings and executive meetings.	

II. QUESTIONNAIRES

QUESTIONNAIRE FOR STANDARDS AND SPECIFICATIONS-SETTING ORGANISATIONS

Draft for discussion

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SECTION 1: CONSORTIUM'S PROFILE, ACTIVITIES, WORKING RULES AND PROCEDURES

1]   Please present briefly the consortium
* You are invited to cover in your answer the following points: profile of entity, major objectives, major activities and geographic scope, location (head office/representation in other countries), consortium working constituencies (e.g., activities are carried out in working groups, sub-committees, etc.), working methods (e.g., physical meetings, mailing lists, etc.), membership (open/close), major stakeholders' categories.

2]   Please describe the consortium's standards-setting activities in the Information and Communications Technologies (ICT) broad subject area.
* You are also invited to define, if this is the case, the constituencies (WG, committees, etc.) within which such activities are carried out (please provide web-links and contact persons where appropriate)

3]   Please describe how a standard-setting activity is initiated in your consortium.

4]   Please describe briefly the IPR policy implemented in your consortium
* If possible, you are invited to highlight the advantages and any "down-sides" that you have probably experienced with regard to this policy.

5]   Which are the elements of your consortium's structure that members seem to appreciate the most?
* Such elements may be, for example, the networking effects of participation in your consortium, immediate recognition of your standards by users' community, efficient decision-making tools, fair working procedures, etc.
** You may refer to written statements of your members, internal reports, minutes of meetings, to justify your answer, etc.

6]   In your view, how are the WTO fundamental rules that underpin standardisation (namely, neutrality, openness, transparency and fair decision-making) reflected in your consortium's structure?

SECTION 2: THE EU AND INTERNATIONAL STANDARDISATION POLICY ARENA

7]   Which is the approach of your organisation towards formal standardisation?
* As "formal standardisation" we mainly mean the classical procedure of standards-setting followed within the 3 formally-recognised standardisation bodies in Europe (CEN/CENELEC and ETSI, herein under "the ESOs") or the international ones (ISO, IEC, ITU).
** Example: It may be that your consortium's activities are carried out independently (and, frequently in duplication) of the work done in formal standardisation; or that you have achieved a constructive collaboration with the ESOs through specific working procedures; or that the consortium simply "keeps an eye" on ESOs activities without trying to influence them, etc. Please provide full explanations for all cases.

8]   What is your view about the efficiency, popularity, end-results and prospective use of the new standardisation procedures followed in ESOs, besides the formal standards-setting procedure?

* By "new standardisation procedures", we mainly mean the so-called "flexible" working approaches that have gradually been adopted by ESOs with a view to compensating some drawbacks of the formal standards-setting procedure in Europe. Examples: the concept and implementation of the "Workshop (WS)" mechanism within CEN/CENELEC or of the "Technical Specifications (TS)" within ETSI.

9] How do consortium members seem to react towards these new standards-setting procedures (WS, TS, etc.)? Can you report of any specific positive/negative experiences?
* Example: It may be that ESOs have not yet achieved to convince your market about the efficacy of these new structures so that your members still overlook these tools completely; or, that consortium members do not see any added-value in pursuing standardisation activities within these new structures. Also, it may be that you see specific problems/uncertainties if standards-setting work is carried out within these new structures. If this is the case, you are invited to comment briefly on these problems/uncertainties (i.e., lack of legal recognition of these new tools, not clear working procedures, tools are new and their benefits in the long run are still unknown, etc.).

10] Which, according to you, are the major bottlenecks of the current European standardisation system in the ICT area?

11] Are there any advantages of the current EU standardisation policy that you consider as positive also in a consortium-based standardisation approach?

12] If the standardisation activities of your consortium are primarily designed following a <u>non-European</u> standardisation policy and system (i.e., you are accredited by ANSI or you are a Chinese-driven consortium, etc.)

a) which, do you consider, as the major benefits of this policy/system?

b) to the best of your knowledge, are there any elements of the EU standardisation policy/system that you consider as positive and worth of following at global level?

c) in your view, which are the elements of the non-EU policy/system into which your consortium is integrated that you would consider as appropriate for implementation in the EU standardisation policy/system?

SECTION 3: ICT TECHNOLOGY AND STANDARDISATION

13] In your view, are there any important technology advancements that EU or international standardisation policy should catch up with as soon as possible?
* In this question, you may also mention technology requirements that your members see as challenging for standardisation activities in the near future.

14] In your view, which is the appropriate standardisation environment in which these new technological advancements should be tackled more efficiently?
* By "standardisation environment", we understand not only the appropriate constituency that should deal with these requirements (i.e. an ESO, a collaborative structure between ESO/consortia, only consortia, etc.), but also the working procedure to follow, the policy to base the work on ("leave the market alone" or another alternative), the appropriate IPR arrangements to underpin the implementation of the standardisation work, etc.

SECTION 4: MEASURING THE MARKET IMPACT

15]   Have the ICT standardisation activities of your consortium or the end-products of these activities – specific standards, specifications, other – gained a particular recognition?
* Examples: It may be that standards developed through the standards-setting activities that you describe have gained an international reputation on the market so that any initiated market player knows them well; or, that your specifications have been granted a formal status, for instance, as ISO or ITU standards, etc. On the contrary, it may be that the consortium's standards are widely known within a specific geographic remit (i.e. Europe) although they are not (yet) popular at a global level.

16]   In your view, which are the major factors contributing/having contributed to the success of your standardisation activities/standards?
* Example: Such factors may be the consortium's strategy in identifying the market needs, the strong marketing profile of your organisation, the consortium's history and origins, the efficiency of its working methods, its financing tools, its IPR policy, etc.. Please provide full explanation of these reasons.

17]   Do you perceive any weaknesses in the current standardisation policy and practices defined/followed by your consortium and if yes, which ones?
* Example: It may be that the visibility of your standards is not the one you wish it to be; or, that long-term maintenance of the specifications produced is not guaranteed; or, that major market players are still missing from the picture despite your marketing efforts; or, on the contrary, that the standardisation work is driven by a few dominant players leaving aside small/medium-size companies; or, that public interest is not sufficiently represented in your groups; or, that, the penetration of your deliverables into the market is blocked by interoperability problems, the users' mistrust, competing standards, etc., etc.. Please try to be as exhaustive as possible in stating these reasons.

SECTION 5: RECOMMENDATIONS

In your view:

18]   Which changes should be made to the current European Standardisation System to implement a "win-win" situation for both ESOs and consortia?
* Consortia integrated in another system than EU may answer to the best of their knowledge

19]   What means should be put forward to implement these changes?
* Examples: these means may be policy or legal measures, or a combination of both, etc. Please also mention which entity/authority, if this is necessary, may play a role to implementing the scenario.

20]   What measures should be taken to enhance the visibility and competitiveness of EU ICT standards on the global market and, if yes, how?

Questions to be still accommodated:

- **How is your consortium activities financed?**
- **Ask consortia to comment on the following fact: consortia are many times undertaking the leading technical role in the development of specifications. However, their standards are deprived from any formal legal value (being not able to produce ENs). Can this be normal? How can this situation be improved?**
- **Please describe your policy regarding the specifications developed by your members (standards freely available, etc.).**

QUESTIONNAIRE FOR FORMAL STANDARDISATION ORGANISATIONS & ENTITIES SUPPORTING STANDARDISATION

Draft for discussion

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SECTION 1: ORGANISATION'S PROFILE, ACTIVITIES, WORKING RULES AND PROCEDURES

1]   Please present briefly your organisation
* Please try to cover in your answer the following points: profile of entity (i.e. formally recognised standardisation organisation, National Standardisation Body, etc.), geographic scope of activities, location (head office/representation in other countries), organisations' working constituencies (e.g., Technical Committees, national representations, etc., sub-committees, etc.), working methods (e.g., physical meetings, mailing lists, etc.), membership (open/close), major stakeholders' categories.

2]   Please outline (with a brief comment if necessary) the organisation's <u>most important</u> standards-setting initiates/activities in the Information and Communications Technologies (ICT) broad subject area.
* You are also invited to define, if this is the case, the constituencies (WG, committees, etc.) within which such activities are carried out (please provide web-links and contact persons where appropriate). Please also mention herein any specific working or policy structures that have probably been adopted by your organisation in order to respond better to standards-setting requirements in the ICT area (e.g., description of the new speedy standardisation procedures for CEN or ETSI).

3]   Please describe the legal framework on which your entity's policy and working procedures in the ICT area are formally based.
* Such legal framework may be defined, for example, by internal regulations, EU or national policy documents, mandates of authorities, EU regulation, etc.
** If possible, please enclose herein copies of the most important internal regulations or indicate the website link (specifying URL) on which we can find these documents.

4]   Which are the elements of your entity's structure in the ICT domain that members seem to appreciate the most?
* Such elements may be, for example, the networking effects of participation in your organisation, the transparency, neutrality, etc. of the voting and decision-making procedures, the immediate formal recognition of the specifications produced, the involvement of different constituencies in the adoption of standards, the permanent organisational structure of your entity offering guarantees of long-lasting maintenance of standards, etc.).
** You may refer to specific documents developed by your members, working groups or your staff highlighting these advantages.

5]   a) If new standards-setting procedures are implemented by your organisation with a view to better accommodating the needs of the ICT community, which, in your view, are the most significant advantages and drawbacks of these new structures?
* By "new standardisation procedures", we mainly mean the so-called "flexible" working approaches that have gradually been adopted by ESOs with a view to compensating some drawbacks of the formal standards-setting procedure in Europe. Examples: the concept and implementation of the "Workshop (WS)" mechanism within CEN/CENELEC or of the "Technical Specifications (TS)" within ETSI.

5]   b) Can you report on any specific positive/negative experiences that your members or market stakeholders have communicated to you relating to these new structures?
* You may depart from standardisation initiatives that the market or your organisation itself seems to consider as "success stories". It is also useful to comment on initiatives that, although appearing to be promising in the very beginning, did not finally meet the market expectations.
** Can you identify the reasons behind these "success" or "failed" stories?

6]   In your view, what are the best measures to improve the efficiency, popularity, end-results and prospective use of these new standardisation procedures followed in ESOs, besides

7]   Please describe briefly the IPR policy implemented by your organisation for specifications in the ICT area.
* If possible, you are invited to highlight the advantages and any "down-sides" that you have probably experienced with regard to this policy.

SECTION 2:   FORMAL STANDARDISATION vs. CONSORTIA

8]   Which is the approach of your organisation towards other "informal" standards-setting initiatives, like consortia?
* Example: It may be that you have developed policies to "embrace" these kind of initiatives in a collaborative structure, or that your work is carried out independently (and, frequently in duplication) of the work done in consortia; or that you have achieved a constructive collaboration with other standardisation platforms through specific working procedures; or that your organisation simply "keeps an eye" on consortia' activities without trying to develop any synergy, etc.
** Please mention, if possible, real cases in which interaction with consortia seemed to be constructive vs. cases of "aggressive" approaches.

9]   Do you see advantages and "down-sides" in the way standardisation is carried out within consortia?
* Please also specify herein whether, in your view, specific advantages of the "consortium" approach may be adapted successfully to the structure and way of working of ESOs.

10]   In your view:

a)   What should be the right strategy of the current EU standardisation system vis-à-vis consortia?
* Such strategy may rest on defining a constructive synergy between ESOs/consortia at least in some areas; or it may draw a dividing line between the "areas of competence" for ESOs and consortia respectively (for instance: standards are exclusively produced within consortia and ESOs intervene only to have them upgraded to EU standards, etc.).

b)   What means should be put forward to define this strategy?
* Examples: these means may be policy or legal measures, or a combination of both, etc. Please also mention which entity/authority, if this is necessary, may play a role to defining the new strategy ESOs/consortia, etc.

11]   In your view, how do consortia perceive the new standards-setting procedures described above (WS, TS, etc.)? Can you report on any specific positive/negative reactions?
* Example: It may be that ESOs have not yet achieved to convince market stakeholders about the efficacy of these new structures so that consortia still overlook these tools completely; or, that consortia do not see any added-value in pursuing standardisation activities within these new structures. Also, it may be that consortia see specific problems/uncertainties if standards-setting work is carried out within these new structures. If this is the case, you are invited to comment briefly how you perceive the consortia problems/uncertainties with regard to these new mechanisms (i.e., lack of legal recognition of these new tools, not clear working procedures, tools are new and their benefits in the long run are still unknown, etc.).

SECTION 3:   ICT TECHNOLOGY AND STANDARDISATION

12]   In your view, are there any important technology advancements that EU or international standardisation policy should catch up with as soon as possible?
* In this question, you may also mention technology requirements that your members see as challenging for standardisation activities in the near future.

13]   In your view, which is the appropriate standardisation environment in which these new technical advancements should be tackled more efficiently?
***By** "standardisation environment", we understand not only the appropriate constituency that should deal with these requirements (i.e. an ESO, a collaborative structure between ESO/consortia, only consortia, etc.), but also the working procedure to follow, the policy to base the work on ("leave the market alone" or following the philosophy of the "New Approach"), the appropriate legal and IPR arrangements underpinning the implementation of the standardisation work, etc.
** Non-European standardisation bodies may answer the question to the best of their knowledge and based on their own national/regional experience.

SECTION 4: ASSESSMENT OF THE CURRENT STANDARDISATION SYSTEM AND ALTERNATIVES

14]   - For EU-based (ESOs and NSBs) and international standardisation organisations:

a) Which, according to you, are the major bottlenecks of the current European standardisation system in the ICT area?
* Non-European standardisation organisation may answer to the best of their knowledge.

b) Can you report of any real cases proving that European standardisation worked efficiently?
* Please state the reasons which, according to you, contributed to this success

- For non-EU based standardisation organisations

a) Which, do you consider, as the major benefits of the standardisation policy/system of your region/country?
* Please put the focus on aspects of your policy/system that may lack from the current EU standardisation landscape.

b) To the best of your knowledge, are there any elements of the EU standardisation policy/system that you consider as positive and worth of following at global level?

c) To the best of your knowledge, can you state two-three concrete standardisation examples in Europe that you consider as "success" stories?

d) In your view, which are the elements of the non-EU policy/system into which you are integrated that you would consider as appropriate for implementation in the EU standardisation policy/system?

SECTION 5:   NATIONAL STANDARDISATION ORGANISATIONS

15]   - For ESOs and National Standardisation Bodies (NSBs)

Can you describe the involvement of NSBs in the current EU ICT standardisation system?

* if alternative mechanisms are used for standards-setting in ESOs (e.g. WSs or TCs), please specify how NSBs contribute to these new structures.

16]   - For National Standardisation Bodies (NSBs)
Would you like your role to be changed within a new EU standardisation policy in the ICT area and, if yes, do you have any concrete suggestions to make?

SECTION 6: FINANCING

17]   a)   In your view, what are the major advantages and drawbacks of the current financing system applied in EU ICT standardisation?

         b)   To what direction should improvements be made?

SECTION 7: RESEARCH

18]   In your view, what should be the synergies between standardisation policy and R&D policy?
* Non-EU and international organisations may answer this question based on their experiences from their local/regional or global market respectively.

SECTION 8: GLOBAL IMPACT OF EU ICT STANDARDISATION

19]   How the visibility and competitiveness of EU ICT standards may be enhanced on the global market?
* Non-EU and international organisations may answer based on their local/international experiences.

Suggestions to be still accommodated:

- Highlight a section with "the market impact" of standards produced within ESOs as we did with the Questionnaire on Consortia
- Ask consortia <u>to comment</u> on the following fact: consortia are many times undertaking the leading technical role in the development of specifications. However, their standards are deprived from any formal legal value (being not able to produce ENs). Can this be normal? How can this situation be improved?
- Better separate Questionnaire that will be sent to the NSBs

QUESTIONNAIRE FOR PUBLIC AUTHORITIES

Draft for discussion

SECTION 1: ORGANISATION'S PROFILE, COMPETENCE, SYNERGIES

1]   Please describe your authority's role and competence in standardisation matters in the ICT area

* Please try to cover in your answer the following points: profile of authority (i.e., ministry, administration, service dedicated to standardisation matters, other authority, etc.), geographic scope of competence (national, European and/or international), entity's constituencies in charge of standardisation issues (e.g., a technical body or committee, a policy unit, etc.), activities within the area of your competence (e.g., building awareness regarding standards or participation in national committees to adopt national standards, country's representation in international fora, like CEN or ISO, etc.), your organisation's location.

** You are invited to place the emphasis on differences, if any, of your involvement in the ICT area compared to other traditional standardisation areas.

2]   Please describe briefly and comment the relation of your authority with the three formal European Standardisation Bodies ("ESOs": CEN/CENELEC and ETSI).

* You are invited to describe and comment any synergies or special mechanisms that have probably been developed between these organisations and your authority with regard to standards setting in ICT.

** Please provide your view about the adequacy of these synergies or the necessity to improve them.

3]   Please describe briefly your involvement, if any, in standards-setting procedures on the international arena (mainly, through your role in ISO, IEC or ITU) or with authorities in charge of ICT standardisation outside Europe.

* If this involvement is different than your interaction with ESOs, please mention the aspects, if any, that you consider as "attractive" of the international arena. Such aspects may, for instance, be: internal working procedures of the international organisations, awareness-building mechanisms towards public authorities, decision-making mechanisms, implementation of standards, etc.

4]   Which is the approach of your authority towards other "informal" standards-setting initiatives taking place outside the ESOs, like consortia?

5]   Do you see any advantages or "down-sides" in the way standardisation is carried out within consortia?

* Please also specify herein whether, in your view, specific advantages of the "consortium" approach may be adapted successfully in the structure and way of working of ESOs.

SECTION 2:   ICT TECHNOLOGY AND MARKET NEEDS

6]   In your view, are there any important technology advancements that EU or international standardisation policy should catch up with as soon as possible?

* In this question, you may also mention technology requirements that user communities in your country see as challenging for standardisation activities in the near future.

7]   As an authority in charge of ICT standardisation policy in your country, what are in your view the needs of the business, industry, or other communities (consumers, disabled people, etc.) from European standardisation?

* If possible, you are invited to state any positive or negative real cases you may be aware of; as experienced by industry, a specific sector of business, SMEs, etc..

** You may also refer to, and if possible enclose herein, any reports, position papers, other literature your authority or another body has elaborated on this issue in your country or in a forum you have participated.

SECTION 3: RELATION OF PUBLIC SECTOR TO EUROPEAN STANDARDS

8) In your view, what is now the impact of standards produced in the European standardisation system in the ICT area on national authorities/governments?

9) Do you consider that the relation of the public sector to ICT "European standards" should be changed and, if yes, towards which direction?
* It may be the case that public administrations may also participate in standards-setting on equal terms with any other community of "users", etc.
** We use herein the term ICT "European standards" in the wide sense, meaning not only EU Norms but any kind of deliverables that are produced by standardisation communities (consortia, ESOs) in the ICT area.

SECTION 4: ASSESSMENT OF EUROPEAN STANDARDISATION

10]   Which is, in your view, the major advantages and drawbacks of the current standardisation landscape in Europe with regard to ICT products and services?
* Advantages may, for instance, be the transparency, neutrality, etc. of the voting and decision-making procedures adopted by the ESOs, the immediate formal recognition of the specifications produced, the involvement of different constituencies in the adoption of standards, the permanent organisational structure of ESOs offering guarantees of long-lasting maintenance of standards, etc.). Some drawbacks may be: the proliferation of competing standards given the work produced in consortia, the uncertainty about the legal value of standards in areas not covered by the New Approach, the lack of education and awareness actions about standardisation activities carried out by ESOs, etc.
** You may refer to, and enclose in your answer, specific policy documents, reports, etc. that your administration or other public entity has prepared on this issue.

11]   You are maybe aware that new standards-setting procedures are implemented by ESOs with a view to better accommodating the needs of the ICT community: To the best of your knowledge, which, in your view, are the most significant advantages and drawbacks of these new structures?
* By "new standardisation procedures", we mainly mean the so-called "flexible" working approaches that have gradually been adopted by ESOs, such as the "Workshop" mechanism in CEN and the "Technical Specification" (TS) in ETSI. The objective of such new structures is to produce standards asked by the market, following speedier and less bureaucratic working procedures than these followed in traditional sectors of business, based on consensus.

12]   Are there specific aspects of the current European standardisation policy in ICT that you would like to criticise?
* We understand the term "standardisation policy" as widely as possible, covering: the legal framework, the organisational structure (i.e. ENs produced only in ESOs, the co-existence of ESOs/consortia), the financing of standards-setting activities, IPR issues, the relation of standardisation to other European policies or national policies, the implementation of standards, etc.
** Please be as exhaustive as possible in your answer.

13]   To the best of your knowledge, can you state two-three real business cases in which European standardisation proved to be successful?
* According to you, what are the reasons behind this success?

SECTION 5: STANDARDISATION AND RESEARCH

14]   To the best of your knowledge, what should be the synergies between standardisation policy and R&D policy?
* Please take also into account your experiences at local/regional level.

SECTION 6: THE WAY FORWARD

In your view:

15]   Taking into account "the consortium reality" towards "the ESOs reality", what should be the right scenario for the European standardisation system in the light of the market needs and new technological challenges you described above (Section 2)?
* Such strategy may rest on defining a constructive synergy between ESOs/consortia at least in some areas; or it may define the "areas of competence" for ESOs and consortia respectively (for instance: standards are exclusively produced within consortia and ESOs intervene only to have them upgraded to European standards, etc.).

16]   What means should be put forward to implement this scenario?
* Examples: these means may be policy or legal measures, or a combination of both, etc. Please also mention which entity/authority (at EU and/or national level or ESOs, etc.) may play a role to implementing the new strategy ESOs/consortia, etc.

17]   What should be the role and position of public authorities in this scenario?

18]   In your view, how the visibility and competitiveness of EU ICT standards may be enhanced on the global market?

Remarks to be still accommodated:

- Define clearly which the recipients of this type of Questionnaire are: which are the entities we target?

QUESTIONNAIRE FOR PROJECTS, INCLUDING STAKEHOLDERS OF THE R&D COMMUNITY

Draft for discussion

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SECTION 1: PRESENTATION OF ACTIVITIES, OBJECTIVES

1]   - For projects:

Please present your project and its relation to standards in the ICT area.

-      **For entities active in R&D:**

Please describe succinctly the scope and objectives of your activities and their relation to standards if any.

2]   a)   Please describe briefly and comment your interaction, if any, with formal standardisation entities in Europe (the so-called "ESOs": CEN/CENELEC and ETSI).
* You are invited to describe and comment any synergies or special mechanisms that have probably been developed between these organisations and your project or R&D activities.
** Please comment also on synergies that may be developed at a later stage (i.e. finalisation of the project) and the initiatives you are probably planning to take in this direction.

**   b)   Are you basically happy with these synergies or do you think that improvements are still necessary?**

3]   Please describe briefly your involvement, if any, in standards-setting procedures on the international arena (mainly, through your role in ISO, IEC or ITU) or with authorities in charge of ICT standardisation outside Europe.
* If this involvement is different than your interaction with ESOs, please mention the aspects, if any, that you can consider as "attractive" in international standardisation. Such aspects may, for instance, be: the internal working procedures of the international organisations or of a non-EU standardisation body, efficient awareness-building mechanisms, flexible decision-making procedures, systematic follow-up in the implementation phase, etc.

4]   Which is your approach towards other "informal" standards-setting initiatives taking place outside the ESOs, like in consortia?
* Examples: You actively take part in a number of consortia because you see great advantages compared to formal standardisation; or, you are trying to merely follow and be aware of the end-results of these activities.

5]   To the best of your knowledge, do you see any advantages or "down-sides" in the way standardisation is carried out within consortia?
* Please also specify herein whether, in your view, specific advantages of the "consortium" approach may be adapted successfully to the structure and way of working of ESOs.

SECTION 2: ICT TECHNOLOGY AND R&D NEEDS

6]   In your view, are there any important technology advancements that EU or international standardisation policy should catch up with as soon as possible?
* In this question, you may also mention technology requirements that your community sees as challenging for standardisation activities in the near future.

7]   As a researcher in your specialist area, what are in your view the needs of the business, industry, or the community you represent from European standardisation?
* If possible, you are invited to state any positive or negative real cases you may be aware of; as experienced by industry, your community or your personal activities, etc..
** You may also refer to, and if possible enclose herein, any reports, position papers, other literature the R&D community or another body has elaborated on this issue in your country or in a forum you have participated.

8]   In which aspects of your project / scientific activity, do you think that standardisation can play an important role?
* Examples: Such aspects may be the implementation phase or, on the contrary, the start-up phase of the project, its technical improvements, awareness-building around the project, etc.

9]   In which aspects of a research or scientific activity in general, do you think that standardisation can play an important role?

10) In your view, what is now the impact of standards produced in the European standardisation system in the ICT area on the R&D community?

SECTION 3: ASSESSMENT OF EUROPEAN STANDARDISATION

* Please answer the following questions taking into account the special interests and needs of the R&D community:

11]   In your view, which are the major advantages and drawbacks of the current standardisation landscape in Europe with regard to ICT products and services?
* Advantages may, for instance, be the transparency, neutrality, etc. of the voting and decision-making procedures adopted by the ESOs, the immediate formal recognition of the specifications produced, the involvement of different constituencies in the adoption of standards, the permanent organisational structure of ESOs offering guarantees of long-lasting maintenance of standards, etc.). Some drawbacks may be: the bureaucracy and considerable time behind the adoption of European standards, the placing on the market of similar and, usually, conflicting standards, the uncertainty about the legal value of standards in areas not covered by the New Approach, the lack of education and awareness actions about standardisation activities carried out by ESOs, the implementation of standards after their adoption, etc.
** You may refer to, and enclose in your answer, specific policy documents, reports, etc. that your community has probably produced on this issue.

12]   You are maybe aware that new standards-setting procedures are implemented by ESOs with a view to better accommodating the needs of the ICT community: To the best of your knowledge, which, in your view, are the most significant advantages and drawbacks of these new structures?
* By "new standardisation procedures", we mainly mean the so-called "flexible" working approaches that have gradually been adopted by ESOs, such as the "Workshop" mechanism in CEN and the production of "Technical Specifications" (TS) in ETSI. The objective of such new structures is to produce standards asked by the market, following speedier and less bureaucratic working procedures than the ones followed in traditional sectors of business, based on consensus.

13]   Are there specific aspects of the current European standardisation policy in ICT that you would like to criticise?
* We understand the term "standardisation policy" as widely as possible, covering: the legal framework, the organisational structure (i.e. ENs produced only in ESOs, the co-existence of ESOs/consortia), the financing of standards-setting activities, IPR issues, the relation of standardisation to other European policies or national policies, the implementation of standards, etc.

** Please be as exhaustive as possible in your answer.

14]   To the best of your knowledge, can you state two-three real cases whereby the synergy between R&D and standardisation proved to be beneficial?
* According to you, what are the reasons behind these "success stories"?

SECTION 4:   RECOMMENDATIONS

In your view:

15]   How the European standardisation policy should be modified in order to accommodate the requirements of the R&D community to the best possible extent?

16]   What should be the right scenario for the European standardisation system in order to ensure a "win-win" situation for both R&D and standardisation?

17]   What means should be put forward to implement this scenario?
* Examples: these means may be policy or legal measures, or a combination of both, etc. Please also mention which entity/authority, if this is necessary, may play a role to implementing the scenario.

18]   What should be the role and position of the R&D community in this scenario?

19]   In your view, how should proprietary rights of the R&D stakeholders be dealt with in the European standardisation policy?

20]   In your view, can the R&D community help to enhance the visibility and competitiveness of EU ICT standards on the global market and, if yes, how?

Question to accommodate:

- In many successful US-led consortia, there are European companies which take the lead or are very active: How is this explained? How can we shift the situation in favour of the EU standardisation? (so that EU stakeholder communities or consortia support EU standardisation projects and not US standardisation initiatives)

QUESTIONNAIRE FOR STAKEHOLDER COMMUNITIES

Draft for discussion

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1]   Please describe your organisation's/company's profile, area of business and activities, and its relation to standards in the ICT area.

2]   Please describe briefly and comment your organisation's/company's involvement, if any, in standardisation activities led by ESOs (CEN/CENELEC and ETSI).

3]   Please describe briefly your organisation's/company's involvement, if any, in standards-setting procedures on the international arena (mainly, through your role in ISO, IEC or ITU) or with authorities in charge of ICT standardisation outside Europe.
* If this involvement is different than your interaction with ESOs, please mention the aspects, if any, that you can consider as "attractive" in international standardisation. Such aspects may, for instance, be: the internal working procedures of the international organisations or of a non-EU standardisation body, efficient awareness-building mechanisms, flexible decision-making procedures, systematic follow-up in the standards' implementation phase, etc.

4]   Which is your approach towards other "informal" standards-setting initiatives taking place outside the ESOs, like in consortia?
* Examples: Your company actively takes part in a number of consortia because it sees great advantages compared to formal standardisation; or, it tries merely to follow and get aware of the end-results of these activities.

5]   To the best of your knowledge, do you see any advantages or "down-sides" in the way standardisation is carried out within consortia?
* Please also specify herein whether, in your view, specific advantages of the "consortium" approach may be adapted successfully to the structure and way of working of ESOs.

6]   Are you basically happy with the synergies you have developed within the EU or international standardisation bodies/consortia or do you think that improvements are still necessary?

SECTION 2:   ICT TECHNOLOGY AND MARKET NEEDS

7]   In your view, are there any important technology advancements that EU or international standardisation policy should catch up with as soon as possible?
* In this question, you may also mention technology requirements that your community of the category of market players you represent sees as challenging for standardisation activities in the near future.

8]   As a standardisation specialist, what are in your view the needs of the business, industry, or the market community you represent from European standardisation?
* If possible, you are invited to state any positive or negative real cases you may be aware of; as experienced by industry, your community or your personal activities in standardisation, etc..
** You may also refer to, and if possible enclose herein, any reports, position papers, other literature your company, business community or another forum in which you participate has prepared on this issue.

9]   In which aspects of your business activities, do you think that standardisation can play

an important role?

10]   In your view, why is standardisation important for the particular sector of business you represent?

11] In your view, what is now the impact of ICT standards produced in the European standardisation system on your community (industry, public interest, another user community, etc.)?

SECTION 3: ASSESSMENT OF EUROPEAN STANDARDISATION

* Please answer the following questions taking into account the special interests and needs of the community you represent (specific industry sector, public interest body, other user communities):

12]   In your view, which are the major advantages and drawbacks of the current standardisation landscape in Europe with regard to ICT products and services?
* Advantages may, for instance, be the transparency, neutrality, etc. of the voting and decision-making procedures adopted by the ESOs, the immediate formal recognition of the specifications produced, the involvement of different constituencies in the adoption of standards, the permanent organisational structure of ESOs offering guarantees of long-lasting maintenance of standards, etc.). Some drawbacks may be: the bureaucracy and considerable time behind the adoption of European standards, the placing on the market of similar and, usually, conflicting standards, the uncertainty about the legal value of standards in areas not covered by the New Approach, the lack of education and awareness actions about standardisation activities carried out by ESOs, the implementation of standards after their adoption, etc.
** You may refer to, and enclose in your answer, specific policy documents, reports, etc. that your community has probably produced on this issue.

13]   You are maybe aware that new standards-setting procedures are implemented by ESOs with a view to better accommodating the needs of the ICT community: To the best of your knowledge, which, in your view, are the most significant advantages and drawbacks of these new structures?
* By "new standardisation procedures", we mainly mean the so-called "flexible" working approaches that have gradually been adopted by ESOs, such as the "Workshop" mechanism in CEN and the production of "Technical Specifications" (TS) in ETSI. The objective of such new structures is to produce standards asked by the market, following speedier and less bureaucratic working procedures than the ones followed in traditional sectors of business, based on consensus.

14]   Are there specific aspects of the current European standardisation policy in ICT that you would like to criticise?
* We understand the term "standardisation policy" as widely as possible, covering: the legal framework, the organisational structure (i.e. ENs produced only in ESOs, the co-existence of ESOs/consortia), the financing of standards-setting activities, IPR issues, the relation of standardisation to other European policies or national policies, the implementation of standards, etc.
** Please be as exhaustive as possible in your answer.

15]   To the best of your knowledge, can you state two-three real cases whereby you find that the synergy between your community or your own company/organisation and standardisation proved to be beneficial?
* According to you, what are the reasons behind these "success stories"?

SECTION 4:   RECOMMENDATIONS

In your view:

16]   How the European standardisation policy should be modified in order to accommodate the requirements of your community to the best possible extent?

17]   - For private sector companies

What should be the right scenario for the European standardisation system in order to ensure a "win-win" situation for both business stakeholders and the standardisation community?

**   - For organisations representing the public interest**

What should be the right scenario for the European standardisation system in order to ensure a "win-win" situation for both the public interest stakeholders and the standardisation community?

18]   What means should be put forward to implement this scenario?
* Examples: these means may be policy or legal measures, or a combination of both, etc. Please also mention which entity/authority, if this is necessary, may play a role to implementing the scenario.

19]   What should be the role and position of the community you represent in this scenario?

20]   In your view, how should the proprietary rights of the communities involved in standards setting be dealt with in the European standardisation policy?

21]   In your view, what actions should be taken to enhance the visibility and competitiveness of EU ICT standards on the global market?

Question to accommodate:

- In many successful US-led consortia, there are European companies which take the lead or are very active: How is this explained? How can we shift the situation in favour of the EU standardisation? (so that EU stakeholder communities or consortia support EU standardisation projects and not US standardisation initiatives)

III. RESPONSES TO QUESTIONNAIRES

More than 100 questionnaires have been distributed for receiving relevant feedback. The Project Team sent the questionnaires to the organisation listed in Chapter I of this annex. The European Commission also sent out the questionnaire to interested parties.

The project team received more than 60 responses. The responses can be found on the enclosed CDrom.

STUDY ON THE SPECIFIC POLICY NEEDS FOR ICT STANDARDISATION

Final Report

ANNEX D: Working Group Reports

Brussels, 10 May 2007

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1.   Consortia

Study on ICT Standardisation in Europe – Second Steering Committee Workshop, February 1, 2007

Co-operation with consortia and fora, especially the identification of criteria for standardisation deliverables to be used in support of EU legislation and policies. The issue should be discussed in relation to industrial policy.

Discussion Summary

Analysis:

The role of consortia and fora in ICT differs significantly between the telecommunications area and IT. It is particularly in the IT domain where standards are developed by fora and consortia for global implementation and, thus, outside the formal European standardisation framework. Therefore, these standardisation deliverables cannot be referenced with EU policies. The source of this problem is Directive 98/34 which lays down that only deliverables from the officially recognised SDOs (i.e. international, European or national) may be referenced in the European standardisation system.

It needs to be differentiated between the various fora and consortia. In the context of allowing standards to be referenced in the European standardisation framework only those fora and consortia should be taken into account that operate in an open way similar to the formal SDOs and thus fulfill certain key criteria like coherence, transparency, openness, consensus, independence of special interests and the possibility of all interested and affected stake-holders to participate in the standards development process. If standards are used for legislation/regulation a public enquiry phase is a further requirement to be met.

The steering committee has outlined and discussed the different issues regarding participation of all stakeholders in a standards project located at fora or consorta as well as possible legal implications that need to be solved when working with standardisation deliverables that have been developed by an organisation which is registered in a non-EU country.

A further important aspect around the co-operation with fora and consortia is coordination. Already today a lot of coordination activities are done between the ESOs and fora and consortia, some on the level of the ICTSB, but most of them bi-laterally, though, and triggered by the need to incorporate, in part or whole, the work done by a forum/consortium in ESO standards in order to make them available for the European standardisation framework.

Recommendations:

Fulfilling certain criteria is a key requirement for the recognition of deliverables from fora and consortia. Instead of laying down the organisation that is recognised in the European standardisation framework, the eligibility of standardisation deliverables should be based on whether they have been developed in accordance with a set of criteria, e.g. the WTO criteria. These critieria need to guarantee that essential requirements of the public sector are met, including the ability for all stakeholders to participate in the standards development process. They need to apply for standards developed by formal SDOs in the same way as for standards developed in fora and consortia.

Depending on the paths in an SDO leading to a standards deliverable the fulfilment of the critieria needs to be measured (i) either against the SDO as such (provided that all

Study on ICT Standardisation in Europe
Discussion Paper
Co-operation of consortia and fora

Document version   003
Date   11/04/2007

processes meet the critieria); (ii) or against the respective standardisation deliverable (provided that some paths in an SDO don't meet all requirements).

Making deliverables from fora and consortia available for EU policies further requires to differentiate between the intented use and thus between the respective policies. This means it needs to be differentiated whether to use standards

> a) for legislation and regulation or

> b) for other policy areas.

The steering committee showed a clear tendency towards a staged approach for enabling standardisation deliverables from fora/consortia to be referenced in the European standardisation framework:

> (i) **for regulation and legislation** adoption of standardisation deliverables by a formal SDO should be required. A lean adoption process needs to be available and preference ought to be given for standards that have global implementation possibilities wherever possible;

> (ii) **for all other policy areas** like standardisation initiatives and public procurement direct referencing of standardisation deliverables from fora and consortia that meet the required criteria should be possible.

There was, futhermore, a general agreement that coordination between all SDOs (including fora, consortia, ESOs, etc.) needs to improved regarding the involvement of these organisations in EU policies. The steering committee clearly favoured a lean process for organising such a coordination task. Therefore, a consultancy committee, e.g. constituted on the base of this steering committee and acting as a general advisory group to the EU Commission, was preferred over the foundation of a new association for the purpose of coordinating between SDOs.

2. **Mandates**

ICT Standardization Policy Study:

The role, monitoring and execution of standardization mandates

Summary of discussions and recommendations

On February 1st, 2007 the Steering Committee Working Group discussed the role, monitoring and execution of standardization mandates. The discussion performed an analysis of current situation and identified opportunities for improvement of the overall process.

1. Analysis of current situation:

Mandates can be used for different aspects of the standardization work: feasibility study, programming and standards setting. Standardization mandates are a useful tool to express political interest in the requested standardization work as they are reviewed and approved by Member States.
When related to ICT, standardization mandates are always addressed to the 3 ESOs, and it is their responsibility to inform the Commission on who is going to take the lead. Sometimes, particularly in programming phases, the ESOs are asked to collaborate where appropriate and provide with a single work programme proposal. Mandates do not automatically involve financial support.

2. Opportunities for process improvement:

The working group agreed that it would be useful to ensure that the views of key/relevant stakeholders are taken into consideration to review/validate the content of a mandate before it is submitted to the Members States for final approval. Currently, EC consultation of stakeholders is limited to personal initiatives and is not systematic. When an ESO has agreed to take care of a mandate, and sometimes before, it usually consults with relevant stakeholders; nevertheless, when the mandate is already published it is not an easy task to maintain productive dialogs with the EC on one side and the stakeholders on the other side.

Also, it is essential to make sure that, in view of the objectives, the requirements put in the mandate will not result in an expensive or hardly achievable implementation. This can only be achieved via early consulting with the stakeholders (in particular the ones that will implement). In practice, the ESOs generally try to consult them, at least when they have received the mandate, and sometimes before, but a stakeholder consultation prior to final approval should become systematic.

Avoiding competition between Standard Bodies is also a key objective. The number of qualified experts (within a technical area) is limited, any competition between Standard Bodies would either dilute contributions to each standard development or force the set of qualified experts to duplicate their efforts to ensure sufficient consistency in competing developments. Instead, at the programming phase, due account should be taken of existing standards or work under way, both in formal bodies and for a/consortia. Any European activity should then be carried out in collaboration as appropriate, both within Europe and with the global level.

Further improvements may also be considered to check whether the deliverable(s) comply with the expectations stated in the mandate and evaluate their "quality".

During the discussion, a controversial point was raised by some SDOs stating that the EC should have freedom to address mandates to other stakeholders beyond the ESOs. No agreement/conclusion was reached on this point.

3. Recommendations from the Working Group:

As a conclusion of this discussion, it is recommended to improve the current process in order to ensure an effective consultation of key/relevant stakeholders prior to the submission of a mandate to the Member States for final approval. In order to ensure an effective consultation, it is recommended to set up a process/committee involving the key/relevant stakeholders in charge of reviewing any draft ICT mandate prior to its submission to the Member States. This Committee should ensure there is a good understanding of the overall standards landscape, in Europe and globally, prior to finalizing the mandate.

Many mandates on new topics already ask the ESOs to prepare an overall inventory of existing work and work in progress as part of the programming phase. It seems sensible for ICT mandates to make this approach systematic.

This committee may further contribute to the monitoring of the process and evaluation of the deliverable(s) with reference to the mandate requirements.

The EC may leverage from the experience acquired with the current Steering Committee set up in the context of the ICT Standardization Policy Study to establish a consultation/steering committee in charge of supporting the overall management of the ICT mandates elaboration and corresponding standard(s) development process.

3. **Regional vs. Global**

ICT standards study steering group
Working group discussion on regional and global issues
Moderator – Simon Hicks, DTI, London UK (simon.hicks@dti.gsi.gov.uk)
Final of issues and analysis – 5 March 2007

GLOBAL VERSUS REGIONAL (EUROPEAN BASED STANDARDISATION)

We may consider standards as having 2 stages – firstly their development, and secondly their being put to use. One can also add the third concept of a supplementary standard to clarify a standard generated elsewhere – to specify local power levels, connectivity, spectrum etc. Bodies that generate these standards can be seen as being largely Europe based, mainly centered outside Europe, or with work spread across the globe. If we put these concepts together then we can construct the table on the following page:

1

GLOBAL AND REGIONAL STANDARDISATION – ANALYSIS MATRIX

STANDARDS. STAGE LOCUS - BASED IN	Standards Development[1]	Standards Use/ Implementation[2]	Standards extra definition [3]
Europe centric (body is centred in Europe)[4]	A	B	C
International/ elsewhere outside Europe – body with most of its activity outside Europe[5]	D	E	F
Global – body with little or no geographic centre[6]	G	H	I

We will use this breakdown to review issues, and see whether they are Europe centred, or have a wider impact

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[1] The process of generating a standard, up to the point of issue
[2] The use of the standard by the community
[3] The production and use of further specification to describe how it is applied in Europe – this may take the form of a specific extra standard, or re-publishing the original standard with extra information added. Typically such extra definition may include radio frequencies, power levels etc
[4] The body is based in Europe, eg ESOs, and others who do most of their work in Europe
[5] Body mainly centred in a geographic region outside Europe, eg other continental regional standards bodies
[6] Body whose membership and activity are equally distributed around the world. with little or no geographic centre.

ISSUES AND CATEGORISATION

In the following table issues around regional and global standardisation are listed and analysed on the model in the first table

Main issues are in italics

- More detailed points in regular script

ISSUE	CATEGORISATION OF ISSUE								
	EUROPE CENTRIC			CENTRED OUTSIDE EUROPE			GLOBAL (INCLUDING EUROPE)		
	A	B	C	D	E	F	G	H	I
The closer you get to application standards (the "e" environment – eBusiness, eHealth, eGovernment, eLearning, eAccessibility) the more you need regional work to complement the global • Including every local variant in the main standard becomes excessive and cumbersome for a global body - better done by a local body in each region	X	X	X						
Standards are needed to support cross-border business or services within the EEA, to remove or prevent barriers to trade • eg European electronic invoice, eAccessibility	X	X	X						
Standards are needed in support of European regulation (subset of the single market objective) • eg Electronic Fee Collection	X	X	X						

ISSUE	CATEGORISATION OF ISSUE								
	EUROPE CENTRIC			CENTRED OUTSIDE EUROPE			GLOBAL (INCLUDING EUROPE)		
	A	B	C	D	E	F	G	H	I
Standards to be implemented in Europe by end-users need to take account of cultural, social, moral and linguistic issues • eg Nordic subset of UBL		X	X						
Standards need to take due account of national requirements • eg eHealth		X	X						
Businesses such as SMEs, and consumer groups need their requirements addressed by global bodies but cannot easily contribute Therefore pan-European consensus should be reached and then sent to global bodies • eg most eBusiness standards, biometrics, RFID • Different views may pertain within such discussions, as for example larger companies (which can more readily go to global organisations) may think differently. This line of reasoning thus calls for ways of forwarding views from defined groupings, rather than showing a need for ESO involvement • Also makes it easier for smaller nations to take part at a			X	X			X		

4

ISSUE	CATEGORISATION OF ISSUE								
	EUROPE CENTRIC			CENTRED OUTSIDE EUROPE			GLOBAL (INCLUDING EUROPE)		
	A	B	C	D	E	F	G	H	I
global level									
ESOs as platforms for improving understanding and awareness of international standards • Educating and informing, acting as a channel for views and information • Need to avoid duplication with NSOs – need agreement as to who does what • eg biometrics, RFID		X	X						
The need to develop supplementary standards to define how a standard works in Europe			X			X			X
How do we link European and world needs, and optimise the European aspects? Do we need ESOs at all? • Maintenance of an industrial base needs a euro-centric approach for IPR issues • Other regions regard standards as a means of protecting their industry – even if we do not do this, then we need to be able to counter the efforts of others	X	X	X	X			X		

ISSUE	CATEGORISATION OF ISSUE								
	EUROPE CENTRIC			CENTRED OUTSIDE EUROPE			GLOBAL (INCLUDING EUROPE)		
	A	B	C	D	E	F	G	H	I
• Ability to negotiate in the enclosed "standards world" with other geographic regions • Thought leadership to NSOs • Maximise our influence in ISO etc by promoting a European consensus • Problems if you have ESOs, problems without them – but fewer problems if they exist? • Somewhere to take European ideas in R&D etc, and get them worked on from a standards perspective									
A world that is filled with an increasing number of bodies and needs, which is seemingly getting further apart than converging. • Promote organisational structures that bring bodies together to talk and allow for easy interchange without too much commitment • Public authorities wish to monitor and influence, but cannot track every body – a smaller number of organisations to view makes engagement easier • Standards bodies and companies wish to talk to public authorities easily	X			X			X		

ISSUE	CATEGORISATION OF ISSUE								
	EUROPE CENTRIC			CENTRED OUTSIDE EUROPE			GLOBAL (INCLUDING EUROPE)		
	A	B	C	D	E	F	G	H	I
• Need to have a public authority approach that allows for easy interchange with international, regional and commercial entities									
In a world that is becoming more global, and where European political structures and citizens feel they are increasingly losing what control they had, there is a wish to try and guarantee some level of involvement	X	X	X			X			X
Only Europe has a true regionally based standards structure. There is also a national standards structure too. A 3 layer model can be seen as bureaucratic, and confusing to outside players. Conversely it replicates the reality of having both nation states and the EU, and is therefore a necessary state of affairs. Should we have an aim to create something more akin to the two layer global-national model that most non-European countries effectively have?	X	X	X						
Possibility of an ESO overreaching and trying to wrongly compete with a more widely accepted global standard – or is this just something we have to accept as occasionally happening?	X						X		

ISSUE	CATEGORISATION OF ISSUE								
	EUROPE CENTRIC			CENTRED OUTSIDE EUROPE			GLOBAL (INCLUDING EUROPE)		
	A	B	C	D	E	F	G	H	I
• Dangers are minimized by ensuring that ESOs are as market lead as possible		X							
Standards support an open and competitive marketplace		X			X			X	

CONCLUSIONS

- The issues and the categorizations show that there are many issues linked to the Europe centric boxes and also in F and G – which are related to Europe too. We can see that there is a clear need for bodies that have a tangible European edge, ie regional bodies

- We could just accept the status quo as to how things are organised, but all the issues in the table are real, and need organisations to adapt in some way to meet them, Not moving would be a soft option.

- As has been noted in the other workstreams, we see an increasing number of commercially based bodies, with what is termed in this workstream a global or international basis. If we are to accommodate this, and retain the regional identity that we want in the standards world, whilst not overloading industry and public authorities, then we need a more flexible and responsive regional standards system. CEN, CENLEC, ETSI, the NSBs, and any other organisation that may be considered part of this eco-system, need to adapt. We need to initiate changes that recognise the different type of work that they will be called on to do, and become more homogeneous, so that those interfacing in from outside are able to do so in one simple way. Organisations and companies will not deal with a regional standards structure that is complex – particularly when it is only doing work of the supplementary variety (categories C, F and I). If the European standards

structure does not evolve, this supplementary work will not be called for, and the structure will lose influence and die.

- Although simplification is always desirable to both industry and public authorities, the continuing growth of commercial fora gives us little doubt that it is what a standards organisation delivers that is the key. The European based standards structure must therefore be globally relevant. To underpin a technology neutral, open market (ie not be protectionist) – it needs to generate globally relevant standards on this count too (local standards that compete with globally accepted ones will not work). As Europe cannot take on the world at everything this suggests that we need to decide what our specialisms are, and focus on these. Such a focused approach also suggests that there is space to simplify the European standards structure. We need though a breadth of expertise in order for the European standards structure to be the conduit for global organisations when this is applicable

- Although there is some influence over the internal European standards structure from this study, it is unlikely to have any impact on global developments. If we are to underpin our standards structure in a world that is moving to commercially based global fora, then we need to look to seeding mechanisms that will help all the bodies work together more easily, and also allow public authorities to easily review what is going on. We should thus look to stimulating light and agile mechanisms to allow standards bodies, industry and appropriate organisations and authorities to meet and resolve issues. This would underpin both the European standards structure and create alliances that would minimize the number of organisations in the standards arena

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4.   **Users**

ICT Standardisation steering committee – user and consumers needs.

The following includes the two main contributions written to encourage the discussion on User Needs that took place in the context of the 3rd workshop on the Study on ICT Standardisation Policy, March 1, 2007. It combines texts from NORMAPME (SME; Freek Posthumus,13-2-07) and additional texts (first and last part) from ANEC (consumers; ANEC-ICT-2007-G-015, March 2007).

1.   Introduction (ANEC)

Consumers are often referred to as users of ICT product and services, together with Governments, Small and Medium Sized Enterprises and non-ICT companies. In ANEC's opinion, this definition does not capture the whole range of stakeholders' interests as consumers use products and services systems for purposes which are outside their trade, business or profession. This non-differentiation between users and consumers is particularly unfortunate when it is essential to define the specific requirements in the policy and standardisation processes.

Therefore, ANEC would like to suggest the adoption of the following definitions[1] in order to clarify the issue, according to art.2 of the Electronic Communications Framework Directive[2]:

> **"user"** = legal entity using or requesting a publicly available electronic communications service;
>
> **"consumers"** = any natural person who uses or requests a publicly available electronic communications service for purposes which are outside his or her trade, business or profession (a consumer organisation is an organisation representing consumers).

Moreover, ANEC suggests that a distinction should be made between the "users" of product and services (as described above) and the "users of standards", which constitute another category.

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[1] Yves Chauvel from ETSI notes: - The proposed definitions of users and consumers cover the services but not the products (while the scope refers to the users of ICT products and services).

[2] 2002/21/EC "Common regulatory framework for electronic communications networks and services (Framework Directive)", 7 March 2002.

ANEC would also like to suggest that the study should make clear whether it focuses on standards as tools for **public policy objectives** (eg: safety, accessibility, etc) or the competitiveness of ICT standardisation as a public policy objective in itself. This in fact is not clear in the present interim report and stakeholders contributions and could give a very different direction to the final outcome of the study. In addition, the concept of **'public interests"**, which consumer representatives in standardisation are traditionally associated with, should be also better defined in the context of this study.

ANEC recommendations on "Consumer needs in ICT standardisation policy", listed at the end of this document, focus on the use of ICT standards as a tool for consumer protection and ICT standardisation policy having an impact on consumer relevant interests such as safety, security, privacy, accessibility, etc.

2.   SMEs needs in ICT standardisation policy (NORMAPME)

Standards are made to help users to work better. What are standards?
The definition could be this one: A document that is:
- *established by consensus, on a voluntary basis, by the main stakeholders,*
- approved by a recognised body,
- providing - for common and repeated use - rules, guidelines or characteristics for activities or their results,
- aimed to achieve the optimum degree of order in a given context,
- based on the consolidated results of science, technology and experience,
- aimed to achieve optimum community benefits,
- *publicly available in all stages of standardisation process until ratification*
- *accessable to all stakeholders concerned.*

So there are many advantages to use good standards.

Why do people like them?
- ✓ Because it simplifies life to work with the same format all the time,
- ✓ Because it provides the security that what they use is safe and suitable for their purpose,
- ✓ Because it simplifies their business operation,
- ✓ Because it reduces cost and time losses,
- ✓ Because it allows to go cross-border with less risk if you know that the same standard is used there also,
- ✓ Because a clear standard allows people to devise a compatible standard for the next phase of operation (interoperability).

Why do many people oppose to use standards?
Because standard users do not want standards that are:
- Multiple solutions to the same one purpose –(40 solutions of eInvoicing)

- Written to promote one, commercial business solution (consortia approach often is that)
- Aimed to exclude one category of users (SMEs are a typical example)
- Made to protect one way of testing, approving or doing business, that usually leads to artificial cost structures and exclusion (we find that in some eBusiness solutions, DVDs, but it is commonly met in Construction standards)
- Imposed by one large customer or supplier that passes the cost to the user.

What are the key factors to change the perception and the use of standards?
1. Create better access to them,
2. Effectively enable the users to participate in making them,
3. Reduce the cost of using them,
4. Make the text of writings simple and accessible to the unqualified (not standard specialist) reader.

Let us look at these four criteria in more detail.

1. **Ensure better access:**
   - Sufficient access to those participants that have less specialised experts and less financial means (SMEs)
   - Ensure that standard making meetings are in a convenient spot like Brussels and not scattered around the world in high cost places like Las Vegas, Beijing and the Bermudas
   - Ensure sufficient financial means for the SMEs to participate and spend time on these matters, like NORMAPME does a little bit,
   - Write the standards in common language and avoid the special standard jargon as much as possible: accessible, understandable, purpose focused.

2. **Enable the small stakeholders by giving them proper voting rights that express their economical importance, not their presence alone.** SMEs assist in small numbers if any, but they represent a major part of the economy. This must be expressed:
   - by giving them balanced representation,
   - by giving them a right of second refusal if the standard making community does not involve them at the making
   - That can be done by creating SME standard assessment bodies like NORMAPME or in ICT the PIN-SME platform that encompasses IT-SMEs and SME-IT Users and IT-Educators.

3. **Reducing the cost of purchase and of use**.

- Remember: the fact that the use of standards needs to bring advantages and cost reduction is one that is essential, but often forgotten feature that the user looks for, so,
- Make standards accessible in cost and in organisation,
- For example: a recent study on food standards showed that while the initial purchase cost was 112 Euro average, the total nr of 24 "must read" standard references created a cost of 2420 Euro, so 20 X more.
- Worse is that the standards extracts are often vague and can easily lead to buying the wrong one.
- The solution could be: staggered pricing according to need. Reference standards must become accessible to the reader, so that sections that are referred to are accessible (via URL why not?). ICT power can help us there, like:
  - Price 1: consult the base standard document on line: is it relevant or do I buy the wrong one?
  - Price 2: Buy base standard and consult extracts.
  - Price 3: Buy the standard and its references.

4. **Make the text of writings simple and accessible to the unqualified (not standard specialist) reader.**
   - either by writing them simple, as we know can be done often,
   - if not possible for legal or technical purposes (if real) by asking the users help in designing user guides that are written in proper day to day type language and which fit the type of operation that the potential users have,
   - By explaining them the essence of the standard in a small summary,
   - Or in courses that can be both on the spot or more and more in the future a mix of on the spot coaching with eLearning.

A discussion took place about the proposal to use more informal "new deliverables" such as CEN and CENELEC's CWAs, and the ESO's TSs (Technical Specification) and GSs (Group Specification) to provide more flexibility and speed-up the approval process. The box below provides ideas to trigger discussion. However, they specifically address CEN's CWAs – and not the other "new deliverables" such as TSs and GSs of e.g. ETSI.
The discussion brought to the fore that such means are already available (e.g. since several years ETSI has made wide use of TSs, which are is a common deliverable to the 3 ESOs).

CWA as a solution to achieve consensus in a faster way than EN /ISO /etc. standards?

1. CWAs miss the legal status of EN/ISO standard documents. This should change.

- CWAs are the fast track development and should be formalised later on,
- CWAs should have the same legal status as EN/ISO standards in that they have been established by a representative group of stakeholders, often from industry, users and government representatives that are convinced of the need of that standard document and its is done respecting the main principles of standard making, under the wings of the CEN.
- CWAs often give better representiveness of the small players as voting rights are equal for all, most of the meetings are in Brussels, and presence is easier to ensured.

CWA status:
- change the name into EWA (European Workshop agreement) or SWA (standard workshop agreement) to allow a more neutral status.

CWAs and Europe.
- By making CWAs in Europe as we currently do, we can much better ensure the presence of SMEs in the process of making them.
- Provided of course that monopolistic approaches like we have seen in the eHealth sector are avoided and a better place is ensured in the making and the decision processes.

CWA, Consortia and SMEs:
- The consortia are greatly present in the CEN workshops and drive a lot of that work with industry,
- CWAs are discussed in the ICT-Standardisation Board under categories like: Security, Health, Interoperability, Smarthouse, etc.
- CWAs can thus be an acceptable route to get Consortia documents officialised. A CWA Forum under ICT-SB can decide on content relevance and make changes necessary to fit the needs and the format of the established ESOs, and publicise them under CWA heading.
- CWAs and Consortia documents need systematic screening in order to fit the weaker participants in the standardisation process. As far as the SMEs is concerned, this requires checking and approving by a SME Standardisation Platform. PIN-SME is the first embryonic platform that could be the basis for such an evaluation mechanism.

More on Consortia and user needs.
There is a problem and an opportunity with consortia. They are created by a group of purpose-filled people for 2 reasons:
1. because they want to bring forward a problem that creates a bottleneck for their companies, and a purpose build forum/consortium will be able to solve that quickly, along people with similar knowledge and goals,
2. because they feel they cannot achieve their goals through the existing structures as there are too many different stakeholders represented there with different opinions and different needs.

The first reason is very valid, as it can fill a gap that exists. It can really help and shows the merit of such purpose-built consortia.

The second reason is often the reality: if open meeting platforms as ICT SB or similar do not allow the goal of a specific participant group to be reached, go and form a consortium of equal-minded people and make it happen.

This is a danger in consortia that is very real as in standardisation unbalanced representation leads to frustration of the other participants.

Hence it is very important that any outcome of consortia is thoroughly screened by a platform that has the proper balanced representation. And that consortia are screened on representiveness before their work is done.

How that can be done and what kind of filter must be put in place is given by the above chapter.

The SME, the large player and the user needs. The discussion on worldwide or European level standardisation. How can we achieve the best result?

Large users are almost automatically served the right solution as for commercial reasons the providers will bend backwards to fulfil their needs. This is much less the case in SMEs as their individual potential does not justify investing in their needs. The service given is therefore often reduced to approaches like:
" averaging out needs"
"assuming needs as given by distributors"
"buying expensive market studies that give an approximation"

Surprising enough, very few want to hear the needs from the SMEs themselves. The reason is that most large providers have done away with their small customer sales force since many years and usually have only a vague idea what plays a role at such ground level operations.

The picture of the next page –courtesy of ART Trading- illustrates the market behaviour between small and big players in the ICT market. It is clear that some multinationals try to reach down to the individual SME owner, but in reality they never reach him. The result is that most ICT providers propose standards without consideration of the real needs of SMEs. They delegate their interface to their distributors, or "partners" that again mostly rely on very small, individual IT-SMEs that carry the majority of the SME implementations and so understand their needs.

We would strongly recommend that the standardisation community starts to recognise this reality and organises itself around it.

In the under-mentioned graph we see the pink layer that consists of about 600,000 IT-SMEs that produce around 4 billion Euro annual services and goods to the SMEs. It is time to create the access to standards making and support the implementation of them to this category of users. It is one of the more efficient ways of making standards fit the needs of this large user category.

It is up to the political and business leaders to choose whether the pink layer is an insulation or an interaction layer and it up them to organise that that interaction is achieved by proper interoperability standards, fulfilling the needs of the players on both sides or the interface.
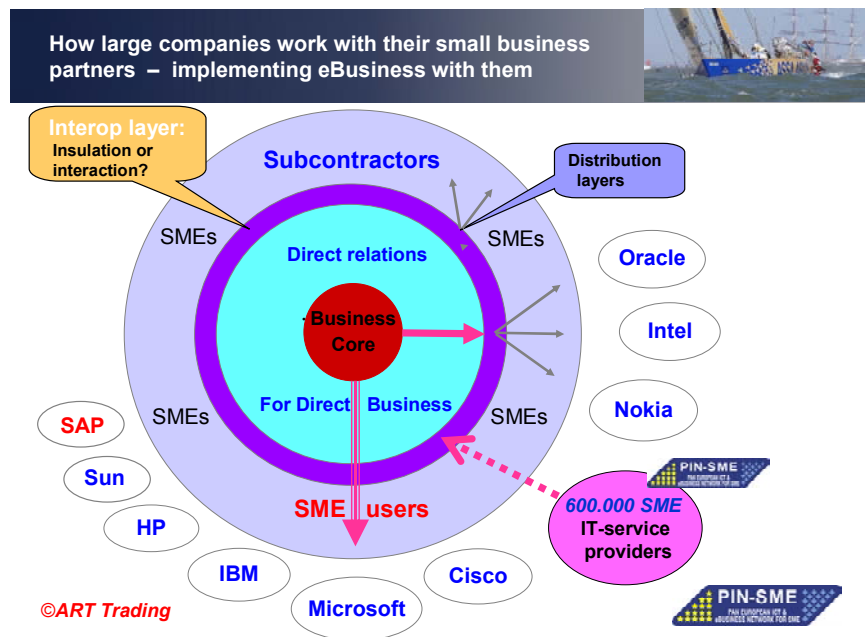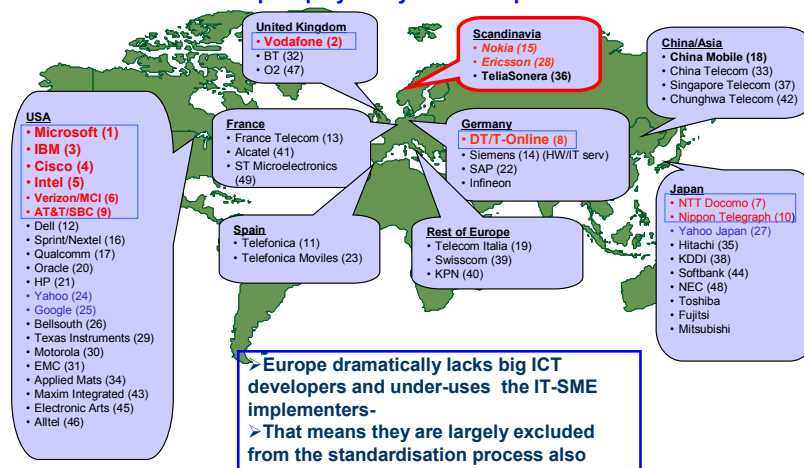

What is the second reason why the majority of large IT-providers cannot make standards that fit the SME so well? Because their main decision centers are outside Europe, notably in the USA. The next graph –courtesy RosettaNet and ART- shows that clearly.

The large players world is dominated by the USA:

World Top 50 players by market capitalization

United Kingdom
- **Vodafone (2)**
- BT (32)
- O2 (47)

Scandinavia
- *Nokia (15)*
- *Ericsson (28)*
- TeliaSonera (36)

China/Asia
- **China Mobile (18)**
- China Telecom (33)
- Singapore Telecom (37)
- Chunghwa Telecom (42)

USA
- **Microsoft (1)**
- **IBM (3)**
- **Cisco (4)**
- **Intel (5)**
- **Verizon/MCI (6)**
- **AT&T/SBC (9)**
- Dell (12)
- Sprint/Nextel (16)
- Qualcomm (17)
- Oracle (20)
- HP (21)
- Yahoo (24)
- Google (25)
- Bellsouth (26)
- Texas Instruments (29)
- Motorola (30)
- EMC (31)
- Applied Mats (34)
- Maxim Integrated (43)
- Electronic Arts (45)
- Alltel (46)

France
- France Telecom (13)
- Alcatel (41)
- ST Microelectronics (49)

Germany
- **DT/T-Online (8)**
- Siemens (14) (HW/IT serv)
- SAP (22)
- Infineon

Japan
- NTT Docomo (7)
- Nippon Telegraph (10)
- Yahoo Japan (27)
- Hitachi (35)
- KDDI (38)
- Softbank (44)
- NEC (48)
- Toshiba
- Fujitsi
- Mitsubishi

Spain
- Telefonica (11)
- Telefonica Moviles (23)

Rest of Europe
- Telecom Italia (19)
- Swisscom (39)
- KPN (40)

➢**Europe dramatically lacks big ICT developers and under-uses the IT-SME implementers-**
➢**That means they are largely excluded from the standardisation process also**

Source(s): Bloomberg; BCG analysis, RosettaNet, *ART*

Additional to this decision focus using the "USA outlook" a lot of the implementation work is done for them in low cost countries as India and China. During the last ICT Task Force meetings there were heated discussions where companies like HP and IBM insisted that the majority of the standard solutions would be done in those low cost countries.

The reality in countries that were early adopters of the India outsourcing like the UK is that a lot of work is coming back to European IT-SMEs. The reason is that the distance to the customer base is important and the remoteness plays a role. Misunderstandings, lack of knowledge on the European needs and local standards (40 eInvoice solutions based on a pool of different standards give you an idea)

So while large providers tend to focus their standards activities on world wide solutions and would like all to follow that move, we recommend that the "back to base" approach that means on European level with strong SME representation will give both them as well as the SMEs a better result in standardisation.

3. Recommendations for the ICT Standardization Policy Study on "SME needs in ICT standardisation policy" (NORMAPME)

- The SMEs need simple, cheap and practical standards,
- Standards need to allow interoperability between large and small IT-system solutions

- There needs to be inclusion of the SME needs at the very design stage of the standard
- The multiplication of solutions of large players via their consortia or via lobbying at national/European government level needs to be changed to a SME-friendly approach
- The SME-friendly approach can be:
  - Create the legal, standard and technical framework for promoting a few technically interesting and viable solutions in e.g.
    - eInvoicing,
    - eLogisitcs
    - eGovernment

    that drive other standardisation solutions.
  - Create the connectivity for SMEs (not broadband, but interoperability based) for these standard solutions, under their circumstances and to their advantage (so cost, simplicity, reliabilibty and clear choices again).
  - Use much more the interface between SMEs and big organisations that is made up by the 600,000 IT-SMEs of Europe.
  - Control the suitability and viability of standard solutions by screeninig mechanism like PIN-SME provides: a platform that represents the real SMEs and their needs.
  - Devise standard implementation programs involving all market players including the SMEs, with financial back up programsand avoid that the majority of support goes to the large players with their top university partners, that mostly tend to stay too far from reality. The same combination with university can be made with It-SMEs that do offer better results as the SME-partner will guarantee the reality check.

We would hope that this approach will lead to better uptake of eBusiness concepts at SME-level as we promoted in the ICT Uptake WG of the last ICT Task Force. It is with this in mind that the next standardisation strategy should be written.

4. Recommendations for the ICT Standardization Policy Study on "Consumer needs in ICT standardisation policy" (ANEC)

Consumer participation in EU standardisation has become an indispensable element of the New Approach as a compensation for the delegation of legislative powers to European standardisation organisations. This delegation of powers from the legislator to private organisations simplified legislation and law-making on the one hand, and induced a democratic deficit on the other hand. This is how ANEC came about more than ten years ago.

Consumer representation in EU standardisation under the New Approach has shown that consumer participation is not a hampering stone for competitiveness

but an important and accepted principle of the European standardisation system. Consumer participation is indeed important to counterbalance the industry view.

> Due to the enormous impact of the Information Society on the consumer in sectors such as safety, security, privacy, accessibility, it is vital that standards elaborated for ICT products and services take into account the views of the consumer. As a consequence, the European standardisation policy should ensure that there is a balance between efficiency required to respond to the fast moving ICT sector and openness of the standardisation system.

ANEC objects to the reference of New Deliverables in European legislation, in particular when dealing with health, safety, environment and basic legal and economic interests of consumers because they do not require full stakeholder participation.

Another response to the specific ICT market needs has been the growth of informal industry lead standards consortia producing their own technical specifications. From a consumer point of view, the lack of transparency and consensus involved raises concerns because they impede proper consumer participation. However, ANEC, acknowledging the reality of the ICT standards scene, decided to join in October 2004 the World Wide Web Consortium (W3C) as a pilot project for consumer participation in informal standardisation.

ANEC believes that the future EU ICT standardisation policy should be based on the following principles, which go beyond the WTO TBT Agreement "Code of Good Practice for the preparation, adoption and application of standards":

1. Openness and transparency;

2. Enhanced consumer participation;

3. Consensus;

4. Implementation and assessment of standards;

5. Cautious use of New Deliverables and non-formal standard setting fora.

For the detailed ANEC proposals, please see ANEC position on the future challenges of ICT standardisation (ANEC2005/ICT/035, April 2005).

5. **Research and Development**

Research and standardization – overall summary

The research/standards issue in the ICT context has been under debate for many years, even since FP4. We note that the EU RACE programme on communications had a systematic approach to pushing relevant research results towards standardization. As a result, many important research contributions were made to standardization, for example concerning the specification of the GSM, where standards and research proceeded in parallel.

Since the RACE programme, the systematic approach has faded from view. However, concerns have been repeatedly expressed that many results of research projects in the ICT domain are relevant to standards but are not often progressed to standards bodies.

There is an increasing emphasis on this issue generally – for example the December 2006 Competitiveness Council drew attention to the importance of standardization as support to innovation.   But even in Framework 6, the standards bodies made some attempts to address the problem. The COPRAS ("*Co-operation Platform for Research and Standards*") Project was started by the three European Standards Organizations, together with The Open Group and W3C, and with the overall blessing of the other participants in the ICT Standards Board.

COPRAS has been considered to be a success overall. It provided dedicated help to find standards organizations and to put projects together was provided towards IST projects in Calls 1 and 2 that needed this support. The structure of the IST calls for proposals meant that this support could not be provided over the whole programme. But COPRAS has also undertaken some comprehensive research to examine the overall relevance of standards to IST projects throughout FP6, and their understanding of the problems and issues. It has provided generic guidance material to help projects in future. Evidence suggests that projects that know about this material are more likely to have a clear path to standards.

It is interesting to note that there seem to be few differences between different standards bodies in the overall issues – the problem affects ESOs and consortia alike. Generally speaking, COPRAS findings have confirmed overall perceptions. These are:

- For some projects, standards are irrelevant;

- For those where standards are a relevant issue, roughly half have little or no idea how to go about putting their work to standards bodies;

- Some projects know which standards group(s) they are targetting. Many are completely confused given the fragmented nature of the ICT standards arena;

- Often their outputs might be relevant to several different bodies and consortia. How can projects be helped through this jungle?

- Some projects build the standards activities into their action plans and sometimes the cost is recovered. More usually, no provision is made and the project partners have no funding for standards work to promote their results. Sometimes, the standards process comes too late – in other words the project closes and has no further resource to submit results.

The **COPRAS conclusions** are still under final endorsement. However, provisionally these are:

- Standards establish a bridge between research results and the implementation of innovative products. Standardization is therefore an essential component for boosting innovation;

- The current pace of technological development forces standardization and research to proceed in parallel - starting standards activity early provides better chances for being successful;

- There are still many barriers for projects participating in standardization such as membership fees or confidentiality rules relating to projects' outputs; also more tools are needed to find the right standards organization and to determine the differences between various bodies;

- Standards organizations should put more effort into marketing the benefits of making and applying standards to the research and industrial communities in Europe, and specifically have to emphasize their communication to SMEs;

- Interfacing with standardization remains an important aspect in FP7. Additional measures are needed and continuation of COPRAS' efforts to bring European research and standardization closer together is a necessity to reinforce Europe's position as a leading provider of technologies for the global information society;

- COPRAS' activities have generated knowledge, results and guidelines that, when implemented, can support the improvement of research/standards interfacing in FP7. The European Commission should enable (horizontal) support actions building upon COPRAS achievements;

- An active policy should encourage and facilitate projects to pass their output through European standards organizations, and, where possible, specific arrangements made to help project representatives to participate;

- European research programmes should provide mechanisms to give research projects to acquire additional resources in situations where standards work exceeds a project's lifespan;

- The Commission should improve training of Project Officers in standards issues.

Implementation of these recommendations is not going to be particularly easy, since the Commisison programme does not allow for a single project such as COPRAS was. But the ICT Standards Board will discuss the possibilities.