Compliance Verification in Electronic Public Procurement

Final Report

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1   EXECUTIVE SUMMARY

The objective of this study is to identify, analyse and compare optimum mechanisms for verifying in all EU/EEA Member States that the systems and tools existing or forthcoming in electronic public procurement comply with the requirements of the new public procurement Directives 2004/18/EC and 2004/17/EC.

In order to determine optimum mechanisms for verifying compliance, the focus of the study is on the respective needs of EU/EEA Member States and on how to best organise the verification. Therefore, a comparative description and assessment has been carried out of the different options available for verifying compliance of e-procurement systems and tools, and of their suitability to respond to EU/EEA Member States' needs.

This study does not deal with the concrete technical content of compliance verification, i.e. the substantive requirements that would form the basis for verification. These will be established by specific actions of the Commission.

Background

The European Commission's 2004 Action Plan for the implementation of the new legal framework for electronic public procurement suggested that development of compliance verification schemes should be promoted to build up user confidence in e-procurement. In line with the Directives, it strongly recommended that Member States introduce or maintain voluntary accreditation schemes. Secondly, it stated that a European scheme which would build on and integrate national schemes would seem desirable to ensure the good functioning of the Internal Market. The Action Plan called on the Commission and Member States to examine the development of such a scheme based on the legal and functional requirements of the public procurement Directives.

Methodology for the study
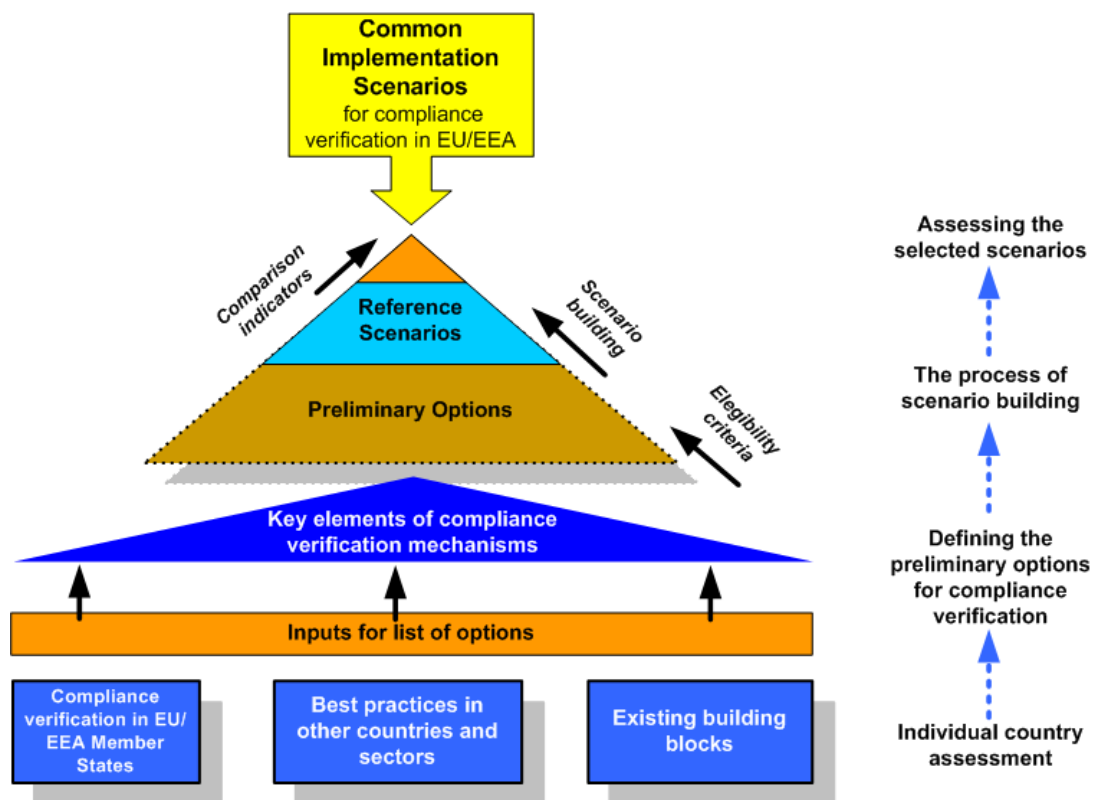
The study was carried out from May 2006 until May 2007. The methodology for this study has been split into four distinct types, depending on the stage of the study, and is shown in the figure above.

Individual country assessment

During this stage of the study, information on the status of compliance verification mechanisms in the EU/EEA Member States was obtained. The information was compiled by means of a literature review and a questionnaire driven interviewing process. The latter process was conducted with the support of an international group of experts who interviewed key persons working with public e-procurement for each country. The results for this section include:

◆ The development, organisational structure and major strengths and weaknesses of e-procurement systems within each Member State; this included a quantitative assessment of a set of high level criteria identified as the desired technical scope of compliance verification mechanisms that should be implemented;

◆ The strategy and level of implementation of e-procurement compliance verification mechanisms within each Member State;

◆ The cultural, political and social factors that may influence the future adoption of instruments oriented to ensure the compliance of e-procurement systems to the EU Directives;

◆ A quantitative assessment of the e-procurement system of each country with regards to the so-called set of high level criteria identified as the technical scope of the compliance verification mechanisms that should be implemented;

◆ A ranking of Member States with respect to the degree of compliance verification implemented;

◆ Other restrictions and facilitators (legal, technical or organisational) that can be expected from each EU/EEA Member State when implementing a compliance verification mechanism;

Defining the preliminary options for compliance verification

A series of preliminary options was defined for describing the organisation of compliance verification strategies based on three primary information inputs:

i. Compliance verification mechanisms and strategies that already exist within the Member States

ii. Best practises for compliance verification that exist in other countries and sectors

iii. Other aspects not directly related to compliance verification, but which may be used as building blocks

The results of this process were the creation of a series of options representing an initial, high level interpretation of possible compliance verification mechanisms that could be applied in the EU/EEA. The options were generated as a result of the analysis of data collected via desk research and the answers given by the national contacts to the questionnaire.

The process of scenario building

The building of scenarios involved two separate stages resulting in two distinct products, the first of which provides the material for the second. Specifically, the **first stage of the scenario building process** aimed at **producing partial scenarios (theme-specific)** to be subsequently integrated into the second **stage of the process, the Reference Scenarios.**

The starting point of the process was the *list of options*, mentioned above. These are formed by eight themes which were chosen to clearly encompass the development of a compliance verification mechanism for e-procurement. These were: *the degree of verification with respect to the product; the type of coordinating entity; the financial procedure to be adopted; the obligation of the scheme to be adopted; the nature of the compliance mechanism; the desired result; the involvement of entities at local level; and the role that standardisation entities should play*.

The result of this process was the development of three distinct Reference Scenarios, identified as appropriate to fill the organisational gap that currently exists at a European level with respect to compliance verification characterised according to their difficulty of implementation. These are listed below:

Reference Scenario 1 **"LITE"**: Relative difficulty of implementation: LOW

Reference Scenario 2 "LOOKING AHEAD": Relative difficulty of implementation: HIGH

Reference Scenario 3 "HARMONISED EUROPE": Relative difficulty of implementation: MEDIUM / HIGH

A detailed roadmap, which leads directly to the definition of a cost benefit analysis, was devised for each of the Reference Scenarios. The roadmap defines the technical characteristics that comprise each Reference Scenario. A description of the primary users (actors) in each scenario, along with their respective primary responsibilities, and an Implementation Plan, which includes an implementation timeframe and costs, is provided for each Reference Scenario.

Assessing the selected scenarios

In addition, the **risks** and **benefits** of the Reference Scenarios were defined, and the **net impact** of each of the scenarios was hypothesised for each Member State with respect to all the above findings. This was defined taking into account any **political**, **legal**, **cultural** and **social** impacts that were considered to affect the suitability of the Reference Scenarios as potential verification schemes, including the **needs and restrictions** that were identified within each Member State.

The result of this process was the designation of the most appropriate Reference Scenario to each Member State, and the characterization of the two Common Implementation Scenarios defined below.

Common verification mechanism:

Following the results obtained in this study, it is considered that the implementation of a Common Implementation Scenario for compliance verification is recommendable throughout the EU/EEA.

The **first Common Implementation Scenario** would involve the use of the least exigent scenario which would enable all Member States to take part, on a voluntary basis. However, this should be considered as the least preferable option, as it does not go far enough towards the development of a more positive and far reaching solution, although on the positive side, it will initiate the process of Member States orientating themselves towards the theme of common interoperability at a European level.

The **second Common Implementation Scenario** would be the more favourable, from a European point of view, as it is a far more integrated approach to the problem of how to verify compliance at a European level. Using a two tiered method, by combining two different Reference Scenarios, it allows for the gradual introduction to the scheme of those Member States (using the lightest scenario), whose capacities for compliance verification may not be as developed as others. Those Member States, whose capacities for implementing compliance verification are greater, will be obliged to adopt a more exigent certification scheme. This scheme, in addition, compels all Member States, through its obligatory nature (i.e. by forcing Member States to move from tier 1 to tier 2 when considered able), to proactively look towards developing greater interoperability, through the process of standardisation and certification. This approach is considered to be the most constructive, and although more demanding, both technologically and financially, the results will be more beneficial to both the EC and the EU/EEA Member States.

Recommendations

General recommendations for compliance verification

Recommendation 1

The development of verification mechanisms should begin immediately to ensure a more coherent effort at European level, and to avoid further divergence of e-procurement systems and verification processes does not continue. This will be greatly aided by the quick implementation of the development process for a common compliance mechanism based on requirements and standards.

Recommendation 2

Present the Member States with the two tiered common option for compliance verification. The involvement of stakeholders at this stage will enable any early problems to be ironed out quickly. In addition it is essential that the

primary aim of the mechanism is to reduce bureaucracy. It must be apparent that this verification process will replace those already in existence at national level (or incorporate them), and will not simply add to an already high level of bureaucracy in some cases.

Specific recommendations for implementing the scenarios

Recommendation 1

Define the expert committee as quickly as possible, with the involvement of other groups of stakeholders, apart from the Member States e.g. developers, lawyers, groups already involved in development of requirements, and look at getting guidance and best practice from other areas for actions that have been undertaken by other groups.

Recommendation 2

Quickly identify and classify standards currently available. It will be important to involve internationally specialised Internet development organizations from the start, which would include groups such as **CEN** (European Standards Organisation), **ETSI** (European Telecommunications Standards Institute), **WS-I** (Web Services Interoperability Organisation), **IETF** (Internet Engineering Task Force), **W3C** (World Wide Web consortium) and **OASIS** (Organisation for the Advancement of Structured Information Standards).

Recommendation 3

Define a code of conduct as quickly as possible, which should be as generic as possible, as it should be potentially applicable to all three scenarios, with minor alterations as necessary. It should a simple and concise document, written with the agreement of all parties, and should not deal with technical matters, but more with the ethical side of compliance verification.

Recommendation 4

Technical requirements must be clear and concise, and should detail all functional and non-functional aspects, as defined by previous e-procurement studies and the current study. The re-use of already existing frameworks and standards should be strongly encouraged (e.g. eGIF, SAGA). All existing technical development must be taken into account. Forcing developers to change from a perfectly functioning system or module, just because it does not meet a technical requirement which has not been proven to be better, will not improve the popularity of the scheme.

Interoperability should be made the key to the requirements process. Any technical solution which permits a sufficient degree of interoperability between systems at a European level should be encouraged. On the other hand, proprietary systems which are not interoperable should be phased out.

Recommendation 5

Obtain quick consensus about scheme type. Within a mixed scheme, the number of mandatory aspects should be minimised as this raises the effort and complexity of the scheme to be administered. The issues central to compliance verification should be clarified. In the voluntary scheme, to ensure success, the tangible benefits of compliance must be made clear. In this case it may be necessary to provide acknowledgement of effort based on an award scheme.

Recommendation 6

Funding, will be an important issue. Based on the issue at hand, and the restrictions already defined by the Member States, full funding of verification processes for national bodies by the EU should be carefully considered.

Recommendation 7

Define the verification model to be used. Based on this study, it is clear that a verification model which adopts a process of verifying compliance of individual modules is preferred. This model should be put forward as the first choice. This will affect the definition of the technical requirements.

Recommendation 8

Initiate a feasibility study for the development of an EU agency for e-government & e-commerce. Rapidly changing technologies necessitate the creation of a body at EU level which is constantly observing development in the international area, and can act as an information point for the Member States.

Recommendation 9

Involve national e-procurement authorities in constant dialogue. It is essential to include the National authorities from the start as they are the hub of the three scenarios, and their inclusion will help relieve the controlling body at EU level of some of the burden of coordination.

Recommendation 10

Identify two candidates for running two tiered test model. It is essential that full testing of any of the proposed schemes adopted should be carried out, before the full implementation of the scheme at European level.

2   ACKNOWLEDGEMENTS

CARSA gratefully acknowledges the information provided by the following contacts within each EU/EEA Member State.

National Contacts		
Country	**Position**	**Organisation**
Austria	Head of Business Area e-procurement	1. BBG – Bundesbeschaffung GmbH [2. Auftrag.at Ausschreibungsservice GmbH & Co KG] [3. Austrian Chamber of Commerce]
Belgium	Head of E-Procurement Service	Federal Government - Personnel & Organisation
Bulgaria	Former Director [Current Director]	Electronic Public Procurement DataBase (Registry), Agency for Public Procurement
Cyrpus	Accountant – Project Manager for the introduction of e-procurement in Cyprus	TREASURY of the Republic of Cyprus
Czech Republic	Deputy Director, Public Investment Section	Ministry for Regional Devolopment of the Czech Republic
Denmark	Head of Administration [GateTrade]	1. Ministry of Science Technology and Innovation [2. GateTrade - Project Manager]
Estonia	Head of Division (Responsible for PP policy in Estonia)	Ministry of Finance
Finland	Senior Adviser Governement Secretary	TIEKE - Finnish Information Society Development Centre [Ministry of Trade and Industry]
France	Project manager on e procurement solutions for ministries	Service pour le développement de l'administration électronique – Direction générale de la modernisation de l'Etat – Ministère de finances
Germany	Project director, responsible for the 'E-Vergabe', the German central e-procurement system at federal level	Beschaffungsamt des Bundesministeriums des Innern
Greece	Project Manager	Ministry of Economy and Finance
Hungary	Head of Department	Central Services Directorate, Dep. of Procurement Research and Development
Iceland	General Manager	Rikiskaup, State Trading Centre (Operating under Ministry of Finance)
Ireland	Assistant Principal with responsibility for eProcurement	Ministry of Finance
Italy	Project Manager	Direzione Approwigionamenti Logistica e Legale- Consorzio per il Sistema Informativo (Piemonte)
Latvia	Director of the Information Department	Procurement Monitoring Bureau
Lithuania	Director of Information Technologies division	Lithuanian Public Procurement Office
Luxemburg	"Attaché de Gouvernement 1er rang" and responsible for Public procurement in Luxembourg [IT Specialist, in charge of the specifications of e-procurement system]	Ministry of Public Works
Malta	Director Operations [Procurement and Sales Manager]	Ministry of Finance [MITTS]
Netherlands	Directorate General Economic Policy. [PIANOo organisation that manages the TenderNed system]	Ministry of Economic Affairs [PIANOo]
Norway	Head of the E-procurement Secretariat	Ministry of Goverment Administration and Reform - Eprocurement Secretariat
Poland	General Counsel for IT systems	Public Procurement Office
Slovakia	Official	Public Procurement Office
Slovenia	Head of the public procurement department	Ministry for Public Administration
Spain	Member advisor of the DG National Heritage	Ministry of Economy and Treasury
Sweden	Procurement strategist	1. City of Stockholm- Executive Office- Dept of Development Procurement Unit [2. Verva -Swedish Administrative Development Agency]
UK	Head of eprocurement, Scottish procurement Directorate	Scottish Executive

Table 1 National contacts who provided information for the study

3   INTRODUCTION

Information Technology has radically changed the way government and private sector operates. By implementing e-business solutions to handle the procurement process, the public sector can increase efficiencies and maximize savings on purchases and internal purchasing processes, and making better use of resources and capital.

In April 2004 the Council and the European Parliament adopted the legislative package of public procurement Directives 2004/18/EC[1] and 2004/17/EC[2]. These Directives provide a coherent EU framework for the transparent and non-discriminatory use of electronic means in the public procurement process and introduce new modern purchasing techniques.

Member States were required to implement the new legal framework by 31 January 2006, and most countries had transposed the above mentioned EU Directives by this date; the remaining countries transposed the Directives by the end of 2006.

The early adoption of the Directives was considered critical to avoid distortion of competition, and to bolster the effective take-up of e-procurement by economic operators. However, whilst e-procurement is firmly rooted in an established legal framework regulating the principles and rules for the awarding process, the challenge was seen in the organisation of previously manual steps in an electronic manner and to apply the new fully electronic procurement procedures correctly. Erroneous or divergent interpretation of the new rules could create new barriers to cross-border trade.

Another critical factor is to ensure that both public buyers and businesses come to trust the new electronic procedures, systems and tools, which otherwise they may be reluctant to use for many reasons, like, for example, a lack of knowledge of the legality of the systems, or a lack of confidence in their functionality.

The European Commission's 2004 Action Plan[3] for the implementation of the new legal framework for electronic public procurement suggested that development of compliance verification schemes should be promoted to build up user confidence in e-procurement. It strongly recommended that Member States introduce or maintain voluntary accreditation schemes. It stated that a European scheme which would build on and integrate national schemes would seem desirable to ensure the good functioning of the Internal Market. The Action Plan called on the Commission and Member States to examine the development of such a scheme based on the legal and functional requirements of the public procurement Directives.

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[1] Directive 2004/18/EC of the European Parliament and of the Council of 31 March 2004 on the coordination of procedures for the award of public works contracts, public supply contracts and public service contracts, L 134, 30.4.2004, p.114.

[2] Directive 2004/17/EC of the European Parliament and of the Council of 31 March 2004 coordinating the procurement procedures of entities operating in the water, energy, transport and postal services sectors, OJ L 134, 30.4.2004, p.1.

[3] Action plan for the implementation of the legal framework for electronic public procurement, Communication from the Commission to the Council and the European Parliament, the European Economic and Social Committee and the Committee of the Regions, COM(2004)841, December 2004

4 STUDY OBJECTIVES

The objective of this study is to identify, analyse and compare optimum mechanisms for verifying in all EU/EEA Member States that the systems and tools existing or forthcoming in electronic public procurement comply with the requirements of the new public procurement Directives 2004/18/EC and 2004/17/EC.

For organising such compliance verification of e-procurement systems and tools, the public procurement Directives 2004/18/EC and 2004/17/EC as well as the Commission's Action Plan on e-procurement suggest the establishment of voluntary accreditation schemes at national level. However, Member States expressed a preference for a shared or common verification mechanism.

In light of this, the findings of the study aim at providing the Commission with a thorough, comprehensive and operational analysis enabling to take appropriate action to organise compliance verification of e-procurement in the EU.

The geographical scope of the study is the EU-25 as well as the European Economic Area (EEA).

In order to determine optimum mechanisms for verifying compliance, the focus of the study is on the respective needs of EU/EEA Member States and on how to best organise the verification. Therefore, a comparative description and assessment has been carried out of the different options available for verifying compliance of e-procurement systems and tools, and of their suitability to respond to EU/EEA Member States' needs.

This study does not deal with the concrete technical content of compliance verification, i.e. the substantive requirements that would form the basis for verification. These will be established by specific actions of the Commission.

This report includes the following three distinct parts:

- A description and evaluation of EU/EEA Member States' need(s) for verifying legal compliance in e-procurement, in light of the developments, trends and legal and administrative practices observed at national level in both e-procurement as well as in approaches to compliance verification;

- The establishment of a conceptual framework for describing and comparatively assessing the options available for organising compliance verification in the EU/EEA, identifying the most relevant options for further evaluation and

- Scenario-building and evaluation on the basis of the most relevant options, in view of identifying the most feasible and best suited mechanisms available for setting up operational compliance verification mechanisms in the EU/EEA.

5   METHODOLOGY

A brief description of the methodology used in the study is carried out here: more detailed information may be found in the annexes.

The methodology for this study has been split into four distinct types, depending on the stage of the study.

1. Individual country assessment

Information Collection Procedure (Questionnaire and Country Experts)

Within each EU/EEA Member State, an expert was assigned with the responsibility of collecting information in that particular country. Part of the expert's function was to interview a previously selected individual (called the national contact) who is recognised in his country for his expertise in public procurement and e-procurement systems. The interview was based on a questionnaire designed to extract information concerning the political, cultural and social aspects that may influence the adoption and implementation of verification mechanisms in each country and the state of the art of both e-procurement systems and verification mechanisms used within that country..

2. Defining the preliminary options for compliance verification
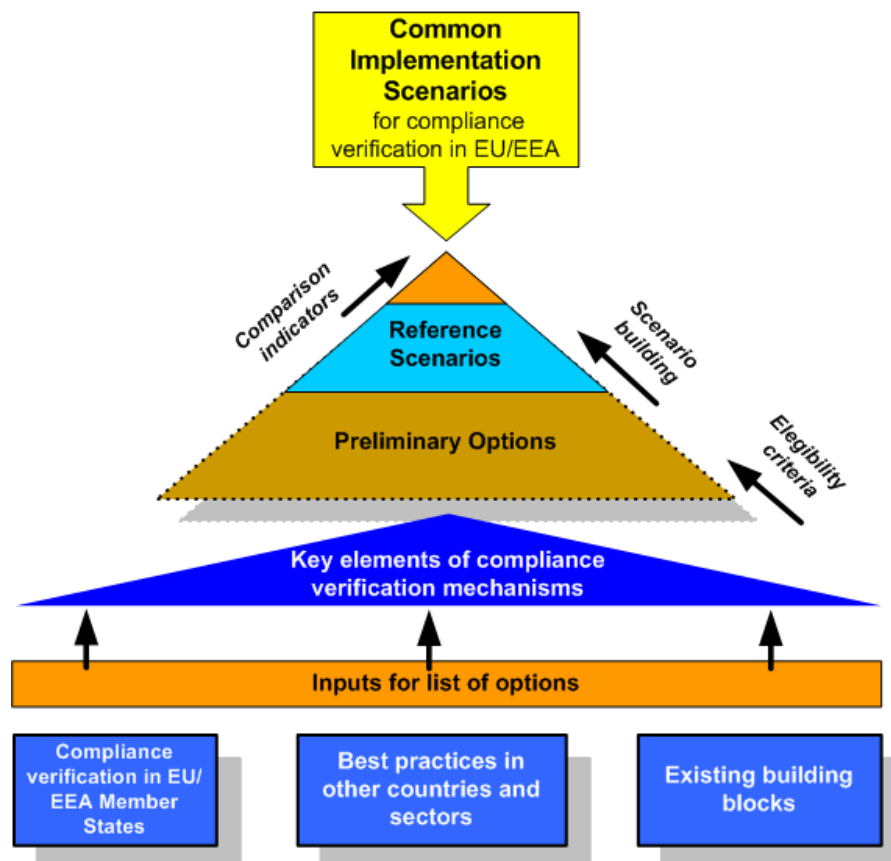
Figure 1 Methodology used for defining the preliminary options for compliance verification.

Figure 1 above describes the basic methodology for defining the preliminary options for compliance verification. The data inputs were formed from three main axes as shown:

- ▪   Data on existing compliance verification mechanisms in the EU/EEA Member States;

- Best practices that exist in other countries and sectors that may be constructive when applied to compliance verification in this study;

- Other practices and data not directly related to compliance verification but which may be used as building blocks in the current study.

The key elements of these three data inputs were then extracted for use in this study.

3. The process of scenario building

In this study, different characteristics of two types of scenario analysis have been used: Morphological Analysis[4], and Shaping Actors – Shaping Factors Analysis[5].

Given the broad scope of the study, it was decided that the building of scenarios would involve two separate stages resulting in two distinct products, the first of which would provide the material for the second. Specifically, the first stage of the project aimed at producing partial scenarios (theme-specific), to be subsequently integrated into Reference Scenarios.

4. Assessing the selected scenarios

In order to assess and compare the different scenarios and their possible implications, a **set of criteria, formed by comparison indicators,** was selected, and was used to assess the viability of each of the chosen scenarios:

- Criteria 1: Structural feasibility for implementing the verification scheme versus the complexity of the existing situation

    - Comparison indicator 1: Current complexity

    - Comparison indicator 2: Implementation complexity

- Criteria 2: Country specific aspects

    - Comparison indicator 3: Cultural and Social aspects

    - Comparison indicator 4: Political will

    - Comparison indicator 5: Legal complexity

    - Comparison indicator 6: Needs and restrictions in each country that may influence

- Criteria 3: Cost of the proposed solution

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[4] Strategic Foresight *La Prospective* Problems And Methods. Michel Godet, Philippe Durance and Adam Gerber. Laboratoire d'Investigation en Prospective, Stratégie et Organisation. 2006

[5] Scenarios Europe 2010. EC Forward Studies Unit. 1999

6 A DESCRIPTION OF THE STATE OF E-PROCUREMENT AND COMPLIANCE VERIFICATION IN THE EU/EEA

6.1 Structure of e-procurement in EU/EEA Member States

The following section contains a qualitative analysis of the overall organisational features of electronic public procurement within EU/EEA Member States. This section is divided into three sub-sections:

The first (6.1.1) describes the structural organisation of the systems analysed under a series of general categories, and also includes a synopsis of the associated functional characteristics of those systems. It also briefly defines the management composition of the systems.

The second (6.1.2) presents the structure of the compliance verification mechanisms in the Member States, in terms of:

- How the verification strategy is defined;

- Who performs verification;

- When verification is performed during the e-procurement life-cycle;

- Which aspects are verified: usability, accessibility, availability, reliability, interoperability, scalability, security, transparency and confidentiality;

- Other aspects, such as the usage of e-signatures, SLAs, etc..

The third (6.1.3) describes the perception within the Member States of the needs and restrictions for defining a compliance verification mechanism.

6.1.1 Structural organisation

Table 2 below shows the *Status of e-procurement system development* in the EU/EEA[6]: this category, in turn, is divided into the four sub-categories shown (functional systems already developed, systems currently in development, administrations with one principle platform or mono-platform, and administrations with a system comprised of many independent platforms). The category *Organisational nature of systems* describes the organisational level at which e-procurement systems exist, whether centralised or decentralised, and whether organised at a national or regional level, or indeed whether systems exist at the level of local administration. Finally, the *Controlling organisation* category classifies the administrative level at which organisational management of the system is carried out, either by a specific government body or Ministerial department, an independent company controlled by a state body, or a privately owned 3rd party.

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[6] An attempt has been made to reflect the national situation as accurately as possible. However, in some cases, the national contacts themselves were unable to quantify the number of systems available due to the complexity of e-procurement in their respective country.

Category	Level	Number countries	Percentage
Status of e-procurement system development	Developed & functional	20	71%
	In development	8	29%
	Mono-platform administrations	18	64%
	Multi-platform administrations	9	32%
Organisational nature of system	Centralised national systems	17	61%
	Decentralised national systems	7	25%
	Decentralised Regional systems	9	32%
	Local systems	9	32%
Coordination & management of e-procurement system(s):	Public body	25	89%
	3rd Party organisation	5	18%
	State company	4	14%

Table 2 Structural organisation of e-procurement systems in EU/EEA

As can be seen, 71% of Member States have already developed functional systems, while the remaining 29% are in the process of developing electronic procurement systems. It must be noted that in certain cases both fields of the category are marked, which implies that a basic system already existed, but is being fundamentally redeveloped (as in the case of Bulgaria), or that new systems are being developed in parallel leading to either decentralisation (as in the case of Belgium) or greater centralisation (for example, in France and Spain). In fact, even in those countries that have what could be described as a mature e-procurement system, development is a continuous process.

In general, most countries (61%) opt for a centralised system at national administrative level, or declare a preference for this type of overall organisation. Those countries with decentralised systems at national level are in the minority (25%), while system decentralised at a regional or local level are apparent in 32% of the Member States. Again, however, a degree of overlap is seen between the sub-categories, with some countries having a system centralised at national (or federal) government, but where regional and/or local autonomy exists to implement independent systems as desired. Centralisation, therefore, should not be seen as a prerequisite of a successful e-procurement system as there are many countries which have developed decentralised systems that function extremely efficiently at organisational level (for example, Italy).

Nevertheless, many of the recently entered Member States of the EU have opted for centralised models for a variety of reasons, one obviously being financial, as the development of more than one complex administrative system may be seen as unfeasible, or, on the other hand, being a natural progression for countries that had previously centralised economies with all services channelled through central government. In addition, even in those countries with decentralised systems at national and regional level, organisational control generally lies with central government (89%) through a specific government department, ministry, or organisation (whether state or semi-state: 14%) thus aiding the development of more simplified verification mechanisms.

However, as e-procurement systems become more complex and costly, governments are more likely to outsource development through the use of off-the-shelf e-procurement products that may be tailored to specific requirements. In many cases, such solutions are suggested to be a realistic means of implementing a system more quickly, as many governments do not have the resources or, more importantly, the expertise to employ in the design of such complex systems. In this case, the control of the system is left in the hands of a 3rd party (18%), although development and

maintenance are usually supervised by (a) specific public department(s) through legal contracts and service level agreements.

Figure 2 below summarises the current state of development of e-procurement within the EU/EEA. It shows the number of e-procurement features known to be currently at operational status, those features which are known to be in test phase and due for implementation, and those features which have been classified as desirable and are currently in the planning phase. It is interesting to note that the most commonly implemented module within the existent systems is simple e-publication, generally accepted as being the least technically complex function to implement. One of the reasons for this is that many e-procurement systems are still used as simple mechanisms for the publication of tenders, with further activities of the procurement process carried out in a traditional manner. This is due to the fact that the development of more advanced features requires a much superior input of technical know-how in the development and maintenance process (something which many central governments lack in their human resource base), greater legal clarity in certain aspects of the e-procurement process, more intensive user training, and of course much higher budgetary requirements. The latter is seen as a common restriction in many countries towards the development of more advanced systems.
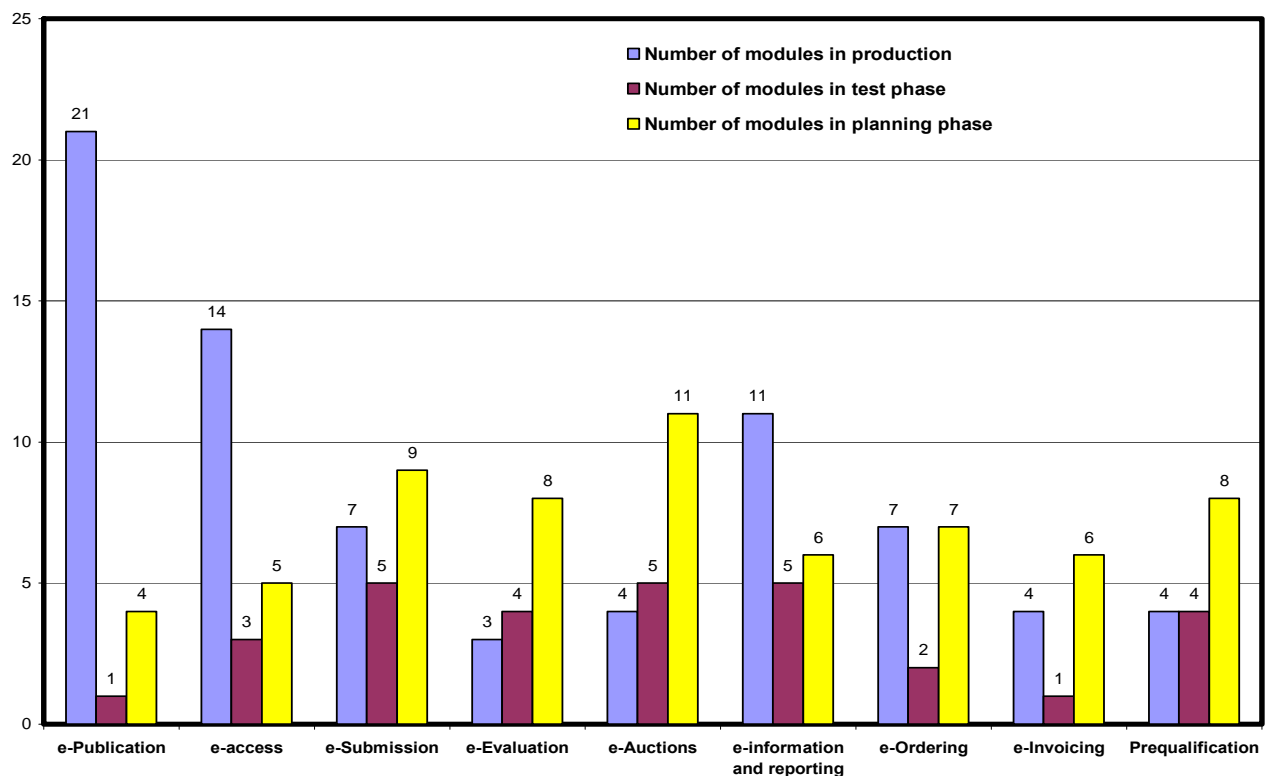
Figure 2 Overall development phases of e-procurement modules/platforms in the EU/EEA

As can be seen, e-access, followed by e-information and reporting, are the next most commonly found features, but their implementation requires a greater degree of system complexity (and must take into account aspects such as security and confidentiality to a greater degree), with more direct communication between the final user and the system,

Under the requirements for conducting public procurement using electronic means[7], the possibility to browse contract documents without previous registration should ideally be provided. However, contracting authorities may want to ask interested economic operators to register, before downloading documents. To this effect a simple user ID and password, a valid e-mail account and the use of properly dated e-mail accompanied by the automatic acknowledgement of receipt are the most appropriate tools: for this reason we can see that prequalification procedures are being planned

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[7] Requirements for conducting public procurement using electronic means under the new public procurement Directives 2004/18/EC and 2004/17/EC. Commission Staff Working Document. SEC(2005) 959

or implemented in many systems, as part of the prequalification process already implies that economic operators provide this type of information. This in addition puts further emphasis on the security and confidentiality of private information provided by the users, and adds to the complexity of the developing system (however, the requirement to use a qualified signature at this stage is considered a hindrance to the access of documents).

The interest in implementing e-auctions is apparent, due to the savings that may be made with this type of procurement procedure. However, it is a complex technical procedure, and requires the presence of an e-evaluation procedure, and features such as the secure transmission of data, confidentiality of communication, authentication and identification of participants, as well as traceability of communications and of processing/calculations must all be ensured appropriately.

In general, a model of evolution may be discerned, where the majority of countries are currently in the planning phase for more sophisticated features such as e-submission, e-evaluation, e-auctions and prequalification procedures, and a limited number of countries are already testing these features in pilot systems.

Figure 3 below includes a more detailed description of the current state of the art of electronic procurement in each Member State, and highlights the overall maturity of the country's e-procurement system with respect to its stage of development. Those countries with more experience of e-procurement, aided in principle by an organisational structure capable of directing the political mindset towards electronic government and the specific aspect of electronic public procurement, clearly possess a greater number of more advanced e-procurement features. More importantly, less of these features are in the planning phase, and more are in the test and production phase.

Those countries which are only now introducing a new e-procurement system appear to be introducing many features *en bloc* (for example, Greece and Cyprus), and not just feature by feature; in fact, this manner of implementation may not be the most suitable, as it implies a large drain on financial resources, and requires experienced know-how; in fact only those countries that receive European structural funds appear to be employing this manner of implementation.

Another, perhaps more viable option for system implementation, (employed, for example, in Hungary and Austria), treats the e-procurement system as a Service Oriented Application (SOA): e-procurement features are put into production, only whenever the need arises for a particular service (the possession of an e-procurement system with all functional modules is not seen as an end in itself). A service is a self-contained software module that performs a predetermined task and doesn't require developers to use a specific underlying technology. Using SOA offers several key advantages: It allows one to adapt applications to changing technologies; easily integrate applications with other systems; leverage existing investments in legacy applications and quickly and easily create a business process from existing services.
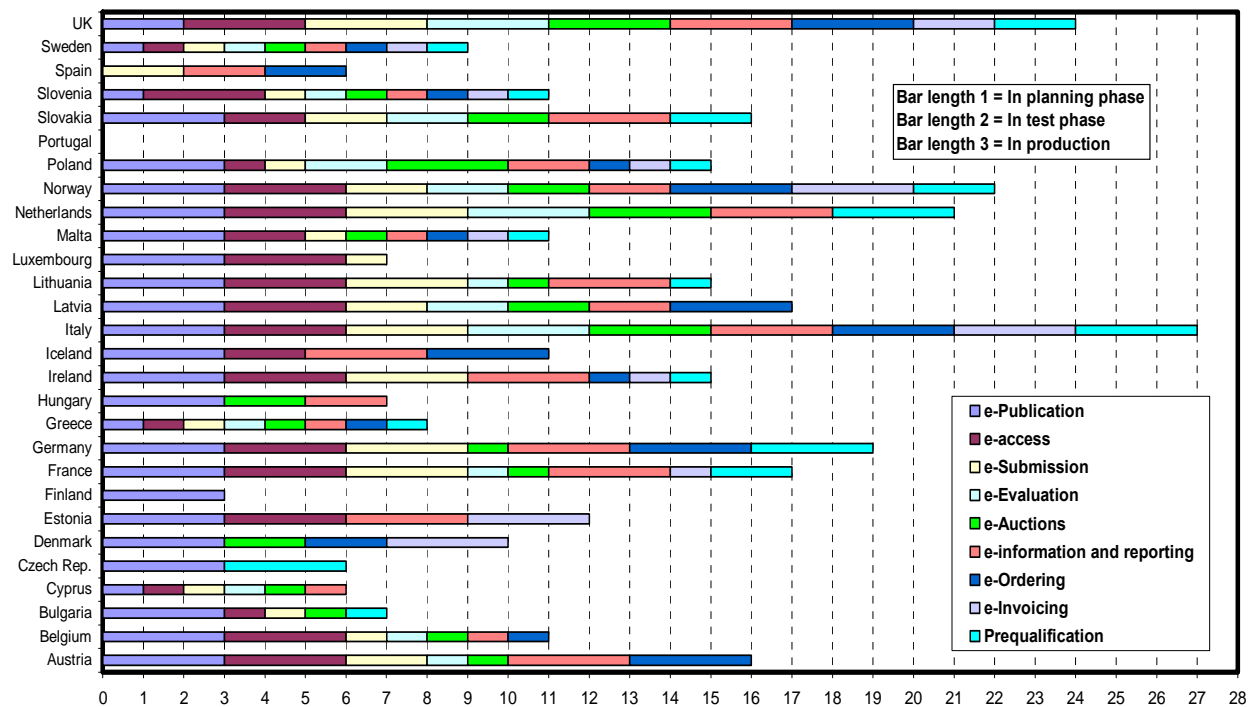
Figure 3 E-procurement modules developed in EU/EEA Member States

As can be clearly seen, nearly all countries are investing heavily in the development of various modules, although as mentioned before the most developed features at this stage can clearly be seen to be e-publication and e-access to tender documents (Finland was the only country which doesn't have concrete implementation plans for more advanced features apart from e-publication, although e-access operability is being discussed).

It must be noted that the level of implementation and technical sophistication of a system is not treated in this study as an automatic indicator of good practice: good practice must be seen as a realistic treatment of all the options available, with the introduction of e-procurement features based on a rational analysis of the overall benefits that may be accrued. In addition, it includes a treatment of non-functional aspects that are not inevitably equal to the technical development of the system. Therefore, a modern e-procurement system with all functional capabilities may appear to score highly on this graph, when in reality if it does not comply thoroughly with other non-functional aspects such as transparency or security, it cannot be considered as an example of good practice.

6.1.2   Structure of compliance verification mechanisms

An **official verification strategy** is used in 48% of the Member States (Austria, Belgium, Czech Republic, Denmark, Hungary, Italy, Lithuania, Luxembourg, Netherlands, Norway, Slovakia, Slovenia, UK). This incorporates any strategy that is officially documented and carried out with respect to any national or international law or standard. The verification may be carried out either by a nationally recognised central agency or externally by an independent 3rd party.

Internal strategies are utilised in 59% of the Member States (Belgium, Bulgaria, Estonia, Finland, France, Germany, Ireland, Italy, Latvia, Luxembourg, Malta, Netherlands, Norway, Poland, Spain, Sweden). This includes those strategies which, although effective, and accomplish the necessary tasks of validation, are not recognised officially through a documented procedure or standard, and are based purely on internally designed, albeit valid, processes. They are carried out primarily by the same body responsible for implementing the e-procurement system. An internal verification strategy is not necessarily mutually exclusive of an official strategy, and the two may complement each other (e.g. Belgium, Italy, Luxembourg, Netherlands and Norway). Only very few states (11%) have not yet adopted a verification strategy of any sort, due primarily to the stage of development of the system (e.g. Cyprus, Greece and Iceland).

The organisation of verification procedures is carried out, in 59% of Member States, by a public body at government level (Belgium, Bulgaria, Estonia, Finland, France, Germany, Ireland, Italy, Latvia, Luxembourg, Malta, The Netherlands, Norway, Poland, Spain, Sweden). In other cases, verification is carried out by a state company (Austria), which although

independent, is partly or wholly owned by the state, or, finally, in 37% of Member States by a 3rd party or independent, privately owned company, with no governmental connections. Again, these options are not mutually exclusive, and in many cases (30%) verification is carried out by more than one body, depending on the aspect being verified (Austria, Hungary, Lithuania, Luxembourg, Netherlands, Norway, Slovenia, Spain).

A **one off verification** procedure is commonly used in 18,5% of the Member States (Belgium, Czech Republic, Estonia, Slovakia, Slovenia) which encompasses the application of just one compliance verification procedure, applied to just one aspect of the system (e.g. e-publication) or one verification procedure of the system as a whole.

A **regular compliance verification procedure**, usually carried out at regular defined periods, such as once a year, or encompassing regular maintenance checks, is carried out again in 18,5% of the Member States surveyed (Austria, France, Ireland, Luxembourg, UK).

Verification at system upgrade, or when a new module is being implemented into the existing system, is commonly carried out by 37% of the Member States (Austria, Czech Republic, Finland, Germany, Latvia, The Netherlands, Norway, Slovakia, Spain, UK). **Other verification intervals**, carried out both internally or externally, and occurring on a random basis, commonly include processes such as audit checks or user satisfaction surveys, take place in 41% of Member States (Bulgaria, Denmark, Hungary, Ireland, Italy, Lithuania, The Netherlands, Norway, Poland, Slovenia, UK).

Verification of the correct **integration** of the e-procurement system with other independent systems is carried out 41% of the Member States (Austria, Belgium, Czech Republic, Denmark, Germany, Lithuania, Luxembourg, The Netherlands, Norway, Spain, UK). This includes integration with financial invoicing systems, Tenders Electronic Daily (TED), or official Gazettes and other tender publication systems.

A total of 33% of Member States (Austria, Bulgaria, Estonia, Germany, Italy, Lithuania, Luxembourg, Norway, UK) ensure that their **testing procedures are verified** against standardised testing procedures, and 48% of Member States (Austria, Belgium, Bulgaria, Czech Republic, Denmark, France, Italy, Lithuania, Luxembourg, Norway, Slovakia, Spain, UK) keep a **documentation plan** of the e-procurement specification, design, implementation, and maintenance process. This usually goes hand-in-hand with an official verification process, as documentation is a key aspect of that process. In addition, linked to the theme of documentation, in this case with respect to **non-electronic (paper-based) public procurement**, 78% of the Member States use verification procedures in this regard (Austria, Belgium, Bulgaria, Cyprus, Denmark, Estonia, Finland, France, Germany, Hungary, Iceland, Latvia, Lithuania, Luxembourg, Malta, The Netherlands, Norway, Slovenia, Spain, Sweden, UK).

With regard to the need for some type of verification plan at European level to be adopted by all Member States, 22% mentioned a preference for a **global verification plan** (Cyprus, Czech Republic, Estonia, Finland, France, Germany, Hungary, Ireland, Lithuania, The Netherlands, Norway, Slovenia, Spain, UK) which would involve the creation of a standardised procedure to verify the entire system, primarily on a one off basis. On the other hand, 15% (Austria, Bulgaria, Italy, Poland) preferred an initiative that involved the **discrete verification of individual modules** as they are installed within a platform or system. However, the majority (30%) preferred a **combination of the two options** (Estonia, France, Germany, Lithuania, The Netherlands, Norway, Spain, UK), that could be adopted by each Member State as the need arose, allowing for more flexibility in the development and implementation process.

Although only 26% of the Member States (Austria, Bulgaria, Cyprus, Czech Republic, Estonia, France, Ireland) directly mentioned the necessity of **adopting European standards** with respect to e-procurement, it is a topic that was mentioned obliquely by almost all respondents as being a necessity towards the efficient development of e-procurement at a EU/EEA level.

Service Level Agreements have been signed in 70% of the Member States (Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Hungary, Iceland, Ireland, Italy, Lithuania, The Netherlands, Norway, Portugal, Slovakia, Sweden, UK), defining the technical responsibility of external service providers which have been contracted to manage the e-procurement system, or in some cases, **different service providers may be responsible for separate modules** of the platform (e.g. Norway). This manner of outsourcing services through well defined agreements, which detail the levels to which a system must perform, may be a financially beneficial manner of managing the functions of an e-procurement system, especially for those countries that lack the financial resources to dedicate internal personnel fulltime to the necessities of a complex system.

Verification procedures for individual non-functional criteria are common in many countries, and highlight that the verification of these aspects is regarded as being genuinely important in all Member States. However, the means of verification varies considerably, from the application of national standards in many cases, to the provision of special online forums requesting users for comments and suggestions for improvements to the system. In general, **reliability, followed by security** are the **most verified features** among the Member States (85% and 74% respectively). In both cases, these aspects tend to be controlled by national standards and service level agreements. **Availability** of the system is also considered of paramount importance, and is governed by service level agreements allowing a down-time of only 0.5% in the provision of services, with respect to those Member States that outsource the operation of their systems. Those **aspects** which are the **least verified** among the Member States are interoperability (56%), usability (48%), accessibility and scalability (both 59%).

In general, **interoperability** amongst European systems is still very limited. In fact, integration with other systems at national level in many Member States is still very incomplete. In many cases, there have been problems integrating e-procurement systems with other systems at government level, such as business management systems. A framework of common principles and rules, as well as an agreement on open standards and interfaces for the implementation of interoperability between systems, applications, business processes and actors producing or using e-Government services is still urgently required, although the IDABC programme is going some way to meet these needs[8]. Some level of interoperability may occur between those Member States which can avail of similar off-the-shelf products from the same service provider (e.g. Denmark, Sweden, Iceland, and Norway).

The remaining aspects, **confidentiality and transparency**, fall somewhere in between (67% and 63%). Confidentiality is strongly linked with security, but as the majority of Member States are still only in the process of developing advanced features such as online bidding, which require tighter controls with respect to private information, this may explain the current lack of verification procedures with regard to these aspects.

Although many Member States do not appear to verify **usability, accessibility and scalability** on an official basis, verification of these aspects is probably carried out to some degree, albeit not on an official level. In many cases, these features are usually indicated during the specification stage of system development and verified on a one-off basis before implementation.

In one case (the Czech Republic) **attestation is provided for e-procurement tools** that are compliant with the applicable national laws. It presents an interesting option for a verification compliance mechanism (and indeed is also planned to be implemented within the French system), and may provide another alternative to those countries which again do not have the resources to develop their own compliance verification mechanism.

E-signatures are currently available for use within 74% of the Member States, although only 37% acknowledge that its use is implemented within public e-procurement. In the majority of cases (48%) the e-signature is certified by an independent authority; In 22% of cases, it is provided by a national authority, and in only one case is it provided by a contracting authority. It is interesting to note that the development and use of e-signatures lags someway behind the development of other aspects related to e-procurement, and in fact its use and implementation appears to be hindered in many countries by an inadequate legal base, which needs further definition before this feature can be employed.

6.1.3   The EU/EEA Member States' needs and restrictions

Each Member State has a different perception of the needs and restrictions for defining a compliance verification mechanism. The main restrictions and needs highlighted within the Member States are presented below:[9]

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[8] European Interoperability Framework For Pan-European E-government Services. IDABC. 2004

[9] The complete picture of needs and restrictions can be found in the Annexes chapter.

Restrictions

- Almost all countries mention that cost is a highly relevant factor, and has a restrictive effect, although it is more severe in some countries (Bulgaria, Czech Republic, Cyprus, Estonia, Iceland, Latvia, Lithuania, Poland, Slovenia) than others (Austria, Germany, Italy, UK).

- Some countries (Bulgaria, Czech Republic, Estonia, Finland, Hungary, Iceland, Malta) have budgetary problems for implementing e-procurement in general, since it is not seen as a relevant issue by politicians. Therefore, verification is not perceived as a primary necessity of the system. In such cases co-funding by national governments and the EU is seen as a possible solution.

- The technical complexity with respect to implementation of e-procurement systems or certain aspects thereof is mentioned as a restriction for the development of e-procurement in some countries (Denmark, Greece, Iceland, Lithuania, Luxembourg, Poland, Spain). This includes such problems such as the long-term storage of electronic documents in the government sphere. In addition, the difficulties in employing qualified IT specialists and other professionals with the necessary experience can be marked, as salaries in government institutions are much lower compared to the corresponding private business.

- The number of users with knowledge and experience regarding e-procurement systems is limited and training and dissemination is considered a requirement in some countries (Estonia, France, Greece, Italy, Latvia, Lithuania, The Netherlands, Poland, Spain).

- The national authority appointed within each Member State to oversee the development of e-procurement development in many cases has not been provided with the organisational and financial capacity to coordinate verification, particularly if different systems are implemented at different levels of government.

- In certain Member States, the small number of employees dedicated to e-procurement management agenda in the government sphere (e.g. Czech Republic, Poland, Greece, Iceland).

- The existence of independent systems at different governmental levels (one national, several regional, etc), and a lack of interoperability standards, is limiting e-procurement development in some countries (Belgium, Italy, Spain, Sweden; see Annex VI) and is perceived as a limiting factor for verification. In these situations, regional platforms have been developed in a wide array of models and sectors, which makes interaction between procurement systems rather difficult.

- In some situations procurement was previously decentralized in all facets but e-notification, and thus financing was only possible on a decentralized level, thus weakening full-scale development opportunities within e-procurement.

- Some countries (Belgium, Czech Republic, Finland, Lithuania, Luxembourg) do not see the necessity of having an external 3rd party that verifies the system, and rather prefer to carry out verification in-house.

- The lack of proper procedures ensuring transparency of the e-procurement process has been noted in some countries (Bulgaria, Malta).

Needs

- There is a general need for a reference body, at European or national level, which promotes e-procurement in all its aspects (implementation, verification, standardisation…). This independent authority could also regularly verify a sample of procurement bids (throughout the whole chain from the notice to implementation) at European level, based on previously defined requirements.

- In some countries (Bulgaria, Czech Republic, Estonia, Finland, Iceland, Malta), the political backing for e-procurement is currently perceived as lacking and requires a more proactive input at the highest administrative level.

- Compliance verification for e-procurement systems is a global need, particularly with respect to aspects such as interoperability. However, verification per module is generally preferred to verification for the whole system, since it allows a step-by-step development, and better control of specific aspects (e.g. e-signatures), which is perceived as the more logical and cost efficient approach. A mix of the two schemes may be preferable, as it is considered that some projects would benefit from one overall verification strategy supplemented with individual verification features in each phase. This should include explicit directives on how to audit an IT system for the public sector.

- The definition of standards for different features of e-procurement is required. However, standards defined at European level must be built on consensus between all countries involved, and take into account development (both technical and with respect to technical standards) that has already occurred. In addition, standardisation is vital with respect to off-the-shelf solutions, as many currently do not correspond with the EU Directives, resulting in higher development costs than originally expected. Verification and the subsequent listing of "best-buy" off-the-shelf solutions, most compliant with EU Directives, should be defined and made available to all countries.

- Technical and financial backing should be provided for smaller, less well-off administrations. In this sense, the complexity of the verification mechanism may need to be standardised commensurate with country size and purchasing power, with insufficient resources to carry out verification at any depth. In this situation, smaller Member States should be encouraged to outsource their development as much as possible, as the costs for compliance would then be the responsibility of the developer.

- Greater mutualism and cooperation among the Member States is seen as necessary to implement the necessary interoperability at European level.

- The involvement of users at the beginning of any e-procurement project is considered to be highly recommendable, and helps to reduce problems with usability and accessibility that may negatively affect the use of the system after implementation.

- Training is vital with regard to many aspects of e-procurement, and of e-business and e-government in general, both within and external to the public authority, and in particular for the final end users, buyers and suppliers. In addition, as many public administrations are moving rapidly from a predominantly manually oriented process to full electronic procurement, training will be vital for the efficient uptake of the system amongst public officers.

- It was stressed that enterprises need more visibility and comprehension concerning the use of e-procurement platforms. The barriers for the moment are more significant than the perceived advantages. In addition, providers should be encouraged to see the added quality provided by the implementation of e-procurement as a benefit and not a constraint. The emphasis should be on added-value, not obligation. In addition, there should be an increase in efforts to give people better access to ICT tools and specific campaigns to promote confidence in the security of these processes.

Based on these aspects and considering the needs detected by CARSA, the main points that should be considered when assessing the different options for a compliance verification mechanism are:

- **E-procurement standards** should be defined **at European level** (especially for e-signature), and in particular **for compliance verification**. The definition of these standards should consider the features of the already existing systems, in order to minimise the impact of their use.

- A reference **body at European or national level**, which **coordinates and promotes the development of e-procurement, and encourages its use amongst citizens and governments and pushes forward compliance verification** as a strategy is seen as relevant in the majority of the countries surveyed.

CARSA

7   AN ANALYSIS OF THE OPTIONS FOR COMPLIANCE VERIFICATION

7.1   Compliance verification strategies already used by the EU/EEA Member States

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Brief summary of the verification strategies used by the EU/EEA Member States:

- Most of the Member States technically verify their system, although the scope and depth varies considerably from one Member States to another.

- The specification phase is considered the most important phase, in all cases. It is defined with respect to the EU Directives that have been transposed into national law and other national laws, and thus forms the foundation for any subsequent verification mechanisms.

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- Compliance verification standards and interoperability frameworks are developed in some countries (Germany, UK).

- Stakeholder input (including final user input) is vital at all stages of the system design and development process, but should be proactively encouraged particularly during the specification phase.

- Attestation of tools based on national standards is applied in some countries (Czech Republic) and planned in others (France).

Main categories of system operation and development:

- **In-house** development and maintenance of the system.

- E-procurement system development and maintenance **outsourced**.

The existing trends for verifying compliance are:

- Development of technical standards for supporting the verification process of the system features.

- The Member States ensure system compliance with the EU Directives during the specification phase.

- Verification is perceived as a technical activity within the development and maintenance life cycle of the e-procurement system. An example of this is that compliance is specified in contracts or service level agreements with external parties.

The list of existing strategies for compliance verification in the EU/EEA Member States is summarised below. This is the approach to compliance verification that each EU/EEA Member State has decided to follow. The verification strategies refer to strategies implemented once the system has been developed (Internal or Outsourced) and also to strategies employed during the operational and maintenance phases (considering who is performing those phases and who is verifying the system at that time). Each strategy is briefly explained and the countries in which it is applied are included. The first category, "System Operation and Maintenance", defines how these aspects are managed and coordinated within each country, and refers to the daily running of the system. "Compliance verification during development" refers to the coordination and execution of compliance verification on all features during system development. "System verification during the operational and maintenance phases" covers the verification mechanisms that are followed once the system is "rolled-out" and fully functional. The final category, "Countries in which this strategy is applied", highlights

those countries which apply the strategy. In some cases, the countries exhibit different traits during operation and maintenance and these are shown in parentheses.

Strategy 1) The characteristics of this alternative are:

System Operation and Maintenance	Internal operations and system maintenance
Compliance verification during development	Internal (the system is internally verified by the public organism, against the requirements). System requirements specification is carried out by the public organism in charge of e-procurement in that country
System verification during operational and maintenance phases	Internally verified using one or more of the following possibilities: (1) That the system fulfils the requirements specified (2) Developed standards (3) International standards (4) Guides or Conduct codes
Countries in which this strategy is applied	Belgium: using (1) above Bulgaria: using (1) & (4) above Czech Republic: using (2) & (3) above Estonia: using (1) above Italy: using (1) above Luxembourg: using (1) above Malta: using (1) above

Strategy 2) The characteristics of this alternative are:

System Operation and Maintenance	Outsourced (daily operations and maintenance are carried out by a service provider)
Compliance verification during development	Internal (the system is internally verified by the public organism, against the requirements). System requirements specification is carried out by the public organism in charge of e-procurement in that country
System verification during operational and maintenance phases	Internally verified using one or more of the following possibilities: (1) a Service Level Agreement (SLA), which is a contractual obligation of the service provider (2) Internal verification of system requirements (3) Developed standards
Countries in which this strategy is applied	Denmark: using (1) above Finland: using (2) above France: using (2) above Germany: using (3) above UK (Scotland) : using (1) & (3) (e-GIF) above

Strategy 3) The characteristics of this alternative are

System Operation and Maintenance	Outsourced (daily operations and maintenance are carried out by a service provider)
Compliance verification during development	Outsourced to a 3rd party (verification is usually applied only to certain system features such as transparency. For other system features (mainly availability) SLA is applied. System requirements specification is carried out by the public organism in charge of e-procurement in that country
System verification during operational and maintenance phases	Both Outsourced & Internal. Outsourced to a 3rd party: verification applied to certain system features Internal: other system features are internally verified by an internal group using a Service Level Agreement (SLA), which is a contractual obligation of the service provider, as well as internal norms or standards
Countries in which this strategy is applied	Austria Spain

Strategy 4) The characteristics of this alternative are

System Operation and Maintenance	Outsourced (daily operations and maintenance are carried out by a service provider)
Compliance verification during development	Internal (the system is internally verified by the public organism, against the requirements). System requirements specification is carried out by the public organism in charge of e-procurement in that country
System verification during operational and maintenance phases	Outsourced: (1) 3rd party audits based on general standards (2) The service provider verifies the system. Contract with service provider defines the SLA for all system features
Countries in which this strategy is applied	Hungary: using (1) above Iceland: using (2) above Sweden: using (2) above

Strategy 5) The characteristics of this alternative are

System Operation and Maintenance	Outsourced (daily operations and maintenance are carried out by a service provider)
Compliance verification during development	Internal (the system is internally verified by the public organism, against the requirements). System requirements specification is carried out by the public

	organism in charge of e-procurement in that country

System verification during operational and maintenance phases	Both Outsourced & Internal.
	
	Outsourced: The service provider verifies the system. Contract with service provider defines the SLA for some system features, which is a contractual obligation of the service provider
	
	Internal: other system features are internally verified by an internal group using:
	
	    (1) National standards
	
	    (2) Guides or conduct codes
	
	    (3) Verification of fulfilment of system requirements

Countries in which this strategy is applied	Ireland: using (2) & (3) above Lithuania: using (1) above The Netherlands: using (3) above Poland: using (2) & (3) above Norway: using (3) above Slovakia: using (3) above

Strategy 6) The characteristics of this alternative are

System Operation and Maintenance	Internal operations and system maintenance
Compliance verification during development	Internal (the system is internally verified by the public organism, against the requirements). System requirements specification is carried out by the public organism in charge of e-procurement in that country
System verification during operational and maintenance phases	Both Internal & Outsourced Internal: most of the system features are internally verified using European regulations Outsourced: an auditing company carries out verification of some system features
Countries in which this strategy is applied	Latvia

For those countries with no system implemented yet, there is ***no verification***: Cyprus; Greece; Slovenia.

Table 3 below summarises all the strategies in a schematic way:

CARSA

Strategy	Country	System Development		System Operation and Maintenance		Compliance verification during development		System verification during operation and maintenance	
		Internal	Outsourced	Internal	Outsourced	Internal	Outsourced	Internal	Outsourced
1	Belgium	X		X		X		X	
	Bulgaria	X		X		X		X	
	Czech Republic	X		X		X		X	
	Estonia	X		X		X		X	
	Italy		X	X		X		X	
	Luxembourg		X	X		X		X	
	Malta		X	X		X		X	
2	Denmark		X		X	X		X	
	Finland		X		X	X		X	
	France		X		X	X		X	
	Germany		X		X	X		X	
	UK (Scotland)		X		X	X		X	
3	Austria	X			X		X	X	X
	Spain		X		X		X	X	X
4	Hungary	X			X	X			X
	Iceland		X		X	X			X
	Sweden		X		X	X			X
5	Ireland		X		X	X		X	X
	Lithuania		X		X	X		X	X
	The Netherlands		X		X	X		X	X
	Norway		X		X	X		X	X
	Slovakia		X		X	X		X	X
	Poland		X		X	X		X	X
6	Latvia		X	X		X		X	X

Table 3 The mechanisms for compliance verification that currently exist within the EU/EEA

These strategies represent how each Member State has organised its own particular system of verification, in spite of a conspicuous gap that exists between the EU Directives on public electronic procurement and the definition of compliance verification mechanisms for these. That gap includes both technological and organisational aspects which must be considered. Despite some existing helping tools, such as the preliminary functional requirements for e-procurement systems established by an external study for the Commission[10] and the interoperability[11] effort that the IDABC programme is leading, this gap exists due to an absence of detailed specifications or frameworks that define compliance verification mechanisms and, in addition, an absence of harmonised standards on how to accomplish a common compliance verification process.

Solving the technological gap is not considered within the confines of this study, as it requires an in-depth investigation of the technologies available, and most commonly used, and a description of the best practices to be applied. In this study, the possible solutions for solving the organisational gap will be considered.

Using the information above which describes the different strategies employed in the various Member States, and based on a series of organisational characteristics considered vital to the functionality of any mechanism, a list of generic options defining potential compliance verification mechanisms is illustrated below (options A to L).

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[10] Functional requirements for conducting Electronic Public Procurement under the EU framework, Volume I & II

[11] 'European Interoperability Framework for pan-European eGovernment Services'

List of options[12]

- <u>Option A</u>: Verification of Product; Led by a European level public entity (existing or to be defined); Verification financed by the EC; Voluntary scheme; Verification performed internally, by electronic means or by a 3rd party involved; Quality label as a result.

- <u>Option B</u>: Verification of Product; Led by a European level public entity (existing or to be defined); Verification financed by the Developer; Voluntary scheme; Verification performed internally, by electronic means or by a 3rd party involved; Quality label as a result.

- <u>Option C</u>: Verification of Product; Led by a European level public entity (existing or to be defined); Verification financed by the EC; Mandatory scheme; Verification performed internally, by electronic means or by a 3rd party involved; Quality label as a result.

- <u>Option D</u>: Verification of Product; Led by a European level public entity (existing or to be defined); Verification financed by the Developer; Mandatory scheme; Verification performed internally, by electronic means or by a 3rd party involved; Quality label as a result.

- <u>Option E</u>: Verification of Product; Led by a European level public entity (existing or to be defined); Verification financed by the EC; Both Voluntary and Mandatory schemes; Verification performed internally, by electronic means or by a 3rd party involved; Quality label as a result.

- <u>Option F</u>: Verification of Product; Led by a European level public entity (existing or to be defined); Verification financed by the Developer; Both Voluntary and Mandatory schemes; Verification performed internally, by electronic means or by a 3rd party involved; Quality label as a result.

- <u>Option G</u>: Verification of Product; Standards required; Led by a European level public entity (existing or to be defined) with implementation at national level by Local Level Entities; Verification financed by the EC; Voluntary scheme; Verification performed internally, by electronic means or by a 3rd party involved; Certification as a result.

- <u>Option H</u>: Verification of Product; Standards required; Led by a European level public entity (existing or to be defined) with implementation at national level by Local Level Entities; Verification financed by the Developer; Voluntary scheme; Verification performed internally, by electronic means or by a 3rd party involved; Certification as a result.

- <u>Option I</u>: Verification of Product; Standards required; Led by a European level public entity (existing or to be defined) with implementation at national level by Local Level Entities; Verification financed by the EC; Mandatory scheme; Verification performed internally, by electronic means or by a 3rd party involved; Certification as a result.

- <u>Option J</u>: Verification of Product; Standards required; Led by a European level public entity (existing or to be defined) with implementation at national level by Local Level Entities; Verification financed by the Developer; Mandatory scheme; Verification performed internally, by electronic means or by a 3rd party involved; Certification as a result.

- <u>Option K</u>: Verification of Product; Standards required; Led by a European level public entity (existing or to be defined) with implementation at national level by Local Level Entities; Verification financed by the EC; Both Voluntary and Mandatory scheme; Verification performed internally, by electronic means or by a 3rd party involved; Certification as a result.

- <u>Option L</u>: Verification of Product; Standards required; Led by a European level public entity (existing or to be defined) with implementation at national level by Local Level Entities; Verification financed by the EC; Both Voluntary and Mandatory scheme; Verification performed internally, by electronic means or by a 3rd party involved; Certification as a result.

Each option implies certain additional aspects which should also be considered. These **implications** are assessed during the scenario-building process.

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[12] The methodology for creating this preliminary list of options is shown in the annexes.

8   AN ANALYSIS OF THE MOST FEASIBLE AND APPROPRIATE SCENARIOS FOR ORGANISING COMPLIANCE VERIFICATION IN THE EU/EEA

This chapter presents the Reference Scenarios for compliance verification in the EU/EEA that have been created as a result of the study. In addition, it provides a brief synopsis of the scenario building process carried out in this study, which is presented in more detail in the annexes.

The list of options described in chapter 7 represents an initial, high level interpretation of possible compliance verification mechanisms that could be applied in the UE/EEA. It must be pointed out, however, that not all the options may be considered practicable for the purposes of this study. The process of scenario building allows one to distinguish those options or combination of options that may be most useful for defining a compliance verification mechanism in the EU/EEA. In order to do this, the previously defined options are *deconstructed* during the scenario building process, the possible interrelationships of their constituent parts clarified, and then they are *reassembled* into the Reference Scenarios that are defined in this chapter.

A Reference Scenario is composed of three different **partial scenario categories.**[13] A total of 8 partial scenarios are defined. These scenarios are grouped into three categories depending on the aspects they encompass: technical based category, financial/organisational based category and standards category.

- **Technical based partial scenarios** tackle the so-called technical aspects of a compliance verification solution;

- **Financial/organisational partial scenarios** tackle the managerial aspects that are to be considered when defining and implementing a compliance verification solution;

- **Standards partial scenarios** work on different alternative to create the guidelines and/or standards that substantiate any compliance verification solution.

Table 4 below shows the relation of partial scenarios that are considered feasible taking into consideration the scope and area of application of the study.

Type of Partial Scenario	Name of the scenario	Key drivers
Technical based category: (1) Product (2) Type of Verification (3) Outcome (4) Standards	TPS 1, Technical Scenario 1	(1) Verification limited to essential requirements (2) Internal Verification, result revised by a third independent party (3) Quality Label linked to a Voluntary Accreditation Scheme. (4) Guidelines and recommendations mutually agreed
	TPS 2, Technical Scenario 2	(1) Verification limited to essential requirements (2) External verification, by Accredited certification bodies (3) Certification (4) Standards, developed with the involvement of standardisation bodies
	TPS 3, Technical Scenario 3	(1) Verification limited to essential requirements (2) Notified Bodies (3) Certification including CE marking (4) Standardisation bodies following New Approach principles.
Financial/organisational based	FOPS 1, Financial Scenario 1	(1) Existing entity at EU Level coordinating and managing (2) European Commission and fees from developers

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[13] A Reference Scenario defines and characterises all the elements necessary to create a compliance verification mechanism, whereas a partial scenario describes only a subset of these.

category		(3) Mixed
(1) Management Entity		(4) Local e-procurement offices, implementing compliance verification at national/local level
(2) Financing	FOPS 2, Financial Scenario 2	(1) New Agency at EU Level (2) European Commission and fees from developers (3) Mixed
(3) Scheme		(4) Local e-procurement offices, implementing compliance verification at national/local level
(4) Local entities		
Standards Based Category	SPS 1, Standards Scenario 1	(1) Mixed (2) CE Label (3) International Standardisation bodies, New Approach
(1) Scheme	SPS 2, Standards Scenario 2	(1) Mixed (2) Certification (3) Standardisation Entities
(2) Outcome		
(3) Standards	SPS 3, Standards Scenario 3	(1) Voluntary (2) Quality Label (3) Mutual recognition of guidelines between countries

Table 4 Partial scenario types and key drivers

As the result of the combination exercise carried out on the partial scenarios, three **Reference Scenarios** have been identified, and are considered feasible for the area of application that is being treated here.

8.1   Reference Scenario 1 "LITE": A Simpler Approach To Verification.

Time frame for implementation: 2 years.

Standards

This is considered to be the **easiest or lightest approach** to put into practice, as **no formally approved standards** are required for implementation.

It does however, require the **implementation of requirements or guidelines** upon which the provision of the quality label is based. These guidelines must be created with the input of all stakeholders and agreed upon by all Member States.

Compliance verification

Compliance verification is then carried out to see these **requirements** are adhered to. It must be noted that the compliance procedure may be just as stringent: the benefit of this scenario is that guidelines may be developed far more quickly and may be more flexible than the development of international standards.

In addition, within this scenario, the **use of electronic tools and methodologies is perfectly acceptable**, and their development should be encouraged, as a means for aiding compliance verification, and may indeed help in minimising subsequent compliance verification processes: the final result, however, should undergo some type of quality control by an entity external to the development of both the systems and tools. The use of tools, however, may incur extra costs such as training, particularly when the tools under discussion deal with complex verification processes.

Coordination

The entities role in this case could be limited to **simple coordination and supervision procedures**; the actual administration of quality labelling and compliance verification may be carried out at national level by the various bodies already involved in the implementation of electronic public procurement. However, the entity must have the capacity to coordinate some type of conflict resolution mechanism, and adjudicate between parties whenever necessary. Therefore, an agency is again seen as the most appropriate entity to fulfil these conditions. It is considered more likely that an

existing agency may be capable of fulfilling the role of this Reference Scenario, although the potential also exists for the creation of a new agency.

Type of scheme

In this case, the type of scheme would be **voluntary**, although through encouragement and dissemination of the advantages of compliance, by both the national entities and EU entity, the bodies responsible for implementing the e-procurement system would see the benefits of compliance verification leading to greater interoperability at a European level.

Outcome

In this case, the outcome is a quality label, the awarding of which is based on previously defined requirements and guidelines. Utilisation of the quality label, to promote the developer and its products, or an individual e-procurement platform, will be provided to those bodies that voluntarily satisfy the compliance verification process.

Although the scheme is identified as being the "lightest", acquiring the quality label should be sufficiently rigorous; the requirements for its provision may be just as exacting as in any other type of scheme.

In this case, the strongest asset of the scheme is that the quality label helps orientate the user towards those bodies that are interested in promoting the interoperability of e-procurement within Europe. It is further strengthened by the fact that being voluntary, it highlights the proactive nature of the bodies involved towards quality and standardisation. This in turn will become a self-regulating process, as the commercial and marketing benefits of obtaining the quality label will convince other developers to voluntarily sign up to the process.

Internal user benefits: quality labelling is a tried and trusted system at international level, in various sectors. As a voluntary scheme, with national entities being perfectly capable of carrying out coordination activities in their relevant countries, the management responsibilities on the EU entity should be minimised.

External user benefits: a voluntary system allows external users to utilise the system based on the resources that they have at their disposal. The quality label will provide a market advantage to the external user over its competitors which have not attained the label.

Risks

- Poor or no uptake by the Member States: being voluntary, Member states wont see the need to comply with the scheme.

- The value of the final quality label attained may be seen as having less credibility than mandatory label: the definition of solid and respected requirements for the awarding of the label, and mutual agreements between Member States would help to mitigate this factor.

- Compliance verification implies a cost, both financial and effort, and if the benefits are not made very clear, a voluntary scheme may fail.

- Disorganisation of e-procurement in some Member states may make a voluntary labelling scheme impossible to implement and coordinate.

- The quality label must be backed up by solid coordinating and administrative structures, and by credible standards/requirements and verification mechanisms, particularly for assuring the user and developer of their benefits.

Benefits

- There is a strong political imperative to create trust in doing business over the Internet: this is provided clearly by trust marks or quality labels.

- Quality labels are widely used in development and the provision of specific internet services, for providing consumer information related to accessibility, usability and security of internet services.

- Quality label could be extended beyond public administration, to private industry. If labelling is sufficiently recognised, it could become self-financing through competing with other trust seals.

- If development is internal to the public authority, and the verification is voluntary, there is no incentive to sign up to the quality labelling scheme.

- If development is outsourced, and the scheme either voluntary or mandatory, incentives for developers to sign up to the quality label scheme are implicit in the standards, and provide positive implications.

- Public procurement opportunities are sufficiently lucrative to private companies to attract investment; in this case the onus will be on the public authority to promote the quality label.

- Quality labels are commonly used to acclaim quality of products or services in technology industry.

- Quality labels are common ways in industry of differentiating yourself from your competitors; new trust seals in this sense are attractive due to their novelty, although their use must be backed by proactive motivation (i.e. standards).

- For those companies whose trademark does not automatically imply trust and quality (e.g. IBM, Cisco), a quality label is ideal for achieving a competitive edge.

- Quality labels that offer dispute resolution mechanisms without recourse to the courts are more attractive options to industry.

- Quality labels that have effective sanctions for non-compliance can result in effective and enforceable redress for final users, and increase the credibility of the label.

- A quality label could be publicised as a European award scheme. This would provide valuable positive publicity to the selected finalists and winners.

Roadmap and implementation plan

In figure 4 the main actors and their primary functions are described. These main actors defined in the first scenario are:

- **EU entity**

- **Experts**

- **National entities**

- **Internal developers**

- **Developers (external)**

- **Internal independent group**

- **Independent test houses**

- **Independent experts**

The primary functions of each of these main actors are defined in the boxes under each of the actors. The top-down flow of the tasks allows us to clearly identify those tasks which occur as the result of a previous activity in the chain. The interrelationships between each of the actors is defined via connecting arrows, and permits the formulation of the primary process flows which have been identified for this Reference Scenario.

The different phases of the roadmap and implementation plan are shown by means of colour codes to facilitate cross referencing of the different phases between the respective diagrams (e.g. see figure 4 and 5) :

Phase 1: Definition phase: PURPLE

This phase includes those steps involved in the initial definition of the Reference Scenario project, and includes the preliminary preparation tasks, involvement of experts, and contact with all stakeholders. It also includes the integration of any initial information that may be essential to the preparatory phase: i.e. information concerning standards etc.

This phase also includes the development of the "rules and regulations" involved in the overall functioning of the scenario e.g. this includes Codes of Conduct, initial guidelines , essential requirements and mandates.

Phase 2: Development phase: GREEN

This phase includes all steps involved in the development of the scenario procedures and processes. This includes running pilot tests and redefining the rules as previously defined based on the results of the testing procedure. Standards development is initiated in this stage. Maintenance tasks are also initiated in this phase.

Phase 3: Implementation phase: BLUE

This phase concerns the "live" implementation of the final compliance verification mechanism in real situations, amongst developers and national authorities, and 3rd party testing and certifying bodies. This phase also includes the various steps to be carried out by developers (internal or external) with respect to labelling.

Phase 4: Coordination phase: TURQUOISE

This phase concerns all actions related to coordination, management and quality checking. It also includes any collaboration processes with external bodies such as national accreditation authorities. This phase carries on through the whole life-time of the project.
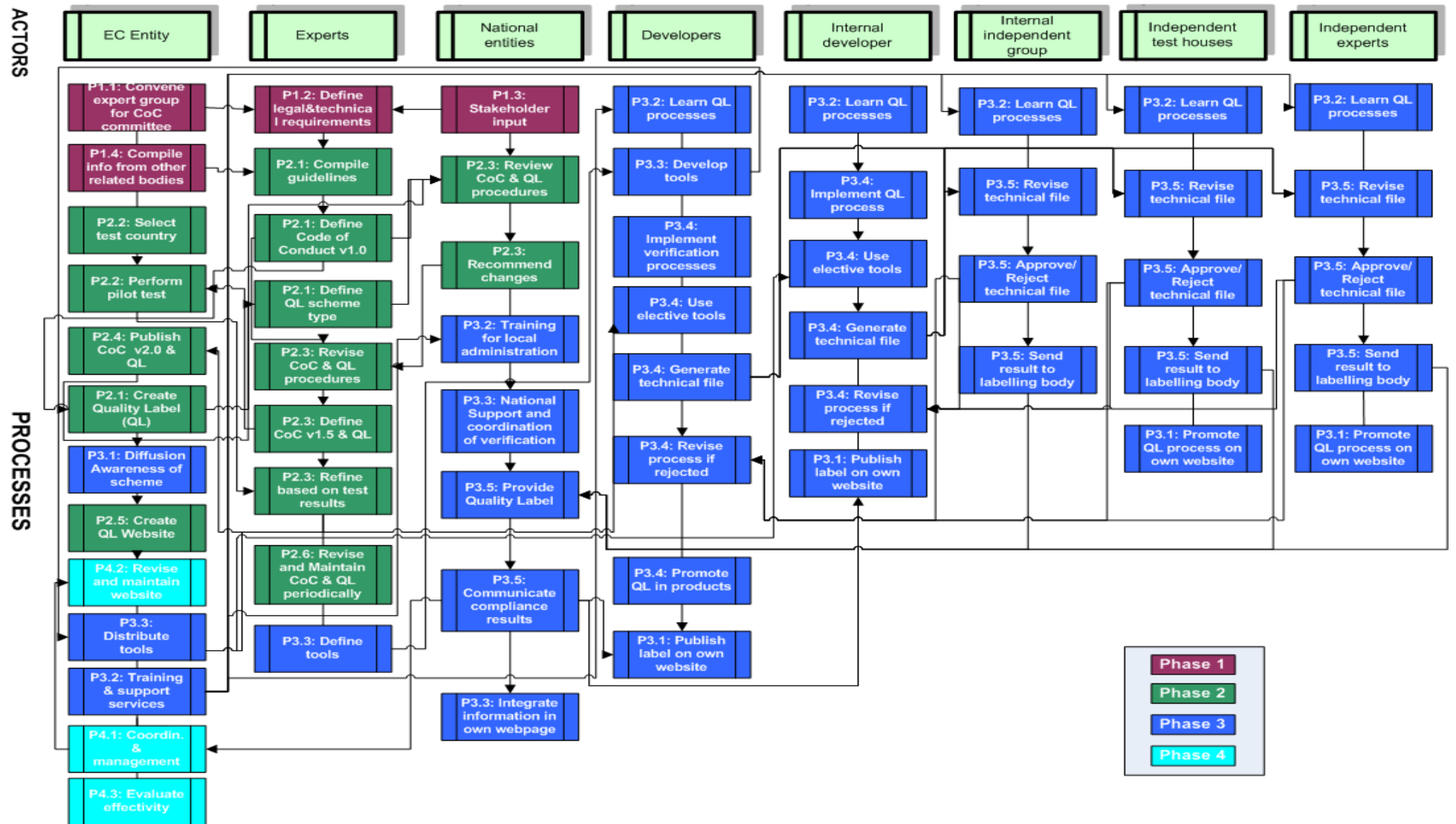
Figure 4 Process detail, actors and main functions in Reference Scenario 1

Figure 5 below shows the different phases involved in the implementation of the Reference Scenario. The colour coding allows us to identify those tasks defined in the process flow above, with the primary phases of development of the Reference Scenario. It should be noted that certain tasks which are shown above have been grouped together in the figure below, in order to compress the time frame to a more manageable size. For this reason different task boxes may show the same task number, e.g. P3.2 is repeated for tasks grouped within training related functions, although the tasks themselves are independent.

Id	Nombre de tarea
1	Europe 2010
2	Phase 1: Definition phase
3	P1.1 Convene expert group
4	P1.2 Define requirements
5	P1.3 Integrate stakeholder input
6	P1.4 Compile info from other bodies
7	Phase 2: Development phase
8	P2.1 Create code of conduct & label
9	P2.2 Perform pilot test
10	P2.3 Revise CoC & QL procedures
11	P2.4 Publish code of conduct
12	P2.5 Create website for QL
13	P2.6. Maintain CoC & QL procedures
14	Phase 3: Implementation phase
15	P3.1 Diffusion and awareness of scheme
16	P3.2 Training for scheme
17	P3.3 Support for users of scheme
18	P3.4 Developers
19	Learn verification process
20	Implement verification process
21	Generate technical file (TF)
22	Subsequent actions
23	P3.5 3rd parties
24	Revision & approval processes
25	Phase 4: Coordination & management phase
26	P4.1 EC entity: Coordination & management
27	P4.2 Revise and maintain website
28	P4.3 Periodical effectivity checks
29	1 Periodical check
30	2 Periodical check

Figure 5 Implementation timeframe for Reference Scenario 1

As can be seen a time frame of just over 2 years is foreseen for the development of Reference Scenario 1.

Phase	Time required
Phase 1: Definition phase	5 months
Phase 2: Development phase (not including maintenance)	12 months
Phase 3: Implementation phase (not including diffusion, training and support)	9 months
Phase 4: Coordination and management phase (concurrent with other phases)	28 months

Phase 1: Definition phase

P1.1 Convene expert group

The first task of the EU entity is to convene the committee of experts who will work towards the creation of the requirements for the code of conduct and guidelines for provision of the quality label. This group of experts should be composed of a range of disciplines, in order to cover the different influencing factors involved in the scenario i.e. both technical and legal experts must be involved, along with experts in standardisation and compliance processes.

These experts may be represented by all the Member States, or they may be independent experts from other areas outside the EU/EEA, with the required know-how. The time and cost that this takes depends entirely on the number of parties and the willingness of parties to work together.

P1.2 Define legal and technical requirements

Define quality label process

Within this step the scope, depth, and process of quality labelling for e-procurement platforms will be defined, related to the code of conduct that has already been devised in the previous section. This task runs in parallel with the development of codes of conduct, as the requirements which are defined in that step will directly affect the type of process that will apply to the provision of the quality label.

The definition of the label should take into account important general characteristics:

- In general, the label will denote a distinctive mark of quality of a product or service.

- In the context of platforms which provide a service via the Internet, the label bears witness to the compliance of an e-procurement site, product or service with pre-defined quality and safety requirements (defined in guidelines).

- The label is a tool that promotes confidence. It must allow the user to easily identify those e-procurement markets enjoying increased security and confidence.

- In general, the label will also be aimed at encouraging use of procurement via the Internet and at alleviating the non-tangible and remote aspects of Internet relations by offering in some cases a simple external reference and in others a real guarantee.

- The label should offer greater visibility to service providers. A company with a label stands out from the plethora of Internet sites that exist. A label is also a commercial argument that increases the sale of products and services. However, there are many national, European and international labels with the most diverse origins and

fields of application. Without a standard (the code of conduct described above), such a profusion of labels is confusing for beneficiaries.

Developing the quality label will entail the definition of certain key questions which must be answered:

Who will use the quality label?

- This will define whether the label will be provided purely to public authorities or also to external developers.

- Defining the use of the label will affect the type of process to be used for labelling the final product, and also the mechanisms of compliance.

Who revises the quality label?

- This could be carried out by the pool of experts mentioned in Stage 1, which would include both legal and technical authorities.

- This could be the responsibility of the coordinating body at EU level.

- It could be the responsibility of the relevant national procurement authorities in each of the Member States.

- the revision process could be outsourced to an external body.

Who leads development of the quality label?

- This could be carried out by the EU entity.

- This could be outsourced to an external developer.

- This will include website development, maintenance and provision of services throughout the life of the quality label scheme.

- Translation services, to provide the quality label and its associated guidelines in all the languages of the EU/EEA.

Define the scheme

The two types of schemes possible in the Reference Scenarios are voluntary or mixed. Both have their advantages and disadvantages. The type of scheme to be adopted must be defined in this case.

- It is possible that compliance in a voluntary structure increases over time. While compliance with a voluntary code in year one may not be high, in year two it may increase if firms feel pressure from other market actors to adopt the same governance practices.

- Market forces occasion greater compliance. Admittedly, there is no guarantee that compliance will in fact increase, and it could certainly decrease, depending on market conditions.

- A partially mandatory or hybrid structure is likely to yield a fairly high level of compliance at a lower cost than a wholly mandatory regime. There are two main permutations of a partially mandatory structure, both of which strike some arrangement between firms' adoption of corporate governance measures and their disclosure of such measures.

Mandatory disclosure of voluntary compliance provides an incentive to comply, since organisations are in essence broadcasting their internal structure and compliance, or non-compliance, with the guidelines or best practices.

P1.3 Integrate stakeholder input

Stakeholders should be involved from the outset, during the definition of the requirements and the code of conduct. The main stakeholders in this case are the Member States, whose input will be vital to the final success of the scheme.

P1.4 Integrate other relevant info

Any information that is relevant to the development of the compliance mechanism should be incorporated into the development process. This includes information from other similar mechanisms or best practices in e-government and electronic public administration that exist worldwide. In addition, other existing building blocks that may be of interest, such as approaches to standardisation, should be incorporated.

Phase 2: Development phase

P2.1: Create code of conduct & quality label process

Part of any successful quality labelling initiative requires the development of a code of conduct. The key principles underlying widely accepted good practice for creating codes of conduct are:

1. The coordinating organisation's objective should be to develop a values-based organisation and a values-driven code, to promote a culture that encourages users of the code to "do the right thing" and allows them to make appropriate decisions.

2. A code of conduct reflects organisational context. The nature, title and content of an effective code will vary, as will the approach to its development. No two codes will be the same, even in the same industry.

3. Commitment from all stakeholders: ultimately, ethical responsibility lies with a board of directors or its equivalent, the body that has power to influence an organisation's culture and behaviour. Boards should specifically oversee the development of the code of conduct (and a wider ethics and values program), and formally appoint a senior manager to supervise that development.

4. A multi-disciplinary and cross-functional group should lead code development. Key stakeholders, as appropriate, should participate by undertaking risk assessments and assisting in defining and reviewing code content. International personnel, from outside the EU/EEA Member States should also be included. This group should strive for substantial consensus in setting standards and priorities.

5. Clearly identifying the established process for defining and developing a code will promote understanding of, and agreement on, the key stages and activities.

6. A code should apply across all jurisdictions.

7. Continuous awareness and enforcement of the code and the wider compliance program is an important part of conveying commitment to the underlying principles. A continuous awareness program should sustain interest in and commitment to the code. Those directly affected by the code of conduct should be made aware of the consequences of breaching the code.

The code of conduct should clearly reflect the desires of the EU Directives on e-procurement, including reference to both the functional and non-functional requirements. It should contain the **legal and technical requirements** for receiving a quality label, and the basic guidelines on how to the implement these requirements. It will also define the steps that should be carried out during compliance verification, and whether or not tools are available.

It should define the fundamental principles that are behind the code of conduct, such as transparency and increased interoperability, and explain how applying the code will achieve these objectives.

Optional task: Define tools

Any tools that may be used for the purposes of complying with the requirements, as defined within the codes of conduct, should be defined, and developed. More comprehensive tools, of course, will entail longer development time, and increased cost. On the other hand, a tool that is too simple and limited in functionality will not provide a sufficiently constructive service.

In addition the processes for creating tools with respect to verification must be defined. For example this process could be carried out in different ways:

i. Outsourcing the development work to a third party, through a series of specific contracts for specific tools

ii. Allowing the different Member States define and develop their own tools based on the requirements

iii. Using tools that already exist in the Member States, and refining them to reflect the new requirements

iv. Combining all the above.

P2.2: Run pilot test

One of the Member States should be selected in order to carry out a trial run of the compliance verification mechanism. In this case, in order to properly test all facets of the mechanism, and more importantly, to discover possible weaknesses, an e-procurement system which is fully developed with all pertinent features as defined by the EU Directives, should be selected. The Member State selected should occupy one of the top five positions in the ranking table, included in this study (see Table 50).

P2.3: Revise code of conduct & quality labelling procedures

The results of this testing process should be fed back to the expert group and subsequently incorporated into the definition process of the guidelines, if necessary. This is particularly important where weaknesses in the process are found.

P2.4: Publish code of conduct

The final code of conduct should be published and made available to the relevant bodies, and any interested organisations that may be directly or indirectly affected by their publication. This would include the relevant Member States, and developers active in the field of e-procurement software development. In addition, the guidelines should be made available to both national and international standardisation bodies, as their input with regard to possible improvements in the guidelines would be invaluable.

P2.5: Create website for quality label scheme

This will be the first entry point related to the quality label, and therefore should be developed in a clear and concise way. It will be the first point of call for:

- **Developers** looking for information concerning the quality label, and therefore should contain the necessary technical information related to the quality label, the code of conduct, and the compliance verification mechanism leading to provision of the label.

- **Users**, looking for general information concerning the presence of the quality label on a website, what its presence means with respect to the platform on which it is featured, and the developer or service provider behind the platform. It should clearly define the rights of the user with regard to the utilisation of a platform which carries the label. It should also clearly define any complaints procedures that may be availed of by the user.

- **Other Trustmark developers and interested organisations,** therefore it should contain clear information about the organisation behind the quality label, its goals, coordination procedures, and the benefits already accrued by public administration and developers, through the use of the label.

- **The website must be translated into all official languages.**

P2.6: Maintain code of conduct and QL procedures

The code of conduct should be regularly revised (perhaps at fixed intervals) by the expert group or coordinating body, to incorporate changes that will probably occur in both the technological and legal facets of e-procurement, and its subsequent verification. This should include a revision of their successful implementation, and a close review of the results of their implementation in different environments (i.e. if the results are positive, or have had no measurable beneficial effect). The use and usability of the tool developed for verifying compliance should also be revised periodically.

Most importantly, complaints or criticisms regarding their implementation or lack of usability should be carefully reviewed, and any constructive criticism be integrated into the revision of the guidelines.

Phase 3: Implementation Phase

P3.1 Diffusion and awareness tasks

All information must be made available to the relevant bodies. This includes the code of conduct, the guidelines and requirements for the mechanism, and all information related to applying and receiving the quality label. Interested parties could be:

- The European Commission;

- The Member State procurement agencies or relevant e-procurement controlling bodies;

- Other international procurement bodies outside the EU/EEA;

- All Member State administrative organisations (via national procurement bodies);

- Other independent websites promoting quality label services in different sectors;

- Developers, that may be directly interested;

- Users / providers to public administrations;

- Other external interested parties, that may benefit the scheme, such as national and international standardisation bodies, and other related e-government or e-commerce initiatives.

Awareness tasks

Awareness of the scheme among the different interested bodies is vital, as the success of any quality labelling scheme is proportional to its level of recognition amongst users.

- Having a successful quality label is all about creating a "brand". The infrastructure can be superb, the financial structure very sound, but if users do not know or recognise the quality label, it will not increase consumer trust in e-procurement and their associated platforms.

- Awareness raising actions, via all types of media, must take place in order to ensure that all interested parties and stakeholders are informed of the benefits of quality labelling for e-procurement systems.

- An attempt should be made to push the quality label beyond the confines of e-procurement: it could potentially be restructured later as a general labelling scheme, or collection of labelling schemes for promoting quality in e-government services, and generally advancing the cause of interoperability and transparency in public administration.

P3.2 Training and support for scheme

Training tasks may have to be carried out at various levels including:

- Training for those developers who may wish to apply for the quality labelling service;

- Training for independent external companies that may wish to register as accredited experts to revise the technical files;

- Internal training for additional staff.

Any **support tasks** that may be required for the successful running of the scheme, such as:

- Help desk services, to respond to all types of enquiries (both technical and legal);

- The management of complaints from both users and developers;

- Advising on non-compliance procedures;

- providing legal and technical back-up.

P3.3: Developer involvement

Learn verification process

The developers will have to undergo a process of learning what the quality label entails, and the compliance verification procedures involved. This includes being provided with information regarding aspects such as the following:

- What the quality label means and what products it may directly affect;

- How the quality label will benefit them in the long run;

- What procedures they may have to carry out to ensure compliance;

- What time frame is required for compliance;

- What additional costs may be expected;

- What external reviewing procedures must be adhered to;

- What the technical file should contain;

- What happens in the case of non-compliance;

Implement process

Once the information has been made clear, the developer must implement the process within its system. This may involve necessitate training from either the national entity or the EU entity.

Generate technical file

The technical file will be revised by the 3rd parties employed in the compliance verification process. The technical file should be generated the first time that quality labelling is requested, and every time changes are made to the system and the quality label must be reviewed.

The contents of the technical documentation should be laid down in the code of conduct and guidelines, in accordance with the module concerned. As a rule, the documentation should cover the design, manufacture and operation of the module or complete product.

Subsequent actions

This includes revision processes, and subsequent re-submittal procedures that should be carried out by the developer if the technical file is rejected after revision by the 3rd party.

In addition, if the technical file is accepted, and labelling provided, the designer should be obliged to undertake certain promotion activities with respect to the quality labelling process, such as endorsing the label on its own website. This will help to further increase the profile of the quality label.

P3.4 Third (3rd) Party involvement

These bodies should be known for their compliance verification activities, although in this scenario the provision of certification is not required. Most importantly the results of any compliance verification processes carried out by these bodies must be recognised by all Member States. It may be beneficial for Member States to name certain bodies at the start of the definition process. This may be adapted in the future as more independent testing bodies or individual experts become involved in the procedure.

Revise technical file by 3rd party

The procedures for compliance verification of the technical file should be clearly defined in the code of conduct and guidelines. This should include aspects such as notification procedures in the case of rejection or acceptance of the technical file, and what aspects of verification should be carried out on-site.

Direct communication between the EU entity and 3rd parties should not be necessary. However, communication procedures between the 3rd party and the national authorities should be clearly defined.

Phase 4: Coordination phase

P4.1 EU entity: Coordination & management

The EU entity is the body which is finally responsible for the coordination and management of the whole process. However, due to the nature of this scenario, the national authorities responsible for e-procurement in each Member State may assume much of the coordination burden in many respects, by controlling and organising the labelling process within their own countries.

The processes of communication between the national authorities and the EU entity must be clearly defined in the code of conduct, and the final responsibility of arbitration in any discord must also be clearly defined.

The final results of any verification process must be communicated to the EU entity, which will have the responsibility of maintaining any information in this regard up-to-date (a database and its associated administrative functions).

Coordination and management functions will run throughout the lifetime of the quality labelling procedure.

P4.2 Revise and maintain website

This is the first point of entry of all interested parties and stakeholders, and should be kept up-to-date with all relevant information. This could include all information relevant to the verification process, such as updates to the requirements or code of conduct; a database of compliant authorities and developers; the availability of new tools to help in the verification process; contact information concerning national authorities and available 3rd party verifiers.

P4.3 Periodical effectivity checks

The effectiveness of the compliance verification scheme should be checked on a regular basis, to enable the EU entity to remain informed of the level of adoption and success of the scheme. In addition, a lack of adoption of the voluntary scheme should be questioned.

The results of this task will feed back into the general overview and revision of the code of conduct and guidelines that should be carried out by the EU entity and experts on a regular basis.

8.1.1 Estimated costs for Reference Scenario 1: "LITE"

Estimated costs for the Reference Scenario are presented in the following tables below.

Each table includes a breakdown of costs that is calculated per process in the process detail diagram (Figure 5) shown previously for this scenario.

The cost is calculated by estimating the effort per process, based on an estimation of the number of months that the process will take to complete, and the number of persons required to carry out the process. Knowing this figure allows us to calculate an estimation of total monetary cost per scenario. To do this the FTE (full time equivalent) value is used: 1 employee at 1700 hours/year at an average rate of 58,82 Euro/hour. Annual cost for an employer is around 108,000 euros (or 9.000 euros/month). In addition, for the tables that are estimated to include the Member States, Romania has been included in the calculation.

EC Entity	Duration (months)	Persons involved	Total effort
P1.1 Convene expert group for CoC committee	0,5	2	1
P1.3 Integrate stakeholder input	0,5	1	0,5
P1.4 Compile info from other related bodies	1	2	2
P2.1 Create Quality Label (QL)	1	2	2
P2.2: - Select test country - Perform pilot test	3,25	2	6,5
P2.4 Publish CoC v2.0 & QL	1	2	2
P2.5 Create QL Website	2	1	2
P3.1 Diffusion and awareness of scheme	3	2	6
P3.2 Training & support services	4	2	8
P3.3 Distribute tools	1	2	2
P4.1 Coordination & management	28	2	56
P4.2 Update website	2	1	2
P4.3 Evaluate effectivity	3	2	6
Totals	50,25	23	96
Total cost (Euros)			864.000,00

Table 5 Estimated procedural operating costs for the EU entity

Experts	Duration (months)	Persons involved	Total effort
P1.2 Define legal & technical requirements	1	12	12
P2.1 - Compile guidelines - Define code of conduct v1.0 - Define QL scheme	1,75	12	21
P2.3 - Revise CoC & QL procedures - Define CoC v1.5 & Quality Label - Refine based on test results	1,25	12	15
P2.6 Revise and Maintain CoC periodically	0,25	12	3
P3.3 Define tools	0,5	12	6
Totals	4,75	60	57
Total cost (Euros)			513.000,00

Table 6 Estimated costs for expert committee

National entities	Duration (months)	Persons involved	Total effort
P1.3 Stakeholder input	0,25	27	6,75
P2.3: - Review CoC & QL procedures - Recommend changes	0,25	27	6,75
P3.2 Training for local administration	0,5	27	13,5
P3.3 - National Support and coordination of verification - Integrate information on own webpage	2,25	27	60,75
P3.5 - Provide Quality Label - Communicate compliance results	0,35	27	9,45
Totals	3,6	135	97,2
Total cost (Euros)			874.800,00

Figure 6 Estimated costs for national entities

External Developers	Duration (months)	Persons involved	Total effort
P3.1 Publish label on own website	0,25	1	0,25
P3.2 Learn QL processes	1	1	1
P3.3 Develop tools	2	1	2
P3.4 - Implement verification processes - Use elective tools - Generate technical file - Revise process if rejected - Promote QL in products	6,25	1	6,25
Totals	9,25	3	9,25
Total cost (Euros)			83.250,00

Table 7 Estimated costs for developers external to public authority

Internal developer	Duration (months)	Persons involved	Total effort
P3.1 Publish label on own website	0,25	1	0,25
P3.2 Learn QL processes	1	1	1
P3.4 - Implement QL process - Use elective tools - Generate technical file - Revise process if rejected	5	1	5
Totals	6	2	6
Total cost (Euros)			54.000,00

Table 8 Estimated costs for developer internal to public authority

Internal verification (independent group)	Duration (months)	Persons involved	Total effort
P3.2 Learn QL processes	1	1	1
P3.5 - Revise technical file - Approve/reject technical file - Send result to labelling body	2,5	1	1
Totals	3,5	2	2
Total cost (Euros)			18.000,00

Table 9 Estimated costs for independent verification bodies internal to public authority

External verification	Duration (months)	Persons involved	Total effort
P3.1 Promote QL process on own website	0,5	1	1
P3.2 Learn QL processes	1	1	1
P3.5 - Revise technical file - Approve/reject technical file - Send result to labelling body	2,5	1	1
Totals	3,5	2	2
Total cost (Euros)			18.000,00

Table 10 Estimated costs for verification bodies external to public authority

8.2 Reference Scenario 2 "LOOKING AHEAD": A Fully Integrated Approach to Verification.

Time frame for implementation: 3,5 years.

Standards

This Reference Scenario is seen as the **most difficult or complex to implement** ("heavy"). It is characterised by a procedure involving the **development and implementation of internationally accepted standards**, which should involve both **national and international standards developing bodies**. In addition, many standards which have been developed and are being implemented at national level in some Member States, could be included as the framework for standards at European level. However, the process of developing standards and compliance mechanisms based on standards is potentially a long and complex process, as it requires not only much technical research and legal experience, but also the involvement and **mutual agreement** of all relevant stakeholders in the final standards development process.

Compliance verification

Compliance verification procedures within this scenario are based on **standard certification processes** (which could involve the provision of a final quality label), and must be carried out **externally**, either by accredited testing laboratories, or any other body which has been accredited at national level by a national accreditation authority. This

scenario also foresees the development of **mutual agreements** between all the Member States, to ensure that the results of certification carried out in one country are recognised in all the other Member States.

Type of scheme

Compliance verification in this scenario should be **mixed**. Those aspects which are considered to be critical to interoperability between the different European systems should be mandatory, and should comply with relevant agreed standards. Other aspects which are not considered as critical should only require voluntary compliance. However, the introduction of mandatory compliance mechanisms implies an inherent cost, in terms of both finance and effort, which are not implied in voluntary mechanisms, and which must be taken into account.

Coordination

In this scenario, the controlling entity's role is more complex, and would require a **greater degree of coordination and administration**. In addition, it must be contemplated that this entity would have to fulfil an enforcement role, and would thus need **regulatory powers**. This will be essential for the mandatory aspects of the scheme, and must include both **compliance and non-compliance mechanisms**, with the required **penalties** being clearly defined for repeated non-compliance. The only entity at a European level that could fill this role is a European **agency**, which have their own legal personality, and in some cases carry out compliance verification themselves (an agency, such as the Office for Harmonisation in the Internal Market, could potentially fill this role, although it would require significant modifications to its current functions and capabilities). In this scenario, it must be considered that if no agency can be identified which currently fills the requirements, a new agency may have to be created to carry out the role required, thus incurring new and additional costs. In addition, the support role played by the national entities in this scenario would be increased to include greater coordination with the relevant national accreditation authorities, whose role will be vital in accrediting testing and certification bodies for providing compliance verification services and creating mutual certification agreements between Member States.

Outcome

In this case, the outcome will be a fully certified product based on previously defined requirements and guidelines (the physical manifestation of this certification may be the awarding of a quality label, if desired). It will include the use of standards where considered necessary. In this case a lack of certification implies the use of a non-conformity process, and the application of previously defined penalties for those aspects of the compliance process that are obligatory.

The application of this scenario would result in the production of a certification process for e-procurement systems that would be original and unique, and developed to the highest level; it could be promoted at an international level as a paradigm for the standardisation of e-procurement systems worldwide. On a European scale, certification would be perfectly in line with the Action Plan for European Standardisation in e-government[14].

Internal user benefits: certification guarantees that the systems that comply with the scheme adhere to the highest relevant standards available. Certification will ensure a high level of interoperability amongst e-procurement systems in Europe, and will provide a sure means of integrating new standards as they are developed. The mixed scheme will ensure that those obligatory characteristics which are fundamental to system functionality at a European level are standardised within the Member States.

External user benefits: although certification is a more exigent approach, it will provide those that adhere to the procedures with a clear market advantage. In addition, the mandatory aspects of the scheme, from a developer's point of view, will help limit conflicting stakeholder interests, thereby increasing efficiency within product development.

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[14] Action Plan for European Standardisation, DG Enterprise and Industry, April 2006

Risks

The feasibility for implementing certification will be low if:

- The cost of compliance verification is seen as prohibitively high with respect to benefits. In this sense, diffusion and awareness of the scheme will have a fundamental role.

- Full backing from national governments is not achieved, or failure to come to agreement on mechanism for compliance verification.

- Standards cannot be developed or recommended with respect to e-procurement.

- Innovation is inhibited by application of standards.

- Technology development is not mature enough to ensure adherence to standards.

- Standards create a disparity between those countries which can afford to implement them and those which can't.

- Standards curtail development of public e-procurement through elevated development costs and poor return of investment due to verification costs.

- Standards too exacting, results in rejection of use at national level, and complete failure of European e-procurement homogenisation procedure.

- Risk less with standards and more with respect to compliance verification bodies: Use of standards only as good as their compliance verification procedures.

Benefits

- Larger markets for goods and services are created more quickly with certification, and end users are better served by the greater likelihood that their purchase expectations will be fulfilled.

- Certification provides a sign of trust and confidence for users of public e-procurement systems throughout Europe.

- Greater support will be generated for public e-procurement among users and stakeholders.

- Greater interest generated amongst industry to develop products for public e-procurement, thereby lowering the cost of provided solutions.

- Buyers of certified products get reliable assurance of conformance to standards, and interoperability.

- Certificates allow industry to show their commitment and demonstrate that they stand behind their products, which gives confidence to the buyers.

- Although certification implies a high cost input, it allows leading service providers to reach a specific market that is looking for features such as product quality and service above cost.

Roadmap and implementation plan

In figure 7 below, the main actors and their primary functions are described. These main actors defined in this scenario are:

- - **EU entity**

- - **Experts**

- - **National entities**

- - **Internal developers**

- - **Developers (external)**

- - **Accredited certification bodies (Accredited test houses; notified bodies)**

- - **International standardisation bodies**

- - **National standardisation bodies**

As in Reference Scenario 1, the primary functions of each of these main actors are defined in the boxes under each of the actors. It must be noted that the description of many of the processes is similar and has already been treated in the first scenario. Only new processes will be described here.

The different phases of the roadmap and implementation plan are shown by means of colour codes to facilitate cross referencing of the different phases between the respective diagrams (see figures 7 & 8):

Phase 1: Definition phase: PURPLE

This phase includes those steps involved in the initial definition of the Reference Scenario project, and includes the preliminary preparation tasks, involvement of experts, and contact with all stakeholders. It also includes the integration of any initial information that may be essential to the preparatory phase: i.e. information concerning standards etc..

This phase also includes the development of the "rules and regulations" involved in the overall functioning of the scenario e.g. this includes Codes of Conduct, initial guidelines , essential requirements and mandates.

Phase 2: Development phase: GREEN

This phase includes all steps involved in the development of the scenario procedures and processes. This includes running pilot tests and redefining the rules as previously defined based on the results of the testing procedure. Standards development is initiated in this stage. Maintenance tasks are also initiated in this phase.

Phase 3: Implementation phase: BLUE

This phase concerns the "live" implementation of the final compliance verification mechanism in real situations, amongst developers and national authorities, and 3rd party testing and certifying bodies. This phase also includes the various steps to be carried out by developers (internal or external) with respect to certification / labelling.

Phase 4: Coordination phase: TURQUOISE

This phase concerns all actions related to coordination, management and quality checking. It also includes any collaboration processes with external bodies such as national accreditation authorities. This phase carries on through the whole life-time of the project.

Figure 7 Process detail, actors and main functions in Reference Scenario 2

Figure 8 below shows the different phases involved in the implementation of the Reference Scenario.

Id	Nombre de tarea
1	**Europe 2010**
2	**Phase 1: Definition phase**
3	P1.1 Convene expert group
4	P1.2 Define legal & technical requirements
5	P1.3 Integrate stakeholder input
6	P1.4 Involvement of Standards bodies
7	P1.5 Integrate other relevant info
8	**Phase 2: Development phase**
9	P2.1 Create CodeOC & certification process
10	P2.2 Run pilot test
11	P2.3 Revise code of conduct & processes
12	P2.4 Publish code of conduct & processes
13	P2.5 Create certification website
14	P2.6 Define new standards
15	P2.7 Maintain code of conduct & processes
16	**Phase 3: Implementation phase**
17	P3.1 Diffusion and awareness of scheme
18	P3.2 Training for scheme
19	P3.3 Support for users of scheme
20	**P3.4 Developers**
21	Learn verification process
22	Implement verification process
23	Generate technical file (TF)
24	Subsequent actions
25	**P3.5 3rd parties**
26	Receive accreditation
27	Carry out product Certification
28	Revise certification periodically
29	**Phase 4: Coordination phase**
30	P4.1 EC entity: Coordination & management
31	P4.2 Revise and maintain website
32	P4.3 Collaborate with National Accredit. Body
33	**P4.4 Periodical effectivity checks**
34	1 Periodical check
35	2 Periodical check

Figure 8 Implementation timeframe for Reference Scenario 2

As can be seen a time frame of over 3 years is foreseen for the development of Reference Scenario 2.

Phase	Time required
Phase 1: Definition phase	7 months
Phase 2: Development phase (not including maintenance or the definition of standards)	19 months
Phase 3: Implementation phase (not including diffusion, training and support, or revision of certification)	12 months
Phase 4: Coordination and management phase (concurrent with other phases; not including revision of certification)	39 months

Phase 1: Definition phase

P1.1 Convene expert group

As in Reference Scenario 1.

P1.2 Define legal and technical requirements

Define certification process

The expert group is to define the methods and mechanisms to be used to evaluate the compliance of candidate systems, and is to establish appropriate policies and procedures for the initial development and continued maintenance of these methods and mechanisms. The expert group is to define a process for the development and maintenance of certification schemes which includes the review and validation of the scheme by the expert group committee.

Within this step the scope, depth, and process of certification for e-procurement platforms will be defined, related to the code of conduct that has already been devised in the previous section. This task runs in parallel with the development of codes of conduct, as the requirements which are defined in that step will directly affect the type of process that will apply to the provision of certification.

In general the steps described previously for defining the quality label apply when creating a certification scheme. In addition, the following points should also be considered, and are particularly important if the development of the scheme will impact on private industry:

- Certification must create real and tangible value for the end user and/or the dominant player(s) in the value chain. That value may be in the form of measurable risk reduction, significant revenue enhancement, or equally significant cost reduction. Without this value, the essential "demand pull" will not occur.

- Economic viability. Certification must not threaten the real or perceived economic viability of any major player in the industry value chain. In this case we are talking about private developers who might be interested in joining the development chain for e-procurement products: the increased availability of certified off-the-shelf products would be of great benefit to the development of compliant e-procurement systems within the Member States.

- Rapid supply development. The structure must accommodate rapid growth of certified product supply, in terms of volume and product breadth – demand for certified product cannot be frustrated for more than 2-3 years.

- Broad support. All significant stakeholders must support a certification scheme that is neutral, and third-party driven.

- Competent design. The certification organization must be professionally managed, service-oriented, and designed for neutral, competent and consistent third-party certification.

A full feasibility study is essential. Important criteria that must be considered are noted below:

1. It is essential that objective and scope are clearly and specifically defined. That precision is required to define what type of certificate or certification scheme should be established.

2. To make a certificate work, operational issues should be elaborated. The items, activities or processes that need a certificate should be clearly defined. In addition, it should become clear at what stage in production chains it should be available (e.g. at first commercialization, etc). Duplication of effort should be avoided.

3. Once it is known what is to be certified, who provides the certificate, and also who needs one, would have to be clearly specified. Presumably, the certificate would best be provided by the official authority, or authorised (accredited) 3rd parties, which have the legal control over the material accessed and who is available in case of enquiries about the certificate and the circumstances of access. The system will only work if it applies to a concrete and relatively limited list of requirements.

4. The next step in making the certificate operational would be a decision on the form and manner of using it. This should be simple, practical and minimize administrative burdens. Would a single certificate serve for all the different Member States, providers and users? Or would different types be needed? In naming the certificate, confusion with existing systems must be avoided.

5. The time of implementation should be carefully chosen. For technical areas such as system development, the development period is often many years, and re-development of individual modules occurs often. The certificate must be sufficiently generic and flexible to be applied in the face of rapidly changing technologies and processes.

6. The legal effects of the certificate should be implemented appropriately to assure that the system becomes functional, and gives sufficient legal certainty to both provider and user. What are the legal effects of having a certificate - and of not having one? In designing the system, all potential benefits to both providers and users of resources should be considered. One possible benefit to users of a certificate would be as evidence of title, in the sense of the right to use the certificated material without being accused of bad faith. A clear title for access and subsequent development could be an advantage to users. It would help users if a certificate could be regarded as conclusive in the absence of fraud. However, absence of a certificate could not be evidence of lack of title unless all the other issues set out above are fully and clearly resolved.

7. Given the realities, a detailed cost/benefit analysis of any certification scheme must be undertaken, in which both costs for users and providers should be considered, as well as those to society as a whole. This is the more important because the system could be extremely costly.

8. Lastly, the overall impact of the certificate on the objectives of Europe 2010 must be carefully considered. Implementing a certificate should not oppose these objectives.

- The definition of the possible use of a label to accompany the certification process should be considered, and the processes in its development are the same as in Reference Scenario 1, although in this case the driver of this scenario is certification and its related process, the quality label is simply a physical manifestation of these procedures.

Define the scheme

As in Reference Scenario 1.

P1.3 Integrate stakeholder input

As in Reference Scenario 1.

P1.4 Integrate standards bodies

Review requirements

The input provided by the standards bodies with respect to the requirements will be very important. The development of any subsequent standards will be based on these requirements and therefore their ability to be transferred quickly and efficiently into applicable standards should be an important consideration. The various national and international standards bodies will be able to provide expertise and recommendations on how to draft such requirements in a suitable manner.

Advise on relevant existing standards

This is possibly the most important task that the standards bodies will carry out in this scenario. The development of standards and benchmarks in the ICT sector is currently being carried out by a variety of bodies. Many national standards bodies have already developed standards at a national level for various aspects of ICT processes that may be highly pertinent within this scenario.

The knowledge of research into relevant standards currently being carried out, which would be directly applicable to the certification process, would be of great benefit to the success of this scenario. In addition, by including international standards, the potential application of the certification scheme beyond the European Union only could be a possibility.

Define new standards if necessary

In addition, the integration of the standards bodies into the scheme will be essential if it is decided that further development of standards may be required.

Presenting the scheme at relevant international meetings

Once the final certification scheme is developed, the presence of the standards bodies would be of great benefit in promoting and publicising the scheme at an international level. This would aid in the further dissemination and dispersal of the certification scheme and its potential benefits to electronic procurement and e-government, in general.

P1.5 Integrate other relevant info

As in Reference Scenario 1.

Phase 2: Development phase

P2.1: Create code of conduct and certification procedures

As in Reference Scenario 1.

Optional task: Define tools

As in Reference Scenario 1.

P2.2: Run pilot test

As in Reference Scenario 1.

P2.3: Revise code of conduct & quality labelling procedures

As in Reference Scenario 1.

P2.4: Publish code of conduct

As in Reference Scenario 1.

P2.5: Create website for quality label scheme

As in Reference Scenario 1.

P2.6 Define new standards

An International Standard is the result of an agreement between the member bodies of the standards organisation. It may be used as such, or may be implemented through incorporation in national standards of different countries. International Standards are developed by technical committees (TC) and subcommittees (SC) through a commonly used six step process:

- Stage 1: Proposal stage
- Stage 2: Preparatory stage
- Stage 3: Committee stage
- Stage 4: Enquiry stage
- Stage 5: Approval stage
- Stage 6: Publication stage

If a document with a certain degree of maturity is available at the start of a standardisation project, for example a standard developed by another organization, it is possible to omit certain stages. For example, in the so-called "Fast-track procedure" adopted by the ISO organisation, a document is submitted directly for approval as a draft International Standard (DIS) to the ISO member bodies (stage 4) or, if the document has been developed by an international standardizing body recognized by the ISO Council, as a final draft International Standard (FDIS, stage 5), without passing through the previous stages.

P2.7: Maintain code of conduct and certification procedures

As in Reference Scenario 1.

Phase 3: Implementation Phase

P3.1 Diffusion and awareness tasks

As in Reference Scenario 1.

P3.2 Training and support for scheme

As in Reference Scenario 1.

P3.3: Developer involvement

As in Reference Scenario 1.

P3.4 Third (3rd) Party involvement

Receive accreditation

In this scenario, certification by an accredited 3rd party is necessary. Accreditation is carried out by the national accreditation organisation in each country, and the results of this accreditation (the certification bodies) must be recognised via mutual agreements between the Member States. This implies that all countries agree to abide by the decisions of the national accreditation bodies.

In the area of product certification, the national accreditation bodies accredit certification bodies who certify the quality of a product. The certification of a product, a term including a process or service, is a means of providing assurance that the product in question conforms with standards and/or other normative documents.

Carry out product certification

Certification bodies providing product certification issue product certificates or licenses to organisations, which entitles them to display a mark or conformity on their product or to issue a certificate indicating the product's conformity with specified requirements. In this way the user is assured that the product has reached a set standard.

Again, the procedures for compliance verification of the technical file should be clearly defined in the code of conduct and guidelines. This should include aspects such as notification procedures in the case of rejection or acceptance of certification, and what aspects of verification should be carried out on-site.

Direct communication between the EU entity and 3rd parties should not be necessary. However, communication procedures between the certifying 3rd parties and the national authorities should be clearly defined. The results of the certification process will be communicated from the 3rd party to the national authority, and thence to the EU entity. In both cases, a database of all certified bodies should be kept and regularly maintained.

Revise certification periodically

Part of the accreditation process is the regular revision of certification by the national accreditation authority, usually at least once a year, or following a previously defined period.

Phase 4: Coordination phase

P4.1 EU entity: Coordination & management

As in Reference Scenario 1.

P4.2 Revise and maintain website

As in Reference Scenario 1.

P4.3 Collaborate with national accreditation authorities

This phase is absolutely vital within this scenario, as the national accreditation authorities are a vital cog in the functioning of any scenario based on certification processes.

The national accreditation authorities are the national bodies with responsibility for accreditation in accordance with the relevant International Organisation for Standardisation ISO 17000 series of standards and guides and the harmonised EN 45000 series of European standards.

They provide accreditation of laboratories, certification and inspection bodies, attestors and attestation bodies and are the statutory bodies responsible for GLP (Good Laboratory Practice) and EMAS (European Eco-Management and Audit Schemes).

The national accreditation authorities' co-operation with other accreditation bodies in Europe and globally through Multilateral Agreements (MLAs) means that national organisations' certificates are recognised both nationally and internationally.

P4.4 Periodical effectivity checks

As in Reference Scenario 1.

8.2.1 Estimated costs for Reference Scenario 2

Estimated ranges of cost for this Reference Scenarios are presented in the following tables below.

Each table includes a breakdown of costs that is calculated per process in the process detail diagram (Figure 7) shown previously for this scenario.

The cost is calculated by estimating the effort per process, based on an estimation of the number of months that the process will take to complete, and the number of persons required to carry out the process. Knowing this figure allows us to calculate an estimation of total monetary cost per scenario. To do this the FTE (full time equivalent) value is used: 1 employee at 1700 hours/year at an average rate of 58,82 Euro/hour. Annual cost for an employer is around 108,000 euros (or 9.000 euros/month). In addition, for the tables that are estimated to include the Member States, Romania has been included in the calculation.

EC Entity	Duration (months)	Persons involved	Total effort
P1.1 Convene expert group for CoC committee	0,5	2	1
P1.3 Integrate stakeholder input	1	2	2
P1.4 Compile info from other related bodies	1	2	2
P2.2 - Select test country - Perform pilot test	3,25	2	6,5
P2.4 Publish CoC v2.0 & certification scheme	1	2	2
P2.5 Create certification Website	1	1	1
P3.1 Diffusion and awareness of scheme	3	2	6
P3.2 Training & support services	3	2	6
P3.3 Distribute tools	1	1	1
P4.1 Coordin. & management	40	2	80
P4.2 Update website	1	1	1
P4.3 Evaluate effectivity	3	2	6
Totals	58,75	21	114,5
Total cost (Euros)			1.030.500,00

Table 11 Estimated costs for operation of EU entity

Experts	Duration (months)	Persons involved	Total effort
P1.2 Define legal & technical requirements	3	12	36
P2.1 - Compile guidelines - Define code of conduct v1.0 - Define certification scheme type	2,5	12	30
P2.3 - Revise CoC & certification procedures - Define CoC v1.5 & certification - Refine based on test results	3	12	36
P2.6 Revise and Maintain CoC & certification periodically	3	12	36
P3.3 Define tools	0,5	12	6
Totals	12	60	144
Total cost (Euros)			1.296.000,00

Table 12 Estimated costs for expert committee

National entities *	Duration (months)	Persons involved	Total effort
P1.3 Stakeholder input	0,5	27	13,5
P2.3 - Review CoC & certification procedures - Recommend changes	0,75	27	20,25
P3.2 Training for local administration	0,5	27	13,5
P3.3: - National Support and coordination of verification - Integrate information in own webpage	4,25	27	114,75
P3.5: - Collaborate with National Accredit. Body - Communicate compliance results	2,1	27	56,7
Totals	8,1	135	218,7
Total cost (Euros)			1.968.300,00

Table 13 Estimated costs for national entities

External Developers	Duration (months)	Persons involved	Total effort
P3.1 Publish certification on own website	0,25	1	0,25
P3.2 Learn certification processes	1	1	1
P3.3 Develop tools	2	1	2
P3.4 - Implement certification processes - Use elective tools - Generate technical file - Revise process if rejected - Promote certification in products	8,25	1	8,25
Totals	11,25	3	11,25
Total cost (Euros)			101.250,00

Table 14 Estimated costs of compliance for developers external to the public authority

Internal developer	Duration (months)	Persons involved	Total effort
P3.1 Publish label on own website	0,25	1	0,25
P3.2 Learn certification processes	1	1	1
P3.4 - Implement certification process - Use elective tools - Generate technical file - Revise process if rejected	8	1	8
Totals	9	2	9
Total cost (Euros)			81.000,00

Table 15 Estimated costs of compliance for developer internal to public authority

Certification bodies	Duration (months)	Persons involved	Total effort
P3.1 Promote certification process on own website	0,25	1	0,25
P3.2 Learn certification processes	2	1	2
P3.5: - Revise technical file - Perform certification audit - Provide/reject certification - Provide result to coordinating body - Revise certification periodically	3,1	1	3,1
Totals	5,1	2	5,1
Total cost (Euros)			45.900,00

Table 16 Estimated costs of verification procedures for certification bodies

International standards bodies*	Duration (months)	Persons involved	Total effort
P1.4 - Review requirements - Advise on relevant existing standards	0,75	4	3
P2.6 Define new standards if necessary	36	4	144
P3.1 Presenting CoC at relevant international meetings	1	4	4
Totals	37,75	12	151
Total cost (Euros)			1.359.000,00

Table 17 Estimated costs for the involvement of international standards bodies

* At a minimum, the standards bodies that should be involved in this scenario include the following:

International Organization for Standardization – ISO

International Electro technical Commission - IEC

International Telecommunication Union - ITU

Organization for the Advancement of Structured Information Standards – OASIS

National standards bodies	Duration (months)	Persons involved	Total effort
P1.4 - Review requirements - Advise on relevant existing standards	0,5	27	13,5
Totals	0,5	27	13,5
Total cost (Euros)			121.500,00

Table 18 Estimated costs for the involvement of national standards bodies

8.3 Reference Scenario 3 "HARMONISED EUROPE" : A European Approach to Verification

Time frame for implementation: 3 years.

Standards

This Reference Scenario is identified as an approach of **medium complexity**; that is, it contains certain characteristics or processes that may be complex to implement, but which, on the positive side, are already clearly defined.

This scenario is **characterised by the New Approach and the European standardisation system**. The "New Approach" represents an innovative way of technical harmonisation. It introduces, among other things, a clear separation of responsibilities between the EU legislator and the European standards bodies CEN, CENELEC and ETSI in the legal framework allowing for the free movement of goods. In this sense, the relevant EU Directives define the "essential requirements" (e.g., protection of health and safety) that goods <u>must</u> meet when they are placed on the market, and the European standards bodies have the task of drawing up the corresponding technical specifications meeting the essential requirements of the Directives, compliance with which will provide a presumption of conformity with the essential requirements. These specifications are referred to as "**harmonised standards**".

The latter are European standards, adopted by CEN, CENELEC or ETSI, following a mandate issued by the European Commission after consultation of Member States. They are developed through an open and transparent process, built on consensus between all interested parties, and are transposed into national standards.

Compliance verification

The compliance verification procedures for the New Approach are clearly defined, and involve the use of **notified bodies**. These bodies are accredited as notified bodies by their national accreditation authority, and are thus entitled to provide compliance assessment against harmonised standards.

Type of scheme

The scheme adopted within this scenario will be **voluntary**, as compliance with harmonised standards remains voluntary, and manufacturers are free to choose any other technical solution that provides compliance with the essential requirements. In a number of cases compliance with harmonised standards also **increases the options for conformity assessment procedures**. However, in the case of e-procurement systems, those aspects that are considered critical to interoperability, may be classified as "**essential requirements**" and therefore their status becomes mandatory.

Coordination

In this case the compliance verification process will be coordinated and overseen by the **controlling entity at European level**, but will be **carried out physically by notified bodies** in each of the Member States. Therefore procedures for compliance, and any subsequent non-compliance, are coordinated at national level. This reduces the cost and workload required of the European entity. Again, an **agency** is considered the most likely solution, and this European entity will be the **ultimate point of conflict resolution and settlement** of possible disagreements that may occur, and thus must be created with the capacity for legal arbitration. Again, collaboration between the **national entities** in this scenario and the relevant national accreditation authorities will be vital to the administration of the notification procedure.

Outcome

The outcome to this scenario will be certification based on the clearly defined conformity assessment procedures of the New Approach. This may include CE marking as required.

The procedures for compliance verification are clearly defined, and therefore the time for development of the scheme may be less than in a traditional certification procedure. The operation of the New Approach requires that the standards offer a guaranteed level of protection with regard to the essential requirements established by the relevant Directives, and that the national authorities carry out their responsibilities for the protection of safety or other interests covered by the Directive.

In everyday language a difference between a European standard and harmonized standard is often not made. A harmonized standard is a European standard prepared on behalf (via a mandate) of the European Commission and of the EFTA Secretariat in order to support the essential requirements of a EU Directive.

This mandate must not necessarily cover all clauses of a European standard. Additional provisions may also be included in the text of the standard. In this case distinction is made between regulated area (submitted to the provisions of the EU Directives) and voluntary area. This relationship is explained in an annex, appended as "Annex Z" to each mandated standard.

Basically, the preparation procedure of a harmonized standard is identical with the preparation of a European standard. In addition, a CEN Adviser is involved in the public enquiry, who checks the European Draft Standard as to the observation of the provisions of the mandate text and of the main requirements of the related EU Directive(s).

A mandated standard is often subject to two or more EU Directives. A corresponding number of CEN Advisers give their comments, each one for his particular subject field and expertise. Maximum consistency has to be achieved.

If the result of the formal vote is positive in accordance with the provisions of the CEN/CENELEC internal regulations, the European standard will be distributed by the CEN Management Centre to the CEN members for national implementation. Simultaneously, the European Commission and the EFTA Secretariat are informed.

The mandated European standard is still only an *aspirant* to a harmonized standard. Not until all CEN Members have sent the translation of the standard title via the CEN Management Centre to the European Commission and the EFTA Secretariat - e.g. the Spanish translation to AENOR, the Spanish Standards Institute, the English translation to both the Irish (NSAI) and UK Standards Institutes (BSI) - can the European standard be registered in the Official Journal of the European Union including the mention of the relevant Directives.

Only after having undergone this procedure, does the European standard becomes a harmonized standard. Starting from this moment, it can be used (and indeed must be for some Directives) for the effective implementation of a EU Directive, e.g. for proof of conformity with a certain Directive.

Internal user benefits: again, certification guarantees that the systems that comply with the scheme adhere to the highest European standards available. Certification will ensure a high level of interoperability amongst e-procurement systems in the Member States. The involvement of the Member States and national bodies for coordination procedures, will again help minimise the coordination and management burden on the controlling EU entity, which may not be the case in a traditional certification system.

External user benefits: the free movement of products throughout the Member States is guaranteed through the New Approach, via mutual agreements. In addition, any standards defined must be done so with the agreement of all the Member States. In addition, application of harmonised standards or other technical specifications remains voluntary, and manufacturers are free to choose any technical solution that provides compliance with the essential requirements.

Risks

Note: The same general risks mentioned in the previous scenario also apply here:

- New Approach is not considered suitable for e-procurement standardisation and compliance verification procedures.

- European standards bodies refuse the mandate to create.

Benefits

Note: The same general benefits mentioned in the previous scenario also apply here:

- Legislative harmonisation is limited to essential requirements that products placed on the market must meet, if they are to benefit from free movement within the European Union.

- The technical specifications of products meeting the essential requirements set out in the Directives are laid down in harmonised standards.

- Application of harmonised or other standards remains voluntary, and the manufacturer may always apply other technical specifications to meet the requirements.

- Products manufactured in compliance with harmonised standards benefit from a presumption of conformity with the corresponding essential requirements.

Roadmap and implementation plan

In figure 9 below, the main actors and their primary functions are described. These main actors defined in this scenario are:

- **EU entity**
- **Experts**
- **National entities**
- **Internal developers**
- **Developers (external)**
- **Notified bodies**
- **International standardisation bodies**
- **National standardisation bodies**

As in the previous Reference Scenarios, the primary functions of each of these main actors are defined in the boxes under each of the actors. Only new processes will be described here.

The different phases of the roadmap and implementation plan are shown by means of colour codes to facilitate cross referencing of the different phases between the respective diagrams (see figures 9 & 10):

Phase 1: Definition phase: PURPLE

This phase includes those steps involved in the initial definition of the Reference Scenario project, and includes the preliminary preparation tasks, involvement of experts, and contact with all stakeholders. It also includes the integration of any initial information that may be essential to the preparatory phase: i.e. information concerning standards etc..

This phase also includes the development of the "rules and regulations" involved in the overall functioning of the scenario e.g. this includes codes of conduct, initial guidelines, essential requirements and mandates.

Phase 2: Development phase: GREEN

This phase includes all steps involved in the development of the scenario procedures and processes. This includes running pilot tests and redefining the rules as previously defined based on the results of the testing procedure. Standards development is initiated in this stage. Maintenance tasks are also initiated in this phase.

Phase 3: Implementation phase: BLUE

This phase concerns the "live" implementation of the final compliance verification mechanism in real situations, amongst developers and national authorities, and 3rd party testing and certifying bodies. This phase also includes the various steps to be carried out by developers (internal or external) with respect to certification / labelling.

Phase 4: Coordination phase: TURQUOISE

This phase concerns all actions related to coordination, management and quality checking. It also includes any collaboration processes with external bodies such as national accreditation authorities. This phase carries on through the whole life-time of the project.

Figure 9 Process detail, actors and main functions in Reference Scenario 3

CARSA

Figure 10 below shows the different phases involved in the implementation of Reference Scenario 3.
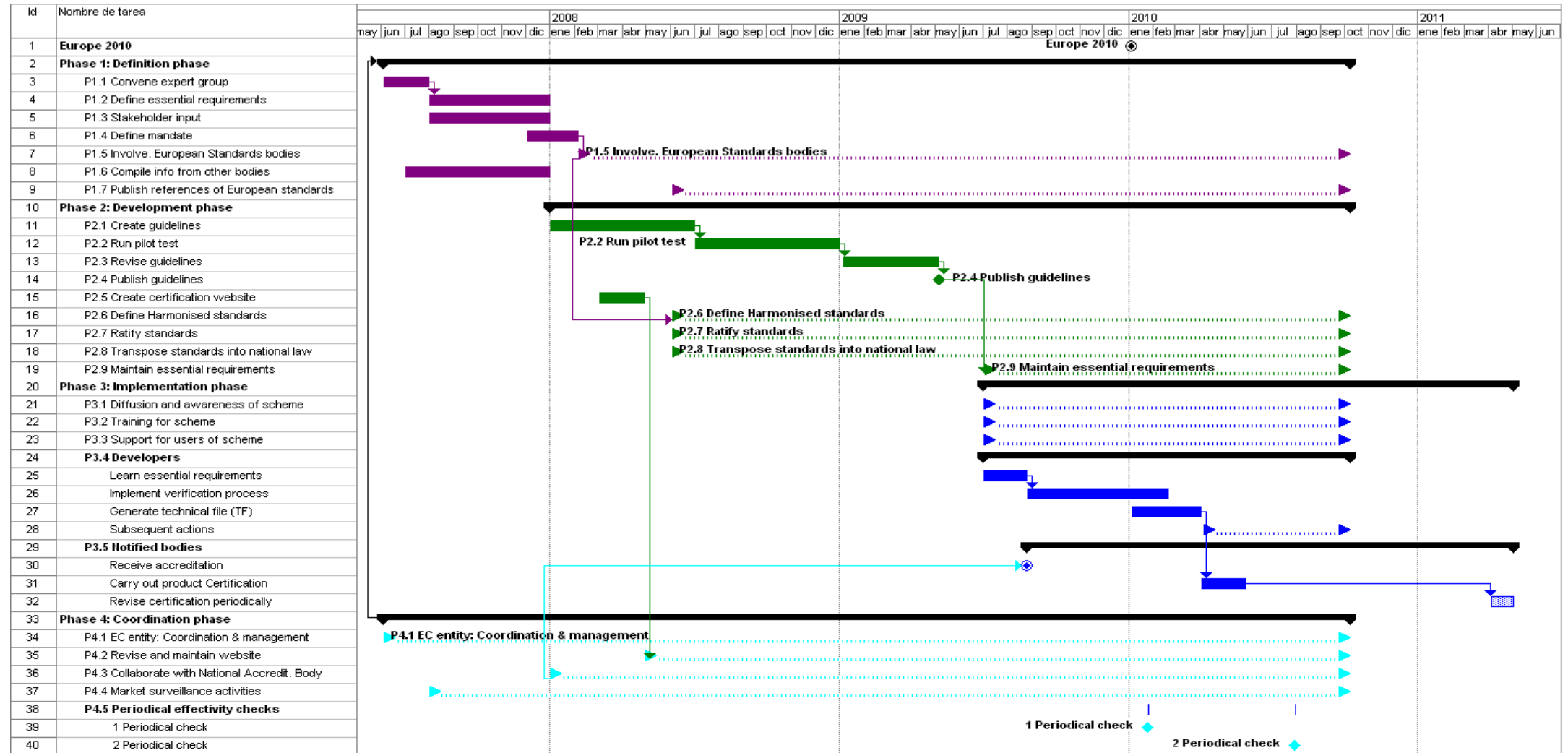
Figure 10 Implementation timeframe for Reference Scenario 3

A time frame of just over 3 years is foreseen for the development of this Reference Scenario.

Phase	Time required
Phase 1: Definition phase	7 months
Phase 2: Development phase (not including maintenance or the definition of standards)	15 months
Phase 3: Implementation phase (not including diffusion, training and support, or revision of certification)	10 months
Phase 4: Coordination and management phase (concurrent with other phases; not including revision of certification)	39 months

Phase 1: Definition phase

P1.1 Convene expert group

As in previous Reference Scenarios.

P1.2 Define essential requirements

The expert group will be responsible for defining the essential requirements of the Directives.

- Essential requirements must be applied as a function of the risk inherent to a given product. Therefore, developers will need to carry out risk analysis to determine the essential requirement applicable to the product. This analysis should be documented and included in the technical documentation.

- Essential requirements define the results to be attained, or the risks to be dealt with, but do not specify or predict the technical solutions for doing so. This flexibility allows manufacturers to choose the way to meet the requirements. It allows also that, for instance, the materials and product design may be adapted to technological progress. Accordingly, New Approach Directives do not necessitate regular adaptation to technical progress, since assessment of whether requirements have been met or not are based on the state of technical know-how at a given moment.

- Essential requirements are set out in the annexes to the relevant Directives, and include all that is necessary to achieve the objective of the Directives.

- Products may be placed on the market and put into service only if they are in compliance with the essential requirements.

- Products that comply with national standards transposing harmonised standards, the reference numbers of which have been published in the Official Journal of the European Union, are presumed to comply with the corresponding essential requirements. Where the manufacturer has not applied, or has only partially applied, such a standard, the measures taken and their adequacy must be documented in order to comply with the essential requirements.

- Essential requirements set up by New Approach Directives may overlap or complement each other, depending on the hazards covered by these requirements that are related to the product in question.

Define the scheme

The application of harmonised or other standards remains voluntary, and the manufacturer may always apply other technical specifications to meet the requirements.

- The developer can choose whether or not to refer to harmonised standards. However, if the developer chooses not to follow a harmonised standard, he has the obligation to prove that his products are in conformity with essential requirements by the use of other means of his own choice (for example by means of any existing technical specifications).

- If the developer applies only a part of a harmonised standard or the applicable harmonised standard does not cover all the essential requirements, the presumption of conformity exists only to the extent the standard corresponds to the essential requirements.

P1.3 Integrate stakeholder input

As in previous Reference Scenarios.

P1.4 Define mandate

The Commission formally requests the European standards organisations to present European standards by issuing a mandate. Prior to this the Commission consults the Committee established under Directive 98/34/EC, and, in some cases, the expert Committee set up under the directive in question. Reaching consensus within the Committee under Directive 98/34/EC implies wide consultation of sectoral authorities at national level. Thus, the mandate provides a strong indication of the expectations of public authorities.

Once public authorities have agreed on a mandate, the search for technical solutions should in principle be left to the interested parties. In certain areas, such as the environment and health and safety, the participation of public authorities on a technical level is important in the standardisation process.

P1.5 Involve European standards bodies

Review requirements

The same process applies as described in Reference Scenario 2.

Accept mandate

The European standards organisations will formally take a position on a mandate from the Commission in conformity with their internal regulations.

Elaborate joint programme

The elaboration and adoption of harmonised standards is based on the General Guidelines for cooperation between the European standards organisations and the Commission. These orientations contain series of principles and commitments concerning standardisation, such as the participation of all interested parties (for example manufacturers, consumer associations and trade unions), the role of public authorities, the quality of standards and a uniform application of standards throughout the Community.

Transmit references to EC for publication

References (such as titles, identification numbers) of harmonised standards are published in the Official Journal for the Directive in question. An updated list of references for each directive can be found at the following Internet address:
http://europa.eu.int/comm/dg03/directs/dg3b/newapproa/eurstd/harmstds/index.html.

P1.6 Integrate other relevant info

As in previous Reference Scenarios.

P1.7 Publish references of European standards

The objective of publishing the reference in the Official Journal is to set the earliest date for the presumption of conformity to take effect. Before the Commission publishes the reference, it may verify that the terms of the mandate are fulfilled. When it considers that a standard does not meet the terms of the mandate, it will either not publish the reference of this standard, or it will limit publication of the reference to parts of this standard.

Member States must publish the reference of the national standard that transposes a harmonised standard.

Phase 2: Development phase

P2.1: Create guidelines

The Global Approach was completed by Council Decision 90/683/EEC, which was replaced and brought up to date by Decision 93/465/EEC. These decisions lay down general guidelines and detailed procedures for conformity assessment that are to be used in New Approach Directives. Thus, conformity assessment is based on:

- developers' internal design and production control activities;

- third party type examination combined with manufacturers' internal production control activities;

- third party type or design examination combined with third party approval of product or production quality assurance systems, or third party product verification;

- third party unit verification of design and production; or

- third party approval of full quality assurance systems.

In addition to laying down guidelines for the use of conformity assessment procedures in technical harmonisation Directives, Decision 93/465/EEC harmonises the rules for the affixing and use of the CE marking.

P2.2: Run pilot test

As in previous Reference Scenarios.

P2.3: Revise guidelines

As in previous Reference Scenarios.

P2.4: Publish guidelines

As in previous Reference Scenarios.

P2.5: Create website

As in previous Reference Scenarios.

P2.6 Define Harmonised standards

The European standards organisations are not obliged to present newly developed standards as harmonised standards. They may also identify existing standards that they judge, after examination and possible revision, to meet the terms of the mandate, or modify existing standards in order to meet those terms. In the same way, they may identify international or national standards and adopt them as European standards, and present them to the Commission as harmonised standards.

- A harmonised standard must match the essential requirements of the relevant directive. A European standard may contain provisions relating not only to essential requirements but also to other provisions. In such a case, these provisions should be clearly distinguished from those covering the essential requirements.

- A harmonised standard does not necessarily cover all essential requirements. This would oblige the manufacturer to use other relevant technical specifications in order to meet all the essential requirements of the Directive.

P2.7: Ratify standards

The European standards organisations are responsible for identifying and elaborating harmonised standards in the meaning of the New Approach and for presenting a list of adopted harmonised standards to the Commission. The technical contents of such standards are under the entire responsibility of the European standards organisations.

A European standard may contain provisions relating not only to essential requirements but also to other provisions. In such a case, these provisions should be clearly distinguished from those covering the essential requirements.

P2.8 Transpose standards into national law

Member States are required to transpose the provisions of the Directives, including the conformity assessment procedures, into their national legislation. They must also inform the Commission of the measures taken.

- According to the internal rules of the European standards organisations, European standards must be transposed at national level. This transposition means that the European standards in question must be made available as national standards in an identical way, and that all conflicting national standards must be withdrawn in a given period.

- Member States must guarantee the free movement of all products which have been subject to a conformity assessment procedure according to the directive in question.

P2.9 Maintain essential requirements

As in previous scenarios.

Phase 3: Implementation Phase

P3.1 Diffusion and awareness tasks

As in previous Reference Scenarios.

P3.2 Training and support for scheme

As in previous Reference Scenarios.

P3.3: Developer involvement

Application of harmonised standards or other technical specifications remains voluntary, and developers are free to choose any technical solution that provides compliance with the essential requirements.

Developers may choose between different conformity assessment procedures provided for in the applicable Directive.

P3.4 Third (3rd) Party involvement

Receive accreditation

Member States must verify the competence of the bodies seeking notification. This shall be based on the criteria laid down in the applicable Directive in conjunction with essential requirements and the conformity assessment procedure in question. In general, the competence criteria set out in the Directives cover:

- availability of personnel and equipment;

- independence and impartiality in relation to those directly or indirectly concerned with the product;

- technical competence of personnel that is relevant to the products and conformity assessment procedure in question;

- maintenance of professional secrecy and integrity; and

- subscription to civil liability insurance, unless that liability is covered by the state under national law.

Accreditation according to the EN 45000 series of standards is a support to the technical part of notification and, although it is not a requirement, it remains an important and privileged instrument for evaluating the competence, impartiality and integrity of the bodies to be notified.

Carry out product certification

The conformity assessment procedures have been divided into a set of separate modules. This means that a notified body must be capable of taking the responsibility and have the competence to carry out the conformity assessment according to a complete module or for several complete modules.

- Consequently, the body cannot be notified for part of a module. For instance, a body notified for modules D, E, H or their variants must be capable of taking the responsibility not only for the aspects of the quality systems involved but also for product-related requirements.

- In either case the notified body may subcontract some of the verification operations. The body subcontracted by the notified body must be technically competent, and display independence and objectivity according to the same criteria and under the same conditions as the notified body. However, notification is not necessary.

- The Member State that has notified the body, which subcontracts part of its work, must be capable of ensuring effective monitoring of the competence of the body subcontracted by the notified body.

Revise certification periodically

- Part of the notification process is the regular revision of notification by the national accreditation authority.

- Member States are responsible for ensuring that notified bodies maintain their competence at all times and are capable of carrying out the work for which they are notified. It is up to the Member States to choose the means and methods for this.

Phase 4: Coordination phase

P4.1 EU entity: Coordination & management

As in previous Reference Scenarios.

P4.2 Revise and maintain website

As in previous Reference Scenarios.

P4.3 Collaborate with national accreditation authorities

In order to build and maintain confidence between the Member States concerning the assessment of notified bodies, it is essential not only to apply the same assessment criteria.

- It is also important that the bodies performing the assessment of notified bodies have the capability to do so, can demonstrate an equivalent competence and operate according to the same criteria. Such requirements are laid down in EN 45003 and EN 45010.

- Most of the national accreditation bodies of the Member States fulfil and operate according to the requirements of these standards, and have put into place peer evaluation schemes in order to attain mutual recognition of the accreditation results.

- The peer evaluation schemes should ensure that the national accreditation bodies are operating on the same basis and according to the same requirements and, thus, provide confidence that the bodies they accredit or assess operate according to the same rules, criteria and level of competence.

P4.4 Market surveillance activities

- Market surveillance is an essential tool for enforcing New Approach Directives, in particular by taking measures to check:

- that products meet requirements of the applicable Directives,

- that action is taken to bring non-compliant products into compliance, and

- that sanctions are applied when necessary.

Member States must nominate or establish authorities (these cannot be notified bodies, for reason of conflict of interest) to be responsible for market surveillance. These authorities need to have the necessary resources and powers for their surveillance activities, ensure technical competence and professional integrity of their personnel, and act in an independent and non-discriminatory way respecting the principle of proportionality.

P4.5 Periodical effectivity checks

As in the previous scenarios. In Reference Scenario 3, input from the market surveillance activities carried out in the Member States will be essential in determining the effectiveness of the scheme.

8.3.1 Estimated costs for Reference Scenario 3

Estimated ranges of cost for this Reference Scenario are presented in the following tables below. Each table includes a breakdown of costs that is calculated per process in the process detail diagram (Figure 9) shown previously for this scenario.

> The cost is calculated by estimating the effort per process, based on an estimation of the number of months that the process will take to complete, and the number of persons required to carry out the process. Knowing this figure allows us to calculate an estimation of total monetary cost per scenario. To do this the FTE (full time equivalent) value is used: 1 employee at 1700 hours/year at an average rate of 58,82 Euro/hour. Annual cost for an employer is around 108,000 euros (or 9.000 euros/month). In addition, for the tables that are estimated to include the Member States, Romania has been included in the calculation.

EC Entity	Duration (months)	Persons involved	Total effort
P1.1 Convene expert group for CoC committee	0,5	2	1
P1.3 Integrate stakeholder input	0,5	2	1
P1.4 Send mandate to standards bodies	0,25	1	0,25
P1.6 Compile info from other related bodies	1	2	2
P1.7 Publish references of European standards	0,25	1	0,25
P2.2 - Select test country - Perform pilot test	3,25	2	6,5
P2.4 Publish guidelines	0,25	1	0,25
P2.5 Create certification Website	1	1	1
P3.1 Diffusion & awareness of scheme	2	2	4
P3.2 Training & support services	3	2	6
P3.3 Distribute tools	0,25	1	0,25
P4.1 Coordin. & management	40	2	80
P4.2 Update website	1	1	1
P4.3 Evaluate effectivity	3	2	6
P4.5 Carry out market surveillance	3	2	6
Totals	**59,25**	**24**	**115,5**
Total cost (Euros)			**1.039.500,00**

Table 19 Estimated operation costs for EU entity

Experts	Duration (months)	Persons involved	Total effort
P1.2 Define essential requirements	1,5	12	18
P1.4 Define mandate	1	12	12
P2.1 - Create guidelines on application of requirements - Define certification scheme - Define CE labelling process	2,5	12	30
P2.3 - Revise requirements & guidelines based on recommendations - Revise procedures based on pilot test results	1,5	12	18
P2.7 Revise & Maintain essential requirements periodically	1	12	12
Totals	7,5	60	90
Total cost (Euros)			810.000,00

Table 20 Estimated costs for expert committee

National entities	Duration (months)	Persons involved	Total effort
P1.3 Stakeholder input	0,25	27	6,75
P2.3 - Review certification procedures - Recommend changes	0,5	27	13,5
P3.2 - Training for local administration	0,25	27	6,75
P3.3 - National Support and coordination of verification - Integrate info in webpage	2,25	27	60,75
P3.5 - Collaborate with National Accredit. Body - Inform of compliance results	1,1	27	29,7
P4.5 Carry out market surveillance	1	27	27
Totals	5,35	162	144,45
Total cost (Euros)			1.300.050,00

Table 21 Estimated costs for functions of national entities

External Developers	Duration (months)	Persons involved	Total effort
P3.1: Publish certification on own website	0,25	1	0,25
P3.2: Learn essential requirements	0,5	1	0,5
P3.4 - Implement verification processes - Generate technical file - Revise process if rejected - Promote certification in products	8,5	1	8,5
Totals	9	2	9
Total cost (Euros)			81.000,00

Table 22 Estimated costs of compliance for developers external to the public authority

Internal developer	Duration (months)	Persons involved	Total effort
P3.1: Publish certification on own website	0,25	1	0,25
P3.2: Learn essential requirements	0,5	1	0,5
P3.4 - Implement certification process - Generate technical file - Revise process if rejected	8	1	8
Totals	8,5	2	8,5
Total cost (Euros)			76.500,00

Table 23 Estimated costs of compliance for developers internal to the public authority

Notified bodies	Duration (months)	Persons involved	Total effort
P3.1: Promote certification process on own website	0,25	1	0,25
P3.2: Learn essential requirements	0,5	1	0,5
P3.5 - Revise technical file - Perform certification audit - Provide/reject certification - Provide result to coordinating body - Revise certification periodically	4,5	1	4,5
Totals	5	2	5
Total cost (Euros)			45.000,00

Table 24 Estimated costs of certification for notified bodies

European standards bodies *	Duration (months)	Persons involved	Total effort
P1.5: Review requirements	0,5	3	1,5
P2.6 - Accept mandate - Elaborate joint programme - Draft standards - Public enquiry - Technical committee considers comments - Ratify standards - Transmit references to EC	25,75	3	77,25
Totals	26,25	6	78,75
Total cost (Euros)			708.750,00

Table 25 Estimated costs for involvement of European standards bodies

Standards bodies involved in this scenario:

* CEN – Comité Européen de Normalisation

* CENELEC – Comité Européen de Normalisation Electrotechnique

CARSA

* ETSI – European Telecommunications Standards Institute

National standards bodies	Duration (months)	Persons involved	Total effort
P1.5: Review requirements	0,25	27	6,75
P1.6: Advise on relevant existing standards	0,25	27	6,75
P2.6: Public enquiry	0,25	27	6,75
P2.6: - Transpose standards - Publish references of national standards	2	27	54
Totals	2,75	108	74,25
Total cost (Euros)			668.250,00

Table 26 Estimated costs for the involvement of national standards bodies

8.4 A synopsis of the costs and benefits of the chosen scenarios

Summary cost tables for the three scenarios are presented here. Each of the tables presents the potential cost per actor within the scenario. In addition, a total potential cost is included in the calculations: this figure however must be treated with caution as it can only be applied if the costs of all the actors are to be covered by the EC. It may be adjusted however, as required, based on the financial regime to be applied in the scenario.

In addition, it must be noted that the development of each of these scenarios requires the creation of an entity at EU level, the cost of which is *not* included in the following tables. A separate series of cost tables is included for the creation of such an entity, based on the data available from comparable activities within the EU.

Reference Scenario 1

2007 - 2009	Entity	Experts	National entities	External developer	Internal developer	Internal verification	External verification	Total potential cost
Partial costs (euros)	864.000	513.000	874.800	83.250	54.000	18.000	18.000	2.425.050

Table 27 Cost summary for the different actors involved in Reference Scenario 1

Reference Scenario 2

2007 - 2009	Entity	Experts	National entities	External developer	Internal developer	Certification bodies	International standards bodies	National standards bodies	Total potential cost
Partial costs (euros)	1.030.500	1.296.000	1.968.300	101.250	81.000	45.900	1.359.000	121.500	4.972.950

Table 28 Cost summary for the different actors involved in Reference Scenario 2

Reference Scenario 3

2007 - 2009	Entity	Experts	National entities	External developer	Internal developer	Notified bodies	European standards bodies	National standards bodies	Total potential cost
Partial costs (euros)	1.039.500	810.000	1.300.050	81.000	76.500	45.000	708.750	668.250	3.689.550

Table 29 Cost summary for the different actors involved in Reference Scenario 3

It can be clearly seen that the lightest of the scenarios, "**LITE**", is the least costly scenario to be implemented. This is logical considering that the scenario involves a smaller number of potential actors and is less complex with respect to its development and implementation. The greatest cost incurred in this scenario is the cost of operation of the EU entity. The individual costs for this entity are outlined in the corresponding tables. In this case, the fact that the scenario involves few external organisations in the development phase, such as standardisation bodies, the complex and legally binding certification processes, primarily explains the lower costs that are shown by this scenario. Labelling should not be considered a "quick easy fix", but a more flexible and compact scenario that does not perhaps reach the levels of completeness of the other two scenarios, but gains in efficiency for what it saves in cost.

The most costly scenario is "**Looking Ahead**", with its intensive involvement of international standards bodies and standards development. The cost of standards development can be enormous, and it's the complexity of the subject being standardised will subsequently increase or decrease the outlay required in the process: For example, the ebXML family of standards, now ISO 15000, was developed through a joint initiative of two organizations (OASIS and UN/CEFACT) over a two-year initial time period (1999 to 2001), with over 600 participants in six working groups. The specifications continue to be developed and maintained since their initial ISO approval in 2004.

Each of the costs (dues, people, and meetings) can be reduced. These reductions can come from various aspects of the standards organization including the processes for development and approval of the specification and the infrastructure provided by the organization. Given that the most significant costs (the people working on the project) are tied to time, it would make sense that decreasing the amount of time required to develop and approve a specification would cut the costs of the standard.

So, where can we cut time – and thus costs? The steps in creating a standard can be broken down into two phases: development and approval. While there may be some chronological overlap, between the two, they are still distinct activities.

- The development process includes such activities as requirements gathering, scope definition, problem analysis, analysis of existing solutions, initial design, considering contributions of existing work, solving technical problems, writing of the specification, resolution of review comments, developing examples or sample implementations, developing conformance criteria, etc. All of this is intended to prepare a specification document that is ready for approval as a standard.

- The approval process includes voting at the committee or working group level to approve the specification at certain stages, sending the specification out for review, clerical/administrative processing, approval at the organizational level, and publication. Development of a technical specification takes time; that's all there is to it. It takes time to develop a solution to a difficult technical problem, as well as to solve and come to a consensus on political issues and codify a solution that meets the needs and demands of a variety of participants. But this process can be made more efficient by removing obstacles, streamlining the organization's technical process, and providing a proper infrastructure.

In addition the development of the requirements and code of conduct is far more intensive, and requires an intensity of legislative input that does not exist in GS1, and is not necessarily present in the other scenario, GS2, although the latter does require quite a high level of legislative development.

The third scenario, "**Harmonised Europe**", is what may be described as an intermediate scenario, with costs lying somewhere between the other two scenarios. Its complexity lies in the creation of the essential requirements necessary for the creation of the harmonised standards, and the development of these standards. One of the primary benefits of the harmonised standards is the procedure for standards development. The European standards organisations are responsible for identifying and elaborating harmonised standards in the meaning of the New Approach and for presenting a list of adopted harmonised standards to the Commission. The technical contents of such standards are under the entire responsibility of the European standards organisations. Once public authorities have agreed on a mandate, the search for technical solutions should in principle be left to the interested parties.

The European standards organisations are not obliged to present newly developed standards as harmonised standards. They may also identify existing standards that they judge, after examination and possible revision, to meet the terms of the mandate, or modify existing standards in order to meet those terms. In the same way, they may identify international or national standards and adopt them as European standards, and present them to the Commission as harmonised standards.

A harmonised standard must match the essential requirements of the relevant directive. A European standard may contain provisions relating not only to essential requirements but also to other provisions. In such a case, these provisions should be clearly distinguished from those covering the essential requirements. Further, a harmonised standard does not necessarily cover all essential requirements. This would oblige the manufacturer to use other relevant technical specifications in order to meet all the essential requirements of the directive. In general the process of standards development under this regime is more flexible than in normal standardisation development conditions.

Risks and benefits of the cost scenarios

Reference Scenario 1

Risks

- There is a risk that the overall benefits of the scheme may not justify the costs – that a quality label may not be seen as sufficient, and their overuse in all aspects of industry, perhaps resulting in a level of scepticism amongst the users, may not justify their cost.

Benefits

- Benefits for this scenario are clear. It is the least costly of the three scenarios, due to the lower costs implied for the EU entity, experts, and national entities, based on the lower development time, and coordination and management costs. In addition the simplicity of the scheme allows for a more rapid implementation and approval process, thus saving time and related costs.

Reference Scenario 2

Risks

- The cost of this scenarios implies a very large outlay by all stakeholders involved. The obvious risk that this implies will be mitigated by the subsequent success of the scheme with the final user.

- The take-up of the verification and certification processes by external certifying bodies will depend on the perceived cost-benefits for these organisations, which are, after all, one of only two profit-making concerns within the schemes (the other being external developers).

- The cost implied by the national entities may prevent uptake of the scheme, particularly if it is voluntary. Subsidisation by the EC would mitigate this risk.

- The development of standards implies the largest cost in this scenario. There is no guarantee provided in this process that a final, useful, standard will be developed; in addition, the time required in their development will have an important effect on the costs presented here.

Benefits

- The cost implied by the presence of external certification bodies is offset by the quality of the results obtained by this scenario, where the provision of certification is backed up by standards.

- The presence of international standardisation bodies in this scenario implies a large percentage of the total scenario cost. The cost-benefits of such a scheme are many, and imply a development of standards for e-procurement and e-government, in general, at international level, with the EC as a forerunner.

Reference Scenario 3

Risks

- The complexity of this scenario lies in the number of different players involved, which necessitates that the roles of each are clearly defined from the outset.

- The cost of harmonisation of standards at a European level.

- Much of the responsibility for this scenario is in the hands of the national authorities; they must coordinate intensively at national level with notified bodies and accrediting authorities. This will raise the cost of their input; again, subsidisation of the work of national authorities in this option must be considered.

Benefits

- The cost for the external experts is lessened as the development of the essential requirements must be based on the already existing Directives.

- In addition, the cost for the work of the European standards bodies is lessened by the ability to use already existing standards, and adapt them to the essential requirements. This may include the adoption of national standards at a European level. This helps to mitigate the cost of the effort required in standards development.

8.5 Estimated costs for setting up of a European entity (in the manner of an agency)

The following tables highlight the potential costs implied in the setting up of an entity, with the necessary features to carry out the functions of coordination, management and regulation as required by these three scenarios.

The cost has been calculated based on the data that is available for the implementation of already existing agencies. The costs presented here are estimated for a small to medium sized agency of about 30 people.

Typical agency costs are shown for the year 2002 in the table below. For the purposes of this mechanism, an agency is envisaged of approximately the size of the European Monitoring Centre on Racism and Xenophobia (EUMC) below, which received a budget of more than 6 million Euros in 2002 (this however rose to 14 million euros in 2007). As can be seen, most of these agencies rely considerably on the EC for their funding, although a few are almost completely self-sufficient.

Agency	2002 Budget		2002 Establishment Plans (authorised statutory staff)
	Total revenue (in 1000 €)	of which EC subsidy	
CEDEFOP	14.198	97%	83
EURO-FOUND	16.800	98%	88
EEA	24.957	78%	106
ETF	16.800	100%	130
EMCDDA	10.356	87%	59
EMEA	70.547	25% (2)	251
OHIM	167.954	0% (3)	715
EU-OSHA	9.180	98%	31
CPVO	8.493	0% (3)	33
CdT	26.030	0% (4)	158
EUMC	6.170	99%	28
EAR	408.000	99%	316
average	64.957.083		

Table 30 Budget examples for some European agencies

The staff that could potentially be associated with the development of the agency are shown below. This table shows the estimated full complement of operational staff which will comprise the agency after some years of development and growth. Different staff categories are shown where category D is a basic employee, category C a secretary or office clerk, category B a research assistant and, finally, category A implies a research administrator or head of unit. In this way, the number of personnel calculated in the table is proportional to the complexity of the activity being undertaken, which also affects the category of staff required to complete each activity.

ACTIVITIES	Staff Category			
	A	B	C	D
Administration	5	3	4	
Management(this item includes the Executive and Deputy Director).	2	0	2	
Human and financial resources department	1	2	1	
Information/IT department	1			
Legal tasks	1	1	1	
Operational tasks:	8	8	2	
Management of diffusion and awareness tasks; pilot project	1	1		
Maintenance of website and other IT related tasks (e.g. publishing CoC, tool distribution)	1	1		
Provide training services	2		1	
Follow-up on research relevant to e-procurement and provide the Commission and Member States with technical expertise	1	2		
Support to Member States requiring technical and operational assistance with regard to verification	1	2	1	
Coordination and management of all legal and technical processes, including effectivity tests	2	2		
TOTAL	**13**	**11**	**6**	

Table 31 Staff required per Agency operational task

Staff costs can then be calculated using the full time employee index (108.000 euros per annum), which are shown below: It is estimated that the agency could function with a total number of 18 full-time internal EU staff, and 12 external staff. Total starting salary costs are estimated at over 3 million euros per year.

Salaries			
Types of post	**No of staff**	**Amount**	**Method of calculation**
Officials or temporary staff	18	1.944.000	18*108.000
External staff	12	1.296.000	12*108.000
Total	**30**	**3.240.000**	

Table 32 Salary costs per Agency staff

The table below shows the tri-annual costs (2007 to 2009) estimated to be incurred by the three different scenarios. The difference between the most costly scenario and the least costly is no more than 11%, as the cost of creating the agency is considered to be more or less equal in all three scenarios.

CARSA

Million EUR	Year 2007	Year 2008	Year 2009	Total Years 2007-2009
Human resources	15	20	23	23
Calculation basis	10	17,5	23	23
Annual cost of human resources	1.080.000	1.890.000	2.484.000	**5.454.000**
Other administrative expenditure				
Missions *	200.000	150.000	150.000	500.000
Management Board and Advisory Expert meetings **	300.000	300.000	300.000	900.000
Interpreting/Translation $	650.000	500.000	500.000	1.650.000
Other administrative expenditure $$	100.000	100.000	100.000	300.000
Total other administrative expenditure	1.250.000	1.050.000	1.050.000	**3.350.000**
Sub-total	2.330.000,00	2.940.000,00	3.534.000,00	**8.804.000,00**
3 year Operating Costs for scenario GS1				2.425.050,00
3 year Operating Costs for scenario GS2				4.972.950,00
3 year Operating Costs for scenario GS3				3.689.550,00
3 year total for GS1				**11.229.050,00**
3 year total for GS2				**13.776.950,00**
3 year total for GS3				**12.493.550,00**

Table 33 Tri-annual summary costs for the three Reference Scenarios

Notes on the table:

* Missions: cover expenditure on transport, daily mission allowances and other exceptional expenses incurred by established staff in the interest of the service, in accordance with the staff regulations

** This appropriation is intended to cover the operating expenses including travel and subsistence expenses and interpretation costs. (2 meetings for the Management Board of 18 members and 2 meetings for the consultative Forum of 12 persons per year).

$ This appropriation is intended to cover the translation of studies, reports, as well as working documents for the Management Board and Advisory Forum and for conferences, seminars, etc. into the different Community languages. The translation work will mainly be carried out by the Translation Centre for the bodies of the EU in Luxembourg

$$ This covers any other administrative costs that may be incurred, such as printing, stationary etc.

9   COMPARING THE SCENARIOS

This section compares the three Reference Scenarios previously discussed. It analyses the effects of the following assessment criteria on the implementation of the different scenarios at Member States level. Concretely, it defines the possible negative implications that these criteria may have with respect to implementing one criteria over another. The assessment criteria used are:

- 1: Structural feasibility for implementing the verification scheme versus the complexity of the existing situation.

- 2: Country specific aspects.

- 3: Cost of the solution.

Criterion 1: Structural feasibility for implementing the verification scheme versus the complexity of the existing situation

Within this criterion, two indicators are considered. The first concerns the current complexity of compliance verification mechanisms, and the possible **re-use** of aspects of these that may be beneficial during the creation of guidelines for the Reference Scenarios. Re-use of already existing verification schemes or parts of schemes will be vital to the success of any verification mechanism, as it will help to minimise the effort and cost that Member States have to incur during implementation.

This is closely linked to the second indicator within this criterion, which is the complexity that is involved in the implementation of each scenario. This level of complexity may have consequences for the acceptance of the relevant scenarios: complexity implies a greater input of effort with respect to the execution and operation of the scenario, and therefore the costs associated with the relevant scenario will also be greater. Choosing the scenario with the least negative impact on the Member States will be an important if not deciding features of its acceptance and subsequent success.

Comparison indicator 1: Current complexity

Based on the different systems analysed in this study, table 34 below shows certain aspects of compliance verification mechanisms that exist within the EU/EEA Member States, which are considered to be potentially beneficial during the creation of the different scenarios. The table shows aspects of compliance verification that are present in more than one country, and also aspects that are specific to certain countries. In most cases, the aspects are applicable to all scenarios, although in certain cases (e.g. e-tools, attestation of tools/platforms, homologising experts) the aspect is considered more applicable to some scenarios than others.

Re-usable aspects present in more than one country	**Applicable to scenario**
- Concrete verification at each step of development	**All**
- Defining legal and functional requirements at specification stage	**All**
- Technicians, business analysts and jurists participate together in meetings	**All**
	All

- Regular verification by key users of the system		**All**
- Regular review phases according to verification requirements		**All**
- Separate tests for separate modules		**All**
- Internal checks on regular basis		**All**
- Installation of Customer Care Centre		**GS1 & GS2**
- Installation of e-support tools		**All**
- User suggestions incorporated into all new developments		**All**
- Further development in case of new releases or advances in software		**All**
- Regular audits of critical functional areas		**All**
- Accreditation and certification of e-signature suppliers		**All**
- Service Level Agreements for external service providers		
Reusable country specific aspects		**Applicable to scenario**
Czech Rep	- Attestation of individual electronic tools	**GS1, GS2**
France	- Homologation process for providers & solutions: providers need obtain homologation only once for all goods or services they provide.	**GS2, GS3** **All**
	- Compliance verification at two levels: suppliers and platforms	**GS1, GS2**
	- Quality labelling of public platforms	**All**
	- Generalised rules on Interoperability and Security	
Norway	- To-the-point formulation: Outsource each individual module to one or more external service operators, users may choose to use more than one internet based service for a single operation. The service buyer (Norwegian public sector) only defines requirements and availability.	**All**
Germany	- SAGA Standards for technologies, infrastructure and standards in e-government projects	**All**
Hungary	- Total Quality Management Plan: a people focused management system that aims at continual increase in customer satisfaction at continually lower real costs.	**All**
Italy	- Use of standardised Rational Unified Process to define the development methodology	**All**
UK	- eGovernment Interoperability Framework for all government applications	**All**

Table 34 Table of reusable elements

In addition, the complexity of the different e-procurement systems in each country with respect to the different compliance verification mechanisms adopted in the Member States is shown in figure 11 below. Here, the complexity of the e-procurement system (the number of different system modules in development, test or production, for both products and services) is graphed alongside the completeness of the verification mechanism in place (the number of aspects verified, and the organisation of verification).

In general, it can be clearly seen that although, logically, more complex e-procurement systems entail more complex verification, there is considerable variation, and some Member States which have quite simple or modestly developed e-procurement systems, have very complete verification mechanisms already in place. Conversely, some countries which have more developed systems have allowed the verification aspects to lag behind.
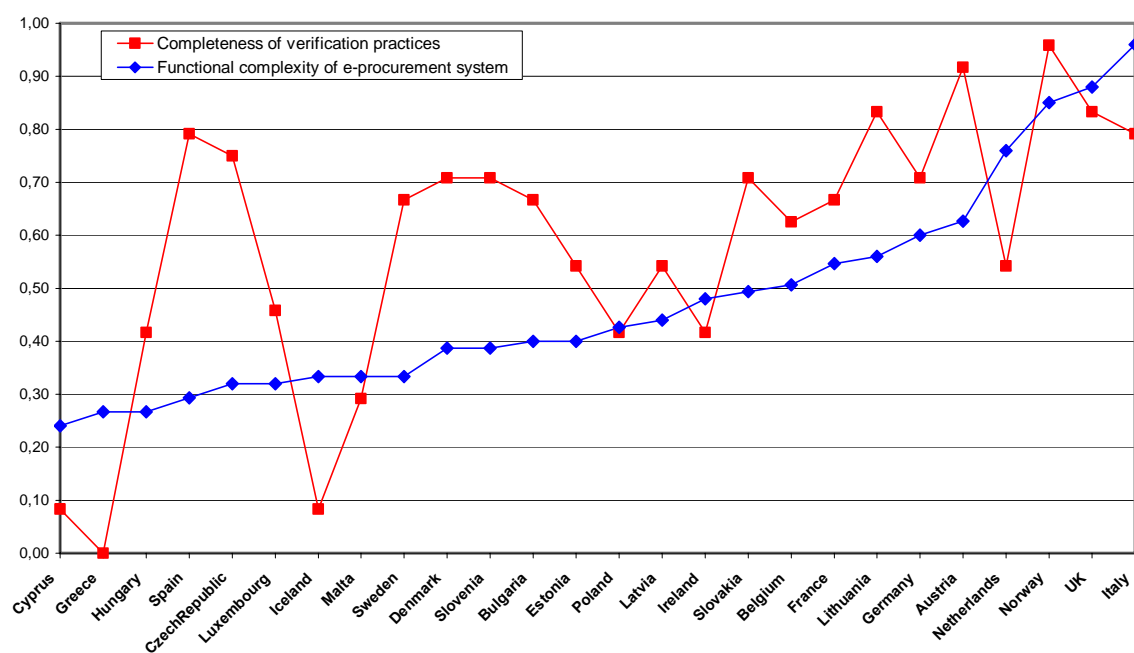
Figure 11 Complexity of e-procurement systems and verification practises in the Member States

This graph leads us to the conclusion that although the implementation of (a) new verification mechanism(s) in the Member States might require some adjustment on the part of the Member States, in general it should not cause any undue difficulty from a technical or organisational point of view. Those countries therefore which may suffer most when implementing the three Reference Scenarios, are those which have not yet implemented a compliance verification mechanism adequate to the functional development of their system.

- These countries include Cyprus, Greece, Iceland and, to a lesser extent, Malta. For these countries implementation of the lightest verification mechanism (Reference Scenario 1) may be the most logical option.

- For the remaining countries, implementation of either of the two remaining solutions (Reference Scenarios 2 & 3) should be feasible, as they either possess verification mechanisms adequate to the functional complexity of the system, or mechanisms far more developed than needed for verification, implying a greater capacity for compliance verification development.

Conclusions

A variety of aspects of the compliance verification mechanisms which currently exist in the Member States may be re-used when defining a common mechanism at European level.

In general the majority of countries have verification systems developed beyond the functional requirements of their e-procurement systems. This implies that a culture of compliance verification is already quite strong within the Member States, which will help create acceptance towards the verification models described in this study.

Based on the complexity of their verification mechanisms, some countries may find it easier to implement one mechanism over another.

Comparison indicator 2: Implementation complexity

The complexity of implementing the three scenarios based on the current state of the art of compliance verification which exists in the Member States is something that must be considered carefully. Although it must be expected that some adjustment will be required on the part of each of the Member States, the level of adjustment involved and the subsequent complexity with respect to the implementation of one scenario over another will be important factors.

However, we did see in the previous section that the level of e-procurement development in a Member State may not correctly reflect that country's capacity for incorporating quite complex compliance verification mechanisms. Based on the results of the High Level Criteria defined in this study, we see that many countries already possess relatively comprehensive mechanisms at national level.

Logically, the various parts of the Reference Scenarios will involve more or less complexity with respect to their implementation. The following table considers the difficulty in implementing each of the scenarios with respect to the actors involved in the scenario; for example, EU entity is considered to have a task of medium complexity within the first scenario, but high complexity in the following two scenarios, as the levels of coordination and management of the scenario are considered to be more involved and difficult to implement. In table 35 below the value **LOW** has a value of 1; **MEDIUM** has a value of 2; **HIGH** has a value of 3 (Not in scenario has a value of 0). The total potential score that a scenario may reach is 33.

	Complexity level per scenario		
Actor	**Reference Scenario 1**	**Reference Scenario 2**	**Reference Scenario 3**
EU Entity	MEDIUM	HIGH	HIGH
Experts	MEDIUM	HIGH	MEDIUM
National entities	LOW	HIGH	HIGH
External developers	MEDIUM	HIGH	MEDIUM
Internal developer	MEDIUM	HIGH	MEDIUM

Internal verification (independent group)	MEDIUM	Not in scenario	Not in scenario
External verification (not certification)	MEDIUM	Not in scenario	Not in scenario
Certification bodies / Notified bodies	Not in scenario	HIGH	HIGH
International standards bodies	Not in scenario	HIGH	LOW
European standards bodies *	Not in scenario	LOW	HIGH
National standards bodies	Not in scenario	MEDIUM	MEDIUM
Score per scenario	13	24	21
Index of complexity (score per scenario / total potential score)	0.39	0.72	0.64

Table 35 Complexity level per scenario

Based on this table, an indication of the implementation complexity of each scenario is calculated, based on the total index of complexity that may be scored (the maximum score obtainable in any one scenario).
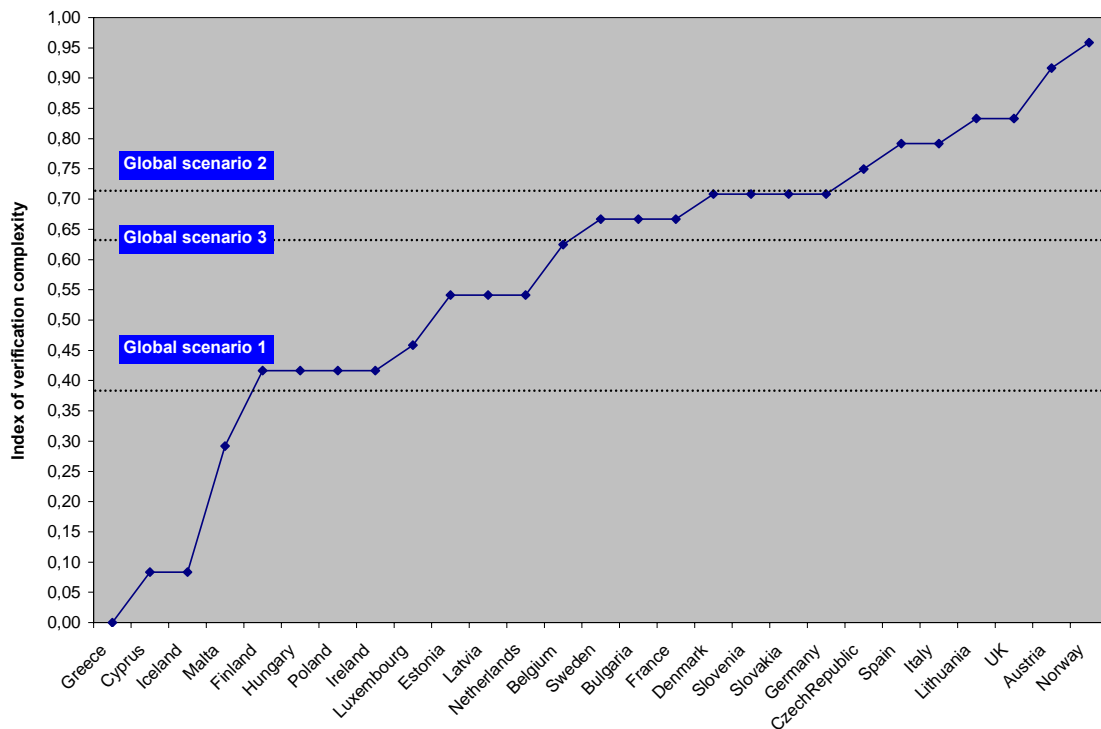
Figure 12 A comparison of Reference Scenario complexity against verification complexity in the Member States

Figure 12 above shows us graphically how the various countries within the Member States may already reach the complexity levels required for each of the Reference Scenarios, based on the thoroughness of the compliance verification mechanisms already implemented. As can be seen from table 36 below, 41% of Member States already achieve the levels of complexity that may be required by the most complex of the scenarios, Reference Scenario 2. More than 55% of countries already have verification mechanisms sufficiently complex to suggest that they are capable of implementing Reference Scenario 3, and almost all countries are close to achieving a complexity comparable to the implementation of Reference Scenario 1, the lightest of the three scenarios, with only 15% considered below the level required to immediately implement this scenario.

In general, this would suggest that although changes will have to made to adapt the mechanisms to the new procedures, the capacity of the countries to implement such procedures to reach the targets set by the different scenarios is feasible. Based on the graph we see that the countries can be organised into 4 clear groupings: those Member States that require an effort to implement scenario 1 (the least complex) scenario; the second group composed of those Member States capable of already implementing scenario 1, but falling just short of the capacity to implement scenario 3 (the middle scenario); the third group shows those countries falling short of implementing scenario 2 (the most complex), and the final group lists the Member States which are already considered capable of implementing all scenarios.

Low complexity	Medium complexity	High complexity	
Countries that require an effort to reach **GS1**	Countries that require an effort to reach **GS3**	Countries that require an effort to reach **GS2**	Countries already capable of implementing **GS2**
Greece	Finland	Sweden	Norway
Cyprus	Hungary	Bulgaria	Denmark
Iceland	Poland	France	Slovenia
Malta	Luxembourg	Belgium	Slovakia
	Estonia		Germany
	Latvia		Czech Republic
	The Netherlands		Italy
	Ireland		Spain
			UK
			Lithuania
			Austria

Table 36 Member State grouping with respect to their current capacity to implement each scenario

Conclusions

Based on a qualitative calculation of the complexity for implementation of each scenario 41% of the Member States are already well capable of implementing the more complex verification mechanisms, whereas others may need some adjustment to reach the level required by the most simple scenario.

In general, however, the simplest scenario could already be implemented in 81% of the Member States without a great deal of change to the complexity of the verification systems they already have implemented.

Criterion 2: Country specific aspects: **impacts of each Member State indicator on each Reference Scenario.**

The indicators used within this criterion are the following:

Comparison indicator 3: Cultural and Social aspects: those aspects related to cultural or social characteristics that may weigh against the implementation of one scheme or another (e.g. lack of IT skills in the general population)

Comparison indicator 4: Political will: those aspects related to the effect that political motivation may have on the implementation of the scenarios (e.g. e-procurement not seen as a financial necessity)

Comparison indicator 5: Legal complexity: if there are legislative characteristics within any of the Member States that may hinder implementation of any scenario.

Comparison indicator 6: Needs and restrictions: this is based on the information concerning the needs and restriction as perceived by both the national contacts and CARSA experts, as described for each Member State in the first interim report.

The impact value of each country specific criteria on each of the Reference Scenarios is shown in the three tables below. The impact has been calculated qualitatively based on the information supplied on the different aspects by the country experts in the First Interim Report of this study.[15] Each impact has been calculated as either positive or negative (or neutral), and with grades (LOW, MEDIUM or HIGH) between them. Therefore, a highly negative effect will score -3, and a highly positive effect +3. An estimated neutral or non-effect has a value of 0.

For example, if the political opinion towards e-procurement is somewhat sceptical in general, it is assumed that for any compliance verification scenario, the indicator **political will**, will score negatively, although less negatively (LOW -) for the least demanding solution, with negativity increasing for a more demanding solution (MEDIUM -) to the most demanding solution (HIGH -). The same occurs with the positive scoring, with strong support for any solution logically scoring a HIGH +. Those indicators for which the national contact did not express an opinion, or where desk research did not reveal additional information regarding the indicator, are considered to be **neutral** (0).

Values:	Negative: LOW - = -1; MEDIUM - = -2; HIGH - = -3
	Positive: LOW + = +1; MEDIUM + = +2; HIGH + = +3
	Neutral = 0

Reference Scenario 1						
	Cultural and Social aspects	Political will	Legal complexity	Restrictions	Needs	TOTAL
Austria	HIGH +	HIGH +	Neutral	Neutral	Neutral	**6**
Belgium	MEDIUM +	Neutral	LOW -	Neutral	Neutral -	**1**
Bulgaria	LOW -	Neutral	Neutral	LOW -	LOW -	**-3**

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[15] It must be noted that these estimations of impact in some countries (UK, Sweden, Cyprus, Malta, Finland, Ireland, Iceland, Slovakia) are affected by a lack of relevant data provided by the national contacts.

Cyprus	MEDIUM +	MEDIUM +	Neutral	LOW -	LOW -	2
Czech Republic	MEDIUM +	Neutral	Neutral	LOW -	LOW -	0
Denmark	MEDIUM +	MEDIUM +	Neutral	Neutral	Neutral	4
Estonia	LOW +	Neutral	Neutral	Neutral	Neutral	1
Finland	Neutral	Neutral	LOW -	Neutral	Neutral	-1
France	MEDIUM +	HIGH +	Neutral	Neutral	Neutral	5
Germany	HIGH +	MEDIUM +	Neutral	Neutral	Neutral	5
Greece	Neutral	MEDIUM -	LOW -	LOW --	LOW --	-5
Hungary	Neutral	Neutral	Neutral	LOW --	LOW -	-2
Ireland	MEDIUM +	MEDIUM +	Neutral	LOW -	Neutral	3
Iceland	Neutral	Neutral	Neutral	LOW --	LOW --	-2
Italy	MEDIUM +	HIGH +	Neutral	Neutral	Neutral	5
Latvia	MEDIUM +	HIGH +	Neutral	Neutral	Neutral	5
Lithuania	MEDIUM +	HIGH +	Neutral	Neutral	Neutral	5
Luxembourg	LOW +	HIGH +	LOW -	LOW -	LOW -	1
Malta	Neutral	LOW +	Neutral	Neutral	Neutral	1
Netherlands	HIGH +	HIGH +	Neutral	Neutral	Neutral	6
Norway	HIGH +	HIGH +	Neutral	Neutral	Neutral	6
Poland	LOW +	MEDIUM +	Neutral	LOW --	LOW --	1
Slovakia	MEDIUM +	HIGH +	Neutral	Neutral	LOW -	4
Slovenia	MEDIUM +	HIGH +	Neutral	LOW -	Neutral	4
Spain	MEDIUM +	MEDIUM +	LOW -	LOW --	Neutral	2
Sweden	MEDIUM +	MEDIUM +	LOW -	Neutral	Neutral	3
UK	HIGH +	HIGH +	Neutral	Neutral	Neutral	6
TOTAL	**42**	**46**	**-6**	**-11**	**-9**	

Table 37 Impact of country specific criteria on Reference Scenario 1

Reference Scenario 2						
	Cultural and Social aspects	**Political will**	**Legal complexity**	**Restrictions**	**Needs**	**TOTAL**
Austria	MEDIUM +	MEDIUM +	LOW -	Neutral	Neutral	**3**
Belgium	LOW +	LOW -	HIGH -	LOW -	Neutral -	**-4**
Bulgaria	Neutral	MEDIUM -	LOW -	MEDIUM -	MEDIUM -	**-7**
Cyprus	LOW +	Neutral	LOW -	HIGH -	HIGH -	**-6**

Czech Republic	LOW +	LOW -	LOW -	LOW -	LOW -	**-3**
Denmark	MEDIUM +	LOW +	LOW -	Neutral	Neutral	**2**
Estonia	LOW +	Neutral	LOW -	LOW -	LOW -	**-2**
Finland	Neutral	MEDIUM -	HIGH -	LOW -	LOW -	**-7**
France	LOW +	MEDIUM +	LOW -	Neutral	Neutral	**2**
Germany	MEDIUM +	MEDIUM +	LOW -	Neutral	Neutral	**3**
Greece	MEDIUM -	MEDIUM -	HIGH -	MEDIUM -	MEDIUM -	**-11**
Hungary	LOW -	LOW -	LOW -	MEDIUM -	MEDIUM -	**-7**
Ireland	MEDIUM +	MEDIUM +	LOW -	LOW -	LOW -	**1**
Iceland	LOW -	LOW -	LOW -	MEDIUM -	MEDIUM -	**-7**
Italy	MEDIUM +	MEDIUM +	LOW -	Neutral	Neutral	**3**
Latvia	MEDIUM +	MEDIUM +	LOW -	MEDIUM -	LOW -	**0**
Lithuania	MEDIUM +	MEDIUM +	LOW -	MEDIUM -	LOW -	**0**
Luxembourg	LOW +	LOW +	HIGH -	MEDIUM -	LOW -	**-4**
Malta	MEDIUM -	LOW -	LOW -	LOW -	LOW -	**-6**
Netherlands	LOW +	LOW +	LOW -	Neutral	Neutral	**1**
Norway	MEDIUM +	MEDIUM +	LOW -	Neutral	Neutral	**3**
Poland	Neutral	Neutral	LOW -	MEDIUM -	MEDIUM -	**-5**
Slovakia	LOW +	MEDIUM +	LOW -	LOW -	LOW -	**0**
Slovenia	LOW +	LOW +	LOW -	LOW -	LOW -	**-1**
Spain	LOW +	MEDIUM +	HIGH -	MEDIUM --	Neutral	**-2**
Sweden	MEDIUM +	MEDIUM +	HIGH -	LOW -	Neutral	**0**
UK	LOW +	MEDIUM +	LOW -	Neutral	Neutral	**2**
TOTAL	**21**	**17**	**-39**	**-30**	**-23**	

Table 38 Impact of country specific criteria on Reference Scenario 2

Reference Scenario 3						
	Cultural and Social aspects	**Political will**	**Legal complexity**	**Restrictions**	**Needs**	**TOTAL**

Austria	MEDIUM +	MEDIUM +	LOW -	Neutral	Neutral	**3**
Belgium	LOW +	LOW -	HIGH -	Neutral	Neutral -	**-3**
Bulgaria	Neutral	MEDIUM -	LOW -	Neutral	Neutral	**-3**
Cyprus	MEDIUM +	LOW +	LOW -	MEDIUM -	LOW -	**-1**
Czech Republic	LOW +	LOW -	LOW -	Neutral	Neutral	**-1**
Denmark	MEDIUM +	MEDIUM +	LOW -	Neutral	Neutral	**3**
Estonia	LOW +	LOW +	LOW -	Neutral	LOW -	**0**
Finland	Neutral	Neutral	HIGH -	LOW -	Neutral	**-4**
France	MEDIUM +	MEDIUM +	LOW -	Neutral	Neutral	**3**
Germany	MEDIUM +	MEDIUM +	LOW -	Neutral	Neutral	**3**
Greece	LOW -	Neutral	HIGH -	MEDIUM -	MEDIUM -	**-8**
Hungary	Neutral	LOW -	LOW -	LOW -	LOW -	**-4**
Ireland	MEDIUM +	MEDIUM +	LOW -	LOW -	Neutral	**2**
Iceland	LOW -	LOW -	LOW -	LOW -	LOW -	**-5**
Italy	MEDIUM +	MEDIUM +	LOW -	Neutral	Neutral	**3**
Latvia	MEDIUM +	MEDIUM +	LOW -	LOW -	Neutral	**2**
Lithuania	MEDIUM +	MEDIUM +	LOW -	LOW -	Neutral	**2**
Luxembourg	LOW +	LOW +	HIGH -	LOW -	Neutral	**-2**
Malta	Neutral	Neutral	LOW -	LOW -	Neutral	**-2**
Netherlands	MEDIUM +	MEDIUM +	LOW -	Neutral	Neutral	**3**
Norway	MEDIUM +	MEDIUM +	LOW -	Neutral	Neutral	**3**
Poland	LOW +	LOW +	LOW -	LOW -	LOW -	**-1**
Slovakia	LOW +	MEDIUM +	LOW -	Neutral	Neutral	**2**
Slovenia	MEDIUM +	LOW +	LOW -	Neutral	Neutral	**2**
Spain	MEDIUM +	MEDIUM +	HIGH -	LOW --	Neutral	**0**
Sweden	MEDIUM +	MEDIUM +	HIGH -	Neutral	Neutral	**1**
UK	MEDIUM +	MEDIUM +	LOW -	Neutral	Neutral	**3**
TOTAL	**34**	**25**	**-39**	**-14**	**-7**	

Table 39 Impact of country specific criteria on Reference Scenario 3

The differences in impact values for each Member State for the different country specific comparison indicators is shown in the graphof figure 13 below.
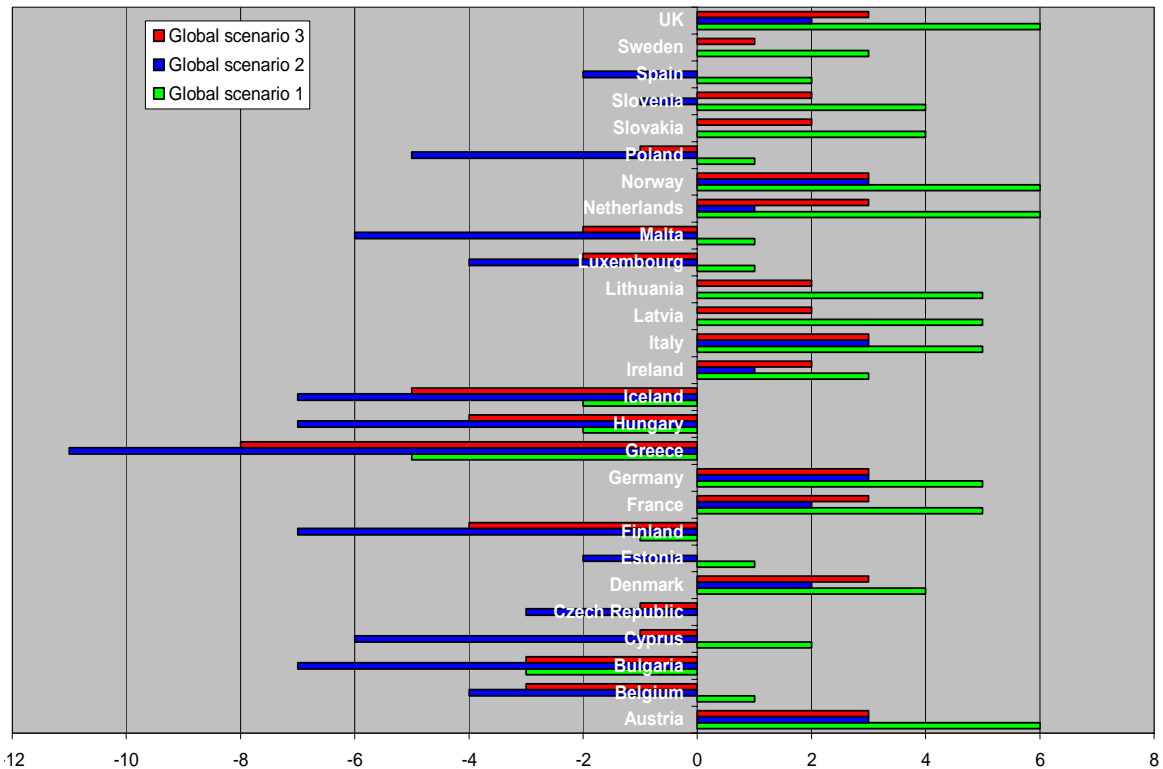
Figure 13 Impact values within Member States of country specific criteria on each Reference Scenario

As can be seen, the impact that the different indicators have on the different scenarios is quite marked. In general, the introduction of the simplest scenario (scenario 1) is received most positively in those countries which have accepted the need for some type of verification mechanism, and is received less negatively in those which have the greatest restrictions towards compliance verification. This is logical, as those countries which may have the least resources to devote to the issue, if required, will choose the least demanding option. The appeal of this option is also in its voluntary nature, which again, does not enter into conflict with the needs, restrictions, and in some cases cultural characteristics that define certain Member States. Those countries which already have well developed verification mechanisms will be well capable of introducing this option without much extra effort.

However, it is considered that in many of the countries which have defined standards at a national level, or have expressed a desire to see standards introduced at European level, the impact of the country specific criteria on the more complex scenarios which introduce standards as an option is more positive: in some of these countries (Austria, Denmark, France, Germany, Italy, Norway, UK), introducing the more complex scenarios would be also highly acceptable. In fact, it should be taken into account that, although scenario 1 has the least negative impact in these Member States, without the introduction of standards, it may not be the most acceptable solution, as it may not have sufficient regulatory consequences, or may be considered too marginal a treatment of the issue. This is reflected in the strong showing for both scenarios 2 and 3 in these Member States.

It can also be seen that between the two more complex scenarios (scenario 2 and 3), scenario 2 is, in general, considered the least desirable, based on the restrictions defined within the various Member States. In some cases (Ireland, UK, Netherlands) this is due to the obligatory nature of these schemes going against social and cultural traits. However, a combination of a somewhat negative political momentum towards e-procurement in some Member States, poor infrastructure in current public administration systems, a lack of

training for both public officers and final users with respect to such systems, and the perception of cost that standardisation may provoke to already cash-depleted national administrations. For this reason, the more voluntary scenario 3 is considered a less invasive option, and the more acceptable of the standards based scenarios. Nevertheless, in those countries which already have well defined compliance mechanisms, and have developed specific standards or frameworks for e-procurement, the difference in tolerance of the two scenarios is minimal, and both appear equally acceptable (Austria, France, Germany, Italy, Norway).

In summary, it is considered that the introduction of the more complex verification mechanism may be the most difficult to implement, in particular of those aspects whose compliance is made obligatory. It is possible that the implementation of the third scenario, based on harmonised standards, may be a more acceptable option, as it leaves more opportunity for adjustment on the part of the developers, and in addition, leaves them more freedom of choice with regard to the implementation of compliance verification.

Overall, however, the impact of the different indicators is, on average, less negative or more positive on the first Reference Scenario. The flexibility and simplicity of this scenario and the capacity to introduce it at minimum cost to the developer, and to the national authorities is considered to be the most important benefit.

The influence of each of the individual country specific indicators is shown in figure 14 below. In general, cultural and social aspects, and political will, are considered to have a neutral to positive influence. On the other hand, legal complexity, Member State restrictions and Member State needs are considered to have a negative to neutral influence.
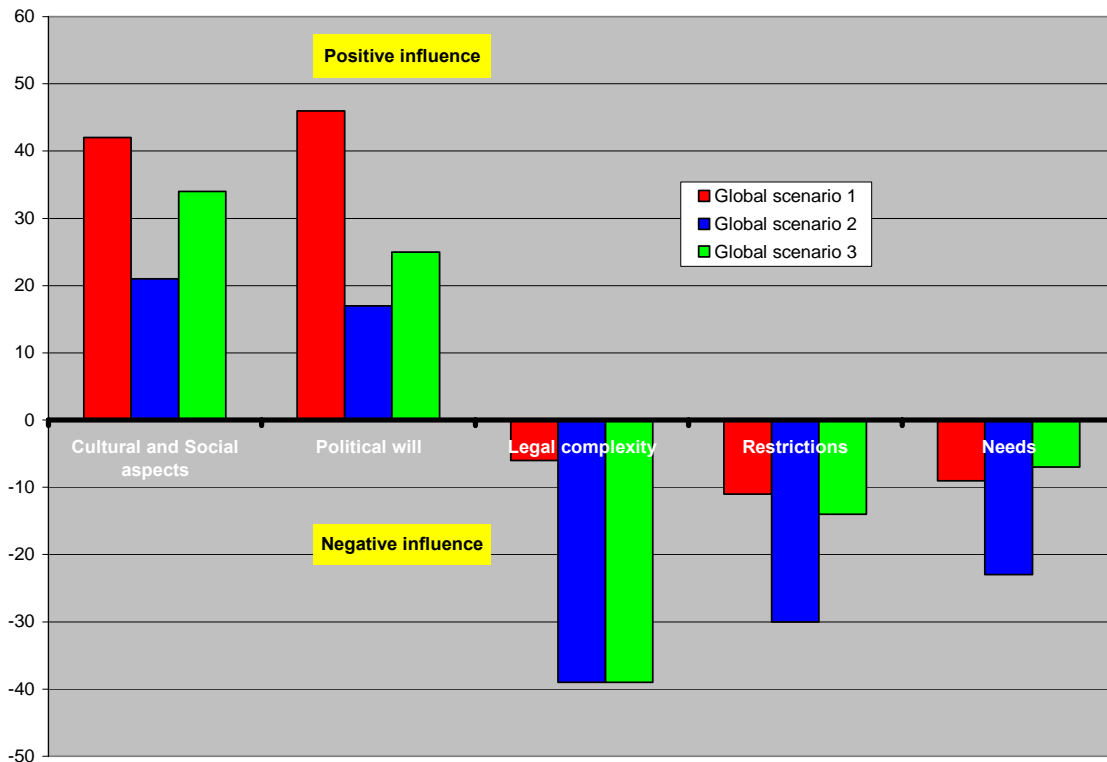
Figure 14 The influence of the country specific indicators on each of the Reference Scenarios

Cultural and social aspects

Looking at each of the indicators, as shown in figure 14 above, cultural and social effects have the greatest effect of the "positive indicators" on the Reference Scenarios. This can be attributed to the fact that this

indicator includes aspects such as the natural cultural acceptance of obligatory procedures, or others, such as considerations related to the existence of an IT culture in the Member State, the necessity of compliance mechanisms, or the desire for interoperability and standards. In general, this indicator reflects positively on all three solutions, although, marginally, the most acceptable solution is the most flexible: Reference Scenario 1. The most complex scenario, scenario 2, suffers somewhat more than the others due to its partially obligatory nature, and the complexity of its implementation. In this sense, Reference Scenario 3 may be more favouirable as the process of development of the mechanism and particularly its implementation is more autonomously controlled by national administrations.

Political will

Political will is highly subjective but based on comments made by the national contacts, it would appear that in general that most countries are politically open and willing to accept a solution which will positively influence public administration and its associated activities, particularly in the area of cost savings. It is possible that the complexity and more advanced political and legal involvement in scenarios 2 and 3 may perhaps go against these 2 scenarios. The "quick fix" is politically the most attractive option.

Legal complexity

In general, the implementation of any of the scenarios will imply some legal activity, although it appears that legal complexity should not be a problem in most of the Member States. The EU Directives on public procurement, and other national laws directly influencing aspects of e-procurement, such as e-signature legislation, have been transposed without much trouble in most countries (however, the EC has referred certain Member States to the European Court of Justice for having not yet transposed the EU Directives related to e-procurement[16], and this is reflected in a negative legal influence that these States may incur). This implies that legal restrictions in the Member States should not impose any undue negative influence on the implementation of the legislation required for any regulatory mechanism.

However, it is considered that both scenarios involving standards development (scenario 2 & 3) could be most affected by the legal complexity within the Member States, due to their modus operandi. Both scenarios imply the implementation of regulatory aspects that may be complex to administer; the development of a legally binding non-compliance mechanism on the one hand, which must be present in scenario 2, and, on the other hand, the transposition of essential requirements into law, and the adoption, by law, of harmonised standards.

Scenario 2 will require the development of a mutual agreement between the Member States, with its associated regulatory mechanisms. In addition, in scenario 3, the Member States must transpose into their national legislation all the conformity assessment procedures established under a Directive and they must guarantee by law the free movement of all products, which have been subject to a conformity assessment procedure according to the directive in question. This implies a legislative load in both scenarios that is some way greater than the simplest scenario.

Restrictions

The restrictions implied by the responses of the various national contacts again lead to the conclusion that of the three scenarios in question the one least affected by restrictions within the Member States is the most simple and flexible scenario (Reference Scenario 1). In addition, highly important factors such as cost

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[16] IP/07/361: Public procurement: Commission acts to ensure seven Member States implement EU laws. http://ec.europa.eu/community_law/eulaw/index_en.htm.

restrictions, human resources limitations, financial benefits or problems associated with the organisation of e-procurement processes at a national level will positively influence the acceptance of this scenario over the others. However, Reference Scenario 3 is considered much less restrictive than the most complex scenario (scenario 2), as it is thought that its structure will respond more to the needs (see needs below) expressed by many Member States with respect to tighter standards for many aspects of e-procurement.

In general however, it must be noted that there is no one solution which can be considered completely neutral, as all scenarios will be affected negatively to some degree or other by the restrictions present in the Member State in question, although this will of course vary from one state to another.

Needs

Although needs are closely related to restrictions, as mentioned previously, this aspect also will affect the adoption of one scenario over the other, as the perceived needs within the Member State will affect the characteristics of the mechanism that may be adopted. All the Reference Scenarios score quite highly (that is to say, they affect the perceived needs of the Member States less negatively), as they all respond more or less adequately to the desire of many countries for the introduction of a standardised European framework for all aspects of e-procurement, although particularly with respect to interoperability, security and transparency.

However, it can be seen that the most complex scenario is the most restrictive of the three, as it may not correctly respond to the needs of many of the Member States whose capacities are already limited with respect to the implementation of e-procurement, and the obligatory commitment to a complex verification scheme may not be the best conclusion.

It is curious to note that the simplest scenario is not thought to respond the best to the needs as defined within all the Member States. Although the difference is again marginal, Reference Scenario 3 is thought to be more adequate than Reference Scenario 1, as it responds better to the desires of many Member States for the creation and application of standards for many aspects of e-procurement, and, in general, a more controlled development of e-procurement within Europe.

Conclusions

Country specific characteristics will have a profound effect on any compliance verification mechanism, and are a useful method of measuring the possible acceptance of any one scenario over another. Although many of the Member States have the capacity to implement the more complex scenarios, the influence of the country specific characteristics may have a negative bearing on their implementation.

The positive implications of some Member States (Austria, Italy, France, Denmark, UK, Sweden, Ireland, Germany, France, Netherlands, Norway, and to a lesser degree Slovenia, Slovakia, Latvia and Lithuania) are much greater than the remaining Member States, and they appear be potentially more disposed towards implementing more complex scenarios based on standardisation.

However, considering all Member States in the EU/EEA, it is clear that the implementation of the lightest scenario would seem to be currently more practicable and immediately realistic amongst all the countries involved.

Criterion 3: Cost of the solution

The cost of each scenario will have an important bearing on its eventual acceptance by the different Member States. The cost of e-procurement solutions has already been mentioned as a limiting factor by many Member States, and therefore any additional cost incurred by the implementation of a compliance verification mechanism should be carefully considered.

The graph in figure 15 below shows the changes that some of the Member States are currently planning with respect to the percentage of their e-procurement budget dedicated towards compliance verification procedures. Those bars marked in green show an increase in spending in the future, whereas those marked in red show a decrease in future spending. Although in some cases (e.g. Austria) expenditure is extremely high (35%) relative to the other Member States, on average the majority of countries appear to spend around 10% of their e-procurement budget on verification procedures.

This figure provides an important reference mark with respect to the cost that could be expected to be incurred by the respective Member States.
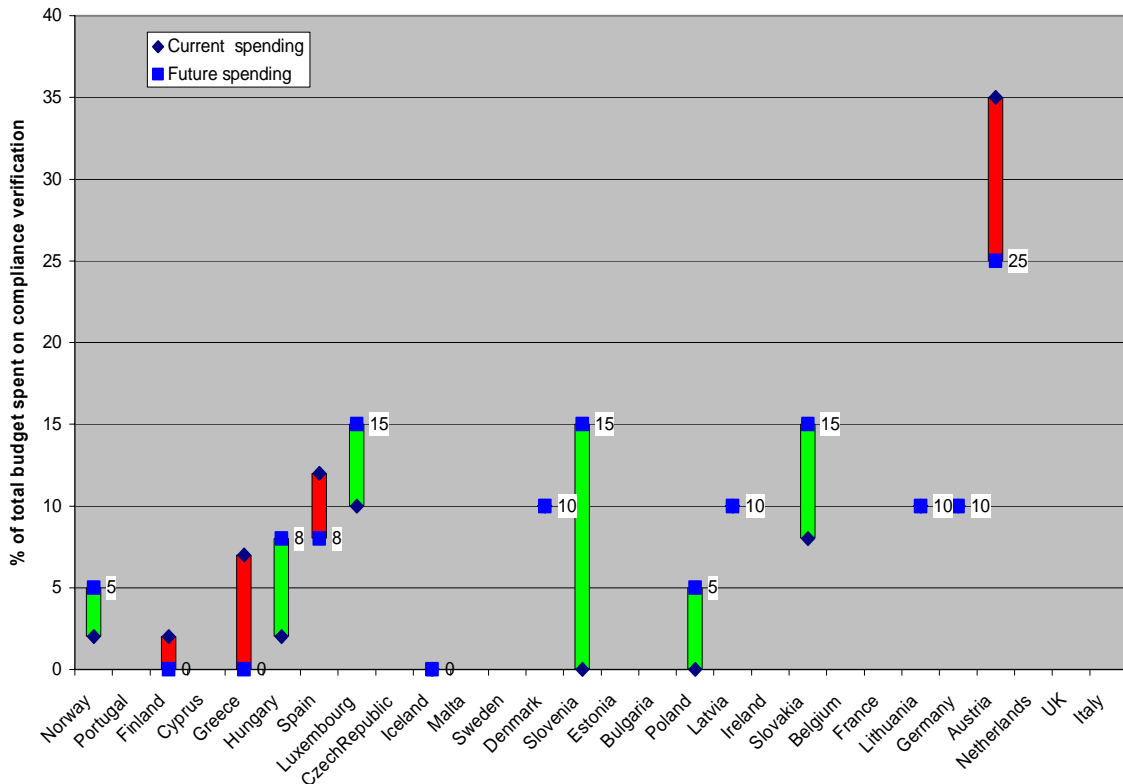
Figure 15 Changes in budget spending on compliance verification

Conclusions

Cost will be a highly important factor to take into account when analysing the suitability of one Reference Scenario over another. As a general rule, it would appear that in the majority of Member States the costs dedicated to compliance mechanisms are around 10% of the total budget for e-procurement development, although there is a quite considerable variation. This figure therefore should be taken into account when defining the costs that any one Member State could absorb as a result of implementing one of the Reference Scenarios presented here.

10 COMMON IMPLEMENTATION SCENARIO FOR COMPLIANCE VERIFICATION

Two alternatives have been identified as the most possible scenarios for a common verification mechanism that could be applied among all the EU/EEA Member States.

COMMON IMPLEMENTATION SCENARIO 1:
Use the lowest common denominator for all : Reference Scenario 1.

This model for a common compliance verification mechanism involves the use of the Reference Scenario which requires the least adjustment by all Member States, and is considered to be the easiest and most flexible to implement. It should be voluntary to minimise the overall inconvenience The benefits of using this scenario as the Common Implementation Scenario amongst all Member States are shown below:

Benefits:

- This scenario requires the least adjustment for all the stakeholders involved, and could be put into place almost immediately, once the required framework is created.

- It is currently well achievable, and within the technical and financial capacity of all the Member States

- It has a clear visual impact for the end-user. This is a strong selling point for this scenario.

- In order to minimise the administrative, organisational and verification aspects of this Common Implementation Scenario, it is recommended that it should be maintained as a purely voluntary scheme, allowing those that wish to enter the scheme to do so on their own accord. The benefits of voluntary systems have already been discussed within the section describing the Reference Scenarios.

- The quality label could be extended beyond public administration, to private industry. If labelling is sufficiently recognised, it could become self-financing through competing with other trust seals.

- Quality labels are commonly used to acclaim quality of products or services in the technology industry.

- Quality labels that offer dispute resolution mechanisms without recourse to the courts, and the implied complex and costly legal procedures, offer a more attractive option to industry.

- Marketing of the quality label is vital to its success, from both the recipient and user's point of view. One way of increasing its success could be to publicise it as a European award scheme to the major stakeholders and players in the sector. This would provide valuable, positive publicity to the selected finalists and winners.

- Although dispute resolution is an important aspect of any credible labelling scheme, any process for dispute resolution would also require ongoing support to ensure that decisions are fair, and that the process is efficient and accessible. Support is likely to include increased management of the system, a forum to hear complaints, and possibly dedicated legal personnel. All of this suggests that the incorporation of a dispute-resolution process would impose extra administrative costs on a labelling system. In this case, as we are trying to introduce a scenario which employs the minimum effort and therefore cost, this resolution process should be kept to the basic minimum possible.

This Common Implementation Scenario is put forward as the least demanding verification mechanism at the simplest level of quality labelling. It preserves the status quo in the sense that the Member States will be given the option to continue developing their systems independently at a national level if they wish, although the possibility is presented for those countries which have the resources and which wish to take a more proactive stance towards the integration and interoperability of e-procurement systems at a European level, which must be seen as a prerequisite for receiving the label.

This Common Implementation Scenario **does not foresee the development** towards a more complex and integrated solution. It is simply a means of providing a visual signal that those receiving a quality label have complied with the requirements defined by the panel of experts with respect to the EU Directives on public procurement.

Countries currently capable of implementing this Common Implementation Scenario: ALL

COMMON IMPLEMENTATION SCENARIO 2:
Use a two tiered system involving two scenarios. The level of development of the e-procurement system will define which tier shall apply to which Member State. This would be defined

- Within this option, the movement of Member States from the lower tier to the upper tier must be made **obligatory**, in order to encourage countries to make the jump, and not remain at the more technically limited tier 1 level.

- Countries must pass from one tier to another as they improve their e-procurement and compliance capacity. The point of promotion from one tier to another will be defined by the expert committee in the code of conduct.

- EC must proactively convince Member States of the benefits of certification over simple quality labelling.

- The benefits of this scheme must be tangible, perhaps rewarding in some way those countries which have passed to the second tier.

Tier 1: Utilise Reference Scenario 1 for those Member States with technical or financial limitations, which might limit the implementation of more complex scenarios. These countries will be allowed to develop their systems and compliance verification mechanism until it is considered that they have developed both the technical and financial capacities (although the latter may be alleviated through co-funding from the EU) to move to the next tier. The moment and requirements for promotion to the second tier will have to be decided by the expert committee during the definition of the code of conduct.

It must be stressed that the obligatory nature of this scheme is vital to ensure that Member States do not view remaining in the bottom tier as a viable option. Being a mandatory scheme, it will be necessary to create a penalty system, and it should be stressed to Tier 1 countries that they may invite incremental penalties for not moving to the top tier within an allotted space of time, although every financial and technical help should be made available to them to ensure that they do so.

It may be of interest to the scheme to ensure that the requirements that are introduced at the Tier 1 level are not simply nominal, that in order to enter this Tier does require some fundamental level, thus ensuring that the jump between the two levels is not overly demanding.

Tier 2: Utilise Reference Scenario 2 or 3 for other Member States which already have well defined compliance verification mechanisms and thus are considered to already have the capacity to implement the more complex mechanisms. This point of inclusion is defined as those countries which obtain the basic

requirements as defined by the expert committee at the start-up of the scheme, but may also, in addition, include those countries which may not quite have reached this cut-off point, but instead show positive specific national aspects (such as the political and cultural impetus for technical compliance and standardisation amongst systems), and have expressed a clear desire for the implementation of a compliance verification mechanism at European level.

This Tier will be marked by the development of standards in both Reference Scenarios. Tier 2, however, should be treated as a gradual process, and not a complete immersion into a global set of standards at one go. The process may be more beneficial if carried out in a stepwise fashion, perhaps on a modular basis. How this should be carried out must be decided at the stage of developing the requirements and the code of conduct.

Benefits:

- Introduces the necessary concept of standardisation to the electronic public procurement sector in Europe, and extending to e-government in general.

- Allows for the constant monitoring of development in this sphere.

- Allows a gradual introduction for Member States with less resources and lower capacities at a European level, while also introducing a solid framework for compliance verification based on standards.

- Allows those Member States which desire a more comprehensive approach to e-procurement at a European level to directly engage in the development of standards and detailed frameworks for interoperability.

- Certification provides a sign of trust and confidence for users of public e-procurement systems throughout Europe.

- Greater support will be generated for public e-procurement among users and stakeholders.

- Greater interest generated amongst industry to develop products for public e-procurement.

- This results in lowered cost of provided solutions.

- Buyers of certified products get reliable assurance of conformance to standards, and interoperability.

- Certificates allow industry to show their commitment and demonstrate that they stand behind their products.

- Although costly, certification allows service providers to reach a specific market that is looking for features such as product quality and service above cost.

- Standards can have a significant impact on the products that incorporate them and on the marketplace. They provide assurances of performance, reliability, safety and interoperability that eliminate inhibitions to subsequent sales. Often, increased sales volume reduces production costs of commonly used components that support standards. Standards also provide guidance to designers, reducing research and development costs and eliminating costly errors. In particular, products that incorporate standards typically gain the following benefits:

  ✓ Increased market access and acceptance.

- ✓ Improved sales efficiency due to decreased trading costs, simplification of contractual agreements, and lowering of trade barriers.

- ✓ Standards provide assurances that products are safe (or more safe) to use.

- ✓ Risk reduction. The standards development process, through prototyping, and agreements by its proponents, ensures that the final standards can be straightforwardly implemented and incorporate best practices.

- ✓ Economies of scale, with particular reference to IT. Employing standards in software components increases the reusability of modules. Reuse increases sales and therefore the production of these components, making them cheaper to build. This further increases their usability and the competitiveness of products that use them.

- ✓ Ease of data integration.

- ✓ Investment protection. When it comes time to retire a standards-based product, it is likely that replacements will be available (from a variety of vendors) supporting the standards.

- ✓ Product life extension. Products that use standards are less likely to require replacement in order to integrate with other, newer products.

- ✓ Protection Against Obsolescence. Standards organizations are generally highly motivated to provide an orderly way to migrate to new versions of standards.

- ✓ Reduced Development Time and Costs. Finding trained and experienced personnel for standardised technologies is easier than for proprietary technologies.

Within this Common Implementation Scenario, it remains to decide whether to use either Reference Scenario 2 and 3: Whether scenario 2 should be used instead of scenario 3 depends on the desired result to be achieved. The implementation of scenario 2 (LOOKING AHEAD) is estimated to be the longest and most complex of the three scenarios. If the desired result is to implement a particularly European scheme in order to create the correct verification environment for e-procurement at a European level, then scenario 3 (HARMONISED EUROPE) must be considered as the most logical approach. However, it must be taken into account that the use of harmonised standards has not yet been applied in the ICT sector, and up till now has been reserved for particular sectors which may have an effect on the safety of European citizens. However, based on the in formation gathered during this study, the process of harmonised standards would be ideal for the development of standards in a relatively short timeframe, as is required in this sector.

On the other hand, if the EU wishes to take the lead in the development and internationalisation of standards (and thus compliance verification schemes) for the delivery of e-procurement at a more global level, and be seen to be proactively involved in what is becoming a universal issue (the standardisation of e-procurement and e-government, in general), then the adoption of scenario 2 may be more beneficial, and provide the more beneficial results in the long run.

However, if we consider that the primary driving force for the development of a compliance verification mechanism at the European level are the EU Directives 17/2004 and 18/2004, then it may be a more logical approach, in terms of the results of this study, to first adopt the development of harmonised standards at a European level, using the mandate approach, described previously. The applicability of this approach is contained within the development of the essential requirements which are directly related to the two EU Directives. This in effect ensures that the very essence of the Directives is distilled into the essential requirements.

Technically speaking, the use of a Harmonised standard is voluntary. That is, a manufacturer can elect to use a Harmonised standard, or elect to use a non-Harmonised standard (an American standard, for example) to meet the essential requirements. When using a Harmonised standard, however, the manufacturer is presumed in conformity with the law. On the contrary, using a standard that is not a Harmonised standard will impose additional responsibilities. The use of anything but a Harmonised Standard places a burden of proof upon the manufacturer that the product meets essential requirements. This proof may be provided by the manufacturer's technical file, by the employment of a third party (consultant, testing house, etc.), or by a combination of the two.

Countries currently capable of implementing TIER 1: **ALL**

Countries currently capable of implementing TIER 2: Norway, Denmark, Slovenia, Slovakia, Germany, Czech Republic, Italy, Spain, UK, Lithuania, Austria, France

11 CONCLUSIONS & RECOMMENDATIONS

11.1 Conclusions

The current implementation of verification strategies in the EU/EEA Member States is characterised by the following:

- Every Member State technically verifies their system, although the scope and depth varies greatly between countries.

- The specification phase is considered to be the most important phase, in all cases. It is defined based on the EU Directives that have been transposed into national law (in most Member States) and other national laws, and thus forms the foundation for any subsequent verification mechanisms.

- Compliance verification standards and interoperability frameworks have been developed in some countries (France, Germany, UK). They must be adhered to by any public authority (within these countries) embarking on e-procurement development, or considering the purchase of off-the-shelf products for providing e-procurement services to citizens.

- Attestation of tools based on national standards is applied in some countries (Czech Republic) and planned in others (France).

- Management of verification strategies remains predominantly internal to the public authority, with verification also carried out mostly by the same body, with very few Member States incorporating an independent 3rd party to control and manage these aspects. Less than one-third of Member States use 3rd party verification for specific aspects, such as security.

The existing trends for verifying compliance, based on the information compiled in this study, are that:

- There is a need for the development of technical standards and precise frameworks to support the verification process of e-procurement system features.

- Verification can be perceived as a natural extension of technical development activities within the development and maintenance life cycle of the e-procurement system, generally carried out though standard system testing procedures.

- In many cases, compliance is seen as a technical service obligation specified in contracts or service level agreements with external parties, supervised by the contracting party, and regulated via in-built penalty clauses for failure to comply with service levels.

- Nearly all Member States validate non-functional requirements to a greater or lesser extent (these are: usability, accessibility, availability, reliability, interoperability, scalability, security, transparency and confidentiality).

- Verification of certain non-functional requirements, in many cases, is carried out via requests for user responses to particular services or module functionality. These responses are then integrated into the system improvements, or are communicated to the service providers for subsequent upgrading.

- Interoperability with other systems is ensured by specifying standard architectures in definite aspects of development (e.g. cHTML, XCBL 3.0/3.5, OPOCE xml-schemas).

With regard to the needs and restrictions for defining a compliance verification mechanism, each EU/EEA Member State has a different perception, although some aspects are common to all countries. Based on these and considering other needs detected during the study, the conclusions can be summarised as follows:

- E-procurement standards should be defined at European level (especially for e-signature), and in particular the definition of a framework and procedures for compliance verification. The definition of standards should consider the features of the already existing systems, in order to minimise the impact of their use.

- A body at European or national level, which coordinates and promotes the development of e-procurement, and encourages its use amongst citizens and governments and pushes forward compliance verification as a strategy is a necessity.

- In some cases, the political backing for e-procurement is currently perceived as lacking and requires a more proactive input at the highest administrative level.

- Compliance verification for e-procurement systems is a global need, particularly with respect to aspects such as interoperability. However, verification per module is generally preferred to verification for the whole system, since it allows a step-by-step development, and better control of specific aspects (e.g. e-signatures), which is the more logical and cost efficient approach. A mix of the two schemes may be preferable, as it is considered that some projects would benefit from one overall verification strategy supplemented with individual verification features in each phase. This should include explicit Directives on how to audit an IT system for the public sector.

- The definition of standards for different features of e-procurement is required. However, standards defined at a European level must be built on consensus between all countries involved, and take into account development (both technical and with respect to technical standards) that has already occurred. In addition, standardisation is vital with respect to off-the-shelf solutions, as many currently do not correspond with the EU Directives, resulting in higher development costs than originally expected.

- Standards may be defined as European standards via the European standards bodies (CEN, CENELEC or ETSI) or as international standards via ISO and other associated international standards bodies. In all cases, the involvement of specialised bodies already involved in developing open standards for e-business and the Web, such as OASIS and W3C, should be encouraged.

- Verification and the subsequent listing of "best-buy" off-the-shelf solutions, most compliant with EU Directives, should be defined and made available to all countries

- Technical and financial backing should be provided for smaller, less well-off administrations. In this sense, the complexity of the verification mechanism may need to be standardised commensurate with country size and purchasing power, with insufficient resources to carry out verification at any depth. Outsourcing development should be encouraged as much as possible, as the costs for compliance would then be the responsibility of the developer.

- Greater mutualism and cooperation among the Member States is seen as necessary to implement the necessary interoperability at European level.

- The involvement of users at the beginning of any e-procurement project is considered to be highly recommendable, and helps to reduce problems with usability and accessibility that may negatively affect the use of the system after implementation.

- Training is vital with regard to many aspects of e-procurement, and of e-business and e-government in general, both within and external to the public authority, and in particular for the final end users, buyers and suppliers. In addition, as many public administrations are moving rapidly from a predominantly manually oriented process to full electronic procurement, training will be vital for the efficient uptake of the system amongst public officers.

- Enterprises need more visibility and comprehension concerning the use of e-procurement platforms. The barriers for the moment are more significant than the perceived advantages. In addition, providers should be encouraged to see the added quality provided by the implementation of e-procurement as a benefit and not a constraint. The emphasis should be on added-value, not obligation. In addition, there should be an increase in efforts to give people better access to ICT tools and specific campaigns to promote confidence in the security of these processes.

Based on the need as identified in this study for a compliance verification mechanism founded on the EU Directives for e-procurement, and being careful to take into account the restrictions and requirements of the different Member States, three different Reference Scenarios have been identified as appropriate to fill the organisational gap that currently exists at a European level with respect to compliance verification.

These scenarios may be summarised briefly as follows:

Characteristics	Reference Scenario 1: LITE	Reference Scenario 2: LOOKING AHEAD	Reference Scenario 3: HARMONISED EUROPE
Complex coordination	✓	✓✓✓	✓✓✓
EU administration required	✓	✓✓✓	✓✓✓
National administration	✓	✓✓✓	✓✓✓
Standards required	✓	✓✓✓	✓✓✓
Requirements needed	✓✓✓	✓✓✓	✓✓✓
Code of conduct	✓✓✓	✓✓✓	✓✓✓
Electronic tools	✓✓✓	✓	✓
Internal verification	✓✓✓		
External verification	✓	✓✓✓	✓✓✓
Voluntary	✓✓✓	✓	✓
Mandatory	✓	✓✓✓	✓✓✓

Quality label	✓✓✓	✓	✓
Certification		✓✓✓	✓✓✓
Mutual agreements beneficial	✓✓	✓✓✓	✓✓✓

Table 40 Characteristics of the three chosen scenarios

The applicability of the characteristics to each scenario is represented by the number of ticks. As has already been seen, and as the diagram in figure 16 below shows figuratively, the two scenarios based on certification schemes are considered the most involved and complex to implement, with scenario 2 being the most complex due to its greater international dimension, but the final result obtained with scenario 2 and 3 are more reliable and retain a level of credibility and authority that is far greater than scenario 1.
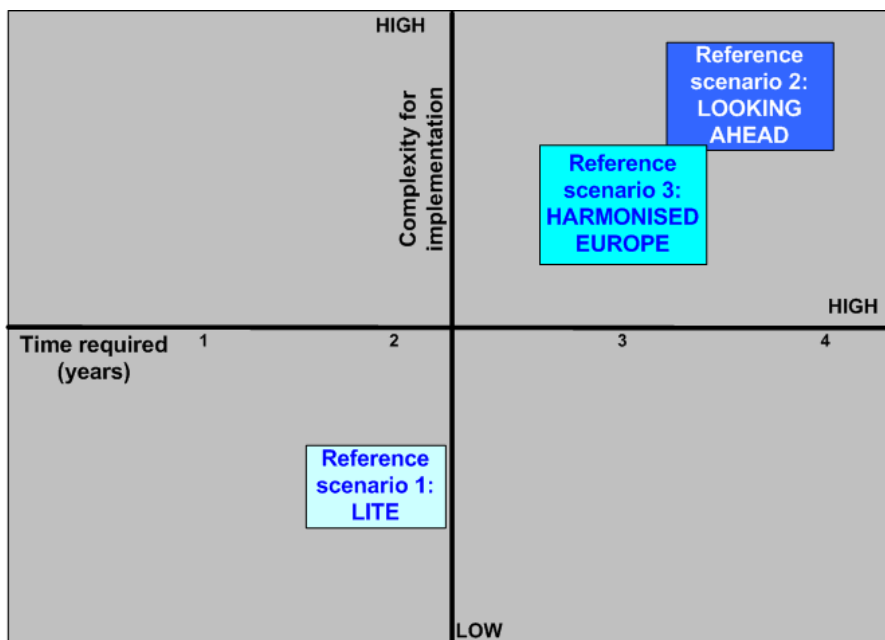
Figure 16 Time and complexity for the implementation of each scenario

In general, the two scenarios which involve certification schemes owe their complexity to the development of standards related to all the principle aspects of e-procurement. For the certification of products to be successful and credible, the development of standards, or at least precise frameworks, is needed. These must be based on existing industry benchmarks, which detail the necessary final requirements for a product (in this case, the functional and non-functional requirements of an e-procurement system or its individual modules). Although Reference Scenario 1 does not preclude standards, and in fact in all cases, standards should be welcomed, it does not include them as a prerequisite of functionality.

Common verification mechanism

Following the results obtained in this study, it is considered that the implementation of a Common Implementation Scenario for compliance verification is recommendable throughout the EU/EEA. Although a series of requirements and needs have been identified in each of the Member States, which have led to the definition of three individual Reference Scenarios, it is considered that as a result of the considerable

differences that exist between the different countries with respect to e-procurement development and compliance verification, two Common Implementation Scenarios should be envisaged.

The first Common Implementation Scenario would involve the use of the least exigent scenario (Reference Scenario 1: LITE) which would enable all Member States to take part, on a voluntary basis. However, this should be considered as the least preferable option, as it does not go far enough towards the development of a more positive and far reaching solution, although on the positive side, it will initiate the process of Member States orientating themselves towards the theme of common interoperability at a European level.

The second Common Implementation Scenario would involve the use of two scenarios: a less demanding scenario (scenario 1) at an introductory level, and a more challenging scenario (either scenario 2 or 3) at a more advanced level. This Common Implementation Scenario would be the more favourable, from a European point of view, as it is a far more integrated approach to the problem of how to verify compliance at a European level. Using a two tiered method, by combining two different Reference Scenarios, it allows for the gradual introduction to the scheme of those Member States (using the lightest scenario, Tier 1), whose capacities for compliance verification may not be as developed as others. Those Member States, whose capacities for implementing compliance verification are greater, will be obliged to adopt a more exigent Tier 2 certification scheme. This scheme, in addition, compels all Member States, through its obligatory nature (i.e. by forcing Member States to move from tier 1 to tier 2 when considered able), to proactively look towards developing greater interoperability, through the process of standardisation and certification. This approach is considered to be the most constructive, and although more demanding, both technologically and financially, the results will be more beneficial to both the EC and the EU/EEA Member States.

11.2 Recommendations

11.2.1   General recommendations for compliance verification

ID	Recommendation 1
1	**The development of verification mechanisms should begin immediately.**
1.1	Initiate the process without delay: All Member States are developing their own mechanisms in order to verify the systems at their disposal. It is essential that the positive effort being put into the development process in each Member State is harnessed quickly to ensure a more coherent effort at European level.
1.2	Ensure that further divergence of e-procurement systems and verification processes does not continue. This will be greatly aided by the quick implementation of the development process for a common compliance mechanism based on requirements and standards.
1.3	It is essential that Member States realise that a proactive effort is being made by the EC to create a comprehensive framework with respect to e-procurement.

Benefits/costs	High	Medium	Low
Benefits	X		
Effort		X	

ID	Recommendation 2
2	**Present the Member States with the two tiered common option for compliance verification**
2.1	Obtain Member State input. The involvement of stakeholders at this stage will enable any early problems to be ironed out quickly.

2.2	Enquire which tier each Member State would ideally prefer to implement. This may reveal some which would voluntarily undertake the more complex verification scheme although currently considered not to have the capacity.
2.3	If stakeholder input is overwhelmingly negative to this option, present the "lowest common denominator" (Common Implementation Scenario 1) as the next possible option. It should be made absolutely clear to the Member States, however, that the adoption of this scenario, although voluntary, will be actively encouraged by the EC, possibly through practical or financial aid being provided to those Member States that adopt the scheme.
2.4	Make the process clearly understood: a primary aim of the mechanism is to *reduce* bureaucracy. It must be apparent that this verification process will replace those already in existence at national level (or incorporate them), and will not simply add to an already high level of bureaucracy in some cases.

Benefits/costs	High	Medium	Low
Benefits	X		
Effort	X		

11.2.2 Specific recommendations for implementing the scenarios

ID	Recommendation 1
1	Define expert committee as quickly as possible
1.1	Consider whether necessary to include an expert from each Member State, to ensure an even input from all the stakeholders concerned, or select experts independent of Member States (e.g. outside EU – S. Korea, USA, Australia).
1.2	Consider the involvement of other groups of stakeholders, apart from the Member States e.g. developers, lawyers, groups already involved in development of requirements.
1.3	Look at getting guidance and best practice from other areas for actions that have been undertaken by other groups.
1.4	Review opportunities to evaluate the benefits of each action as they occur – this will increase the efficiency of the process.
1.5	Invest time and effort in convincing that Member States that the process will have tangible benefits.

Benefits/costs	High	Medium	Low
Benefits	X		
Effort		X	

ID	Recommendation 2
2	Quickly identify and classify standards currently available
2.1	Independently of the scheme chosen, consider contacting standards entities and proactively involving the Member States in standards development.
2.2	Ask all Member States to put forward standards of choice that are currently in use in their national situation.
2.3	Identify most re-usable standards. Although this will be carried out by the standards bodies, it will be beneficial to obtain the input of the national stakeholders in this regard.

2.4	With regard to scenario 3, mandates should be defined as quickly as possible to involve the European standards bodies.
2.5	Involve internationally specialised Internet development organizations and existing specialized workshops from the start, regardless of the scenario adopted. This would include: ***Workshops:*** • CEN/ISSS Focus Group on eGovernment • CEN/ISSS Workshop on eInvoicing Phase 2 • CEN/ISSS Workshop on Business Interoperability Interfaces for public procurement in Europe • Northern European Subset (NES) of the Universal Business Language (UBL); the requirements and final specifications of which will be input into UN/CEFACT. ***Specialised Internet development organizations:*** e.g. WS-I, IETF, W3C, OASIS • WS-I (Web Services Interoperability Organisation[17]) is an open industry organization chartered to promote Web services interoperability across platforms, operating systems and programming languages. • IETF (Internet Engineering Task Force[18]) develops and promotes Internet standards, cooperating closely with the W3C and ISO/IEC standard bodies; and dealing in particular with standards of the TCP/IP and Internet protocol suite. • W3C (World Wide Web consortium[19]) develops interoperable technologies, (specifications, guidelines, software, and tools), and • OASIS (Organisation for the Advancement of Structured Information Standards[20]) produces standards for security, e-business, and is involved in standardisation efforts in the public sector and for application-specific markets.

Benefits/costs	High	Medium	Low
Benefits	X		
Effort		X	

ID	Recommendation 3
3	**Define code of conduct as quickly as possible**
3.1	The code of conduct should be as generic as possible, as it should be potentially applicable to all three scenarios, with minor alterations as necessary. It should a simple and concise document, written with the agreement of all parties.
3.2	The code of conduct should not deal with technical matters, but more with the ethical side of compliance verification.
3.3	Procedures resulting from a violation of the code of conduct should be clear and concise, avoiding legal ambiguity. The exact procedures themselves will vary between scenarios, and may be detailed in annexes.
3.4	The responsibilities of the Member States, the EC, and all other stakeholders should be clearly defined. Any indistinct roles of any stakeholders should be avoided.
Benefits/costs	High	Medium	Low

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[18] **IETF**, c/o NeuStar, Inc.Corporate Headquarters, 46000 Center Oak Plaza, Sterling, VA 20166, Canada

[19] **W3C** Benelux Office, Centre for Mathematics and Computer Science (CWI), Kruislaan 413, Amsterdam, 1098SJ, The Netherlands

[20] **OASIS**, Avenue de Tervueren, 300, B-1150 Brussels, Belgium

Benefits	X		
Effort			X

ID	Recommendation 4		
4	**Technical requirements must be clear and concise**		
4.1	The technical requirements pertain to the technical aspects that a system must fulfill, such as performance-related issues, reliability issues, and availability issues. These should be clarified during the expert committee meetings.		
4.2	The requirements should detail all functional and non-functional aspects, as defined by previous e-procurement studies and the current study.		
4.3	Requirements already detailing certain aspects are already available. The re-use of already existing frameworks and standards should be strongly encouraged (e.g. eGIF, SAGA).		
4.4	An effort should be made to minimize the number of purely technical requirements. Technology changes quickly and often requirements based on technology change just as quickly.		
4.5	For all requirements, try to determine the real underlying business needs being expressed.		
4.6	All existing technical development must be taken into account. Forcing developers to change from a perfectly functioning system or module, just because it does not meet a technical requirement which has not been proven to be better, will not improve the popularity of the scheme.		
4.7	Interoperability should be made the key to the requirements process. Any technical solution which permits a sufficient degree of interoperability between systems at a European level should be encouraged. On the other hand, proprietary systems which are not interoperable should be phased out.		
Benefits/costs	High	Medium	Low
Benefits	X		
Effort	X		

ID	Recommendation 5		
5	**Obtain quick consensus about scheme type**		
5.1	In the mixed schemes, those aspects of compliance verification to be made mandatory (and consequently those which should be left voluntary) must be quickly identified, as obligation will require subsequent regulatory mechanisms to be defined.		
5.2	Within a mixed scheme, the number of mandatory aspects should be minimised as this raises the effort and complexity of the scheme to be administered. The issues central to compliance verification should be clarified.		
5.3	Within a purely voluntary scheme, the benefits must be highlighted to the Member States to convince them to take part.		
5.4	In the case of a mandatory scheme, a "carrot & stick" method may be adopted where although penalties for non-compliance are made clear, it must be evident that the benefits far outweigh the penalties.		
5.5	In the voluntary scheme, to ensure success, the tangible benefits of compliance must be made clear. In this case it may be necessary to provide acknowledgement of effort based on an award scheme.		

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Benefits/costs	High	Medium	Low
Benefits	X		
Effort		X	

ID	Recommendation 6
6	**Funding**
6.1	This will be an important issue. Based on the issue at hand, and the restrictions already defined by the Member States, full funding of verification processes for national bodies by the EU should be carefully considered.
6.2	Alternative co-financing schemes should also be considered where possible. Identify possible co-financing partners in Member States. Co-financing can facilitate the movement towards a sector wide strategic approach. This considerably increases the probability that the activity will yield sustainable improvements.

Benefits/costs	High	Medium	Low
Benefits	X		
Effort		X	

ID	Recommendation 7
7	**Define verification model to be used.**
7.1	Based on this study, it is clear that a verification model which adopts a process of verifying compliance of individual modules is preferred. This model should be put forward as the first choice. This will affect the definition of the technical requirements.
7.2	Where possible, electronic and online tools should be made available and their use encouraged, particularly where verification is voluntary. Where aspects of verification are mandatory, tools can be useful for self-assessment purposes before full certification, and indeed may help to lower costs (e.g. discover weak points before full certification).
7.3	Verification could also be carried out following the model already in place in many Member States, where compliance is measured against the contractual specifications.
7.4	A definition of acceptable Service Level Agreements should be defined. This contract model is very common, and defines the levels of service to be provided in various non-functional characteristics. These levels should also be standardised at European level.
7.5	The verification mechanism must incorporate other strategies for those Member States which do not want to invest funds in the creation of a full system, but prefer a process for homologising tools from external suppliers to be accessed from a simple central platform.

Benefits/costs	High	Medium	Low
Benefits	X		
Effort		X	

ID	Recommendation 8
8	**Initiate a feasibility study for the development of an EU agency for e-government & e-commerce.**

8.1	Rapidly changing technologies necessitate the creation of a body at EU level which is constantly observing development in the international area, and can act as an information point for the Member States.
8.2	An agency should be used to encourage research and development in e-government, e-procurement and e-commerce in general at an EU level.
8.3	To minimise costs, contact should be made with existing agencies in order to see if these can take up the responsibilities. Any existing agency would have to be provided with regulatory powers to oversee compliance in e-procurement and be able to act accordingly against non-compliance.
8.4	If no existing agency has the capacity to carry out such work, the potential for creating a new agency should be given serious consideration.

Benefits/costs	High	Medium	Low
Benefits	X		
Effort	X		

ID	Recommendation 9
9	**Involve national e-procurement authorities in constant dialogue**
9.1	It is essential to include the national authorities from the start as they are the hub of the three scenarios, as their inclusion will help relieve the controlling body at EU level of some of the burden of coordination.
9.2	The capacity of national authorities to take on the coordination work involved in all scenarios (but particularly 2 & 3) should be carefully analysed before the implementation of the compliance mechanisms at a European level. Financial backing may be necessary.
9.3	Create an online forum for all national e-procurement authorities where issues and considerations at a European level may be aired. This online forum could be part of the EU agency's activities.

Benefits/costs	High	Medium	Low
Benefits	X		
Effort		X	

ID	Recommendation 10
10	**Identify two candidates for running two tiered test model**
10.1	A candidate Member State at the upper level with advanced e-procurement systems / platforms and with an already well defined verification strategy should be approached to test the upper tier of the verification process (Austria, Norway, UK, Italy, Lithuania).
10.2	At the lower level, a candidate from those countries which have not yet developed a complete verification mechanism should be approached for testing the first tier verification process (Luxembourg, Finland, Poland, Ireland, Hungary).

Benefits/costs	High	Medium	Low
Benefits	X		
Effort	X		

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12 ANNEXES

12.1 ANNEX I: Methodology

Data collection and country assessment

The main technique for obtaining information was based on the design and development of a questionnaire.

The structure of the questionnaire is formed by a series of high level criteria. These criteria comprise certain general non-functional characteristics which are considered to be the minimum integral features of an e-Procurement system which is compliant with the Directives. Examples of these criteria are Security, Usability, Accessibility, Availability, Interoperability, etc.

High level criteria (as shown in the figure below) can be explained by means of a series of lower level indicators. These are specific intrinsic characteristics which, placed together in certain associations, define a high level criterion. These indicators themselves are composed of one or a series of questions, which respond to the required study themes, thus providing the mechanism to supply the essential data needed for the analysis, that is, the questionnaire.
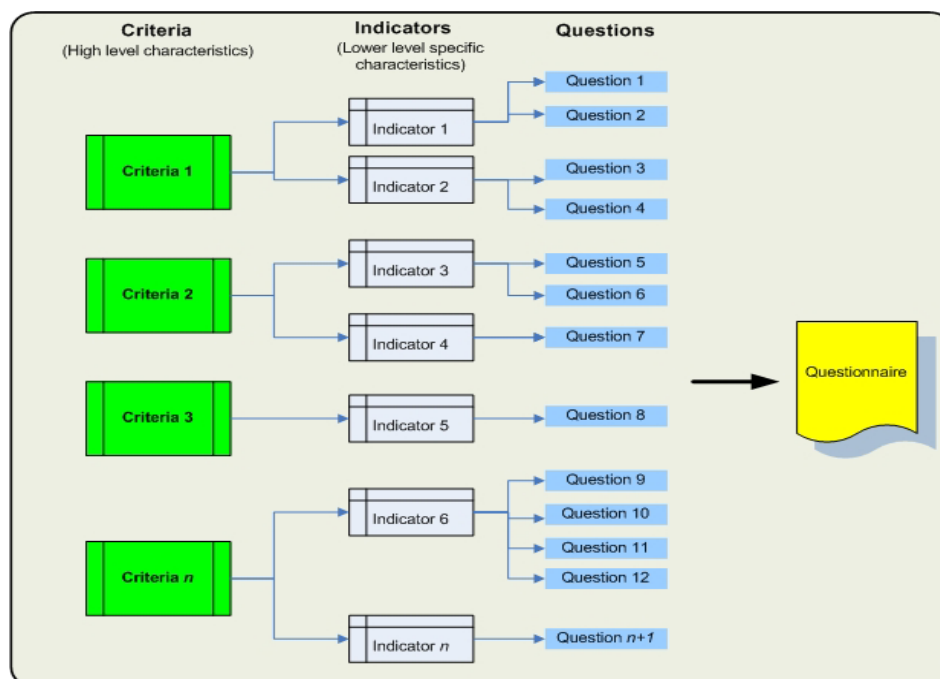
Figure 17 Graphical representation of the structure of the questionnaire used in the study

This process of partitioning a criterion in different indicators, and the latter into different questions, is a way to extract properly the relevant information of a somewhat general feature. For example, a high level criterion like Security itself is not an easily measurable concept, but it can be divided into several lower level indicators, such as Authentication, Authorisation, Encryption, etc. These as well can be split into questions to extract the most of information about them: In this manner, more measurable parameters are extracted, which, when put together, define the high level criteria.

In this sense, certain basic criteria have been identified to analyse the fundamental principles of a verification system, for defining its compliance with the Directives. These are the following: Usability, Security, Scalability, Interoperability, Accessibility, Reliability, Availability, Confidentiality, Transparency, and System Implementation aspects.

- ▪ **Usability:** In computer systems, it is related to the characteristics of the Graphical User Interface, the ease of use and of learning how to use, the efficiency with which the system can be utilised by any user, the

implementation of existing standards and common practices, the support and information given to the user and mainly his/her satisfaction.

- **Security:** is the capacity of the system to protect information and data, so that non-authorised systems or persons can not read or modify them, while not denying access to authorised systems or tools. It also includes physical security of hardware systems and of stored and transmitted data.

- **Scalability:** scalability is a desirable property of a system, a network or a process, which indicates its ability to either handle growing amounts of work, or to be readily enlarged.

- **Interoperability:** is the ability of products, systems, or business processes to work together to accomplish a common task. The term can be defined in a technical way or in a broad way, taking into account social, political and organizational factors.

- **Accessibility:** is a general term used to describe the degree to which a system may be operated by as many people as possible without modification. It is not to be confused with usability which is used to describe how easily a module can be used by any type of user. One meaning of accessibility specifically focuses on people with disabilities and their use of assistive devices such as screen-reading web browsers.

- **Reliability:** is the ability of a system to perform/maintain its functions in routine and also in different hostile or/and unexpected circumstances.

- **Availability:** is the degree to which a system or equipment is operable and in a committable state when starting to perform certain function, at an unknown, random time. Simply put, availability is the proportion of time a system is in a functioning condition.

- **Confidentiality:** is ensuring that information is accessible only to those authorized to have access. It is one of the design goals for many cryptosystems, made possible in practice by the techniques of modern cryptography

- **Transparency:** implies openness and communication. Transparency includes providing information to all interested parties simultaneously, without discrimination between them.

- **System Implementation aspects:** details the functional state of the system, as well as the political, social and cultural aspects that may influence the way a system is implemented, as well as the budgetary aspect, which can limit the development of a system, or technical difficulties which have been encountered during its set-up.

- **Verification:** relates to the general level of compliance verification of the current system with national or European law. It includes legal and organisational features and aspects related to scope.

Complementarity of High Level Criteria: Crosschecking was carried out to eliminate the duplication of questions within indicators in the same criteria, and to ensure the inclusion of an indicator within different criteria if it is applicable to more than one. It must be noted that in many of the high level indicators, there is a strong degree of inter-relationship. For example, certain non-functional requirements such as cost-benefit will undoubtedly affect the technical approach that may be taken: additionally, a highly complex technical approach may require more initial investment, that may limit the degree to which, for example, certain interoperability measures may be implemented. In this case, the same indicator (questions) can be applied to various criteria (Implementation aspects, interoperability, Scalability).

Some indicators, which have already been defined for the high-level criteria, are grouped in the following table, which also includes the cross-checking relationships that exist between the different criteria. Each criterion may be implemented or *guaranteed by* certain functional or non-functional characteristics, which in turn *require* certain functional and non-functional features. These features and characteristics may also be required by other criteria, which are highlighted within the crosschecking column.

CRITERIA	GUARANTEED BY:	REQUIRES:	CROSSCHECKING WITH CRITERIA:
Usability	User support	Help desk, training, documentation	Efficiency
	Application Graphical Interface	Based on widespread technologies	Interoperability, accessibility, security
	Search functions	Access to registered and anonymous users	Interoperability, accessibility
	Online help	Access to FAQ, help on the system	Accessibility, equal treatment

Accessibility	Language options	Support for more than one language	Equal treatment, transparency, usability
	Facilities for disabled, people of any age…	Web accessibility to all kind of users	
Reliability	Mechanisms for handling potential disruptions (Business Continuity Plans and Disaster Recovery Plans)	Most important system functionalities involved Error detection and correction System accessibility	Security, transparency, non discrimination, scalability
Interoperability	Organisational requirements	Functional integration among Contracting Authorities	Equal treatment, transparency, non discrimination
	Semantic requirements	Data compatibility among entities Linguistic equivalence	
	Technical requirements	Utilisation of standards in data structures, etc.	Equal treatment, security, transparency, accessibility
Scalability	Transactional load	System availability in worst situations Plans for handling critical failures	Efficiency, usability, reliability
	Performance requirements	Prompt response to any user request Achievement of predefined performance goals	
Security	Communication Storage 4-eyes principle Reporting, logging and monitoring User profiling	Authentication Authorisation Integrity Non discrimination Non repudiation	Non discrimination, equal treatment, confidentiality
Transparency	Contract Notices, Mandatory Reports, etc are provided to all participants in Tenders.	Complete information is provided to all interested parties simultaneously	Availability, non discrimination, equal treatment
Confidentiality	Stored data	Information is only accessible to authorized persons	Security
	Transmitted data		
Availability	Functionality during disruptive events	System is operable even when non desired events occur	Scalability, interoperability, accessibility
System Implementation	Political, social and cultural aspects	Main country characteristics are captured in the system	All the previously mentioned
	Costs	Research, development, maintenance costs are covered	
	Difficulties	Solution for every difficulty encountered while implementing eProcurement	
Verification	Legal, organisational and technical aspects	A minimum level of compliance with the corresponding law	All

The following table shows the criteria and the indicators which have been selected for the current study. Further details of the questionnaire may be found later in the Annexes.

Criteria Number	High level criteria	Indicator Number	Indicator	Questions nr.
C_1	**System implementation**	I_1.	e-Procurement stages	Q1, Q2
		I_2.	Difficulties	Q47
		I_3.	Solutions	Q47
		I_4.	Financial	Q48-Q50
C_2	**Usability**	I_5.	Usability validation	Q3, Q4
		I_6.	Technical usability	Q5
C_3	**Accessibility**	I_7.	Accessibility validation	Q6, Q7
		I_8.	Accessibility facilities	Q8, Q9

		$I_{9.}$	Technical accessibility	Q10, Q11
C_4	**Availability**	$I_{10.}$	Availability validation	Q12, Q13
		$I_{11.}$	Availability management	Q14 - Q16
		$I_{12.}$	Technical availability	Q17
C_5	**Reliability**	$I_{13.}$	Reliability validation	Q18, Q19
		$I_{14.}$	Technical reliability	Q20
C_6	**Interoperability**	$I_{15.}$	Interoperability validation	Q21, Q22
		$I_{16.}$	Level of integration	Q23
		$I_{17.}$	Standard technical interoperability	Q24, Q25, Q27
		$I_{18.}$	Future development	Q26
		$I_{19.}$	Collaborative functions	Q28
C_7	**Scalability**	$I_{20.}$	Scalability validation	Q29, Q30
		$I_{21.}$	Scalability management	Q31, Q32
		$I_{22.}$	Technical scalability	Q33, Q34
C_8	**Security**	$I_{23.}$	Security validation	Q35, Q36
		$I_{24.}$	Security planning	Q37
		$I_{25.}$	Security standards	Q38
		$I_{26.}$	Technical security	Q39, Q40
C_9	**Transparency**	$I_{27.}$	Transparency validation	Q41, Q42
		$I_{28.}$	Equality	Q43
C_{10}	**Confidentiality**	$I_{29.}$	Confidentiality validation	Q44, Q45
		$I_{30.}$	Technical confidentiality	Q47
C_{11}	**Verification**	$I_{31.}$	Legal aspects	Q51-Q57
		$I_{32.}$	Organisational aspects	Q58-Q60
		$I_{33.}$	Scope of compliance	Q61

Information Collection Procedure

Role of the country experts

Within each EU/EEA Member State, a country expert was assigned with the responsibility of collecting information in that particular country. In order to do so, a person recognised in the respective country for their expertise in public procurement systems has been selected for interview. This person is known for the purposes of this contract as a national contact. The expert's primary task was to interview this contact (or if the named contact was not available, to locate a suitable replacement for interview). Once the interview completed, the expert was in charge with writing a report including information concerning:

- the political, cultural and social aspects that may influence the adoption and implementation of verification mechanisms in each country;

- the validation/modification of the state of the art in e-procurement, by means of using the information collected from the interviewed person in each country and additional desk research;

- any other additional comments.

The report was recorded in CARSA's on-line questionnaire management platform, Evalmaster. In Annex VIII, the table of interviewed people (national contacts) is provided.

Questionnaire and Report Validation

Each response received from a country expert was rigorously checked by an internal CARSA expert. The completeness, consistency, coherence and clarity of the information received per country were assessed. Following this Quality Check two procedures were followed:

    i. The expert was contacted again to fill in any missing or ambiguous information. This procedure was followed up again to ensure that the requested information was completed.

    ii. If the questionnaire was correct, the expert was contacted confirming the completion of their contract with CARSA.

In many cases delays have been caused by the inability of the expert to compete the questionnaire in the allotted time required, for various reasons. In addition it must be stated that in some cases the quality of the answers to the questionnaire suffered as a result of poor responses from the national contact, who either lacked interest in responding, could not respond in the period allotted for the interview, or did not know the correct information at the time. In these cases the experts made clear their inability to access the information, and in the majority of cases tried to complete the absence of direct information by desk research.

Once the information supplied by the experts was validated, the process for extracting and analysing the data was carried out.

Questionnaire Assessment

The questionnaire used for the study was designed to collect the following information:

1. Information on the cultural, political and social characteristics of the country.

2. Information on the key elements of the e-procurement strategy in the country and on the characteristics of the organisational instruments in place.

3. Information on the degree of implementation of an e-procurement solution and its corresponding compliance verification mechanism(s) in each country.

4. Information on the verification needs per country ranked by importance.

Information collected under point 1 above will be considered as influencing factors in each country, when comparing the different options identified for compliance verification.

That information (point 1) together with the one collected under points 2, 3 and 4 was used to perform a comparative analysis and assessment of the EU/EEA Member States needs with regards to compliance verification. For this to be achieved, the qualitative information collected via the questionnaires has been quantified. The result of the quantification process has led to a unique value being obtained for each country and for each high level criterion identified for comparison purposes. This value represents the degree of development achieved for a country with respect to a high level criterion.

As it was documented in the working methodology, a total of 10 High Level Criteria for comparison purposes were identified: Usability, Security, Scalability, Interoperability, Accessibility, Reliability, Availability, Confidentiality, Transparency, and System Implementation. They represent the complete set of functional and non-functional requirements an e-procurement system has to implement and therefore delimit the technical scope of the compliance verification mechanisms that should be implemented.

The proper and accurate characterisation of these 10 High Level Criteria for each country allows a reliable picture to be drawn of the situation within a country with respect to the implementation and verification of its e-procurement system. The questionnaire was designed to collect the information necessary to get a detailed picture on how each of the criteria has been implemented and on how it has been validated/verified in each country.

In order to be able to perform an objective and systematic comparison of the situation of the countries a method to get the quantitative view of the picture was developed.

A "Value" per High Level Criteria and a "Value" per country are to be obtained. The subsequent process for comparison will be based on these values. The method for calculating both values is explained below and summarised in the next figure:
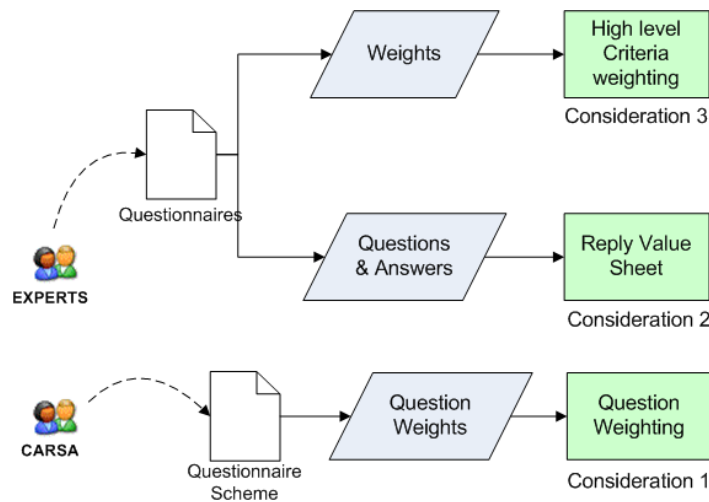
Figure 18 Questionnaire Weighting Process

Consideration 1. – Question Weighting. Every question of the questionnaire is relevant to the study. However, not every question has the same impact on the final assessment. Therefore, a strategy to assign weights was designed and a weight to each question was assigned. The weight assigned to each question is called a **"Question Weight".** The specific weight of each question can be found in Annex II **"Question Weight List"**. In general the question weights, apart from questions **26** and **27**, were derived from a range of weights to be found in table below.

The weights detailed in Annex II are based on an expert judgement of the importance of the question within the questionnaire as a whole: therefore, those questions whose answers are deemed to be of critical value to the overall results are given a value within the "Mandatory" weighting range; those which are important but not critical, are assigned a value from the "Highly Relevant" range, and so on. In this way, the importance of the reply to a heavily weighted question is given greater significance in the overall analysis of the results. The table below shows the weighting values assigned in this case.

Weight Range Assigned	Reason
0.2-0.3	Recommended
0.35-0.5	Relevant
0.55-0.75	Highly Relevant
0.8-1.0	Mandatory
Inherited	Taken from High level criteria weights

Table 1 Assigning Question Weights

Questions **26** and **27** of the questionnaire**,** as they are directly related to the High Level Criteria, have "inherited" their values from those calculated for the criteria, and thus are weighted the same as detailed in *Consideration 4* below.

Consideration 2. – Reply Value. For each question and response, a "value" was assigned. A "**Reply Value Sheet"** for individual questions has been prepared (see Annexes). The answers were divided into two types: those based on an order of values from 1 to 5, derived from a series of defined criteria which are allocated as: 0 for a negative response or low technology base, to 5 for a highly advanced technology base or high level of organisation (see Question 1 (Q1), of the value matrix as an example). The second answer type is 0/1 for presence or absence (see Q8, for example). By applying the "Matrix of Reply Values", a score per answer is obtained.

Consideration 3. – High Level Criteria Weighting. Except for two of the High Level Criteria, "System Implementation" and "Verification", there is no theoretical reason (on the basis of the scope of the study and on the basis of the EU Directives) that could justify that one High Level Criteria should have a higher impact on the final value of the country. Nevertheless, the information provided by the experts on the needs for compliance verification as perceived by the

different countries allows some quantifiable differentiation to be made. For this reason, the data obtained from each country on the importance given to each High Level Criteria has been used to calculate the weight of each High Level Criteria. The weight of each High Level Criteria is named by "**High Level Criteria Weights**".

In the case of the weights for the High Level Criteria, the value assigned is based on the values calculated from the subset of values assigned by the national contacts to Q54. In this case the national contacts were asked to rank the importance of the criteria ("aspects to be verified") shown in the table below from 1 to 8, with 1 being considered the most important feature to be considered, and 8 being the least important.

Aspects to be verified	Austria	Belgium	Bulgaria	Cyprus	CzechRepublic	Denmark	Estonia	Finland	France	Germany	Greece	Hungary	Iceland	Ireland	Italy	Latvia	Lithuania	Luxembourg	Malta	Netherlands	Norway	Poland	Portugal	Slovakia	Slovenia	Spain	Sweden	UK	total score	average	ranking
usability	1	1	1	0	1	1	4	2	3	5	0	5	1	3	1	2	3	2	1	2	1	1	0	0	3	8	7	1	60	2,143	1
accesibility	4	2	8	0	4	2	3	3	4	6	0	6	6	2	2	4	4	3	2	6	8	3	0	0	2	7	3	2	96	3,429	3
availability	8	4	7	0	5	6	1	4	5	3	0	1	2	1	2	3	1	5	5	5	2	4	0	0	1	3	5	3	86	3,071	2
reliability	5	3	5	0	6	3	2	1	6	2	0	4	3	6	1	6	6	6	6	3	3	2	0	0	6	5	8	4	102	3,643	4
scalability	7	5	2	0	2	8	8	5	7	7	0	2	7	7	1	5	8	7	8	4	5	6	0	0	5	6	1	8	131	4,679	7
interoperability	6	8	1	0	3	7	5	6	8	8	0	3	8	8	3	7	7	8	7	7	4	5	0	0	8	4	6	7	144	5,143	8
transparency	3	7	6	0	7	5	7	7	2	4	0	7	4	4	1	8	2	4	3	8	7	7	0	0	4	1	4	5	117	4,179	6
confidentiality	2	6	4	0	8	4	6	8	1	1	0	8	5	5	3	1	5	1	4	1	6	8	0	0	7	2	2	6	104	3,714	5

▢ Not available

Table 41 Inputs for calculating High Level Criteria weights

The colour coding included in the table highlights those countries that either felt that they could not evaluate the features correctly, or did not have any opinion in that regard, and for this reason are marked Not Available. Those that gave incomplete answers, and which are awaiting clarification, have been marked Pending Definitive Ranking.

The average score for each of these features was calculated for all the countries that responded, and the inverse (*1/average*) of this calculation was used for the weighting value. Two High Level Criteria (System Implementation and Verification), have been assigned the highest weighting of 1, in order to give more significance to those systems which proactively consider these features. In addition Security, has been assigned a value similar to confidentiality, the two features being considered as concomitant. The current final values for the High Level Criteria therefore are shown in the table below:

High Level Criteria	Average	Weight
System Imp.	1,00	1,00
Validation/verif	1,00	1,00
usability	2,143	0,467
availability	3,071	0,326
accesibility	3,429	0,292
reliability	3,643	0,275
Security	3,714	0,269
confidentiality	3,714	0,269
transparency	4,179	0,239
scalability	4,679	0,214
interoperability	5,143	0,194

Table 42 Current High Level Criteria Weights

Consideration 4.- Indicators. For each High Level Criteria, different aspects are assessed. These aspects are identified in the methodology as Indicators (see table below). The weight of every indicator is 1, since they are considered to have the same relevance.

Criteria Number	High level criteria	Indicator Number	Indicator	Questions nr.
C_1	System implementation	I_1	e-Procurement stages	Q12 – Q15
		I_2	Difficulties	Q5 – Q7, Q54
		I_3	Solutions	Q54
		I_4	Financial	Q55
C_2	Usability	I_5	Usability validation	Q27
		I_6	Technical usability	Q26, Q28
C_3	Accessibility	I_7	Accessibility validation	Q27
		I_8	Accessibility facilities	Q31
		I_9	Technical accessibility	Q26, Q29, Q30
C_4	Availability	I_{10}	Availability validation	Q32, Q27
		I_{11}	Availability management	Q26, Q33, Q34, Q35
C_5	Reliability	I_{12}	Reliability validation	Q36, Q27
		I_{13}	Technical reliability	Q26
C_6	Interoperability	I_{14}	Interoperability validation	Q37
		I_{15}	Technical interoperability	Q26, 27
		I_{16}	Level of integration	Q38
		I_{17}	Standardised technical interoperability	Q39, Q40, Q42
		I_{18}	Future development	Q41
C_7	Scalability	I_{19}	Scalability validation	Q43, Q27
		I_{20}	Scalability management	Q26, Q46
		I_{21}	Technical scalability	Q44, Q45
C_8	Security	I_{22}	Security validation	Q47
		I_{23}	Security planning	Q48
		I_{24}	Security standards	Q49
		I_{25}	Technical security	Q50, Q51
C_9	Transparency	I_{26}	Transparency validation	Q52, Q27
		I_{27}	Transparency management	Q26
C_{10}	Confidentiality	I_{28}	Confidentiality validation	Q53, Q27
		I_{29}	Technical confidentiality	Q26
		I_{30}	Development	Q17, Q18
C_{11}	Verification	I_{31}	Organisational aspects	Q8 – Q11
		I_{32}	Strategy	Q19 – Q25
-	Overall Evaluation			-

Table 43 High Level Criteria and related Indicators and Questions

As it can be seen, each indicator represents one characteristic of an e-procurement system. Its value describes the degree of implementation of that particular characteristic in that country.

In this sense, when talking about the meaning of a High Level Criterion value in one country, we may say that it combines the degree of implementation of different characteristics, such as: technical development, management aspects related to that particular characteristic, the usage of related standards (depending on the characteristics being analysed), validation strategy, etc.

At this point, it is important to highlight the four Indicators related to the High Level Criterion 1, since it includes:

- the level of implementation of the e-procurement system in terms of active phases (e-publication, e-submission, e-invoicing, e-auctions, e-catalogues…) and,

- the political, social and cultural aspects (Indicator 2),

- difficulties and solutions related to both technical, budgetary, political and social aspects found during the implementation of the e-procurement system (Indicators 2 and 3), and

- the costs devoted to verification (Indicator 4).

Consideration 5.- Country Overall rate. Despite the effort made in getting complete, accurate and consistent reports from every country, there are still differences in the depth of the information received. This cannot be avoided but in

order to avoid a negative effect on the valorisation of a country, a corrective factor has been designed. The name of this corrective value is the **"Overall Rate"**.

As indicated above each questionnaire has been given an overall evaluation or total questionnaire weighting, from 1 to 5, during the analysis process. The reason behind this is to reflect the real position of those systems that are clearly more advanced than others, with greater organisational control of e-procurement development, and the presence of mature verification processes throughout the whole course of system development and maintenance, despite the fact that questionnaires filled out for these countries do not include sufficient information within the individual questions. CARSA's experts have assigned this value based on the independent research carried out (literature and personal interviews). The values of the overall rate are presented below:

0	No e-procurement system implemented; no evidence of political impetus towards fully integrated electronic system, or very little constructive information provided.
1	No e-procurement system implemented, although importance recognised and political impetus clear towards creating the legal, technical and organisational framework necessary.
2	No e-procurement system yet implemented, although planning stage advanced for implementing new system. Recognition at political level that verification processes are required and a willingness to implement such processes exists.
3	Basic system exists, and some advanced e-procurement features in advanced planning or early testing stage, prior to implementation. E-procurement recognised as important political goal although difficulties defined which are clearly impeding progress. Rudimentary verification processes defined.
4	E-procurement system implemented, with some advanced system features fully integrated, or at least in test phase prior to introduction. Well defined verification processes used on all or most of those features implemented. The system may require some adjustment before being adapted on a more global basis. In general a serious treatment of compliance verification.
5	E-procurement system implemented with all or most advanced features, or at least with clear plans to introduce them, or already in test phase prior to introduction. Well defined verification processes used on all or most of those features implemented. Clear indication that international standards are being employed in system development, and that the system design is highly interoperable, and has clear potential as a best practice. In general, a very good treatment of the issue in terms of compliance verification.

Table 44 Matrix of values for Overall Questionnaire Evaluation

Consideration 6.- Country Value. Finally, a **Formula** to calculate the value per High Level Criteria and per Country is needed. The following have been applied:

(1) Indicator = ∑(Reply Value * Question Weight) * Indicator Weight

(2) High Level Criteria = ∑Indicators * Criteria Weight

(3) Country Value = ∑(High Level Criteria Values) * Overall Rate

12.2 ANNEX II: Questionnaire Template

The following is the questionnaire which was drafted by CARSA and approved by the Commission for the use of collecting data by the experts in the EU/EEA Member States.

Dear Sir/Madam,

The present questionnaire is part of a project for the European Commission. The questionnaire aims to collect information on both the current situation of electronic procurement in your country, as well as the mechanisms adopted for verifying the different features of the most representative system.

DISCLAIMER: All information and personal opinion supplied in the current questionnaire is anonymous and the identification of the person supplying the information will not be disclosed. The information contained herein is for the use of the European Commission only. The Commission reserves the right to analyse and extract the relevant information that may be required for publication. The Commission guarantees that the anonymity of the interviewee will never be violated.

Name of expert:	
Country analysed:	
Phone number:	
Email:	
Date:	

A. QUESTIONNAIRE FOR EXPERT

A.1. E-Procurement systems

1. How many e-Procurement systems are there in the country? (Please note that some systems could be technically the same but managed differently. In such a case those systems should be treated as individual systems). If e-Procurement systems do not yet exist, are there concrete plans for implementing such a system, and what is its implementation timeframe? What features have been implemented so far?

2. At what organisational level do they, or will they, operate (national, regional ...)?

3. Is there any organism that coordinates the e-Procurement systems, or, in the case of a newly proposed system, is there one planned? What interoperability aspects, if any, does it, or will it, require from the various systems? How are (or will) these aspects (be) verified?

4. Do you believe compliance verification is sufficiently performed? What further / different means of verification do you believe are needed, at what level, and by whom? Covering what type of aspects?

EXPERT: In order to fill out the questionnaire you should choose one e-Procurement system. By default you should choose the system at national level. However, if verification is completely lacking at this level or you believe that the mechanisms of verification are better at a different level, please choose the latter and explain why (e.g. it may be the most technically advanced, it may have the most complete verification mechanism, etc.). The questionnaire for the national contact should be directed at the relevant authority responsible for the chosen system.

GUIDE 1: It is quite possible that e-procurement systems will not be fully implemented yet, and thus no specific verification system will be available for study. In such cases it would be advisable to redirect the questions more towards what the National Contact would like to see verified and or what he/she expects might/should be verified.

GUIDE 2: Question 4 should be based on both desk research and the information collected during the interview with the National Contact.

A.2. Critical national aspects in the implementation of a verification mechanism

5. What political aspects, if any, have you identified that may or have influenced either positively or negatively the implementation of e-Procurement? How could this affect verification mechanism(s) for e-Procurement?

> Political aspects: Regional, national or international government policy that may guide and influence the implementation of public procurement policy.

6. What social aspects, if any, have you identified that may or have influenced either positively or negatively the implementation of for e-Procurement? How could this affect verification mechanism(s) for e-Procurement?

> The term "social" is used in many different senses, referring among other things to:
>
> - attitudes, orientations or behaviours which take the interests, intentions or needs of other people into account
>
> - social facts: common characteristics of people or descriptions of collectivities
>
> - interactions between people (social action);
>
> - co-operation or co-operative characteristics between people;

7. What cultural aspects, if any, have you identified that may or have influenced either positively or negatively the implementation of e-Procurement? How could this affect verification mechanism(s) for e-Procurement?

> Cultural aspects: distinct sets of behaviour and beliefs that differentiate groups of people from the other European cultures. This may include codes of manners, language, religion, rituals, norms of behaviour and systems of belief.

EXPERT: A good point of reference for the above may be the statistical data sources available on e-Government (e.g. IDABC, Eurostat, national statistical agencies…). If available and feasible, please quote statistical figures and your sources of reference in the report.

B. QUESTIONNAIRE FOR NATIONAL CONTACT

Name of interviewee:	
Company/ organisation:	
Position / role of the interviewee in the organisation:	
Role of the organisation in the procurement process (buyer, supplier, user, other):	
Country:	
Phone number:	
Email:	
Date:	

B.1. GENERAL ISSUES

B1.1 Organisational Aspects

8. Is e-Procurement centralised or decentralised and at what level?

a.   ☐ Centralised
b.   ☐ Decentralised national (Ministry or Department level)
c.   ☐ Decentralised regional

9. What body or bodies are responsible for implementing electronic public procurement in your country? What type are they?

BODY	TYPE		
	Governmental (public)	Independent (private)	State-owned company

a.   If more than one body is responsible, is there coordination between the different bodies at national or governmental level?

   i.   ☐ National level
   ii. ☐ Governmental level

10. Is there a body which ensures compliance of the e-Procurement system with the national law or with the Directives?

a.   ☐ Yes. Please name: _____

   i.   How does this body verify compliance with national law (e.g.: audits, questionnaires…)?

   ii. What is the frequency of verification
      1.   ☐ one-off
      2.   ☐ at regular intervals. Please specify: _____
      3.   ☐ at each system upgrade
      4.   ☐ Other. Please specify:_____

b.   ☐ No.
   i.   Do you think such a body would be beneficial?
      1.   ☐ Yes.
      2.   ☐ No.

11. With regard to non-electronic (paper-based) public procurement, are there verification procedures implemented? If yes, are these verification reviews carried out on a case-by-case basis or as general yearly reviews as part of performance monitoring?

B1.2 Technical Aspects

12. Please indicate in the following table (you may choose more than one) the stage of the e-Procurement cycle and level of implementation of the e-Procurement system

Phase	Fully implemented	Test phase	Expected to be implemented (expected date)
e-Publication[21]	(options[22])	(options)	
e-access to tender documents[23]	(options)	(options)	
e-Submission[24]	(options)	(options)	

---

[21] The electronic provision of tender notices by drafting and transmitting notices to the Commission by electronic means.

[22] Options: for products, for services, for both, for none

[23] The electronic provision of contract documents, which may be downloaded by any interested party.

[24] This means electronic submission of tenders or requests to participate.

e-Evaluation[25]	(options)	(options)	
e-Auctions[26]	(options)	(options)	
e-information and reporting[27]	(options)	(options)	
e-Ordering[28]	(options)	(options)	
e-Invoicing[29]	(options)	(options)	
"Prequalification"[30]	(options)	(options)	

(EXPERT: please include any additional comments about this table in the section at the end of the document).

13. What types of purchases does the system support?

    a. ☐ One-off by means of open procedure

    b. ☐ One-off by means of restricted procedure

    c. ☐ Repetitive by means of Dynamic Purchasing System (DPS)

    d. ☐ Repetitive by means of Framework Agreement

14. Does your system support e-Auctions?

15. Does your system support e-Catalogues?

    a) for submission as offers (electronic supplier 'prospectus')

    b) as management system for framework agreements/contracts

16. Does you system interoperate with other systems? What and with which ones?

B.2. FUNCTIONAL REQUIREMENTS

General issues

An e-Procurement system is a complex product the functioning of which may be approached from two different perspectives:

On the one hand, an e-procurement system may cover different stages in the purchasing process, from the e-Notification phase (publication of a procurement notice) up to the automated evaluation of offers or even including electronic invoicing and ordering. Whilst they may be only progressively implemented, ultimately, all these stages should be assessed with regard to their legal conformity and compliance towards the legal framework. (For example, part of an e-Procurement system may include e-Auctions, which in itself is an individual product requiring a full development lifecycle.

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[25] This means that the system may assist officers for the drafting of documents and tender evaluation, including analysis and evaluation support tools, in an automated or semi-automated way.

[26] Online competition that allows bidders to submit new prices/values revised downwards.

[27] The automatic or semi-automatic production of Mandatory Reports regulated by the legislation, including notifying the winning tenderer of the result, and supplying information about the tenderers who participated in the competition, the successful tenderer(s), the reasons for their selection etc.

[28] Example: in Framework Agreements.

[29] Example: e-Payment schemes or purchase cards

[30] Single submission of proof documents for the selection phase to be re-used in subsequent procedures.

On the other hand, an eProcurement system is a tool and a complex product in itself, which may encapsulate various other products or modules. Thus the development lifecycle for a system includes a specification phase, a design phase, a development phase and an installation phase, whereas the product lifecycle comprises the operational phase and maintenance phase.

Based on the examples above, both the development lifecycle and the product lifecycle may be applied to the e-Procurement system as a whole or to the individual products that make up the system. Please take into account therefore that the following questions may be applied to either the whole system or its individual modules (e.g. e-Auctions).

17. What is the product lifecycle of your e-Procurement system? How and by whom are the different developments conceived, coordinated and scheduled? Is operation and / or maintenance carried out internally or by a 3rd party? What are the major stakeholders in the product lifecycle?

    Guidance: Collect information on: organisational structure (who, what and how); product life-cycle phases

18. What is the development lifecycle of your e-Procurement system? Is it developed in-house, to your specifications by a third party or bought off-the-shelf? What policies/methodologies are employed for developing the e-Procurement system? Do these policies/methodologies also take into account future developments of the e-Procurement system?

    Guidance: Focus on the development process. Try to get a picture of the development method followed.

19. What verification/validation strategy(ies) do you have? Who carries out verification/validation in your organisation (independent 3rd party, national body, internal body...)?

    Guidance: In general as strategy. Do not focus on any specific phase.

20. Have you designed and/or implemented specific tools/methods/instruments to verify/validate and/or monitor the proper performance of the whole/part of your e-procurement system all over its life?

    Guidance: Try to collect data on the infrastructure they have in place for verification/validation/monitoring.

21. What verification methods/techniques/tools do you use during each of the following phases? At what moment of the lifecycle have you considered compliance with either national law or the Directives?

    Expert: Please note that if none of the following phases has yet been implemented, it is important that the National Contact indicates in which phase she/he thinks that verification would be most useful, and in which of the phases do they expect that verification of will be implemented.

    It is important to distinguish in the different phases between **Implemented**, **Expected to be implemented**, and **Should be implemented**.

    - In the case that the phases are *already implemented*, the questions included under each phase below should be asked.
    - For those phases not yet implemented but *expected to be implemented*, it is important to ask: When will they be implemented? Will validation be integrated from the start? If not, why not? And if yes, what frequency, level and scope of verification is planned?
    - For *Should be implemented* phases, the personal opinion of the National Contact is being sought. Questions such as the following should be asked: Why in your opinion is validation so important at this stage? What other factors may affect whether or not validation is introduced at this phase (e.g. budgetary factors, legal factors, political factors etc.)? If validation is not introduced, how might that affect the system?

    i. Specification phase:

    Is any documentation available which describes the specifications of the system or software to be developed (e.g. legal or functional requirements)? Are such requirements reviewed? Against what (national legislation, EU legislation, other)? How is the review process carried out? Who is participating in this process? Do you keep documented evidence of the review process and its outcome? With what frequency is verification carried out? What are the final results (accreditation, clearance, etc.)?

    ii. Design and Development phases:

How do you ensure the design complies with the requirements? How do you verify the outcomes of the development process? How do you perform integration? With what frequency is verification carried out? What are the final results (accreditation, clearance, etc.)?

iii.   Validation Phase:

Who verifies and validates the functionality of the final system before entering into production? How do you perform validation? With what frequency is verification carried out? What are the final results (accreditation, clearance, etc.)? Traceability to requirements is kept? (This is the ability to describe and follow the life of a requirement, in both a forward and backward direction, i.e. from its origins, through its development and specification, to its subsequent deployment and use, and through periods of ongoing refinement and iteration in any of these phases)

iv.   Installation phase:

Do you verify system integrates properly with existing modules? With what frequency is verification carried out? What are the final results (accreditation, clearance, etc.)?

v.   Operational phase:

What internal or external mechanisms do you use to ensure the correct functionality of the system? (E.g. internal: auditing, self-verification, logging, etc.; external: online suggestion /complaints forms...) With what frequency is verification carried out? What are the final results (accreditation, clearance, etc.)?

vi.   Maintenance phase:

What is your verification strategy for this phase? With what frequency is verification carried out? What are the final results (accreditation, clearance, etc.)? What is verified and at what depth: System functionalities; Tools; Operational platforms; Others: please specify?

22.   Do you have verification mechanisms for integrating your system with other systems?

23.   How do you verify the testing strategy that is implemented? Is the strategy accredited? By whom?

24.   Do you have a systematically maintained Documentation Plan? (This refers to the management of all the documentation produced as a result of implementation of an eProcurement system)

25.   In your opinion, is a global verification strategy for the system as a whole better than individual verification features included in each phase, or is it better to have different verification mechanisms for different aspects (e.g. e-signatures)?

B.3. NON-FUNCTIONAL REQUIREMENTS

The new EU public procurement Directives, in addition to describing the functional requirements, impose also a set of non-functional requirements. These requirements are primarily concerned with usability and security aspects, for ensuring accessibility, transparency, equal treatment, security, and other principles of the EU legislation. Others, of a more implicit nature, are also included, and these can significantly assist contracting authorities in establishing effective Public eProcurement systems.

Non-functional requirements originate from system properties, such as environmental or implementation constraints (e.g. remote access should be provided, software must run on various operating systems) and qualities of the system,. Usability is an example of a non-functional requirement. It is a requirement that may not be explicitly specified in a contract between the customer and the system developer, but it affects the general performance of the system and thereby its overall quality. It may therefore also be known as a quality factor.

As with other non-functional requirements, usability cannot be directly measured but must be quantified by means of indirect measures or attributes such as, for example, the number of reported problems with ease-of-use of a system. For this reason the responses obtained to this part of the questionnaire will be strongly affected by the functional requirements of the previous part: different functional aspects may have different non-functional requirements.

26. How does your organization perceive the following criteria? Do you follow a specific regulation (national or European) for putting them into practice? Please specify

   a. Usability

   b. Accessibility

   c. Availability

   d. Reliability

   e. Interoperability

   f. Scalability

   g. Transparency

   h. Confidentiality

27. What mechanisms do you use for verifying the following criteria technically and legally in your system? Who carries out the verification (an independent 3rd party, internal verification)?

   a. Usability

   b. Accessibility

   c. Availability

   d. Reliability

   e. Interoperability

   f. Scalability

   g. Transparency

   h. Confidentiality

USABILITY

28. Does your system include...

Feature	YES	NO	Comments
A Graphical User Interface based on commonly understood functionalities, like drop-down menus, buttons, fields, etc.			
Support and help functionalities for **procurement officers**? (e.g. help-desk, training, online help…)			
Support and help functionalities for **tenderers**? (e.g.			

help-desk, training, online help…)			
A search-function for procurement officers?			
A search-function for tenderers?			

ACCESSIBILITY

29. Besides your official language, does your system support any other official language of the European Union?

   e. ☐ Yes. Please specify: _____
   f. ☐ No

30. Does your system require any tool to be installed at the customer site?
   g. ☐ Yes.
      i. Which policy do you follow in these cases? _____
   h. ☐ No

31. Does your system provide facilities for disabled people?

   i. ☐ Yes. Please specify: _____
   j. ☐ No

AVAILABILITY

32. Do you validate availability in your system?

   k. ☐ Yes
      i. How do you validate? Please specify:
      ii. Who carries out the validation?
         1. ☐ An independent 3rd party. Please specify _____
         2. ☐ Internal validation
   l. ☐ No

33. What is your current Service Level Agreement (SLA)?

34. Do you have preventive maintenance systems to ensure availability? If yes, please specify:

35. Do you provide contingency planning for recovering availability? If yes, please specify:

RELIABILITY

36. Do you validate reliability in your system?

   m. ☐ Yes
      i. How do you validate? Please specify:
      ii. Who carries out the validation?
         1. ☐ An independent 3rd party. Please specify _____
         2. ☐ Internal validation
   n. ☐ No

INTEROPERABILITY

37. Do you validate interoperability in your system?

   o. ☐ Yes
      i. How do you validate? Please specify:_____
      ii. Who carries out the validation?
         1. ☐ An independent 3rd party. Please specify _____
         2. ☐ Internal validation

p. ☐ No

38. What level of effective integration have you achieved, and with whom in terms of organisational, semantic and technical interoperability? Please specify: _____

39. Is your system based on common standards and practices?

    q. ☐ Yes
        i. ☐ Off-the-shelf. Please specify: _____
        ii. ☐ Proprietary
        iii. ☐ Open Source. Please specify: _____
    r. ☐ No

40. Does your system use the Common Procurement Vocabulary (CPV)?

    s. ☐ Yes
    t. ☐ No

41. How does your system contemplate the adoption of future developments? Please specify.

    u. Technical developments:

    v. Organisational developments:

    w. Semantic developments:

42. Do you ensure semantic interoperability among data structures? (e.g. XML vocabularies may be developed taking into account agreed e-Government data elements)

    x. ☐ Yes.
        i. What means do you provide for ensuring semantic interoperability? _____
    y. ☐ No

SCALABILITY

43. Do you validate scalability in your system?

    z. ☐ Yes
        i. How do you validate? Please specify:_____
        ii. Who carries out the validation?
            1. ☐ An independent 3rd party. Please specify _____
            2. ☐ Internal validation
    aa. ☐ No

44. Have you applied a systematic approach to reduce/control the risk associated with high loads? Please specify: _____

45. Have you established Service Level Agreements (SLA)?

    bb. ☐ Yes. What features do you control to ensure acceptable performance rates? ____
    cc. ☐ No

46. What are the most critical processes/moments in terms of load? How do you ensure the optimal performance of the system in these moments? _____

SECURITY

47. Do you validate security in your system?

    dd. ☐ Yes
        i. How do you validate? Please specify:_____
        ii. Who carries out the validation?
            1. ☐ An independent 3rd party. Please specify _____

2. ☐ Internal validation

ee. ☐ No

48. Have you got a Security Plan? And a Security Manager? Please specify: _____

49. Do you apply any national or European standard regarding security? _____

50. In the case that e-Signatures are implemented, what type do you use?

a. ☐ Accredited: A digital signature backed by a qualified certificate from an accredited certification authority provides the most enhanced form of certainty to a recipient in relation to data integrity and authenticity of the sender.

b. ☐ Qualified: an advanced electronic signature based on a qualified certificate and created by a secure signature creation device.

c. ☐ Advanced: It is uniquely linked to the signatory, identifying the signatory, created using means that the signatory can maintain under his sole control. It is linked to the data to which it relates in such a manner that any subsequent change of the data is detectable

d. ☐ Other. Data in electronic form which are attached to or logically associated with other electronic data and which serve as a method of authentication E.g. PGP. Also scanned handwritten signature pasted under email

e. ☐ None

51. Who provides and certifies the e-signatures?

o ☐ National Authority

o ☐ Independent Certification Authority

o ☐ Contracting Authority

TRANSPARENCY

52. Do you validate transparency in your system?

o ☐ Yes

i. How do you validate? Please specify:_____
ii. Who carries out the validation?
  1. ☐ An independent 3rd party. Please specify _____
  2. ☐ Internal validation

o ☐ No

CONFIDENTIALITY

53. Do you validate confidentiality in your system?

o ☐ Yes

iii. How do you validate? Please specify:_____
iv. Who carries out the validation?
  1. ☐ An independent 3rd party. Please specify _____
  2. ☐ Internal validation

o ☐ No

54. With regard to the following aspects, please describe the difficulties that you have encountered during the implementation of the e-Procurement system and the solutions that you have employed with respect to Usability, Accessibility, Availability, Reliability, Interoperability, Scalability, Transparency and Confidentiality.

ASPECT	DIFFICULTIES	SOLUTIONS
TECHNICAL ASPECTS		
BUDGETARY ASPECTS		
POLITICAL ASPECTS		
SOCIAL ASPECTS		

With regard to verification of the following 8 aspects, could you please rank them, with 1 being the most in need of verification and 8 being the least? In other words, what are the most critical aspects that must be verified in order to ensure the system's performance?

CRITERIA	Usability	Accessibility	Availability	Reliability	Scalability	Interoperability	Transparency	Confidentiality
RANK								

55. Regarding the cost of implementation of the e-Procurement system

   a. What is the current cost dedicated to verification (as percentage of global implementation cost of system):

   b. What do you expect will be the future cost dedicated to verification (as percentage of global implementation cost of system):

FURTHER COMMENTS ON ANY OF THE ABOVE MENTIONED ASPECTS

END OF QUESTIONNAIRE

12.3 Annex III. List of question weights and matrix of reply values

Question	weighting	Max value	Weighted max value	Question	weighting	Max value	Weighted max value
1	0,75	5	3,75	27.1	0,47	5	2,35
2	0,75	5	3,75	27.2	0,32	5	1,60
3	0,75	5	3,75	27.3	0,33	5	1,65
4	0,75	5	3,75	27.4	0,28	5	1,40
5	0,3	5	1,50	27.5	0,20	5	1,00
6	0,3	5	1,50	27.6	0,22	5	1,10
7	0,3	5	1,50	27.7	0,25	5	1,25
8	0,75	1	0,75	27.8	0,29	5	1,45
9	0,85	5	4,25	28	0,65	5	3,25
10	1	5	5,00	29	0,75	5	3,75
11	0,9	5	4,50	30	0,5	5	2,50
12	1	5	5,00	31	0,85	5	4,25
13	0,5	5	2,50	32	1	5	5,00
14	0,85	1	0,85	33	0,5	1	0,50
15	0,85	1	0,85	34	0,5	5	2,50
16	0,75	5	3,75	35	0,5	5	2,50
17	0,5	5	2,50	36	1	5	5,00
18	0,5	5	2,50	37	1	5	5,00
19	1	5	5,00	38	0,85	5	4,25
20	1	5	5,00	39	0,9	5	4,50
21	1	5	5,00	40	1	1	1,00
22	1	5	5,00	41	0,5	5	2,50
23	1	5	5,00	42	0,65	5	3,25
24	0,85	5	4,25	43	1	5	5,00
25	0,75	1	0,75	44	0,65	5	3,25
26.1	0,47	5	2,35	45	0,4	5	2,00
26.2	0,32	5	1,60	46	0,4	5	2,00
26.3	0,33	5	1,65	47	1	5	5,00
26.4	0,28	5	1,40	48	1	2	2,00
26.5	0,20	5	1,00	49	1	1	1,00
26.6	0,22	5	1,10	50	1	1	1,00
26.7	0,25	5	1,25	51	1	1	1,00
26.8	0,29	5	1,45	52	1	5	5,00
				53	1	5	5,00
				54	0,85	5	4,25
				55	1	5	5,00

Matrix of Reply Values

A.1. E-Procurement systems

1. How many e-Procurement systems are there in the country? If e-Procurement systems do not yet exist, are there concrete plans for implementing such a system, and what is its implementation timeframe? What features have been implemented so far?

0	No system
1	No system, but consideration is being given in government to the lack of e-Procurement
2	No public system, but plans advanced for its implementation. Private systems may exist
3	Public system(s) exists, but at a basic level
4	Public system(s) exists, relatively advanced, with further development plans in progress
5	Very advanced public system(s) with all the functional features present

2. At what organisational level do they, or will they, operate (national, regional …)?

0	No organisation exists to control or encourage development

1	No controlling organisation, but various bodies exist selling e-Procurement services
2	No organisation, but government plans exist to create an overall controlling body
3	Clear organisations exist, but function independently
4	Different organisations exist, but clear interest in encouraging interoperability
5	Clear organisation between bodies, with clear interoperability between independent systems

3. Is there any organism that coordinates the e-Procurement systems, or, in the case of a newly proposed system, is there one planned? What interoperability aspects, if any, does it, or will it, require from the various systems? How are (or will) these aspects (be) verified?

0	No organism exists
1	No controlling organism, but plans are being considered
2	No organism, but government plans are well developed
3	Organism exists, but with limited functionality
4	Organism exists, with good functionality, but limited coordination achieved so far
5	Good organisation achieved by clearly defined organism

4. Do you believe compliance verification is sufficiently performed? What further / different means of verification do you believe are needed, at what level, and by whom? Covering what type of aspects?

0	No
1	No, but compliance verification is recognised as important
2	No, but government plans for mechanism are well developed
3	No, but mechanism will be implemented with new system
4	Yes, but only based on internal controls
5	Yes, carried out by both internal and accredited 3rd party

A.2. Critical national aspects in the implementation of a verification mechanism

5. What political aspects, if any, have you identified that may or have influenced either positively or negatively the implementation of e-Procurement? How could this affect verification mechanism(s) for e-Procurement?

0	No political aspects identified
1	Political aspects identified as a prime mover, with strong negative effect
2	Political aspects identified, although either not enough information given to make more informed decision on its effect, or somewhat negative.

3	Politics recognised as important, although neutral effect overall
4	Very strong political influence identified, although not clearly identified as a positive prime mover
5	Very strong political influence identified, as a positive prime mover

6. What social aspects, if any, have you identified that may or have influenced either positively or negatively the implementation of for e-Procurement? How could this affect verification mechanism(s) for e-Procurement?

0	No social aspects identified
1	Social aspects identified, with strong negative effect
2	Social aspects identified, although not enough information given to make more informed decision on its effect
3	Social aspects identified as important, although neutral effect overall
4	Social aspects identified as important, although not a prime mover
5	Social aspects identified as very important, and a prime mover

7. What cultural aspects, if any, have you identified that may or have influenced either positively or negatively the implementation of e-Procurement? How could this affect verification mechanism(s) for e-Procurement?

0	No cultural aspects identified
1	Social aspects identified, with strong negative effect
2	Cultural aspects identified, although not enough information given to make more informed decision on its effect
3	Cultural aspects identified as important, although neutral effect overall
4	Cultural aspects identified as important, although not a prime mover
5	Cultural aspects identified as very important, and a prime mover

B.1. GENERAL ISSUES

B1.1 Organisational Aspects

8. Is e-Procurement centralised or decentralised and at what level?

| 0 | No e-Procurement, or not yet |
| 1 | e-Procurement exists |

9. What body or bodies are responsible for implementing electronic public procurement in your country? What type are they? If more than one body is responsible, is there coordination between the different bodies at national or governmental level?

0	No bodies exist
1	Bodies known to exist but not sufficient information provided
2	Many clearly defined bodies but no coordination, or too early in planning stage to assess effectivity
3	One or a few clearly defined bodies but poor coordination
4	One or a few clearly defined bodies but with one principle coordinator at public level
5	One or a few, clearly defined bodies with clear coordination between them

10. Is there a body which ensures compliance of the e-Procurement system with the national law or with the Directives?

0	No body exist
1	No body known to exist, but compliance mechanisms are known to exist
2	Body exists but compliance mechanisms are not clear
3	Body exists; but compliance only carried out once
4	Body exists; compliance carried out at service upgrades
5	Body exists; compliance carried out at very regular intervals and with clear plan, based on clear mechanism

11. With regard to non-electronic (paper-based) public procurement, are there verification procedures implemented? If yes, are these verification reviews carried out on a case-by-case basis or as general yearly reviews as part of performance monitoring?

0	No procedures
1	Procedures thought to exist, but not clear
2	Procedures known to exist but not clear how function
3	Procedures exist but carried out randomly
4	Procedures case-by-case only
5	Regular case by case, and other yearly reviews and audits

B1.2 Technical Aspects

12. Please indicate in the following table (you may choose more than one) the stage of the e-Procurement cycle and level of implementation of the e-Procurement system

0	None
1	Only 1 stage implemented; others in planning stage

2	Only 1 stage implemented; others in test or pilot stage
3	Less than 4 stages implemented; non-implementation of other stages explained
4	4 or more stages implemented, but only for either options or services
5	4 or more stages implemented for both options and services

13. What types of purchases does the system support? One-off by means of open procedure One-off by means of restricted procedure Repetitive by means of Dynamic Purchasing System (DPS) Repetitive by means of Framework Agreement

0	None
1	1 purchase type
2	2 purchase types
3	3 purchase types
4	4 purchase types

14. Does your system support e-Auctions?

0	No, or not yet
1	Yes

15. Does your system support e-Catalogues? for submission as offers (electronic supplier 'prospectus')   as management system for framework agreements/contracts

0	No, or not yet
1	Yes

16. Does you system interoperate with other systems? What and with which ones?

0	None
1	Interoperability planned
2	Some interoperability with local systems
3	Interoperability with other national systems
4	Basic interoperability with EU's TED and other international systems
5	Multiple functional interoperability with other e-procurement systems, or with diverse financial systems

B.2. FUNCTIONAL REQUIREMENTS

General issues

17. What is the product lifecycle of your e-Procurement system? How and by whom are the different developments conceived, coordinated and scheduled? Is operation and / or maintenance carried out internally or by a 3rd party? What are the major stakeholders in the product lifecycle?

0	None exists
1	Exists, but product lifecycle not clearly defined
2	Development and maintenance briefly defined
3	Development, coordination and scheduling clearly defined. Maintenance and operation needs more information
4	Development, coordination and scheduling clearly defined. Operation and / or maintenance clearly defined.
5	Development, coordination and scheduling clearly defined. Operation and / or maintenance clearly defined. Major stakeholders clearly defined

18. What is the development lifecycle of your e-Procurement system? Is it developed in-house, to your specifications by a third party or bought off-the-shelf? What policies/methodologies are employed for developing the e-Procurement system? Do these policies/methodologies also take into account future developments of the e-Procurement system?

0	None exists
1	Exists, but not clearly defined
2	Development process defined, but not clear.
3	Development lifecycle defined, with policy direction mentioned but not clear
4	Development lifecycle and policies clear, although future developments not mentioned
5	Complete development lifecycle clearly defined, with clear vision of future developments

19. What verification/validation strategy(ies) do you have? Who carries out verification/validation in your organisation (independent 3rd party, national body, internal body…)?

0	None exists
1	Strategy exists, but not clearly defined
2	Strategy exists although limited scope
3	Non accredited random verification carried out
4	Non accredited Internal strategy exists
5	Strategy exists based on both internal and nationally accredited 3rd party

20. Have you designed and/or implemented specific tools/methods/instruments to verify/validate and/or monitor the proper performance of the whole/part of your e-procurement system all over its life?

![CARSA logo]

0	No e-procurement system exists
1	No verification system, but being considered
2	Tools/methods/instruments being considered
3	Tools/methods/instruments being developed for future use. Basic monitoring exists.
4	Tools/methods/instruments not used during complete life cycle, only part.
5	Tools/methods/instruments employed in monitoring performance through product lifespan

21. What verification methods/techniques/tools do you use during each of the following phases? At what moment of the lifecycle have you considered compliance with either national law or the Directives:

0	No verification exists
1	Verification exists, but not clearly defined
2	Verification and compliance methods being developed
3	Verification and compliance clear in one phase only
4	Verification and compliance defined for more than one phase, but not all
5	Verification and compliance defined for all phases

22. Do you have verification mechanisms for integrating your system with other systems?

0	None exists
1	Mechanism exists, but not clearly defined
2	Mechanism exists although limited scope
3	Non accredited random verification carried out
4	Non accredited Internal Mechanism exists
5	Mechanism exists based on both internal and nationally accredited 3rd party

23. How do you verify the testing strategy that is implemented? Is the strategy accredited? By whom?

0	None exists
1	Strategy exists, but not clearly defined
2	Strategy exists although limited scope
3	Non accredited random verification carried out
4	Non accredited Internal strategy exists
5	Strategy exists based on both internal and nationally accredited 3rd party

24. Do you have a systematically maintained Documentation Plan? (This refers to the management of all the documentation produced as a result of implementation of an eProcurement system)

0	None exists
1	Plan exists, but not used
2	Plan used although not clearly defined
3	Generalised Documentation Plan used limited scope
4	Specialised Documentation Plan used
5	Specialised Documentation Plan used with clearly defined scope and reasons for use

25. In your opinion, is a global verification strategy for the system as a whole better than individual verification features included in each phase, or is it better to have different verification mechanisms for different aspects (e.g. e-signatures)?

B.3. NON-FUNCTIONAL REQUIREMENTS

26. How does your organization perceive the following criteria? Do you follow a specific regulation (national or European) for putting them into practice? Please specify Usability Accessibility Availability Reliability Interoperability Scalability Transparency Confidentiality

0	No opinion
1	Not considered important
2	Considered important but not implemented, or in planning stage
3	Considered important but not implemented regarding any specific regulation
4	Implemented based only on national regulation
5	Implemented based on EU and/or common international regulation

27. What mechanisms do you use for verifying the following criteria technically and legally in your system? Who carries out the verification (an independent 3rd party, internal verification)? Usability Accessibility Availability Reliability Interoperability Scalability Transparency Confidentiality

0	None exists
1	None, but being planned for in new system
2	Mechanism exists although limited in scope both legally and technically
3	Only internal non- accredited technical verification carried out
4	Internal legal and technical verification carried out
5	Mechanism exists based on both legal and technical internal and accredited 3rd party

USABILITY

28. Does your system include…A Graphical User Interface based on commonly understood functionalities, like drop-down menus, buttons, fields, etc. Support and help functionalities for procurement officers? (e.g. help-desk, training,

online help…)   Support and help functionalities for tenderers? (e.g. help-desk, training, online help…)A search-function for procurement officers? A search-function for tenderers?

0	None
1	Only 1 feature
2	2 features
3	3 features
4	4 features
5	All features

ACCESSIBILITY

29. Besides your official language, does your system support any other official language of the European Union?

0	No information
1	Only national language.
2	National language, and other languages/dialects within the country concerned, although not spoken internationally.
3	Two officially recognised European languages
4	More than two officially recognised European languages
5	All European working languages (English, French or German) catered for

30. Does your system require any tool to be installed at the customer site?

0	System can only be used by specific pre-accredited customers
1	Yes, specific software that must be bought
2	Yes, specific software, although free, can only be acquired from a central site
3	No, but only supported by certain browsers
4	No, but customer must download freely available software from internet e.g. Acrobat
5	No, can be used by anyone with browser

31. Does your system provide facilities for disabled people?

0	No
1	No but in planning
2	No, but in development
3	Yes, currently included in pilot system, or not clear which standards used.

4	Yes, based on national standards
5	Yes, based on international WAI standards

AVAILABILITY

32. Do you validate availability in your system? How? who?

0	No
1	Mechanism exists, but not clearly defined
2	Mechanism exists although limited in scope both legally and technically
3	Only internal non- accredited verification carried out
4	Internal legal and technical (accredited) verification carried out
5	Both legal and technical verification: based on internal and accredited 3rd party, using both national and international conventions

33. What is your current Service Level Agreement (SLA)?

0	None
1	Clearly established

34. Do you have preventive maintenance systems to ensure availability? If yes, please specify:

0	None
1	No, but importance is recognised
2	No, but plan currently being developed
3	Yes, but not defined clearly
4	Yes, with certain features, although still being improved
5	Yes, clearly defined, with fully recognised preventative maintenance features

35. Do you provide contingency planning for recovering availability? If yes, please specify:

0	None
1	No, but importance is recognised
2	No, but plan currently being developed
3	Yes, but not defined clearly
4	Yes, with certain features, although still being improved
5	Yes, full back-up and recovery plan defined

RELIABILITY

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36. Do you validate reliability in your system? How? who?

0	No
1	Mechanism exists, but not clearly defined
2	Mechanism exists although limited in scope both legally and technically
3	Only internal non- accredited technical verification carried out
4	Internal legal and technical verification carried out
5	Both legal and technical validation: based on internal and accredited 3rd party

INTEROPERABILITY

37. Do you validate interoperability in your system? How? who?

0	No
1	Mechanism exists, but not clearly defined
2	Mechanism exists although limited in scope both legally and technically
3	Only internal non- accredited technical verification carried out
4	Internal legal and technical verification carried out
5	Both legal and technical validation: based on internal and accredited 3rd party

38. What level of effective integration have you achieved, and with whom in terms of organisational, semantic and technical interoperability?

0	None
1	None, but importance is recognised
2	None, but interoperability being tested in pilot version
3	Integration in terms of technical interoperability achieved
4	Integration at national level achieved at semantic, organisational & technical level achieved
5	Integration with other international systems and at national level achieved

39. Is your system based on common standards and practices?

0	No system
1	Current existing system not based on common standards and practice
2	No, but new system based on common standards and practices is being planned
3	Yes, but not defined what those standards are

4	Yes, but only in test version, although standards used clearly defined
5	Yes, and clearly defined

40. Does your system use the Common Procurement Vocabulary (CPV)?

0	No
1	Yes

41. How does your system contemplate the adoption of future developments? Please specify. Technical developments: Organisational developments: Semantic developments:

0	No system
1	No planning for future developments
2	None, although its importance is realised
3	New system being developed takes future developments into account
4	Yes, but not clear how, or not defined for all stages
5	Yes, and clearly defined for all stages

42. Do you ensure semantic interoperability among data structures? (e.g. XML vocabularies may be developed taking into account agreed e-Government data elements)

0	No system
1	No planning for semantic interoperability
2	None, although its importance is realised
3	No, but new system being developed uses common data structures
4	Yes, but not defined
5	Yes, and clearly defined

SCALABILITY

43. Do you validate scalability in your system? How? who?

0	No
1	Mechanism exists, but not clearly defined
2	Mechanism exists although limited in scope both legally and technically
3	Only internal non- accredited technical verification carried out
4	Internal legal and technical verification carried out
5	Both legal and technical validation: based on internal and accredited 3rd party

44. Have you applied a systematic approach to reduce/control the risk associated with high loads?

0	No
1	No, but risk control is recognised as important
2	No but included in newly planned system
3	Approach exists, but not clearly defined
4	Load testing carried out at start but currently not adopted
5	Clearly systematic approach described

45. Have you established Service Level Agreements (SLA)? What features do you control to ensure acceptable performance rates?

0	None
1	Yes, but not defined, or in the process of being signed
2	Yes, clearly established features controlled

46. What are the most critical processes/moments in terms of load? How do you ensure the optimal performance of the system in these moments?

0	No system
1	No system, but planned system has clearly defined processes for load control
2	System exists, but no critical load control measures defined
3	System exists, but no specific measures for controlling optimal performance
4	System exists, but specific load control measures considered not necessary
5	Clearly systematic approach adopted

SECURITY

47. Do you validate security in your system? How? who?

0	No
1	Mechanism exists, but not clearly defined
2	Mechanism exists although limited in scope both legally and technically
3	Only internal non- accredited technical verification carried out
4	Internal legal and technical verification carried out
5	Security validation based on internationally accredited 3rd party

48. Have you got a Security Plan? And a Security Manager? Please specify:

0	No
1	Security plan
2	Both security plan and manager

49. Do you apply any national or European standard regarding security?

0	No
1	Yes

50. In the case that e-Signatures are implemented, what type do you use? Accredited: Qualified: Advanced: Other. None

0	None
1	e-Signatures used

51. Who provides and certifies the e-signatures? National Authority   Independent Certification Authority Contracting Authority

0	None used
1	Certification provided

TRANSPARENCY

52. Do you validate transparency in your system? How? who?

0	No
1	Mechanism exists, but not clearly defined
2	Mechanism exists although limited in scope both legally and technically
3	Only internal non- accredited technical verification carried out
4	Internal legal and technical verification carried out
5	Both legal and technical validation: based on internal and accredited 3rd party

CONFIDENTIALITY

53. Do you validate confidentiality in your system? How? who?

0	No
1	Mechanism exists, but not clearly defined
2	Mechanism exists although limited in scope both legally and technically
3	Only internal non- accredited technical verification carried out
4	Internal legal and technical verification carried out

5	Both legal and technical validation: based on internal and accredited 3rd party

54. With regard to the following aspects, please describe the difficulties that you have encountered during the implementation of the e-Procurement system and the solutions that you have employed with respect to Usability, Accessibility, Availability, Reliability, Interoperability, Scalability, Transparency and Confidentiality.

0	No information
1	Ambiguous difficulties found
2	No particular difficulties occurred during implementation
3	Only solutions relevant to national situation defined; not easily applicable internationally
4	Aspects relevant to international situation defined, but solutions found not clear or not mentioned
5	Realistic Difficulties and clear solutions provided for all aspects

55. Regarding the cost of implementation of the e-Procurement system What is the current cost dedicated to verification (as percentage of global implementation cost of system): What do you expect will be the future cost dedicated to verification (as percentage of global implementation cost of system):

0	No verification implemented
1	No system yet implemented, and verification costs in planning stage
2	Verification only one-off on whole system and no future costs envisaged. Costs assigned but not clear what or not enough information
3	10-19% current costs
4	20-29% current costs
5	30-40% current costs

Values assigned to questionnaire responses

The data which has been collected by the experts within each country has been summarised into a table of values, shown below in the next table. This table is the primary data source for the whole study, and is the main point of departure for carrying out the calculations described further in the analysis. Those values shown in the main body of the table are the values that have been assigned to the responses received for each question by applying the "Question Value Sheet for Individual Questions". The question number is shown in the first column and the second column of the table shows the question weight.

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Question	Question weighting	Austria	Belgium	Bulgaria	Cyprus	CzechRepubl	Denmark	Estonia	Finland	France	Germany	Greece	Hungary	Ireland	Iceland	Italy	Latvia	Lithuania	Luxembourg	Malta	Netherlands	Norway	Poland	Portugal	Slovakia	Slovenia	Spain	Sweden	UK
1	0,75	5	4	3	2	4	4	2	3	4	4	2	3	4	2	5	4	4	3	3	3	4	2		3	2	4	2	5
2	0,75	5	5	5	2	4	5	3	3	3	4	2	2	4	2	5	5	5	5	4	4	5	2		3	4	3	3	5
3	0,75	5	4	5	3	3	5	4	4	4	4	2	3	4	1	5	5	5	5	0	5	5	3		5	5	3	0	5
4	0,75	5	4	5	2	4	3	0	1	3	4	2	3	3	0	5	2	5	4	4	4	5	1		5	0	3	0	5
5	0,3	5	2	2	2	2	3	3	5	5	5	3	3	5	2	5	2	5	3	4	5	0	1		4	4	2	2	5
6	0,3	5	2	2	2	0	3	3	1	5	5	3	3	4	0	4	2	4	2	2	3	0	4		4	4	2	3	5
7	0,3	4	1	2	2	0	3	3	4	4	5	3	3	3	0	3	2	3	0	5	3	0	4		3	4	2	3	5
8	0,75	1	1	1	0	1	1	0	1	1	1	0	1	1	1	1	1	1	1	1	1	1	1		1	0	1	1	1
9	0,85	5	4	3	2	5	5	5	5	4	3	2	5	5	3	5	5	5	5	4	5	5	1		4	5	2	4	5
10	1	5	3	2	0	5	5	3	1	5	5	0	2	0	0	5	4	2	2	0	5	4	0		5	4	4	1	5
11	0,9	5	5	2	5	0	5	5	0	5	5	0	5	2	5	2	5	5	0	5	3	0	2		5	5	5	5	5
12	1	4	3	1	2	3	2	3	0	5	5	0	2	5	3	5	3	4	3	2	3	5	2		3	3	2	0	5
13	0,5	3	3	4	2	4	2	0	0	2	2	0	1	2	1	3	1	2	2	1	2	4	2		2	4	4	0	3
14	0,85	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0		0	0	0	0	1
15	0,85	1	0	0	0	0	1	0	0	0	1	0	1	0	1	1	1	1	0	0	0	1	0		0	1	1	0	1
16	0,75	5	5	4	0	0	1	0	4	0	5	1	0	2	0	5	0	5	0	0	4	5	0		1	0	1	0	5
17	0,5	5	5	3	0	5	5	3	3	3	5	0	3	5	3	5	3	5	1	5	2	5	2		1	4	2	3	5
18	0,5	5	5	4	0	5	5	3	3	3	5	1	3	5	3	5	1	5	4	3	4	5	2		4	4	2	0	5
19	1	5	4	4	0	5	3	3	2	5	5	1	5	2	0	5	5	5	2	1	3	5	1		0	1	4	4	5
20	1	5	3	3	0	1	3	2	2	5	5	2	0	3	0	4	5	4	3	3	0	5	0		0	0	4	0	5
21	1	5	1	2	0	5	4	3	1	4	5	2	1	5	0	5	5	4	4	1	2	5	0		4	3	2	0	5
22	1	5	5	0	0	5	3	0	3	3	3	1	0	1	0	0	4	2	0	5	5	0	0		0	0	3	1	5
23	1	5	0	4	0	0	4	3	1	1	4	0	1	1	0	4	0	4	4	0	4	4	2		4	0	1	3	4
24	0,85	5	2	4	0	5	5	0	4	2	2	3	0	3	0	5	5	5	3	0	0	5	0		5	0	5	4	0
25	0,75	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1		1	1	1	1	1
26.1	0,47	3	0	4	2	0	3	2	2	3	4	3	3	5	1	4	5	2	0	4	4	3	2		0	2	3	2	0
26.2	0,29	4	0	4	2	5	3	2	3	4	5	3	3	5	1	4	5	2	4	4	3	3	2		0	2	3	2	0
26.3	0,33	0	0	3	2	3	3	2	3	3	3	3	3	4	1	4	5	2	0	4	3	3	2		0	2	3	2	0
26.4	0,27	0	0	4	2	3	3	2	3	4	0	3	3	4	1	4	5	2	3	4	3	3	2		0	2	3	2	0
26.5	0,19	4	0	0	2	5	3	2	3	4	4	4	3	0	1	4	5	2	0	4	4	3	2		0	2	3	2	0
26.6	0,21	0	0	0	2	4	3	2	3	3	0	1	3	4	1	4	5	2	0	4	3	3	2		0	2	3	2	0
26.7	0,24	4	0	4	2	3	3	2	4	4	4	1	3	4	1	4	5	2	0	4	3	5	2		0	2	3	2	0
26.8	0,27	4	0	4	2	4	3	2	4	4	4	4	3	4	1	4	5	2	0	4	3	5	2		0	2	5	3	0
27.1	0,47	5	0	2	0	2	5	1	4	4	3	0	5	4	0	4	4	1	0	0	3	5	1		0	1	5	2	0
27.2	0,29	5	0	2	0	4	5	1	4	4	5	0	5	4	0	4	4	1	0	0	3	5	1		0	1	5	2	0
27.3	0,33	5	0	2	0	2	5	1	4	4	2	0	5	4	0	4	4	1	0	0	3	5	1		0	1	4	2	0
27.4	0,27	5	0	2	0	4	5	1	4	4	0	0	5	4	0	4	4	1	0	0	3	5	1		0	1	4	2	0
27.5	0,19	5	0	0	0	4	5	1	4	4	0	0	5	0	0	4	4	1	0	0	3	5	1		0	1	4	2	0
27.6	0,21	5	0	0	0	4	5	1	4	4	3	0	5	0	0	4	4	1	0	0	3	5	1		0	1	4	2	0
27.7	0,24	5	0	2	0	4	5	1	4	4	0	0	5	4	0	4	4	1	0	0	3	5	1		0	1	4	2	0
27.8	0,27	5	0	2	0	4	5	1	4	4	5	0	5	4	0	4	4	1	0	0	3	5	1		0	1	4	2	0
28	0,65	5	3	5	0	5	5	1	4	5	5	0	5	5	0	4	4	5	5	1	5	5	3		4	5	5	0	5
29	0,75	4	4	0	0	1	5	0	3	1	1	0	0	2	3	3	3	3	2	3	1	3	1		1	3	3	0	3
30	0,5	5	5	5	0	5	4	3	3	2	2	0	0	5	5	5	5	5	5	3	5	5	5		3	5	5	0	4
31	0,85	1	0	0	0	3	4	0	0	0	5	1	0	5	0	0	4	0	5	0	5	1		0	2	5	0	5
32	1	5	3	1	0	2	5	3	0	4	4	0	0	4	0	3	3	4	1	3	0	3	3		4	0	5	5	4
33	0,5	1	1	0	0	0	1	0	1	1	1	1	0	0	1	1	1	0	1	0	0	1	1		1	0	0	1	1
34	0,5	5	0	5	0	0	3	2	5	4	3	2	0	3	5	3	3	5	0	3	0	5	3		2	0	4	4	1
35	0,5	4	0	4	0	0	0	3	5	0	3	2	5	5	0	3	4	4	0	5	2	5	3		0	0	4	0	5
36	1	5	3	4	0	0	3	3	4	1	4	0	5	3	0	5	4	5	0	3	0	4	3		4	0	4	4	5
37	1	5	0	4	0	0	3	0	4	0	4	0	0	0	0	0	0	4	1	0	3	5	4		0	0	4	4	5
38	0,85	5	5	2	0	0	5	0	4	0	4	0	0	0	0	0	0	5	0	0	3	5	4		5	0	3	0	5
39	0,9	4	3	3	0	3	5	1	3	3	5	0	3	4	3	3	5	3	5	3	3	5	5		3	2	3	3	5
40	1	1	1	1	0	1	0	1	1	1	1	0	0	1	0	1	1	1	1	1	1	1	1		0	1	1	0	1
41	0,5	4	3	2	0	3	4	3	1	5	5	3	4	0	0	4	3	4	0	1	3	5	3		4	0	4	3	5
42	0,65	5	5	1	0	4	5	4	4	3	0	3	5	0	0	5	5	5	0	2	5	5	5		5	0	4	5	5
43	1	5	0	0	0	0	3	0	4	4	3	0	0	3	0	5	4	1	0	1	4	4	0		0	0	4	4	5
44	0,65	5	0	2	0	0	3	0	4	0	5	2	0	0	0	1	4	1	3	3	4	5	3		0	0	4	0	5
45	0,4	2	0	0	0	0	2	2	1	1	2	0	0	0	0	0	0	0	0	0	1	2	0		1	0	0	2	2
46	0,4	5	0	2	0	3	4	0	1	3	5	1	4	0	0	4	2	4	0	0	3	5	3		1	0	5	0	5
47	1	5	3	2	0	4	4	3	3	5	5	0	4	0	0	4	3	4	0	1	0	5	4		1	0	4	5	5
48	1	2	1	1	0	0	0	1	0	0	2	1	2	0	0	2	1	1	2	1	0	0	2		0	0	2	1	2
49	1	1	0	0	0	1	1	1	1	1	1	0	1	0	0	1	1	1	0	0	1	1	1		0	0	1	0	1
50	1	0	1	1	0	1	1	1	0	0	1	1	1	0	0	0	1	1	0	0	1	1	1		0	0	0	1	1
51	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0	1	1	1	1		1	1	1	1	0
52	1	5	0	4	0	0	0	0	2	3	4	0	0	0	0	0	5	4	0	0	0	5	0		4	0	4	5	1
53	1	4	0	4	0	0	5	3	2	4	5	0	0	0	3	5	4	4	0	0	5	5	0		4	0	4	5	1
54	0,85	5	0	3	0	3	5	4	2	3	3	0	5	0	4	3	4	5	2	0	5	3	5		3	0	5	0	5
55	1	5	2	2	0	2	3	3	3	2	3	0	3	2	0	2	3	3	3	2	2	3	3		3	3	3	1	2
Overall evaluation		5	3	3	2	4	4	2	3	4	4	2	3	4	3	5	4	4	3	3	3	5	2		4	2	3	3	5

Table 45 Matrix of values assigned to replies

Calculating High Level Criteria Values

One of the most important aspects of the analysis is to evaluate the stance of each country with respect to the High Level Criteria. This analysis is carried out once the overall values for the responses have been assigned, as described

in the previous section. Each High Level Criterion is made up of a series of indicators, which in turn are defined by the questions contained in the questionnaire.

The tables shown in the following annex summarise the calculations carried out during the evaluation of the High Level Criteria for each country, in this case Austria. The table shows the High Level Criteria, associated criteria weights, the calculation of which was described in the previous section, the Indicators associated with each criterion, the weights of the indicators (always 1), the value for each indicator and the final calculation for the value of the high level criteria.

The calculations for each of the values shown above are carried, as already explained, out as follows:

Indicator = ∑(Reply Value * Question Weight)*Indicator Weight
High Level Criteria = ∑Indicators * Criteria Weight

The final values calculated for all the countries allow us to compare how each EU/EEA Member State stands with regard to the importance attached to each of the High Level Criteria that have been analysed above, within the development of their e-procurement systems. As the maximum obtainable value for each high level criterion is different (see next table), in order to facilitate the readability of the table, the values shown in the table below are the values obtained for each criterion calculated as a percentage over the total obtainable value of the criteria.

High Level Criteria	Max value obtainable
System implementation C1	6,68
Usability C2	1,85
Accessibility C3	1,30
Availability C4	2,24
Reliability C5	1,06
Interoperability C6	0,87
Scalability C7	0,94
Security C8	0,67
Transparency C9	0,88
Confidentiality C10	1,14
Verification C11	22,25
Overall evaluation	5,00
MAX TOTAL	**39,89**

Table 46 Maximum values available for each Criteria

The table below shows the maximum values obtained per criteria in each of the EU/EEA Member States, represented as a percentage of the maximum value that is obtainable for that criteria.

Country	System implementation C1	Usability C2	Accessibility C3	Availability C4	Reliability C5	Interoperability C6	Scalability C7	Security C8	Transparency C9	Confidentiality C10	Verification C11
Austria	90,07%	92,63%	66,89%	82,87%	82,28%	92,90%	89,69%	90,00%	96,76%	90,00%	100,00%
Belgium	29,96%	63,16%	40,99%	25,44%	38,73%	56,58%	0,00%	60,00%	0,00%	39,39%	60,90%
Bulgaria	44,57%	56,00%	31,68%	60,65%	65,82%	49,23%	15,92%	50,00%	73,53%	60,00%	54,49%
Cyprus	17,98%	0,00%	4,35%	11,52%	7,09%	1,73%	6,19%	10,00%	6,47%	4,24%	15,62%
CzechRepublic	47,57%	74,95%	62,80%	21,64%	24,81%	42,55%	22,96%	70,00%	22,66%	56,36%	69,66%
Denmark	67,60%	92,63%	85,59%	68,17%	67,09%	82,67%	65,02%	70,00%	25,90%	95,76%	82,02%
Estonia	58,05%	43,79%	17,70%	51,50%	49,37%	29,33%	12,26%	60,00%	9,71%	53,64%	52,81%
Finland	35,21%	61,47%	43,17%	53,87%	76,46%	69,33%	65,40%	50,00%	52,95%	56,36%	43,03%
France	64,79%	61,47%	30,43%	30,73%	41,27%	43,24%	53,23%	80,00%	66,47%	72,12%	76,63%
Germany	72,85%	80,84%	66,46%	68,89%	51,65%	72,08%	74,52%	100,00%	67,05%	97,88%	83,71%
Greece	10,11%	6,32%	12,86%	31,82%	10,63%	18,84%	20,41%	30,00%	3,24%	12,42%	24,72%
Hungary	13,10%	67,37%	17,39%	35,45%	92,91%	42,35%	21,42%	80,00%	25,90%	40,61%	43,26%
Ireland	43,45%	86,74%	81,06%	88,22%	67,09%	20,50%	29,23%	10,00%	25,90%	56,36%	49,66%
Iceland	12,15%	37,89%	37,58%	27,57%	3,54%	12,90%	3,10%	10,00%	3,24%	49,39%	19,21%
Italy	70,79%	86,74%	52,80%	70,29%	92,91%	32,33%	67,36%	90,00%	25,90%	95,76%	78,20%
Latvia	59,74%	48,84%	54,97%	76,05%	83,54%	53,47%	71,59%	70,00%	96,76%	66,36%	75,28%
Lithuania	78,46%	69,05%	67,27%	76,95%	75,19%	79,23%	30,84%	70,00%	63,82%	77,27%	84,27%
Luxembourg	44,57%	31,58%	38,51%	7,27%	10,63%	43,44%	14,79%	40,00%	0,00%	19,70%	59,21%
Malta	29,21%	50,53%	44,10%	73,93%	52,91%	22,18%	34,75%	20,00%	12,95%	40,00%	32,36%
Netherlands	69,85%	55,58%	29,81%	31,58%	21,27%	59,75%	72,94%	20,00%	19,42%	36,36%	61,69%
Norway	59,74%	92,63%	84,47%	79,07%	80,00%	98,27%	85,49%	80,00%	100,00%	100,00%	85,39%
Poland	64,42%	31,16%	37,08%	55,14%	49,37%	81,24%	30,08%	80,00%	9,71%	22,12%	16,07%
Slovakia	46,63%	56,42%	54,60%	11,52%	10,63%	15,07%	6,19%	10,00%	50,27%	51,54%	39,33%
Slovenia	57,68%	31,58%	16,77%	39,98%	51,65%	54,36%	36,40%	20,00%	54,10%	51,21%	59,89%
Spain	67,98%	54,74%	84,47%	82,70%	76,46%	72,23%	74,50%	80,00%	76,76%	66,36%	67,30%
Sweden	12,73%	30,74%	8,70%	66,04%	69,37%	54,48%	50,17%	80,00%	80,58%	61,82%	48,99%
UK	86,89%	63,16%	63,35%	54,52%	64,56%	91,34%	83,79%	80,00%	13,53%	47,27%	88,20%

Table 47 Values obtained per criteria for each EU/EEA Member State

It shows the criteria listed from left to right, with the overall percentage score for each country with respect to that criterion.

Therefore, taking the first value for Austria as an example under the criteria of System Implementation C1, Austria achieves a value of 90.07% in the first criteria of the total score available for this criterion. In comparison, the same country only achieves 66.89% inaccessibility C3. In this way the strongest and weakest criteria values for each country can be clearly seen. In addition, the values obtained across the board for a single criterion are also obvious. In this case, we again see that in System Implementation, Austria scores the highest value and Greece achieves the lowest (90.07% versus 10.11%). The following table shows the maximum and minimum scores for each criterion that have been obtained by the different countries:

Criteria	Maximum	Minimum
System Implementation	Austria	Greece
Usability	Austria, Denmark, Norway	Cyprus (0.00%)
Accessibility	Denmark	Cyprus
Availability	Ireland	Luxembourg
Reliability	Italy / Hungary	Iceland
Interoperability	Norway	Cyprus
Scalability	Austria	Belgium (0.00%)
Security	Germany	Cyprus / Iceland / Ireland / Slovakia
Transparency	Norway	Belgium/Luxembourg (0.00%)
Confidentiality	Norway	Cyprus
Validation	Austria	Cyprus

Table 48 Maximum and minimum High Level Criteria Values

A pattern emerges of those countries which tend to score highest in the Maximum category and those which are most present in the Minimum category. These categories will be discussed in detail for each country in section 4.3. In some cases the information provided for some countries is not as well defined as in others, and therefore those countries obtaining the minimum value in the above table may be due more to a lack of information, and 0.00% has been noted in these cases. For this reason the overall rate for each country, as previously defined, is used to reflect a greater uniformity and actuality of the country situation from the different questionnaires received, based on a combination of additional expert knowledge and information provided. This process is explained further in the next section.

Calculating Country Values

Once the High Level Criteria Values per country have been calculated, it is possible to calculate the Country Values. For the calculation of the Country Values, it is necessary to take into account the Overall Rate assigned to each questionnaire. The Formula used to calculate the country value is: $\sum$**(High Level Criteria Values) * Overall Rate**

The results for the overall rate of the countries are shown in the figure below.
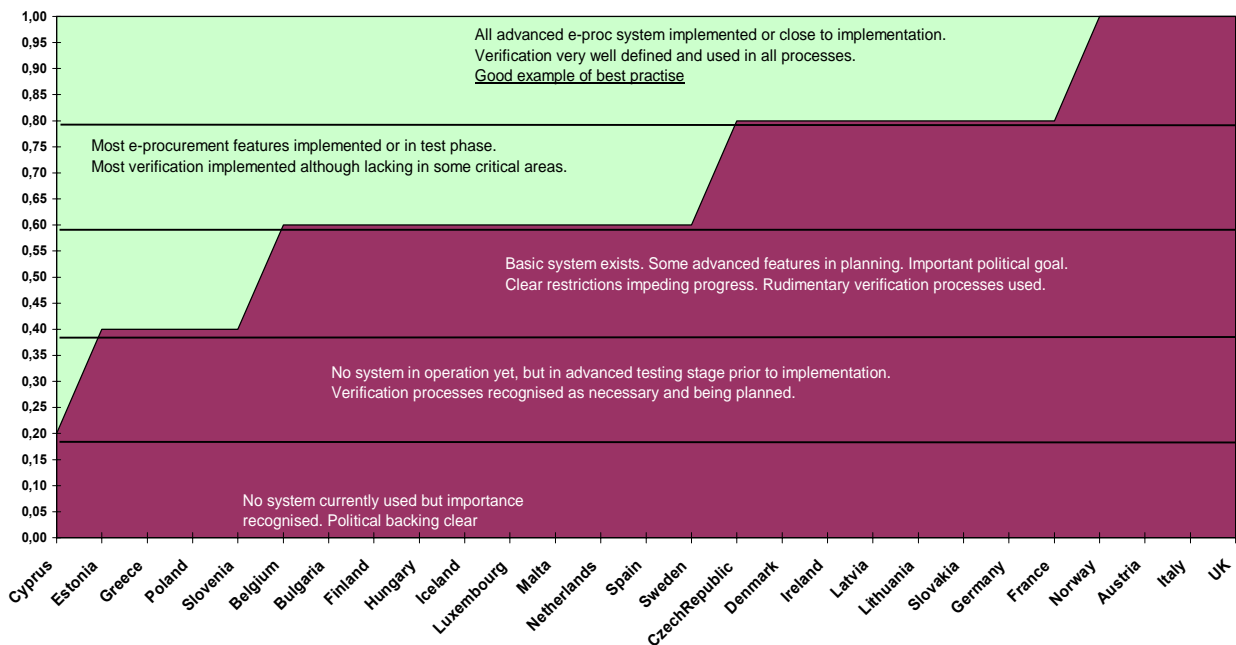

Figure 19 Overall evaluation scores for each EU/EEA country based on questionnaire as a whole

Eleven countries achieved an evaluation of good or very good (4 and 5 respectively). Only three countries received the maximum rating (Austria, UK and Italy), with eight receiving a rating of good, of which two (Germany and Lithuania) have been included in the Top 5 Ranking. The majority of countries fell within the middle category, categorised by having a basic e-procurement system, with some advanced features in at least the planning stage or early testing stage. In these cases e-procurement is a political goal, although there are clearly defined difficulties, whether financial, political or cultural/social which are impeding the process of implementation. Very few countries achieved an extremely poor to passable rating (0 to 2).

The following table shows for each country the sum of the high level criteria values for the country, the overall rate for the questionnaire, and the calculated country value.

Country	Sum High Level Criteria	Overall Country Rate	Country value
Austria	37,72	5,00	188,59
Belgium	19,58	3,00	58,74
Bulgaria	20,86	3,00	62,57
Cyprus	5,31	1,00	5,31
CzechRepubl	23,53	4,00	94,11
Denmark	30,95	4,00	123,81
Estonia	19,81	2,00	39,63
Finland	18,31	3,00	54,93
France	26,86	4,00	107,44
Germany	31,65	4,00	126,60
Greece	8,01	2,00	16,03
Hungary	15,55	3,00	57,20
Iceland	20,69	4,00	29,57
Ireland	7,73	3,00	82,76
Italy	29,82	5,00	149,09
Latvia	28,17	4,00	112,68
Lithuania	31,56	4,00	126,24
Luxembourg	18,52	3,00	55,57
Malta	14,10	3,00	42,30
Netherlands	22,66	3,00	67,99
Norway	32,64	5,00	163,22
Poland	12,56	2,00	25,12
Slovakia	15,28	4,00	61,11
Slovenia	21,43	2,00	42,87
Spain	27,59	3,00	82,78
Sweden	17,55	3,00	52,65
UK	32,11	5,00	160,53

Table 49 Calculations for High Level Criteria per country

The results present the rankings calculated with the results to date. The rankings reflect how close a country is to achieving a perfect 100% score for all the selected criteria; in this way, any weakness in a particular criteria will lower a country's ranking in the table, although they may compensate for this if they exhibit a clear advantage in another criteria. Those countries contained within the top 5 are therefore considered to be the best examples available in Europe based on the criteria analysed. The figure below shows graphically that only those countries that have broken the 60% barrier are included in the top 5 ranking.

In this way, Austria is shown to be the clear leader with 93.75%, some way ahead of the UK (Scotland) with 78.89%, followed closely by Italy (74.35%). The next two ranking positions, Germany and Lithuania, are again some way behind the top 3. The detailed explanations for the positions within the ranking table of each country may be found within the discussion of the individual criteria radial graphs.

The bar-graph which follows the ranking table shows clearly this "bunching" effect of the various % ranking scores, with countries falling naturally into one of five groupings (less than 25%, 26-35%, 36-50%, 51-70% and greater than 70%).

Rank position	Country	Criteria Total	% Rank
1	Austria	188,59	94,56
2	Norway	163,22	81,84
3	UK	160,53	80,49
4	Italy	149,09	74,75
5	Germany	126,60	63,48
6	Lithuania	126,24	63,30
7	Denmark	123,81	62,08
8	Latvia	112,68	56,50
9	France	107,44	53,87
10	CzechRepubl	94,11	47,19
11	Spain	82,78	41,51
12	Ireland	82,76	41,50
13	Netherlands	67,99	34,09
14	Bulgaria	62,57	31,37
15	Slovakia	61,11	30,64
16	Belgium	58,74	29,45
17	Hungary	57,20	28,68
18	Luxembourg	55,57	27,86
19	Finland	54,93	27,54
20	Sweden	52,65	26,40
21	Slovenia	42,87	21,49
22	Malta	42,30	21,21
23	Estonia	39,63	19,87
24	Iceland	29,57	14,83
25	Poland	25,12	12,60
26	Greece	16,03	8,04
27	Cyprus	5,31	2,66

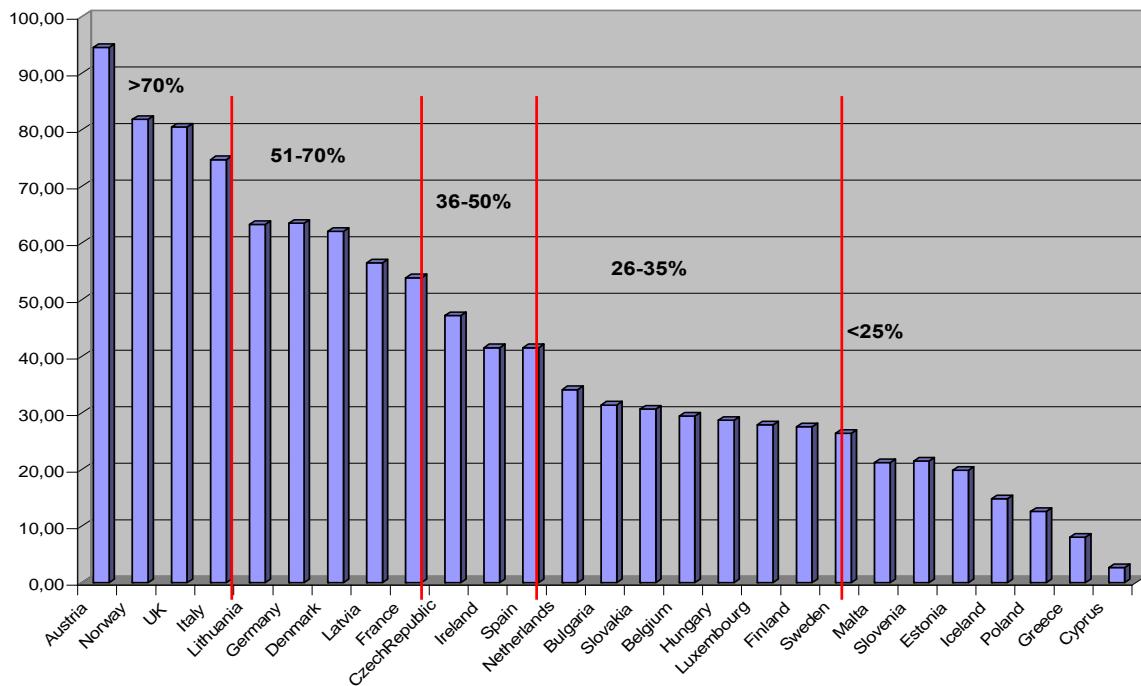**Table 50 Ranking values for EU/EEA Member States**

Figure 20 Percentile rank of each EU/EEA Member State

12.4 ANNEX IV: Results Tables for High Level Criteria Calculation in EU/EEA Member States

EU Member States:

Austria

High level criteria	Criteria Weight	Indicator Number	Indicator name	Related Questions	Indicator Weight	Overall weighted mean	Value
System implementation C1	1,00	$I_{1.}$	e-Procurement stages	Q12 – Q15	1	6,35	6,01
		$I_{2.}$	Difficulties	Q5 – Q7, Q54	1	8,45	
		$I_{3.}$	Solutions	Q54	1	4,25	
		$I_{4.}$	Financial	Q55	1	5,00	
Usability C2	0,47	$I_{5.}$	Usability validation	Q27	1	1,09	1,71
		$I_{6.}$	Technical usability	Q26, Q28	1	2,33	
Accessibility C3	0,29	$I_{7.}$	Accessibility validation	Q27	1	0,43	0,87
		$I_{8.}$	Accessibility facilities	Q31	1	0,25	
		$I_{9.}$	Technical accessibility	Q26, Q29, Q30	1	1,94	
Availability C4	0,33	$I_{10.}$	Availability validation	Q32, Q27	1	2,08	1,86
		$I_{11.}$	Availability management	Q26, Q33, Q34, Q35	1	1,63	
Reliability C5	0,27	$I_{12.}$	Reliability validation	Q36, Q27	1	1,75	0,87
		$I_{13.}$	Technical reliability	Q26	1	0,00	
Interoperability C6	0,19	$I_{14.}$	Interoperability validation	Q37	1	0,97	0,81
		$I_{15.}$	Technical interoperability	Q26, 27	1	0,34	
		$I_{16.}$	Level of integration	Q38	1	0,83	
		$I_{17.}$	Standardised technical interoperability	Q39, Q40, Q42	1	1,53	
		$I_{18.}$	Future development	Q41	1	0,39	
Scalability C7	0,21	$I_{19.}$	Scalability validation	Q43, Q27	1	1,23	0,84
		$I_{20.}$	Scalability management	Q26, Q46	1	0,43	
		$I_{21.}$	Technical scalability	Q44, Q45	1	0,87	
Security C8	0,27	$I_{22.}$	Security validation	Q47	1	1,35	0,61
		$I_{23.}$	Security planning	Q48	1	0,54	
		$I_{24.}$	Security standards	Q49	1	0,27	
		$I_{25.}$	Technical security	Q50, Q51	1	0,27	
Transparency C9	0,24	$I_{26.}$	Transparency validation	Q52, Q27	1	1,48	0,86
		$I_{27.}$	Transparency management	Q26	1	0,23	
Confidentiality C10	0,27	$I_{28.}$	Confidentiality validation	Q53, Q27	1	1,44	1,03
		$I_{29.}$	Technical confidentiality	Q26	1	0,29	
		$I_{30.}$	Development	Q17, Q18	1	1,35	
Verification C11	1	$I_{31.}$	Organisational aspects	Q8 – Q11	1	14,50	22,25
		$I_{32.}$	Strategy	Q19 – Q25	1	30,00	
Overall rate						5	

Belgium

High level criteria	Criteria Weight	Indicator Number	Indicator name	Related Questions	Indicator Weight	Overall weighted mean	Criteria average
System implementation C1	1	$I_1.$	e-Procurement stages	Q12 – Q15	1	4,50	2,00
		$I_2.$	Difficulties	Q5 – Q7, Q54	1	1,50	
		$I_3.$	Solutions	Q54	1	0,00	
		$I_4.$	Financial	Q55	1	2,00	
Usability C2	0,47	$I_5.$	Usability validation	Q27	1	0,00	1,17
		$I_6.$	Technical usability	Q26, Q28	1	2,33	
Accessibility C3	0,29	$I_7.$	Accessibility validation	Q27	1	0,00	0,53
		$I_8.$	Accessibility facilities	Q31	1	0,00	
		$I_9.$	Technical accessibility	Q26, Q29, Q30	1	1,60	
Availability C4	0,33	$I_{10}.$	Availability validation	Q32, Q27	1	0,98	0,57
		$I_{11}.$	Availability management	Q26, Q33, Q34, Q35	1	0,16	
Reliability C5	0,27	$I_{12}.$	Reliability validation	Q36, Q27	1	0,82	0,41
		$I_{13}.$	Technical reliability	Q26	1	0,00	
Interoperability C6	0,19	$I_{14}.$	Interoperability validation	Q37	1	0,00	0,49
		$I_{15}.$	Technical interoperability	Q26, 27	1	0,00	
		$I_{16}.$	Level of integration	Q38	1	0,83	
		$I_{17}.$	Standardised technical interoperability	Q39, Q40, Q42	1	1,35	
		$I_{18}.$	Future development	Q41	1	0,29	
Scalability C7	0,21	$I_{19}.$	Scalability validation	Q43, Q27	1	0,00	0,00
		$I_{20}.$	Scalability management	Q26, Q46	1	0,00	
		$I_{21}.$	Technical scalability	Q44, Q45	1	0,00	
Security C8	0,27	$I_{22}.$	Security validation	Q47	1	0,81	0,40
		$I_{23}.$	Security planning	Q48	1	0,27	
		$I_{24}.$	Security standards	Q49	1	0,00	
		$I_{25}.$	Technical security	Q50, Q51	1	0,54	
Transparency C9	0,24	$I_{26}.$	Transparency validation	Q52, Q27	1	0,00	0,00
		$I_{27}.$	Transparency management	Q26	1	0,00	
Confidentiality C10	0,27	$I_{28}.$	Confidentiality validation	Q53, Q27	1	0,00	0,45
		$I_{29}.$	Technical confidentiality	Q26	1	0,00	
		$I_{30}.$	Development	Q17, Q18	1	1,35	
Verification C11	1	$I_{31}.$	Organisational aspects	Q8 – Q11	1	11,65	13,55
		$I_{32}.$	Strategy	Q19 – Q25	1	15,45	
Overall rate						3	

Bulgaria

High level criteria	Criteria Weight	Indicator Number	Indicator name	Related Questions	Indicator Weight	Overall weighted mean	Criteria average
System implementation C1	1	$I_{1.}$	e-Procurement stages	Q12 – Q15	1	3,00	2,98
		$I_{2.}$	Difficulties	Q5 – Q7, Q54	1	4,35	
		$I_{3.}$	Solutions	Q54	1	2,55	
		$I_{4.}$	Financial	Q55	1	2,00	
Usability C2	0,47	$I_{5.}$	Usability validation	Q27	1	0,44	1,03
		$I_{6.}$	Technical usability	Q26, Q28	1	1,63	
Accessibility C3	0,29	$I_{7.}$	Accessibility validation	Q27	1	0,17	0,41
		$I_{8.}$	Accessibility facilities	Q31	1	0,00	
		$I_{9.}$	Technical accessibility	Q26, Q29, Q30	1	1,07	
Availability C4	0,33	$I_{10.}$	Availability validation	Q32, Q27	1	0,93	1,36
		$I_{11.}$	Availability management	Q26, Q33, Q34, Q35	1	1,78	
Reliability C5	0,27	$I_{12.}$	Reliability validation	Q36, Q27	1	1,10	0,70
		$I_{13.}$	Technical reliability	Q26	1	0,30	
Interoperability C6	0,19	$I_{14.}$	Interoperability validation	Q37	1	0,78	0,43
		$I_{15.}$	Technical interoperability	Q26, 27	1	0,00	
		$I_{16.}$	Level of integration	Q38	1	0,33	
		$I_{17.}$	Standardised technical interoperability	Q39, Q40, Q42	1	0,85	
		$I_{18.}$	Future development	Q41	1	0,19	
Scalability C7	0,21	$I_{19.}$	Scalability validation	Q43, Q27	1	0,00	0,15
		$I_{20.}$	Scalability management	Q26, Q46	1	0,17	
		$I_{21.}$	Technical scalability	Q44, Q45	1	0,28	
Security C8	0,27	$I_{22.}$	Security validation	Q47	1	0,54	0,34
		$I_{23.}$	Security planning	Q48	1	0,27	
		$I_{24.}$	Security standards	Q49	1	0,00	
		$I_{25.}$	Technical security	Q50, Q51	1	0,54	
Transparency C9	0,24	$I_{26.}$	Transparency validation	Q52, Q27	1	1,07	0,65
		$I_{27.}$	Transparency management	Q26	1	0,23	
Confidentiality C10	0,27	$I_{28.}$	Confidentiality validation	Q53, Q27	1	1,22	0,68
		$I_{29.}$	Technical confidentiality	Q26	1	0,29	
		$I_{30.}$	Development	Q17, Q18	1	0,54	
Verification C11	1	$I_{31.}$	Organisational aspects	Q8 – Q11	1	7,10	12,13
		$I_{32.}$	Strategy	Q19 – Q25	1	17,15	
Overall rate						3	

Cyprus

High level criteria	Criteria Weight	Indicator Number	Indicator name	Related Questions	Indicator Weight	Overall weighted mean	Criteria average
System implementation C1	1	$I_{1.}$	e-Procurement stages	Q12 – Q15	1	3,00	1,20
		$I_{2.}$	Difficulties	Q5 – Q7, Q54	1	1,80	
		$I_{3.}$	Solutions	Q54	1	0,00	
		$I_{4.}$	Financial	Q55	1	0,00	
Usability C2	0,47	$I_{5.}$	Usability validation	Q27	1	0,00	0,00
		$I_{6.}$	Technical usability	Q26, Q28	1	0,00	
Accessibility C3	0,29	$I_{7.}$	Accessibility validation	Q27	1	0,00	0,06
		$I_{8.}$	Accessibility facilities	Q31	1	0,00	
		$I_{9.}$	Technical accessibility	Q26, Q29, Q30	1	0,17	
Availability C4	0,33	$I_{10.}$	Availability validation	Q32, Q27	1	0,30	0,26
		$I_{11.}$	Availability management	Q26, Q33, Q34, Q35	1	0,21	
Reliability C5	0,27	$I_{12.}$	Reliability validation	Q36, Q27	1	0,00	0,08
		$I_{13.}$	Technical reliability	Q26	1	0,15	
Interoperability C6	0,19	$I_{14.}$	Interoperability validation	Q37	1	0,00	0,02
		$I_{15.}$	Technical interoperability	Q26, 27	1	0,08	
		$I_{16.}$	Level of integration	Q38	1	0,00	
		$I_{17.}$	Standardised technical interoperability	Q39, Q40, Q42	1	0,00	
		$I_{18.}$	Future development	Q41	1	0,00	
Scalability C7	0,21	$I_{19.}$	Scalability validation	Q43, Q27	1	0,08	0,06
		$I_{20.}$	Scalability management	Q26, Q46	1	0,09	
		$I_{21.}$	Technical scalability	Q44, Q45	1	0,00	
Security C8	0,27	$I_{22.}$	Security validation	Q47	1	0,00	0,07
		$I_{23.}$	Security planning	Q48	1	0,00	
		$I_{24.}$	Security standards	Q49	1	0,00	
		$I_{25.}$	Technical security	Q50, Q51	1	0,27	
Transparency C9	0,24	$I_{26.}$	Transparency validation	Q52, Q27	1	0,00	0,06
		$I_{27.}$	Transparency management	Q26	1	0,11	
Confidentiality C10	0,27	$I_{28.}$	Confidentiality validation	Q53, Q27	1	0,00	0,05
		$I_{29.}$	Technical confidentiality	Q26	1	0,14	
		$I_{30.}$	Development	Q17, Q18	1	0,00	
Verification C11	1	$I_{31.}$	Organisational aspects	Q8 – Q11	1	6,20	3,48
		$I_{32.}$	Strategy	Q19 – Q25	1	0,75	
Overall rate						1	

Czech Republic

High level criteria	Criteria Weight	Indicator Number	Indicator name	Related Questions	Indicator Weight	Overall weighted mean	Criteria average
System implementation C1	1	$I_{1.}$	e-Procurement stages	Q12 – Q15	1	5,00	3,18
		$I_{2.}$	Difficulties	Q5 – Q7, Q54	1	3,15	
		$I_{3.}$	Solutions	Q54	1	2,55	
		$I_{4.}$	Financial	Q55	1	2,00	
Usability C2	0,47	$I_{5.}$	Usability validation	Q27	1	0,44	1,38
		$I_{6.}$	Technical usability	Q26, Q28	1	2,33	
Accessibility C3	0,29	$I_{7.}$	Accessibility validation	Q27	1	0,34	0,82
		$I_{8.}$	Accessibility facilities	Q31	1	0,74	
		$I_{9.}$	Technical accessibility	Q26, Q29, Q30	1	1,37	
Availability C4	0,33	$I_{10.}$	Availability validation	Q32, Q27	1	0,65	0,48
		$I_{11.}$	Availability management	Q26, Q33, Q34, Q35	1	0,32	
Reliability C5	0,27	$I_{12.}$	Reliability validation	Q36, Q27	1	0,30	0,26
		$I_{13.}$	Technical reliability	Q26	1	0,23	
Interoperability C6	0,19	$I_{14.}$	Interoperability validation	Q37	1	0,00	0,37
		$I_{15.}$	Technical interoperability	Q26, 27	1	0,34	
		$I_{16.}$	Level of integration	Q38	1	0,00	
		$I_{17.}$	Standardised technical interoperability	Q39, Q40, Q42	1	1,23	
		$I_{18.}$	Future development	Q41	1	0,29	
Scalability C7	0,21	$I_{19.}$	Scalability validation	Q43, Q27	1	0,21	0,22
		$I_{20.}$	Scalability management	Q26, Q46	1	0,44	
		$I_{21.}$	Technical scalability	Q44, Q45	1	0,00	
Security C8	0,27	$I_{22.}$	Security validation	Q47	1	1,08	0,47
		$I_{23.}$	Security planning	Q48	1	0,00	
		$I_{24.}$	Security standards	Q49	1	0,27	
		$I_{25.}$	Technical security	Q50, Q51	1	0,54	
Transparency C9	0,24	$I_{26.}$	Transparency validation	Q52, Q27	1	0,23	0,20
		$I_{27.}$	Transparency management	Q26	1	0,17	
Confidentiality C10	0,27	$I_{28.}$	Confidentiality validation	Q53, Q27	1	0,29	0,64
		$I_{29.}$	Technical confidentiality	Q26	1	0,29	
		$I_{30.}$	Development	Q17, Q18	1	1,35	
Verification C11	1	$I_{31.}$	Organisational aspects	Q8 – Q11	1	10,00	15,50
		$I_{32.}$	Strategy	Q19 – Q25	1	21,00	
Overall rate						4	

Denmark

High level criteria	Criteria Weight	Indicator Number	Indicator name	Related Questions	Indicator Weight	Overall weighted mean	Criteria average
System implementation C1	1	$I_{1.}$	e-Procurement stages	Q12 – Q15	1	3,85	4,51
		$I_{2.}$	Difficulties	Q5 – Q7, Q54	1	6,95	
		$I_{3.}$	Solutions	Q54	1	4,25	
		$I_{4.}$	Financial	Q55	1	3,00	
Usability C2	0,47	$I_{5.}$	Usability validation	Q27	1	1,09	1,71
		$I_{6.}$	Technical usability	Q26, Q28	1	2,33	
Accessibility C3	0,29	$I_{7.}$	Accessibility validation	Q27	1	0,43	1,12
		$I_{8.}$	Accessibility facilities	Q31	1	0,99	
		$I_{9.}$	Technical accessibility	Q26, Q29, Q30	1	1,93	
Availability C4	0,33	$I_{10.}$	Availability validation	Q32, Q27	1	2,08	1,53
		$I_{11.}$	Availability management	Q26, Q33, Q34, Q35	1	0,97	
Reliability C5	0,27	$I_{12.}$	Reliability validation	Q36, Q27	1	1,20	0,71
		$I_{13.}$	Technical reliability	Q26	1	0,23	
Interoperability C6	0,19	$I_{14.}$	Interoperability validation	Q37	1	0,58	0,72
		$I_{15.}$	Technical interoperability	Q26, 27	1	0,30	
		$I_{16.}$	Level of integration	Q38	1	0,83	
		$I_{17.}$	Standardised technical interoperability	Q39, Q40, Q42	1	1,51	
		$I_{18.}$	Future development	Q41	1	0,39	
Scalability C7	0,21	$I_{19.}$	Scalability validation	Q43, Q27	1	0,77	0,61
		$I_{20.}$	Scalability management	Q26, Q46	1	0,48	
		$I_{21.}$	Technical scalability	Q44, Q45	1	0,59	
Security C8	0,27	$I_{22.}$	Security validation	Q47	1	1,08	0,47
		$I_{23.}$	Security planning	Q48	1	0,00	
		$I_{24.}$	Security standards	Q49	1	0,27	
		$I_{25.}$	Technical security	Q50, Q51	1	0,54	
Transparency C9	0,24	$I_{26.}$	Transparency validation	Q52, Q27	1	0,29	0,23
		$I_{27.}$	Transparency management	Q26	1	0,17	
Confidentiality C10	0,27	$I_{28.}$	Confidentiality validation	Q53, Q27	1	1,71	1,09
		$I_{29.}$	Technical confidentiality	Q26	1	0,22	
		$I_{30.}$	Development	Q17, Q18	1	1,35	
Verification C11	1	$I_{31.}$	Organisational aspects	Q8 – Q11	1	14,50	18,25
		$I_{32.}$	Strategy	Q19 – Q25	1	22,00	
Overall rate						4	

Estonia

High level criteria	Criteria Weight	Indicator Number	Indicator name	Related Questions	Indicator Weight	Overall weighted mean	Criteria average
System implementation C1	1	$I_{1.}$	e-Procurement stages	Q12 – Q15	1	3,00	3,88
		$I_{2.}$	Difficulties	Q5 – Q7, Q54	1	6,10	
		$I_{3.}$	Solutions	Q54	1	3,40	
		$I_{4.}$	Financial	Q55	1	3,00	
Usability C2	0,47	$I_{5.}$	Usability validation	Q27	1	0,22	0,81
		$I_{6.}$	Technical usability	Q26, Q28	1	1,40	
Accessibility C3	0,29	$I_{7.}$	Accessibility validation	Q27	1	0,09	0,23
		$I_{8.}$	Accessibility facilities	Q31	1	0,00	
		$I_{9.}$	Technical accessibility	Q26, Q29, Q30	1	0,61	
Availability C4	0,33	$I_{10.}$	Availability validation	Q32, Q27	1	1,28	1,15
		$I_{11.}$	Availability management	Q26, Q33, Q34, Q35	1	1,03	
Reliability C5	0,27	$I_{12.}$	Reliability validation	Q36, Q27	1	0,90	0,52
		$I_{13.}$	Technical reliability	Q26	1	0,15	
Interoperability C6	0,19	$I_{14.}$	Interoperability validation	Q37	1	0,00	0,26
		$I_{15.}$	Technical interoperability	Q26, 27	1	0,11	
		$I_{16.}$	Level of integration	Q38	1	0,00	
		$I_{17.}$	Standardised technical interoperability	Q39, Q40, Q42	1	0,88	
		$I_{18.}$	Future development	Q41	1	0,29	
Scalability C7	0,21	$I_{19.}$	Scalability validation	Q43, Q27	1	0,08	0,12
		$I_{20.}$	Scalability management	Q26, Q46	1	0,09	
		$I_{21.}$	Technical scalability	Q44, Q45	1	0,17	
Security C8	0,27	$I_{22.}$	Security validation	Q47	1	0,81	0,40
		$I_{23.}$	Security planning	Q48	1	0,27	
		$I_{24.}$	Security standards	Q49	1	0,27	
		$I_{25.}$	Technical security	Q50, Q51	1	0,27	
Transparency C9	0,24	$I_{26.}$	Transparency validation	Q52, Q27	1	0,06	0,09
		$I_{27.}$	Transparency management	Q26	1	0,11	
Confidentiality C10	0,27	$I_{28.}$	Confidentiality validation	Q53, Q27	1	0,88	0,61
		$I_{29.}$	Technical confidentiality	Q26	1	0,14	
		$I_{30.}$	Development	Q17, Q18	1	0,81	
Verification C11	1	$I_{31.}$	Organisational aspects	Q8 – Q11	1	11,75	11,75
		$I_{32.}$	Strategy	Q19 – Q25	1	11,75	
Overall rate						2	

Finland

High level criteria	Criteria Weight	Indicator Number	Indicator name	Related Questions	Indicator Weight	Overall weighted mean	Criteria average
System implementation C1	1	$I_{1.}$	e-Procurement stages	Q12 – Q15	1	0,00	2,35
		$I_{2.}$	Difficulties	Q5 – Q7, Q54	1	4,70	
		$I_{3.}$	Solutions	Q54	1	1,70	
		$I_{4.}$	Financial	Q55	1	3,00	
Usability C2	0,47	$I_{5.}$	Usability validation	Q27	1	0,87	1,14
		$I_{6.}$	Technical usability	Q26, Q28	1	1,40	
Accessibility C3	0,29	$I_{7.}$	Accessibility validation	Q27	1	0,34	0,56
		$I_{8.}$	Accessibility facilities	Q31	1	0,00	
		$I_{9.}$	Technical accessibility	Q26, Q29, Q30	1	1,35	
Availability C4	0,33	$I_{10.}$	Availability validation	Q32, Q27	1	0,30	1,21
		$I_{11.}$	Availability management	Q26, Q33, Q34, Q35	1	2,11	
Reliability C5	0,27	$I_{12.}$	Reliability validation	Q36, Q27	1	1,40	0,81
		$I_{13.}$	Technical reliability	Q26	1	0,23	
Interoperability C6	0,19	$I_{14.}$	Interoperability validation	Q37	1	0,78	0,61
		$I_{15.}$	Technical interoperability	Q26, 27	1	0,26	
		$I_{16.}$	Level of integration	Q38	1	0,66	
		$I_{17.}$	Standardised technical interoperability	Q39, Q40, Q42	1	1,23	
		$I_{18.}$	Future development	Q41	1	0,10	
Scalability C7	0,21	$I_{19.}$	Scalability validation	Q43, Q27	1	0,98	0,61
		$I_{20.}$	Scalability management	Q26, Q46	1	0,22	
		$I_{21.}$	Technical scalability	Q44, Q45	1	0,64	
Security C8	0,27	$I_{22.}$	Security validation	Q47	1	0,81	0,34
		$I_{23.}$	Security planning	Q48	1	0,00	
		$I_{24.}$	Security standards	Q49	1	0,27	
		$I_{25.}$	Technical security	Q50, Q51	1	0,27	
Transparency C9	0,24	$I_{26.}$	Transparency validation	Q52, Q27	1	0,71	0,47
		$I_{27.}$	Transparency management	Q26	1	0,23	
Confidentiality C10	0,27	$I_{28.}$	Confidentiality validation	Q53, Q27	1	0,83	0,64
		$I_{29.}$	Technical confidentiality	Q26	1	0,29	
		$I_{30.}$	Development	Q17, Q18	1	0,81	
Verification C11	1	$I_{31.}$	Organisational aspects	Q8 – Q11	1	6,00	9,58
		$I_{32.}$	Strategy	Q19 – Q25	1	13,15	
Overall rate						3	

France

High level criteria	Criteria Weight	Indicator Number	Indicator name	Related Questions	Indicator Weight	Overall weighted mean	Criteria average
System implementation C1	1	I_1.	e-Procurement stages	Q12 – Q15	1	6,00	4,33
		I_2.	Difficulties	Q5 – Q7, Q54	1	6,75	
		I_3.	Solutions	Q54	1	2,55	
		I_4.	Financial	Q55	1	2,00	
Usability C2	0,47	I_5.	Usability validation	Q27	1	0,87	1,14
		I_6.	Technical usability	Q26, Q28	1	1,40	
Accessibility C3	0,29	I_7.	Accessibility validation	Q27	1	0,34	0,40
		I_8.	Accessibility facilities	Q31	1	0,00	
		I_9.	Technical accessibility	Q26, Q29, Q30	1	0,85	
Availability C4	0,33	I_{10}.	Availability validation	Q32, Q27	1	0,24	0,69
		I_{11}.	Availability management	Q26, Q33, Q34, Q35	1	1,13	
Reliability C5	0,27	I_{12}.	Reliability validation	Q36, Q27	1	0,58	0,44
		I_{13}.	Technical reliability	Q26	1	0,30	
Interoperability C6	0,19	I_{14}.	Interoperability validation	Q37	1	0,00	0,38
		I_{15}.	Technical interoperability	Q26, 27	1	0,30	
		I_{16}.	Level of integration	Q38	1	0,00	
		I_{17}.	Standardised technical interoperability	Q39, Q40, Q42	1	1,10	
		I_{18}.	Future development	Q41	1	0,49	
Scalability C7	0,21	I_{19}.	Scalability validation	Q43, Q27	1	1,02	0,50
		I_{20}.	Scalability management	Q26, Q46	1	0,39	
		I_{21}.	Technical scalability	Q44, Q45	1	0,09	
Security C8	0,27	I_{22}.	Security validation	Q47	1	1,35	0,54
		I_{23}.	Security planning	Q48	1	0,00	
		I_{24}.	Security standards	Q49	1	0,27	
		I_{25}.	Technical security	Q50, Q51	1	0,54	
Transparency C9	0,24	I_{26}.	Transparency validation	Q52, Q27	1	0,95	0,59
		I_{27}.	Transparency management	Q26	1	0,23	
Confidentiality C10	0,27	I_{28}.	Confidentiality validation	Q53, Q27	1	1,37	0,82
		I_{29}.	Technical confidentiality	Q26	1	0,29	
		I_{30}.	Development	Q17, Q18	1	0,81	
Verification C11	1	I_{31}.	Organisational aspects	Q8 – Q11	1	13,65	17,05
		I_{32}.	Strategy	Q19 – Q25	1	20,45	
Overall rate						4	

Germany

High level criteria	Criteria Weight	Indicator Number	Indicator name	Related Questions	Indicator Weight	Overall weighted mean	Criteria average
System implementation C1	1	$I_{1.}$	e-Procurement stages	Q12 – Q15	1	6,85	4,86
		$I_{2.}$	Difficulties	Q5 – Q7, Q54	1	7,05	
		$I_{3.}$	Solutions	Q54	1	2,55	
		$I_{4.}$	Financial	Q55	1	3,00	
Usability C2	0,47	$I_{5.}$	Usability validation	Q27	1	0,65	1,49
		$I_{6.}$	Technical usability	Q26, Q28	1	2,33	
Accessibility C3	0,29	$I_{7.}$	Accessibility validation	Q27	1	0,43	0,87
		$I_{8.}$	Accessibility facilities	Q31	1	1,24	
		$I_{9.}$	Technical accessibility	Q26, Q29, Q30	1	0,94	
Availability C4	0,33	$I_{10.}$	Availability validation	Q32, Q27	1	1,63	1,54
		$I_{11.}$	Availability management	Q26, Q33, Q34, Q35	1	1,46	
Reliability C5	0,27	$I_{12.}$	Reliability validation	Q36, Q27	1	1,10	0,55
		$I_{13.}$	Technical reliability	Q26	1	0,00	
Interoperability C6	0,19	$I_{14.}$	Interoperability validation	Q37	1	0,78	0,63
		$I_{15.}$	Technical interoperability	Q26, 27	1	0,15	
		$I_{16.}$	Level of integration	Q38	1	0,66	
		$I_{17.}$	Standardised technical interoperability	Q39, Q40, Q42	1	1,07	
		$I_{18.}$	Future development	Q41	1	0,49	
Scalability C7	0,21	$I_{19.}$	Scalability validation	Q43, Q27	1	0,81	0,70
		$I_{20.}$	Scalability management	Q26, Q46	1	0,43	
		$I_{21.}$	Technical scalability	Q44, Q45	1	0,87	
Security C8	0,27	$I_{22.}$	Security validation	Q47	1	1,35	0,67
		$I_{23.}$	Security planning	Q48	1	0,54	
		$I_{24.}$	Security standards	Q49	1	0,27	
		$I_{25.}$	Technical security	Q50, Q51	1	0,54	
Transparency C9	0,24	$I_{26.}$	Transparency validation	Q52, Q27	1	0,96	0,59
		$I_{27.}$	Transparency management	Q26	1	0,23	
Confidentiality C10	0,27	$I_{28.}$	Confidentiality validation	Q53, Q27	1	1,71	1,11
		$I_{29.}$	Technical confidentiality	Q26	1	0,29	
		$I_{30.}$	Development	Q17, Q18	1	1,35	
Verification C11	1	$I_{31.}$	Organisational aspects	Q8 – Q11	1	12,80	18,63
		$I_{32.}$	Strategy	Q19 – Q25	1	24,45	
Overall rate						4	

Greece

High level criteria	Criteria Weight	Indicator Number	Indicator name	Related Questions	Indicator Weight	Overall weighted mean	Criteria average
System implementation C1	1	$I_{1.}$	e-Procurement stages	Q12 – Q15	1	0,00	0,68
		$I_{2.}$	Difficulties	Q5 – Q7, Q54	1	2,70	
		$I_{3.}$	Solutions	Q54	1	0,00	
		$I_{4.}$	Financial	Q55	1	0,00	
Usability C2	0,47	$I_{5.}$	Usability validation	Q27	1	0,00	0,12
		$I_{6.}$	Technical usability	Q26, Q28	1	0,23	
Accessibility C3	0,29	$I_{7.}$	Accessibility validation	Q27	1	0,00	0,17
		$I_{8.}$	Accessibility facilities	Q31	1	0,25	
		$I_{9.}$	Technical accessibility	Q26, Q29, Q30	1	0,26	
Availability C4	0,33	$I_{10.}$	Availability validation	Q32, Q27	1	0,46	0,71
		$I_{11.}$	Availability management	Q26, Q33, Q34, Q35	1	0,97	
Reliability C5	0,27	$I_{12.}$	Reliability validation	Q36, Q27	1	0,00	0,11
		$I_{13.}$	Technical reliability	Q26	1	0,23	
Interoperability C6	0,19	$I_{14.}$	Interoperability validation	Q37	1	0,00	0,16
		$I_{15.}$	Technical interoperability	Q26, 27	1	0,15	
		$I_{16.}$	Level of integration	Q38	1	0,00	
		$I_{17.}$	Standardised technical interoperability	Q39, Q40, Q42	1	0,38	
		$I_{18.}$	Future development	Q41	1	0,29	
Scalability C7	0,21	$I_{19.}$	Scalability validation	Q43, Q27	1	0,17	0,19
		$I_{20.}$	Scalability management	Q26, Q46	1	0,13	
		$I_{21.}$	Technical scalability	Q44, Q45	1	0,28	
Security C8	0,27	$I_{22.}$	Security validation	Q47	1	0,00	0,20
		$I_{23.}$	Security planning	Q48	1	0,27	
		$I_{24.}$	Security standards	Q49	1	0,00	
		$I_{25.}$	Technical security	Q50, Q51	1	0,54	
Transparency C9	0,24	$I_{26.}$	Transparency validation	Q52, Q27	1	0,00	0,03
		$I_{27.}$	Transparency management	Q26	1	0,06	
Confidentiality C10	0,27	$I_{28.}$	Confidentiality validation	Q53, Q27	1	0,00	0,14
		$I_{29.}$	Technical confidentiality	Q26	1	0,29	
		$I_{30.}$	Development	Q17, Q18	1	0,13	
Verification C11	1	$I_{31.}$	Organisational aspects	Q8 – Q11	1	1,70	5,50
		$I_{32.}$	Strategy	Q19 – Q25	1	9,30	
Overall rate						2	
Average						0,63	0,73

Hungary

High level criteria	Criteria Weight	Indicator Number	Indicator name	Related Questions	Indicator Weight	Overall weighted mean	Criteria average
System implementation C1	1	I_1.	e-Procurement stages	Q12 – Q15	1	3,35	4,39
		I_2.	Difficulties	Q5 – Q7, Q54	1	6,95	
		I_3.	Solutions	Q54	1	4,25	
		I_4.	Financial	Q55	1	3,00	
Usability C2	0,47	I_5.	Usability validation	Q27	1	1,09	1,24
		I_6.	Technical usability	Q26, Q28	1	1,40	
Accessibility C3	0,29	I_7.	Accessibility validation	Q27	1	0,43	0,23
		I_8.	Accessibility facilities	Q31	1	0,00	
		I_9.	Technical accessibility	Q26, Q29, Q30	1	0,26	
Availability C4	0,33	I_{10}.	Availability validation	Q32, Q27	1	0,46	0,79
		I_{11}.	Availability management	Q26, Q33, Q34, Q35	1	1,13	
Reliability C5	0,27	I_{12}.	Reliability validation	Q36, Q27	1	1,75	0,99
		I_{13}.	Technical reliability	Q26	1	0,23	
Interoperability C6	0,19	I_{14}.	Interoperability validation	Q37	1	0,00	0,37
		I_{15}.	Technical interoperability	Q26, 27	1	0,30	
		I_{16}.	Level of integration	Q38	1	0,00	
		I_{17}.	Standardised technical interoperability	Q39, Q40, Q42	1	1,16	
		I_{18}.	Future development	Q41	1	0,39	
Scalability C7	0,21	I_{19}.	Scalability validation	Q43, Q27	1	0,12	0,20
		I_{20}.	Scalability management	Q26, Q46	1	0,48	
		I_{21}.	Technical scalability	Q44, Q45	1	0,00	
Security C8	0,27	I_{22}.	Security validation	Q47	1	1,08	0,54
		I_{23}.	Security planning	Q48	1	0,54	
		I_{24}.	Security standards	Q49	1	0,27	
		I_{25}.	Technical security	Q50, Q51	1	0,27	
Transparency C9	0,24	I_{26}.	Transparency validation	Q52, Q27	1	0,29	0,23
		I_{27}.	Transparency management	Q26	1	0,17	
Confidentiality C10	0,27	I_{28}.	Confidentiality validation	Q53, Q27	1	0,36	0,46
		I_{29}.	Technical confidentiality	Q26	1	0,22	
		I_{30}.	Development	Q17, Q18	1	0,81	
Verification C11	1	I_{31}.	Organisational aspects	Q8 – Q11	1	11,50	9,63
		I_{32}.	Strategy	Q19 – Q25	1	7,75	
Overall rate						3	

Ireland

High level criteria	Criteria Weight	Indicator Number	Indicator name	Related Questions	Indicator Weight	Overall weighted mean	Criteria average
System implementation C1	1	I_1	e-Procurement stages	Q12 – Q15	1	6,00	2,90
		I_2	Difficulties	Q5 – Q7, Q54	1	3,60	
		I_3	Solutions	Q54	1	0,00	
		I_4	Financial	Q55	1	2,00	
Usability C2	0,47	I_5	Usability validation	Q27	1	0,87	1,60
		I_6	Technical usability	Q26, Q28	1	2,33	
Accessibility C3	0,29	I_7	Accessibility validation	Q27	1	0,34	1,06
		I_8	Accessibility facilities	Q31	1	1,24	
		I_9	Technical accessibility	Q26, Q29, Q30	1	1,59	
Availability C4	0,33	I_{10}	Availability validation	Q32, Q27	1	2,06	1,98
		I_{11}	Availability management	Q26, Q33, Q34, Q35	1	1,89	
Reliability C5	0,27	I_{12}	Reliability validation	Q36, Q27	1	1,12	0,71
		I_{13}	Technical reliability	Q26	1	0,30	
Interoperability C6	0,19	I_{14}	Interoperability validation	Q37	1	0,00	0,18
		I_{15}	Technical interoperability	Q26, 27	1	0,00	
		I_{16}	Level of integration	Q38	1	0,00	
		I_{17}	Standardised technical interoperability	Q39, Q40, Q42	1	0,89	
		I_{18}	Future development	Q41	1	0,00	
Scalability C7	0,21	I_{19}	Scalability validation	Q43, Q27	1	0,64	0,27
		I_{20}	Scalability management	Q26, Q46	1	0,18	
		I_{21}	Technical scalability	Q44, Q45	1	0,00	
Security C8	0,27	I_{22}	Security validation	Q47	1	0,00	0,07
		I_{23}	Security planning	Q48	1	0,00	
		I_{24}	Security standards	Q49	1	0,00	
		I_{25}	Technical security	Q50, Q51	1	0,27	
Transparency C9	0,24	I_{26}	Transparency validation	Q52, Q27	1	0,23	0,23
		I_{27}	Transparency management	Q26	1	0,23	
Confidentiality C10	0,27	I_{28}	Confidentiality validation	Q53, Q27	1	0,29	0,64
		I_{29}	Technical confidentiality	Q26	1	0,29	
		I_{30}	Development	Q17, Q18	1	1,35	
Verification C11	1	I_{31}	Organisational aspects	Q8 – Q11	1	6,80	11,05
		I_{32}	Strategy	Q19 – Q25	1	15,30	
Overall rate						4	

Italy

High level criteria	Criteria Weight	Indicator Number	Indicator name	Related Questions	Indicator Weight	Overall weighted mean	Criteria average
System implementation C1	1	I_1.	e-Procurement stages	Q12 – Q15	1	8,20	4,73
		I_2.	Difficulties	Q5 – Q7, Q54	1	6,15	
		I_3.	Solutions	Q54	1	2,55	
		I_4.	Financial	Q55	1	2,00	
Usability C2	0,47	I_5.	Usability validation	Q27	1	0,87	1,60
		I_6.	Technical usability	Q26, Q28	1	2,33	
Accessibility C3	0,29	I_7.	Accessibility validation	Q27	1	0,34	0,69
		I_8.	Accessibility facilities	Q31	1	0,00	
		I_9.	Technical accessibility	Q26, Q29, Q30	1	1,73	
Availability C4	0,33	I_{10}.	Availability validation	Q32, Q27	1	1,58	1,57
		I_{11}.	Availability management	Q26, Q33, Q34, Q35	1	1,56	
Reliability C5	0,27	I_{12}.	Reliability validation	Q36, Q27	1	1,67	0,99
		I_{13}.	Technical reliability	Q26	1	0,30	
Interoperability C6	0,19	I_{14}.	Interoperability validation	Q37	1	0,00	0,28
		I_{15}.	Technical interoperability	Q26, 27	1	0,30	
		I_{16}.	Level of integration	Q38	1	0,00	
		I_{17}.	Standardised technical interoperability	Q39, Q40, Q42	1	0,72	
		I_{18}.	Future development	Q41	1	0,39	
Scalability C7	0,21	I_{19}.	Scalability validation	Q43, Q27	1	1,23	0,63
		I_{20}.	Scalability management	Q26, Q46	1	0,52	
		I_{21}.	Technical scalability	Q44, Q45	1	0,14	
Security C8	0,27	I_{22}.	Security validation	Q47	1	1,08	0,61
		I_{23}.	Security planning	Q48	1	0,54	
		I_{24}.	Security standards	Q49	1	0,27	
		I_{25}.	Technical security	Q50, Q51	1	0,54	
Transparency C9	0,24	I_{26}.	Transparency validation	Q52, Q27	1	0,23	0,23
		I_{27}.	Transparency management	Q26	1	0,23	
Confidentiality C10	0,27	I_{28}.	Confidentiality validation	Q53, Q27	1	1,64	1,09
		I_{29}.	Technical confidentiality	Q26	1	0,29	
		I_{30}.	Development	Q17, Q18	1	1,35	
Verification C11	1	I_{31}.	Organisational aspects	Q8 – Q11	1	11,80	17,40
		I_{32}.	Strategy	Q19 – Q25	1	23,00	
Overall rate						5	

Latvia

High level criteria	Criteria Weight	Indicator Number	Indicator name	Related Questions	Indicator Weight	Overall weighted mean	Criteria average
System implementation C1	1	I_1.	e-Procurement stages	Q12 – Q15	1	4,35	3,99
		I_2.	Difficulties	Q5 – Q7, Q54	1	5,20	
		I_3.	Solutions	Q54	1	3,40	
		I_4.	Financial	Q55	1	3,00	
Usability C2	0,47	I_5.	Usability validation	Q27	1	0,87	0,90
		I_6.	Technical usability	Q26, Q28	1	0,93	
Accessibility C3	0,29	I_7.	Accessibility validation	Q27	1	0,34	0,72
		I_8.	Accessibility facilities	Q31	1	0,00	
		I_9.	Technical accessibility	Q26, Q29, Q30	1	1,81	
Availability C4	0,33	I_{10}.	Availability validation	Q32, Q27	1	1,74	1,70
		I_{11}.	Availability management	Q26, Q33, Q34, Q35	1	1,67	
Reliability C5	0,27	I_{12}.	Reliability validation	Q36, Q27	1	1,40	0,89
		I_{13}.	Technical reliability	Q26	1	0,38	
Interoperability C6	0,19	I_{14}.	Interoperability validation	Q37	1	0,00	0,47
		I_{15}.	Technical interoperability	Q26, 27	1	0,34	
		I_{16}.	Level of integration	Q38	1	0,00	
		I_{17}.	Standardised technical interoperability	Q39, Q40, Q42	1	1,70	
		I_{18}.	Future development	Q41	1	0,29	
Scalability C7	0,21	I_{19}.	Scalability validation	Q43, Q27	1	1,06	0,67
		I_{20}.	Scalability management	Q26, Q46	1	0,40	
		I_{21}.	Technical scalability	Q44, Q45	1	0,56	
Security C8	0,27	I_{22}.	Security validation	Q47	1	0,81	0,47
		I_{23}.	Security planning	Q48	1	0,27	
		I_{24}.	Security standards	Q49	1	0,27	
		I_{25}.	Technical security	Q50, Q51	1	0,54	
Transparency C9	0,24	I_{26}.	Transparency validation	Q52, Q27	1	1,43	0,86
		I_{27}.	Transparency management	Q26	1	0,29	
Confidentiality C10	0,27	I_{28}.	Confidentiality validation	Q53, Q27	1	1,37	0,76
		I_{29}.	Technical confidentiality	Q26	1	0,36	
		I_{30}.	Development	Q17, Q18	1	0,54	
Verification C11	1	I_{31}.	Organisational aspects	Q8 – Q11	1	13,50	16,75
		I_{32}.	Strategy	Q19 – Q25	1	20,00	
Overall rate						4	

Lithuania

High level criteria	Criteria Weight	Indicator Number	Indicator name	Related Questions	Indicator Weight	Overall weighted mean	Criteria average
System implementation C1	1	I_1.	e-Procurement stages	Q12 – Q15	1	5,85	5,24
		I_2.	Difficulties	Q5 – Q7, Q54	1	7,85	
		I_3.	Solutions	Q54	1	4,25	
		I_4.	Financial	Q55	1	3,00	
Usability C2	0,47	I_5.	Usability validation	Q27	1	0,22	1,28
		I_6.	Technical usability	Q26, Q28	1	2,33	
Accessibility C3	0,29	I_7.	Accessibility validation	Q27	1	0,09	0,88
		I_8.	Accessibility facilities	Q31	1	0,99	
		I_9.	Technical accessibility	Q26, Q29, Q30	1	1,56	
Availability C4	0,33	I_{10}.	Availability validation	Q32, Q27	1	1,61	1,72
		I_{11}.	Availability management	Q26, Q33, Q34, Q35	1	1,84	
Reliability C5	0,27	I_{12}.	Reliability validation	Q36, Q27	1	1,45	0,80
		I_{13}.	Technical reliability	Q26	1	0,15	
Interoperability C6	0,19	I_{14}.	Interoperability validation	Q37	1	0,78	0,69
		I_{15}.	Technical interoperability	Q26, 27	1	0,11	
		I_{16}.	Level of integration	Q38	1	0,83	
		I_{17}.	Standardised technical interoperability	Q39, Q40, Q42	1	1,35	
		I_{18}.	Future development	Q41	1	0,39	
Scalability C7	0,21	I_{19}.	Scalability validation	Q43, Q27	1	0,30	0,29
		I_{20}.	Scalability management	Q26, Q46	1	0,43	
		I_{21}.	Technical scalability	Q44, Q45	1	0,14	
Security C8	0,27	I_{22}.	Security validation	Q47	1	1,08	0,47
		I_{23}.	Security planning	Q48	1	0,27	
		I_{24}.	Security standards	Q49	1	0,27	
		I_{25}.	Technical security	Q50, Q51	1	0,27	
Transparency C9	0,24	I_{26}.	Transparency validation	Q52, Q27	1	1,01	0,56
		I_{27}.	Transparency management	Q26	1	0,11	
Confidentiality C10	0,27	I_{28}.	Confidentiality validation	Q53, Q27	1	1,15	0,88
		I_{29}.	Technical confidentiality	Q26	1	0,14	
		I_{30}.	Development	Q17, Q18	1	1,35	
Verification C11	1	I_{31}.	Organisational aspects	Q8 – Q11	1	11,50	18,75
		I_{32}.	Strategy	Q19 – Q25	1	26,00	
Overall rate						4	

Luxembourg

High level criteria	Criteria Weight	Indicator Number	Indicator name	Related Questions	Indicator Weight	Overall weighted mean	Criteria average
System implementation C1	1	$I_{1.}$	e-Procurement stages	Q12 – Q15	1	4,00	2,98
		$I_{2.}$	Difficulties	Q5 – Q7, Q54	1	3,20	
		$I_{3.}$	Solutions	Q54	1	1,70	
		$I_{4.}$	Financial	Q55	1	3,00	
Usability C2	0,47	$I_{5.}$	Usability validation	Q27	1	0,00	0,58
		$I_{6.}$	Technical usability	Q26, Q28	1	1,17	
Accessibility C3	0,29	$I_{7.}$	Accessibility validation	Q27	1	0,00	0,50
		$I_{8.}$	Accessibility facilities	Q31	1	0,00	
		$I_{9.}$	Technical accessibility	Q26, Q29, Q30	1	1,51	
Availability C4	0,33	$I_{10.}$	Availability validation	Q32, Q27	1	0,33	0,16
		$I_{11.}$	Availability management	Q26, Q33, Q34, Q35	1	0,00	
Reliability C5	0,27	$I_{12.}$	Reliability validation	Q36, Q27	1	0,00	0,11
		$I_{13.}$	Technical reliability	Q26	1	0,23	
Interoperability C6	0,19	$I_{14.}$	Interoperability validation	Q37	1	0,19	0,38
		$I_{15.}$	Technical interoperability	Q26, 27	1	0,00	
		$I_{16.}$	Level of integration	Q38	1	0,00	
		$I_{17.}$	Standardised technical interoperability	Q39, Q40, Q42	1	1,70	
		$I_{18.}$	Future development	Q41	1	0,00	
Scalability C7	0,21	$I_{19.}$	Scalability validation	Q43, Q27	1	0,00	0,14
		$I_{20.}$	Scalability management	Q26, Q46	1	0,00	
		$I_{21.}$	Technical scalability	Q44, Q45	1	0,42	
Security C8	0,27	$I_{22.}$	Security validation	Q47	1	0,00	0,27
		$I_{23.}$	Security planning	Q48	1	0,54	
		$I_{24.}$	Security standards	Q49	1	0,27	
		$I_{25.}$	Technical security	Q50, Q51	1	0,27	
Transparency C9	0,24	$I_{26.}$	Transparency validation	Q52, Q27	1	0,00	0,00
		$I_{27.}$	Transparency management	Q26	1	0,00	
Confidentiality C10	0,27	$I_{28.}$	Confidentiality validation	Q53, Q27	1	0,00	0,22
		$I_{29.}$	Technical confidentiality	Q26	1	0,00	
		$I_{30.}$	Development	Q17, Q18	1	0,67	
Verification C11	1	$I_{31.}$	Organisational aspects	Q8 – Q11	1	8,80	13,18
		$I_{32.}$	Strategy	Q19 – Q25	1	17,55	
Overall rate						3	

Malta

High level criteria	Criteria Weight	Indicator Number	Indicator name	Related Questions	Indicator Weight	Overall weighted mean	Criteria average
System implementation C1	1	$I_1.$	e-Procurement stages	Q12 – Q15	1	2,50	1,95
		$I_2.$	Difficulties	Q5 – Q7, Q54	1	3,30	
		$I_3.$	Solutions	Q54	1	0,00	
		$I_4.$	Financial	Q55	1	2,00	
Usability C2	0,47	$I_5.$	Usability validation	Q27	1	0,00	0,93
		$I_6.$	Technical usability	Q26, Q28	1	1,87	
Accessibility C3	0,29	$I_7.$	Accessibility validation	Q27	1	0,00	0,58
		$I_8.$	Accessibility facilities	Q31	1	0,00	
		$I_9.$	Technical accessibility	Q26, Q29, Q30	1	1,73	
Availability C4	0,33	$I_{10}.$	Availability validation	Q32, Q27	1	1,58	1,66
		$I_{11}.$	Availability management	Q26, Q33, Q34, Q35	1	1,73	
Reliability C5	0,27	$I_{12}.$	Reliability validation	Q36, Q27	1	0,82	0,56
		$I_{13}.$	Technical reliability	Q26	1	0,30	
Interoperability C6	0,19	$I_{14}.$	Interoperability validation	Q37	1	0,00	0,19
		$I_{15}.$	Technical interoperability	Q26, 27	1	0,15	
		$I_{16}.$	Level of integration	Q38	1	0,00	
		$I_{17}.$	Standardised technical interoperability	Q39, Q40, Q42	1	0,72	
		$I_{18}.$	Future development	Q41	1	0,10	
Scalability C7	0,21	$I_{19}.$	Scalability validation	Q43, Q27	1	0,38	0,33
		$I_{20}.$	Scalability management	Q26, Q46	1	0,18	
		$I_{21}.$	Technical scalability	Q44, Q45	1	0,42	
Security C8	0,27	$I_{22}.$	Security validation	Q47	1	0,27	0,13
		$I_{23}.$	Security planning	Q48	1	0,27	
		$I_{24}.$	Security standards	Q49	1	0,00	
		$I_{25}.$	Technical security	Q50, Q51	1	0,00	
Transparency C9	0,24	$I_{26}.$	Transparency validation	Q52, Q27	1	0,00	0,11
		$I_{27}.$	Transparency management	Q26	1	0,23	
Confidentiality C10	0,27	$I_{28}.$	Confidentiality validation	Q53, Q27	1	0,00	0,46
		$I_{29}.$	Technical confidentiality	Q26	1	0,29	
		$I_{30}.$	Development	Q17, Q18	1	1,08	
Verification C11	1	$I_{31}.$	Organisational aspects	Q8 – Q11	1	8,65	7,20
		$I_{32}.$	Strategy	Q19 – Q25	1	5,75	
Overall rate						3	

Netherlands, The

High level criteria	Criteria Weight	Indicator Number	Indicator name	Related Questions	Indicator Weight	Overall weighted mean	Criteria average
System implementation C1	1	$I_1.$	e-Procurement stages	Q12 – Q15	1	4,85	4,66
		$I_2.$	Difficulties	Q5 – Q7, Q54	1	7,55	
		$I_3.$	Solutions	Q54	1	4,25	
		$I_4.$	Financial	Q55	1	2,00	
Usability C2	0,47	$I_5.$	Usability validation	Q27	1	0,65	1,03
		$I_6.$	Technical usability	Q26, Q28	1	1,40	
Accessibility C3	0,29	$I_7.$	Accessibility validation	Q27	1	0,26	0,39
		$I_8.$	Accessibility facilities	Q31	1	0,00	
		$I_9.$	Technical accessibility	Q26, Q29, Q30	1	0,91	
Availability C4	0,33	$I_{10}.$	Availability validation	Q32, Q27	1	0,61	0,71
		$I_{11}.$	Availability management	Q26, Q33, Q34, Q35	1	0,81	
Reliability C5	0,27	$I_{12}.$	Reliability validation	Q36, Q27	1	0,23	0,23
		$I_{13}.$	Technical reliability	Q26	1	0,23	
Interoperability C6	0,19	$I_{14}.$	Interoperability validation	Q37	1	0,58	0,52
		$I_{15}.$	Technical interoperability	Q26, 27	1	0,26	
		$I_{16}.$	Level of integration	Q38	1	0,50	
		$I_{17}.$	Standardised technical interoperability	Q39, Q40, Q42	1	0,97	
		$I_{18}.$	Future development	Q41	1	0,29	
Scalability C7	0,21	$I_{19}.$	Scalability validation	Q43, Q27	1	1,02	0,69
		$I_{20}.$	Scalability management	Q26, Q46	1	0,39	
		$I_{21}.$	Technical scalability	Q44, Q45	1	0,64	
Security C8	0,27	$I_{22}.$	Security validation	Q47	1	0,00	0,13
		$I_{23}.$	Security planning	Q48	1	0,00	
		$I_{24}.$	Security standards	Q49	1	0,00	
		$I_{25}.$	Technical security	Q50, Q51	1	0,54	
Transparency C9	0,24	$I_{26}.$	Transparency validation	Q52, Q27	1	0,17	0,17
		$I_{27}.$	Transparency management	Q26	1	0,17	
Confidentiality C10	0,27	$I_{28}.$	Confidentiality validation	Q53, Q27	1	0,22	0,41
		$I_{29}.$	Technical confidentiality	Q26	1	0,22	
		$I_{30}.$	Development	Q17, Q18	1	0,81	
Verification C11	1	$I_{31}.$	Organisational aspects	Q8 – Q11	1	12,70	13,73
		$I_{32}.$	Strategy	Q19 – Q25	1	14,75	
Overall rate						3	

Poland

High level criteria	Criteria Weight	Indicator Number	Indicator name	Related Questions	Indicator Weight	Overall weighted mean	Criteria average
System implementation C1	1	I_1.	e-Procurement stages	Q12 – Q15	1	3,00	4,30
		I_2.	Difficulties	Q5 – Q7, Q54	1	6,95	
		I_3.	Solutions	Q54	1	4,25	
		I_4.	Financial	Q55	1	3,00	
Usability C2	0,47	I_5.	Usability validation	Q27	1	0,22	0,58
		I_6.	Technical usability	Q26, Q28	1	0,93	
Accessibility C3	0,29	I_7.	Accessibility validation	Q27	1	0,09	0,48
		I_8.	Accessibility facilities	Q31	1	0,25	
		I_9.	Technical accessibility	Q26, Q29, Q30	1	1,12	
Availability C4	0,33	I_{10}.	Availability validation	Q32, Q27	1	1,28	1,23
		I_{11}.	Availability management	Q26, Q33, Q34, Q35	1	1,19	
Reliability C5	0,27	I_{12}.	Reliability validation	Q36, Q27	1	0,90	0,52
		I_{13}.	Technical reliability	Q26	1	0,15	
Interoperability C6	0,19	I_{14}.	Interoperability validation	Q37	1	0,78	0,71
		I_{15}.	Technical interoperability	Q26, 27	1	0,11	
		I_{16}.	Level of integration	Q38	1	0,66	
		I_{17}.	Standardised technical interoperability	Q39, Q40, Q42	1	1,70	
		I_{18}.	Future development	Q41	1	0,29	
Scalability C7	0,21	I_{19}.	Scalability validation	Q43, Q27	1	0,08	0,28
		I_{20}.	Scalability management	Q26, Q46	1	0,35	
		I_{21}.	Technical scalability	Q44, Q45	1	0,42	
Security C8	0,27	I_{22}.	Security validation	Q47	1	1,08	0,54
		I_{23}.	Security planning	Q48	1	0,54	
		I_{24}.	Security standards	Q49	1	0,27	
		I_{25}.	Technical security	Q50, Q51	1	0,27	
Transparency C9	0,24	I_{26}.	Transparency validation	Q52, Q27	1	0,06	0,09
		I_{27}.	Transparency management	Q26	1	0,11	
Confidentiality C10	0,27	I_{28}.	Confidentiality validation	Q53, Q27	1	0,07	0,25
		I_{29}.	Technical confidentiality	Q26	1	0,14	
		I_{30}.	Development	Q17, Q18	1	0,54	
Verification C11	1	I_{31}.	Organisational aspects	Q8 – Q11	1	3,40	3,58
		I_{32}.	Strategy	Q19 – Q25	1	3,75	
Overall rate						2	

Slovakia

High level criteria	Criteria Weight	Indicator Number	Indicator name	Related Questions	Indicator Weight	Overall weighted mean	Criteria average
System implementation C1	1	I_1.	e-Procurement stages	Q12 – Q15	1	5,85	3,11
		I_2.	Difficulties	Q5 – Q7, Q54	1	3,60	
		I_3.	Solutions	Q54	1	0,00	
		I_4.	Financial	Q55	1	3,00	
Usability C2	0,47	I_5.	Usability validation	Q27	1	0,22	1,04
		I_6.	Technical usability	Q26, Q28	1	1,87	
Accessibility C3	0,29	I_7.	Accessibility validation	Q27	1	0,09	0,71
		I_8.	Accessibility facilities	Q31	1	0,50	
		I_9.	Technical accessibility	Q26, Q29, Q30	1	1,56	
Availability C4	0,33	I_{10}.	Availability validation	Q32, Q27	1	0,30	0,26
		I_{11}.	Availability management	Q26, Q33, Q34, Q35	1	0,21	
Reliability C5	0,27	I_{12}.	Reliability validation	Q36, Q27	1	0,08	0,11
		I_{13}.	Technical reliability	Q26	1	0,15	
Interoperability C6	0,19	I_{14}.	Interoperability validation	Q37	1	0,00	0,13
		I_{15}.	Technical interoperability	Q26, 27	1	0,11	
		I_{16}.	Level of integration	Q38	1	0,00	
		I_{17}.	Standardised technical interoperability	Q39, Q40, Q42	1	0,54	
		I_{18}.	Future development	Q41	1	0,00	
Scalability C7	0,21	I_{19}.	Scalability validation	Q43, Q27	1	0,08	0,06
		I_{20}.	Scalability management	Q26, Q46	1	0,09	
		I_{21}.	Technical scalability	Q44, Q45	1	0,00	
Security C8	0,27	I_{22}.	Security validation	Q47	1	0,00	0,07
		I_{23}.	Security planning	Q48	1	0,00	
		I_{24}.	Security standards	Q49	1	0,00	
		I_{25}.	Technical security	Q50, Q51	1	0,27	
Transparency C9	0,24	I_{26}.	Transparency validation	Q52, Q27	1	0,78	0,44
		I_{27}.	Transparency management	Q26	1	0,11	
Confidentiality C10	0,27	I_{28}.	Confidentiality validation	Q53, Q27	1	0,61	0,59
		I_{29}.	Technical confidentiality	Q26	1	0,08	
		I_{30}.	Development	Q17, Q18	1	1,08	
Verification C11	1	I_{31}.	Organisational aspects	Q8 – Q11	1	12,75	8,75
		I_{32}.	Strategy	Q19 – Q25	1	4,75	
Overall rate						4	

Slovenia

High level criteria	Criteria Weight	Indicator Number	Indicator name	Related Questions	Indicator Weight	Overall weighted mean	Criteria average
System implementation C1	1	$I_1.$	e-Procurement stages	Q12 – Q15	1	4,00	3,85
		$I_2.$	Difficulties	Q5 – Q7, Q54	1	5,85	
		$I_3.$	Solutions	Q54	1	2,55	
		$I_4.$	Financial	Q55	1	3,00	
Usability C2	0,47	$I_5.$	Usability validation	Q27	1	0,00	0,58
		$I_6.$	Technical usability	Q26, Q28	1	1,17	
Accessibility C3	0,29	$I_7.$	Accessibility validation	Q27	1	0,00	0,22
		$I_8.$	Accessibility facilities	Q31	1	0,00	
		$I_9.$	Technical accessibility	Q26, Q29, Q30	1	0,66	
Availability C4	0,33	$I_{10}.$	Availability validation	Q32, Q27	1	1,30	0,90
		$I_{11}.$	Availability management	Q26, Q33, Q34, Q35	1	0,49	
Reliability C5	0,27	$I_{12}.$	Reliability validation	Q36, Q27	1	1,10	0,55
		$I_{13}.$	Technical reliability	Q26	1	0,00	
Interoperability C6	0,19	$I_{14}.$	Interoperability validation	Q37	1	0,00	0,47
		$I_{15}.$	Technical interoperability	Q26, 27	1	0,00	
		$I_{16}.$	Level of integration	Q38	1	0,83	
		$I_{17}.$	Standardised technical interoperability	Q39, Q40, Q42	1	1,16	
		$I_{18}.$	Future development	Q41	1	0,39	
Scalability C7	0,21	$I_{19}.$	Scalability validation	Q43, Q27	1	0,85	0,34
		$I_{20}.$	Scalability management	Q26, Q46	1	0,09	
		$I_{21}.$	Technical scalability	Q44, Q45	1	0,09	
Security C8	0,27	$I_{22}.$	Security validation	Q47	1	0,27	0,13
		$I_{23}.$	Security planning	Q48	1	0,00	
		$I_{24}.$	Security standards	Q49	1	0,00	
		$I_{25}.$	Technical security	Q50, Q51	1	0,27	
Transparency C9	0,24	$I_{26}.$	Transparency validation	Q52, Q27	1	0,96	0,48
		$I_{27}.$	Transparency management	Q26	1	0,00	
Confidentiality C10	0,27	$I_{28}.$	Confidentiality validation	Q53, Q27	1	1,08	0,58
		$I_{29}.$	Technical confidentiality	Q26	1	0,00	
		$I_{30}.$	Development	Q17, Q18	1	0,67	
Verification C11	1	$I_{31}.$	Organisational aspects	Q8 – Q11	1	13,65	13,33
		$I_{32}.$	Strategy	Q19 – Q25	1	13,00	
Overall rate						2	

Spain

High level criteria	Criteria Weight	Indicator Number	Indicator name	Related Questions	Indicator Weight	Overall weighted mean	Criteria average
System implementation C1	1	$I_1.$	e-Procurement stages	Q12 – Q15	1	4,85	4,54
		$I_2.$	Difficulties	Q5 – Q7, Q54	1	6,05	
		$I_3.$	Solutions	Q54	1	4,25	
		$I_4.$	Financial	Q55	1	3,00	
Usability C2	0,47	$I_5.$	Usability validation	Q27	1	1,09	1,01
		$I_6.$	Technical usability	Q26, Q28	1	0,93	
Accessibility C3	0,29	$I_7.$	Accessibility validation	Q27	1	0,43	1,10
		$I_8.$	Accessibility facilities	Q31	1	1,24	
		$I_9.$	Technical accessibility	Q26, Q29, Q30	1	1,64	
Availability C4	0,33	$I_{10}.$	Availability validation	Q32, Q27	1	2,08	1,85
		$I_{11}.$	Availability management	Q26, Q33, Q34, Q35	1	1,62	
Reliability C5	0,27	$I_{12}.$	Reliability validation	Q36, Q27	1	1,40	0,81
		$I_{13}.$	Technical reliability	Q26	1	0,23	
Interoperability C6	0,19	$I_{14}.$	Interoperability validation	Q37	1	0,78	0,63
		$I_{15}.$	Technical interoperability	Q26, 27	1	0,26	
		$I_{16}.$	Level of integration	Q38	1	0,50	
		$I_{17}.$	Standardised technical interoperability	Q39, Q40, Q42	1	1,23	
		$I_{18}.$	Future development	Q41	1	0,39	
Scalability C7	0,21	$I_{19}.$	Scalability validation	Q43, Q27	1	0,98	0,70
		$I_{20}.$	Scalability management	Q26, Q46	1	0,56	
		$I_{21}.$	Technical scalability	Q44, Q45	1	0,56	
Security C8	0,27	$I_{22}.$	Security validation	Q47	1	1,08	0,54
		$I_{23}.$	Security planning	Q48	1	0,54	
		$I_{24}.$	Security standards	Q49	1	0,27	
		$I_{25}.$	Technical security	Q50, Q51	1	0,27	
Transparency C9	0,24	$I_{26}.$	Transparency validation	Q52, Q27	1	1,19	0,68
		$I_{27}.$	Transparency management	Q26	1	0,17	
Confidentiality C10	0,27	$I_{28}.$	Confidentiality validation	Q53, Q27	1	1,37	0,76
		$I_{29}.$	Technical confidentiality	Q26	1	0,36	
		$I_{30}.$	Development	Q17, Q18	1	0,54	
Verification C11	1	$I_{31}.$	Organisational aspects	Q8 – Q11	1	10,95	14,98
		$I_{32}.$	Strategy	Q19 – Q25	1	19,00	
Overall rate						3	

Sweden

High level criteria	Criteria Weight	Indicator Number	Indicator name	Related Questions	Indicator Weight	Overall weighted mean	Criteria average
System implementation C1	1	I_1.	e-Procurement stages	Q12 – Q15	1	0,00	0,85
		I_2.	Difficulties	Q5 – Q7, Q54	1	2,40	
		I_3.	Solutions	Q54	1	0,00	
		I_4.	Financial	Q55	1	1,00	
Usability C2	0,47	I_5.	Usability validation	Q27	1	0,44	0,57
		I_6.	Technical usability	Q26, Q28	1	0,70	
Accessibility C3	0,29	I_7.	Accessibility validation	Q27	1	0,17	0,11
		I_8.	Accessibility facilities	Q31	1	0,00	
		I_9.	Technical accessibility	Q26, Q29, Q30	1	0,17	
Availability C4	0,33	I_{10}.	Availability validation	Q32, Q27	1	1,93	1,48
		I_{11}.	Availability management	Q26, Q33, Q34, Q35	1	1,03	
Reliability C5	0,27	I_{12}.	Reliability validation	Q36, Q27	1	1,25	0,74
		I_{13}.	Technical reliability	Q26	1	0,23	
Interoperability C6	0,19	I_{14}.	Interoperability validation	Q37	1	0,78	0,48
		I_{15}.	Technical interoperability	Q26, 27	1	0,15	
		I_{16}.	Level of integration	Q38	1	0,00	
		I_{17}.	Standardised technical interoperability	Q39, Q40, Q42	1	1,16	
		I_{18}.	Future development	Q41	1	0,29	
Scalability C7	0,21	I_{19}.	Scalability validation	Q43, Q27	1	1,15	0,47
		I_{20}.	Scalability management	Q26, Q46	1	0,09	
		I_{21}.	Technical scalability	Q44, Q45	1	0,17	
Security C8	0,27	I_{22}.	Security validation	Q47	1	1,35	0,54
		I_{23}.	Security planning	Q48	1	0,27	
		I_{24}.	Security standards	Q49	1	0,00	
		I_{25}.	Technical security	Q50, Q51	1	0,54	
Transparency C9	0,24	I_{26}.	Transparency validation	Q52, Q27	1	1,31	0,71
		I_{27}.	Transparency management	Q26	1	0,11	
Confidentiality C10	0,27	I_{28}.	Confidentiality validation	Q53, Q27	1	1,49	0,70
		I_{29}.	Technical confidentiality	Q26	1	0,22	
		I_{30}.	Development	Q17, Q18	1	0,40	
Verification C11	1	I_{31}.	Organisational aspects	Q8 – Q11	1	9,65	10,90
		I_{32}.	Strategy	Q19 – Q25	1	12,15	
Overall rate						3	

United Kingdom

High level criteria	Criteria Weight	Indicator Number	Indicator name	Related Questions	Indicator Weight	Overall weighted mean	Criteria average
System implementation C1	1	$I_{1.}$	e-Procurement stages	Q12 – Q15	1	8,20	5,80
		$I_{2.}$	Difficulties	Q5 – Q7, Q54	1	8,75	
		$I_{3.}$	Solutions	Q54	1	4,25	
		$I_{4.}$	Financial	Q55	1	2,00	
Usability C2	0,47	$I_{5.}$	Usability validation	Q27	1	0,00	1,17
		$I_{6.}$	Technical usability	Q26, Q28	1	2,33	
Accessibility C3	0,29	$I_{7.}$	Accessibility validation	Q27	1	0,00	0,83
		$I_{8.}$	Accessibility facilities	Q31	1	1,24	
		$I_{9.}$	Technical accessibility	Q26, Q29, Q30	1	1,24	
Availability C4	0,33	$I_{10.}$	Availability validation	Q32, Q27	1	1,30	1,22
		$I_{11.}$	Availability management	Q26, Q33, Q34, Q35	1	1,14	
Reliability C5	0,27	$I_{12.}$	Reliability validation	Q36, Q27	1	1,37	0,69
		$I_{13.}$	Technical reliability	Q26	1	0,00	
Interoperability C6	0,19	$I_{14.}$	Interoperability validation	Q37	1	0,97	0,80
		$I_{15.}$	Technical interoperability	Q26, 27	1	0,00	
		$I_{16.}$	Level of integration	Q38	1	0,83	
		$I_{17.}$	Standardised technical interoperability	Q39, Q40, Q42	1	1,70	
		$I_{18.}$	Future development	Q41	1	0,49	
Scalability C7	0,21	$I_{19.}$	Scalability validation	Q43, Q27	1	1,07	0,79
		$I_{20.}$	Scalability management	Q26, Q46	1	0,43	
		$I_{21.}$	Technical scalability	Q44, Q45	1	0,87	
Security C8	0,27	$I_{22.}$	Security validation	Q47	1	1,35	0,54
		$I_{23.}$	Security planning	Q48	1	0,54	
		$I_{24.}$	Security standards	Q49	1	0,27	
		$I_{25.}$	Technical security	Q50, Q51	1	0,00	
Transparency C9	0,24	$I_{26.}$	Transparency validation	Q52, Q27	1	0,24	0,12
		$I_{27.}$	Transparency management	Q26	1	0,00	
Confidentiality C10	0,27	$I_{28.}$	Confidentiality validation	Q53, Q27	1	0,27	0,54
		$I_{29.}$	Technical confidentiality	Q26	1	0,00	
		$I_{30.}$	Development	Q17, Q18	1	1,35	
Verification C11	1	$I_{31.}$	Organisational aspects	Q8 – Q11	1	14,50	19,63
		$I_{32.}$	Strategy	Q19 – Q25	1	24,75	
Overall rate						5	

CARSA

EEA Members:

Iceland

High level criteria	Criteria Weight	Indicator Number	Indicator name	Related Questions	Indicator Weight	Overall weighted mean	Criteria average
System implementation C1	1	$I_{1.}$	e-Procurement stages	Q12 – Q15	1	4,35	2,94
		$I_{2.}$	Difficulties	Q5 – Q7, Q54	1	4,00	
		$I_{3.}$	Solutions	Q54	1	3,40	
		$I_{4.}$	Financial	Q55	1	0,00	
Usability C2	0,47	$I_{5.}$	Usability validation	Q27	1	0,00	0,70
		$I_{6.}$	Technical usability	Q26, Q28	1	1,40	
Accessibility C3	0,29	$I_{7.}$	Accessibility validation	Q27	1	0,00	0,49
		$I_{8.}$	Accessibility facilities	Q31	1	0,00	
		$I_{9.}$	Technical accessibility	Q26, Q29, Q30	1	1,47	
Availability C4	0,33	$I_{10.}$	Availability validation	Q32, Q27	1	0,15	0,62
		$I_{11.}$	Availability management	Q26, Q33, Q34, Q35	1	1,08	
Reliability C5	0,27	$I_{12.}$	Reliability validation	Q36, Q27	1	0,00	0,04
		$I_{13.}$	Technical reliability	Q26	1	0,08	
Interoperability C6	0,19	$I_{14.}$	Interoperability validation	Q37	1	0,00	0,11
		$I_{15.}$	Technical interoperability	Q26, 27	1	0,04	
		$I_{16.}$	Level of integration	Q38	1	0,00	
		$I_{17.}$	Standardised technical interoperability	Q39, Q40, Q42	1	0,53	
		$I_{18.}$	Future development	Q41	1	0,00	
Scalability C7	0,21	$I_{19.}$	Scalability validation	Q43, Q27	1	0,04	0,03
		$I_{20.}$	Scalability management	Q26, Q46	1	0,05	
		$I_{21.}$	Technical scalability	Q44, Q45	1	0,00	
Security C8	0,27	$I_{22.}$	Security validation	Q47	1	0,00	0,07
		$I_{23.}$	Security planning	Q48	1	0,00	
		$I_{24.}$	Security standards	Q49	1	0,00	
		$I_{25.}$	Technical security	Q50, Q51	1	0,27	
Transparency C9	0,24	$I_{26.}$	Transparency validation	Q52, Q27	1	0,00	0,03
		$I_{27.}$	Transparency management	Q26	1	0,06	
Confidentiality C10	0,27	$I_{28.}$	Confidentiality validation	Q53, Q27	1	0,81	0,56
		$I_{29.}$	Technical confidentiality	Q26	1	0,07	
		$I_{30.}$	Development	Q17, Q18	1	0,81	
Verification C11	1	$I_{31.}$	Organisational aspects	Q8 – Q11	1	7,80	4,28
		$I_{32.}$	Strategy	Q19 – Q25	1	0,75	
Overall rate						3	

Norway

High level criteria	Criteria Weight	Indicator Number	Indicator name	Related Questions	Indicator Weight	Overall weighted mean	Criteria average
System implementation C1	1	$I_{1.}$	e-Procurement stages	Q12 – Q15	1	7,85	3,99
		$I_{2.}$	Difficulties	Q5 – Q7, Q54	1	2,55	
		$I_{3.}$	Solutions	Q54	1	2,55	
		$I_{4.}$	Financial	Q55	1	3,00	
Usability C2	0,47	$I_{5.}$	Usability validation	Q27	1	1,09	1,71
		$I_{6.}$	Technical usability	Q26, Q28	1	2,33	
Accessibility C3	0,29	$I_{7.}$	Accessibility validation	Q27	1	0,43	1,10
		$I_{8.}$	Accessibility facilities	Q31	1	1,24	
		$I_{9.}$	Technical accessibility	Q26, Q29, Q30	1	1,64	
Availability C4	0,33	$I_{10.}$	Availability validation	Q32, Q27	1	1,43	1,77
		$I_{11.}$	Availability management	Q26, Q33, Q34, Q35	1	2,11	
Reliability C5	0,27	$I_{12.}$	Reliability validation	Q36, Q27	1	1,47	0,85
		$I_{13.}$	Technical reliability	Q26	1	0,23	
Interoperability C6	0,19	$I_{14.}$	Interoperability validation	Q37	1	0,97	0,86
		$I_{15.}$	Technical interoperability	Q26, 27	1	0,30	
		$I_{16.}$	Level of integration	Q38	1	0,83	
		$I_{17.}$	Standardised technical interoperability	Q39, Q40, Q42	1	1,70	
		$I_{18.}$	Future development	Q41	1	0,49	
Scalability C7	0,21	$I_{19.}$	Scalability validation	Q43, Q27	1	0,98	0,80
		$I_{20.}$	Scalability management	Q26, Q46	1	0,56	
		$I_{21.}$	Technical scalability	Q44, Q45	1	0,87	
Security C8	0,27	$I_{22.}$	Security validation	Q47	1	1,35	0,54
		$I_{23.}$	Security planning	Q48	1	0,00	
		$I_{24.}$	Security standards	Q49	1	0,27	
		$I_{25.}$	Technical security	Q50, Q51	1	0,54	
Transparency C9	0,24	$I_{26.}$	Transparency validation	Q52, Q27	1	1,48	0,88
		$I_{27.}$	Transparency management	Q26	1	0,29	
Confidentiality C10	0,27	$I_{28.}$	Confidentiality validation	Q53, Q27	1	1,71	1,14
		$I_{29.}$	Technical confidentiality	Q26	1	0,36	
		$I_{30.}$	Development	Q17, Q18	1	1,35	
Verification C11	1	$I_{31.}$	Organisational aspects	Q8 – Q11	1	9,00	19,00
		$I_{32.}$	Strategy	Q19 – Q25	1	29,00	
Overall rate						5	

12.5 Annex V: Analysis of high level criteria and ranking of EU/EEA Member States

The results are shown in a series of radial graphs that permit an easy visual comparison to be made with respect to each country's results. The graphs are valued from 0 to 1, with 0 signifying the criteria in question is not considered within the system, or that insufficient data has been supplied to make a calculation. At the other end of the scale, 1 signifies that all the necessary characteristics of the criteria are correctly implemented.

In general the graphs reflect the level of completeness of each e-procurement system with respect to each of the High Level Criteria. A country which shows a perfect adherence to all of the characteristics of all the criteria will score 1 in all categories and exhibit a perfect 12-sided polygon. "Perfection" may be defined in this case as scoring the highest mark for all questions in the question value matrix, previously described. The use of this graphical method is very intuitive, as any deviations from this perfect figure are clearly seen, and can be easily compared between countries. An explanation of these results is described under the graph for each country.

The EU / EEA average is also shown as a red figure in each of the graphs, allowing an immediate visual comparison of each country with the average value across the EU / EEA.

Additionally, a summary of the main political, social and cultural aspects influencing e-procurement in each country is also included. These influencing factors are part of the High Level Criterion 1 (System implementation C1), but due to their relevance it has been considered pertinent to present them in a separate way, so that a complete picture of the circumstances within each country can be seen.

EU Member States:

Austria
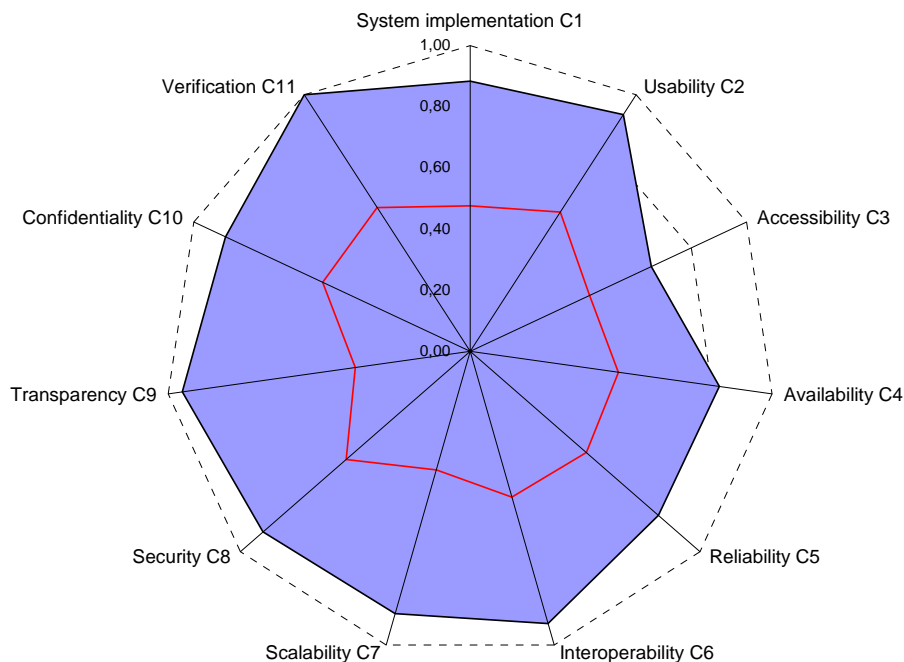
Figure 21 Austria – High Level Criteria representation

The criteria of Verification of the system as a whole is considered to be extremely advanced, with thorough validation of all features of the e-procurement system, throughout its design, implementation and maintenance. The implementation of the system is well organised and shows a solid control of the situation at national level, with clear communication between all bodies concerned and clearly defined roles assigned. Confidentiality (assured through authorisation and authenticity procedures), Usability, Transparency, and Interoperability and Reliability all score higher in the rankings and are considered to be the non-functional aspects of most importance within the Austrian e-procurement system. In

general however, the remaining criteria of score close to 0.6 in all cases highlighting the overall completeness of the system in general. It is important to note that the costs associated with verification in Austria are someway higher than those in other countries and more effort is devoted to this aspect, and indeed Austria is considered to be one of the most advanced European countries in terms of both legal and technical verification. The physical structure of the e-procurement system is well advanced, although it is interesting to note that Austria does not intend to implement e-auctions, e-evaluation nor e-invoicing until a business case justifies the investment, which would seem to suggest that even in countries with good public spending power as Austria, the development of an e-procurement system implies a critical drain on resources. However, the lack of these features is balanced in its favour by the political will and advanced organisational structure in place.

Good practice: Overall comprehensive consideration of criteria; good treatment of verification mechanisms (explained in section 4.4 and Annex IX); thorough organisational aspects; good global vision of public e-procurement practice.

Negative traits: Not all advanced e-procurement features implemented; elevated costs associated with verification mechanisms probably not replicable in many other countries.

Summary of the main political, social and cultural aspects influencing e-procurement:

Political aspects

There was full and immediate implementation of EU Directives into Austrian national law

This commitment by the Government towards the issuing of a national legislation implementing the EU Directives was considered a cornerstone towards the successful formation of centralised public structures represented by the Bundesbeschaffung GmbH (BBG) and Wiener Zeitung (WZ). These were able to create high standard e-procurement systems for public federal services and even assist regional authorities and bigger public companies.

The political will and overall approach of the government to outsource e-procurement development activities is considered an advantage as it allows for the exploitation of technical expertise that may otherwise not be available "in-house"

The clear organisational structure at national and regional level provides clear advantages with regard to the high level of organisation noticed within the e-procurement systems (this may be clearly seen when compared with regional proficiency in other countries, such as Spain).

Social aspects

The well-founded legal base is considered to have an important social effect, as it may generate more confidence towards such systems among public users.

The centralisation at national level is considered to have greatly simplified access for public users to the system, thus also increasing the acceptance of its use.

Cultural aspects

Steady co-ordination, the latter being considered a characteristic of Austrian society, was exemplified by the various boards involved in the development of the current organisation of e-procurement.

Traditional Austrian cultural characteristics such as patience and orderliness, added to the long preparation phase, which was considered essential for convincing stakeholders and customers of the benefits of the system.

Other aspects were also carefully considered, through a wide range of approaches from pragmatic to short-spoken, taking into account the varying situation of the customers (ministries).

Belgium
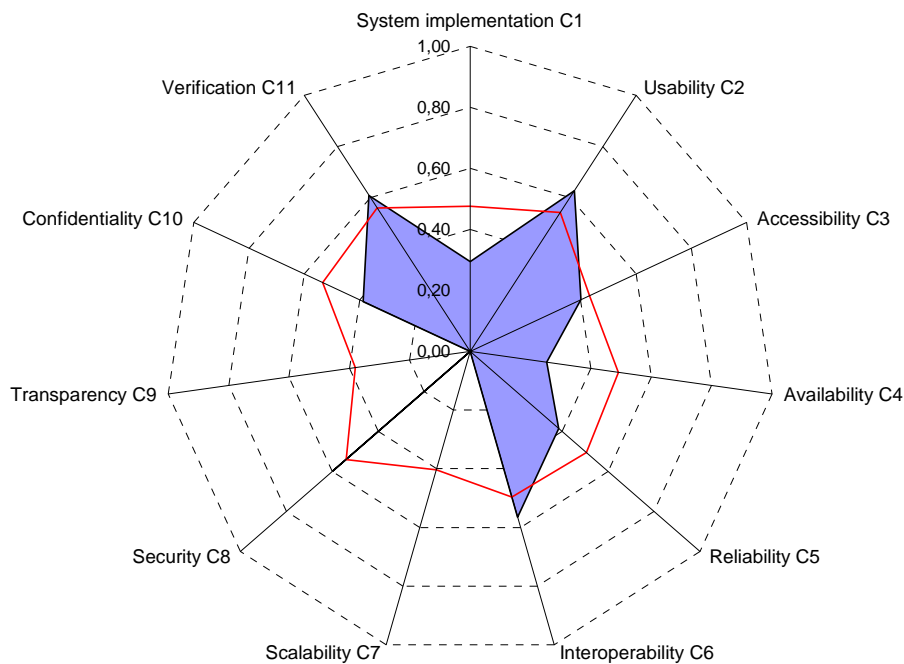
Figure 22 Belgium – High Level Criteria representation

Within the Belgian scenario Verification along with Usability and Interoperability are the most important aspects. Usability scores highly based on the specifications being defined for extensive multilingual characteristics of the new system at Federal level. In general the graph reflects the level of development of e-procurement in Belgium, where System Implementation suffers from the independent development of regional systems, each with budget limitations. In this respect, Interoperability is, logically, an important criterion, as cooperation between the existing and future systems is considered important. To help in this regard, a working group has been created with representatives from both federal and regional government but it only appears to have a consultative role. In general, a new system is also currently being implemented at federal level (the level at which the questionnaire was aimed) and thus the specifications which affect the positive scoring of the criteria are still primarily in the draft phase and thus contribute heavily to the low results seen in the Belgian e-procurement situation. Verification is carried out internally, and verification procedures are integrated into the normal working procedures of the system, although a lack of clarity in this regard negatively affects the final score for this criterion.

Good practice: Have defined a clear strategy to build a full e-procurement system at federal level, through defining a separate contract for each module of the e-procurement system, based on specifications defined by IDABC and the national legislation.

Have applied the theory of starting small, due to budgetary limitations, and growing stepwise by taking into account the evolution of e-procurement systems and customer (companies and procurement agencies) needs.

Negative traits: Lack of coordination between regional systems; limited budgets delaying development of most advanced features.

Summary of the main political, social and cultural aspects influencing e-procurement:

Political aspects

The federal structure of the country results in several developments of e-procurement systems in parallel, all with budget limitations. It is considered that the implementation and quality of verification tasks could suffer from this situation.

Social aspects

The progress on implementation of e-procurement in Belgium is characterised as "unusual", given that the Flemish region which is generally considered to be more advanced from an economical point of view compared to the Walloon Region, is quite far behind both the Federal and Walloon region with regard to the implementation of e-procurement. Part of the reason given is that Flemish politicians do not seem to be particularly active in this field.

Cultural aspects

The existence of two very different communities in Belgium is considered to create difficulties, and as a consequence impacts the development of projects that may be considered to have a negative influence on the image of the region.

This cultural difference creates difficulties with regard to a genuine will to collaborate.

Bulgaria
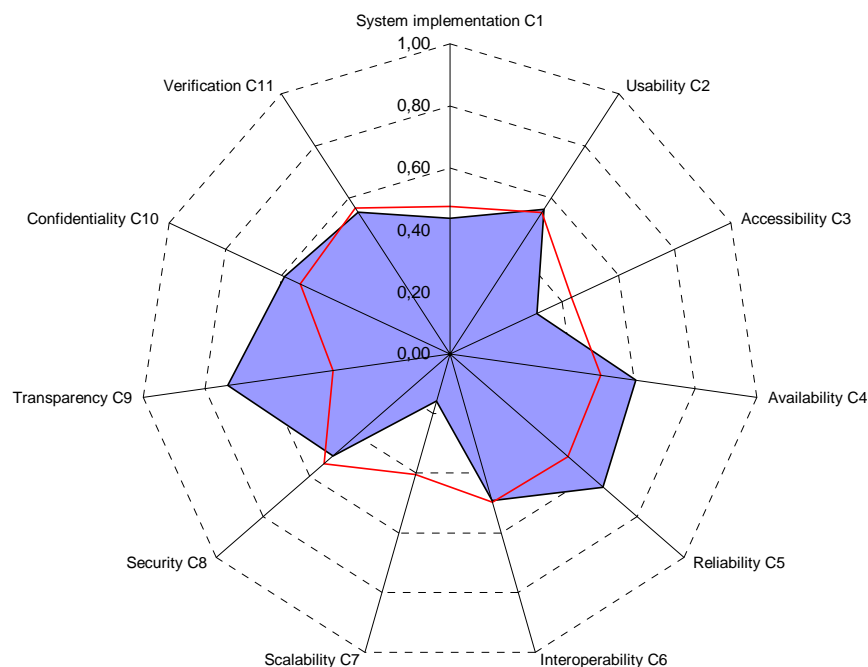
Figure 23 Bulgaria – High Level Criteria representation

Bulgaria shows an interesting example of the development of an e-procurement system in a previously highly centralised economy. System Implementation and Verification are currently important aspects of Bulgarian e-procurement development, as the projects around which the new system is being developed are heavily funded by USAID and PHARE Programme donations, around which verification of project activities plays an important role. Allied with this, criteria such as Usability, Availability and Reliability, which are the fundamental features of a nascent system are well in evidence. Most important, however, is Transparency, which is being strongly encouraged through these funding programs. The establishment of the Electronic Public Procurement Register (EPPR) was an important step forward in the improvement of accountability in public procurement in Bulgaria. The fact that about 5,000 public procurement bidders used the Register in 2005 is a sign of enhanced transparency. One of the reasons for this encouragement is that it has been noted that politically favoured companies and organizations in Bulgaria are typically financed through public procurement contracts and concession agreements. Therefore, there is much external political motivation to enforce such features. On the contrary, criteria such as Scalability and Accessibility are poorly represented, being considered as future possible concerns once the system is functioning. Security is considered important, however it is not carried out to any recognised international standard and thus incurred a lower score as a consequence.

Good practice: The positive effect of external donor programmes in introducing a greater degree of transparency into public procurement procedures.

Negative traits: Unclear political stance with respect to support for e-procurement policy; high levels of corruption.

Summary of the main political, social and cultural aspects influencing e-procurement:

Political aspects

Politically favoured companies and organizations in Bulgaria are often financed through public procurement contracts and concession agreements. The Centre for the Study of Democracy in Bulgaria (CSD) estimates that resources deviated from the public procurement process by all parties' loops of companies ranges between 160 million and 185 million Euro in 2005[31]. It can therefore be assumed that there was not enough motivation to increase transparency within public procurement processes, by adopting an e-procurement strategy.

The judicial system was seen to have had a negative effect on e-procurement implementation in the past, by causing a significant delay (over 7 years) in the creation of an electronic business registry, in order to allow companies to carry out official registration with a central body. This currently must be carried out within the court system, which is seen as highly inefficient.

the new electronic business registry (supported by International Monetary Fund) will effectively start in June/July 2007. Companies will be able to submit documentation electronically and therefore it will effectively be possible to introduce pre-qualifying procedures, when bidders will register to be licensed or otherwise permitted to submit technical offers and bids. This reform is expected to radically reduce transaction costs, and greatly improve transparency.

Social aspects

The process of e-procurement implementation is more supply-driven than demand-driven in Bulgaria.

Reforms in Bulgaria are considered to be rather elite-centred or donor-shaped. In general, social aspects related to the wider-range of population and businesses are not at all correlated with implementation. In particular, the current USAID project[32] had much broader goals to achieve with its e-procurement program (such as reducing corruption and raising efficiency). However, the administration shaped the process in a way that only incremental changes would occur, thereby not making significant institutional changes.

Thus verification procedures would be applicable to the extent that this would assure compliance with the law in a nominal sense. However, verification would be mainly focused on the formal outcomes and not the business processes. Verification, in the most part, would be thought of as the responsibility of the user of the system.

However, most common abuses are informally legal (for instance, entering an eligibility requirement that could be fulfilled only by a certain consortium, known in advance). More generally, it is considered that specific socio-professional groups indeed have had a negative impact on e-procurement development.

Cultural aspects

The strongest cultural aspects that affect e-procurement implementation are also administrative-centred and are considered to arise from donor-beneficiary relations.

The Ministry of Finance has been well-known for its "culture of innovation" for many years, their small e-procurement system being considered an example. It was a local initiative, made with the aim to "compete" for USAID funding,

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[31] On the Eve of EU Accession: Anti-corruption Reforms in Bulgaria, 2006. Centre for the Study of Democracy

[32] USAID Open Government Initiative

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although finally unsuccessful. In Bulgaria, a lot of municipalities did not want to implement the same system as their municipal neighbours, and therefore it was not possible to widely replicate the system in other regional institutions.

Cyprus
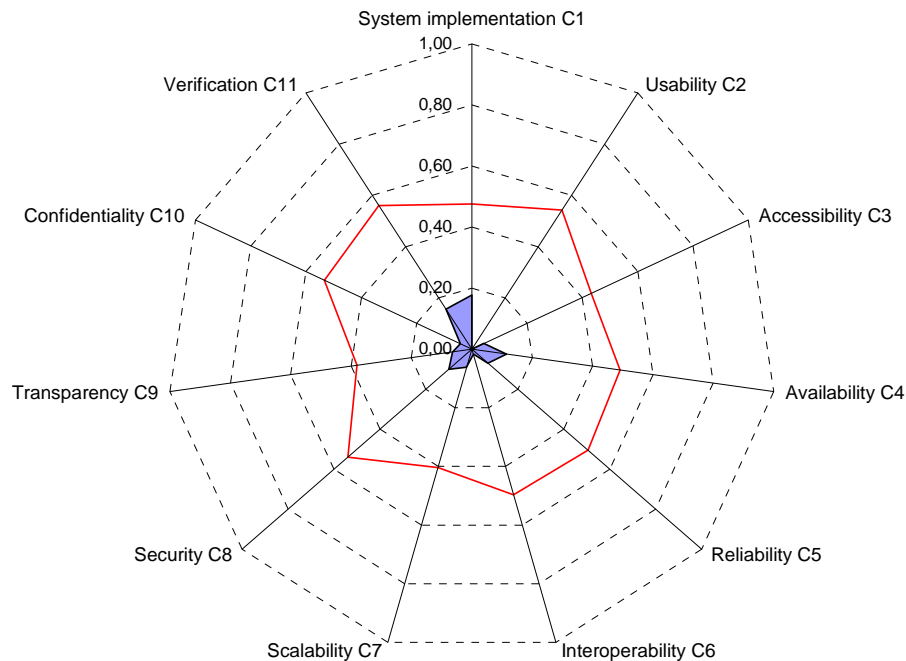
Figure 24 Cyprus– High Level Criteria representation

The graph shown is a typical example of the distinctive shape obtained from the results for a country, like Cyprus, that is in the processes of specifying an e-procurement system. At present none of the required features for such a system exist in Cyprus, and thus no value is available for the various criteria as they are not currently defined as quantifiable characteristics. However, Verification and System Implementation, for this reason, do achieve some presence, as the specifications are being carried out in accordance with national law and the EU Directives; therefore even at this early stage of e-procurement development, these criteria are evident. In addition, some moves are already being made towards harmonising a security plan (Security), and defining Service Level Agreements (SLAs) for the service provider (Availability).

Good practice: Definition of Service Level Agreements to ensure compliance of certain features; positive political attitude towards implementation of e-procurement system.

Negative traits: System in very early stage of development. No previous experience of e-procurement.

Summary of the main political, social and cultural aspects influencing e-procurement:

Political aspects

Very positive political backing for the introduction of the new e-procurement system.

Social aspects

The perceived quality and trust of a secure operational environment by the general public are considered to be pre-requisites for the quick adoption of the system by contracting authorities and economic operators and for ensuring its subsequent broader use.

Cultural aspects

The culture of the public and private sectors towards modernisation and the embracing of information technology are considered to play an important role in the implementation of an e-procurement system.

Czech Republic
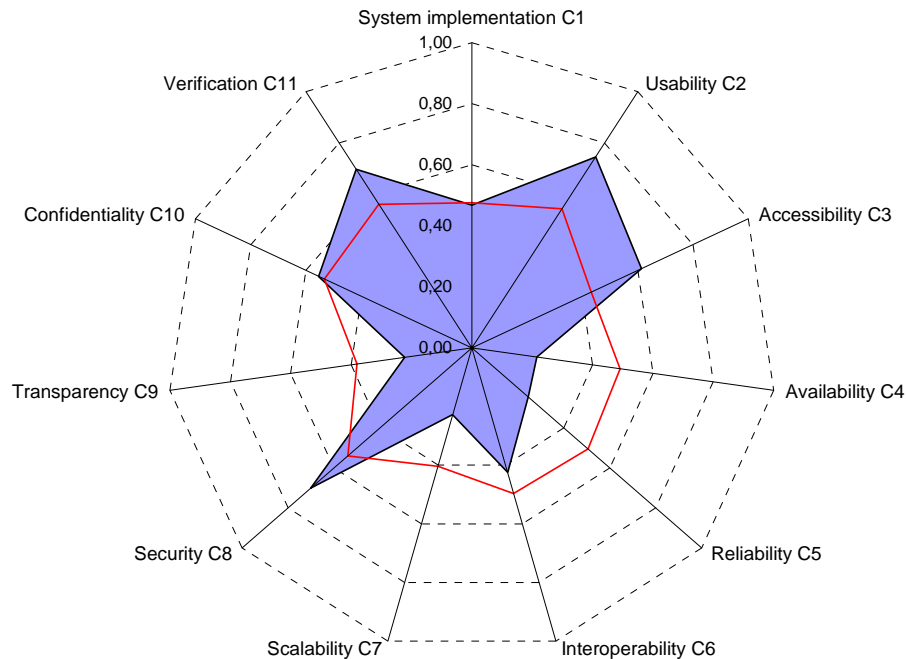
Figure 25 Czech Republic – High Level Criteria representation

The Czech Republic is somewhat different from other countries. The e-procurement system is not built around one platform, but provides a virtual space for the development and usage of various electronic tools by particular public submitters and operators. The government role is to create the legislative framework for public e-procurement and supervise compliance to this framework by attesting tools presented to it based on both national law and the EU Directives, and although one system is an advanced e-procurement system, it has so far only been implemented for private use. This explains, in the case of the Czech Republic, why Verification occupies an important position relative to other criteria. In general, compliance is concerned with ensuring that the systems comply legally and technically, are plainly Interoperable with the platform, and comply with the basic Security norms laid down in the national law. In addition, certain criteria, such as Accessibility, Usability and Confidentiality are all clearly defined through national standards and score well for this reason. Compliance with the criteria is really the responsibility of the submitter or operator through the selection of the correct tool, which has been previously attested.

Good practice: Procedure of attestation carried out for various tools, which minimises the level of public investment required for a fully operational e-procurement system.

Negative traits: Too much decision left in the hands of the submitter or operator; may become confusing as the number of attested tools grows.

Summary of the main political, social and cultural aspects influencing e-procurement:

Political aspects

From long-term point of view the lack of political will to give the process relevant priority seems to be the main threat for quick e-procurement implementation process in the Czech Republic. The political priorities are set up differently at the present time and the resources devoted to e-procurement implementation are very limited.

The compliance of public e-procurement does not belong to the highest political priorities, which could inhibit its future development.

The considerable difficulty from a short term point of view could be the winding-up of the Ministry of Informatics after the last elections and the consequent change of political representation in the country. The Ministry of Informatics was responsible for the attestation of e-procurement electronic tools and it is not known what its competences will now be. For this reason, this has affected the attestation process.

Social aspects

In 2005, 7242 public orders were commissioned in the Czech Republic (with an aggregated financial volume of 183.6 billions CZK - approximately 6120 million EUR), but none of them was commissioned electronically (with the exception of 0.7 % of the volume realised through e-marketplaces for public and government administration). The National Plan for the Introduction of Electronic Public Procurement assumes that in 2010, 50 % of all public orders will be electronically commissioned. That should save 10.99 billion CZK (366 million EUR) through lower prices and another 1.46 billions CZK (49 million EUR) through lower costs for public procurement administration.

The decentralized system of public e-procurement, which gives each pubic submitter the possibility of choosing arbitrary electronic tools produced by 3rd party suppliers, is very flexible, when considering the fulfilment of specific needs (either financial or technical) of different submitters. However, it is also highly demanding with respect to compliancy verification.

Under these circumstances, decentralization is considered to be a very good option, as it leaves the activity of e-procurement in the hands of the private IT sector, which is very strong and active in the Czech Republic.

Cultural aspects

None considered important

Denmark
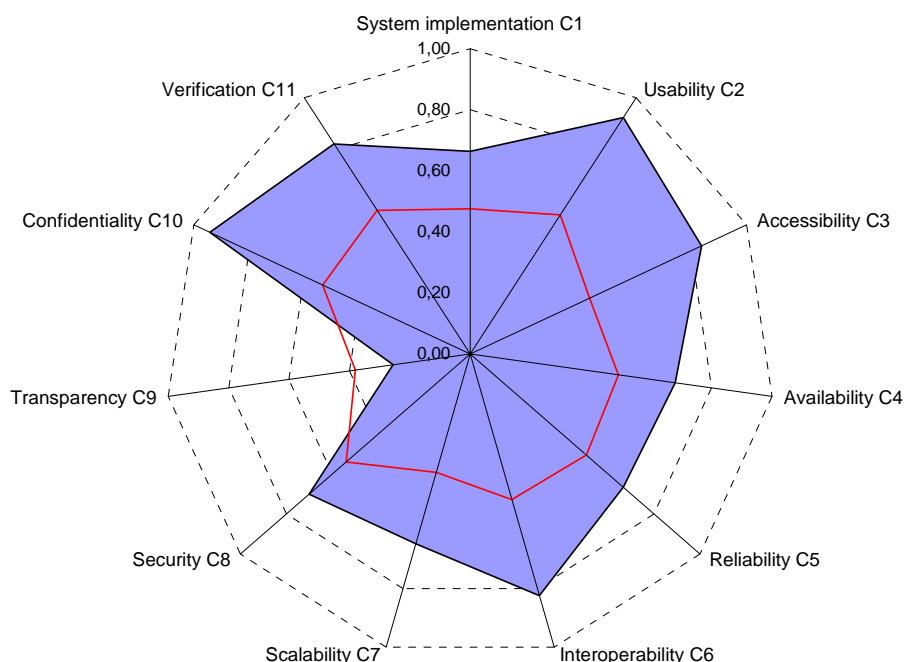
Figure 26 Denmark – High Level Criteria representation

Denmark is another example of a highly efficient system with regard to Verification, where technical aspects of the e-procurement system are implemented and verified for compliance to both Danish law and the EU Directives. The system is highly robust, and scores highly with respect to Usability, Accessibility, Confidentiality and Interoperability, where the system is designed to be interoperable with all Danish public procurement offices, and has also been incorporated into other national public procurement structures (the system is currently also used in Iceland and Sweden,

to some limited extent). In general, the scoring for some of the criteria (Transparency and Scalability) suffers slightly due to a lack of direct information concerning the verification of these features. The system is developed and maintained by a 3rd party, GateTrade, and the technical organisation and management is not in the hands of the public body, but outsourced through a series of SLAs. The SLAs specifically state the levels of Availability to be guaranteed, and the maximum down-time (Reliability) allowed for the system. All functional verification of the system is based on user input and / or continuous scanning, and verification of development is controlled through a series of specific contracts with GateTrade.

Good practice: Routine performance of system controlled through a series of Service Level Agreements with the service level operator, which helps to minimise validation costs which must be incurred in-house. Development costs minimised through off-the-shelf solution.

Negative traits: Problems encountered while adapting off-the-shelf solution to specific requirements; each e-procurement system is different, and therefore lack of experience of solution provider in implementing a specifically demanded attribute not previously encountered may cause delays.

Summary of the main political, social and cultural aspects influencing e-procurement:

Political aspects

The e-procurement system has been influenced by a very decentralised purchasing structure which has made implementation more difficult. The implementation has also been influenced by the many regulations on national as well as European level.

The project is part of Danish IT policy and was therefore expected to move a lot faster than actually occurred.

Furthermore, it was expected that the solution should provide substantial savings. However, this has not been the case so far, and there are few success stories reported regarding major savings.

Social aspects

The social aspect is not seen as a major influence during the implementation of an e-procurement system. During the start up, the focus was primarily on system functionality. However, later on in the process, the interaction between parties (purchasers, suppliers and other users) are influenced by social aspects. More involvement from the users in the beginning is considered to be beneficial for the process.

There is a profound development in the area of e-procurement in Denmark at the moment. After many years of development and implementation of the e-procurement portal, many initiatives are ready to be launched. The government is very focused on the development of e-procurement in Denmark, and after a long implementation process and adjustment, the users (purchasers and suppliers) are finally getting accustomed to the new conditions.

Another aspect is the legal demands and the influences of these. When looking at the e-procurement portal project, this could have benefited from some regulation within the area of e-procurement and e-trading in general.

It is considered that the e-procurement situation in Denmark is taking shape but would benefit from a more controlled guidance, more professionalism and highlighted "best practices" in the area.

Cultural aspects

Aspects, such as the users knowledge of IT systems and other "e-software", are considered to have an important cultural effect.

Estonia
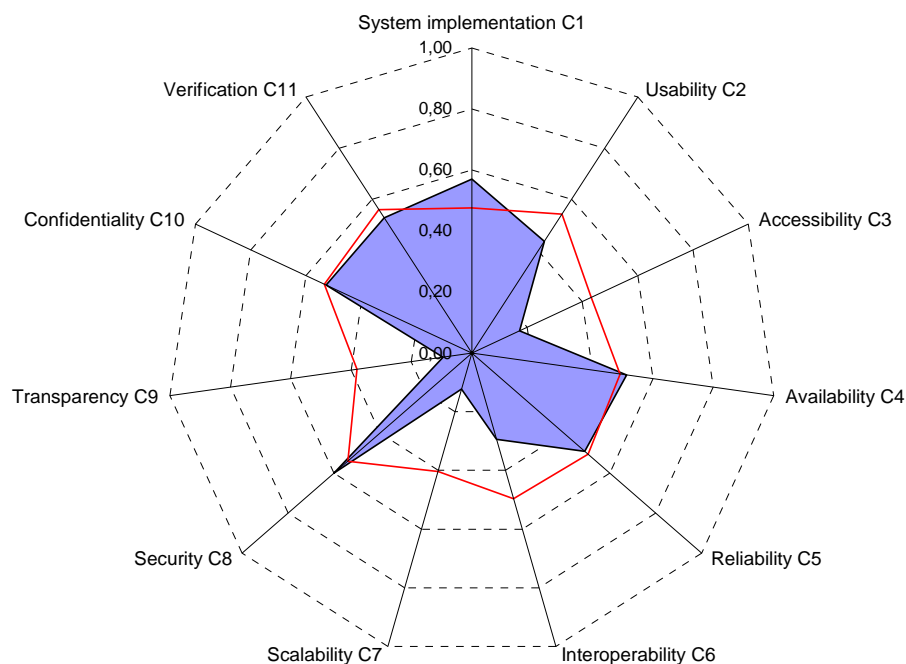
Figure 27 Estonia– High Level Criteria representation

Estonia is a solid example of a simple e-procurement system, based solely on e-publication. For this reason, although there are not many mechanisms implemented, the level of Verification for those extant features is basic although adequate. However, there is room for improvement, and indeed current plans include an ID card authorisation to be shortly introduced (June 2007), thus greatly improving Security and Confidentiality. In addition related legal developments and e-procurement system developments occur concurrently and complement each other, which enable a relatively high level of verification efficiency. System Implementation scores relatively well as a new system, including e-auctions, is planned for implementation within the next 2 years and implies a large degree of technological advancement compared to the current system. In addition, criteria such as Availability and Usability are intrinsically linked with this planned development, and score relatively well. Future Interoperability is also considered important due to planned interoperability with the Estonian Tax and Customs Board register and Commercial register.

Good practice: Clear implementation planning of all advanced features.

Negative traits: Too early in overall system specification to be used as example.

Summary of the main political, social and cultural aspects influencing e-procurement:

Political aspects

No direct political influence for e-procurement development process is identified. However, there were elections in March 2007 and a new government came to power. There is a clause in their programme that by 2010 the tenders should be submitted electronically only. Other relevant influences are the government priorities for ICT sector. Some governments have been keener to implement novel ICT solutions, and therefore pay more attention to e-procurement than others.

Social aspects

Estonians of the middle and, in particular, younger generations are considered to be highly IT literate and open for new e-systems. The general social attitude is definitely a positive influence towards the development of an e-procurement system. For example, more than 50% of companies use the internet for their monthly tax declarations and more than 80% of citizens used an e-declaration system for the annual tax declaration in 2006.

Cultural aspects

The Estonian population is made up of Estonians and a large proportion of other nationalities, mainly Russians, who comprise almost 25% of the population. It would appear that elder people and other nationalities are not so keen to use e-solutions, although this is becoming less of a problem in younger generations. Language barriers (the main e-procurement portal is in Estonian and English) or a natural apprehension of technology appear to play a large part in this cultural difference.

Finland
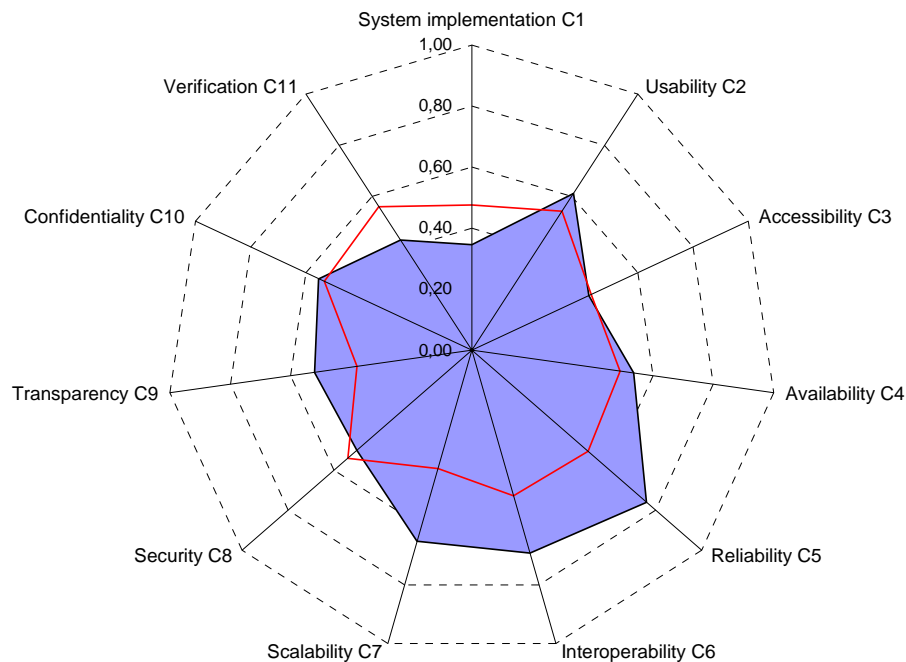
Figure 28 Finland – High Level Criteria representation

Finland is another example of a country which has a simple e-procurement system at national level, not requiring much Verification features, as little System Implementation is implied in its overall development (so far limited to e-publication processes). The simplicity and ease of use of the system ensures relatively good scores in terms of Usability and Reliability, and Interoperability provided with TED and has other interfaces to national (Finnish) providers of value added services, such as TIEKE and Fonecta, who extract data from the system, process it further, and provide it to private customers. In general, criteria such as Security and Scalability are provided to the point necessary without being considered vital to the successful functioning of the system. Other aspects such as Availability and Accessibility are the responsibility of the main service provider, through SLAs.

Good practice: Use of Service Level Agreements aiding in the validation process. The use of other external services to carry out the processing and provision of information, thus lowering the running costs of the system.

Negative traits: Poor political motivation hampering development progress. Poor central organisation at overall e-procurement at both municipal and national level.

Summary of the main political, social and cultural aspects influencing e-procurement:

Political aspects

There is political pressure to make the public sector more efficient.

There is a political impetus towards adopting a national information technology strategy in e-government; e-procurement is suggested as being one part of encouraging the use of advanced technology in Governmental operations.

Finland is very pragmatic in dealing with the technology. Only if the benefits can be quantified is there likely to be political interest towards e-procurement.

Currently, however, e-procurement is not seen as an important issue politically, as it does not raise political passions. Therefore, the initiatives in the near future are likely to be small in scope and will not receive any extra funding within the normal budgets of the Ministry of Trade and Industry and Ministry of Finance.

Social aspects

E-procurement has not attracted any particular attention from citizens, lawmakers, corporations or non governmental organizations.

Cultural aspects

Finland sees itself as an "engineering minded" society which has a fairly positive view towards implementing new technology. Most citizens feel that new technology can and should be used to deal with the issues Finland faces. In that sense, Finland can be characterized as a technology friendly country.

France
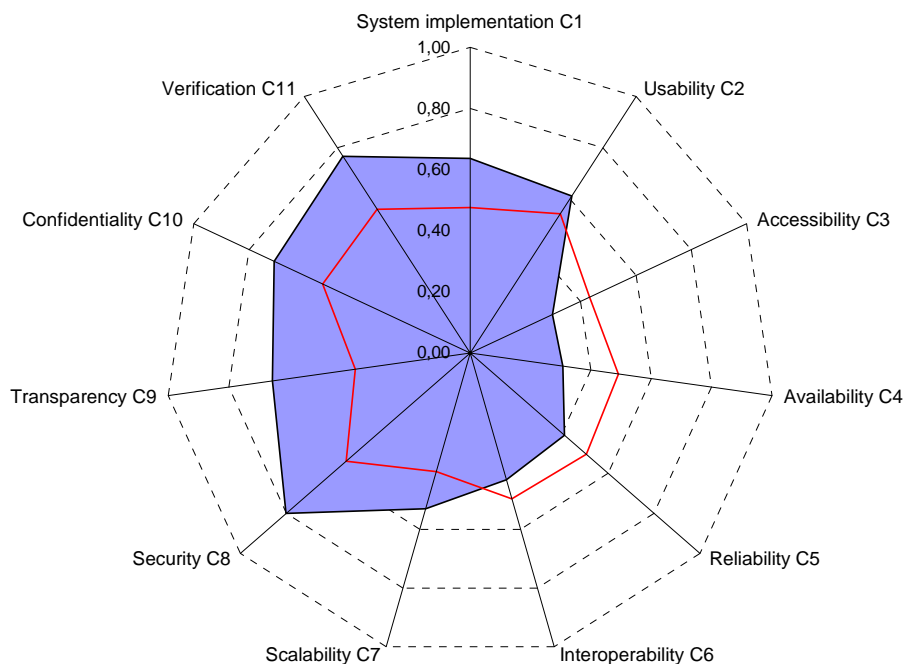
Figure 29 France – High Level Criteria representation

Although France is still currently in the process of defining a new system which will function at central level for Ministries, it has incorporated clear plans for a verification mechanism based on a "homologation" process that will be based on the accreditation of providers by experts certified by the administration. This explains the relatively high score which is obtained for Verification. Although the system is still in the planning phase, System Implementation scores above average due to the clear procedures being followed with respect to overall development and product maintenance. The General rules of interoperability (in particular the "Référentiel Général d'Interopérabilité", RGI, General Interoperability Reference) and security (Référentiel Général de Sécurité, RGS, General Security Reference) have been published and enforced legally, in 2004. These rules are gradually being phased in for all new ministerial projects. This allows features such as Confidentiality, Transparency and Security to score well above the European average. Currently, limited verification procedures and a lack of information with regard to Interoperability, Availability

and Accessibility have lowered these scores. This should change radically with the progressive adoption by solutions providers of the RGI mentioned above.

Good practice: The development of laws related to the implementation of both interoperability standards and security standards which must be adhered to within any new system; the development of an accreditation process for future verification mechanisms.

Negative traits: The majority of the system is still only in the specification phase, and as yet, the successful application of RGI/RGS cannot be assessed.

Summary of the main political, social and cultural aspects influencing e-procurement:

Political aspects

Regional, national or international government policies guide and influence the implementation of public procurement policy.

National transposition into law of the EU Directives enforces obligations on e-procedures and stimulates e-procurement in general.

General rules of interoperability, RGI (Référentiel Général d'Interopérabilité, General Interoperability Reference) and Security, RGS (Référentiel Général de Sécurité, General Security Reference) are sets of rules, implemented in the legislation, by ordinances (nos. 2004-1343, 2005-1516), that facilitate exchanges between the French public administration and the users of public services, as well as between administrations. They also aim to enhance the consistency of the French public services' information systems.

Greater maturity on public sector and particularly public procurement, sets a positive environment for all actors to modernize and think differently about the use of public markets (introducing e-procedures).

Budgetary measures: political actions are a priority and activities like procurement are only a means to manage them. Efficiency, harmonization and simplification are the main targets for e-government.

For the same reason, projects concerning the mutualisation of information systems are becoming a reality in France. That could be a means to spread technologies quickly, as projects benefit from know-how, even for services developed by others.

Social aspects

First experiences, in 2005 and 2006, have led to reactions from enterprises. They need visibility and more comprehension concerning the use of e-procurement platforms. The barriers are for the moment more important than the perceived advantages.

Interoperability for electronic certificates (included in RGI) is a first step in giving a clear message encouraging enterprises to use e-services. Taking into account the need for common business processes is a result of these experiences.

Smaller collectives and organisms realise that it is expensive for them to develop e-procurement systems, so they work together to mutualise and offer extended services to their buyers and the enterprises. This helps e-procurement go further than the minimal obligations in law.

Even when organisms decide not to mutualise, they look for recommendations and common specifications and these exchanges accelerate e-procurement developments. The exchanges go further than information systems, such as instructions for purchases, sourcing, organizational changes, etc.

Cultural aspects

Mutualisation is slow to develop in France. It is considered difficult to know if an inter-country (i.e. European level) cooperation will accelerate or slow down this move.

One common need for all e-procurement public actors is to report to Europe. This can have a positive effect on standardisation of data and selection of statistics.

Germany
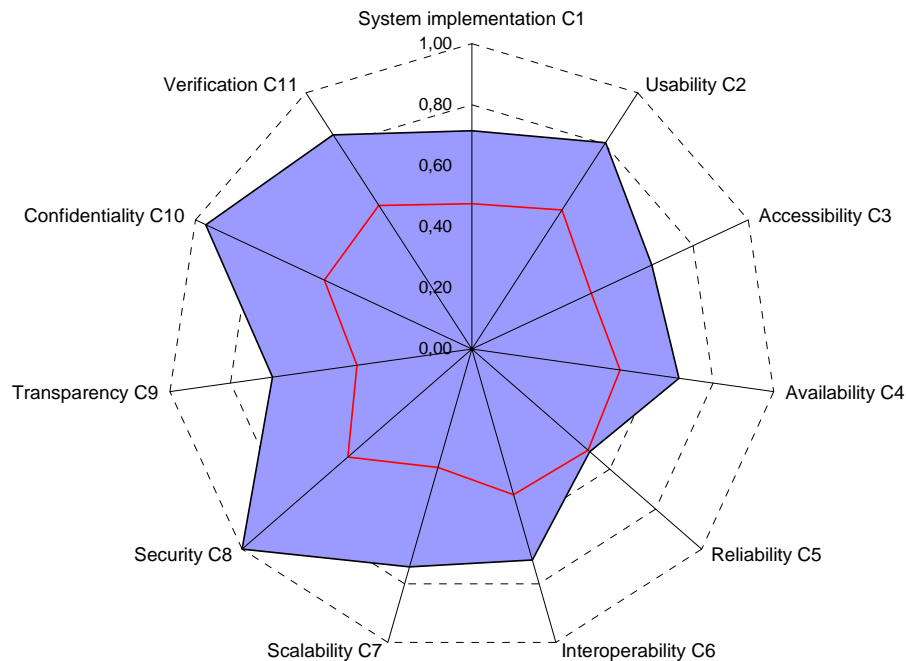
Figure 30 Germany – High Level Criteria representation

The current German e-procurement system exhibits many examples of good practice. Legal verification and validation is carried out by internal lawyers and although there are no official compliance verification mechanisms in Germany, a very high share of the German e-procurement platforms achieve a good level of compliance both with legal requirements and with technical functionalities. Security is considered paramount and follows the National standard of the German Federal Office for IT security. This explains the high scores obtained for Confidentiality and Security. In addition, many features score highly as they follow the so called SAGA standards. Developed by the German government as part of its E-Government initiative "Bund online", the SAGA standards give recommendations concerning architecture, infrastructure and standards and technologies in e-Government projects of the federal administration, and affect Usability, Accessibility, Interoperability and Transparency. Although Reliability and Scalability is ensured by means of system administrators and testing tools, a lack of more detailed information in this regard has affected the overall score. System Implementation suffers somewhat in the final result as a lack of coordination at a national level between the many existing systems affects the implementation of some advanced features, such as e-signature, at a national level.

Good practice: The development of security standards; the development of the SAGA standards (Standards and Architectures for E-Government Applications), based on various requirements, such as data protection and Security, adherence to which is required within national law (Federal Data Act).

Negative traits: Lack of homogeneity between systems has allowed the development of many types of platforms, creating barriers with regard to the use of certain features such as e-signature; no official compliance verification mechanisms.

Summary of the main political, social and cultural aspects influencing e-procurement:

Political aspects

E-procurement is politically supported on all levels; budgets for e-procurement were common in the past, therefore as a concept, e-procurement is well accepted in Germany. However, there was no coordination at the different political levels, and due to the German federal system, a large number of different systems now exist.

There are no central or official verification mechanisms in Germany. As regards interoperability it is considered that this turned out to be a problem. For companies which are supposed to use e-procurement portals, the large number of different systems is seen as a problem as well; a lot of time must be invested in order to be able to use the different systems.

Following on from this situation, the situation that currently exists with electronic signatures is problematic. Not all platforms accept all existing German e-signatures. Companies eventually need different signature cards to use different systems. Consequently, there are still not many electronic bids in Germany, although the technical infrastructure is available.

The decentralised federal system has resulted in the lack of a truly coordinated verification mechanism in Germany.

Social aspects

Public e-procurement is part of a large online initiative in Germany and part of the fight against the limitations of bureaucracy. It is an important element of extensive change in the German public sector, in business and in society in general. Since e-procurement is regarded as an important development, it was very much supported in the past.

Cultural aspects

In the public sector in Germany, and, in general, in German culture, conformation with legal requirements plays an important cultural role. As a consequence, e-procurement platforms achieved a high level of compliance with legal requirements. This is certainly a positive effect. However, it is considered that because of the legal requirements, usability suffered and e-procurement isn't used at present as much as it should be.

Greece
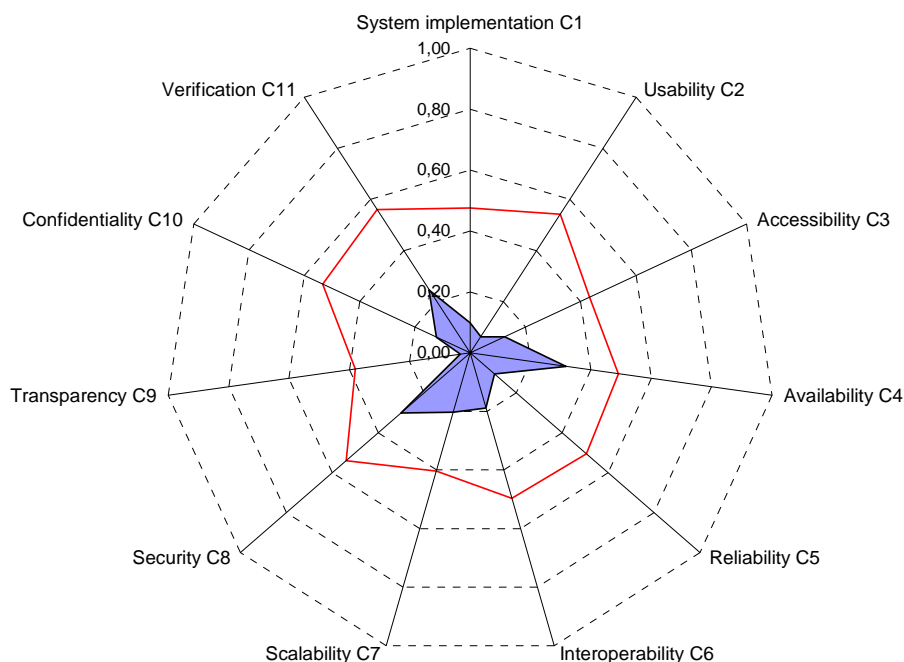
Figure 31 Greece – High Level Criteria representation

In Greece, the structure of e-procurement is in a very initial state, with tender specifications having been defined for the development of an electronic system earlier this year. Efforts to accommodate certain criteria, such as Verification

(primarily of early specifications for Security and Availability) can already be ascertained at this point, although in an elemental stage of development. Various Interoperability aspects have already been taken into account such as the interconnection with the Public Supplier Registry and the network of the Public Administration (namely "Sizefxis") as well as the connection with other banking and ERP systems, and this explains its presence on the graph.

Good practice: None. Too early to be assessed as system is still only in planning phase.

Negative traits: Poor organisational control and management of public e-procurement.

Summary of the main political, social and cultural aspects influencing e-procurement:

Political aspects

E-procurement has always been thoroughly supported by the Greek Government. However until the moment it became obligatory no political decisions towards the implementation of an e-procurement system had been taken.

The most important reason for the delay in the implementation of such a system is considered to be the negligible infrastructure of the public sector.

Elections of a new Government in 2004 resulted in the adoption of a new legal framework regarding public procurement, causing further delays to system implementation.

Social aspects

It is not considered that social aspects have substantially influenced the implementation of e-procurement in Greece, although the lack of implementation of both e-government and e-business in Greece, which are far from average European levels, is considered to greatly affect the potential acceptance of the system, at least in its initial phases.

The main reasons for delay in implementation of a system are either financial or technical. Although the current e-procurement project is financially supported by European Structural Funds there have been limited national resources available so far.

Furthermore, IT infrastructure was previously rather limited with respect to the availability of network connections, the interconnections between Ministries and public authorities and public sector personnel specially trained in the use of IT tools.

Importantly, the penetration of e-business in the private sector, in the past, was also minimal. In this context, the implementation of an e-procurement system was not considered a priority.

Cultural aspects

There are no cultural aspects identified with respect to the implementation of e-procurement in Greece.

The portal will be implemented in both Greek and English, aiding interoperability.

Hungary
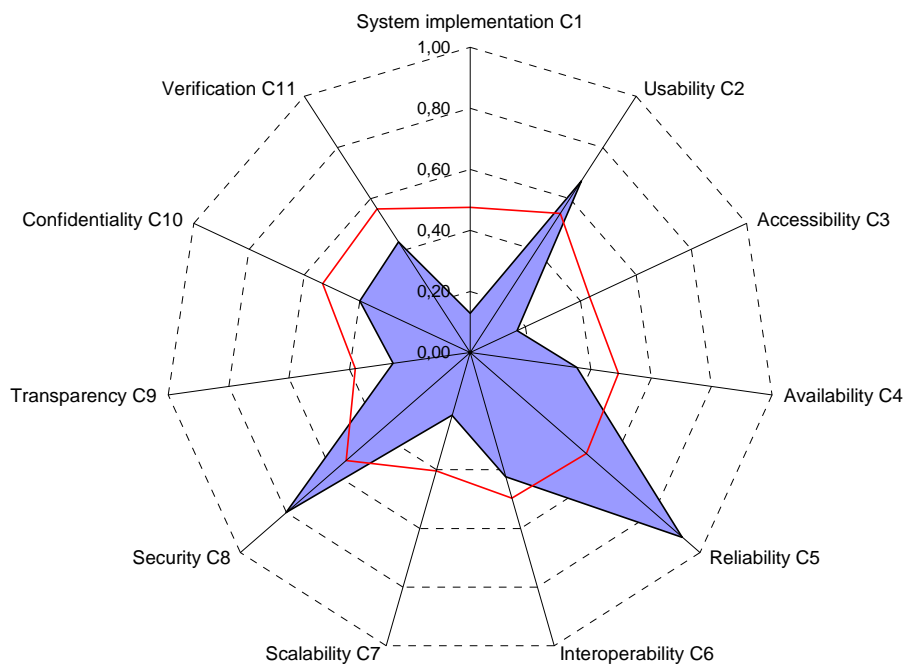
Figure 32 Hungary – High Level Criteria representation

In Hungary, the e-procurement system is regarded as a Service Oriented Application (SOA) which, in its initial stages, is made as simple as possible, reflected in the low score achieved by System Implementation. As the need arises different actors or modules are joined to the chain: for this reason Reliability and Usability of the system are guaranteed, as the required modules are given ample development time to ensure their successful integration with the basic system. Those Verification and Security procedures that are needed are also employed when the time arises. In general the graph reflects the stage of development of the Hungarian system, which is in a phase of advanced planning of a more sophisticated system, although overall, the system loses out due to a lack of clarity in political coordination of the organisational roles within the new system

Good practice: Incremental development of system as needs arise, not wholesale development.

Negative traits: Poor political organisation

Summary of the main political, social and cultural aspects influencing e-procurement:

Political aspects

Both Hungarian and EU policies are considered to affect e-procurement.

Bureaucracy is considered a hindering factor to the implementation of e-procurement at a wider level, although the current drive towards the simplification of governmental procedures has aided in the acceptance of e-procurement.

It is considered that Hungarian law requires further adaptation in order to encourage the acceptance of e-procurement. It is commented that this has led to the problem that whenever an attempt was made to write software programs based on procedures written in law, many hidden functions tended to emerge. It is considered that tackling such a problem requires a redrafting of the model of Hungarian law and legal regulation, to allow laws which directly affect IT processes, such as that concerning e-procurement, to be written in a more logical and structured manner, which allows easier process interpretation and modelling.

Lack of financial resources at Governmental level have effected the structure of the system.

Social aspects

The low economic and infrastructural capability of companies, especially that of SMEs is considered a limiting factor to the utilisation and acceptance of an e-procurement system.

SMEs in Hungary are at the end of the sales / marketing chain, and therefore their capacity to serve clients via e-procurement systems is currently doubtful.

Concern that products and services purchased by current public procurement procedures are more expensive than direct buying.

Cultural aspects

The trend is towards a SOA (Service Oriented application): not one large, complex e-procurement system but one where the actors, or modules, join to the chain whenever required.

Ireland
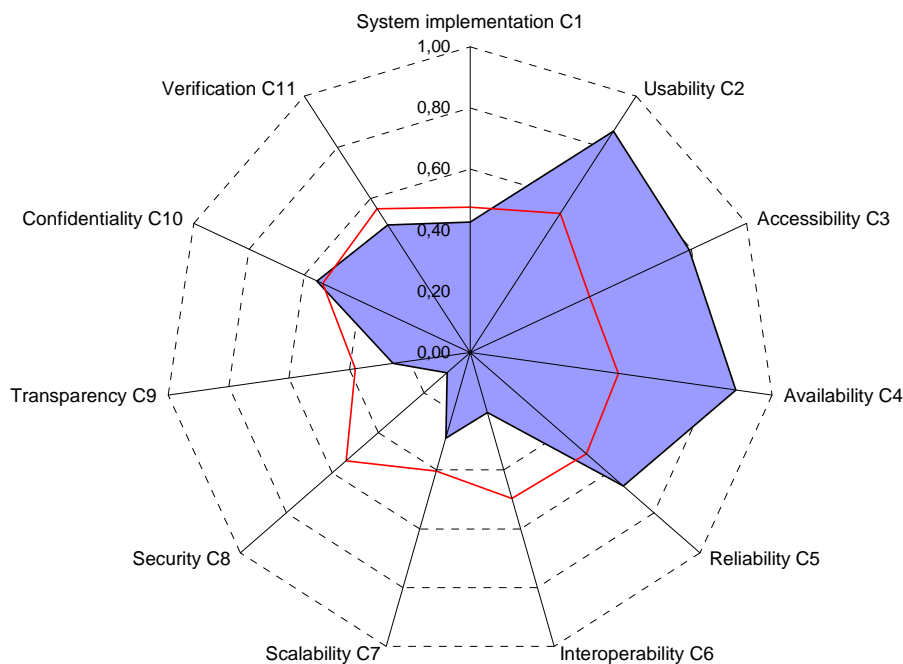
Figure 33 Ireland – High Level Criteria representation

The organisation of e-procurement is complex in Ireland, and exists at all levels of government, although efforts are advanced to centralise coordination through a public body. Technically, in certain aspects it is extremely advanced, and this is reflected in the high scores achieved in Usability, Accessibility, Availability and Reliability, where most operations are outsourced to service providers through SLAs. However, official verification mechanisms are regarded as a recent development in Ireland, where previously such activities were carried out ad-hoc, and thus this criteria scores poorly, although some effective non-official verification mechanisms are considered to exist at internal level; some of these include the polling of specific user groups for testing the functionality of certain features, and an internally provided user-suggestion scheme. Although System Implementation scores weakly, the majority of advanced features are to be implemented in the near future at national level, the only impediment being a lack of financial resources.

Good practice: Good technical development of various features. Use of SLAs to ensure service quality. The use of user groups within some internal verification processes to ensure that client satisfaction is taken into account.

Negative traits: Financial restraints at government level.

CARSA

Summary of the main political, social and cultural aspects influencing e-procurement:

Political aspects

Political support for e-government and e-business in general is very strong.

Ireland's public e-procurement system is relatively recent, and it is for this reason, rather than because of a particular political climate, that they have not yet implemented an e-procurement verification policy.

It should be noted that there are current plans to create a National Public Procurement Operations Unit, as a publicly owned company, although it is not yet decided where ownership of this new body will lie.

Social aspects

Past scepticism concerning government and political processes may hinder acceptance of e-procurement.

There do not appear to be any noticeable social aspects that are hindering the implementation of an e-procurement strategy, rather it is the newness of e-procurement that is the reason for the actual status.

Ireland is taking into account the new EU Directives and also the E-procurement Action Plan, so they are clearly progressing, and have an open and positive attitude to developments at a European level.

The recent Social Partnership Framework Agreement includes a public expenditure profile that reflects the growth in the economy, provides for investment in a sustainable way in public services, and a public expenditure allocation and management system that optimises value for money, including implementation of public procurement reforms.

Cultural aspects

A clear pro-European stance is a cultural characteristic in Ireland.

A strong IT culture, with SMEs highly aware of the advantages that technological advancement can bring to business.

A culture of public-private partnerships (PPP) in very large contracts has been used in Ireland since the year 2000. A motivator for PPPs can be compliance with national regulations. The costs of infrastructure developments to meet tougher new regulations can easily exceed a municipality's, or government department's capabilities, leading to a partnership with the private sector to gain compliance with nationally mandated standards. In addition, many governments have constraints on their procurement methods that have the unintended result of limiting access to new technologies. 'Lowest price' on bids is often required, even when 'best value' would be a more effective approach. 'Proven technology' requirements also seriously limit a government's ability to try newer technologies that can improve system efficiencies. The private sector often is not constrained by these regulations.

Italy
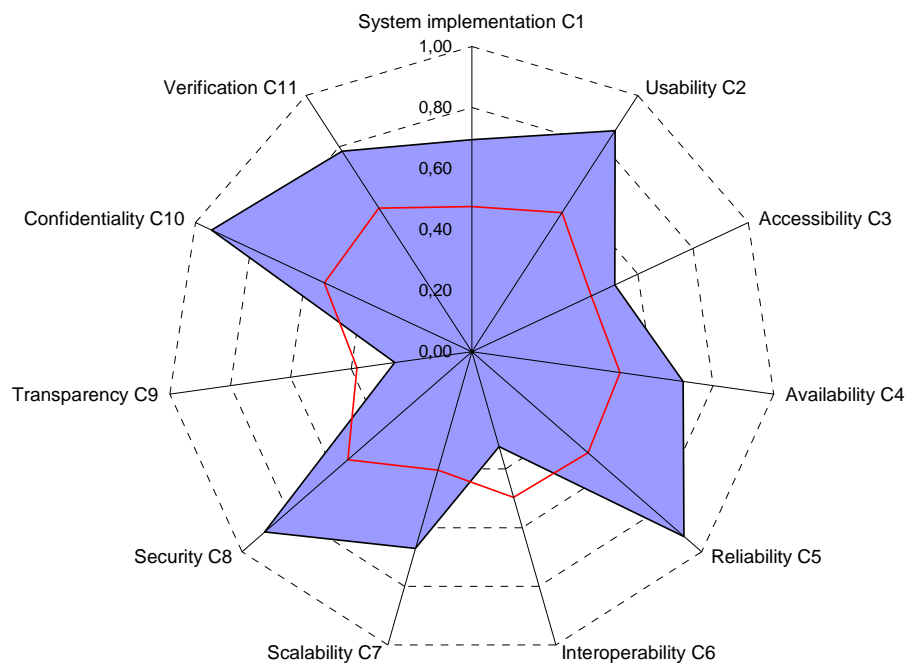
Figure 34 Italy – High Level Criteria representation

Italy should be regarded as one of the fore-runners within Europe with regard to the development of its e-procurement systems. Although officially possessing a series of independent decentralised regional systems, the country demonstrates an admirable attempt to organise what could potentially be a confusing e-procurement structure at regional level, through the appointment of a company at national level which acts as a coordinator and internal government consultancy for regional projects. Their main focus is the implementation of a procurement streamlining programme, and for this reason System Implementation scores above the European average.

In addition, as internal processes are well established for ensuring compliance of the systems with national law, Verification scores highly, as different internal verification mechanisms are adopted to screen procedures, depending on the platform, and the kind of supplies or services that can be procured on the different portals. The entity managing the platform has a number of monitoring functions over online tenders concerning specific supplies. While it drafts tender/competition strategies (e.g. conducting market analyses, feasibility studies, defining strategies), the entity also has the task to authorize auction types and to run compliance checks during the public procurement procedure stage, both before the call for bids is published and during/after delivery (e.g. dealing with complaints). Reliability and Usability of the systems are therefore seen as paramount and are monitored through internal verification procedures based on Italian law and internal load testing respectively.

CNIPA is a specific body which verifies compliance of the national system with national law and the EU Directives via auditing reports for each financed project.

In general, criteria such as Security, Confidentiality, Reliability and Usability are implemented and maintained with respect to specific Italian privacy and security laws, regarded as being extremely rigorous, and therefore score highly, and this reflects the maturity of the systems in place. However, Interoperability between the different regional systems is recognised as a problem, as development is carried out independently, thus lowering the ranking for this criterion. Although Transparency is still recognised as somewhat of a problem, and scores poorly, over the last 6 years, budget laws have aimed at enhancing the transparency of tendering procedures so as to streamline public spending.

Good practice: A good attempt at creating an efficient centralised organisational structure bringing together various independent regional systems. Good verification procedures based on a clear legal and technical structure.

Negative traits: There is some room for improvement with respect to the exchange of information and practices between the different regional and national platforms.

Summary of the main political, social and cultural aspects influencing e-procurement:

Political aspects

Budget restraints over the last few years have clearly led government organizations to resort to e-procurement as a way of cutting costs. Almost all political parties and coalitions support cost cutting policies and dedicated portals have been established by regional boards run by different and contrasting coalitions.

The growing role of IT in the civil service will increase data access and thus provide useful expenditure monitoring and cost cutting instruments.

Over the last 6 years, budget laws have aimed at enhancing the transparency of tendering procedures so as to streamline public spending. In the medium and long term this is expected to favour the diffusion of e-procurement.

Social aspects

Social aspects are closely related to political aspects. The public is demanding more transparency within the civil service, as there has been a common public conception of severe wastage of taxpayers' money by successive governments.

Cultural aspects

The general trend towards innovation in the Italian society as a whole may positively affect the uptake of e-procurement systems.

Latvia
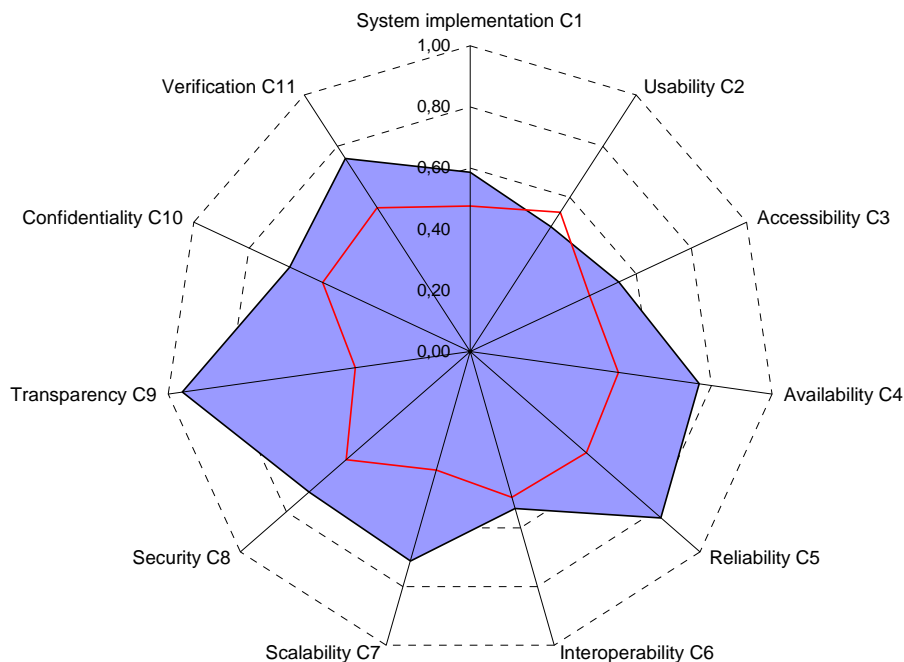
Figure 35 Latvia – High Level Criteria representation

Latvia is considered as one of the most advanced countries with regard to its e-procurement system. Due to its more recent development, the establishment of the system has integrated the EU Directives in a solid manner, and thus Verification scores highly due to the implementation of mechanisms, such as involving the legal adviser in the development process annually at each system upgrade, thus covering compliance of most features with the Directives. Organisation of the e-procurement system is tightly controlled at central government level. The criteria of System Implementation, although not ranked at the highest level, is important, as an extension on the current e-procurement

system is being developed under Structural Funds, although for a limited number of new features, such as e-auction and pre-qualification features. For this reason, Transparency is also high, along with other facets such as Reliability, Availability and Security. Although Scalability and Interoperability are considered important they are not validated through any official procedures, and so score somewhat less than their potential.

Good practice: An example of clear organisational control at central level, with some clear verification procedures carried out by independent parties.

Negative traits: A new system, and still in an early phase of development

Summary of the main political, social and cultural aspects influencing e-procurement:

Political aspects

The concept of e-procurement is accepted at government level. However, it is commented that many of the standard off-the-shelf solutions did not correspond with the EU Directives, and this has resulted in higher development costs than originally expected.

A National Development Plan has been developed with a clear message regarding the movement towards a knowledge based society which has positively influenced the integration of e-procurement in society.

Social aspects

The e-procurement system in Latvia is based on a positive trend towards innovation. During the first stages of system implementation, it was positively supported as being an accepted knowledge society technology.

SMEs did not benefit as expected from the introduction of the system, and to counteract this, 5 regions were created in Latvia (how this works is not clarified in the response).

Cultural aspects

None mentioned

Lithuania
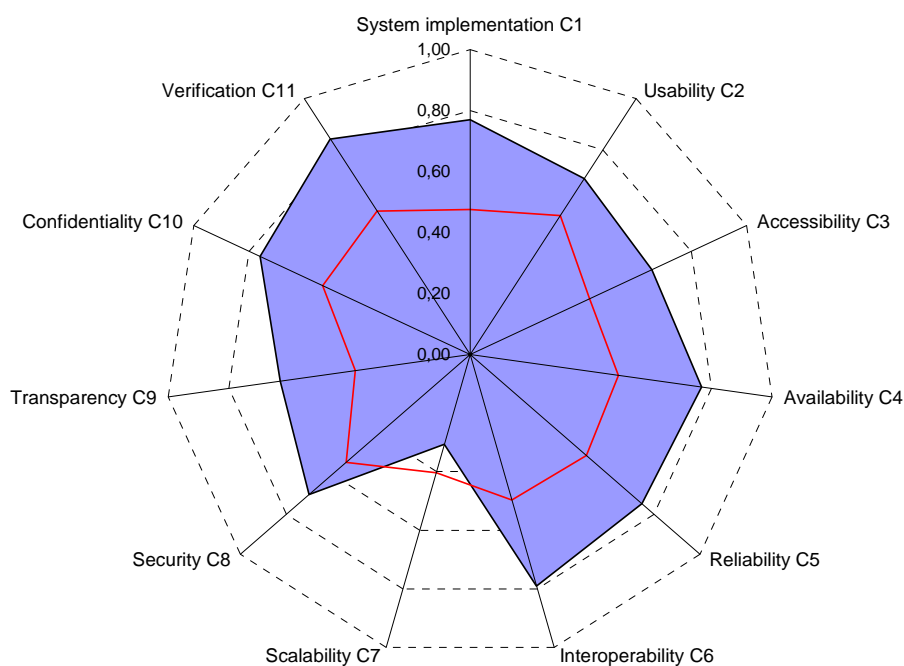
Figure 36 Lithuania – High Level Criteria representation

Lithuania has one of the most developed e-procurement systems in Europe, with extremely high scores for Verification of all e-procurement features with respect to national law within which the EU Directives are firmly embedded. The system is functionally highly advanced, with the majority of advanced e-procurement features, and in general shows a maturity across all criteria analysed. E-publication, e-access to tender documents, e-submission and e-information and reporting modules are all implemented. The central government coordinator responsible for any developments is the Public Procurement Office, which contracts 3rd parties for their subsequent implementation. In this way, SLAs ensure the success of certain criteria such as Availability, Reliability and Interoperability is guaranteed with the State Enterprise Centre of Registers for obtaining data about tenderers and buying organizations, and also fully interoperates with the TED data base and State News, which is the official State newspaper publishing all public procurement notices.

Maintenance is carried out both internally and by those contracted 3rd parties, with Verification of all maintenance related procedures carried out internally. Scalability is the only criterion which falls in the overall ranking, although a test plan for this feature is currently being developed.

Good practice: A good example of a system which includes a rounded treatment of all criteria involved. In general the overall organisation of the system is tightly controlled, and exhibits an overall structure which is secure but also sufficient flexible for allowing future development.

Negative traits: Still lacks some advanced features, such as e-auctions and e-signatures, and also their associated verification mechanisms.

Summary of the main political, social and cultural aspects influencing e-procurement:

Political aspects

Politically, there is a positive attitude towards e-procurement systems. This is indicated by the fact that the e-procurement project has strong financial support and by the new Law on Public Procurement.

Political backing has created a centralised model of e-procurement system and the system will be developed by the Public Procurement Office.

Social aspects

Lithuania is considered to be an IT literate society with more than 85 % of private companies using the Internet. In the public sector, Internet use is calculated at more than 80 % in the majority of the government organisations. These facts indicate that the integration of e-Procurement in society and its subsequent acceptance at the user level should not present problems.

However, difficulties have been found with regard to the employment of qualified IT specialists and other professionals, as salaries in government institutions are too low compared to business. This has affected the centralised development process: one solution employed for solving this was *outsourcing*, and some part of the technical services was transferred to third parties. However, information confidentiality is indicated as being a problem in this case (see comment below).

Any lack of competence in IT of the buying organisations and suppliers has been solved through the organisation of training.

Cultural aspects

Some scepticism with regard to e-procurement systems may occur with respect to the confidentiality of personal information. This is especially evident among the older generation.

Luxembourg
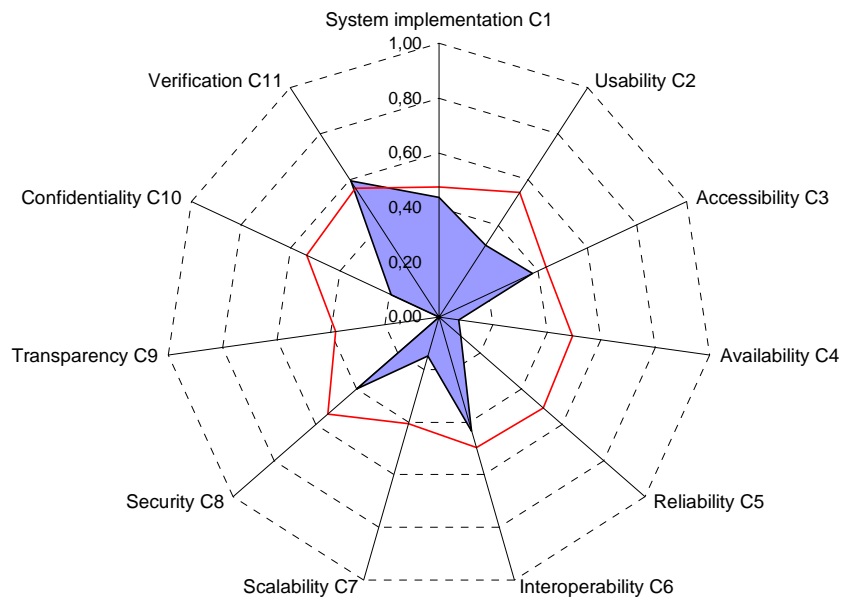
Figure 37 Luxembourg – High Level Criteria representation

Luxembourg shows some curious development features with regard to the criteria analysed. Verification is ranked highly relative to the other criteria, and these processes are well developed, although other criteria are relatively poorly developed. It is possible that this may be due to a culture of compliance verification in the country encouraged by the proximity of national government to EU processes and procedures. Compliance with national law is provided (partly) by the structure of official electronic forms for publishing tender notices and ensuing validity tests, which oblige the government body publishing the notice to include certain mandatory information (specific dates, etc.). From the organisational point of view, the awarding departments are responsible for the content of their publications and subsequent compliance with the national law. In general, the system shows an average scoring for System Implementation, as only basic features, such as e-publication and e-access are implemented, with corresponding features such as Security, Interoperability and Accessibility being similarly ranked, achieving a level commensurate with the overall level of development of the system's e-procurement features. The poor ranking for Transparency, Availability and Reliability is primarily due to a lack of substantial information.

Good practice: In general, verification is well developed, possibly beyond similar systems with a similar level of technical development.

Negative traits: Basic technological development of the system

Summary of the main political, social and cultural aspects influencing e-procurement:

Political aspects

E-procurement appears to be strongly supported politically.

Social aspects

The small size of the country results in the consequence that few people are directly involved in development and often in charge of a different tasks. This may influence the rapidity of the development and implementation of new systems

Cultural aspects

None identified

Malta
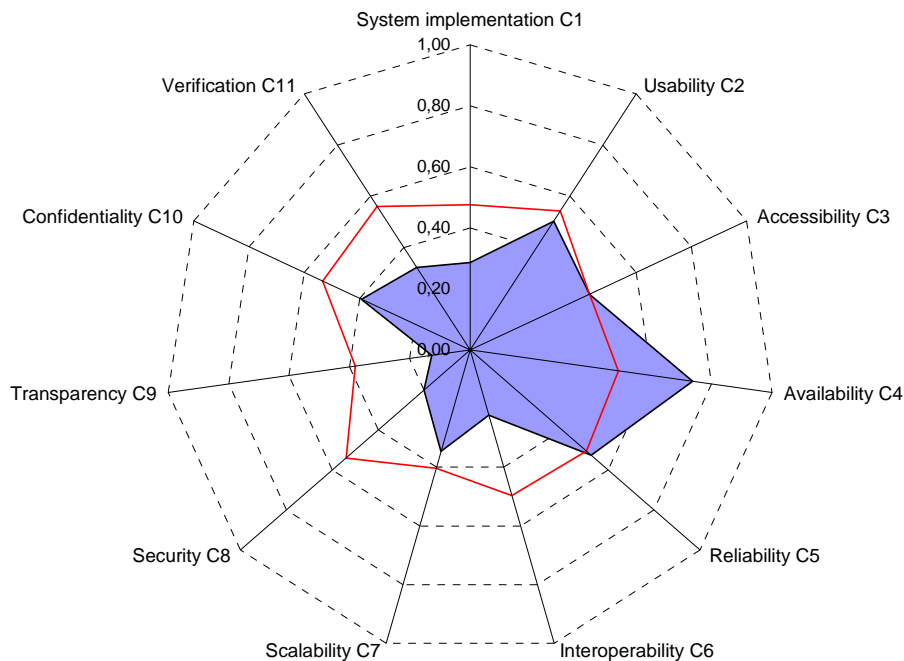
Figure 38 Malta – High Level Criteria representation

Malta has a very basic e-procurement system, the consequence of which causes the low results achieved in the criteria ranking of both Verification and System Implementation. On the contrary, the system is simple enough to ensure that Reliability and Availability are considered well served as criteria. Current implementation is limited to e-publication, but an action plan is in place to provide a more advanced system with all the required features by 2010, including the Verification mechanisms required to ensure compliance with the EU Directives and national law. One feature of interest is the low scoring obtained for Transparency within the current system, and the award of many public contracts is said to suffer from a strong level of cronyism, and it is suggested that the lack of development of this criteria in the current system was also due somewhat to political apathy. With the advent of the new system such problems should be addressed.

Good practice: Not yet sufficiently developed as a system.

Negative traits: Transparency of e-procurement system a problem.

Summary of the main political, social and cultural aspects influencing e-procurement:

Political aspects

A top priority on the government's agenda is boosting the ICT infrastructure.

However, the government is more interested in those activities which generate revenue for the government. The latter comes with the need to reach the Exchange Rate Mechanism II targets and other fiscal challenges.

Therefore certain services such as VAT compliance, income tax, the issuing of certificates and other similar new web portals that actively "create" money have been very much publicised to the general public and given more importance.

Social aspects

True confidentiality is considered sometimes difficult to ensure, as Malta has a small population, and businesses that regularly tender are well known to one another.

Given that the presently active public e-procurement system is of the B2B category and that the penetration of the internet is widespread, no specific social aspects are identified that could hinder the implementation of an public e-procurement system.

Cultural aspects

The awarding of contracts sometimes may be carried out through prior knowledge of the tenderer, thus not allowing full transparency.

It was, and in many occasions still is, difficult to break the relationship between the long term supplier and the government itself. This creates a barrier to entry for other competitors.

Under an e-public procurement system however such a system of fraudulent award of contracts soon disappears, allowing thus for fair trading.

The other companies which where however perceived to be in a comfortable relationship with the government find it even harder now to compete and are also perhaps eliminated from the market for inefficiency, lower standards or high prices. Knowing that this was a possibility the government is thought to have delayed in instilling a transparent mechanism by not actively pushing forward e-procurement as much as it could have.

Netherlands, The
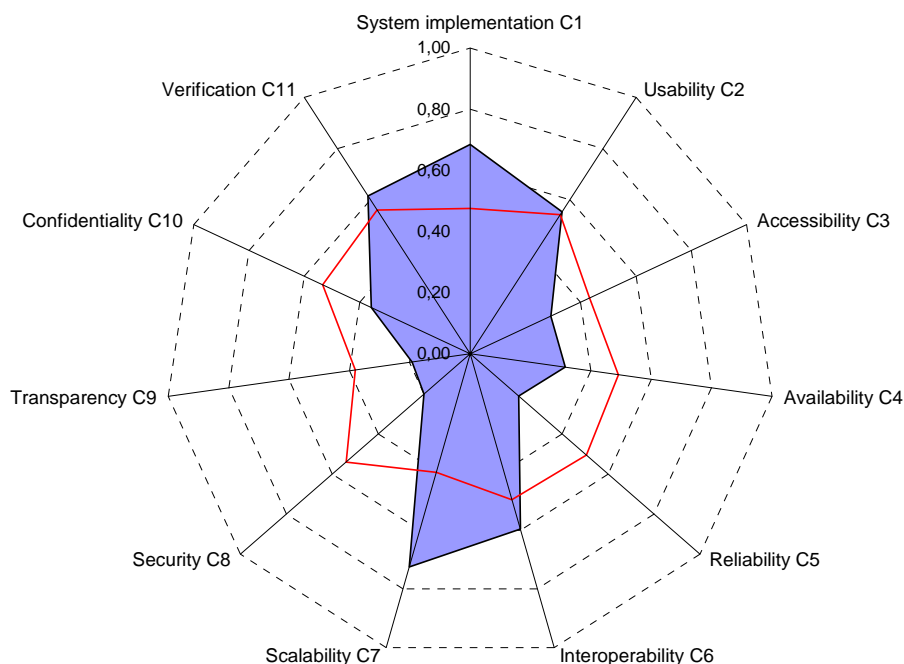
Figure 39 The Netherlands – High Level Criteria representation

The Netherland is an example of a system which, while only in the pilot phase, is considered well advanced in many features, scoring relatively well in many criteria. Verification of system compliance with national law and the Directives has been carried out externally by an accredited bureau, and thus scored well for a system still in test phase, although Verification mechanisms once the system is in place are not clear, and the ranking has been reduced for this reason. Although not yet implemented in public administration, the system is being used in one industry sector and thus can be categorised as tried and tested prior to roll-out across the public sector; for this reason it scores relatively highly in System Implementation. The country has also a high level of organisation with regard to public procurement, with the setting up of a centralised controlling body. The primary concerns for the new system appear to be Usability (to facilitate public tendering), Interoperability (with TED) and Scalability (sufficient to cope with for roll-out across the public sector).

Good practice: Clear organisation at a national level of e-procurement system, with creation of national body to foresee overall development of new system.

Negative traits: Due to the early test phase, it is not possible to see how certain criteria will be treated in the verification process.

Summary of the main political, social and cultural aspects influencing e-procurement:

Political aspects

The Dutch Parliament has approved that registration with the new national e-procurement platform, TenderNed, will be enforced by law; use of the system for certain tendering steps will be made obligatory.

An important political issue in the Netherlands is the reduction of government-imposed administrative burden. The e-procurement system is seen as one of the required instruments.

Social aspects

Use of the system is free (at least for the next few years), for governmental bodies and for tenderers.

Cultural aspects

The Netherlands exhibits a culture of public decision based on consensus. This is shown by the presence of many governmental bodies, including local communities and provinces, and tenderers, on the Board of TenderNed.

To mandate the use of a system is quite against the Dutch governmental culture. The policy therefore is more focused on presenting the system as an facilitator. Yet, legislation was approved by the Parliament to position the system as the only channel for TED registration. No political opposition was met in the Parliament doing so. Implementation of the legislation (foreseen beginning next year) must show whether opposition is met among the using organisations. The Ministry of Economic Affairs is reluctant to mandate the other system functions, though they hope those functions will be generally used without any problems and no alternatives will be developed.

Poland
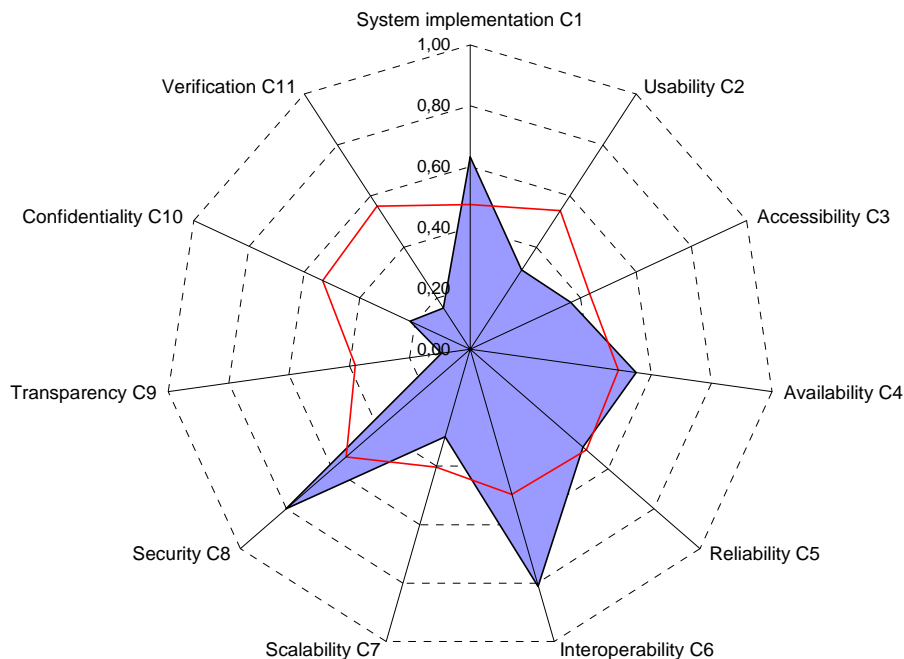
Figure 40 Poland – High Level Criteria representation

Poland is a curious situation with respect to e-procurement. It is not considered to have a fully developed system as such; however, individual parts have been developed in parallel (i.e. e-auctions, e-publication, e-evaluation, etc.), and thus System Implementation scores relatively highly due to the presence of these advanced features. In addition, plans are underway to implement a new system fully inclusive of all advanced features, and thus Interoperability and Security criteria, and to a lesser degree, Reliability are positively affected by this action. At the same time procurement principles in Poland are still undergoing some major changes, and for this reason Verification suffers greatly, as the basic mechanisms still remain unclear. In addition there are also regulations missing for some advanced features, such as e-signature, and for this reason Confidentiality also scores poorly. Other criteria, such as Transparency and Usability suffer, primarily due to the complexity of the organisational structure that currently exists.

Good practice: Clear attempt to introduce high level of security.

Negative traits: Lack of legislation at certain levels is preventing further advanced development (e-signature).

Summary of the main political, social and cultural aspects influencing e-procurement:

Political aspects

Political backing seems positive.

EU enlargement seems to have a positive tendency here, as it enables the implementation of well-established solutions at European level.

Currently, public bodies and private companies are investing a lot of resources in training their employees and increasing their IT skills (some of these are co-financed with European structural funds).

Social aspects

Public procurement is relatively new part of Polish economy and society, and therefore there is limited tradition in this range.

CARSA

Many businesses had very negative experiences from the period before 1989, when public procurement was not based on strictly economic circumstances and still suffer from a lack of transparency.

Currently, many people consider the system to be too complicated and unclear. In addition, planned implementation may cause exclusion of a part of the society (older generations, not familiar with e-business and new technologies). Facing the above described situation it is considered necessary to organize public campaigns promoting e-procurement (especially in small cities and in the rural areas).

Cultural aspects

None identified

Slovakia
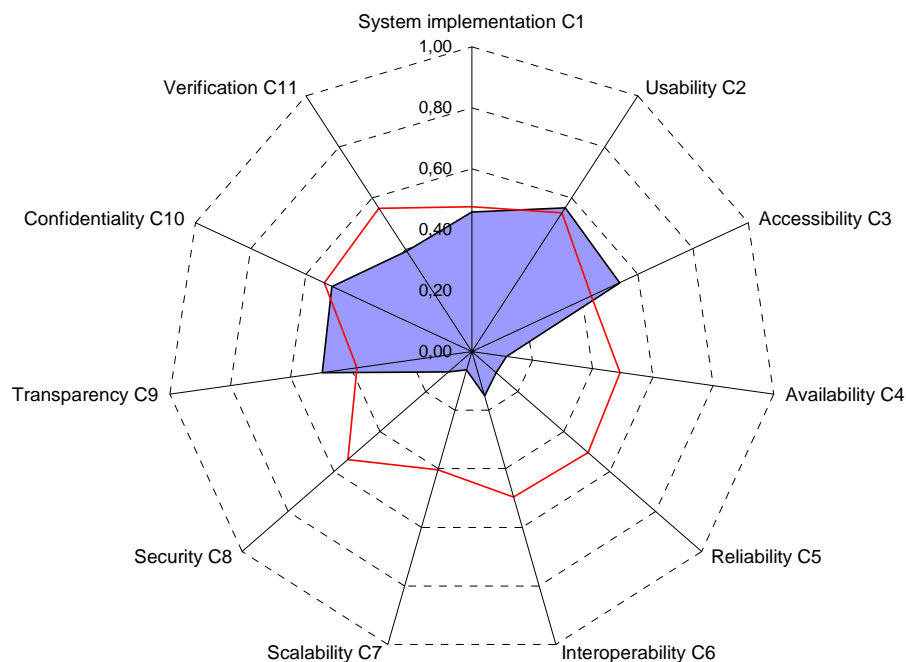
Figure 41 Slovakia – High Level Criteria representation

Although Slovakia currently has a very basic centralised e-procurement system in place, with few features, it scores relatively well in System Implementation as plans are well advanced for the enlargement of the current system. Some parts of a new e-procurement system are currently being tested, and should be fully implemented in 2007. In this way, criteria such as Usability, Accessibility, Confidentiality and Transparency score quite well, being the early focus of development, and are well integrated into the internal Verification procedures, carried out by a centralised public body.

As the system is still in a fledgling state, it scores poorly with regard to Security, Scalability, and Availability, due to a lack of explicit information and also perceived importance of the criteria at such an early stage of development. Interoperability scores slightly higher than the other criteria in this half of the graph, as plans exist to allow development of other e-procurement systems on a decentralised basis, although integrated with the central government platform.

Good practice: An attempt to introduce advanced e-procurement features at all levels.

Negative traits: Poor development of various criteria, as system in early stage of development.

Summary of the main political, social and cultural aspects influencing e-procurement:

Political aspects

Political support is positive towards the e-procurement system implementation. The implementation was backed-up by the national government's strategy[33] to support a knowledge-based economy.

Support from government officials and cooperation among responsible ministries is positive.

Public authorities and entrepreneurs are anxious, and actively encouraging, the implementation of a public e-procurement system.

Social aspects

None identified

Cultural aspects

None identified

Slovenia
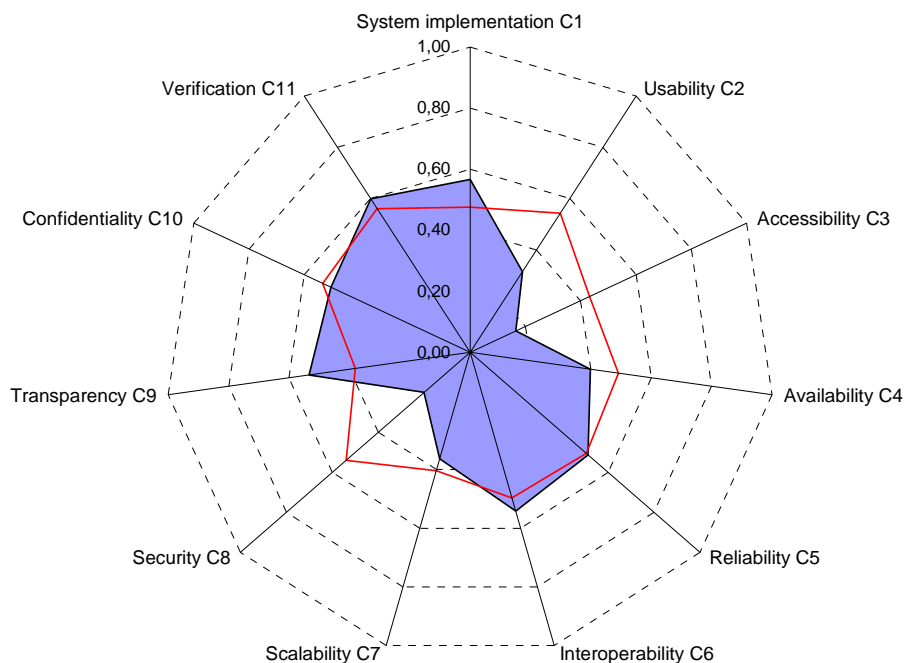
Figure 42 Slovenia – High Level Criteria representation

Slovenia is on a similar development stage as its neighbour Slovakia, although it scores slightly higher with regard to System Implementation and Verification. This is explained by the fact that some advanced features of the system are already implemented (e-access to tender documents is fully implemented; e-auctions and e-information and reporting are partly implemented features), with the corresponding Verification features defined with respect to both national law and the Directives. The criteria such as Security, Reliability, Confidentiality and Transparency are all present, although they suffer somewhat in the ranking due to a lack of information, again due to the fact that the system is in constant development and a clear definition of such criteria is still somewhat diffuse. Nevertheless, Interoperation scores quite highly, as integration with the Ministry of Finance system responsible for the state budget and tracking of all invoices, is in the advanced planning stage, and will be operated at a national level.

Good practice: Positive political effort being made to enforce e-procurement development plan.

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[33] MINERVA STRATEGY: Strategy for the development of competitiveness of Slovakia until 2010

Negative traits: System still in early stage of development.

Summary of the main political, social and cultural aspects influencing e-procurement:

Political aspects

E-procurement is regarded politically as an important subject, with a corresponding positive impact on implementation of the e-procurement system.

The Government is actively teaching citizens how to use e-services and about the benefits they bring.

Once the e-procurement system is implemented, the Official Journal of the Republic of Slovenia will no longer be printed (it will only be available in electronic form). This way, citizens will be forced to adopt electronic processes for at least certain phases of the e-procurement process.

However, resources are limited, mostly in terms of experts. Funding, due to current political interest in the topic is not considered a problem.

Although the future of e-procurement appears assured, it is thought that additional changes in government may have a negative impact (by slowing down progress) on development and deployment of the system at a national level.

Social aspects

There is a doubt that an electronic system can completely replace human contact. In Slovenia, people like to know not only what they are applying for but also with whom. Businesses like to know with whom they cooperate, or indeed, compete.

Internet usage in Slovenia is high, with 75% of companies using broadband access to the internet, and 89% of companies using internet for e-banking and other financial services[34] . From this point of view, it is concluded that social impact should not have a negative affect on the implementation of e-procurement.

However, it is thought that people are still not sufficiently informed of the potential benefits, as e-services and digital certificates are only used ton a modest extent.

Cultural aspects

The younger generations of employees are more proficient in ICT technologies. This will certainly have a positive impact on the implementation and usage of an e-procurement system.

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[34] Source: Statistical Office of the Republic of Slovenia, www.stat.si

Spain
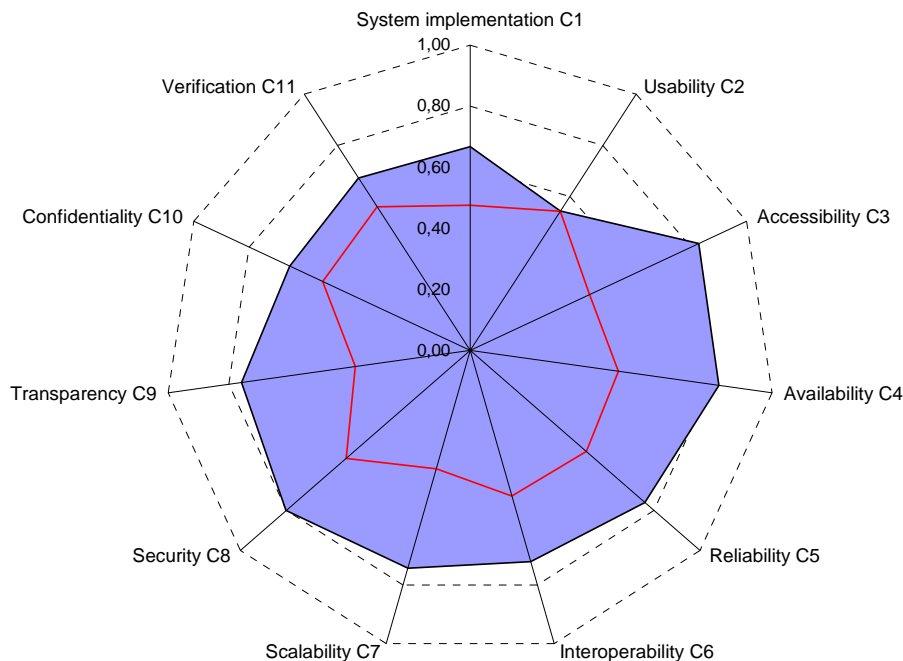
Figure 43 Spain – High Level Criteria representation

Spain scores adequately in both Verification and System Implementation due primarily to the reasonably advanced technical state of its e-procurement systems, although these may vary in their level of organisation and capacity. The existence of clear national laws defining aspects such as Security, Confidentiality, Transparency and Accessibility, ensure that all of these criteria are well represented, with a clear association with the criteria of Verification, and score highly for this reason. In general, e-procurement systems are in an advanced state of maturity in Spain. In general an effort is being made to introduce organisational control at a national level; however, the country suffers from a complex public administration structure, each with a high degree of independence with regard to the development of e-procurement systems, and for this reason criteria such as Scalability, Usability and Interoperability suffer slightly in the scoring procedure.

Good practice: Good technical development of e-procurement systems has enabled the introduction of most advanced e-procurement features.

Negative traits: Poor organisational structure at a national level.

Summary of the main political, social and cultural aspects influencing e-procurement:

Political aspects

The new law rules under development in Spain (Public sector Contracts and Hiring Procedures for Water, Energy, Transport and Postal Services), will significantly improve the implementation of a unique e-procurement system at national level.

On the other hand the difficulty of controlling and regulating the regional and municipal e-procurement systems will obstruct the implementation of a centralised system for all the administrative entities.

Social aspects

There are some constraints in the use of ICT systems and solutions, specially in SMEs. The difficulties with regard to accessing broadband systems in some areas, and the lack of expertise in companies, are considered to be affecting the normal use of these systems.

A lack of confidence in security aspects is hindering the normal utilisation of e-procurement systems.

Cultural aspects

None identified

Sweden
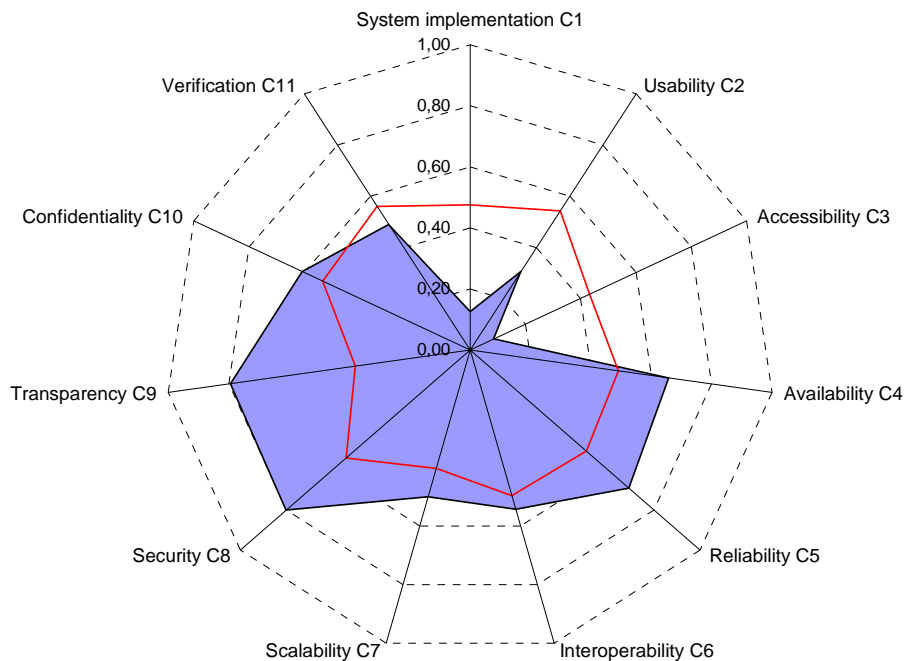
Figure 44 Sweden – High Level Criteria representation

Analysis of the current situation in Sweden with regard to the criteria is somewhat difficult. Systems are organised on a decentralised basis, and are required to ensure Interoperability standards with other systems decided previously at a political level, although there are not mandatory. Verification ranks low due to the lack of coordination between the systems above regional level. Although a governmental body exists to coordinate procedures, it is not considered to have much authority due to a severe lack of political motivation and backing, and an overall e-procurement policy. System Implementation also suffers at national level for this reason, with apparently little advancement. Although procurement processes tend to be carried out in a non-electronic format in Sweden, certain procurement procedures may be carried out electronically, and for these SLAs have been agreed with a 3rd party, owned by the Swedish Chamber of Commerce, which guarantee the transactions through a simple administrative application (e.g. concerning identity, e-signatures and encrypt information). Thus Security, Transparency and Confidentiality raise the score of these criteria within this system. In addition, Reliability is somewhat guaranteed through a Service Level Agreement, although as use of the system is not mandatory, it weakens the score of this criteria slightly.

Good practice: The use of SLAs for certain procurement procedures.

Negative traits: Poor overall organisational structure. Very little coordination at central governmental level.

Summary of the main political, social and cultural aspects influencing e-procurement:

Political aspects

E-procurement has had a low political priority.

Political elections to the Swedish parliament as well as at the local government level occurred in 2006. The election campaigns often have a paralysing influence upon decision strength, sometimes even on urgent ones.

It is considered that the short time given for the budget process after the elections may have a negative effect on e-procurement priorities.

Social aspects

National political decisions are strongly sought after, and very much anticipated among sellers as well as buyers.

Cultural aspects

The Swedish need for consensus may slow down the process of implementation.

The "Law of Jante", which may be translated as: "Don't ever think that you are better than anybody else!", is an invincible code in Sweden. In many cases, it is thought to have a paralysing effect upon taking initiatives.

United Kingdom
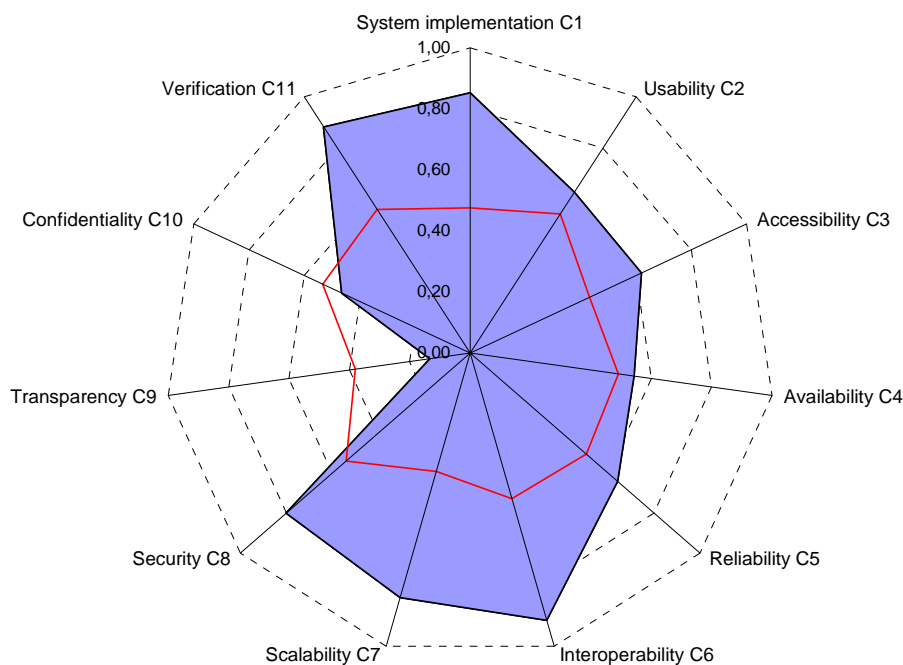
Figure 45 United Kingdom – High Level Criteria representation

Within this study, the UK is represented by the highly regarded Scottish e-procurement system. This system is extremely advanced and exhibits almost all the advanced features required of a mature e-procurement system, thus scoring highly in System Implementation. In addition, compliance verification is sufficiently performed by continuous monitoring at regular intervals. At all stages of the change process, regulatory compliance is specified and monitored, and day-to-day performance, principally via a continuous helpdesk, is supervised. Behind this level, server performance, etc, at regular intervals throughout the day is also verified.

Security is a very important feature and is verified via both international ISO standards and Sarbanes-Oxley audit requirements, as the system is hosted in the USA; however, its score suffers slightly in that e-signatures are not yet implemented, although encryption procedures are used in all transactions.

Interoperability, although it remains somewhat unclear if the criteria is verified through specific procedures, scores highly as the system is undergoing change from a centralised operation to a decentralised tiered system, and must integrate with other UK systems at national level and also other Scottish systems at a regional or sectoral level. Although Usability and Scalability score relatively low, due to a lack of information, the Scottish system is reckoned to be one of the most utilised systems in Europe (based on number of registered users), with high levels of Usability, Reliability guaranteed through a complaints system, and with Scalability guaranteed through operational growth. Transparency, it must be noted, lowers the overall Scottish score due to a lack of adequate information in this regard. However, in

general, the Scottish system exhibits many characteristics that score highly in the overall ranking and make it a candidate for emulating at an international level.

Good practice: Very advanced system, with advanced verification procedures in place. Officially decentralised at regional and local level, it is characterised by a well integrated system art all levels of government but centrally controlled by one body. Additionally, OSIAF Interoperability framework was developed by the Scottish Executive, and incorporates the e-Government Interoperability Framework (e-GIF) for use in Scotland, providing e-GIF Certification and Accreditation for OSIAF compliant solutions (e-GIF is detailed explained in the annexes chapter).

Negative traits: External hosting in USA may make it a prohibitively expensive arrangement at emulate at other national levels.

Summary of the main political, social and cultural aspects influencing e-procurement:

Political aspects

There is currently no policy specific to e-procurement. Departments using e-procurement must ensure that they abide by the same legal and policy obligations that govern all public procurement. Specifically, e-procurement must be compatible with the EU Directives and the UK Government's value for money policy, as set out in chapter 22 of Government Accounting. In reality, e-procurement systems, due to their transparency and full auditability, do and often help Public Sector Bodies to improve compliance with UK and EU legislation.

In 2004 and 2005, the OGC (Office of Government Commerce) completed a consultation exercise on the proposed approach to implementing the new Directives into UK law, and also produced a training module, providing information on major changes arising from the new rules.

The OGC regularly publishes communication documents, informing businesses of the rapidly changing landscape within e-procurement.

Social aspects

e-procurement is increasingly part of the fabric of the UK's public sector. Social acceptance of an electronic medium transplanting the more traditional model is a natural obstacle that is not particular to the UK, but one which is being overcome with success.

The huge variety of UK e-procurement approaches and systems is perhaps evidence of a consideration for social factors, whereby the public sector is, under a common framework, able to implement a system that works within a given scope, and that answers particular requirements.

Localism, ownership and accountability are also seen as drivers in verification processes.

Cultural aspects

There are undoubtedly cultural issues intertwined with the implementation of e-procurement systems across the UK, in terms of what works at a certain level or in a certain area of the country, what is or maybe considered important, etc., down to the clear fact that change implies and requires cultural change.

The huge cultural diversity of UK society, plus the immense difference between perceived levels of connectedness between individuals, groups, bodies, etc. and the government, clearly have a part to play in the implementation and maintenance of new technology such as e-procurement systems.

The view that change cannot be imposed, but should rather be freely embraced, on the basis of a clear identification of the benefits that will be achieved, is a key approach that characterises the UK.

As it is often in the case the UK when implementing new technology, the OGC stresses the importance of adopting a "Quick Wins" approach, the very basic aim of which is to plan and execute an implementation strategy such that customer/client buy-in is quickly won and frequently boosted, by demonstrably producing results or benefits at regular

intervals (even if they are small). This enables the value of change to be seen and channelled through the target organisation, and society in general.

EEA Members:

Iceland
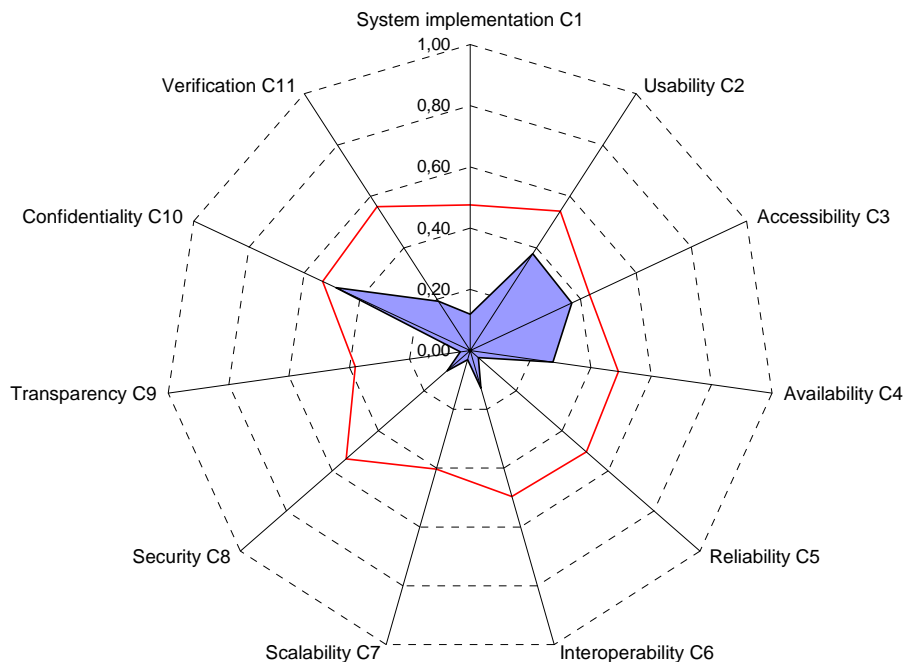
Figure 46 Iceland – High Level Criteria representation

The system in Iceland is also in a state of active development, starting from its current basic e-publication structure. Iceland, due to its demography, does not have the resources to develop proprietary systems and relies on off-the-shelf solutions. Therefore, due to a lack of both financial resources and political motivation both Verification and System Implementation score very poorly, and indeed accreditation of the different system features is only guaranteed by the provider (IBX) through SLAs signed with State Trading Agency. The current centralised system favours mostly criteria such as Confidentiality, closely followed in the rankings by Usability and Accessibility as its primary concerns. Although the current IBX system does have more advanced features available, such as e-auctions and e-ordering, these are not yet being used, due to the high cost involved.

Good practice: SLAs used with external provider to ensure service quality.

Negative traits: Low financial capacity to make use of more advanced features.

Summary of the main political, social and cultural aspects influencing e-procurement:

Political aspects

The political process with regard to this topic is recognised as being very slow

Budget limitations play a large part in political decision making with respect to e-procurement.

It is considered that e-procurement systems remain large, inflexible and too expensive, and as long as real political motivation is lacking, it is expected that the proper implementation will take several more years.

It is commented that in order to fulfil the ambitions of e-procurement at European level, small nations should receive more support at political and operational levels.

Social aspects

None encountered or foreseen

Cultural aspects

None encountered or foreseen

Norway
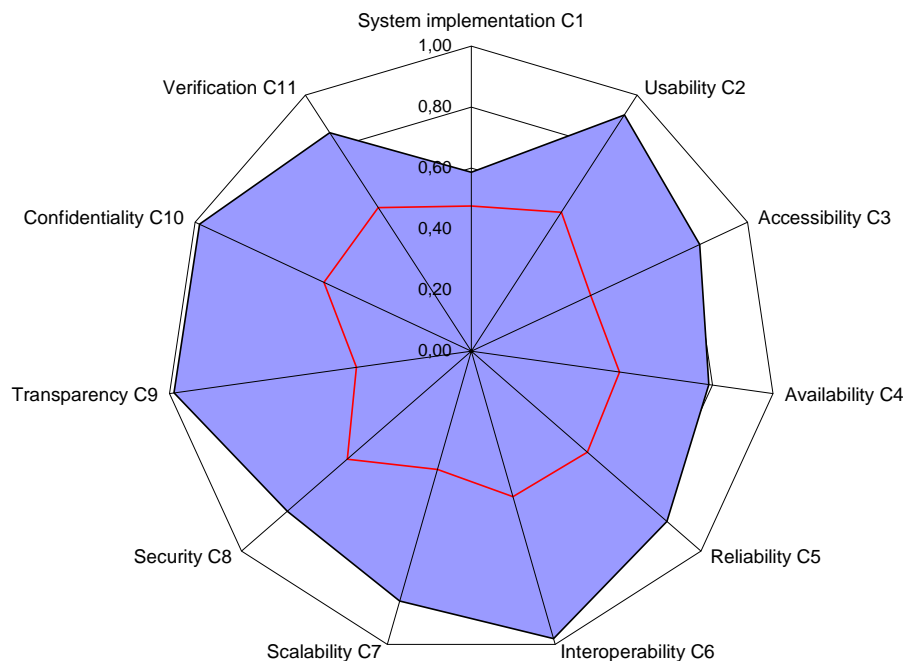
Figure 47 Norway – High Level Criteria representation

The Norwegian e-procurement platform is considered to be one of the most advanced in the EU/EEA, and based on the results of this study is one of the most complete with respect to compliance verification. It is controlled centrally by the E-Procurement Secretariat, which is part of the Ministry of Government Administration and Reform, and has a centralized responsibility for stimulating and facilitating e-procurement in the public sector. Public entities are however, responsible for the implementation of their own services.

In general the system is extremely well defined: System implementation ranks slightly lower as many of the more advanced e-procurement features are currently in test phase (e-submission, e-evaluation, e-auctions and e-reporting and prequalification services) and won't be operational until the end of 2007. In general, most of the non-functional requirements are extremely well represented, although certain features such as Usability, Accessibility, Availability, Scalability and Reliability drop very slightly in the ranking as they are not harmonised with respect to any specific national or European regulation, although requirements based on perceived best practice and user input are implemented. Factors, such as Confidentiality, Transparency and Security are well verified via security audits which may be called by the Procurement Secretariat whenever necessary, although Security loses some weight for not having an on-site security plan or manager, these aspects being left in the hands of the service providers.

Verification is carried out in all areas, and is well defined through a solid framework in distinct facets of e-procurement, although loses slightly in influence as many of the processes are carried out internally without 3rd party involvement. In this case, the strongest characteristic of verification is one of well defined contracts with service providers, and the imposition of penalties for non-compliance of contractual obligations.

Interoperability is extremely well catered for: the e-publication service (Doffin.no) is fully integrated with TED and has integration capabilities with 3rd parties. All notifications are handled electronically. The platform is also integrated with

some 30 suppliers (and more are in progress) and some 20 authorities. The integrations handle catalogue uploads, order/ receipt, invoice etc. The end-user applications are integrated with entity internal invoice handling systems and/or financial systems in around 10 authorities. Integrations are based on an organisational, semantic and technical interoperability approach, where processes, information content and syntax is defined by the E-procurement Secretariat.

Good practice:. The creation of a procurement platform around purely internet based services. The provision of contracts (and SLAs) to different operators for different modules of the overall "system" allows the national authority to concentrate on functionality and availability. As long as requirements are met and it is not to the inconvenience of users, the operators may carry out upgrades or even switch to another service platform.

Negative traits: None encountered.

Summary of the main political, social and cultural aspects influencing e-procurement:

Political aspects

Political influence is very positive in Norway, with the publication of the eNorway initiatives. The current eNorway 2009 (published in 2005) has three target areas:› The individual in the digital Norway › Innovation and growth in business and industry and › A coordinated and user-adapted public sector, the latter including e-procurement.

The Norwegian government prepared an action plan ("Strategy and actions for the use of electronic business processes and electronic procurement in the public sector", 2005) to promote increased use of electronic procurement. This contains initiatives for skills development in public and private businesses, organisational change, and introduction and use of new routines, work methods and electronic support systems, the goal being, by 2009, that 25% of the volume of public sector operational procurement shall be wholly or partly achieved through competition based on electronic processes for coordination with businesses.

Social aspects

Norway has succeeded in establishing a good environment for implementation of e-government. One positive aspect is the legislative and regulatory environment, which has been updated to account for many of the legal requirements related to the operation of government in the digital environment.

In addition, the existence of some common ICT infrastructure, standards and applications (most notably the system of public registers (in place for a long time), which has made many internal electronic transactions commonplace and well accepted.

Also, Norwegian government organisations have generally accepted e-government as being relevant to themselves and their stakeholders, and are looking for ways to implement it.

Finally, Norwegians have a high degree of trust in government, and confidence in providing it with their personal information in exchange for better services.

Cultural aspects

None encountered or foreseen

12.6 ANNEX VI: General Country Profile for each EU/EEA Member State

Austria	
Political Aspects	**Positive aspects**
	Political commitment towards the creation of national legislation implementing the EU

	Directives.
	Successful formation of centralised public structures Bundes-beschaffung GmbH (BBG) and Wiener Zeitung (WZ). These created high standard e-procurement systems for public federal services and assist regional authorities and bigger public companies.
	The political will to outsource e-procurement development activities allows for the exploitation of technical expertise that may otherwise not be available "in-house".
	Negative aspects: NONE
Social Aspects	**Positive aspects**
	Well founded socio-legal base generates user confidence.
	Centralisation of Austrian society helps simplify user access to system.
	Negative aspects: NONE
Cultural Aspects	**Positive aspects**
	Steady co-ordination, common in Austrian society, very important in e-procurement development.
	Cultural characteristics such as patience and orderliness, added to the long preparation phase, considered essential for convincing stakeholders and customers of the benefits of the system.
	Varying situation of the customers (ministries) considered, through a wide range of approaches from pragmatic to short-spoken.
	Negative aspects: NONE
Compliance verification	
General Aspects	Considers itself in a leading position regarding compliance verification, especially concerning the legal basis.
	Considers that no further means at national level needed.
	BBG and WZ carry out verification by several audit standards at different stages via control mechanisms, internal concepts. Verification in certain cases done by BBG, in others by 3rd parties.
	Non-electronic verification: • Monitoring undertaken in parallel to electronic systems • Random sampling
Interoperation	BBG interoperates with central federal ERP-system (SAP-HV) Verification strategies for interoperation: • BBG internally • Random sampling by 3rd parties • Currently by ICT-board of Federal chancellery
Specific performance validating tools/methods	At BBG no IT tools; at WZ via individually developed IT tools.
	Concepts (definition of aspects to be verified, verification requirements) / checklists on paper.
Scope of verification methods	Verification is planned in advance based on a concept following an official strategy. Concrete verification at each step of development:

	1) Specification phase: • specifications of the system or software to be developed • reviewed against national and EU legislation • technicians, business analysts and jurists participate together in weekly meetings • all steps documented in a final report • final acceptance by ordering party (BBG) 2) Design and Development phase: • rough analysis internally by BBG • verification by key users (Ministry departments, federal regions, communities) • regression analysis • final acceptance by ordering party (BBG) 3) Validation phase: • Final validation by BBG according to the release plan • Regular review phases according to verification requirements 4) Installation phase: • Separate tests for separate modules, final integration and test 5) Operational phase: • Checks by BBG on an daily base • Installation of a Customer Care Centre and e-support tools 6) Maintenance phase: • Maintenance contracts with developer (IT-supplier) • Further development by BBG and IT-supplier in case of new releases • final acceptance by ordering party (BBG) when required
Integration	Interfaces to WZ as well as to Federal Enterprise Resource Platform. Verification of integration methods laid down in concepts and co-operation agreements.
Testing	Verification of testing strategies: • Based on a concept for functional tests, development plan • The completed interfaces are checked each time
Mechanisms for verifying features (High Level Indicators)	
Availability	Checks, measurement tools. An internal 3rd party and internal verification, via SLA Signed with operator of the system (Bundesrechenzentrum - BRZ). Preventative maintenance: Clustering of hardware system in case of single breakdown; Complete data back-up. Contingency planning: an emergency scenario exists with a measurement plan, no parallel computer centre but actual data is saved.
Accessibility	Verify national regulation via control mechanisms, internal concepts. Sole cases done by BBG, others by 3rd parties. e-learning tools provided specific to the required step in the process, personal training and workshops provided.
Reliability	Measurement tools, process routines, carried out by 3rd party in specific cases as well as internal validation.
Interoperability	Validated through handbooks, experts (WZ, federal ERP). Semantic interoperability through standards, partly specific to branches.
Usability	Chamber of Commerce demands simple usability of system, to encourage use by SMEs.

	Site provided in English and German.
Scalability	Scalability validated through tests on quantity structure, carried out via 3rd party in specific cases as well as internal validation.
	SLAs signed for controlling performance rates in features such as development, operation.
Security	Security validated via regulations, norms carried out by both 3rd party and internal validation.
	IT Security handbook published for the national public administration, in parallel international market standards according to the state of the art.
	E-signatures not used although available and controlled via an independent certification authority, being a consortium of banks called "A-Trust".
Transparency	Validated via Austrian audit court, stake holders.
Confidentiality	Validated through internal validation via authorisation, authenticity.
Technical development	Product
	Product lifecycle about 5 years (auftrag.at launch 2001, complete revision 2006)
	BBG acts as central project manager
	Operation by 3rd party (Bundesrechenzentrum – BRZ)
	Maintenance by 3rd party
	Stakeholders: Federal chancellery, BBG, WZ, BRZ
	Development
	Development lifecycle 3 years in total, 1,0 analysis, conception, 1,0 development, 1,0 roll out
	Analysis, conception by BBG, development by 3rd parties to specifications
	Future developments take into account by maintenance and development contracts
Organisation development	2 national systems for public e-procurement for well defined applications:
	a) BBG, implementation of public e-procurement, in co-operation with:
	b) Subsidiary of the Wiener Zeitung – WZ which provides platforms for public procurement, tenderers (e.g. www.lieferanzeiger.at; www.auftrag.at).
	Approximately 3 other regional public e-procurement systems.
	Other state owned companies operate systems that have to be verified by WZ (public road construction, public real estate).
Legal development	E-Procurement regulated by the *E-Procurement-Verordnung*, approved in 2004, which governs the electronically based creation and delivery of offers in the area of public procurement. The Austrian government implemented the EU Directives into the Public Procurement Act 2006, in February 2006.
	Regarding e-government, the Austrian E-Government Act sets the obligation for public bodies to be capable of full electronic transactional service delivery by 2008 and provides a clear and solid legal basis for the country's e-government programme and initiatives.
Budget	Due to detailed planning no budget difficulties encountered.
	Current cost dedicated to verification: 30 - 40%
	Future cost to be dedicated to verification: 25%

Austria: Restrictions and Needs for defining compliance verification mechanisms	
Restrictions identified by National Contact	None
Needs identified by National Contact	Definition of European standards for e-procurement features required (e.g. e-signature).
Needs identified by CARSA	Integrate e-signature into the national e-procurement system.

Belgium	
Political Aspects	**Positive aspects: NONE** **Negative aspects** The federal structure of the country results in several developments of e-procurement systems in parallel, all with budget limitations. It is considered that the implementation and quality of verification tasks could suffer from this situation.
Social Aspects	**Positive aspects** **Negative aspects** The progress on implementation of e-procurement in Belgium is characterised as "unusual", given that the Flemish region which is generally considered to be more advanced from an economical point of view compared to the Walloon Region, is quite far behind both the Federal and Walloon region with regard to the implementation of e-procurement. Part of the reason given is that Flemish politicians do not seem to be particularly active in this field.
Cultural Aspects	**Positive aspects: None** **Negative aspects** The existence of two very different communities in Belgium is considered to create difficulties, and as a consequence impacts the development of projects that may be considered to have a negative influence on the image of the region. This cultural difference creates difficulties with regard to a genuine will to collaborate.
Compliance verification	
General Aspects	Consider that verification should be done by the same persons or group that created the specifications and will manage the projects. No desire identified to appoint a third party to take care of verification tasks in any of the e-procurement projects. Non-electronic verification Case by case done by the internal services and financial auditors.
Interoperation	With BBA (the Belgian official journal in which all tender advices above the threshold are published by law), and soon with the e-procurement platform in the Walloon region. Verification strategies for interoperation: Not mentioned.
Specific performance validating tools/methods	Not specifically for this system; general monitoring features will be used.
Scope of verification	Not defined.

methods	
Integration	The e-procurement system is designed to work as a "stand-alone" system: it will be linked with other systems only for e-publication functionality (with regions and the JOEU), and for invoicing which is managed at the Department of Finance level.
	The communication procedures for e-publication have already been tested in actual the JEPP system.
	Verification procedures are integrated into the working procedures of the system (no more information provided).
Testing	Not defined.
Mechanisms for verifying features (High Level Indicators)	
Availability	Internal verification (no further information).
	SLA signed (99,5% availability).
	Preventative maintenance: not defined.
	Contingency planning: not defined.
Accessibility	Specifications are still in preparation for comprehensive accessibility features.
	Any user with internet access can access the e-procurement system.
Reliability	Internal verification (no further information).
Interoperability	No verification.
	Semantic interoperability via XML schemes from IDABC.
Usability	Site provided in French, Dutch, and later in German and English.
Scalability	No answer, although policy is oriented towards evolution.
Security	Internal validation via Security Risk Assessment plan.
	Accredited e-signatures (and eID) used and controlled via a National Authority and independent certification authority.
Transparency	Not defined.
Confidentiality	Not defined.
Technical development	Product
	A new specific service has been setup at the Federal Personnel & Organisation Service: this will specify, launch and monitor the development, management, and maintenance of the Federal system and also specify expansion of the functionalities.
	Development and maintenance will be outsourced.
	The federal e-procurement system will be linked with the regional systems as well as JOUE with regard to the e-publication function.
	Development
	By third party under specifications of Federal service. The development will be modular and should be able to incorporate new modules.
	All verification strategies of an internal nature.
Organisation development	One system operates at the Federal level (JEPP), another system operates in the Walloon region (MET) and a third system is being planned for the Flemish region.
	Coordination of e-government systems carried out by the Federal Personnel & Organisation Service, but the regions are autonomous and can decide about their own

	developments.
Legal development	New legislation transposing the EU Directives was approved by the Belgian Parliament in June 2006. Belgian procurement legislation is currently being revised beyond the requirements of EU law.
Budget	No information.

Belgium: Restrictions and Needs for defining compliance verification mechanisms	
Restrictions defined by National Contact	Regions have complete autonomy with regard to compliance. Budget limitations will cause parallel development of systems at regional level to suffer. Compliance verification considered responsibility of party involved in drawing up specifications, and outside influence is not considered necessary. More collaboration required between different communities, in particular with regard to verification mechanisms.
Needs identified by National Contact	More control needed by appointed controlling body for the various systems.
Needs identified by CARSA	Definition of European standards for e-procurement features required (e.g. e-signature) Compliance mechanisms must be defined at national level – this would aid in aspects such as interoperability between different systems. A central body genuinely controlling e-procurement development would aid the efficient use of scarce financial resources.

Bulgaria	
Political Aspects	**Positive aspects** The new electronic business registry (supported by IMF funding) will effectively start in June/July 2007. Companies will be able to submit documentation electronically and therefore it will be possible to introduce pre-qualifying procedures, when bidders will register to be licensed or otherwise permitted to submit technical offers and bids. This reform is expected to radically reduce transaction costs, and greatly improve transparency. **Negative aspects:** Politically favoured companies and organizations in Bulgaria are often financed through public procurement contracts and concession agreements. The Centre for the Study of Democracy (CSD) in Bulgaria estimates that resources deviated from the public procurement process by all parties' loops of companies ranges between 160 million and 185 million Euro in 2005. It can therefore be assumed that there was not enough motivation to increase transparency within public procurement processes, by adopting an e-procurement strategy. The judicial system was seen to have had a negative effect on e-procurement implementation in the past, by causing a significant delay (over 7 years) in the creation of an electronic business registry, in order to allow companies to carry out official registration with a central body. This currently must be carried out within the court system, which is seen as highly inefficient.
Social Aspects	**Positive aspects: None** **Negative aspects:**

	The process of e-procurement implementation is more supply-driven than demand-driven in Bulgaria.
	Reforms in Bulgaria are considered to be rather elite-centred or donor-shaped. In general, social aspects related to the wider-range of population and businesses are not at all correlated with implementation. In particular, the current USAID project (Open Government Initiative) had much broader goals to achieve with its e-procurement program (such as reducing corruption and raising efficiency), however, the government was not considered open to it, and thus the administration shaped the process in a way that only incremental changes would occur, thereby not making significant institutional changes that would affect party-financing through the public procurement system.
	Thus verification procedures would be applicable to the extent that this would assure compliance with the law in a nominal sense. However, verification would be mainly focused on the formal outcomes and not the business processes. Verification, in the most part, would be thought of as the responsibility of the user of the system.
	However, most common abuses are informally legal (for instance, entering an eligibility requirement that could be fulfilled only by a certain consortium, known in advance). More generally, it is considered that specific socio-professional groups indeed have had a negative impact on e-procurement development.
Cultural Aspects	**Positive aspects**
	The Ministry of Finance has been well-known for its "culture of innovation" for many years, their small e-procurement system being considered an example. It was a local initiative, made with the aim to "compete" for USAID funding, although finally unsuccessful. In Bulgaria, a lot of municipalities did not want to implement the same system as their municipal neighbours, and therefore it was not possible to widely replicate the system in other regional institutions.
	Negative aspects
	The strongest cultural aspects that affect e-procurement implementation are also administrative-centred and are considered to arise from donor-beneficiary relations.
	There is no court practice for SLAs to determine the actual scope of agreement. Formal contractual culture is not very well developed in Bulgaria, mainly because of the weak judiciary and conflict resolution systems. Some comments made surprisingly suggested that when a contract has been signed, then the real negotiations on the terms start!
Compliance verification	
General Aspects	As a rule, compliance with the law is ensured through the user requirements of the system at the time of implementation.
	Verification is informal and reliant on checks and balances at entry of information and routine checks from the support personal.
	Non-electronic verification:
	According to the public procurement law (PPL) all public procurement notices must be registered.
Interoperation	Not automated, but all tender notices must be sent to the State Gazzette and to TED (by the contracting entity).
	Potential differences in information are controlled manually by revision processes.
Specific performance validating tools/methods	Verification and validation (for the functioning of the system as a whole) as a rule is on a case-by-case method.
	For verifying entries into the database/register a business process model (of contracting entity behaviour) has been developed and the system is actually an entry-support tool. It

	guides contracting entities while entering information and blocks entry of logical impossible entries and checks for entry of all necessary fields.
	The content of the entries is not formally monitored, however, the employees do scan for evident errors.
	A validation check is carried out to see if the contracting entity is actually eligible to use the system, as provided by the Public Procurement Law. Private companies that are not contracting entities according to the PPL are rejected the right to populate the system with their notices.
Scope of verification methods	Compliance is achieved through the design of the system, which is currently in compliance with national law, which in turn is being harmonized with the EU Directives.
	The contract with the developer envisages adaptation at each change of the law within the provided period. It is coordinated in advance with the Agency to provide enough time for implementation.
	Every contracting entity is responsible for the submitted information and related aspects (when and what to submit within the procurement life-cycle).
	The system has two "intelligent features": (i) it can suggest to the contracting entity terms and deadlines to submit information; (ii) it can signal non-compliance with the law, rules and regulations.
	After the electronic submission of a public procurement notice, an employee of the Agency formally checks it again against predefined criteria and publishes the notice (makes it available to the general public).
Integration	Not defined.
Testing	Testing strategy is carried out by the developer, although validated (and documented) by the donor (USAID).
Mechanisms for verifying features (High Level Indicators)	
Availability	Internally: Statistics register using and analysing user complaints received online.
	System failure signals (telephone or email) followed;
	Automatic notification of IT persons if a problem/availability risk occurs
	Occasional tests for availability conducted.
	Preventative maintenance: system is built on a cluster-approach: if one server is down, the other one continues to function.
	Contingency planning: There is a daily back-up of both servers and information. Back-ups are currently held within the same office, but plans for moving to a distant location are discovered.
Accessibility	Doesn't follow specific guidelines, although must provide easy navigation with different browsers. However, the visibility of specific parts of the site via some browsers is said to be poor.
	Internally verified.
	Contracting entities can download and complete procurement notices locally. Electronic version sent with original hard-copy to the PPA and State Gazette. Notices may also be completed on-line by using e-signature and are visible after verification by a PPA expert.
Reliability	Internally: Reliability guaranteed by formal checks-and-balances implemented in the system.
Interoperability	Organization and technical interoperability has been achieved with State Gazette. Although automatic, it has not yet achieved DataBase-DataBase interoperability, but

	automated notices are sent.
Usability	Internally: Statistics register using and analysing user complaints received online. Only Bulgarian version provided.
Scalability	Not available.
Security	Internal validation based on formal security plan. Formal security logs are used. No national technological security standards exist. Accredited e-signatures provided by 4 companies, all certified by a State independent commission.
Transparency	Validated via formal checks and balances, although depth to which transparency verified is not known.
Confidentiality	Validated through checks and balances.
Technical development	<u>Product</u> Not available <u>Development</u> The system requirements have been developed by the Agency in-house. Development carried out by Rila Solutions (private company). Tests and improvement of functionalities are being performed by a joint group of public procurement agency employees and Rila. System developed on a module-principle, hence further functionalities can be added.
Organisation development	One centralised register for public procurement is maintained by the Agency for Public Procurement (PPA). The PPA's register operates at national level. Another system exists at ministerial level within central government and provides opportunities for e-auctions; all small-procurement within the Ministry of Finance and other ministries is registered and conducted through it. Various private contracting entities implement various types of e-procurement systems, though not at full-scale.
Legal development	The current Public Procurement Law (PPL) was adopted by parliament on 23 March 2004 (SG no. 28/06.04.2004). E-auctions, were due to be integrated into national Law from July 2006. After July 2007, pre-qualification procedures will be aided by a new Company Registry Law.
Budget	Cost of verification impossible to determine, as it is not an official strategy and is embedded in the daily routine of work. Serious budget concerns that prevent wide-scale e-procurement development at all levels. The first e-government dedicated budget was opened in autumn 2006.

Bulgaria: Restrictions and Needs for defining compliance verification mechanisms	
Restrictions identified by National Contact	Serious budget concerns that prevent wide-scale e-procurement development at all levels. Procurement previously decentralized in all facets but e-notification, hence financing only possible on a decentralized level, thus weakening full-scale development opportunities. Political resolve.
Needs identified by National Contact	An independent authority (3rd party or EU-related), that regularly inspects a sample of procurement bids (the whole chain from the notice to the implementation) for verification,

	at European level.
	A feature-by feature verification strategy is better, at least in countries where it is not feasible to have a fully-featured system(s) soon; a module-certification/validation approach is preferred.
Needs identified by CARSA	Greater transparency of public procurement procedures, through the application of standards.
	There is a need for official verification procedures as verification is very informal and reliant on checks and balances carried out by the support personal.
	Better financial support for verification procedures

Cyprus	
Political Aspects	**Positive aspects**
	Very positive political backing for the introduction of the new e-procurement system.
	Negative aspects: NONE
Social Aspects	**Positive aspects**
	The perceived quality and trust of a secure operational environment by the general public are considered to be pre-requisites for the quick adoption of the system by contracting authorities and economic operators and for ensuring its subsequent broader use.
	Negative aspects: NONE
Cultural Aspects	**Positive aspects**
	The culture of the public and private sectors towards modernisation and the embracing of information technology are considered to play an important role in the implementation of an e-procurement system.
	Negative aspects: NONE

Compliance verification	
General Aspects	In the terms of reference it is provided that the system should be certified as compliant to the EU Directives and national legislation.
	Non-electronic verification:
	Verification procedures are performed on all EU funded projects and on a case-by-case basis for the projects financed by the national budget.
	Yearly reviews are carried out as part of performance audits.
Interoperation	To be examined.
Specific tools/methods/instruments to validate and/or monitor performance of the e-procurement system?	Not applicable.
Scope of verification methods	Not applicable.
Integration	Not applicable.

Testing	Not applicable.
Mechanisms for verifying features (High Level Indicators)	
Availability	Not applicable.
Accessibility	Not applicable.
Reliability	Not applicable.
Interoperability	Not applicable.
Usability	Not applicable.
Scalability	Not applicable.
Security	Not applicable.
	No e-procurement authority in Cyprus.
Transparency	Not applicable.
Confidentiality	Not applicable.
Technical development	Product
	Not applicable.
	Development
	Cyprus is at a preparatory stage of developing an e-procurement system.
	At a first stage a study was carried out for the implementation of such a system.
	At a second stage, a tender will be published at the end of 2006 regarding the design, development and commissioning of an e-procurement system, including electronic auctions and electronic catalogues.
Organisation development	Cyrus is currently in the process of preparing the tender documents for the procurement for an electronic system, operating at national level.
	The Public Procurement Directorate of the Treasury will be the coordinator.
Legal development	There is currently no specific legislation on electronic procurement in Cyprus. EU Directives will be implemented by the end of 2006.
	The aim is to achieve generalised e-procurement by 2010.
Budget	Not available.

Cyprus: Restrictions and Needs for defining compliance verification mechanisms	
Restrictions identified by National Contact	Budgetary restrictions may be a factor, although information not provided.
Needs identified by National Contact	Global verification strategy in order to allow the system be assessed as a whole and on a uniform basis for all its modules.
Needs identified by CARSA	None.

Czech Republic	
Political Aspects	**Positive aspects: None**
	Negative aspects:
	From a long-term point of view the lack of political will to give the process relevant priority

	seems to be the main threat for quick e-procurement implementation process in the Czech Republic. The political priorities are set up differently at the present time and the resources devoted to e-procurement implementation are very limited.
	The compliance of public e-procurement does not belong to the highest political priorities, which could inhibit its future development.
	The considerable difficulty from a short term point of view could be the winding-up of the Ministry of Informatics after the last elections and the consequent change of political representation in the country. The Ministry of Informatics was responsible for the attestation of e-procurement electronic tools and it is not known what its competences will now be. For this reason, this has affected the attestation process.
Social Aspects	**Positive aspects:**
	Large procurement volume
	The decentralized system is very flexible, when considering the fulfilment of specific needs (either financial or technical) of different submitters.
	Decentralization leaves the activity of e-procurement in private IT sector, which is very strong and active in the Czech Republic.
	Negative aspects:
	Few public orders carried out electronically.
	The decentralized system is also highly demanding with respect to compliancy verification.
Cultural Aspects	**Positive aspects: None**
	Negative aspects: None
Compliance verification	
General Aspects	Compliance verification performed sufficiently in relation to the current level of e-procurement development. The emphasis is laid especially on security.
	Gradually, verification of other fields such as reliability, accessibility and usability should be developed. Ministry of Informatics assure the attestation of electronic tools in advance.
	Office for the Protection of Competition is competent to do consequent checking of individual tenders including the compliance of electronic tools.
	Non-electronic verification: No information.
Interoperation	Not defined.
Specific performance validating tools/methods	Not defined.
Scope of verification methods	The compliance must be unconditionally verified and guaranteed in the operational phase. Compliance verification is unreasonably formidable in other phases. For that reason, attestation by Ministry of Informatics is provided.
Integration	Integration should be guaranteed by compliance with available standards which is ensured in the system.
Testing	None.
Mechanisms for verifying features (High Level Indicators)	
Availability	Compliance with common open standards.

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	High availability is guaranteed by contractor, but it is not validated exactly.
	Preventative maintenance: No.
	Contingency planning: No.
Accessibility	Compliance with common open standards.
	Attestation by Ministry of Informatics.
Reliability	Attestation of tools by Ministry of Informatics based on national standards
Interoperability	Attestation of tools by Ministry of Informatics based on national standards
Usability	Not defined, although English may be introduced
Scalability	Attestation of tools by Ministry of Informatics. Should allow for support of all types of public contracts based on national standards.
Security	The verification of compliance with security standards is part of the attestation provided by Ministry of Informatics. The key national security standard is CSN BS 7799-2.
	Accredited e-signatures used and provided by 3 accredited certification authorities.
Transparency	Attestation of tools by Ministry of Informatics based on national standards
Confidentiality	Attestation of tools by Ministry of Informatics based on national standards
Technical development	Product
	The system was created by a 3rd party contractor and it is operated and maintained by the same company.
	Ministry for Regional Development executes the supervision and guards the compliance of the tool with the legislative framework.
	Development
	The system was developed by a 3rd party contractor to Ministry for Regional Development specifications.
Organisation development	System is not built just at one central platform, but creates a space for development and usage of various electronic tools by particular public submitters and/or operators.
	The government role is to create the legislative framework for public e-procurement and supervise its confirmation by particular submitters.
	Ministry for Regional Development is responsible for the legislative framework of public e-procurement and its methodical commentary in the Czech Republic.
	Ministry of Informatics provides attestation of e-procurement electronic tools. Five tools so far have been attested; one of them is complex e-procurement tool which is routinely used in private enterprises, but no implementation of this tool in the public sector so far.
Legal development	The new EU Directives were implemented through a new legislative instrument, Act n. 137/2006 Coll. on Public Procurement that came into force on July 1, 2006.
	The Czech government intends to draft new e-government legislation setting, among other things, the rules for data interchange between public administration bodies and the status of basic public administration registers.
	The Ministry for Regional Development has created and is responsible for the National Plan for Electronic Submission of Public Contract for Years 2006 - 2010.
Budget	The amount of the attestation fee is set by law and it is not in strict relation with the cost of system.
	The attestation fees have motivational character at present and there is an assumption

	that they will grow.
	The fee for attestation provided by Ministry of Informatics is from 100 to 50 000 CZK (approx. from 3 to 1 600 Euro). The amount of the fee depends on the type and functionality of the electronic tool.

Czech Republic: Restrictions and Needs for defining compliance verification mechanisms	
Restrictions identified by National Contact	Lack of obligatory European standards.
	The problem of long-term storage of electronic documents in the government sphere.
	Small number of employees dedicated to e-procurement management agenda in government sphere.
	The alignment of political priorities.
Needs identified by National Contact	Compliance of the system as a whole should be verified in the operational phase.
Needs identified by CARSA	European standards required. Verification only provided to national standards.
	More political impetus required
	System flexible for submitters but complex for defining one verification mechanism.

Denmark	
Political Aspects	**Positive aspects**
	A centralization of governmental purchasing has been initiated, and multiple restrictions which limit the degrees of freedom in the purchasing of goods and services have been introduced to control public spending.
	Negative aspects:
	The e-procurement system has been influenced by a very decentralised purchasing structure which has made implementation more difficult. The implementation has also been influenced by the many regulations on national as well as European level.
	The project is part of Danish IT policy and was therefore expected to move a lot faster than actually occurred.
	Furthermore, it was expected that the solution should provide substantial savings. However, this has not been the case so far, and there are few success stories reported regarding major savings.
Social Aspects	**Positive aspects: None**
	Negative aspects:
	During start up, the focus was primarily on system functionality, and technical aspects, and social aspects have little influence. However, later on in the process, as the system becomes operable, social interaction between the different parties (purchasers, suppliers and other users) becomes more marked, and has greater influence on the direction of further system development.
	The government is very focused on the development of e-procurement in Denmark,
	Users (purchasers and suppliers) are finally becoming accustomed to the new conditions.
	It is considered that the e-procurement situation in Denmark is taking shape but would benefit from a more controlled guidance, more professionalism and highlighted "best practices" in the area.

Cultural Aspects	**Positive aspects**
	Aspects, such as the users knowledge of IT systems and other "e-software", are considered to have an important cultural effect.
	Negative aspects: None
Compliance verification	
General Aspects	All purchases through the e-procurement system.
	Periodical reviews are made to ensure this (mostly once a year) based on statistical data obtained during the year.
	Compliance verified via:
	1. Circular letter on purchasing;
	2. Circular letter regarding providers;
	3. SKI (Stats & Kommune Indkøb ~ State and local municipality purchase);
	4. Statistics provided by GateTrade;
	Non-electronic verification:
	These were made/changed together with the development and integration of the e-procurement system.
	All processes except from electronic invoicing, can be done manually if economically profitable (cf. Circular letter on purchasing in the government, nr. 9608 of the 20th of December 2002).
Interoperation	The system is intended to interact directly with Navision (business management software from Microsoft Business Solutions). However, it is not fully implemented yet due to technical problems in that area.
Specific performance validating tools/methods	Verification is carried out as internal analysis. This analysis has primarily been focused on savings. Goals developed for project: primary objectives were savings, simpler procedures, and transparency.
	Ongoing evaluations are made and data statistics are extracted on a regular basis, but not due to specific procedure or method.
Scope of verification methods	Specification phase:
	The Ministry of Finance has the primary responsibility and has reviewed the performance of the system and the parties involved during the whole project. When the system was specified and developed, both legal and functional requirement were documented, and national and European legislation were incorporated into the specifications. Primary method for reviewing requirements and daily use is through the user group. The primary participants in this process were the user group, Ministry of Finance and representatives from the solution provider, GateTrade.
	Design and Development phases:
	Design complies with the requirements, through sequential tests. Outcomes of the development process verified through user-tests. The users were connected to SKI (A governmental purchasing organ). After all new developments a verification was carried out.
	There have been modifications and improvements, based on a common understanding between the parties. GateTrade is the system owner, so they are responsible for system development.
	Validation Phase:
	Ministry of Finance verifies and validates the functionality of the final system before

	entering into production. User validation continues with system implementation.
	Traceability to requirements is kept through ongoing meetings between GateTrade and the Ministry of Finance where there is a follow up on requirements.
	Installation phase:
	Some problems with the integration to Enterprise Resource Planning (ERP) system: integration process much longer than expected.
	Operational phase:
	User verification and user reviews to ensure the correct functionality of the system. Carried out both inside and outside the organisation. GateTrade manages and follows up on all suggestions and complaints, which can be sent online from both internal and external users of the system. All internal and external mechanisms to ensure functionality are managed by GateTrade and public institutions are not involved in the daily functionality.
	Maintenance phase:
	Run by GateTrade with ongoing feedback from the users of the system.
Integration	There are test procedures regarding integration with other systems. Formalisation of procedures.
Testing	Not defined
Mechanisms for verifying features (High Level Indicators)	
Availability	Technically a browser solution is used. Legally there are strict demands to follow. Both aspects controlled through the contract by GateTrade.
	All verification is based on user input
Accessibility	Specifications required high simplicity. All verification based on user input.
	Legal and technical aspects controlled through the contract.
	Controlled by GateTrade: it is believed that GateTrade takes a fee for this service.
Reliability	Technically a browser solution is used. Legally there are strict demands to follow. Both aspects controlled through the contract by GateTrade.
	All verification is based on user input
Interoperability	Technically and legally there is a demand to use e-Invoicing.
	All verification is based on user input.
	The system is designed to interoperated with other data structures - there is a standard procedure.
Usability	Non systematic verification mechanisms.
	All verification is based on user input.
	English, German and Swedish versions available.
Scalability	All verification is based on user input.
	The system is designed to be scalable: controlled through the contract by GateTrade.
Security	All verification is based on user input. Continuous scanning.
	Security standards (not said which) incorporated in the foundation of the system; controlled through the contract by GateTrade.
	Accredited e-signatures used and provided by independent certification authorities.

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Transparency	All verification is based on user input.
	controlled through the contract by GateTrade.
Confidentiality	All verification is based on user input.
	Based on a set of security instructions; controlled through the contract by GateTrade.
Technical development	Product
	All coordination and development is made in cooperation between the 'Ministry of Finance', 'Ministry of Science, Technology and Innovation' and 'GateTrade' who is the public provider of the system.
	Many developments are however initiated by the users (purchasers) who have daily contact with the system. These improvements are communicated either directly to GateTrade or through the Ministry of Finance.
	Technical operation and maintenance is carried out by GateTrade, who is a 3rd party.
	Daily operation and use is managed internally by the purchasers and the financial department.
	The primary stakeholders are the purchasers – both centralised and decentralized purchasers.
	Development
	The system was bought as an "off-the-shelf" product from a third party (GateTrade).
	However, requirements and system development has made the system into a customer specific solution, made in cooperation between GadeTrade and the users (the Ministry of Finance and the Ministry of Science, Technology and Innovation).
	An agreement was made between the Ministry of Science, Technology and Innovation and GateTrade (a public company, established by TDC. Maersk Data, Danske Bank & Post Danmark).
	The Ministry of Finance paid an initial development fee and left the operation to GateTrade.
	No policies are made regarding the future development, although the system will follow the evolutionary development of the market.
Organisation development	On a National level GateTrade provides the public procurement portal (DOIP) used by all State and regional institutions in Denmark.
	Some regional and local authorities make use of private marketplaces
	A State-owned company National Procurement Ltd. (SKI) has simpler e-tendering solutions (ETHICS, Netindkøb and Netkatalog).
Legal development	The new EU Directives were implemented in January 2005 with the exception of e-auctions for public works contracts.
	In February 2005, Denmark became the first country to legally generalise e-invoicing.
Budget	Cost of verification well below 10 %.

Denmark: Restrictions and Needs for defining compliance verification mechanisms	
Restrictions identified by National Contact	Very slow process: a lot of time required fro convincing stakeholders.
	Financial benefit not clear so far.
	Initially, a lack of proper testing before implementation and the inexperience of the contractor with the specific Danish Government requirements resulted in many delays

	with installation and implementation.
Needs identified by National Contact	Improve compliance verification mechanisms. More involvement from the users in the beginning is beneficial for the process. Legal demands and the influences of these: when looking at the e-procurement portal project, it could have benefited from regulation within the area of e-procurement and e-trading in general. One global verification strategy is probably better than an individual strategy. However some projects will benefit from one overall verification strategy supplemented with individual verification features in each phase.
Needs identified by CARSA	None

Estonia	
Political Aspects	**Positive aspects** Very recently, there would appear to be more favourable political will and support for e-procurement. Parliament elections were held in March 2007 and the new government that came to power includes a clause in their programme that by 2010 the submission of tenders should be electronic only. **Negative aspects:** Some governments have been more keen to implement novel ICT solutions, and therefore pay more attention to e-procurement than others.
Social Aspects	**Positive aspects:** Estonians are considered to be highly IT literate and open for new e-systems. The general social attitude is definitely a positive influence towards the development of an e-procurement system. **Negative aspects: None**
Cultural Aspects	**Positive aspects: None** **Negative aspects:** Language barriers (main e-procurement portal only in Estonian and English, and Russians form 25% population) or a natural apprehension of technology appear to play a large part in this cultural difference.
Compliance verification	
General Aspects	Verification plan is not implemented yet and current levels of verification are considered insufficient. On the current system (e-publications) only user registration and password authorizations are used. The new system (planned for January 1st. 2007) will exploit ID-card authorization. For future products (e-auction, etc.) there will be a need to verify bidders electronically. Non-electronic verification: case-by-case.
Interoperation	The system is planned to interact with different national registers e.g. Commercial Register, local authority registers and Estonian Tax and Customs Board Register.
Specific performance validating	A national body will control validation. Internal body in specific phase and first level validation.

tools/methods	
Scope of verification methods	Specification phase: The software development process is regulated by internal regulations and documents derived from software development unified process. At the beginning of the new development the project team is compiled. The team consists of specialists from Min. of Finance, lawyers and developers. At the specification phase the vision document is compiled where functional and non-functional requirements are described. All requirements will coincide with EU Directives and national laws. Design and Development phases: The interactive development methodology is exploited. Every iteration ends with specific tests. The results of every test are accepted and accredited by project management group. Validation Phase: Customer (Min. of Finance) carries out passage tests and accepts the system if all requirements are satisfied. If any faults occur during the test, official report will be generated. New agreement will be concluded according to general contract. Installation phase: The developer compiles the installation guides. The guide will be tested and a validation report will be generated. Operational phase: Monitoring and logging. Maintenance phase: Not analysed yet.
Integration	There are test procedures regarding integration with other systems. Formalisation of procedures.
Testing	Internal tests carried out according to ANSI/IEE Std 829-1983. No external accreditation.
Mechanisms for verifying features (High Level Indicators)	
Availability	Validated internally through internal procedures and rules for failures. IT services are managed by ICT department. This is regulated by internal documents and rules, and regular monitoring of software alerts when failure occurs.
Accessibility	The specification development will follow EU Directives and local laws. Verification not specified.
Reliability	Regular maintenance and monitoring. Internal validation procedures.
Interoperability	Verification not defined. System based on common standards for data exchange (XML is used).
Usability	Not defined.
Scalability	Not validated although constant monitoring of server loads, CPU, memory and data consistence. New staff will be hired for e-auction system maintenance.

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Security	National standard applied (Estonian standard also fully compatible with German national security standard).
	Monitoring and logging according to security policy.
	The Ministry of Finance has its own internal security requirements and dedicated security personnel.
	Estonia has unique ID cards for authentication and digital signatures.
Transparency	Not defined.
Confidentiality	Internally: different levels of user rights.
Technical development	Product
	The whole development process as well as product lifecycle is managed by the Ministry of Finance. The internal responsibility is divided by ICT and the administrative policy department. The legal work and e-procurement system development are concurrent work and complement each other.
	Development
	See above.
Organisation development	Only fully implemented central system is e-publications, implemented in 2001.
	The e-Procurement system analysis and development is planned to start in January 2007. January 2008 is the first deadline to launch dynamical purchasing system and e-auction system.
	Development and implementation will be coordinated by the Ministry of Finance.
Legal development	Currently, the only legislation in force is the Public Procurement Act of December 2003. A new law is being drafted to transpose the two new Directives. The text was submitted to the Parliament in January 2006, and was proposed to be finished in October of the same year, although no information with respect to this can be found.
Budget	There is no finalised specification, which makes planning budgets difficult.
	Budget does include a special reserve for changes in specifications.

Estonia: Restrictions and Needs for defining compliance verification mechanisms	
Restrictions identified by National Contact	There is no finalised specification, what makes planning budgets difficult.
	Political will has previously been seen as a problem (although this may be changing with the new government that came into power in March 2007, which includes a clause in their programme that by 2010 the submission of tenders should be electronic only).
Needs identified by National Contact	Quick finalisation of specifications for new system, in order to plan budget requirements.
	Global as well as individual verification is needed, but in different level and aspects.
	Training: this has started already on the system development phase and users can test the system before the final version.
Needs identified by CARSA	Need for integration with other European systems. System currently only operates at national level.
	European political backing should be stressed.

Finland	
Political Aspects	**Positive aspects**

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	There is political pressure to make the public sector more efficient.
	There is a political impetus towards adopting a national information technology strategy.
	Negative aspects:
	Only if the benefits can be quantified is there likely to be political interest towards e-procurement.
	Currently, e-procurement is not seen as a politically important issue.
	Will not receive any extra funding within the normal budgets.
Social Aspects	**Positive aspects: None.**
	Negative aspects:
	E-procurement has not attracted any particular attention from citizens, lawmakers, corporations or non governmental organizations.
Cultural Aspects	**Positive aspects:**
	Most citizens feel that new technology can and should be used.
	Negative aspects: None.
Compliance verification	
General Aspects	Current system HILMA, deals only with e-publication and has no other functionality. It is so simple and open that only basic internal verification is considered necessary.
	Verification principles have been set out in the system specification phase by the Ministry of Trade and Finance. The verification is internal in nature, no third party or national body has been used for verification and there are no plans to use them.
	It is felt that the system is so simple that there is no need for extensive verification.
	Non-electronic verification:
	A unit for auditing the state finances exists, and it is the responsibility of this unit to also audit the compliance of e-procurement. However, no such audits have ever been made.
Interoperation	HILMA interoperates with TED and has interfaces towards national providers of value added services - TIEKE and Fonecta - who extract data from HILMA, process it further, and provide it to private customers.
Specific performance validating tools/methods	No.
Scope of verification methods	Specification and development phases: testing procedure
	Operational phase: no testing or auditing is planned. SLA governs the required performance of the system.
Integration	During development the interface between HILMA and TED was tested and secured. Interface towards national providers of value added services - TIEKE and Fonecta - was tested in the similar manner.
	No third party verification has been used.
Testing	Onesta Solutions, the company responsible for development, has suggested a testing procedure, which has been accepted by Ministry of Trade and Industry.
Mechanisms for verifying features (High Level Indicators)	
Availability	An SLA governs the required availability, backups, load balancing etc..
	The availability requirement is set high during working days, between 8–17.00, and

	somewhat lower for other times.
	Virtual server farm with backup systems.
Accessibility	National regulation governing aspects of public services and public authorities in the area of all e-services provided: the Finnish Act on Electronic Services in the Administration.
	This completeness of this legislation is considered by Finnish authorities to be relatively rare in EU countries and that most criteria relating to public electronic procurement are sufficiently covered in Finland by this national legislation.
	Internal verification only.
Reliability	Response times for recovery have been set in the agreement between the Ministry of Trade and Industry and the private companies operating the service.
	SLA governs risk management.
Interoperability	Internal verification only. Finnish Act on Electronic Services sets out requirements for interoperability and these have been implemented in the HILMA system.
	XML standards used.
Usability	Internal verification only.
	Finnish and Swedish are the two official languages in Finland, and both are supported.
Scalability	Internal verification only.
	A new law, to be implemented in 2007, requires more tender notices to be entered into HILMA system. This would increase the amount of data and traffic. Both have been taken into account in scalability plans.
Security	Internal verification only.
	SSL for secure transfer.
Transparency	Internal verification only.
Confidentiality	Internal verification only.
Technical development	Product
	HILMA was released in May 2006 and is fully operational. No updates have yet been made.
	Ministry of Trade and Industry is the system owner and manager.
	The software development was done by a private company, Onesta Solutions.
	The system maintenance (running virtual server farm) is done by a private company, ENFO.
	Development
	The system objectives and specifications developed at the Ministry of Trade and Industry with outside consultants used to help draft the specifications.
	Software development work has been subjected to open bidding, and the winner, Onesta Solutions, has carried out the development work as a 3rd party.
	The system design is unique, not an off-the-shelf package.
	No new functionality is planned.
	Specification work during 2005, contract for development in Sep 2005, testing in spring 2006, release and operational system in May 2006.
Organisation	2 systems used: HILMA and Credita. Both include only functionality of e-publication. Both

development	systems are used at the national level.
	Eventually, by the end of 2007, the Credita system will also be phased out.
	No plans exist for a large, integrated e-procurement system in Finland. It is unlikely that such a system will be developed within the next two years.
	Ministry of Finance is in charge of the national public procurement strategy. Ministry of Trade and Industry is in charge of the legal framework and in charge of implementing HILMA.
Legal development	The Finnish Act on Electronic Services in the Administration 1999 was one of the first e-Government legislations in the world.
	The procedure for transposing the new EU Directives was submitted to Parliament on the 28th April 2006.
Budget	Current cost of verification 2%
	No future estimate given

Finland: Restrictions and Needs for defining compliance verification mechanisms	
Restrictions identified by National Contact	It was emphasized that the Finnish administrative model does not rely on independent third party audits and these are not considered necessary.
	Political will lacking.
Needs identified by National Contact	A committee, in 2006, concluded that the role of e-procurement is important but also states that there are aspects (procedures, legislation etc.) besides technology which need to be improved in order to improve public procurement. E-procurement is seen as a tool, and not as an end itself.
	Global verification strategy needed.
Needs identified by CARSA	Need for integration of more advanced e-procurement features
	Need to encourage implementation of official verification strategies based on EU Directives or national law
	Political backing should be encouraged.

France	
Political Aspects	**Positive aspects**
	Government policies guide and influence the implementation of public procurement policy.
	National transposition into law of the EU Directives enforces obligations on e-procedures and stimulates e-procurement in general.
	General rules of interoperability and Security, both supported by law.
	Political actions are a priority and activities like procurement are only a means to manage them. Efficiency, harmonization and simplification are the main targets for e-government.
	Projects concerning the mutualisation of information systems are becoming a reality.
	Negative aspects: None.
Social Aspects	**Positive aspects:**
	Interoperability for electronic certificates (included in RGI) is a first step in giving a clear message encouraging enterprises to use e-services.

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	Smaller collectives and organisms work together to mutualise and offer extended services to their buyers and the enterprises.
	Even when organisms decide not to mutualise, they look for recommendations and common specifications and these exchanges accelerate e-procurement developments.
	Negative aspects:
	More visibility and comprehension concerning the use of e-procurement platforms. The barriers are for the moment more important than the perceived advantages.
Cultural Aspects	**Positive aspects: None**
	Negative aspects:
	Mutualisation is slow to develop in France. It is not known if inter-country cooperation would accelerate or further slow down this change, but obliging all e-procurement public actors to report to a central controlling European body would have a positive effect on the standardisation of data and selection of statistics.
Compliance verification	
General Aspects	A "homologation" process will be deployed following two steps: the administration accredits experts on certification; then providers ask these organisms to be accredited.
	Compliance verification will be done at two levels: by the customers of providers at the selection phase of solutions, and by the accreditation process of platforms.
	Accreditation may be used for any application and/or infrastructure. Therefore, providers need only to make an effort once for all the solutions or services that they provide. Obtaining the certification will be an efficient commercial argument.
	Many public authorities, in particular smaller organisms, are not always able to check compliance: the fact of sharing compliance (through particular standards) is often welcome. As soon as solutions are accredited, these actors will be interested.
	Verification by DAJ (Directorate for Legal Affairs in charge of Directives translation and procurement rules) work with Directorate General for State Modernisation (Ministry of Economy and Finance) and any buyer (regional, local, establishments).
	Non-electronic verification:
	Early reviews in order to monitor public procurement activities.
Interoperation	Not defined.
Specific performance validating tools/methods	Specifications include functionalities and reporting.
Scope of verification methods	Specification phase: Validation specifically by DAJ (Department for Legal Affairs, in charge of national legislation).
	Design and Development phases: NA.
	Validation Phase: Classical technical and functional verifications before opening service and each time important changes are undertaken (for example with new procurement rules in September 2006).
	Installation phase: NA.
	Operational phase: Regular verifications by buyers, customers of the application and experts in law implementation. Regular verifications by solution provider. Regular verifications by team in charge of production and management of maintenance and evolutions.

	Maintenance phase: Outsourced.
Integration	System (or the modules that built it) must respect RGI/RGS (see legal development).
Testing	Not yet defined.
Mechanisms for verifying features (High Level Indicators)	
Availability	A SLA with the service provider.
	"Service Client Plan": Documents explaining commitments, penalties, instructions, processes in case of unavailability or how to manage evolutions.
	Monitoring tool shared with the provider.
Accessibility	Accessibility rules are included in RGI and progressively implemented.
	Free java tool provided.
Reliability	Users comments and queries.
Interoperability	Not defined.
	Standardisation: UML / XML.
Usability	Will be provided for in accreditation requirements.
Scalability	Technical developments: new project will envisage open source solution, will be based on RGI/RGS & common sector specifications, and will take into account best practices.
Security	Security audits by Internal and 3rd party.
	Advanced e-signature used, provided by national authority.
Transparency	RGI / RGS.
Confidentiality	Internal and 3rd party verification will be included.
Technical development	<u>Product</u>
	Carried out by a 3rd party as the service is bought off-the-shelf.
	Future system (shared by all ministries included Defence) will be owned by administration but maintenance will be outsourced.
	<u>Development</u>
	Use of specifications based on needs of buyers and technical specifications in respect to RGI/RGS.
	Developments based on good practices. Some of them already defined, others in definition.
Organisation development	Two systems for Ministries - central administration and local representations (one for Defence and one for other Ministries). They will probably converge in 2008.
	Some 70 technical solutions exist, used for the development of many systems/services.
	One specific case: the Bourgogne region, where all local authorities use the same solution. This example could be developed over the next years.
	For ministries: control at national level, each head of service is in charge of "customers".
	For local authorities and public establishments it depends on the degree of mutualisation: local, regional, or national.
Legal development	The Public Procurement Act of 2004 is being revised to include the EU Directives.
	General rules of interoperability (in particular the "Référentiel Général d'Interopérabilité", RGI, General Interoperability Reference) and security (Référentiel Général de Sécurité, RGS, and General Security Reference) have been published and enforced legally, in

	2004. New projects (for example the one for ministries mentioned above) will gradually introduce these rules through general specifications.
	The e-procurement project aims at allowing providers to be accredited in reference to RGI and RGS and at developing particular specifications/conditions specifically for one field.
Budget	Not enough budget in the ministries to raise awareness.
	Verification costs lowered if system relies on accreditation by third party and that these processes are common to any administration application.

France: Restrictions and Needs for defining compliance verification mechanisms	
Restrictions identified by National Contact	Solutions seemed expensive.
	Resistance to change.
	Difficult to introduce 100% electronic procedures as all economic fields are not ready.
Needs identified by National Contact	Enterprises need more visibility and comprehension concerning the use of e-procurement platforms. The barriers are for the moment more important than the perceived advantages.
	Mutualisation and inter-country (i.e. European level) cooperation is needed.
	Both global and modular verification strategy needed to ensure interoperability, although better at modular level because less complex to implement. Verification should be introduced early on in the process to ensure less intensive verification required at the end.
	Providers should be encouraged to see quality as a benefit and not a constraint.
Needs identified by CARSA	Tighter organisational control of system development at a national level, through definition of e-procurement standards

Germany	
Political Aspects	**Positive aspects**
	The concept of e-procurement is well accepted politically in Germany.
	Negative aspects:
	There are no central or official verification mechanisms in Germany.
	Not all platforms accept all existing German e-signatures.
	The decentralised federal system has resulted in the lack of a truly coordinated verification mechanism in Germany.
Social Aspects	**Positive aspects:**
	E-procurement an important element of extensive change in the German public sector, in business and in society in general.
	Negative aspects: None
Cultural Aspects	**Positive aspects:**
	Conformation with legal requirements plays an important cultural role. As a consequence, e-procurement platforms achieved a high level of compliance with legal requirements.
	Negative aspects:
	Because of the legal requirements, usability suffered, and e-procurement isn't used at

	present as much as it should be.
Compliance verification	
General Aspects	Only the institutions using the federal e-procurement system coordinate their activities. Though various parties (e.g. business associations) demand interoperability between public e-procurement systems, there are no concrete plans for verification.
	Although there are no official compliance verification mechanisms in Germany, a very high share of the German e-procurement platforms achieve a good level of compliance both with legal requirements and with technical functionalities.
	Procurement officers demand systems that are compliant with public procurement law. Procurement platforms promote the fact that they are compliant with law.
	There are some private and voluntary initiatives that have tried to set standards for public e-procurement, e.g. the initiative OKKSA which has defined the criteria to fulfil to be compliant with German public procurement law and in order to be 'state of the art'.
	Legal verification and validation is carried out by internal lawyers.
	Non-electronic verification:
	Via internal controls, & the German Court of Audits checks whether procedures strictly follow public procurement law.
Interoperation	Not defined.
Specific performance validating tools/methods	A testing phase exists for every new development:
	The software company provides updates and upgrades as well as test plans,
	Selected users test the system off-line for a period of four weeks: bugs are collected in a database, and lawyers check compliance with legal aspects.
	The Bundesamt für Sicherheit in der Informationstechnik (BSI) checks security aspects.
Scope of verification methods	Specification Phase:
	Documentation available that describes the specifications of the system. The specifications were reviewed against both, European and national legislation by internal lawyers. In all other phases, compliance with legislation is checked regularly. Reviews are carried out by an internal project group. Verification is carried out regularly.
	Design and Development Phase:
	A private software company realises any updates and upgrades. The project director and the project team are in contact with the private company during development.
	Validation Phase:
	Tests during the validation phase of new features.
	Installation Phase:
	There are no special validation activities during the installation phase.
	Operational Phase:
	Some automatic testing procedures in place. Feedback from users is collected by the system hotline. There are also online suggestions and complaints forms on the website.
	Maintenance Phase:
	System functionalities are tested regularly. For important bugs there is a "hot-fix" system. Minor bugs are collected and fixed later.
Integration	With work flow systems and with a common Federal database for online publication of tender notices.

Testing	The testing strategy follows internal guidelines only.
Mechanisms for verifying features (High Level Indicators)	
Availability	Log files. SLA between the Beschaffungsamt and the private software company.
Accessibility	National and European regulations on accessibility. Conformity to W3C.
Reliability	Internal validation through system administrators.
Interoperability	During the testing phase the connected systems (work flow systems and a common federal database for online publication of tender notices) can do tests on the new interfaces. After the testing period, the system update goes online regardless of the connected systems. Standardisation: SAGA standards.
Usability	Follows SAGA standards. The SAGA standards were developed as part of the e-government initiative "Bund Online". The SAGA standards give recommendations concerning architecture, infrastructure and standards and technologies in e-government projects of the federal administration. Test phase for each update and feedback by users.
Scalability	Web load test tool.
Security	Verified against national standard of the German Federal Office for IT security. Qualified e-signature used (and advanced from 2007), provided by Independent certification authority.
Transparency	Internal validation.
Confidentiality	Tests by the German Federal Office for IT security.
Technical development	Product There are new releases twice a year. New developments are coordinated by the Beschaffungsamt. They include suggestions of all users. A private company realises new developments. Stakeholders of the e-Procurement system are procurement offices of the federal state and of three German Bundesländer. Development The e-procurement system is developed in-house and realised by a third party to the suggestions of the Beschaffungsamt. The e-catalogue 'Kaufhaius des Bundes' was bought off-the-shelf and adopted to individual needs. Users suggestion are collected in a database. An internal project group - consisting of representatives of two ministries, the German army and the Beschaffungsamt decides on which suggestions are realised. The software company implements the changes.
Organisation development	E-procurement very decentralised: more than a hundred e-procurement platforms at federal, regional and local level with different functionalities and requirements. A centralised e-procurement platform exists at federal level used by all federal ministries and associated institutions. This pilot project of the German federal government was started in order to develop a reference system that fulfils all legal requirements to e-procurement and that sets standards for e-procurement in Germany. However, this goal was not achieved.

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	Some ten private companies offer specialised software for public e-procurement.
	No organism coordinates the e-procurement systems. There are also no special requirements concerning interoperability.
Legal development	The EU Directives will be transposed into National Law by the end of 2006.
	The Federal State is responsible for e-procurement legislation. Certain standardisation procedures (SAGA and Security standardisation) are embedded into national law.
Budget	Current and future verification costs: 10%
	Verification costs lowered if system relies on accreditation by third party and that these processes are common to any administration application.

Germany: Restrictions and Needs for defining compliance verification mechanisms	
Restrictions identified by National Contact	No central or official verification mechanisms in Germany
	Not all platforms accept all existing German e-signatures. Companies eventually need different signature cards to use different systems. Consequently, there are still not many electronic bids in Germany, although the technical infrastructure is available.
Needs identified by National Contact	For certain aspects (e.g. e-signatures) different verification mechanisms preferred, although a global mechanism for ensuring interoperability would be preferred.
Needs identified by CARSA	Develop interoperability requirements.
	Design central or official verification mechanisms to be used at all level of government.
	Revive pilot project of German federal government to develop a reference e-procurement system that fulfils all legal requirements and sets standards for e-procurement in Germany.

Greece	
Political Aspects	**Positive aspects**
	E-procurement is supported as a concept by the Greek Government.
	Negative aspects:
	Real, proactive political support limited in the past.
	Government elections in 2004 caused further delays to system implementation.
	Negligible infrastructure of the public sector.
Social Aspects	**Positive aspects: None.**
	Negative aspects:
	Lack of implementation of e-government and e-business in Greece.
	IT infrastructure was previously rather limited.
	Penetration of e-business in the private sector, in the past, was also minimal. In this context, the implementation of a e-procurement was not considered a priority.
Cultural Aspects	**Positive aspects: None.**
	Negative aspects: None.
Compliance verification	
General Aspects	None yet devised.

	Non-electronic verification:
	There is no standard verification procedure for public procurements. It is the responsibility of each authority to comply with either the national or the European legislation.
Interoperation	The system will interoperate with the Public Supplier Registry and the Public Administration network ("Sizefxis").
Specific performance validating tools/methods	The technical consultant of the project should propose such tools according to a general description included in the work program of the project. Furthermore, according to the work program a number of technical experts will undertake the maintenance and the proper operation of the system with the support of the technical consultant.
Scope of verification methods	There is currently no specific verification method or procedure under consideration. According to the technical annex, the system under development will be in accordance with the EU Directives as well as the national law. Verification will most probably be implemented in the operational phase.
Integration	The technical consultant will undertake integration of the system with other systems.
Testing	The technical consultant will undertake some testing activities (not defined).
Mechanisms for verifying features (High Level Indicators)	
Availability	Not defined.
Accessibility	Not defined but should conform to W3C.
Reliability	Not defined.
Interoperability	There is a National Framework for Interoperability, but at this point it is only a guideline and not a regulation.
Usability	Not defined. English will be incorporated.
Scalability	Not defined.
Security	The work program includes the use of Intrusion Detection Systems in combination with the extensive use of firewalls and other security mechanisms. The system will follow the e-signature processes of the "Sizefxis" system which supports e-signature between the General Secretariat of Commerce and the supplier, provided that both hold verified digital certificates.
Transparency	Internal validation
Confidentiality	There is an independent national authority which sets all regulations for the operation of every public IT system.
Technical development	Product lifecycle

Development

The open call was on March 3, 2006 and the deadline for submitting an offer was on April 27th, 2006. According to the implementation plan the development of the system would last 25 months. A technical consultant, which has been selected after a competitive call, to ensure the compliance of the final system with technical specifications. |
| **Organisation development** | There is no e-procurement system in the country.

Now in the phase of developing an e-procurement system. The goal is to develop a system at national level covering the entire range of public procurement procedures.

The authority which coordinates this project is the Ministry of Development and in specific |

	the General Secretariat of Commerce.
	The call was in March 2006 and according to that every project approved would be co-financed at 75% by the European Structural funds and at 25% by national funding. The development of the system should last nearly 2 years (25 months).
Legal development	The proposed text amending Greek legislation to transpose the EU Directives should be introduced by the end 2006.
Budget	Although the current e-procurement project is financially supported by European Structural Funds there have been limited national resources available so far.
	Development costs are 14 M€; Technical Consultant will be compensated with 1 M€.
	The state will undertake the operation of the system, so no future verification costs are expected.

Greece: Restrictions and Needs for defining compliance verification mechanisms	
Restrictions identified by National Contact	No verification mechanisms developed.
	Implementation of e-Government and e-Business in Greece are far from the European average.
	Lack of knowledge concerning e-procurement among public officers.
Needs identified by National Contact	Individual verification features in each phase.
	More applied political action required.
Needs identified by CARSA	Design central or official verification mechanisms to be used at all level of government.
	Devise training schemes to encourage use of e-procurement initiatives among possible users, and promote e-government and e-business at all levels.

Hungary	
Political Aspects	**Positive aspects:**
	Current drive to simplify governmental procedures has aided e-procurement acceptance.
	Negative aspects:
	Bureaucracy a hindering factor to the implementation of e-procurement.
	Hungarian law requires further adaptation to encourage the acceptance of e-procurement.
	Lack of financial resources at governmental level.
Social Aspects	**Positive aspects: None.**
	Negative aspects:
	Low economic and infrastructural capability of companies is considered a limiting factor to the utilisation and acceptance of an e-procurement system.
	Capacity of SMEs to serve clients via e-procurement systems is currently doubtful.
	Concern that current public procurement procedures are more expensive than direct buying.
Cultural Aspects	**Positive aspects: None.**
	Negative aspects: None.

Compliance verification	
General Aspects	The current audit on existing Total Quality Management systems is considered sufficient. Outside monitoring of the organisation and system is carried out by 3rd party.
	Ministry of Justice and Law Enforcement (IRM) is responsible for legislation within the Parliamentary framework, but is apparently not monitoring the process.
	KSZF (Central Services Directorate) is responsible for implementation.
	Non-electronic verification:
	Verification is performed on case-by-case basis by the literary advisers of the Public Procurement Bulletin and the Public Procurement Arbitration Board.
Interoperation	A third party audit has been carried out in 2005 on general IT standards.
Specific performance validating tools/methods	Not defined.
Scope of verification methods	Some general requirements referring to standards have been implemented in government decrees 168, 167. No requirements for verification are stated.
Integration	A third party audit has been carried out in 2005 on general IT standards.
Testing	Not defined.
Mechanisms for verifying features (High Level Indicators)	
Availability	A third party audit has been carried out in 2005 on general IT standards.
	Contingency planning defined on daily and weekly basis for recovering availability.
Accessibility	A third party audit has been carried out in 2005 on general IT standards.
Reliability	A third party audit has been carried out in 2005 on general IT standards.
	Validated through data clearing by 3rd party.
Interoperability	A third party audit has been carried out in 2005 on general IT standards.
	XML vocabulary.
Usability	A third party audit has been carried out in 2005 on general IT standards.
Scalability	A third party audit has been carried out in 2005 on general IT standards.
Security	A third party audit has been carried out in 2005 on general IT standards.
	Security audits also carried out based on national security standard.
Transparency	A third party audit has been carried out in 2005 on general IT standards.
Confidentiality	A third party audit has been carried out in 2005 on general IT standards.
Technical development	Product lifecycle
	Since the e-procurement system is IT dependent its life cycle should be dependent upon IT HW and SW life cycle (3-5 years) and the lifecycle of the particular business model.
	It may be outsourced for SLA assurance.
	Development
	2-4 years. It is transaction based, aligned with supply chain processes.
	Development is continuous, since hidden functionalities frequently appear.
Organisation development	One system exists.

	Currently no central e-procurement infrastructure exists in Hungary.
	The Government's plan is to set up a fully automated electronic public procurement system within the next few years. The system will cover all procurement phases.
	Coordination should be done between Ministry of Justice, Council of Public Procurement, and Ministry of Economics.
Legal development	The Hungarian Government Decree 167/2004 (V. 25.) on Electronic Public Procurement foresees the implementation of an electronic public procurement system. The Public Procurement Act of 2003 transposed the EU Directives in December 2005.
Budget	Current verification costs: 2%.
	Future verification costs: 6-8%.

Hungary: Restrictions and Needs for defining compliance verification mechanisms	
Restrictions identified by National Contact	Lack of relevant financial resources.
	Bureaucracy: the law (especially the law for public procurement) has not been created as a result of an IT or logical model of the processes described, but rather as a multi-value textual interpretation by various groups (attorneys, etc..) who do not master the process interpretation and modelling.
	Dependence on Microsoft technology.
	Lack of official concern about public procurement costs.
Needs identified by National Contact	More applied political action required: changes required to the model of the law used.
	Need for explicit directives on how to audit an IT system for the public sector.
	Separation of IT application and business application: IT should be outsourced.
	Different verification mechanisms for different aspects needed.
Needs identified by CARSA	Fully implement e-signatures.
	Develop systematic verification plan for all e-procurement procedures.

Iceland	
Political Aspects	**Positive aspects: None.**
	Negative aspects:
	Political process very slow.
	Budget limitations with respect to e-procurement.
	Considered large, inflexible and too expensive.
Social Aspects	**Positive aspects: None.**
	Negative aspects: None.
Cultural Aspects	**Positive aspects: None.**
	Negative aspects: None.
Compliance verification	
General Aspects	No system. IBX (Stockholm based company) off-the shelf solution exists at national level but little used.
	Regarding products: verifications standards do not exist.

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	Regarding invoices: no decisions have been taken.
	Non-electronic verification:
	Verification is performed on case-by-case basis according to law and the ESA (EFTA Surveillance Authority) Directive.
Interoperation	Up to service supplier IBX.
Specific performance validating tools/methods	Depends on IBX accreditation.
Scope of verification methods	Up to service supplier IBX.
Integration	None so far.
Testing	Up to service supplier IBX.
Mechanisms for verifying features (High Level Indicators)	
Availability	IBX 4-year agreement, 99% up-time.
Accessibility	Up to service supplier IBX, but based on WAI standards.
Reliability	Up to service supplier IBX.
Interoperability	Up to service supplier IBX.
Usability	Up to service supplier IBX.
Scalability	Up to service supplier IBX.
Security	IBX provides standard security measures. IBX may have 3rd party relation for validation although not defined further.
	E-signatures not yet applicable for procurement although used by private business.
Transparency	Considered not applicable.
Confidentiality	Considered not applicable.
Technical development	Product lifecycle
	Dependent on IBX as a supplier.
	Development
	Dependent on IBX as a supplier.
Organisation development	No specific office coordinating e-procurement has been appointed. The Ministry of Finance is working on policy.
	Rikiskaup, the State Trading Centre, (Ministry of Finance) handles procurement for supplies and services in domestic and foreign markets for State institutions and State corporations. This includes tender services, framework contracts, competitive dialogues.
	It is also currently responsible for the electronic market place, the ANZA Procurement Portal, operated in collaboration with IBX, a Swedish company.
Legal development	New legislation on public procurement, in accordance with the new EU Directives, was passed by the Parliament in January 2006.
Budget	None.

Iceland: Restrictions and Needs for defining compliance verification mechanisms

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Restrictions identified by National Contact	Systems are big, inflexible: lack of relevant financial resources
	Political motivation is lacking.
	Iceland dependant on off-the-shelf solutions procured from abroad.
Needs identified by National Contact	Small nations should receive more support at political and operational levels.
	More time: Implementation by 2009/2010 is too tight.
Needs identified by CARSA	Technical and financial backing needed.
	System complexity may need to be standardised commensurate with country size and purchasing power.
	Insufficient resources to carry out verification at any depth.

Ireland	
Political Aspects	**Positive aspects:**
	Political support for e-government and e-business is very strong
	Plans for National Public Procurement Operations Unit coordinating e-procurement activities
	Negative aspects:
	Ireland's public e-procurement system is relatively recent, and for this reason, no e-procurement verification policy has been created yet.
Social Aspects	**Positive aspects:**
	Ireland has an open and positive attitude to developments at European level.
	Social Partnership Framework Agreement will aid public procurement reforms.
	Negative aspects:
	Newness of e-procurement may hinder acceptance somewhat.
	Scepticism of political processes.
Cultural Aspects	**Positive aspects:**
	A clear pro-European stance is a cultural characteristic in Ireland.
	A strong IT culture, with SMEs highly aware of the advantages that technological advancement can bring to business.
	A culture of public-private partnerships (PPP) with clear agreement on shared objectives for the delivery of public infrastructure and/or public services by the private sector that would otherwise have been provided through traditional public sector procurement methods.
	Negative aspects: None.
Compliance verification	
General Aspects	Interested in verification as it is a requirement of the E-procurement Action Plan but not in a position yet to implement a policy.
	Validation of requirements is carried out as part of the normal project management and user testing cycles.
	Non-electronic verification:
	There are some peer group reviews for projects costing over €5million but these relate more to value for money and project management than procedures (although confirming

	that procedures were adhered to is part of the process); this is a recent development.
Interoperation	None
Specific performance validating tools/methods	The service provider company produces regular statistics on day-to-day performance for the site only.
Scope of verification methods	Specification phase: original specification of requirements (describing functional and security requirements) used for the tendering exercise. This has been updated to take account of the new EU Directives and also the E-procurement Action Plan. Design & development phase: test system is validated against requirements at each stage and new releases signed off when requirements have been met. In some cases consultation with the user base (or a sample user base) is carried out – particularly when a new design layout is introduced. Validation phase: As above – Functionality validated and verified through user testing, sometimes involving sample users. Verification phase: at user acceptance test stage. Operational phase: There are various in-built audit trails and user base also surveyed. User feedback and suggestions (through a specially facilitated e-procurement network) very helpful. Maintenance phase: as above.
Integration	None so far.
Testing	Test plans devised based on experience working in IT.
Mechanisms for verifying features (High Level Indicators)	
Availability	The system is available 24x7. SLA with service provider; also preparing SLA with web hosts. If there is a requirement to shut down (e.g. for an upgrade) the user base is notified in advance and the upgrade is carried out at a time when it is not too inconvenient for users (e.g., outside office hours for buyers and suppliers). Verification: Service provider and web hosts. Mirrored systems and backup from the service provider (if web host fails).
Accessibility	An independent audit conducted on-site. Technically the site is compliant with national and international regulations.
Reliability	The system is closely monitored by our service provider and by the web hosts. Internal verification based on system reports (the NPPPU has manager level access to perform reporting functions etc.).
Interoperability	Not defined.
Usability	Currently implementing recommendations on 'usability' for people with disabilities (particularly for those using screen readers); technically the site is compliant with national and international regulations. Currently English and Irish. French and German interfaces soon.
Scalability	Addressed by service provider.
Security	Not defined.
Transparency	The system is fully transparent and tender notices can be seen by everyone (i.e. the general public, not just buyers and suppliers).

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	Internal verification mechanisms.
Confidentiality	Appropriate security has been built into the system (e.g., for e-submissions and for buyer/supplier specific pages).
	Internal verification mechanisms.
Technical development	Product lifecycle
	The developments were originally conceived by NPPPU as requirements, defined via consultation with key buying organisations, through questionnaires and focus groups, and consultation with suppliers.
	The development is now taking account of the E-procurement Action Plan. o.
	The site is being developed by external consultants, who also manage the site on a day-to-day basis.
	Decisions on functionality are made by NPPPU and agreed with the company's project manager.
	The website is hosted by a separate third party, the Local Government Computer Services Board which has a web farm for hosting government websites.
	The major stakeholders are the NPPPU, the public sector buyers and suppliers who use the site.
	Development
	The site has been developed by a third party (Millstream Associates – based in Aberdeen, Scotland).
Organisation development	One centralised e-tendering system although smaller systems may operate at regional and local level.
	Plans for a national supplier register and a coordinating portal as a gateway to all electronic catalogues.
	Other financial systems capable of dealing with e-ordering & e-invoicing are being rolled out across the Irish public sector i.e., for central government, local government, health and education. A small number of framework agreements have now been established for cross-sector aggregated arrangements and the option of electronic catalogues for these is being pursued. A pilot for purchase cards is about to commence.
	Coordinated by National Public Procurement Policy Unit (NPPPU) in the Department of Finance. There are plans to create a National Operations Unit (which might be state-owned or independent).
Legal development	Regulations implementing Directive 2004/18/EC ready for signature by May 2006. The negotiations between the government and the trade unions concerning the National Partnership Program were due to end in June 2006.
Budget	Not defined.

Ireland: Restrictions and Needs for defining compliance verification mechanisms	
Restrictions identified by National Contact	Financial restrictions have blocked e-auction development.
Needs identified by National Contact	A national body which ensures compliance of the e-procurement system with the national law or the EU Directives.
	A standard verification strategy is needed, whether global or modular.
Needs identified by	More resources should be committed to allow advanced e-procurement features, such as

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Italy	
Political Aspects	**Positive aspects:**
	All political parties and coalitions support cost cutting policies and dedicated portals have been established by regional boards.
	The growing role of IT in the civil service will increase data access and thus provide useful expenditure monitoring and cost cutting instruments.
	Budget laws have aimed at enhancing the transparency of tendering procedures to streamline public spending.
	Negative aspects: None.
Social Aspects	**Positive aspects:**
	The public is demanding more transparency, as there has been a common public conception of severe wastage of taxpayers' money by successive governments.
	Negative aspects: None.
Cultural Aspects	**Positive aspects:**
	The general trend towards innovation in the Italian society as a whole.
	Negative aspects: None
Compliance verification	
General Aspects	Different compliance verification systems adopted in Italy to screen competitions/tenders, depending on the kind of supplies or services that can be procured on the portals.
	Entity managing the platform has a number of monitoring functions over online tenders concerning specific supplies. This entity also must authorize auction types and run compliance checks, both before the call for bids is published and during/after delivery (e.g. complaints).
	There is some room for improvement, specifically as regards the exchange of information and practices between the different platforms.
	CNIPA is a specific body which verifies compliance of the system with national law and EU Directives via auditing reports for each financed project
	Non-electronic verification:
	Controls performed only on the basis of national laws (although very detailed in Italy).
Interoperation	Internal verification mechanisms.
Specific performance validating tools/methods	Not defined.
Scope of verification methods	An internal group dedicated to final products verification and certification.
Integration	With local Chamber of Commerce. Verified internally.
Testing	Verification is carried out by iterative testing sessions.
Mechanisms for verifying features (High Level Indicators)	
Availability	With an automatic script.

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	Internal verification mechanisms.
	SLA: 5x7 from 8.00 to 18.00.
	Contingency planning and preventative maintenance supplied.
Accessibility	Internal verification mechanisms.
Reliability	Internal verification mechanisms: load tests.
Interoperability	Specific template documents for each project phase as indicated by RUP methodology. The functional requirements documents are reviewed by development group and changes are traced in official versions.
	Internal verification mechanisms.
Usability	Internal verification mechanisms.
Scalability	Addressed by service provider.
	Internal verification mechanisms.
Security	Internal verification mechanisms according to Italian law about Privacy and security planning.
	Accredited e-signatures provided by Independent Certification Authority.
Transparency	Internal verification mechanisms.
Confidentiality	Follow Italian privacy and security laws.
	Internal verification.
Technical development	Product lifecycle
	The system was developed following a proprietary methodology (ProCSI) founded upon RUP (Rational Unified Process). The system is based upon an Oracle standard product (Oracle Exchange) and then customized to follow national laws and local needs.
	Planned developments coordinated by a functional analyst with a design architect, who supervised all the technical process (development and deployments).
	Maintenance is carried out by in internal group of experts.
	Development
	Developments are shared and agreed upon with the client and follow a proprietary methodology founded upon RUP. The developments are in-house.
Organisation development	Only one national e-procurement platform, and three regional platforms.
	One more regional platform is being started up in Tuscany: test tenders have started in mid September 2006. More portals are in the pipeline in Lombardy and Friuli Venezia Giulia.
	Consip S.p.A. (owned by the Ministry of Economy and Finance) acts as a coordinator and internal government consultancy for regional projects.
	Main focus of Consip's Civil Service E-procurement Division is implementation of a procurement streamlining programme.
	Consip S.p.A. is a joint-stock company and a supplier of the civil service exclusively.
	In 2004 the Ministry of Economy and Finance appointed a working group on government-run e-procurement systems in Italy as a way of promoting cooperation and coordination between government departments that had developed or were in the process of developing e-Procurement platforms.
Legal development	Italy was the first European country to set up an e-procurement regulatory framework

	allowing purchases above the EU threshold to occur online.
	A new "Single Act" on public procurement, including all the new elements proposed by the EU Directives was finally approved in May 2006.
Budget	Difficult to answer as verification included in other costs.
	No specific budget dedicated to future verification needs.
	Over the last 6 years, budget laws have aimed at enhancing the transparency of tendering procedures so as to streamline public spending.

Italy: Restrictions and Needs for defining compliance verification mechanisms	
Restrictions identified by National Contact	Regional platforms have been developed in a wide array of models and sectors, which makes interaction between procurement systems rather difficult.
	High investment required.
Needs identified by National Contact	Different verification mechanisms are better at modular level.
	Co-funding needed by local and national governments.
	Provide technical support and training, and help to disseminate usage of electronic means.
Needs identified by CARSA	Keep tight control on regional developments through national laws and standards.
	Develop or use existing interoperability standards.

Latvia	
Political Aspects	**Positive aspects:**
	The concept of e-procurement is well accepted at government level.
	A National Development Plan developed with a clear message regarding the movement towards a knowledge based society has positively influenced the integration of e-procurement in society.
	Negative aspects: None.
Social Aspects	**Positive aspects:**
	During the first stages of system implementation, it was positively supported as being an accepted knowledge society technology.
	Negative aspects:
	SMEs did not benefit as expected from the introduction of the system, and to counteract this, 5 regions were created in Latvia (how this works is not clarified in the response).
Cultural Aspects	**Positive aspects: None**
	Negative aspects: None
Compliance verification	
General Aspects	Procurement Monitoring Bureau, Electronic Procurement State Agency carries out verification by involving the legal adviser in the development process annually at each system upgrade.
	Non-electronic verification:
	The verification procedures are implemented on a case-by-case basis by Procurement Monitoring Bureau.

Interoperation	Planned interoperation with State Revenue Agency, and Register of Enterprises: information on taxes and enterprise registration/liquidation will be received.
Specific performance validating tools/methods	Collect data on the infrastructure external experts have in place for verification/validation/monitoring: Data collection is in progress, started in December 2005.
Scope of verification methods	Using external expert: Accreditation by independent 3rd party (PricewaterhouseCooper Ltd and AA Projekts Ltd).
Integration	None.
Testing	None.
Mechanisms for verifying features (High Level Indicators)	
Availability	Internal verification against printed version of national or EU Directives in Procurement Monitoring Bureau. Microsoft Standard tools.
Accessibility	Internal verification against printed version of national or EU Directives in Procurement Monitoring Bureau.
Reliability	Internal verification against printed version of national or EU Directives in Procurement Monitoring Bureau; validation carried out at each update.
Interoperability	No integration with other systems. Use xCBL interoperability standards.
Usability	Internal verification against printed version of national or EU Directives in Procurement Monitoring Bureau.
Scalability	Internal verification. Tests on maximum load carried out by the developer after each update of system design.
Security	Internal verification: Security tests carried out at different levels (physical and logical) based on security plan. Latvian standard 17799:2002 LVS/ISO applied.
Transparency	Auditing by PriceWaterhouseCooper Ltd; Procurement Monitoring Bureau.
Confidentiality	Internal validation, integrated into software system.
Technical development	Product lifecycle Product lifecycle of e-Procurement system is about 1 year (scheduled by e-procurement State Agency). The 3 levels of maintenance and support (buyer's or supplier's administrator; Agency; software developer) are built into the system. Development Development lifecycle of e-procurement system depends on current situation and state of the art available. Accreditation of system by independent 3rd party (PricewaterhouseCooper Ltd and AA Projekts Ltd).
Organisation development	There is one e-Procurement system in Latvia operating at national level, consisting of e-catalogues. The users are government institutions and local community administrations. Ministry of Finance coordinates the e-procurement procedures. Ministry of e-Government coordinates the running of e-Procurement systems (Electronic

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	Procurement State Agency).
Legal development	The Utilities Directive was transposed by January 31st 2006, with Directive 2004/18/EC being implemented in May 2006.
Budget	Current verification costs: about 10%.
	Future costs: about 10%.

Latvia: Restrictions and Needs for defining compliance verification mechanisms	
Restrictions identified by National Contact	Many of the standard off-the-shelf solutions identified did not correspond with the EU Directives, and this resulted in higher development costs than originally expected.
	High investment required.
Needs identified by National Contact	Different verification mechanisms better at modular level.
	There are clear training needs for e-procurement.
	A more holistic approach must be designed, including e-Signature, Project management tools, etc..
Needs identified by CARSA	Clear verification strategy must be defined, at all levels.
	Verification and listing of "best" off-the-shelf solutions, most compliant with EU Directives, should be defined and made available to all countries.

Lithuania	
Political Aspects	**Positive aspects:**
	Politically, there is a positive attitude towards e-procurement systems.
	Negative aspects: None.
Social Aspects	**Positive aspects:**
	Lithuania is considered to be an IT literate society; the integration of e-procurement in society and its subsequent acceptance at user level should not present problems.
	Outsourcing of some part of the technical services was transferred to third parties to save costs.
	Any lack of competence in IT of the buying organisations and suppliers has been solved through the organisation of training.
	Negative aspects:
	Difficulties found with regard to employment of qualified IT specialists and other professionals, as salaries in government institutions are too low compared to business.
	Outsourcing caused problems with information confidentiality.
Cultural Aspects	**Positive aspects: None.**
	Negative aspects:
	Some scepticism with regard to e-procurement systems may occur with respect to the confidentiality of personal information, especially among older generation.
Compliance verification	
General Aspects	Compliance verification is considered sufficiently performed, as it is carried out centrally by the same organisation which is the main coordinator of public procurement in Lithuania. Compliance is verified in whole process of system development and

	exploitation.
	Main service provider and technical support services provider are responsible for implementation of functional criteria in the system.
	Public Procurement Office will verify that they comply with the definitions in the system specification. Regular meetings, reviews and reports are the main mechanisms in the process.
	Non-electronic verification:
	The verification procedures are implemented on a case-by-case basis by Procurement Monitoring Bureau.
Interoperation	System interoperates with State Enterprise Centre of Registers for obtaining data about tenderers and buying organizations, and fully interoperates with TED data base and State News, which is official State newspaper publishing all public procurement notices.
Specific performance validating tools/methods	Process of verification ensured in the process of system development and maintenance and carried out by people working in the organisations involved in the process.
	Verification is ensured by agreements, which develops close cooperation with the parties involved and the procedures of reporting.
Scope of verification methods	The compliance with national law and Directives is important in all phases. Especially it is important in the early stages, during specifications.
	Specification phase:
	For the modules, which are already functioning, there are full system specifications.
	Specifications were made by technical service providers, according to the main requirements of Public Procurement Office, which was controlling the process.
	Compliance with the requirements has been reviewed during the specification process by the main parties (Project management group and technical service providers) where regular meetings were held to review the progress of the work. The minutes of such meetings were documented.
	The result of verification review process usually is the minutes of the review meetings.
	The frequency of such reviews is not formalised and depends on the needs.
	After each major phase in the development process technical service providers must deliver reports.
	For those modules still in the process of specification, the main service provider will be a foreign company.
	In this case the procedures of the verification reviews could be more complex and formalised. Also there will be one more party involved in the development lifecycle – technical support services provider will help to coordinate work with the main service provider. It will have to deliver reports to Public Procurement Office after each major phase of the project.
	Design and Development phases:
	Design and Development phase will be verified similarly as in the phase of specification.
	Validation Phase:
	Validation phase will be verified similarly as previous phase. Compliance with the requirements will be ensured by major parties in the process (Public Procurement Office, main service provider and technical support services provider). Regular meetings, reviews and reports are the main tools for the process. The project management group will validate the functionality of the final system.

	Installation phase:
	One of the requirements of Public Procurement Office to the main service provider is that the new system should be integrated with existing modules. This will be verified and tested by IT specialists in Public Procurement Office and by technical support services provider. Regular meetings, reviews and reports are the main tools for the process. At the end of installation phase the agreement with the main service provider and technical support services provider will be signed.
	Operational phase:
	In existing system both internal and external (testing, logging, online and telephone suggestion/complaints) verification mechanisms are used to ensure the correct functionality. This work is done by System administrators in Public Procurement Office and 2 technical service providers. Internal procedures of Public Procurement Office are designed to ensure fast reaction to complaints on system errors and schedule some routine tests.
	When the new modules will installed it is planned to create a data centre (new internal body in the Public Procurement Office), which will be responsible for managing e-procurement system and ensuring its functionality. The internal and external mechanisms for ensuring functionality will be more strict and formalised, because there will be more sensitive information in the system.
	Maintenance phase:
	In the existing system maintenance is coordinated by Public Procurement Office. The strategy for this phase is to ensure optimal operation of system by following user instructions, performing frequent tests and fast reaction to contingencies.
	When the new modules will installed it is planned to create a data centre (new internal body in the Public Procurement Office), which will be responsible for managing e-procurement system and ensuring its functionality. The internal and external mechanisms for ensuring functionality will be more strict and formalised, because there will be more sensitive information in the system.
Integration	The main verification mechanism for integrating the system with other systems is frequent tests and suggestion system.
Testing	Testing strategy is developed internally by Public Procurement Office.
Mechanisms for verifying features (High Level Indicators)	
Availability	Automatic tester informs system administrator, when the system becomes unavailable.
	Verification by Internet service provider and provider of technical infrastructure for storing servers ("Bite") and Internet service provider ("Infostruktura").
	24 hour SLA.
	Automatic tester informs system administrator, when the system becomes unavailable; UPS – prevent from problems with power supply.
	There is a contingency plan, which specifies responsible persons for recovering availability.
Accessibility	Defined in graphical user interface, with support and help functionalities provided.
	Public Procurement Office verifies compliance with the definitions in the system specification.
Reliability	System reliability tests are performed every year by comparing quantity of errors with the previous year.
	Same external 3rd parties as above.

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Interoperability	Interoperability is validated by performing tests. National standards for system operability are used.
	XML standard is used for data transfer to TED data base.
Usability	English provided
	Standardised user interface
	Public Procurement Office verifies compliance with the definitions in the system specification.
Scalability	Renewal of technical equipment planned according to the level of load.
Security	Security is validated by technical systems (firewall, antivirus software) and by system administrators of the Public Procurement Office and 3rd party.
	Lithuanian Standard LST ISO/IEC 17799:2002 is applied.
Transparency	Validation of transparency is the main task of Public Procurement Office.
	Transparency is also validated by public exposure of e-procurement system ensuring that all parties can see how the process of procurement is being organised.
Confidentiality	Validated by technical means and procedures. In the existing system there is no sensitive information.
Technical development	Product lifecycle
	E-publication, e-access to tender documents, e-submission and e-information and reporting modules are in the phase of maintenance.
	The coordinator of different developments is Public Procurement Office, which contracts 3rd parties for implementation.
	Maintenance is carried out both internally and by 3rd parties.
	Major stakeholders are: Public Procurement Office, which manages the system; 2 technical service providers, which developed the system and now provide support services; Internet service provider and provider of technical infrastructure for storing servers ("Bite"); Internet service provider ("Infostruktura").
	Development
	The project started in 2006 and will be finished in 2008.
	Currently the Public Procurement Office is preparing documents (specifications) for the main service provider, which will implement the rest of the modules.
	A technical support services provider is envisaged, who will help to coordinate the project, assess quality, verify compliance of results with the requirements and consult in the field project documentation and IT infrastructure.
	The development process will be guided by several pieces of legislation:
	EU Directives 2004/17/EC and 2004/18/EC, Law on Public Procurement, Law on Provision of Information to the Public, Law on State Registers, Law on Legal Protection of Personal Data, Law on Electronic Communications, Law on Electronic Signature, Law on the Right to Obtain Information from State and Local Government Institutions.
	Methodologies:
	Methodology on public sector investment projects, Lithuanian Single Programming Document for 2004–2006, Guidelines for organisations applying for structural funds financing (Nr. T-85), Electronic government conception. // Þin. 2003, Nr. 2-54, Rules of establishment and legitimisation of state information systems.
Organisation	There is one e-procurement system in Lithuania with a new project for developing the

development	existing e-procurement system to be finished 2008.
	The main institution coordinating e-procurement system is the Public Procurement Office. This is a national institution which co-ordinates the activities of procurement, supervises compliance of procurement activities with the Law on Public Procurement and the implemented legislation.
Legal development	The 2002 Law on Public Procurement has been amended to transpose the new EU Directives within the deadline.
Budget	The 2008 Project is funded by Structural Funds.
	Lack of financial resources in previous phases.
	Current verification costs: 10%.
	Future costs: 10%.

Lithuania: Restrictions and Needs for defining compliance verification mechanisms	
Restrictions identified by National Contact	System is very complex and difficult to implement. Difficulties in ensuring non-functional requirements for different target groups.
	High investment required.
	Difficulties in employing qualified IT specialists and other professionals, because salaries in government institutions are too low compared to business.
Needs identified by National Contact	Both global verification and verification of individual features are needed.
	Training required for buying organisations and suppliers.
	Outsourcing necessary.
Needs identified by CARSA	None.

Luxembourg	
Political Aspects	**Positive aspects:**
	E-procurement appears to be strongly supported politically
	Negative aspects: None
Social Aspects	**Positive aspects: None**
	Negative aspects:
	The small size of the country results in the consequence that few people are directly involved in development and often in charge of a different tasks. This may influence the rapidity of the development and implementation of new systems
Cultural Aspects	**Positive aspects: None**
	Negative aspects: None
Compliance verification	
General Aspects	Compliance verification is considered to be well performed, although it is not made clear

	what mechanisms are used. In Luxembourg the IT systems of the Ministry departments are hosted under the control of the national IT department which manages all the systems based on professional methodologies.
	Compliance with national law is provided (partly) by the structure of the forms containing "mandatory information", and "validity tests" (dates, etc..). From the organisational point of view, the awarding departments are responsible for the content of their publications.
	Non-electronic verification:
	Not defined
Interoperation	The system does not interoperate with other systems but is linked by data communication with OJEU (submission of new publications under XML format) and with national press for the publication of notices.
Specific performance validating tools/methods	The State IT Centre issued guide lines for development and implementation of applications on their systems. They also issued a "graphic chart" which defines the ergonomics and accessibility to the applications.
Scope of verification methods	Acceptance of the system was made based on test cases and support from an external expert specially appointed for this verification.
Integration	Compliance with international standards (telecom, interfacing)
Testing	Testing strategy is approved by the State IT centre and controlled by third party expert.
Mechanisms for verifying features (High Level Indicators)	
Availability	The system should at least be available during business working hours. Mechanisms for verification not clear.
Accessibility	A graphic chart that requires applications to have a high level of visibility. Mechanisms for verification not clear.
Reliability	Load balancing on the servers
Interoperability	Data transfer with OJEU and national press validated: XML for data communication with OJEU IBM compatibility, J2EE, Java standards used
Usability	State IT graphic chart advises usability requirements Both French and German supported
Scalability	Not defined
Security	The State IT Centre have a security plan for the systems and applications that they are running. Mechanisms for verification not clear. Advanced electronic signature will be implemented, e-certificates will be provided by independent certification authority.
Transparency	Not defined

Confidentiality	Not defined
Technical development	Product lifecycle Not defined Development The modules e-procurement and e-access are implemented. E-submission and e-reporting are foreseen for 2008. The specifications of the actual system have been defined by the Ministry of Public Works in close cooperation with the State IT Centre. The development itself was made by a third party (public call for tender in 2004) The specifications as well as development and implementation comply with the methodologies and the rules that are set by the State IT centre that manage the IT systems of the Luxembourg state departments and ministries.
Organisation development	There is one system in Luxembourg operating at the national level under the responsibility of the Ministry of Public works. The main institution coordinating e-Procurement system is Public Procurement Office. This is a national institution which co-ordinates the activities of procurement, supervises compliance of procurement activities with the Law on Public Procurement and the implemented legislation.
Legal development	The two new Directives have not been transposed yet. The government introduced the competitive dialogue procedure and framework agreements, but the final legislative outcome strongly depends on the Parliament's decision.
Budget	Current verification costs: 10% Future costs: 15%

Luxembourg: Restrictions and Needs for defining compliance verification mechanisms	
Restrictions identified by National Contact	Change in behaviour of awarding authorities as well as the enterprises. Low staffing capability of ministries: expertise may not be available.
Needs identified by National Contact	Ensure that both procurement and e-procurement are controlled by the same body, in order to smooth decision processes.
Needs identified by CARSA	Outsourcing a solution to staffing problems.

Malta	
Political Aspects	**Positive aspects:** A top priority on the government's agenda is boosting the ICT infrastructure. **Negative aspects:** Only revenue generating systems important due to need to reach ERMII targets and

	other fiscal challenges: VAT compliance, income tax, issuing of certificates and other web portals that actively "create" money given more importance.
Social Aspects	**Positive aspects:** Penetration of internet widespread, so new technology well accepted. **Negative aspects:** True confidentiality is considered sometimes difficult to ensure, as Malta has a small population, and businesses that regularly tender are well known to one another.
Cultural Aspects	**Positive aspects:** Under an e-public procurement system a system of fraudulent contracts awarding disappears, allowing for fairer trading. Companies which were in a comfortable relationship with government find harder to compete and are perhaps eliminated from the market for inefficiency, lower standards or high prices. Knowing the above was a possibility the government thought to have delayed instilling a transparent mechanism by not proactively pushing forward e-procurement. **Negative aspects:** Contracts awarding sometimes carried out through prior knowledge of the tenderer, thus not allowing full transparency. Difficult to break the relationship between the long term supplier and the government itself. This creates a barrier to entry for other competitors.
Compliance verification	
General Aspects	The National Audit Office mandate covers full annual financial and compliance audit of all government offices and other public entities, independent advisory and investigative powers, examination of any financial matter concerning use of public funds, and performance/value for money evaluation audits of government offices and public entities and companies where government is a majority shareholder. This office is also in charge of audit-assurance with respect to e-government. The Office of the Commissioner for Data Protection ensures data privacy with regard to personal information, and enforcement of relevant legislation. An electronic portal managed by MITTS caters only for quotations for electronic hardware and software of less than Lm2500 (€5833). Non-electronic verification: Most procedures (apart from issuing on-line requests) in the tendering process are still handled on paper. Audits are held on a regular basis by the National Audit Office and EU auditors. Moreover the Department of Contracts through the Compliance Directorate is constantly monitoring that procurement regulations are strictly adhered to.
Interoperation	Internal validation: Not defined.
Specific performance validating tools/methods	Internal validation: Not defined.
Scope of verification methods	The portal enables public officers to acquire IT hardware and software below LM2, 500. Requests for quotations exceeding this amount should have prior authorisation from the Permanent Secretary. The equipment supplied through this system has to conform to the specified features required by the Departments putting forward their request and those

	suppliers who provide equipment which is approved, can then form part of the "Approved Supplier List".
	The current framework aims at increasing transparency, reducing the cost of doing business for both government and suppliers, bringing about more efficient purchasing and increasing the ability to capture strategic information on procurement such as purchasing patterns. This system also provides for the establishment of a pool of suppliers, which after a qualifying period of six months are awarded a Quality Mark. There is also support for the distribution and control of the software licenses resulting from the agreement signed with Microsoft.
Integration	Internal validation: No clear information exists regarding this issue.
Testing	Internal validation: No clear information exists regarding this issue.
Mechanisms for verifying features (High Level Indicators)	
Availability	No clear information exists regarding this issue.
Accessibility	Not defined.
Reliability	Internal validation.
	Preventative maintenance through routines.
	Through backups.
Interoperability	The system operates independently and no other systems are integrated with it.
Usability	English and Maltese.
Scalability	The existing system could be scalable but requires a number of major enhancements and development. There was an attempt to review this in depth but this was abandoned due to the fact that another initiative was being undertaken and was not worth the effort at that time.
	The current infrastructure can handle loads comfortably.
Security	Internal verification carried out by Security Department.
	No digital signature is in place for use with the current e-quotation system but this is currently under review.
Transparency	Not defined.
Confidentiality	Not defined.
Technical development	Product lifecycle
	The responsibility for policy making and strategies in terms of e-government implementation falls under the Ministry for Investment, Industry and Information Technology. The coordination, implementation and part of the support used to fall under the Central Information Management Unit which was based in the Office of the Prime Minister (OPM). This unit was bound to coordinate the development and implementation of government information management standards and procedures. Information Management Units were set to in each Ministry to relay work of CIMU. Government ministries and departments are also involved in the implementation of such a project however at the departmental level.
	The MITTS (Malta Information Technology and Training Services Ltd.), a government-owned company supplying IT systems and services to Government departments had the role of providing support in conjunction with the CIMU and the Management Efficiency Unit (MEU). The MEU is the in-house consultancy organisation of the Government of Malta. It is a separate entity from the OPM and is primarily tasked with assisting government ministries and departments in the development and implementation of effective change management strategies intended to lead to the improvement of

	Government Services. The MEU helped draft the e-Government Vision and Strategy under the direction of the CIMU and also helps various Government Departments to re-engineer their business processes in order to start providing their services online.
	In early 2004, the then CIMU (Central Information Management Unit) within the Office of the Prime Minister was commissioned to develop an e-procurement system (e-quotations system which works through an e-procurement website and is backed by an e-procurement framework) to cater for ICT Desktop Equipment.
	The e-procurement website provides suppliers with the up-to-date information they need to offer quality software and hardware supplies in line with the quality standards stipulated by the authority. It also serves to authorise public officers to purchase IT supplies with more flexibility. The website is intended for use by the Quality Mark suppliers and purchasing officers from Government Ministries, Departments and public sector entities connected to MAGNET, the Maltese Government Network, which in 2005 became MAGNET II.
	The system's portal contains a list of items that could be procured through the system, whilst featuring the possibility of placement of on-line requests by the requesting Departments. Through this system quotations are received within a cut-off date, and the submissions are made public. The award for the tender is also made public. The system however does not include other procurement features as these are handled through existing methods.
	Development
	The existing system was designed and developed by MITTS Limited.
Organisation development	Malta is considered to have one e-public procurement system which is currently in operation. At the present time there have been no publications issued by the government on the implementation of a new system or any mention of improvement of the present one. The current portal is the responsibility of the central government, specifically the Ministry of Finance, Department of Contracts.
	Following a review of ICT policy, a decision was taken to close down CIMU on 30 September 2005. Responsibility for broad ICT strategy and planning across the whole public sector now belongs to the MIIIT whereas MITTS Ltd has assumed responsibility for technical standards and policies and corporate ICT applications. No development has been undertaken since the take-over; however minor enhancements and reporting facilities have been implemented.
	Another initiative is being undertaken by the Ministry of Finance (Contracts Department) for a fully integrated e-procurement system.
Legal development	The transposition of both EU Directives has been completed with the adoption of Legal Notice 177/2005 and Legal Notice 178/20058 that entered into force in June 2005.
Budget	Not defined.

Malta: Restrictions and Needs for defining compliance verification mechanisms	
Restrictions identified by National Contact	Political backing for e-procurement.
Needs identified by National Contact	Not defined.
Needs identified by CARSA	Provide standards for transparency and confidentiality.

The Netherlands	
Political Aspects	**Positive aspects:** The Dutch Parliament has approved that registration with TenderNed will be enforced by law. An important political issue is the reduction of government-imposed administrative burden. The e-procurement system is seen as one of the required instruments. **Negative aspects: None.**
Social Aspects	**Positive aspects:** Use of the system is free, for governmental bodies and for tenderers. **Negative aspects: None.**
Cultural Aspects	**Positive aspects:** The Netherlands exhibits a culture of public decision based on consensus. This is shown by the presence of many governmental bodies, and tenderers, on the board of TenderNed. **Negative aspects:** To mandate use of a system is against Dutch culture. The policy therefore is more focused on presenting the system as an enabler. Yet, legislation was approved by the Parliament to position the system as the only channel for TED registration. Implementation of the legislation (foreseen beginning next year) must show whether opposition is met among the using organisations. Ministry of Economic Affairs reluctant to mandate other system functions; they hope those functions will grow popular by general use.
Compliance verification	
General Aspects	Compliance of the system with national and European legislation has been verified by an external bureau. As the system is still in its pilot phase, no procedures for systematic verification are yet in place. The emphasis is currently on preparing the system for roll-out and on the roll-out itself. Then needed verification procedures will be established. Note: external verification revealed two minor issues that are now being fixed. The Ministry of Economic Affairs verifies compliance, or assigns external experts on an ad-hoc basis to perform the verification. The present system was verified once-off on legal compliance (EU Directives and national law). The intention is to repeat verification after each major system change and after changes of the legislation. Non-electronic verification: No centralised procedure for verification. Verification is embedded in regular governance. Compliance is a self-regulating mechanism, as subscribing companies start law suits against non-compliant governmental bodies.
Interoperation	Interoperation with TED interface was verified and certified by the Luxembourg organisation running the TED.
Specific performance validating tools/methods	Verification methods/techniques/tools are under development and not yet decided.
Scope of verification methods	Not defined.

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Integration	Internal validation: No clear information exists regarding this issue.
Testing	Test procedures are in place. They have not been certified by an external party.
Mechanisms for verifying features (High Level Indicators)	
Availability	After the pilot phase availability checking will be organised.
	Systematic SLA compliance monitoring has not been implemented yet.
	Current system has an availability of 99.4% (short maintenance during the weekend).
	Helpdesk is open working days from 8:30 - 17:30.
Accessibility	Specified in system requirements.
	Verified using test procedure.
Reliability	Specified in system requirements.
	All system components have double implementations. No real contingency plan yet. Will be developed during the roll-out phase.
Interoperability	Specified by TED. Better browser support is under development.
Usability	Dutch government has specific directives/guidelines for usability of governmental systems.
	Verified using test procedure.
	An English language interface is being developed.
Scalability	Specified in system requirements.
	The system regularly undergoes stress testing.
	The system will use phased scaling. Performance will be monitored after each step and appropriate actions will be taken.
Security	None yet.
	Accredited e-signature provided by Independent Certification Authority.
Transparency	Specified in system requirements. No verification processes yet.
Confidentiality	Specified in system requirements. No verification processes yet.
Technical development	Product lifecycle
	The system is constantly improved. In this pilot phase no version cycles have been defined yet. Upgrades are being approved by the PIANo Board. It took 2.5 years to develop the system to its present state. Development costs were about EUR 1.5 million.
	As soon as the system is regarded as sufficiently stable, a target group of users will be admitted. It must be noted that the roll-out schedule is set over a period of months rather than years. Steering is performed by a management board with representatives of all relevant (semi-)governmental bodies, utilities AND contractors. Consensus and commitment are seen as more valuable than legislation and command.
	Development
	System development has been outsourced but is under control of PIANOo. Technical maintenance and operation has been outsourced as well.
	An SLA is in effect between PIANOo and the operator.
	Costs for operation and maintenance, including improvement projects, have been included in the government budget. For major upgrades additional budget will be requested.

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Organisation development	One system, TenderNed, for public tendering: the system will operate at national scale but is also open to foreign tenderers. The system is now used by a few infrastructural works oriented governmental bodies. It is the intention to present the system as the (only) system to support public tendering for governmental bodies, semi-governmental bodies (hospitals, universities) and utility companies.
	An organisation has been founded, PIANOo, that will manage TenderNed. PIANOo is part of the Ministry of Economic Affairs, but is controlled by a Board in which multiple governmental bodies are represented. PIANOo is an organisation to support public tendering, not operational procurement. Therefore the interoperability with other systems is limited.
	Several governmental organisations have operational e-procurement systems installed, like catalogue systems, without tendering functionality. Some organisations use services of commercial providers on an ad-hoc basis for tendering projects.
Legal development	Dutch legislation now implemented the EU Directives 2004-17 and 2004-18. A system has been acquired / developed by the Ministry of Economic Affairs to support e-tendering.
Budget	For major upgrades additional budget will be requested.
	Verification costs not known.

The Netherlands: Restrictions and Needs for defining compliance verification mechanisms	
Restrictions identified by National Contact	Possible resistance against obligatory use of the system.
Needs identified by National Contact	Certain specialised functions (availability, legal compliance, interfaces) need to be verified by specialised experts. It is not clear if those verifications will be combined and/or be subject of centralised certification.
	User-friendliness, scalability, security, etc. must be improved.
	Monitoring and controlling budget allocation and consumption.
	Offer the system as a user friendly facilitator. Guide users actively during implementation. Emphasise added value, not obligation.
Needs identified by CARSA	Education of users with regard to the benefits of system use.

Norway	
Political Aspects	**Positive aspects: None**
	Negative aspects: None.
Social Aspects	**Positive aspects: None**
	Negative aspects: None.
Cultural Aspects	**Positive aspects: None**
	Negative aspects: None
Compliance verification	
General Aspects	Compliance with national law and regulations is stressed as obligatory when the E-procurement Secretariat are entering into contracts (e.g. Framework Agreements) on e-procurement systems supporting the process for entering into agreements (e-Sourcing)

	to the public sector in 2007.
	Systems that are in conflict with national law will be rejected. Systems that give guidance to authorities on how to comply with the national regulations, will be appreciated. Note that these contracts on e-procurement systems will not be mandatory for public entities. Public entities includes Governmental bodies, local authorities and public companies.
	Non-electronic (paper-based) public procurement:
	Bodies under the national regulations based on the utilities directive can have their procurement routines certificated. However, very few bodies have done this since the possibility was introduced in 1999. There is no similar possibility in the public sector.
Interoperation	Yes, with;
	- TED (Tenders Electronic Daily) by OPOCE
	- ERP-systems (economy-, procurement-, invoice-)
	- Supply- / storage systems
	- HR-systems
	- Analyzing systems
	- Ordinary office-systems (typical MS Excel)
Specific performance validating tools/methods	Functional specifications are prepared as part of the basis for entering into the above mentioned framework agreements with the operators.
	The actual service delivered by the operators is monitored according to the contracts with focus on issue solving and performance according to SLA (Service level agreements). Changes in the service delivery originated by changes in procurement regulations and/or system upgrades/replacements are handled on an individual basis.
Scope of verification methods	i. Specification phase:
	Functional requirements are available, in Norwegian, some also available in English. Reviewed against National regulations (that also implement the EU-regulations). as part of describing the processes that should be supported. Revision carried out by legal experts and/or procurement experts from participating authorities and/or private third parties. The Ministry in special cases. Do you keep documented evidence of the review process and its outcome? Documented evidence is kept to some extent – where specific issues has been clarified by experts and/or the Ministry. Verification is carried out when contracts with operators are entered into with clearance being the final result.
	The following specifications are completed, verified and available:
	e-procurement platform (integration between buyers and sellers, e-catalogues)
	end-user applications (ordering, receipt of goods and services and invoice-handling)
	e-Sourcing (including e-Auctions, evaluation and more).
	e-publication (including integration with TED, e-access to tender documents and more)
	The following specifications are to be available within 12 months (end 2007) :
	e-Invoice platform
	e-Supplier information registry
	ii. Design and Development phases:
	Systems are rarely developed based on specifications as the secretariat tries to specify

	in such a way that off the shelf software can be used.
	Where development is necessary, it is the responsibility of the operator to ensure that their design complies with the specifications. Where deemed necessary, development plans have been established for each individual operator for the duration of the contract.
	The services delivered by the operators have been integrated with electronic systems within the entity (e.g. financial systems). The operators need to document their overall integration capabilities and their experience with specific integration scenarios.
	Verification is carried out when contracts with operators are entered into and when changes in procurement regulations and/or system upgrades/replacements occur.
	iii. Validation Phase:
	Functionality of the final system before entering into production is validated through a pilot period involving the E-procurement Secretariat, participating authorities and/or private third parties, and the Ministry in special cases. These perform validation as far as possible on basis of actual transactions, through testing of the system according to pre-agreed scenarios and routines.
	Validation performed when contracts with operators are entered into and when changes in procurement regulations and/or system upgrades/replacements occur.
	Clearance is the result. The validation phase might result in issues which have to be included in the development plan.
	Documentation of verification is a result. Traceability to implementation of some requirements, but not necessarily all, are kept.
	iv. Installation phase:
	Each authority which takes the services into use, has its own "installation phase" which is customised for this entity. The final result of these activities is clearance of the system.
	v. Operational phase:
	Self-verification, online suggestion/complaints forms from the users.
	Monthly reports on activity and service levels, monthly meetings with the service operators and quarterly meetings with the service subscribers.
	vi. Maintenance phase:
	Verification strategy involves doing necessary verifications when changes in procurement regulations and/or system upgrades/replacements occur.
	Carried out when necessary, following the frequency of changes in procurement regulations and/or system upgrades/replacements. Includes verification of system functionalities; Tools; Operational platforms are verified
Integration	The service operators are obliged to carry out technical and functional tests of integrations before they can be put into operation. The methods to be used must be documented by the operators as part of their contract with the E-procurement Secretariat.
Testing	The testing strategy as such is evaluated before the operator achieves a contract with the E-procurement Secretariat. It is not obligatory for the operator to have testing strategies accredited.
Mechanisms for verifying features (High Level Indicators)	
Availability	Basic requirement for all services. Not regulated by specific national or European law/regulation. Requirements based on perceived best practice and user input.
	Evaluation before entering into framework agreements by the E-procurement Secretariat, users and/or independent 3rd parties. In addition, regular reporting and compensation

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	regarding service level.
	SLA: 99,5 % (measured between 0700 – 2100 on work days). Includes redundant services, but differs regarding service and service provider. Usually back-up site and requirements regarding need for back-up. Service providers are obliged to have plans for recovery after disasters.
Accessibility	Basic requirement for all services. Not regulated by specific national or European law/regulation. Requirements based on perceived best practice and user input.
	Evaluation before entering into framework agreements by the E-procurement Secretariat, users and/or independent 3rd parties. In addition, regular reporting and compensation regarding service level.
Reliability	Basic requirement for all services. Not regulated by specific national or European law/regulation. Requirements based on perceived best practice and user input.
	Evaluation before entering into framework agreements by the E-procurement Secretariat, users and/or independent 3rd parties. In addition, regular reporting and compensation regarding service level.
	Estimated by measuring number of interruptions that have consequences for users.
Interoperability	Basic requirement for all services. Not regulated by specific national or European law/regulation. Requirements based on perceived best practice and user input.
	Evaluation before entering into framework agreements by the E-procurement Secretariat, users and/or independent 3rd parties.
	The E-publication service (Doffin.no) is fully integrated with TED and has integration capabilities with 3rd parties. All notifications are handled electronically only. The E-procurement platform is integrated with some 30 suppliers (and a lot more are in progress) and some 20 authorities. The integrations handle catalogue uploads, order/order receipt, invoice etc. The End-user applications are integrated with entity internal invoice handling systems and/or financial systems in around 10 authorities.
	Integrations are based on an organisational, semantic and technical interoperability approach, where processes, information content and syntax is defined by the E-procurement Secretariat (in most cases process and information content level) and the service operators (in most cases syntax/xml-schema level). Specifications are considered to be given on syntax level for invoice handling. This is already done for notifications (following OPOCE xml-schema specifications).
Usability	Basic requirement for all services. Not regulated by specific national or European law/regulation. Requirements based on perceived best practice and user input.
	Evaluation before entering into framework agreements by the E-procurement Secretariat, users and/or independent 3rd parties.
	Built to W3C xHTML requirements.
	Includes English interface
Scalability	Basic requirement for all services. Not regulated by specific national or European law/regulation. Requirements based on perceived best practice and user input.
	Validated: Availability, response time, "production time" and reliability. Penalty clauses if service level is not achieved.
	Service providers have the responsibility to be in accordance with service level requirements regarding response time and availability.
Security	Basic requirement for all services. Regulated by national and European public procurement related regulations/directives. In addition, requirements based on perceived

	best practice and user input.
	Evaluation before entering into framework agreements by the E-procurement Secretariat, users and/or independent 3rd parties.
	The E-procurement Secretariat can initiate security audits whenever deemed necessary. The operators are not obliged to be certified according to ISO17799 or other international security related standards, but their routines and documentation must follow the same structure/methodology.
	E-signatures available
Transparency	Basic requirement for all services. Regulated by national and European public procurement related regulations/directives. In addition, requirements based on perceived best practice and user input.
	Evaluation before entering into framework agreements by the E-procurement Secretariat, users and/or independent 3rd parties. The E-procurement Secretariat can initiate security audits whenever deemed necessary.
Confidentiality	Basic requirement for all services. Regulated by national and European public procurement related regulations/directives. In addition, requirements based on perceived best practice and user input. The E-procurement Secretariat can initiate security audits whenever deemed necessary.
	Evaluation before entering into framework agreements by the E-procurement Secretariat, users and/or independent 3rd parties.
Technical development	Product lifecycle The "procurement system" made available to the Norwegian public sector through a centralized initiative, is contracted (as modules) from 3rd parties (Operators). The systems are made available, not as systems, but as internet-based services. As the buyer of services, the procurement secretariat requires functionality and availability. It does not require one particular system nor a particular version of a system. To-the-point formulated: As long as the requirements are met and it is not a disadvantage nor substantial inconvenience of the final users, the Operators may do upgrades or even switch to another service platform. The modules delivered by the Operators (mainly on 3-5 year Framework Agreements) are: 1. "E-procurement platform" (integration between buyers and sellers, e-catalogues) – 1 Operator 2. "End-user applications" (ordering, receipt of goods and services and invoice-handling) – 5 Operators 3. "e-Sourcing" (including e-Auctions, evaluation and more) – 3 or more Operators (Framework Agreements in process) 4. "E-publication" (including integration with TED, e-access to tender documents and more) – 1 Operator 5. "E-Invoice platform" (conversion and distribution of e-Invoices) – under consideration Development It is delivered to the specifications of the secretariat, but the services offered are mainly based on one or more off-the-shelf systems with some contracted development.
Organisation development	Ministry of Government Administration and Reform, E-procurement Secretariat has a centralized responsibility for stimulating and facilitating e-procurement in the public sector in Norway.

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	E-procurement control is centralised. Public entities are however, responsible of their own implementation. As to the organization of procurement Norway has a centralized initiative with decentralized implementation.
Legal development	The Norwegian Government released its legal package with updated rules for future public procurement in March 2006. The legal package consists of two parts: a proposal for certain changes in the current Norwegian Public Procurement Act, and revised provisions of the current Act and the public utilities. The Ministry of Government Administration and Reform has set 1 January 2007 as their target date for implementation. The revised provisions allow for e-Procurement as a fully accepted alternative to the traditional way of doing business.
Budget	Current cost dedicated to verification (as percentage of global implementation cost of system): 1-2%
	Future cost dedicated to verification (as percentage of global implementation cost of system): 2-5%

Norway: Restrictions and Needs for defining compliance verification mechanisms	
Restrictions identified by National Contact	Some minor integration problems solved by customised fix per subscriber/system
Needs identified by National Contact	A global verification strategy should be the goal, but an approach with initial focus on the establishment of different verification mechanisms for specific and (legally) well defined aspects would be best.
Needs identified by CARSA	None defined.

Poland	
Political Aspects	**Positive aspects:**
	Political backing seems positive.
	EU enlargement seems to have a positive tendency, as it enables the implementation of well-established solutions at European level.
	Currently, public bodies and private companies are investing a lot of resources in training their employees and increasing their IT skills (some co-financed with European funds).
	Negative aspects: None.
Social Aspects	**Positive aspects: None.**
	Negative aspects:
	Public procurement relatively new part of Polish economy and society, and therefore there is limited tradition in this area.
	Many businesses had very negative experiences, when public procurement processes suffered from a lack of transparency.
	Currently, many people consider the system too complicated and unclear.
	In addition, planned implementation may cause exclusion of a part of the society (older generations, not familiar with e-business and new technologies).
Cultural Aspects	**Positive aspects: None.**

	Negative aspects: None.
Complianse verification	
General Aspects	There is no clear strategy regarding verification and validation. Purchaser of the e-procurement system (in this case Public Procurement Office) specifies the requirements to the system. Each time verification is necessary a special working group is set up in order to evaluate the given solution. Members of the working groups differ depending on the subject of the verification process.
	As verification is a novelty and introduces substantial change in Polish public procurement, it requires flexibility and new approaches. Unfortunately it is considered that in current Polish conditions (many, and often, changes of legislation) it is very difficult to plan such actions for clarifying compliance verification processes.
	In general, Public Procurement Office in Poland applies a number of "good" and "best" practices, which were identified by its employees, clients, etc.
	Non-electronic verification:
	At this moment no verification procedures are implemented. Control, mediation and information tasks of the Public Procurement Office are based rather on "good practices".
Interoperation	The e-procurement system is designed to work on "stand-alone" basis: it will be linked with other systems only for e-publication functionalities (with regions and JOEU) and for invoicing which is managed at the financial department level.
	The communication procedures for e-publication have already been tested.
	Verification procedures are set up in the working procedures of the system.
Specific performance validating tools/methods	Not defined.
Scope of verification methods	E-procurement system in Poland is still in very initial phase. Although some of its modules are developed in parallel, there are some missing regulations (for instance e-signature legislation should be ready in 2008), what makes it impossible to continue working on the system at this moment.
	Lack of legal framework makes it also impossible to give binding answers at this point.
Integration	None. Modules not yet integrated with one another.
Testing	No elaborated testing mechanisms. Experience of people involved in process.
Mechanisms for verifying features (High Level Indicators)	
Availability	Internal verification processes: all necessary / required information published on Public Procurement Office website
	SLA of 99.5%
Accessibility	Internal verification process is used based on assessment of informal feedback from the end-users, PPO employees, etc.
Reliability	Internal verification process is used based on assessment of informal feedback from the end-users, PPO employees, etc.
	Based on "2 server" model and backups (data saved on the regular basis).
Interoperability	With BBA and JOUE.
	XML schemes from IDABC; MS Windows, Zope, MySQL, FreeBSD.
	The Public Procurement Office applies discrete validation.

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Usability	Internal verification process is used based on assessment of informal feedback from the end-users, PPO employees, etc..
	System supports French, Dutch, later will support German and English.
Scalability	Policy oriented towards system evolution. System adjusted to new legislation.
	Instead of validation, Public Procurement Office develops system, based on scalable solutions.
Security	Internal validation against security plan and standard (exact standard not defined).
	E-signature legislation is foreseen to be ready in 2008.
Transparency	Not defined.
Confidentiality	Not defined.
Technical development	Product lifecycle
	E-procurement system will be implemented by Public Procurement Office. PPO plays here policy making and co-ordinating role for the whole public procurement system.
	PPO sets legal framework conditions and prepares specification of the future system.
	The sought solutions are designed and developed by the third parties (they are purchased by PPO).
	Their validation is carried out by special working groups organised by PPO.
	After successful completion of the validation phase installation it is operated by PPO.
	Development
	Development phase is conducted by third parties (basing on the specifications prepared by PPO). While preparing above mentioned specifications PPO takes into account future developments of the e-Procurement.
Organisation development	At this moment there is no e-procurement system in Poland. There are only separate unconnected parts developed in parallel (i.e. e-auctions, e-publication, e-evaluation, etc.). A new system is being planned for the future.
	E-procurement (in its initial phase) is very decentralised – about 12.000 potential tenderers, both governmental and private bodies are involved in implementation.
	In the case of private companies there is no coordination of development or interoperability between them.
	Role of Public Procurement Office is diminishing for some time and instead of this PPO is concentrating on creation of right frameworks for e-procurement systems.
	Interoperability problems should be solved by creation of one future e-procurement system.
Legal development	EU Directives implemented in May 2006. Still undergoing some major changes (last change was introduced in May 2006). In addition there are also some missing regulations (like e-signature), which are expected to be ready after 2008, and which are necessary to move forward in this range.
Budget	Current verification costs: 0%.
	Future costs: 1-5%.

| Poland: Restrictions and Needs for defining compliance verification mechanisms | |
| Restrictions identified | Legislation changes (within the last 2 years Poland introduced 2 major changes in public |

by National Contact	procurement).
	No plan regarding implementation of the e-procurement system.
	No coordination between government and private system developers.
	Technical difficulties with criteria usability, accessibility, availability and interoperability, mainly due to complexity of applied solution and novelty of this kind of applications.
	Limited IT skills throughout the society plays an important role.
	Public doubts regarding reliability of the implemented system(s).
Needs identified by National Contact	Clear legislative situation required (e.g. e-signatures) so that more detailed steps may be planned.
	Develop clear verification mechanisms for all aspects of development.
	Public campaigns promoting e-procurement (especially in small cities and in rural areas).
	In Polish conditions no use in implementing global verification strategy. It is much more reasonable to keep the system as flexible as possible.
	Polish law – in general, regulation regarding this issue prefers a more individual approach.
	Elaborating common standards with the use of Public Procurement Office resources.
Needs identified by CARSA	Education of users with regard to the benefits of system use.
	Define clear implementation plans at political level, with clear time-lines.
	Define one coordination body with legal backing to enforce applied standards.

Slovakia	
Political Aspects	**Positive aspects:**
	Support from government officials and cooperation among responsible ministries is positive.
	Public authorities and entrepreneurs are anxious, and actively encouraging, the implementation of a public e-procurement system.
	Negative aspects: None.
Social Aspects	**Positive aspects: None.**
	Negative aspects: None.
Cultural Aspects	**Positive aspects: None.**
	Negative aspects: None.
Compliance verification	
General Aspects	The Public Procurement Office has performed verification; the verification included the evaluation of compliance with the legislative requirements.
	Non-electronic verification:
	Public Procurement Office verifies the compliance of procurement procedures as well as case-by case inspections (random ad hoc inspection or based on a particular complaint). An annual monitoring report is submitted to the government.
Interoperation	An interface is foreseen with the e-procurement system with Public Procurement Office internal system "Procurio" which supports e-publication and e-reporting.
Specific performance	Not defined.

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validating tools/methods	
Scope of verification methods	At this time, the Public Procurement Office verifies the compliance of EVO system with the requirements defined in the Slovak public procurement legislation. Correct integration process was also verified as part of pilot project implementation.
Integration	None. Modules not yet integrated with one another.
Testing	So far, a testing portal has been implemented on which 2 pilot procurements are being tested. The Public Procurement Office is currently testing the system internally, using "step by step" system.
Mechanisms for verifying features (High Level Indicators)	
Availability	Part of testing process. The Public Procurement Office and IBM Slovakia are about to sign the SLA contract, it should be effective as of 1 JAN 2007.
Accessibility	Other languages are supported by the system, but so far, only Slovak has been implemented. Verification of this feature not defined.
Reliability	Part of testing process.
Interoperability	Integrated with PROCURIO system (internal system of Public Procurement Office). EVO system supports XML standards.
Usability	Other languages are supported by the system, but so far, only Slovak has been implemented.
Scalability	Further development of EVO system is foreseen which should support implementation of e-Ordering, DPS, etc..
Security	EVO security audit is planned to be implemented by 3rd party: Security plan will be developed after accomplishing the security audit. EVO system works on the framework SSL protocol. E-certificate is generated by EVO system; it is unique for each procurement and each applicant/signatory. It is planned that EVO supports also certified e-signature provided by certification authority (e-accredited).
Transparency	Part of testing process.
Confidentiality	Part of testing process.
Technical development	Product lifecycle This is still not finalized; the testing phase is in implementation. Currently not clear who will be responsible for the product lifecycle of e-procurement system. Development The Slovak system, EVO, is based on the Danish e-procurement system ETHICS (bought off-the-shelf). The system is being customized to be in compliance with Slovak legislation (focus partially on design and development as well as on installation phase).
Organisation development	So far there is only one e-procurement system called EVO in Slovakia at national level Some parts of the e-procurement system are currently being tested. The system should be fully implemented as of January 2007. Public Procurement Office (national level) is the administration authority for public procurement. Ministry of Transport, Post and Telecommunication is involved in the

	coordination process.
	However, no purely centralized system is planned. If needed, additional e-procurement systems might be implemented.
Legal development	A new Act, Act 25/2006 approved on December 2005, implements the new EU Directives on public procurement, including their provisions relating to e-procurement.
	Slovak legislation does not limit situation to one centralized system only, it allows also for more e-procurement systems if necessary.
Budget	Additional financial resources are needed for further development of EVO system
	Current verification costs: app. 8%
	Future costs: app.15%

Slovakia: Restrictions and Needs for defining compliance verification mechanisms	
Restrictions identified by National Contact	Financial restrictions.
Needs identified by National Contact	Additional financial resources are needed for further development of EVO system.
	Change of legislation.
Needs identified by CARSA	None.

Slovenia	
Political Aspects	**Positive aspects:**
	E-procurement regarded politically as important.
	The government actively teaching citizens how to use e-services and about their benefits.
	Citizens will be forced to adopt e-business for certain phases of e-procurement process.
	Negative aspects:
	Additional changes in government may have a negative impact (by slowing down progress) on development and deployment of the system at a national level.
Social Aspects	**Positive aspects:**
	Internet usage in Slovenia is high, with 75% of companies using broadband access to the internet, and 89% of companies using internet for e-banking and other financial services.
	Negative aspects:
	There is a doubt that an electronic system can completely replace human contact.
	It is thought that people are still not sufficiently informed of the potential benefits, as e-services and digital certificates are only used to a modest extent.
Cultural Aspects	**Positive aspects:**
	The younger generations of employees are proficient in ICT technologies, which will have a positive impact on the implementation and usage of an e-procurement system.
	Negative aspects: None
Compliance verification	
General Aspects	Bodies that will ensure compliance of the e-procurement system with the national law and EU Directives are Ministry of Finance and Ministry for Public Administration. They

	will verify compliance through meetings and audits.
	Non-electronic verification:
	Verification procedures are implemented. Yearly reviews are carried out as a part of performance monitoring.
Interoperation	System will interoperate with the MFRAC system - finance system for the state budget, tracking of all bills/invoices (from the Ministry of Finance).
Specific performance validating tools/methods	Not defined.
Scope of verification methods	Already in planning phase the system will be compliant with the EU Directives and national law.
	Ministry of Finance is responsible for verification whether the national law is compliant with EU Directives.
	Design phase is responsibility of the Ministry for Public Administration.
	Verification of the functionality of the final system will be done by the group of experts (including also IT experts). It will be a one-off verification. Additional verifications will be performed when necessary.
	System will be gradually built (module by module). Firstly, the core system will be built, and on this new features are added (e.g. e-auctions, e-catalogues). This is also politically more acceptable since it takes less time to deliver the results.
	Third party will be responsible for maintenance.
Integration	None.
Testing	So far, a testing portal has been implemented on which 2 pilot procurements are being tested. The Public Procurement Office is currently testing the system internally, using "step by step" system.
Mechanisms for verifying features (High Level Indicators)	
Availability	Not applicable since the system is not yet implemented.
Accessibility	Not applicable since the system is not yet implemented.
Reliability	Not applicable since the system is not yet implemented.
Interoperability	System will most probably be interoperable with already existing financial system for the state budget (MFRAC).
	Ministry of Finance is already involved in the working group responsible for development and implementation of the e-Procurement system, therefore they have a direct insight into interoperability issues (MFRAC finance system is managed by the Ministry of Finance
Usability	English language is partly supported.
Scalability	Not applicable since the system is not yet implemented.
Security	Qualified and advanced e-signatures will be implemented.
	SIGOV and SIGEN-CA are certification authorities in the Republic of Slovenia.
Transparency	Not applicable since the system is not yet implemented.
Confidentiality	Not applicable since the system is not yet implemented.
Technical development	Product lifecycle
	E-procurement system will be built in 2 years. The system will be maintained for at least

	3 years, since new features will be added.
	Operation and maintenance is carried out by a third party.
	Major stakeholders: Ministry for public administration is responsible for implementation of the e-procurement system. And as coordination body.
	System will most probably be interoperable with already existing financial system for the state budget (MFRAC). Ministry of Finance is already involved in the working group responsible for development and implementation of the e-procurement system, therefore they have a direct insight into interoperability issues (MFRAC finance system is managed by the Ministry of Finance).
	Development
	The development cycle of the e-procurement system is 2 - 3 years. It is developed partly in-house and partly by a third party (third party advising on policies to be implemented).
	Applied policies are Public Procurement Acts ZJN 1 (Zakon o javnih naroèilih) and ZJN 2 still in preparation phase. These policies take into account future developments of the e-procurement system.
Organisation development	Currently no e-procurement system exists in Slovenia.
	There will be one single e-procurement system on a national level that is planned to be completely finished in the year 2010.
	Some features of the system are already implemented; e-access to tender documents is fully implemented; e-auctions and e-information and reporting are partly implemented.
Legal development	The Public Procurement Act of December 2003 is still applicable and a new law is being prepared to transpose the two new EU Directives.
Budget	Current verification costs: 0%.
	Future costs: app.10-20%.

Slovenia: Restrictions and Needs for defining compliance verification mechanisms	
Restrictions identified by National Contact	Problem is to provide such a service at the national level, while individual users (subscribers, consignees) are using completely different internal processing workflow of documents.
Needs identified by National Contact	Global verification strategy required.
Needs identified by CARSA	Ensure that compliance verification procedures are implemented and adhered to from the start of system development.

Spain	
Political Aspects	**Positive aspects:**
	The new law rules under development in Spain (Public sector Contracts and Hiring Procedures for Water, Energy, Transport and Postal Services), will significantly improve the implementation of a unique e-procurement system at national level.
	Negative aspects:
	Difficulty of controlling and regulating the regional and municipal e-procurement systems will obstruct the implementation of a centralised system for all the administrative entities.
Social Aspects	**Positive aspects: None.**

	Negative aspects:
	A lack of confidence in security aspects is hindering the normal utilisation of e-procurement systems.
	Some constraints in use of ICT systems and solutions, especially in SMEs. Difficulties with regard to accessing broadband systems in some areas, and the lack of expertise in companies, are considered to be affecting the normal use of these systems.
Cultural Aspects	**Positive aspects: None.**
	Negative aspects: None.
Compliance verification	
General Aspects	Up to now compliance verification not sufficiently performed. In 2007, national e-procurement system will be implemented, ensuring compliance at national level.
	Compliance at regional and municipality level is not easy to achieve, considering the existing independent strategies for these entities.
	Audits applied on current system at each system upgrade by DG State Heritage, of the Ministry of Economy and Treasury (MEH).
	Non-electronic verification:
	Reviewed case-by-case, depending on the entity that has carried out the e procurement.
Interoperation	It must be interoperable with all the existing systems in the national administration, until all the existing systems are included under a single platform.
Specific performance validating tools/methods	Tools are for internal use, and have been developed by the IT department in the MEH.
	There is no specific strategy. Internally, the Ministry ensures the control of the whole process, by auditing the different phases of the project.
Scope of verification methods	The verification strategy is developed by DG Heritage of the Ministry. The pre-requirements are designed to fulfil the expectations in the verification processes. Development is made by an external company, and verification of development process is done by a 3rd party.
Integration	A crucial step within the development of the new system is to assure complete integration with the existing systems.
Testing	Not tested by an accredited authority.
Mechanisms for verifying features (High Level Indicators)	
Availability	Ensured by the provider: ISP report activity by logs and failures detected.
	SLAs under discussion.
Accessibility	Will adhere to WAI: Internally and externally checked.
Reliability	Ensured by the provider : ISP report activity by logs and failures detected.
Interoperability	It must be 100% interoperable with all existing systems in national administration, embracing all the existing different systems under a single platform. This topic has been tackled in the CODICE project, the first phase of the system development.
Usability	Ensured by the provider: Internally and externally checked.
	Will also incorporate English, and official Spanish languages: Catalonian, Basque and Castilian.
Scalability	Modular solution to encompass future necessities: modularity is analysed internally.
Security	Obliged by Spanish law. National LOPD security standard is applied.

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	Security plan and manager defined in protocols applied by the Economy Ministry.
Transparency	Defined in the pre-requirements list (Required by administration).
Confidentiality	Obliged by Spanish law .
Technical development	Product lifecycle The lifecycle operations are planned by the MEH, but the development is mainly subcontracted to external companies. Development The development is mainly done by others entities, subcontracted to execute this task.
Organisation development	There are many different systems in Spain. Organisation is highly decentralised. At national level, each ministry has its own system, working at different levels and with specific capacities. The autonomous regions may independently develop and implement their own e-procurement systems; even local municipalities have the option to buy their own systems. At national level, the Ministry of Economy and Treasury, DG State Heritage, is the organism that coordinates the different systems. At Regional and municipality level, there is no specific coordinating organism.
Legal development	The *Order on the use of electronic means in public procurement* regulates the use of electronic means in the procurement process of central administrations. It modifies the Law on public administration contracts of 2000 and the General Regulation of public administration contracts of 2001. As far as EU Directives are concerned, transposition works are still ongoing.
Budget	Current verification costs: 12%. Future costs: app. 5 - 10%.

Spain: Restrictions and Needs for defining compliance verification mechanisms	
Restrictions identified by National Contact	Ensuring Interoperability, Confidentiality. Use of e-signatures (no standard applied in Europe). The decentralised policy existing in Spain makes it impossible to achieve a single e-procurement system.
Needs identified by National Contact	Both global and individual verification strategy required although the verification of each phase is more critical. Increase efforts to give people better access to ICT tools and specific campaigns to promote the confidence in the security of these processes.
Needs identified by CARSA	Organisational control is imperative in Spain. One national body controlling systems at all political level must be defined, otherwise ensuring application of any defined standards very difficult. Standards defined at European level (especially e-signature).

Sweden	
Political Aspects	**Positive aspects: None.** E-procurement is part of the e-Government strategy. **Negative aspects:**

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	Sweden has not implemented the EU Directives so far.
	E-procurement has had a low political priority.
	Political elections (occurred 2006) often have a paralysing influence upon political decision strength, sometimes even on urgent ones.
	It is considered that the short time given for the budget process after the elections may have a negative effect on e-procurement priorities.
Social Aspects	**Positive aspects:**
	National political decisions are strongly sought after, and very much anticipated among sellers as well as buyers.
	Negative aspects: None.
Cultural Aspects	**Positive aspects: None**
	Negative aspects:
	The Swedish need for consensus may slow down the process of implementation.
	The Law of Jante: "Don't ever think that you are better than anybody else!", is an invincible code in Sweden. In many cases, thought to have a paralysing effect upon taking initiatives.
Compliance verification	
General Aspects	No verification carried out officially. VERVA (the National Administration Development Authority) has been assigned responsibility for public administration processes, but don't verify compliance because the government has not given them authorisation.
	The existing manual system is not very efficient except for confidentiality and reliability. Gatetrade will improve verification of all functional & non-functional criteria.
	Non-electronic verification:
	reviewed case-by-case.
Interoperation	It must be interoperable with all the existing systems in the national administration, until all the existing systems are included under a single platform.
Specific performance validating tools/methods	Nothing so far. They may be defined when national decisions on e-procurement have been taken and implemented.
Scope of verification methods	Not defined.
Integration	They exist, but are currently dormant.
Testing	Partly tested through the "best practice experience".
Mechanisms for verifying features (High Level Indicators)	
Availability	Will be validated by ChamberSign.
	SLAs with Tieto Enator, including preventive maintenance systems and contingency planning.
Accessibility	Will be validated by ChamberSign.
	Gatetrade system will include accessibility features: Gatetrade won tests carried out for Best Practice regarding accessibility.
Reliability	Ensured by the provider: In accordance with the information and standards provided by Tieto Enator..

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Interoperability	Because of lack of experience and implementation, interoperability isn't verified.
	The SFTI standard (Single Face to Industry) is included in Gatetrade.
Usability	English, Danish and Swedish will be supported by GateTrade.
Scalability	Scalability will be validated by ChamberSign.
Security	Will be validated by ChamberSign. Before Chambersign is implemented there has been no national security solution in accordance with Directive 1999/93/EC on e-signatures.
	There is no supplier for qualified e-signatures according to the EU Directives (only advanced e-signatures available from PTS-Post och Telestyrelsen). There is no national certification of eSignatures in Sweden. The Swedish banks issue eSignatures for their Internet bank customers. Verification of eSignatures is a service provided by the banks. The public sector purchases the service after a public procurement procedure. The service is included in a framework agreement for the public sector.
Transparency	Defined in the pre-requirements list (Required by administration). Will be validated by ChamberSign.
Confidentiality	Will be validated by ChamberSign.
Technical development	Product lifecycle
	Third party maintenance is the normal solution. Verification not considered a technical matter but rather political and / or collaborative knot to be untied.
	Development
	Not defined.
Organisation development	Approximately 10 systems, organised first at local level, then gradually expanding to regional, national and cross border level through cooperation, interoperability and politically agreed standards. In general, no overall e-procurement policy exists. Procurement is made traditionally, and e-procurement is voluntary, depending of the demand of the parties concerned. The Swedish local authorities (county councils and municipalities) exercise an extensive self government. The government agencies have their own budget and are responsible for their own procurement activities. There are co-ordinated activities between local authorities and between state agencies, but there is a need for standardised and interoperable solutions.
	So far there are no mandatory rules. VERVA (the National Administration Development Authority), founded January 2006, has been assigned preliminary responsibility to improve public administration in Sweden, and as a part of that, e-procurement systems.
	Ideas and plans exist concerning all parts of e-procurement. At national level, for the moment, the Danish system Gatetrade was chosen among fourteen different systems tested in the IDABC Best Practice study.
	ChamberSign is an independent 3rd party solution, owned by the Swedish Chamber of Commerce. They act as a trusted 3rd party and guarantee the transactions through a simple administrative application, e.g. concerning identity, e-signatures and information encryption.
Legal development	A committee and experts have been appointed to prepare new public procurement legislation implementing the EU Directives, with two new Acts expected at beginning 2007.
Budget	Decisions are still to be taken.

Sweden: Restrictions and Needs for defining compliance verification mechanisms

Restrictions identified by National Contact	Changing of old and familiar behaviour
	Difficulties with finding the benefits with e-Procurement.
	Possible resistance from local authorities against obligatory use of one system.
Needs identified by National Contact	National political decisions are strongly needed.
	Regarding products: verification standards should be created.
	Regarding invoices: no decisions have been taken: currently voluntary, but needs to be implemented as a common standard.
	Verification should be global to fulfil the requirements from GPA (Government Procurement Agreement) and other trade conventions.
Needs identified by CARSA	Organisational control should be organised at national level: VERVA should be given organisational and verification authority.
	Standards to be defined at European level (especially e-signature).

UK (Scotland)	
Political Aspects	**Positive aspects:**
	On a UK level, there is currently no policy specific to e-procurement, although e-procurement must be compatible with the EU Directives and the UK government's value for money policy.
	The OGC (Office of Government Commerce) regularly publishes communication documents, informing businesses of the rapidly changing landscape within e-procurement.
	The Directives were transposed into UK legislation as Regulations in early 2006.
	Negative aspects: None.
Social Aspects	**Positive aspects:**
	E-procurement increasingly part of the fabric of the UK's public sector.
	The public sector is, under a common framework, able to implement a system that works within a given scope, and that answers particular requirements.
	Localism, ownership and accountability are also seen as drivers in verification processes.
	Negative aspects: None
Cultural Aspects	**Positive aspects:**
	The huge cultural diversity of UK society clearly has a part to play in the implementation and maintenance of new technology such as e-procurement systems.
	The view that change cannot be imposed, but should rather be freely embraced, is a key approach that characterises the UK.
	The importance of adopting a "Quick Wins" approach enables the value of change to be quickly seen and channelled through the target organisations, and society in general.
	Negative aspects: None
Compliance verification	
General Aspects	Compliance verification is sufficiently performed by continuous monitoring at regular intervals. At all stages of the change process, regulatory compliance is specified and monitored, and day-to-day performance, principally via a continuous helpdesk, is supervised. Behind this level, server performance, etc, at regular intervals throughout the

	day is also verified.
	Verification is performed at all stages using standard project tools, such as technical testing followed by user testing for verifying system to system integration, and the Scottish Executive itself is involved in testing and closely monitoring the situation.
	The Openscotland Information Age Framework (OSIAF) was developed by the Scottish Executive and its public service delivery partners in Scotland. It sets out standards and specifications to be used by the Scottish public sector and it provides a Scottish framework for developing and approving interoperability specifications that support the delivery of electronic services.
	The OSIAF incorporates the e-Government Interoperability Framework (e-GIF) and endorses its use in Scotland. Consequently the Scottish Executive supports e-GIF Certification and Accreditation as methods of helping to equip staff and organisations to deliver OSIAF compliant solutions.
	Non-electronic verification:
	Generally via random sampling of case-work by auditors.
Interoperation	The contractor / service supplier is required to ensure interoperability and is verified internally by user testing as required.
Specific performance validating tools/methods	All stages are monitored and verified.
Scope of verification methods	At all stages of the change process regulatory compliance is specified for and monitored.
Integration	With Oracle, SAP and Cedar ERP/finance systems and various other finance systems.
Testing	Scottish Executive involved in the testing and close monitoring of system.
Mechanisms for verifying features (High Level Indicators)	
Availability	Availability monitored by Scottish Executive through SLAs with service provider
	Contingency planning: back-up facility mirrors live site and can be switched on as a replacement.
	System availability, help-desk responsiveness, etc. are all controlled to ensure acceptable performance rates.
Accessibility	Not defined.
Reliability	Scottish Executive believes itself to be the largest operating public e-procurement system in Europe, and bases reliability testing on its users (in 68 public sector organisations) and several thousand suppliers who are very quick to highlight problems.
	Use a hosted system accessed via the internet. The most critical aspect is the capability of local networks to handle the internet traffic.
Interoperability	The contractor / service supplier is required to ensure interoperability and is verified internally by user testing as required.
Usability	Includes usability features as part of specifications.
Scalability	Verified by continuous market research as to developments in other systems and by the consideration of user requests for change.
	System is live in 68 organisations with more in the pipeline. Scalability proven by operational growth – tested by user testing before any new customer goes live.
Security	Verified by regular penetration testing.

	Use a hosted system; security is a contractual requirement of service provider subject to penetration testing and audit control.
	Appropriate ISO standard applied. Because system is hosted in the USA, Sarbanes-Oxley security requirements also apply.
	Use 128 bit SSL encryption as standard, with stronger encryption for some specific transactions.
Transparency	Not defined.
Confidentiality	Not defined.
Technical development	Product lifecycle
	The specification stage should be business output based and contain very little detailed technical specification and certainly little or no bespoke IT design. E-procurement is considered first and foremost to be a business change programme and not an IT project.
	Development
	Off-the-shelf hosted solution (i.e. aside from some Java applets and any hardware required to provide an interface with local finance systems, there is no local set-up). Significant input provided into the development of the software to meet customers' requirements, as indeed to other customers of the provider.
	Regularly monitor customer requests and comments and distil these down into significant requests for change which are then processed as part of the product upgrade process.
Organisation development	In Scotland, procurement policy and best practice are centralised at national level, whilst operations are decentralised to local level. This structure is in the process of change to tiered procurement operations at national, sectoral [e.g. Health, Education, Local Government] and local levels depending on commodity.
	The Scottish Procurement Directorate is responsible for: procurement policy and best practice in Scotland, e-procurement in the Scottish public sector, and procurement operations within the Scottish Executive.
Legal development	Scotland transposed the two new EU Directives independently, with two Regulations, one on Public Contracts and the other on Utilities Contracts, both applicable since January 31, 2006.
	Two Regulations, the Public Contracts Regulation SI 2006/5 and the Utilities Contracts Regulations SI 2006/6 completed the transposition of the two new EU Directives in England, Wales and Northern Ireland within the deadline.
Budget	Not defined.

UK (Scotland): Restrictions and Needs for defining compliance verification mechanisms	
Restrictions identified by National Contact	Main issues are local network capacity and interfacing with Finance Systems.
Needs identified by National Contact	Both global and individual verification strategy required although the latter is probably better as it allows the workload to be managed constantly.
	Principal concern at the semantic level is that the Commission will push through requirements to change which are not supported in the market. For example Scottish system standardises a lot of activity on cXML which is ubiquitous and commonly understood in the market.
	Patience and building trust are the key requirements.
Needs identified by	Standards defined at European level (especially e-signature) must be built on consensus

CARSA

CARSA	between all countries involved, and take into account development that has already occurred.

12.7 Annex VII: Existing building blocks used in defining the option

The state of the art of the following aspects has also been considered. The following instruments could also be used as an input for defining options for compliance verification mechanisms.

A) Existing compliance verification mechanisms in other sectors and countries:

- Compliance verification mechanisms in other sectors:

    o Electronic Commerce;

    o Voting machines in the US;

- e-Government Interoperability Forum.

B) Existing instruments and standards that could be used as reference:

- New approach and global approach Directives;

- List of existing standards on e-procurement;

C) Existing certification entities that could be taken into account.

D) Types of compliance verification mechanisms

In this chapter a summary of those aspects is presented. More information can be found in the Annexes.
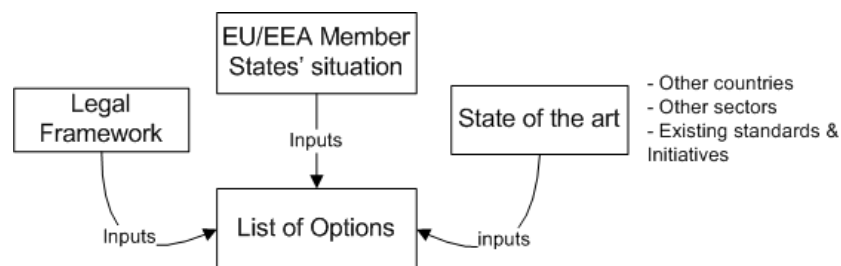
Figure 48 Inputs for the list of options for compliance verification

A) EXISTING COMPLIANCE VERIFICATION MECHANISMS

Compliance verification mechanisms in other sectors

Electronic Commerce: Business2Commerce (B2C)

The objective is to increase the percentage of individuals and companies ordering goods and products over the Internet. There is a legal framework (Electronic Commerce Directive, Electronic Signature and Data Protection Directives) that regulates essential requirements to ensure a safe and reliable process. However, they are not widely known by the general public and therefore the customers do not have clear evidence that the existing commercial websites and the companies behind them are reliable.

Within this context, well-known organisations of different types (certification entities, insurance companies, testing houses, security experts, insurance companies, and standardisation bodies) launched certificates and quality labels. A certificate and/or quality label that appears on a website indicates such website complies with well defined, published and verified quality requirements.

There are different types of quality labels and certificates. Each of them has a technical scope (what is to be fulfilled by a website to get the label) and a compliance assessment process (how, by whom and what is the result of the certification process).
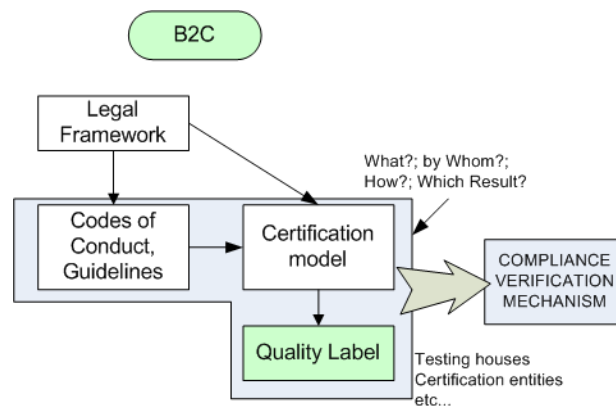
Figure 49 Business2Commerce model

Certification of voting machines in the US

In the United States, electronic voting machines as used in federal, state, and local elections have come under public scrutiny and controversy. Voting machines, especially those that do not provide a Voter Verified Audit Trail, potentially allow undetectable, large-scale electoral fraud. Various levels of the US government require certification of voting machines.

The Voluntary Voting System Guidelines (VVSG), published by the National Institute of Standards and Technology in 2005, provide a set of specifications and guidelines against which voting systems can be tested to determine if they provide all the basic functionality, accessibility and security capabilities required to ensure the integrity of voting systems. The VVSG specifies the functional requirements, documentation requirements and test evaluation criteria for the national certification of voting systems. The VVSG is composed of two volumes: Volume I, Voting System Performance Guidelines and Volume II: National Certification Testing Guidelines. The guidelines will take effect in December 2007, at which time voting systems will no longer be tested against the 2002 Voting System Standards (VSS) developed by the US Federal Election Commission. All previous versions of national standards will become obsolete at that time.

Certification testing encompasses the examination and testing of software; tests of hardware under conditions simulating the intended storage, operation, transportation and maintenance environments; the inspection and evaluation of system documentation; and operational tests to validate system performance and functioning under normal and abnormal conditions. The testing also evaluates the completeness of the vendor's development test programme, including the sufficiency of vendor tests conducted to demonstrate compliance with stated system design and performance specifications, and the vendor's documented quality assurance and configuration management practices. The tests address individual system components or elements, as well as the integrated system as a whole.

The certification test process can be conducted by one or more accredited test labs that together perform the full scope of tests required.

The National Institute of Standards and Technology (NIST) established a program, in 2004, for accrediting laboratories that will test voting systems and components

The program is established as part of NIST's National Voluntary Laboratory Accreditation Program (NVLAP) in coordination with the U.S. Election Assistance Commission (EAC). NVLAP accredits public and private laboratories based on evaluation of their technical qualifications and competence to carry out specific calibrations or tests.

NVLAP accreditation is a prerequisite for a laboratory to be considered by the EAC as a Voting System Test and Certification Authority (VSTCA). EAC-accredited laboratories will test and certify voting systems for conformance with voluntary voting system standards proposed by the EAC. The EAC will maintain a list of VSTCAs to help vendors and elections officials identify qualified resources.[35]

E-Government Interoperability Framework Accreditation Scheme (e-GIF)

This scheme is used in the UK (with the homologous scheme, OSIAF, applied in Scotland), and defines the technical policies and specifications governing information flows across the government and public sector. They cover interconnectivity, data integration, e-services access and content management.

The e-GIF covers the exchange of information between government systems and the interactions between:

- UK Government and citizens

- UK Government and intermediaries

- UK Government and businesses (worldwide)

- UK Government organisations

- UK Government and other governments (UK/EC, UK/US, etc.).

Compliance responsibilities

It is recognised that compliance with the e-GIF cannot be imposed on citizens, businesses and foreign governments, but the UK Government makes it clear to all that this is their preferred method of interface. Note that OSIAF in Scotland embraces and expands on the e-GIF so that Scottish public-sector services are interoperable within the UK. Standards emerging from the Scottish public sector can also be included in the OSIAF and, where appropriate, in the e-GIF.

The e-GIF specifications are mandated on all new systems that fall within the scope defined in the information exchange pathways above. In order to take advantage of services being provided through UK's e-government platform Directgov (www.direct.gov.uk), the UK Government Gateway, the Knowledge Network or other systems which are part of electronic service delivery targets, legacy systems will need to comply with these specifications. For systems that fall outside the scope and mandate, the e-GIF is recommended in all public sector procurements and in major upgrades to other departmental legacy systems. Guidance on complying with this mandate is given in the Annexes.

The ultimate responsibility for compliance rests with the system's senior responsible owner or sponsor. Compliance is by self-regulation using normal departmental checking arrangements throughout the system's development lifecycle. It will be for service organisations themselves to consider how their business processes can be changed to be more effective by taking advantage of the opportunities provided by increased interoperability.

The approval authority and final arbiter on all questions relating to e-GIF compliance is the e-Government Unit (Technology Policy,), which provides help in defining departments' internal compliance regimes where required. The e-GIF team will monitor compliance through the Interoperability Working Group and other liaison groups.

Reasons for adopting e-GIF

The main impetus behind e-GIF is to adopt the Internet and World Wide Web specifications for all government systems. Throughout this section, the term 'system' includes its interfaces. There is a strategic decision to adopt XML and XSL as the core standards for data integration and management. This includes the definition and central provision of XML schemas to be used throughout the public sector. The e-GIF only adopts specifications that are well supported in the

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[35] See http://www.eac.gov/vvsg_intro.htm for detailed information.

market. It is a pragmatic strategy that aims to reduce cost and risks for government systems while aligning them to the global Internet revolution.

The e-GIF also sets out policies for establishing and implementing metadata across the public sector. The e-Government Metadata Standard (e-GMS) will help citizens to find government information and resources more easily.

Stipulating policies and specifications is not enough in itself. Successful implementation will mean the provision of support, best-practice guidance, toolkits and centrally agreed schemas.

The selection of e-GIF specifications has been driven by:

- o interoperability – only specifications that are relevant to systems' interconnectivity, data integration, e-services access and content management metadata are specified
- o market support – the specifications selected are widely supported by the market, and are likely to reduce the cost and risk of government information systems
- o scalability – specifications selected have the capacity to be scaled to satisfy changed demands made on the system, such as changes in data volumes, number of transactions or number of users
- o openness – the specifications are documented and available to the public
- o international standards – preference will be given to standards with the broadest remit, so appropriate international standards will take preference over EU standards, and EU standards will take preference over national standards.

B) EXISTING INSTRUMENTS AND STANDARDS THAT COULD BE USED AS REFERENCE

New Approach and Global Approach Directives

Since 1987 some 25 Directives, adopted on the basis of the New Approach and the Global Approach, 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 referred to in Article 95 paragraph 3 of the EU Treaty. 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.

Notified Bodies pay a key role in verifying the compliance of the products with the corresponding harmonised standards.
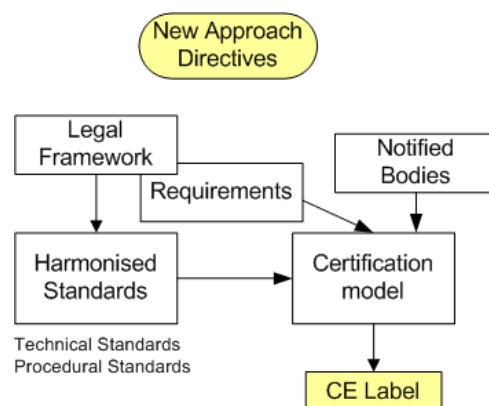
Figure 50 New Approach Directives

Standards related to e-procurement

The following is a non-exhaustive list of different aspects related to standards that can be applied to verify compliance of the e-procurement systems.

- Standards and Architectures for e-government Applications (SAGA). Published by the Federal Ministry of the Interior of Germany (ISSN 0179-7263 Volume 59 December 2003). The document presents standards, processes, methods and products of state-of-the-art IT development for e-government applications.

- International Standard ISO/IEC 17000, which defines conformity assessment as a "demonstration that specified requirements relating to a product, process, system, person or body are fulfilled". (ISO/IEC conformity assessment standards and guides).

- "ETSI White Paper No. 3 Achieving Technical Interoperability - the ETSI Approach", as presented by the European Telecommunications Standards Institute (ETSI) in France.

- The following documents from the EUROPEAN COMMITTEE FOR STANDARDIZATION (CEN) are also relevant:

    o cwa14171-00-2004-May_General guidelines for electronic signature verification

    o cwa14172-01-2004-Mar_EESSI Conformity Assessment Guidance - Part 1 General

    o cwa14172-02-2004-Mar_EESSI Conformity Assessment Guidance - Part 2 Certification

    o cwa14172-03-2004-Mar_EESSI Conformity Assessment Guidance - Part 3 Trustworthy

    o cwa14172-04-2004-Mar_EESSI Conformity Assessment Guidance - Part 4 Signature creation

    o cwa14365-01-2004-Mar_Guide on the Use of Electronic Signatures - Part 1 Legal and technical aspects

    o cwa14661-00-2003-Feb_guidelines to standardisers of ICT products & services in CEN ICT domain

    o cwa14708-00-2003-Mar_eSignatures. The practical use of Electronic signatures in e-Commerce: a Guide for SMEs

    o cwa14859-00-2003-Nov_Guidance on the use of Metadata in eGovernment

    o cwa15236-00-2005-Feb_STANDARDISATION IN E_PROCUREMENT. Analysis of standardisation requirements and standardisation gaps for e-Procurement in Europe.

    o CWA15262-00-2005-Apr_Inventory of Data Protection Auditing Practices

    o CWA15263-00-2005-Apr_Analysis of Privacy Protection Technologies& standardisation

    o cwa15264-01-2005-ApR_eAuthentication_I. Architecture for a European interoperable eID system within a smart card infrastructure

    o cwa15264-02-2005-ApR_eAuthentication_II. Best Practice Manual for card scheme operators exploiting a multi-application card scheme incorporating interoperable IAS (Identification, authentication and electronic signature service) services

    o cwa15264-03-2005-ApR_eAuthentication_III. User Requirements for a European interoperable eID system within a smart card infrastructure

    o CWA15292-00-2005-May_assist compliance with obligations Data Protect Directive. Standard form contract to assist compliance with obligations imposed by article 17 of the Data Protection Directive 95/46/EC (and implementation guide)

    o CWA15499-01-2006-Feb_Personal Data Protection Audit Framework (EU Directive EC 95/46)

    o CWA15499-02-2006-Feb_Personal Data Protection Audit Framework (EU Directive EC 95/46) - Part II: Checklists, questionnaires and templates for users of the framework

- cwa15537-00-2006-Apr_SERVICE ORIENTED ARCHITECTURE. Network Enabled Abilities - Service-Oriented Architecture for civilian and military crisis management

- CWA15554-00-2006-Jun_eAccessibility. Specifications for a Web Accessibility Conformity Assessment Scheme and a Web Accessibility Quality Mark

- Existing usability tools and methods: ISO 9241 conformity assessment (developers provide documentary evidence of their development process and auditors determine if conformance is warranted); or gathering users feedback with surveys such as WAMMI (Web site Analysis and Measurement Inventory[36]), SUMI – Software usability Measurement Inventory[37], etc.

C) ENTITIES OF CERTIFICATION THAT COULD BE TAKEN INTO ACCOUNT

There are already some entities that are able to certify, and that could be considered for the purposes of this study.

- Accredited Test-Labs (for example, Underwriters Laboratories, Inc.) are laboratories which are accredited by national accreditation bodies to carry out testing and final product certification or quality marking based on applied standards. In addition, they may provide a follow -up service designed to help maintain product certifications. The programme is usually part of product certification and is determined by the nature of the product and type of certification achieved.

  These laboratories must comply with the standard ISO/IEC 17025:2005 "General requirements for the competence of testing and calibration laboratories"):.ISO/IEC 17025:2005 specifies the general requirements for the competence to carry out tests and/or calibrations, including sampling. It covers testing and calibration performed using standard methods, non-standard methods, and laboratory-developed methods. Laboratory customers, regulatory authorities and accreditation bodies may also use it in confirming or recognizing the competence of laboratories.

  ISO/IEC 17025:2005 is not intended to be used as the basis for certification of laboratories. Compliance with regulatory and safety requirements on the operation of laboratories is covered by ISO/IEC 17000:2004 Conformity assessment. Vocabulary and general principles. ISO/IEC 17000:2004 specifies general terms and definitions relating to conformity assessment, including the accreditation of conformity assessment bodies, and the use of conformity assessment to facilitate trade.

  A large number of test labs are accredited as a test lab for different testing procedures and by different accreditation bodies in a large number of sectors (textile, road traffic, mechanical testing procedures, thermal testing procedures…). The German Accreditation Council (DAR), for example, runs a central register of accredited bodies pursuant to the accreditation bodies' notifications to the DAR Secretariat. The notifying accreditation body commits itself to complying at any time with the relevant national and international standards and the DAR Rules and Procedures for accreditation bodies in the field concerned (laboratory, inspection, and certification). It also commits the accredited body to complying with the valid national and international standards.

  The DAR in particular carries out the following tasks:

    Coordinating the activities of accreditation and recognition of testing and calibration laboratories, certification and inspection bodies in Germany

    Providing a central registration of German accreditations / recognitions granted

    Developing the DAR Rules and Procedures.

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[36] An evaluation tool for web sites, based on a questionnaire that visitors fill out.

[37] A questionnaire designed to collect subjective feedback from users about a software product with which they have some experience.

The DAR itself does not carry out any accreditations or recognitions.

- Independent test houses (for example, VeriTest, Software Quality Systems, National Software Testing Laboratory): Are centres of competence that test, based on specific recognised standards in an independent way. They exist for several fields of activity. Independent testing houses or authorities run tests on products submitted by manufacturers, to determine whether they conform to the relevant standards. The testing authority examines and evaluates the product and also simulates the conditions the product is subjected to in storage, transport, and in operation, to make sure it works or is easy to repair in varying circumstances. The testing authority documents how the product holds up under "normal and abnormal conditions," meaning that it subjects the product to a variety of stress tests (if applicable to the particular product). The testing authority also works with manufacturers themselves to teach them to perform similar tests.

  However, the independent testing authority does *not* certify products or companies. It only evaluates the particular product. It may provide guidance to the company so that it can run its own tests and make sure its internal quality control system is adequate. Independent testing houses are used to test the quality and functionality of many products from the performance of electronic voting machines to food quality. Certification is then carried out by a national certifying body based on the final test results..

- Notified Bodies (for example, TÜV Rheinland, BureauVeritas, SGS Group): The primary role of a Notified Body is to provide services for conformity assessment on the conditions set out in the New Approach Directives in support of CE marking. This normally means assessing the manufacturers conformity to the essential requirements listed in each directive. Notification is an act whereby a Member State informs the Commission and the other Member States that a body, which fulfils the relevant requirements, has been designated to carry out conformity assessment according to a directive. Notification of Notified Bodies and their withdrawal are the responsibility of the notifying Member State. Notified Bodies must have the necessary qualifications to meet the testing requirements set forth in the Directives. Notified bodies may be a private sector organization or a government agency. Manufacturers may choose a notified body in any member state of the European Union.

  Currently, there are no New Approach Directives that deal directly with ICT, that may be adapted for e-procurement purposes. However, ICT companies registered as Notified Bodies do exist, although related to the area of EU Directive 99/5/EC Radio and telecommunications terminal equipment.

  EU/EEA Member States and other countries with which the EU has concluded Mutual Recognition Agreements (MRAs) and Protocols to the Europe Agreements on Conformity Assessment and Acceptance of Industrial Products (PECAs) have designated Notified Bodies, established per directive. Lists of Notified Bodies can be searched on the NANDO web site[38] (Nando (New Approach Notified and Designated Organisations) Information System). The lists include the identification number of each notified body as well as the tasks for which it has been notified, and are subject to regular update.

12.8 Annex VIII: Defining the preliminary options

For establishing the organisation of a common verification strategy the following questions should be answered; the combination of the answers to those questions would provide ways to complete the gap:

What is the scope of the verification process?	Process / Product level
Who leads and implements the compliance verification policy?	Private commercial organisations / Standardisation entities / Local Public entity / European Level Public entity

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[38] http://ec.europa.eu/enterprise/newapproach/nando/

CaRSa

Who finances the compliance verification activities?	EU/EEA Member States / European Commission / Developer
What type of verification is applied?	Voluntary / Mandatory scheme
Who is in charge of performing the compliance verification process?	Internal / Automated / 3rd party involved
What is the outcome?	"Non-official" (voluntary adoption of standards) / Quality Label / Certification

Rationale for the answers to these questions and a preliminary assessment of their applicability in our case is carried out with respect to four Eligibility Criteria which are highlighted below:

- *Eligibility Criterion 1*: The completeness of the option to fill the gap, and the state of the art. The state of the art refers to those verification mechanisms which already exist in other areas, and which may serve as effective frameworks upon which to develop a definitive system for public e-procurement in the EU/EEA. Option completeness refers to the capacity of that option to cover the organisational requirements of a compliance verification mechanism with respect to the EU Directives.

- *Eligibility Criterion 2*: Another important aspect is the consideration of the general objectives of the Action Plan on electronic public procurement[39]. Those aspects which contravene the ideas of the action plan will be discarded. This includes actions which may prevent a well functioning Internal Market in public e-procurement, slow efficiency in procurement, governance or competitiveness, or prevent the creation of an international framework for public e-procurement.

- *Eligibility Criterion 3*: Impact of the option on the existing e-procurement mechanisms. The principle used relates to how the proposed option can build upon the existing e-procurement systems and their compliance verification mechanisms.

- *Eligibility Criterion 4*: Common restrictions that exist in the Member States, which may adversely affect the adoption of one option over another (as defined in the annexes); this includes identifying the option which may provide the correct balance between ease of implementation and scope, but which also provides the best possible quality of compliance verification. We have considered whether the option goes in line with or against the already defined Member States' restrictions with regard to public electronic procurement and compliance verification. This factor is also taken into account during the scenario-building process which is carried out later, as it plays a crucial role in supporting the realistic acceptance of any suggested mechanism..

In order to select options for the organisation of a compliance verification mechanism, the combinations of answers to those questions posed above, could be represented as a *simplified matrix*, and represent the list of options for compliance verification, at a high level. The following *Simplified Matrix* presents the results. The answers that may contravene the eligibility criteria, as discussed above, have been marked in grey, and are not considered a satisfactory solution, based on the findings of the current study. The matrix represents those combinations of options considered as being the most feasible at the moment.

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[39] Adopted by the Commission in December 2004 with the aim of providing guidance and organising a smooth transition towards e-procurement in the Member States. It sets out what the Commission and EU Member States can do to ensure that the new legal framework is implemented in a consistent way across the EU. In particular, it aims to prevent barriers that could arise from incompatible systems in different Member States.

	Scope		Managing verification				Financing			Type		Verification Performance			Result		
	Proc.	Prod.	Private comm. org.	Standardisation entities	Local Public entity	European Public entity	MS	EC	Develop.	Volunt.	Mand.	Int.	Tools	3rd party involved	Non-official	Quality Label	Certif.
Option A		X		NA	NA	X		X		X		X	X	X		X	
Option B		X		NA	NA	X			X	X		X	X	X		X	
Option C		X		NA	NA	X		X			X	X	X	X		X	
Option D		X		NA	NA	X			X		X	X	X	X		X	
Option E		X		NA	NA	X		X		X	X	X	X	X		X	
Option F		X		NA	NA	X			X	X	X	X	X	X		X	
Option G		X		R	X	X		X		X		X	X	X			X
Option H		X		R	X	X			X	X		X	X	X			X
Option I		X		R	X	X		X			X	X	X	X			X
Option J		X		R	X	X			X		X	X	X	X			X
Option K		X		R	X	X		X		X	X	X	X	X			X
Option L		X		R	X	X			X	X	X	X	X	X			X

X = applicable

R = Required

NA = Not applicable

The simplified matrix gives an initial list of 12 possible options for compliance verification. This initial list of options may vary during the assessment phase, and some conditions not considered at this moment or considered as not convenient could be included or removed, if thought necessary:

- Option A: Verification of Product; Led by a European level public entity (existing or to be defined); Verification financed by the EC. Voluntary scheme. Verification performed internally, by electronic means or by a 3rd party involved; Quality label as a result.

- Option B: Verification of Product; Led by a European level public entity (existing or to be defined); Verification financed by the Developer. Voluntary scheme. Verification performed internally, by electronic means or by a 3rd party involved; Quality label as a result.

- Option C: Verification of Product; Led by a European level public entity (existing or to be defined); Verification financed by the EC. Mandatory scheme. Verification performed internally, by electronic means or by a 3rd party involved; Quality label as a result.

- Option D: Verification of Product; Led by a European level public entity (existing or to be defined); Verification financed by the Developer. Mandatory scheme. Verification performed internally, by electronic means or by a 3rd party involved; Quality label as a result.

- Option E: Verification of Product; Led by a European level public entity (existing or to be defined); Verification financed by the EC. Both Voluntary and Mandatory schemes. Verification performed internally, by electronic means or by a 3rd party involved; Quality label as a result.

- Option F: Verification of Product; Led by a European level public entity (existing or to be defined); Verification financed by the Developer. Both Voluntary and Mandatory schemes. Verification performed internally, by electronic means or by a 3rd party involved; Quality label as a result.

- Option G: Verification of Product; Standards required; Led by a European level public entity (existing or to be defined) with implementation at national level by Local Level Entities; Verification financed by the EC. Voluntary scheme. Verification performed internally, by electronic means or by a 3rd party involved; Certification as a result.

- Option H: Verification of Product; Standards required; Led by a European level public entity (existing or to be defined) with implementation at national level by Local Level Entities; Verification financed by the Developer. Voluntary scheme. Verification performed internally, by electronic means or by a 3rd party involved; Certification as a result.

- Option I: Verification of Product; Standards required; Led by a European level public entity (existing or to be defined) with implementation at national level by Local Level Entities; Verification financed by the EC. Mandatory scheme. Verification performed internally, by electronic means or by a 3rd party involved; Certification as a result.

- Option J: Verification of Product; Standards required; Led by a European level public entity (existing or to be defined) with implementation at national level by Local Level Entities; Verification financed by the Developer.

Mandatory scheme. Verification performed internally, by electronic means or by a 3rd party involved; Certification as a result.

- Option K: Verification of Product; Standards required; Led by a European level public entity (existing or to be defined) with implementation at national level by Local Level Entities; Verification financed by the EC. Both Voluntary and Mandatory scheme. Verification performed internally, by electronic means or by a 3rd party involved; Certification as a result.

- Option L: Verification of Product; Standards required; Led by a European level public entity (existing or to be defined) with implementation at national level by Local Level Entities; Verification financed by the EC. Both Voluntary and Mandatory scheme. Verification performed internally, by electronic means or by a 3rd party involved; Certification as a result.

Eliminating preliminary options

After an initial analysis of the list of options, certain options were eliminated as being impracticable on the grounds that they would not be acceptable to certain Member States, based on the information provided during the study. Those options that have been eliminated are shown below: These four options have not been considered as feasible because:

A mandatory scheme may not be accepted by countries which prefer some independence in decision making in public administration (UK; Sweden; Finland; France; Iceland; The Netherlands; Poland; Spain).

Implementation of a completely mandatory certification scheme at national level by national authorities may not be practicable, as this would entail an increase in resources that many bodies may not be able to obtain, particularly in those countries where cost is seen as a prohibitive factor (Bulgaria, Czech Republic, Cyprus, Estonia, Iceland, Latvia, Lithuania, Poland, Slovenia).

- Option C

- Option D

- Option I

- Option J

On the contrary, in a voluntary scheme (or scheme with minimised obligatory aspects) the national authority may choose the resources it can commit to the running of the scheme, and for this reason options with this characteristic allow more freedom of movement, and have been included in the scenario building process. Therefore the remaining schemes to be considered are:

- Option A

- Option B

- Option E

- Option F

- Option G

- Option H

- Option K

- Option L

12.9 Annex IX: Scenario building and assessment

In general, the remaining options, shown above are formed by eight themes which were chosen to clearly encompass the development of a compliance verification mechanism for e-procurement. These were:

    i. the degree of verification with respect to the product;

    ii.   the type of coordinating entity; the financial procedure to be adopted;

    iii.   the obligation of the scheme to be adopted;

    iv.   the nature of the compliance mechanism;

    v.   the desired result or outcome of the compliance verification;

    vi.   the involvement of entities on the ground at local level; and

    vii.   the role that standardisation entities should play.

The latter theme resulted from the inclusion of standardisation entities in a possible managing role, as described in the preliminary list of Options. This is discarded as being impracticable, although the presence of standardisation entities, both national and international, is considered vital in a supporting role, and has been elevated to a theme in its own right.

Specifically, the production of the partial scenarios can be described as a four-step process, with a fifth step being the development of Reference Scenarios, as shown in the figure above. The scope of each step in the process is described below.

STEP 1 - Selection of elements: a brainstorming exercise puts together a list of the elements that can have an impact on the theme under consideration. Each element is subsequently classified as factor or actor. Factors are defined as the structural trends that are considered important in shaping the future mechanism. Actors are defined as those players that can influence factors in an interactive fashion. They are recognisable, purpose-oriented elements, as opposed to the structural and diffuse character of factors. Through reflection and discussion, the initial list of elements has been reduced to a more manageable set.

STEP 2 - Construction of 'hypotheses'. Alternative paths or possibilities of evolution are defined for each shaping actor or factor. The answers are elaborated to yield comparable sets of alternatives. In practice, this means producing alternative 'stories' (each summarised in a two-line sentence) for each actor/factor. These receive the name of 'hypotheses'. The hypotheses may be evaluated as positive or negative attributes that may influence the use/non-use of a particular factor.

STEP 3 - Selection of the 'pivot elements' through *cross consistency assessment*. The actors/factors considered with their alternatives are still too numerous to allow the formation of contrasted pictures of the future. The morphological field (or solution space) in this study contains more than 50,000,000 configurations, far too many to inspect by hand. Thus, the next step in the analysis-synthesis process is to examine the internal relationships between the morphological field parameters and "reduce" the field by weeding out all mutually contradictory conditions. This is achieved by a process of cross-consistency assessment: all of the parameter values in the field are compared with one another, pair-wise, in the manner of a cross-impact matrix (Figure 4). As each pair of conditions is examined, a judgment is made as to whether, or to what extent, the pair can coexist, i.e. represent a consistent relationship. Note that there is no reference here to causality, but only to internal consistency. There are three types of inconsistencies involved here: purely logical contradictions (i.e. those based on the nature of the concepts involved); empirical constraints (i.e. relationships judged be highly improbable or implausible on empirical grounds), and normative constraints (e.g. relationships ruled out on e.g. ethical or political grounds). It is important not to allow normative judgments to initially influence the cross-consistency assessment. For this reason, only logical and empirical judgements are made initially. Although normative judgements must be made eventually, they must never be confused with logical and empirical consideration. A judgement of what is possible should be made before deciding what is desirable.

STEP 4 - Definition of the partial scenarios. Taking into account only the pivot elements as defined in the previous step, a number of clearly independent combinations of the hypotheses, are revealed. These combinations may be divided into three distinct types: technical based factors, standards based factors, and financial/organisational based factors. Finally, through a process of merging and elimination, by analysing the options provided, the combinations are reduced to 2 or 3 partial scenarios per type, giving a total of nine partial scenarios. Each of these combinations of partial scenarios provides a part of the 'skeleton' for a different Reference Scenario. A Reference Scenario could potentially be composed of 3 partial scenarios: a technical scenario, a financial/organisational scenario and a standard scenario.

STEP 5 - Definition of the Reference Scenarios. Concentrating on the combinations retained from the consistency exercise and development of the partial scenarios, the more salient and consistent combinations are retained. This means not only that the partial scenarios contained in each combination should not appear to contradict each other, but also that there should be some salient feature that clearly distinguishes each combination from the others. The combinations of partial scenarios have been reduced to 3 through a process of merging and elimination, providing the basis for the Reference Scenarios.

Scenario building in action

In the chapter the outcome of each step of the process is provided. From the point of view of results, the outcomes of STEPS 4 and 5 are of special interest as they correspond to the identification of the partial and Reference Scenarios.

STEP 1 – Selection of elements

The elements selected for further analysis are shown in the figure below.
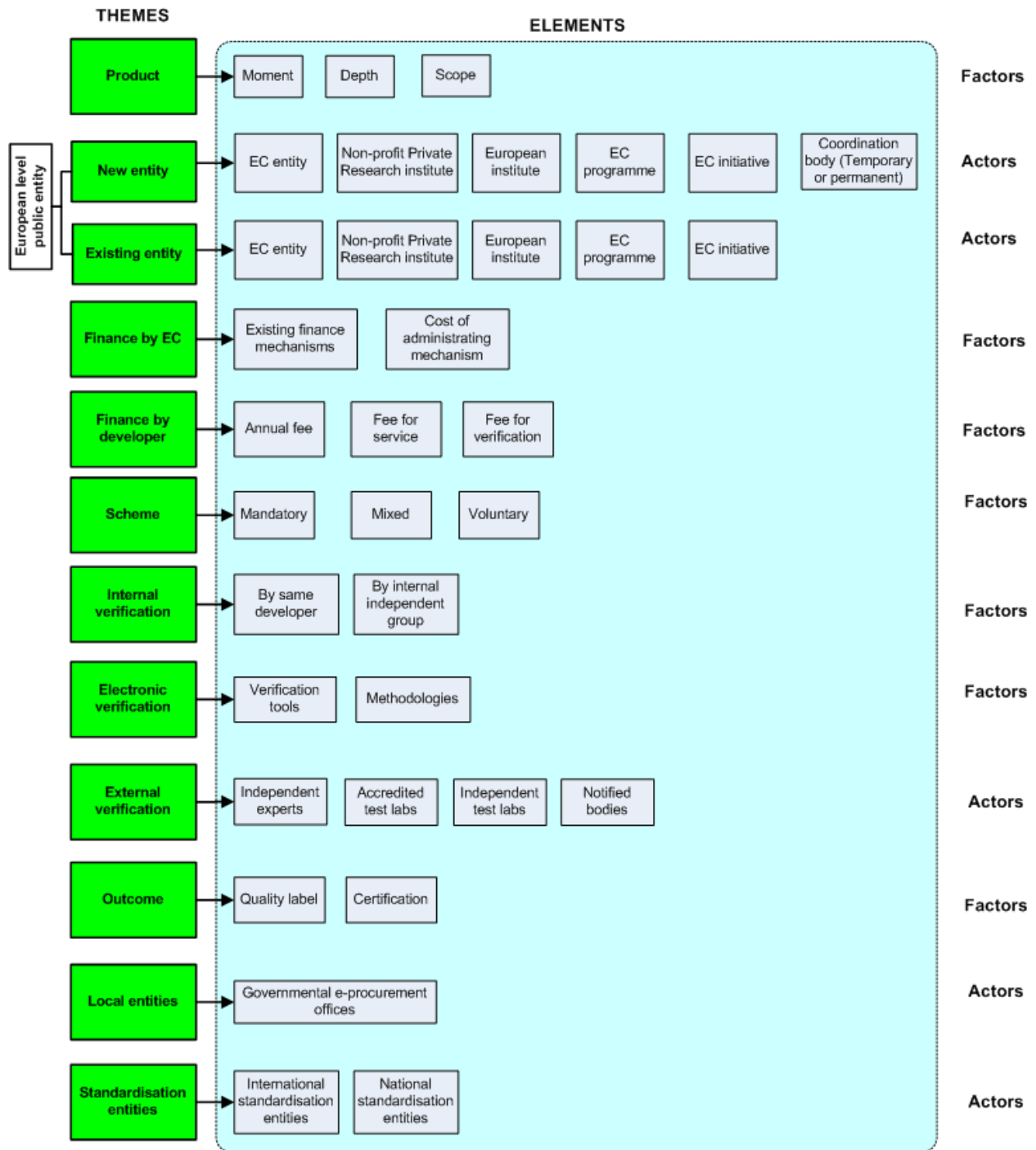
Figure 51 Themes and elements used in the scenario building process

Each element is briefly described below with respect to its relevance to e-procurement and compliance verification.

Compliance verification of product

Scope
Those aspects of an e-procurement system and its related procedures that should be included in, or excluded from, the compliance verification process.

Depth

The level of penetration to which the e-procurement systems and/or their individual modules should be put through during compliance verification.

Moment

The point in the lifecycle of an e-procurement system at which compliance verification should take place.

Existing European entity

Existing EU entity

Decentralised agencies which exist at a European level, functioning independently, but responding ultimately to the European Commission.

Existing non profit private research institute

A research institute that is registered as private, non-profit or as a charity, and which receives the majority of funding from membership fees and private sources, although it may also carry out projects for the EC.

Existing European institute

A research institute which receives the majority of its funding from the EC, and therefore cannot be classified as independently functioning.

Existing EC programme

Any research or work programmes related to e-procurement or e-government, or other relevant aspects, which have already been set up at EU level

Existing EC initiative

Any initiatives, such as working groups, that have already been created at EU level, and are working on topics that may be relevant to e-procurement.

New European entity

New EU entity

The creation of a new EU agency, with regulatory powers.

New non profit research institute

The creation of a new non-profit private research institute, dedicated to public administration research, and other related topics.

New European institute

The creation of a new European research institute, fully funded at EU level, dedicated to public administration research, and other related topics.

New EC programme

The creation of a new EC programme, related to compliance verification in e-procurement.

New EC initiative

The creation of a new EC initiative, related to compliance verification in e-procurement.

Coordination body (temporary or permanent)

The creation of a new coordination body, charged with the specific goal of coordinating and managing compliance verification of e-procurement systems in the EU/EEA Member States.

Financed by the EC

Existing Finance mechanisms

Using the various financial mechanisms that already exist at EC level to fund the setting up and coordination of a particular body with respect to e-procurement and compliance verification.

Administration of mechanism

Funds are supplied by the EC to ensure the administration costs of the compliance verification mechanism only.

Financed by the Developer

Annual fee

The developer pays an annual fee to become affiliated to a centralised body, which covers the costs of compliance verification, whenever required.

Fee per service

Fee-for-service agreements are tailored to meet the specific needs of each individual client. In this case, the developer would receive specific services apart from compliance verification, such as development services, tools or training; other services such as marketing or the advertising of tools developed by private developers may be necessary and justifiable. More advanced services such as pre-commercial procurement services may also be provided where public procurers may acquire technologically innovative solutions for their specific needs which are not commercially available yet. Shaping the right solution at the best cost may be done by pooling efforts with other procurers and sharing with the suppliers the risks and benefits of designing, prototyping and testing new products and services.

Fee per verification

Developers would pay directly to the required body for compliance verification services of specific e-procurement system modules.

Scheme adopted

Voluntary scheme

Implies the freedom to adopt the defined and recommended compliance verification mechanism, as they require.

Mandatory scheme

Implies that the adoption of the defined and recommended compliance verification mechanism is obligatory.

Mixed scheme

CARSA

Certain specific aspects of the defined and recommended compliance verification mechanism are obligatory; other aspects within the mechanism are, however, voluntary, and may be adopted as needed.

Type of verification

Internal verification: Same developer

The developer responsible for system development also carries out compliance verification.

Internal verification: Independent group

An independent group, internal to the administration implementing the system, but external to the development group.

Electronic verification: Verification tools (simulators, questionnaires…)

Electronic tools that may be used to provide compliance verification of individual products.

Electronic verification: Methodologies

Used throughout the development process to allow users to apply guidelines that are scalable and repeatable at system level, from project to project and platform to platform. They should be applicable not only for advanced verification specialists, but also for designers who perform their own verification and cannot afford the steep learning curves associated with the more advanced approaches.

External third party verification: Independent experts

Experts not affiliated to any particular company or body, with proven experience and capacity to provide compliance verification services for complex IT systems.

External third party verification: Accredited test house

Laboratories which are accredited by national accreditation bodies to carry out testing and final product certification or quality marking based on applied standards.

External third party verification: Independent test house

Independent testing houses or authorities run tests on products submitted by manufacturers, to determine whether they conform to the relevant standards or requirements. They do not certify products or companies.

External third party verification: Notified body

Provide services for conformity assessment on the conditions set out in the New Approach Directives in support of CE marking. This means assessing the manufacturers conformity to the essential requirements listed in each directive.

Result

Quality label

A quality label is an image that appears on a site and indicates that a platform follows good practices, codes or conduct and/or requirements that make it reliable for the market. Standards are not officially necessary for the provision of quality labels, although the better labels are backed by standards.

Certification

Certification testing encompasses the examination and testing of software and hardware under conditions simulating the intended use. Certification must be backed by relevant standards.

Involvement of national entities

Governmental e-procurement offices

Those public procurement offices which are already involved at national government level, with respect to the day to day administration of public procurement in the respective Member State, the development and implementation of e-procurement services, and the encouragement of the use of e-procurement platforms among all stakeholders.

Involvement of standardisation entities

International entities

Those entities which function at an international level, and which are responsible for the development of international standards for complete product sectors, and the further encouragement of their use. Members of such organisations should be technically independent of national influence, and may be from both the public and private sectors.

National entities

Standards bodies which have a national mandate only; they are charged with the development of standards for the individual Member State. Many of these bodies, however, have reached such a level of sophistication and expertise, that the standards they provide are adopted also at international level.

STEP 2 - Construction of 'hypotheses'.

The hypotheses, which can be seen in Annex 1, are constructed for each element, with a maximum of seven hypotheses created for each element. In general, the hypotheses try to cover the whole range of positive to negative characteristics, which may be used to describe the different elements. An hypothesis should define a spectrum of values, or what are called conditions, which represent alternative solutions to the particular issue that the element expresses. Sometimes this is a scale, from high to low, or good to bad; sometimes it may be mini-scenarios or idea-packages, which may best define different aspects of a complex element. When working with a scale, the boundary values are used to create the framework. In general, the boundaries of the parameters should be extended as far as possible, and the extreme limits of each element should be defined (note that those hypotheses which may seem extreme or impractical, now, should be included as they could turn into reality in the future).

STEP 3 - Selection of the "pivot elements" through cross consistency assessment.

The following figure shows the themes and associated elements which have been treated during the cross consistency assessment, forming the matrix as seen below. The themes (see previous figure) are highlighted at the top and left hand side of the matrix, with a blue background. These in turn have their associated factors/actors (see previous figure) outlined directly beneath them. As can be seen, the same themes and factors/actors are repeated both on the left hand side, and above, creating the cross-consistency matrix between them.

Figure 52 Cross consistency matrix

One way of deciphering the table is to ask if there is any *reason* to include an element with respect to another: that is, if they could initially exist independently of each other.

The **green cells** within the matrix show those combinations which are consistent, and most possible.

The **white cells** are those combinations which are considered illogical, inconsistent or do not have any constructive association between them. The result of the cross consistency is the elimination of those combinations which are not considered to be necessary in the creation of the final scenarios.

The **grey cells** in the matrix are the points of "self-crossing" between the elements, that is where cross-consistency is not carried out as it represents the evaluation of the elements of a theme against themselves (i.e. *compliance verification of product* against *compliance verification of product*). In most cases this represents an irrational comparison, except in the case where some elements within the same theme may be complimentary, such as occurs within the theme Entity at European Level: in this case it is considered that both programs and initiatives may co-exist alongside other elements within the same theme, as they are not mutually exclusive.

STEP 4 - Definition of the partial scenarios.

The following section describes the different steps that are involved

STEP 4.1 – Identification of the partial scenario categories

As can be seen in the figure below, the combinations are divided into **three distinct partial scenario categories**: technical based category, standards based category, and financial/organisational based category, with their associated themes and elements. The first, technical based category, is shown in yellow in the figure below. The second, financial/organisational based category is shown in red, and the third, standards based category is shown in blue. Each of these groupings may exist independently of the other, therefore each may be analysed separately to find the best combination of themes and elements possible (partial scenarios), which will then be later combined to create the Reference Scenarios.

It must be noted that certain elements may be represented in more than one category

- for example, the theme "Outcome" in both the standards and technical based categories, and

- the theme "Involvement of standardisation entities" in both the financial/ organisational and standards based categories.

This is perfectly permissible, as their presence in the different categories is based on different aspects or characteristics of the same theme affecting the relevant category in different ways. For example, implementing the theme Outcome (whether quality label or certification) has a direct effect on the technical aspects of compliance verification (for example, providing a quality label through the use of technical tools), but also affects the role that standardisation plays in the type of verification scheme (if only a voluntary quality label scheme is used, official standardisation procedures may be over-demanding and unnecessary). In this case, the theme "Outcome" is considered, on the one hand, from a purely technical point of view, and on the other, from a methodological point of view.

Likewise, when comparing the presence of "Involvement of standardisation entities" in financial/ organisational and standards based categories, the presence of the theme in the latter category is self-explanatory, as it is integral to standards development, whereas its inclusion in the first category is seen more in a supporting and collaborative role. The inclusion of the same theme in both is therefore necessary for ensuring a thorough treatment of the categories in question.

Figure 53 Categories for partial scenario building

Each of the three distinct categories is described below:

Technical based category: It tackles the so-called technical aspects of a compliance verification solution.

This category is characterised by the presence of purely technical themes and elements such as the moment, depth and scope of compliance verification, whether internal or external, with or without electronic tools, the type of outcome or result desired, in this case either quality label or certification, and the involvement of standardisation entities, in this case in a technical regulatory capacity.
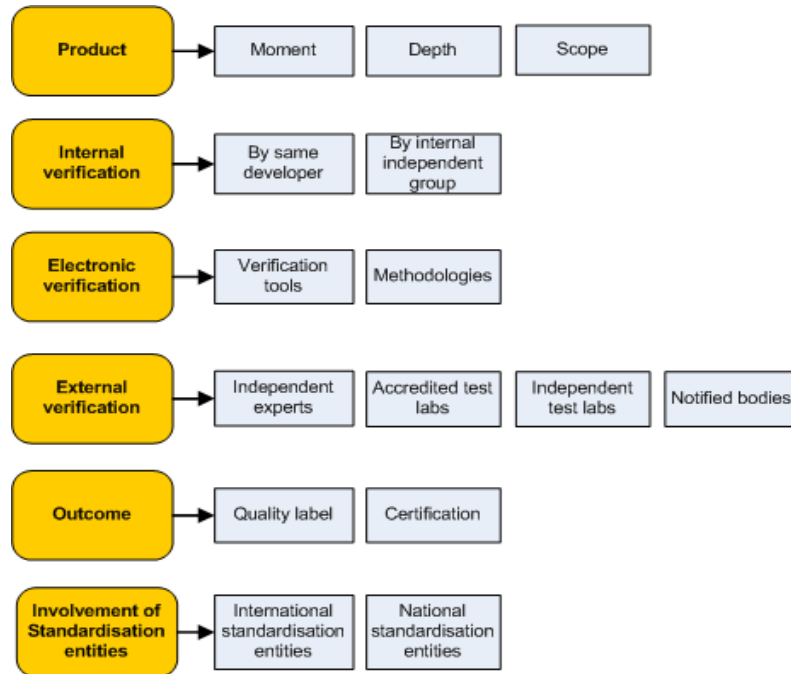
Figure 54 Technical based categories

Financial and organisational based category: It tackles the managerial aspects that are to be considered when defining and implementing a compliance verification solution.

This category is defined by a purely organisational structure and its associated financial framework, characterised by the financial and organisational themes and elements. This includes the type of entity that may be involved, the financial structure that may be used, whether local administrative elements may be involved, and the participation of entities involved with standardisation, in an organisational capacity.
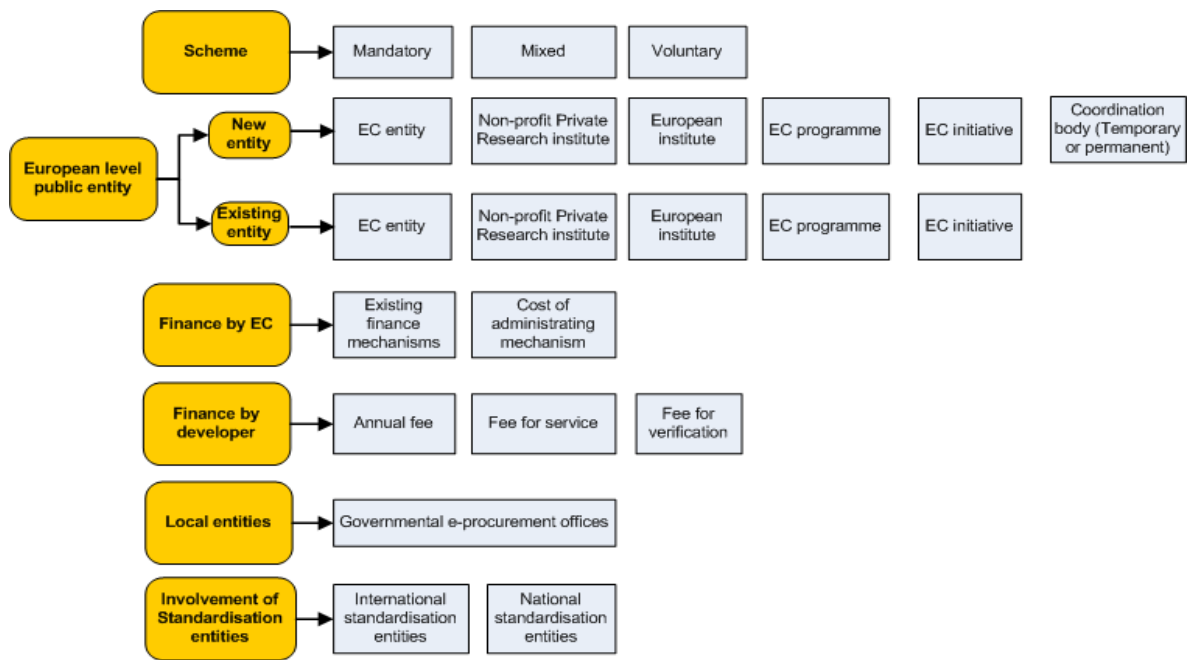
Figure 55 Financial/Organisational based category

Standards based category: It works on the different alternatives to create the guidelines and/or standards that substantiate any compliance verification solution.

This solution type is concerned with the development of standards only, and is the most specialised of the three types. It concerns the type of scheme that should be implemented, voluntary, mandatory or perhaps a combination of the two; again the type of outcome is included, but from a standards related point of view, with respect to the regulations required for each of the outcomes, and the relative complexity for their respective implementations as regulatory mechanisms; and the involvement of standardisation bodies, this time in their role as the relevant body for the definition, development and implementation of the required standards.
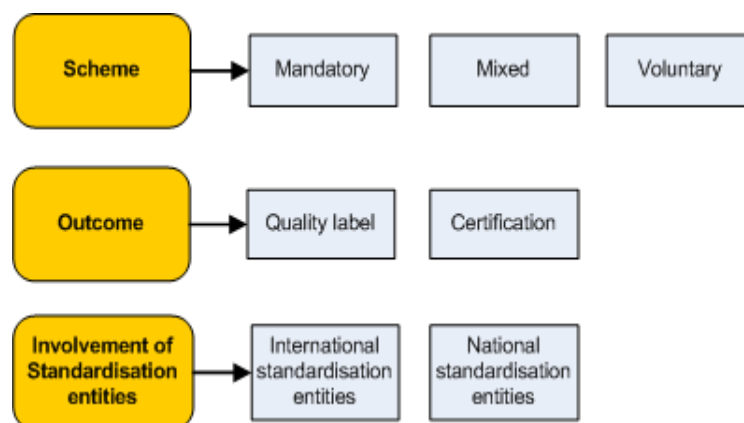
Figure 56 Standards based category

STEP 4.2 -. Identification and characterisation of the partial scenarios

Partial scenarios are created using the categories mentioned above, thereby creating technical partial scenarios, financial/organisational partial scenarios, and standards based partial scenarios.

How the elements are chosen or eliminated

Each of the possible combinations of hypotheses (see all hypotheses in Annex 1) written for the elements within the same category were compared and contrasted, in order to isolate those elements and hypotheses that coexisted most logically with each other. Through a process of brainstorming, logical comparison, inclusion and elimination, each element is analysed against the other elements within its own theme, and against the elements contained within the other themes of the category. This allows for the creation of the most plausible partial scenarios for each of the categories, and also allows for the discovery of those elements which are not necessarily mutually exclusive, and others which may play an important role but may not be able to exist independently of other elements.

Elements are eliminated from a partial scenario, if:

- They are illogical - their inclusion creates an irrational comparison with other elements;

- They are unnecessary –-their inclusion is completely neutral to the partial scenario;

- They are considered simply improbable.

The partial scenarios obtained following this process are:

   Technical based category: TPS1, TPS2, TPS3.

   Standards based category: SPS1, SPS2, SPS3.

   Financial/organisational based category: FOPS1, FOPS2.

These partial scenarios are further described below.

Understanding the colour coding of the partial scenarios

Each of the partial scenarios identified is described below, including the principle drivers, and the *reasons for elimination and inclusion of the different elements.* Each partial scenario comes with a visual scenario space, whose colour-coding is described below:

- The **hypotheses highlighted in green** are those which are considered the most relevant and positive in this case, and therefore their associated element is included.

- The **red hypotheses** are those which are considered to cause the exclusion of the element in question from consideration within the partial scenario.

- An **element left blank (white)** is one which is judged not to have any logical coherence within the partial scenario, and is therefore not considered.

- Those **hypotheses shown in blue** are considered to be optional choices that may be included within the partial scenario, and are complementary to the final solution space – in this sense, they may be included for the sake of completeness, but are not seen as practicable independent elements, and cannot form a solution space on their own accord.

Category 1: Technical based

Three technical solutions have been isolated as representing the most plausible combination of the various elements related to technical development of compliance verification. These, most importantly, provide a variety of choices within the technical partial scenario, which may be combined later in various ways with the other partial scenario types to form the Reference Scenarios.

TPS 1: Technical partial scenario 1

Driver:

- This partial scenario is driven by the use of a **quality label** as the primary driver of the solution. In this case, the quality label responds to a **Voluntary Accreditation Scheme** and does not need to be backed by formally agreed standards, and therefore certification as an aspect of the verification process is not required;

Reasons:

- Consequently, the inclusion of standardisation bodies at an international level is also deemed unnecessary. However, for any quality label to be meaningful, it must be backed by **guidelines** or **requirements** at some level, which must be adhered to in order to achieve the label.

- In this sense, the inclusion of **national standardisation entities** may be beneficial, as they could provide, via requirements or frameworks already developed at national level, the desired input to the guidelines for awarding a quality label.

- In this scenario, both **internal** and **external** compliance verification may be carried out, although to ensure mutual acceptance, the results of any internal verification should be **revised externally** by an independent body.

This partial scenario is seen as the "lightest" of the technical scenarios, as the creation of specific standards is not required, and therefore the potentially complex mechanism of certification is also unnecessary.

Compliance verification of product			Internal verification		Electronic verification		External third party verification				Result		Involvement of	
Scope	Depth	Moment	Same Developer	Independent group	Verification tools (simulators, questionnaire)	Methodologies	Independent experts	Accredited test house	Independent test house	Notified body	Quality label	Certification	International entities	National entities
Verification carried out on only some system modules, defined as integral to system interoperability	Performed on only selected functional criteria and non-functional criteria based on importance to system functionality	Verification performed at implementation stage, based on functionality requirements	Some internal compliance mechanisms do not need adjustment of any sort, as they already comply to the highest national standards	To ensure mutual recognition, a technical file of all internal compliance procedures carried out must be revised by a recognised body, whether internal or external	Analysing the results provided by electronic tools is more efficient, as information collected is already processed to a certain degree, and not just a stand-alone validation instrument for a single feature	Electronic verification methodologies may be part of a comprehensive resource kit related to compliance verification, and not just a stand-alone validation instrument for a single feature	Independent experts may also be incorporated as part of the development and improvement process of a compliance verification mechanism, as they would be seen as more independent of any external business interestes	Accreditation and compliance verification is an integral part of all standards application procedures.	Independent test houses may be used during the early stages of setting up a compliance framework, and later make way to accredited testing labs	A notified body carries out the appropriate examinations and tests in order to check the conformity of the product with the applicable requirements, and provides certification	More flexible than certification, also immediately recognised as representing trust and quality	Certification will not succeed if standards cannot be developed or recommended with respect to e-procurement	Costs will be high as standards development require long process of consensus between governments and much investment of time and effort	Some national entities already possess "standards" or "recommendations", that may be adopted at the highest level
		Verification performed at specification stage, based on requirements					Independent experts may be contracted to verify very specific aspects of any system, thereby giving them a flexibility that other testing procedures may not have					Cost will be prohibitively high if certification implies the subsequent creation of entire administrative, enforcement and management infrastructure.		
							Independent expert may be a more cost-efficient means of applying verification procedures							

Figure 57 Technical partial scenario 1

The reasons for the subsequent inclusion or exclusion of each individual element are discussed in the following section.

Compliance verification of product

Scope

Verification carried out on modules considered critical to system interoperability. At this stage it does not seem rational or feasible to carry out compliance verification on the whole system. As interoperability between is the primary concern, only those aspects of the system which are critical to achieving this should be verified.

Depth

Verification performed on selected functional and non-functional criteria related to these modules, based on their importance to system functionality.

Moment

Verification to be carried out at specification stage, based on requirements. Correct compliance at this stage will reduce the necessity for complex verification processes later on in development. Verification should also be performed at the implementation stage to ensure correct functionality of the system based on the requirements.

Internal verification

Same developer

The developer of the system could also carry out compliance verification, although the resulting technical file should be reviewed and assessed by an appropriate external body.

Independent group

Again, could be applicable in this case, and more impartial than compliance carried out by the same developer. In this case, there are two possibilities: (i) that the technical file would again be reviewed and assessed by an appropriate external body, or (ii) that the independent group forms part of a mutual agreement between the Member States, and its results are mutually recognised through this agreement, not requiring external assessment.

Electronic verification

Verification tools (simulators, questionnaire)

Tools could be a very helpful mechanism in this case, to provide guidance and self-help to developers, in their efforts to comply with the requirements of the quality labelling process.

Methodologies

Methodologies may be used as part of a comprehensive resource kit for compliance verification.

External verification

Independent experts

As certification is not required in this case, independent experts are a very useful addition to the compliance verification process, adding their experience and knowledge to the compliance and development process.

Accredited test house

Not required, as certification not needed.

Independent test house

Again, a useful solution as they can provide the testing facilities for assessing products against requirements. In addition they can provide training in-house to the developer to aid and improve their compliance verification procedures.

Notified body

Not needed.

Result

Quality label

The desired result in this case. Although not necessarily backed by standards, it must be backed by legislation (EU Directives, in this case), good practices where applicable, codes of conduct, and guidelines or requirements that make it a reliable and trustworthy seal to users.

Certification

Not needed.

Involvement of standardisation entities

International entities

Not needed.

National entities

In this case national entities are seen as a positive addition, as many have already developed recommendations or requirements for governmental systems at national level that may also be applicable at international level, and may be readily used in defining the guidelines framework for quality labelling.

TPS 2: Technical partial scenario 2

Driver:

- This partial scenario is guided by the use of **certification** as the primary driver of the solution.

Reasons:

- Again, **quality label** is also included as the visual result of the certification process, but in this case, it must be backed by relevant **standards**, and therefore certification as an aspect of the compliance verification process is required.

- Consequently, the inclusion of standards development by **international standardisation bodies** and internationally recognised national standards bodies.

- In this case internal verification is not seen as beneficial, as certification must be provided **externally**, by **accredited certification bodies**.

- **Tools** may be used to help the compliance verification process, although they are not an end to certification in themselves.

This partial scenario is seen as possibly the "heaviest" of the technical scenarios, as the potentially complex mechanism of certification requires the creation or adoption of specific standards, which in itself may be an intricate process.

Compliance verification of product			Internal verification		Electronic verification		External third party verification				Result		Involvement of	
Scope	Depth	Moment	Same Developer	Independent group	Verification tools (simulators, questionnaire)	Methodologies	Independent experts	Accredited test house	Independent test house	Notified body	Quality label	Certification	International entities	National entities
Verification carried out on only some system modules, defined as integral to system interoperability	Performed on only selected functional criteria and non-functional criteria based on importance to system functionality	Verification performed at implementation stage, based on functionality requirements	Very difficult for ad-hoc internal verification procedures to attain mutual recognition	To ensure mutual recognition, a technical file of all internal compliance procedures carried out must be revised by a recognised body, whether internal or external	Tools simply as an online help for system developers and compliance verifiers, and results are for personal reflection only	Electronic verification methodologies may be part of a comprehensive resource kit related to compliance verification, and not just a stand-alone validation instrument for a single feature	Independent experts will not be able to certify final product, unless they are recognised as certifying body, or notified body by the member state.	Accredited test houses also have conflict resolution procedures integrated into the process. These are essential to the credibility of any compliance verification process	Independent test houses cannot certify; this process must be carried out by an external certifying body based on the results of the technical file produced. This will create a longer process	Notified bodies are an accepted procedure of New Approach and Global Approach Directives. Notified bodies already exist in most member states	Quality labelling must be backed up by solid coordinating and administrative structures, and by credible standards or recommendations, and verification mechanisms	Certified off-the-shelf products minimize need for compliance testing, simplify bid analysis, and reduce procurement complexity, cost and risk associated with procurement	Standards and verification at European level seen as one less responsibility to be organised by national governments	Some national entities already possess "standards" or "recommendations", that may be adopted at the highest level
		Verification performed at specification stage, based on requirements	Mutual recognition may be difficult to achieve if internal mechanisms are not based on clearly defined and common methods.					Accreditation labs exist in all countries; these are recognised through mutual agreements signed with other member states and supervised by the European Accreditation Body (EA)		Compliance verification and Certifying procedures of Notified bodies are already clearly defined		Buyers of certified products get reliable assurance of conformance to standards, and interoperability	Standards seen as way of opening up public procurement markets and increasing trade, through increased interoperability between systems	
								Accreditation and compliance verification is an integral part of all standards application procedures.		CE marking, based on standards, is an integral part of the notified body's functions. Notified bodies may also subcontract other more qualified independent bodies if necessary		Certification implies that system has undergone rigorous testing to ensure compliance with a set of standards		
												Certification implies that in the event of non-compliance, faults will be corrected within prescribed timescales.		

Figure 58 Technical partial scenario 2

The reasons for the subsequent inclusion or exclusion of each individual element are discussed in the following section.

Compliance verification of product

Scope

As in TPS 1.

Depth

As TPS 1.

Moment

As TPS 1.

Internal verification

Same developer

Not valid, as not sufficiently impartial and independent.

Independent group

Not valid, as not sufficiently impartial and independent.

Electronic verification

Verification tools (simulators, questionnaire)

Tools may be used in order to provide direction for compliance verification, and may provide some limited level of guidance, although certification cannot be provided through an electronic tool alone. In addition, tools are only as thorough as the standards and compliance verification processes to which they apply.

Methodologies

Methodologies may be used as part of a comprehensive resource kit for compliance verification. However, methodologies again are not an end in themselves, and must be used in conjunction with other verification processes: they cannot be used to provide certification directly but may aid and speed up the process.

External verification

Independent experts

As certification is required in this case, independent experts are not sufficient. Although their knowledge is always useful, they cannot play a direct role in the certification process.

Accredited test house

Directly applicable in this case, as accredited test houses can provide accreditation and compliance verification as an integral part of their testing procedures. Many are also known on an international basis, allowing for mutual recognition between all member states.

Independent test house

Not applicable, as they cannot certify products or companies.

Notified body

Although not required in this case to be a notified body *per se*, many of these bodies are also accredited testing laboratories and certification organisations, and can comfortably fill this role.

Result

Quality label

In this case the visual seal that implies that the e-procurement platform, and its functionality, is backed by standards and certified by an accredited body, according to the compliance verification model defined.

Certification

In this case, required. It implies that the product has passed performance and/or quality assurance tests or qualification requirements stipulated in regulations such as nationally accredited standards, or that it complies with a set of regulations and standards governing quality and/or minimum performance requirements.

Involvement of standardisation entities

International entities

Required in this case. The presence of international standardisation entities may be required in order to define or recommend the standards necessary for use within the e-procurement system. Many of these standards

may already exist. In addition, these bodies may also help in the definition of compliance mechanisms for adhering to standards.

National entities

National entities may again play a positive role, although they may not have the resources to define standards at international level, they may provide much needed support and experience to the standards development process at European level.

TPS 3: Technical partial scenario 3

Driver:

- This partial scenario is guided by the use the **New Approach and Global Approach** of the EC as the primary driver of the solution.

Reasons:

- Again, **quality label** is also included as the visual result of the compliance assessment process, but in this case, applies to the **CE label**, as the only possible outcome of this partial scenario.

- Particular conformity assessment procedures are used, and **certification** by **Notified Bodies** as a generalised process is included; the procedures involved in conformity assessment within the New Approach are specialised and are not related to other types of regular certification.

- **Standards development** by international standardisation bodies is included, as the standards developed through the New Approach are based on international standards.

- In this case internal verification is not possible, as **certification** must be provided **externally**, and exclusively by notified bodies.

- Electronic tools and methods are not involved as they are not included as part of the New Approach.

This partial scenario is seen as possibly a middle approach, because although the creation and/or adoption of specific standards is required, the mechanism of compliance assessment by notified bodies is already clearly defined.

Compliance verification of product			Internal verification		Electronic verification		External third				Result			Involvement of	
Scope	Depth	Moment	Same Developer	Independent group	Verification tools (simulators, questionnaire)	Methodologies	Independent experts	Accredited test house	Independent test house	Notified body	Quality label	Certification	International entities	National entities	
Verification carried out on only some system modules, defined as integral to system interoperability	Performed on only selected functional criteria and non-functional criteria based on importance to system functionality	Verification performed at implementation stage, based on functionality requirements	Very difficult for ad-hoc internal verification procedures to attain mutual recognition	To ensure mutual recognition, a technical file of all internal compliance procedures carried out must be revised by a recognised body, whether internal or external	Tools simply as an online help for system developers and compliance verifiers, and results are for personal reflection only	Methodologies must be used in conjunction with other electronic verification processes, and are not an end in themselves	Independent experts will not be able to certify final product, unless they are recognised as certifying body, or notified body by the member state.	Accredited test houses must conform to ISO standards, and are thus vigilated constantly to ensure quality of testing and accuracy of certification		Notified bodies are an accepted procedure of New Approach and Global Approach Directives. Notified bodies already exist in most member states	Quality labelling must be backed up by solid coordinating and administrative structures, and by credible standards or recommendations, and verification mechanisms	Certification implies that system has undergone rigorous testing to ensure compliance with a set of standards	Standards and verification at European level seen positively as one less responsibility to be organised by national governments	
		Verification performed at specification stage, based on requirements	Mutual recognition may be difficult to achieve if internal mechanisms are not based on clearly defined and common methods							Compliance verification and Certifying procedures of Notified bodies are already clearly defined			Standards seen as way of opening up public procurement markets and increasing trade, through increased interoperability between systems	
										CE marking, based on standards, is an integral part of the notified body's functions. Notified bodies may also subcontract other more qualified independent bodies if necessary				

Figure 59 Technical partial scenario 3

The reasons for the subsequent inclusion or exclusion of each individual element are discussed in the following section.

Compliance verification of product

Scope

As TPS 1.

Depth

As TPS 1.

Moment

As TPS 1.

Internal verification

Same developer

Not valid.

Independent group

Not valid.

Electronic verification

Verification tools (simulators, questionnaire)

Not valid.

Methodologies

Not valid.

External verification

Independent experts

Not valid.

Accredited test house

Not valid.

Independent test house

Not valid.

Notified body

The only mechanism available for conformity assessment in this particular case. Notified Bodies must have the necessary qualifications to meet the testing requirements set forth in the Directives. Notified bodies may be a private sector organization or a government agency, designated by the relevant Member State. Manufacturers may choose a notified body in any member state of the European Union.

Result

Quality label

In this case, the visual seal for conformity involves the use of the CE Label.

Certification

Traditional certification processes are not really applicable in this case, as the New Approach is a specialised case of compliance verification, and involves its own certifying procedures.

Involvement of standardisation entities

International entities

Required in this case. The presence of international standardisation entities may be required in order to define or recommend the standards necessary for use within the e-procurement system. Many of these standards may already exist. In addition, these bodies may also help in the definition of compliance mechanisms for adhering to standards.

National entities

Not directly applicable, although they may provide useful experience and knowledge to the standardisation process.

Category 2: Financial-Organisational based.

Two solutions have been isolated as representing the most plausible combination of the various organisational and financial elements. Each of these will be discussed below, including the principle drivers, and the reasons for elimination

and inclusion of the different elements. In both partial scenarios, the selection of elements are very similar, only varying between the controlling entity, and financial arrangement included in the combination.

FOPS 1: Financial-organisational partial scenario 1

Driver:

- This partial scenario is driven by the presence of an **existing entity at European level** (for example, a suitable combination of Directorates within either, or both, DG Information Society or DG Internal Market; or an agency such as the Office for Harmonisation in the Internal Market, with some modifications) which will be required to coordinate and manage the process of compliance verification.

Reasons:

- It is considered that the **presence of other organisations** may be beneficial to the process, although they are inadequate to be considered as the lone coordinator and manager of the entire scheme.

- This EU entity would greatly benefit from assistance provided **by national government e-procurement offices**, through the provision of coordination assistance and the application of compliance verification mechanisms on a national level.

- In general it is considered that in order for the scheme to have any success it must be **financed directly by the EC**, although due to the fact that the entity is already an existing body, funding in this case could be limited to the **administration costs of the mechanism**.

- Full funding by the developers in this case may be feasible through the **contributions by developers** with respect to an annual fee for possible membership to a high-level e-procurement think tank or policy group, and, in addition aided through fees for verification and other related services.

- The type of scheme that may be established will depend heavily on the financial arrangement that is defined. However, it is considered that a **fully mandatory scheme will be prohibitively costly**, and may, at this point in time, be a discouragement to those countries which are already struggling with the financial burden of implementing new e-procurement systems.

- However, a purely **voluntary** system may **not create a sufficient sense of necessity and responsibility**, and therefore may further delay the implementation of interoperable e-procurement systems throughout the member states.

- In this sense, a **mixed scheme is thought to be the most likely**, where perhaps a minimum amount of aspects critical to interoperability are mandatory, with the remainder being left to voluntary compliance as deemed fit by the developer.

Existing European entity					New European entity					Financed by the EC		Financed by the Developer			Scheme			Using local entities
Existing EC entity	Existing non profit Private Research Institute	Existing European Institute	Existing EC program	Existing EC Initiative	New EC entity	New European Institute	New EC programme	New EC Initiative	Coordination body (temporary or permanent)	Existing Finance mechanisms	Administration of mechanism	Annual fee	Fee per service	Fee per verification	Voluntary scheme	Mandatory scheme	Mixed scheme	Governmental e-procurement offices
Guaranteed solid financial backing required to ensure permanency and continuity, and give impression of significant venture by EC	Many institutes are already involved in research work for public administration, and have profound knowledge of needs and restrictions of public procurement.	Research institute could be extended to include other areas such as investigation into standards, compliance, management of public procurement, technical research.	Programme would function more in an encouragement role, than legal enforcer. This would be carried out by other bodies.	Would not have any "enforcement" role, only incentive role. Compliance verification would have to be carried out by other bodies							Direct administration and running of mechanism by EC may be beneficial as poor or inconsistent activity management procedures by partners could otherwise create problems.	Commitment by EC would attract industry to "new" market. Huge financial market for companies guaranteeing quality service provision. Annual fee could guarantee running cost of mechanism	Systems evolving, ensuring constant investment in new advanced technologies and thus development more services than just compliance verification may be necessary and justifiable (eg training, regular revisions, marketing, standards research, etc)	Fee for verification alone not sufficient to support the entire mechanism, although useful to cover admin costs	The value of the final voluntary quality label attained will be seen as having less credibility than mandatory label	Legally obligatory mechanisms require considerable time and resources to prepare, not least because their legally binding nature may make them more difficult to negotiate.	A mixed scheme yields a high level of compliance at lower cost than a wholly mandatory regime.	Increased costs not envisaged as procedures already developed and may be continued
Infrastructure already exists, leading to more fluent assumption of entity's roles	Research institute will have built up reputation, having knowledge and experience to back up recommendations made wrt compliance and standards	Research institute could play a didactic role, ensuring dissemination of new ideas related to advanced public administration.	Some Programmes, are already working on creating the necessary steps towards harmonisation of certain aspects of e-procurement in member states	Certain initiatives already exist related to e-procurement: their experience would be invaluable for creating the necessary framework for a coordinating body enforcement and certification would be carried out by other bodies							Subcontracting could provide an important channel for the administration and coordination of the mechanism, and aid development and transfer of technology and know-how.				Disorganisation of e-procurement in some member states makes voluntary scheme impossible to coordinate	Political importance and perceived value of e-procurement varies markedly between states; this will affect adoption of potentially overtly mandatory schemes.	Mixed approach can be complementary, with both voluntary and mandatory schemes applied to different aspects of the system, or at different stages of development	EC will benefit from not having to organise and coordinate the processes within each country
Knowledge already gained by entity will help to ensure swift implementation of verification procedures in all member states			Some Programmes will already have created networks and contacts with national bodies and be known in the area of e-procurement													Mandatory scheme must be based on and supported by standards: lack of relevant standards in any area may reduce efficiency of scheme	Mandatory standards can be set for critical aspects, such as security, confidentiality or transparency. Voluntary standards can then be applied to less system critical aspects	
	Many institutes already have profound knowledge of innovation and current technological limitations, which would bring much needed experience to area of e-procurement																Mixed scheme may give impression that scheme will become more strict in the future, and this may act as incentive to become compliant	

Figure 60 Financial-Organisational partial scenario 1

The reasons for the subsequent inclusion or exclusion of each individual element are discussed in the following section.

Existing European entity

Existing EU entity

In this case, the most likely type of entity would be a Community agency or Executive agency[40], with its own legal personality, and with powers to carry out compliance verification procedures. Most agencies are financed from a Community subsidy set aside for the purpose in the general budget of the European Union. However, some are partially or entirely self-financed. Its tasks and mandate should be defined in close co-operation with the Member States in agreement with EU objectives and priorities.

Existing non profit private research institute

These are considered to be insufficient in terms of legal and official capacity to manage and coordinate a verification mechanism, although the knowledge at their disposal may be indispensable. In addition, their inclusion may provide the opportunity to generate specialised networks, think-tanks or working groups that could be created to deal with aspects related to e-procurement and other related studies.

Existing European institute

As above.

Existing EC programme

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[40] There are 4 agency types: Community agencies, Common Foreign and Security Policy agencies, Police and judicial cooperation in criminal matters agencies, and Executive agencies

Not suitable for coordination and management role, although very applicable for the momentum and knowledge they may already have generated. This includes programmes that have already been launched, and that deal directly with e-procurement or other aspects that may be related, such as interoperability, or e-signature development. This would also include programmes related to the development and application of standards. Programmes are already financed by the EC.

Existing EC initiative

As with EC programmes: This includes initiatives that have already been instigated and that deal with e-procurement and other related aspects. This would include working groups, related policy committees, and other similar projects. Initiatives would be schemes that do not require direct finance, as they are formed on a voluntary basis to resolve concrete problems.

New European entity

New EU entity

Not applicable.

New European institute

Not applicable.

New EC programme

Not applicable.

New EC initiative

Not applicable.

Coordination body (temporary or permanent)

Not applicable.

Financed by EC

Existing Finance mechanisms

Standard funding mechanisms for the setting up of programmes, agencies and other institutions of the EC. These would not be required in the case of an existing body, as the implementation of the necessary basic infrastructure has already been carried out.

Administration of mechanism

Finance could be sought from the EC for the administration costs of the mechanism. In the case of an existing body this would be the most reasonable solution, as the extra costs for setting up the mechanism and providing the finances to support administrative personnel would not be covered in the budgets of an already existing entity. Not providing this source of funding may cause a significant delay in the development of the mechanism.

Financed by developer

Annual fee

This would constitutes an annual fee to be paid by the developer to a central entity. It would permit the developer access to any compliance verification services and other services that may include training, and the

provision of electronic tools, or resource kits for e-procurement development and compliance. More importantly, it would also allow the developer to be an active member and attend e-procurement related workshops, working groups and/or committee meetings .

Fee per service

This would be a fee for any services related to compliance verification that may include training for particular products or aspects of development by independent experts, and the provision of electronic tools, the implementation and use of methodologies that may improve the e-procurement development and testing process, or in general, resource kits for e-procurement development and compliance.

Fee per verification

This implies a simple fee for compliance verification services, that would be paid as required. It may cover the costs of employing an external expert to carry out compliance verification, or having the overseeing entity review a technical file.

Type of verification scheme

Voluntary scheme

A purely voluntary scheme is not considered valid.

Mandatory scheme

A purely mandatory scheme is not considered valid.

Mixed scheme

The developer would choose to apply the compliance verification mechanism to certain non-critical aspects on a voluntary basis, following recommendations laid down by the controlling entity and the stakeholders involved, and defined in the compliance verification procedures. This has many positive implications, as in many cases, where such a scheme operates in commercial fields, compliance of all aspects is carried out, as the mandatory aspects give an incentive to companies to pre-empt government regulation by adopting certain practices in advance of a possible legal rule compelling them to do so. In addition, peer pressure amongst developers in a mixed system may also provide an incentive to adopt a more mandatory outlook.

Aspects critical to EU/EEA e-procurement interoperability should be verified for compliance with the EU Directives on a mandatory basis (these aspects being agreed upon by all national stakeholders and clearly defined), with subsequent non-compliance to be penalised as predetermined in the compliance mechanism.

Involvement of local entities

Governmental e-procurement offices

These may be extremely useful for the correct and efficient functioning of the compliance verification mechanism. In addition, they may be indispensable in aiding the administrative work of the EU entity on the ground in each of the member states. Their inclusion may also positively affect the acceptance of the mechanism, as it would be seen as coming more from national government for the benefit of national administration than an authoritarian EC approach.

FOPS 2: Financial-organisational partial scenario 2

Driver:

- this partial scenario is driven by the creation of a **new entity at European Commission level** which will be required to coordinate and manage the process of compliance verification.

Reasons:

- In this case the most logical type of entity would, again, be an **agency** which would coordinate and control both the compliance verification mechanism and any external processes that may be relevant to e-procurement and e-government; in addition they could be extended to take part in and/or encourage research into aspects related to advanced European administrative studies.

- The creation of other types of organisations (research centres, coordination bodies, programmes, initiatives) is not considered to be logical or sufficiently advantageous, as their ability to manage this type of scheme, with the required legal capacity for enforcement, is very limited.

- However, again, it is considered that the knowledge and experience already obtained by other, already **existing organisations would be beneficial to the process.**

- Again the funding from the EC is considered essential, although in this case **full funding by the EC would be required** to create the coordination entity (such funds already exist); again, some contribution from the member states in this regard may also be possible, and contributions by developers with respect to an annual fee, and for verification and other related services, are also applicable.

- However, it is not considered that funding only the administration of the mechanism is a sufficient financial response, and is not considered in this partial scenario. This type of funding should already be included in the full funding already mentioned.

The remaining elements remain the same as in the previous scenario, FOPS1.

Existing European entity					New European entity					Financed by the EC		Financed by the Developer			Scheme			Using local entities
Existing EC entity	Existing non profit Private Research Institute	Existing European Institute	Existing EC program	Existing EC Initiative	New EC entity	New European Institute	New EC programme	New EC Initiative	Coordination body (temporary or permanent)	Existing Finance mechanisms	Administration of mechanism	Annual fee	Fee per service	Fee per verification	Voluntary scheme	Mandatory scheme	Mixed scheme	Governmental e-procurement offices
	Many institutes are already involved in research work for public administration, and have profound knowledge of needs and restrictions of public procurement	Research institute could be extended to include other areas such as investigation into standards, compliance, management of public procurement, technical research.	Programme would function more in an encouragement role, than legal enforcer. This would be carried out by other bodies.	Would not have any "enforcement" role, only incentive role. Compliance verification would have to be carried out by other bodies	Entity would not be affected by past "baggage" that an existing entity may have to overcome	Political will at EC level may not exist to create sufficient backing for new entity	EC programme would not be to provide sufficient encouragement to Member States to synchronise efforts in process of compliance verification	Mandatory system could not be controlled by an initiative, as it would not be able to provide sufficient administration and coordination	Coordination body would be most cost effective way to support mandatory verification; however would have to be carried out by other bodies	Co-financing being currently used in some e-procurement implementation projects, extending to verification mechanisms should be feasible		Commitment by EC would attract industry to "new" market. Huge financial market for companies guaranteeing quality service provision. Annual fee could guarantee running cost of mechanism	Systems evolving, ensuring constant investment in new advanced technologies and thus development, more services than just compliance verification may be necessary and justifiable (eg training, regular revisions, marketing, standards research, etc)	Fee for verification alone not sufficient to support the entire mechanism, although useful to cover admin costs	The value of the final voluntary quality label attained will be seen as having less credibility than mandatory label	Legally obligatory mechanisms require considerable time and resources to prepare, not least because their legally binding nature may make them more difficult to negotiate	A mixed scheme yields a high level of compliance at lower cost than a wholly mandatory regime.	Increased costs not envisaged as procedures already developed and may be continued
	Research Institute will have built up reputation, having knowledge and experience to back up recommendations made wrt compliance and standards	Research institute could play a didactic role, ensuring dissemination of new ideas related to advanced public administration.	Some Programmes, are already working on creating the necessary steps towards harmonisation of certain aspects of e-procurement in member states	Certain initiatives already exist related to e-procurement their experience would be invaluable for creating the necessary framework for a coordinating body: enforcement and certification would be carried out by other bodies	New entity will be formed streamlined to specific project requirements: no adaptation necessary	Bureaucracy associated with public European Institute may be negative factor			Coordination only not sufficient: investigation into themes related to procurement and standardisation must also be carried out. Coordination body would not have resources for this work	Cofinancing can provide financial and policy leverage in the achievement of verification mechanism development goals.					Disorganisation of e-procurement in some member states makes voluntary scheme impossible to coordinate	Political importance and perceived value of e-procurement varies markedly between states: this will affect adoption of potentially costly mandatory schemes	Mixed approach can be complementary, with both voluntary and mandatory schemes applied to different aspects of the system, or at different stages of development	EC will benefit from not having to organise and coordinate the processes within each country
	Knowledge already gained by entity will help to ensure swift implementation of verification procedures in all member states		Some Programmes will already have created networks and contacts with national bodies and be known in the area of e-procurement		Entity will be created with backing of all countries, and would not be seen to be affected by individual national concerns				Temporary coordination body would not be able to generate sufficient impetus quickly, as mechanism will probably take much time to conceive	EC investment will ensure that all interested national stakeholders will have an opinion					Mandatory scheme must be based on and supported by standards: lack of relevant standards in any area may reduce efficiency of scheme	Mandatory standards can be set for critical aspects, such as security, confidentiality or transparency. Voluntary standards can then be applied to less system critical aspects		
	Many institutes already have profound knowledge of innovation and current technological limitations, which would bring much needed experience to area of e-procurement								Coordination body's effectiveness may be 'hijacked' by other coordination bodies already existing at national level								Mixed scheme may give impression that scheme will become more strict in the future, and this may act as incentive to become compliant	

Figure 61 Financial-Organisational partial scenario 2

The reasons for the subsequent inclusion or exclusion of each individual element are discussed in the following section.

Existing European entity

Existing EU entity

Not included in this scenario.

Existing non profit private research institute

In conjunction with a controlling entity, such institutions may be invaluable, as in the previous scenario, for the knowledge and experience they may possess related to public administration studies, and technological processes relevant to e-procurement.

Existing European institute

As in previous partial scenario, FOPS 1.

Existing EC programme

As in the previous scenario FOPS 1: programmes that have already been launched, and that deal directly with e-procurement or other aspects that may be related, such as interoperability, or e-signature development. This would also include programmes related to the development and application of standards. Programmes are already financed by the EC.

Existing EC initiative

As in the previous scenario FOPS 1: Initiative that have already been instigated and that deal with e-procurement and other related aspects. This would include working groups, related policy committees, and other similar projects. Initiatives would be schemes that do not require direct finance, as they are formed on a voluntary basis to resolve concrete problems.

<u>New European entity</u>

New EU entity

This involves the creation of a new agency to fill the role of coordinator and administrator of the compliance verification mechanism, and encourage research in topics related to e-procurement and e-government in general. The creation of agencies with respect to a particular role is not new in the EU, and more than 30 agencies currently exist. Each agency is unique and fulfils an individual function defined at the time of its creation. This function might be modified in the future but, nevertheless, there are a number of general aims underlying an agency's operation as a whole:

- they introduce a degree of decentralisation and dispersal to the Community's activities;

- they give a higher profile to the tasks that are assigned to them;

- they answer the need to develop scientific or technical know-how in certain well-defined fields;

- they integrate different interest groups and thus to facilitate the dialogue at a European or international level.

In this case the agency could be a Community agency or an Executive agency: the former would be a more permanent body, decentralised to one of the Member States; the latter are set up for a fixed period to coordinate certain tasks relating to the management of one or more Community programmes.

New European institute

Not logical in this scenario as the EC cannot create a private non-profit organisation.

New EC programme

Not considered rational in this scenario as it would not be able to adopt a coordination or management role. It is more logical to incorporate those relevant programmes that already exist.

New EC initiative

As in previous partial scenario, FOPS 1. It is more logical to integrate those relevant initiatives that are already functioning and may help the coordinating entity in its role.

Coordination body (temporary or permanent)

A coordination body would not present a sufficiently authoritarian aspect, required for the coordination of a compliance verification mechanism. Although a possible option, the effort and cost required to create a coordination body would be better spent in the creation and implementation of a more proactive entity with regulatory powers. In addition, a temporary coordination body would not provide the conviction of prolonged investment by the EC.

<u>Financed by EC</u>

Existing Finance mechanisms

Standard funding mechanisms for the setting up of programmes, agencies and other institutions of the EU. These would be extremely beneficial in the case of an existing body, such as the cost of implementing the necessary basic administrative infrastructure, as well as the framework required for the implementation of the compliance verification mechanism.

Administration of mechanism

In this case, only financing the administration of the mechanism by the EC is not considered sufficient. The costs of administration will be included in the financing mentioned above.

<u>Financed by developer</u>

Annual fee

As in previous partial scenario, FOPS 1.

Fee per service

As in previous partial scenario, FOPS 1.

Fee per verification

As in previous partial scenario, FOPS 1.

<u>Type of verification scheme</u>

Voluntary scheme

As in previous partial scenario, FOPS 1.

Mandatory scheme

As in previous partial scenario, FOPS 1.

Mixed scheme

As in previous partial scenario, FOPS 1.

<u>Involvement of local entities</u>

Governmental e-procurement offices

As in previous partial scenario, FOPS 1.

Category 3: Standards based

Three solutions have been isolated as representing the most plausible combination of the various elements related to standardisation. Each of these are discussed below, including the principle drivers, and the reasons for elimination and inclusion of the different elements.

SPS 1: Standards partial scenario 1, Voluntary certification and/or New Approach

Driver:

- this partial scenario is driven by a **New Approach type of standardisation** which has been discussed in previous partial scenarios. The strength of this regulatory technique lies in its simplicity and flexibility. **Mutually agreed voluntary standards** throughout the EU contribute to better regulation, stimulate business competitiveness and remove barriers to trade.

Reasons:

- Compliance with the harmonised standards under the New Approach is **voluntary**.

- Standards can be updated much faster than legislation. In particular **technological developments can be more easily incorporated** into regulatory requirements. This reduces the negative impacts of outdated legislation on competitiveness, thereby encouraging innovation and **enabling interoperability**.

- For this reason, **standardisation entities at both the national and international level** play an extremely important role in this process.

- In addition to standards, **reliable conformity assessment** is also part of the New Approach. It is based on manufacturers' internal design and production control activities and third-party examinations by conformity assessment bodies, which are "notified" on the basis of harmonised criteria.

- Again, quality label applies to the **CE label**, as the only possible outcome of this partial scenario. Particular conformity assessment procedures are used, and **certification** by **Notified Bodies** as a generalised process is included; the procedures involved in conformity assessment within the New Approach are specialised and are not related to other types of regular certification.

CARSA

Scheme			Result		Involvement of standardisation entities	
Voluntary scheme	*Mandatory scheme*	*Mixed scheme*	*Quality label*	*Certification*	*International entities*	*National entities*
Peer pressure from developers within an industry to adopt voluntary practice renders these practices in effect mandatory.			Quality labelling must be backed up by solid coordinating and administrative structures, and by credible standards or recommendations, and verification mechanisms	Certification implies that system has undergone rigorous testing to ensure compliance with a set of standards	Standards and verification at European level seen positively as one less responsibility to be organised by national governments	Some national entities already possess "standards" or recommendations, that may be adopted at the highest level
Another incentive for voluntary behaviour is a company's desire to pre-empt government regulation by adopting certain practices in advance of a legal rule compelling them to do so.					Standards seen as a way to ease technical and legal frustration and onus in organising complex e-procurement systems	
EC entity will need to invest less, both financially and with respect to effort, as scheme will depend more on developers and national bodies					Standards seen as way of opening up public procurement markets and increasing trade	
A voluntary scheme may be later "upgraded" to mandatory, as standards are developed					Standards that represent an international consensus on the state of the art constitute an important source of technological know-how	

Figure 62 Standards based partial scenario 1

The reasons for the subsequent inclusion or exclusion of each individual element are discussed in the following section.

Type of verification scheme

Voluntary scheme

Although compliance with the New Approach harmonised standards is technically voluntary, in many cases it has been seen in industry that the adoption of voluntary standards becomes self-regulating and almost obligatory, as peer pressure within industry and a fear of future legislation encourages compliance with the standards.

Mandatory scheme

Compliance with certain essential requirements (not standards) within the New Approach is obligatory. However, these requirements deal in particular with the protection of health and safety of users (usually consumers and workers) and sometimes cover other fundamental requirements (for example protection of property or the environment), and are not considered applicable in this area.

Mixed scheme

Not applicable in this scheme.

Result

Quality label

The CE label, which is an integral part of compliance verification within the New Approach: however, not all Directives based on the New Approach provide CE labelling. In addition, the affixing of other marks, additional to the CE marking, is allowed to the extent that such markings or marks do not create confusion with the CE marking, and that they do not reduce the legibility and visibility of the CE marking.

Certification

Not strictly valid in this case, as the conformity assessment used in the New Approach is rather specialised, and not based on typical certification procedures. The Global Approach introduced a modular approach, which subdivided conformity assessment into a number of operations (modules). These modules differ according to the stage of development of the product (for example design, prototype, full production), the type of assessment involved (for example documentary checks, type approval, quality assurance), and the person carrying out the assessment (the manufacturer or a third party).

Involvement of standardisation entities

International entities

In this case, the international entities involved are those directly concerned with the New Approach Directives. New Approach standardisation represents the joint efforts of the three European Standards Organisations (CEN, CENELEC and ETSI) together with both the European Commission and EFTA.

National entities

The integration of national standardisation bodies is essential in this approach, as many of the standards included in the New Approach have been adapted from standards developed by national authorities. These national authorities are also responsible for the creation of the European standards organisations, and are active members.

SPS 2: Standards partial scenario 2, Traditional certification

Driver:

- this partial scenario is driven by a **traditional approach to standardisation**.

Reasons:

- **Certification** is a prerequisite of the standardisation process, which in many cases may be accompanied by the provision of a quality label, although this does not have to be a precondition of normal compliance verification and certification procedures, although it may be recommendable to provide some sort of tangible seal of approval after a compliance verification process.

- Again in this second partial scenario, the **involvement of international entities** is essential in the **development of the standards**. In this case, national entities are removed as being essential to requirements, as it is assumed that they are already involved as member bodies of the international standards organisations; in addition, the

standards adopted at international level must be extremely generalised, and the adjustment of national standards may require just as much effort as creating new mutually agreed standards.

- Compliance with standards under a normal certification approach may be voluntary or mandatory, depending on the product sector: in this partial scenario we are **assuming a mixed approach**, as it is considered the most beneficial approach that should be taken to ensure interoperability.

Scheme			Result		Involvement of standardisation entities	
Voluntary scheme	Mandatory scheme	Mixed scheme	Quality label	Certification	International entities	National entities
Peer pressure from developers within an industry to adopt voluntary practice renders these practices in effect mandatory.	Legally obligatory mechanisms require considerable time and resources to prepare, not least because their legally binding nature may make them more difficult to negotiate.	A mixed scheme yields a high level of compliance at lower cost than a wholly mandatory regime.	If development outsourced, and scheme either voluntary or mandatory, incentives for developers to sign up to the quality label scheme are implicit in the standards, and provide positive implications	Certification implies the creation or adoption of standards; this has many associated costs, including compliance and non-compliance procedures	Standards and verification at European level seen positively as one less responsibility to be organised by national governments	Some national entities already possess "standards" or recommendations, that may be adopted at the highest level
Another incentive for voluntary behaviour is a company's desire to pre-empt government regulation by adopting certain practices in advance of a legal rule compelling them to do so.	Political importance and perceived value of e-procurement varies markedly between states: this will affect adoption of potentially costly mandatory schemes	Mixed approach can be complimentary, with both voluntary and mandatory schemes applied to different aspects of the system, or at different stages of development		Certiified off-the-shelf products minimize need for compliance testing, simplify bid analysis, and reduce procurement document complexity, cost and risk associated with procurement	Standards seen as a way to ease technical and legal frustration and onus in organising complex e-procurement systems	
	Mandatory scheme must be based on and supported by standards: lack of relevant standards in any area may reduce efficiency of scheme	Mandatory standards can be set for critical aspects, such as security, confidentiality or transparency. Voluntary standards can then be applied to less system critical aspects		Buyers of certified products get reliable assurance of conformance to standards, and interoperability	Standards seen as way of opening up public procurement markets and increasing trade	
		Mixed scheme may give impression that scheme will become more strict in the future, and this may act as incentive to become compliant			Standards that represent an international consensus on the state of the art constitute an important source of technological know-how	

Figure 63 Standards based partial scenario 2

The reasons for the subsequent inclusion or exclusion of each individual element are discussed in the following section.

<u>Type of verification scheme</u>

Voluntary scheme

Not considered sufficient within this partial scenario.

Mandatory scheme

Not considered sufficient within this partial scenario.

Mixed scheme

Aspects critical to EU/EEA e-procurement interoperability should be verified for compliance with the EU Directives on a mandatory basis (these aspects being agreed upon by all national stakeholders and clearly defined), with subsequent non-compliance to be penalised as predetermined in the compliance mechanism.

<u>Result</u>

Quality label

The CE label, which is an integral part of compliance verification within the New Approach: however, not all Directives based on the New Approach provide CE labelling. In addition, the affixing of other marks, additional to the CE marking, is allowed to the extent that such markings or marks do not create confusion with the CE marking, and that they do not reduce the legibility and visibility of the CE marking.

Certification

Not strictly valid in this case, as the conformity assessment used in the New Approach is rather specialised, and not based on typical certification procedures. The Global Approach introduced a modular approach, which subdivided conformity assessment into a number of operations (modules). These modules differ according to the stage of development of the product (for example design, prototype, full production), the type of assessment involved (for example documentary checks, type approval, quality assurance), and the person carrying out the assessment (the manufacturer or a third party).

<u>Involvement of standardisation entities</u>

International entities

Essential in defining the approach to standardisation that should be taken by the coordinating EU entity, and the mechanism for compliance that should be adopted.

National entities

In this case not essential within the standardisation scheme, as this will be carried out at a more international level, and will include stakeholders from many different specialities. However, their knowledge of the organisation and application of national standards and compliance mechanisms already implemented on a national level would be extremely useful in helping to define the approach taken at European and international level.

SPS 3: Standards partial scenario 3, Simple Quality Labelling

Driver:

- this partial scenario is driven by a **simple approach to quality labelling**. A quality label is an image that appears on a site and indicates that the website or platform follows good practices, codes or conduct and/or guidelines that make it reliable for the market.

Reasons:

- In this case it is assumed that certification based on a formal standardisation process will not be used, although **well defined guidelines or requirements, developed through an international effort, and with the final approval of all member states,** are needed for the provision of the quality label.

- The **guidelines** define the requirements that are to be fulfilled by the platform to get the label. Their content should at least cover **technical aspects** (i.e. security, data protection, usability or accessibility) that must be fulfilled, but can also includes requirements to guarantee the **quality of the service** offered. The requirements should be oriented to demonstrate the **credibility of the service provider** behind the website or platform.

- A means of **conflict resolution** should be created in this scheme where resolution of conflicts is managed by a third party. The receiver of the quality label adheres to an extrajudicial conflict resolution system.

- Although the involvement of national and international standardisation entities may be extremely useful in defining the guidelines, their presence is not compulsory in this scheme.

- Compliance with standards under this approach should be **voluntary**, as it is not an official certification process, although it is possible that, in time, compliance may be become self-propagating, through the perceived business benefits of obtaining the quality label.

Scheme			Result		Involvement of standardisation entities	
Voluntary scheme	Mandatory scheme	Mixed scheme	Quality label	Certification	International entities	National entities
Peer pressure from developers within an industry to adopt voluntary practice renders these practices in effect mandatory.			More flexible than certification, also immediately recognised as representing trust and quality			
Another incentive for voluntary behaviour is a company's desire to pre-empt government regulation by adopting certain practices in advance of a legal rule compelling them to do so.			Regular renovation of label will ensure quality levels sustained over time			
			Quality labelling must be backed up by solid coordinating and administrative structures, and by credible standards or recommendations, and verification mechanisms			
			Complaint mechanisms must be integrated into the process; this must be meticulous as complaints will damage quality label image			
			Active marketing is vital, as users must understand what the quality label implies; information must be made actively available to all interested parties. Investments in marketing to create and maintain an image may be huge.			

Figure 64 Standards based partial scenario 3

The reasons for the subsequent inclusion or exclusion of each individual element are discussed in the following section.

Type of verification scheme

Voluntary scheme

Considered.

Mandatory scheme

Not considered appropriate within this partial scenario.

Mixed scheme

Not considered appropriate within this partial scenario.

Result

Quality label

The quality label in this scenario indicates that the website or platform follows good practices, codes or conduct and/or guidelines that make it reliable for the market. Formal standardisation process is not required, although clear guidelines and requirements are essential.

Certification

Not considered applicable within this partial scenario.

Involvement of standardisation entities

International entities

Not essential, but their experience can be exploited, if required.

National entities

Not essential, but their experience can be exploited, if required.

STEP 5: Definition of the Reference Scenarios

A Reference Scenario provides a concrete characterisation of all the themes (eight as indicated above) that are needed to build a compliance verification mechanism. Following the process designed, a Reference Scenario is composed of one partial scenario of each type.

The combination of all partial scenarios is shown in the table below. Again through a process of consistency, those combinations which are though to be most practicable are highlighted. In addition, they have been classified from "light" to "heavy" approaches, with respect to their complexity for implementation. The individual elements of the partial scenarios have already been discussed in the previous sections.

The approach taken to combining the different partial scenarios is similar to selecting / eliminating elements, as discussed in the previous section. The different partial scenarios are compared amongst each other, and again, any illogical combinations and improbable groupings are ignored.

In general, one standards partial scenario is applicable for each of the technical scenarios. In the case of the financial/organisational partial scenarios, many of the aspects of the two financial/organisational partial scenarios are similar, and both are therefore applicable in all the Reference Scenarios; the selection of one financial/organisational partial scenario over the other will depend on the resources that may be available at the time, and the likelihood of redefining the current role of an existing European body in order to encompass the new executive functions for compliance verification.

	Partial Standards scenario 1	Partial Standards scenario 2	Partial Standards scenario 3	Partial Financial organisational scenario 1	Partial Financial organisational scenario 2	Complexity for implementation
Partial Technical scenario 1			✓	✓	✓	"Light" approach
Partial Technical scenario 2		✓		✓	✓	"Heavy" approach
Partial Technical scenario 3	✓			✓	✓	"Medium" approach

Table 51 Combinations of partial scenarios resulting in Reference Scenarios

The resultant Reference Scenarios from the above matrix are:

Reference Scenario 1: TPS1, SPS3, FOPS1 & FOPS2

Reference Scenario 2: TPS2, SPS2, FOPS1 & FOPS2

Reference Scenario 3: TPS3, SPS1, FOPS1 & FOPS2

The individual characteristics and distinguishing attributes of each of the Reference Scenarios are discussed in the main text.

12.10 Annex X: Hypotheses

Theme	Variables	Hypothesis 1	Hypothesis 2	Hypothesis 3	Hypothesis 4	Hypothesis 5	Hypothesis 6	Hypothesis 7
Compliance verification of product	Scope	Verification carried out on whole system, only once	Verification carried out on whole system, at various stages during its lifecycles	Verification carried out once on all system modules, as each is integrated into the system	Verification carried out on all system modules, as each is integrated into the system, and at various stages during lifecycle	Verification carried out on only some system modules, defined as integral to system interoperability		
	Depth	Performed on all functional criteria and non-functional criteria as defined in Directives, and subsequent standards	Performed on only functional aspects as defined in the Directives, and subsequent or existing standards	Performed on only non-functional aspects as defined by the Directives, and relevant standards	Performed on only selected functional criteria and non-functional criteria based on importance to system functionality			
	Moment	Verification performed at specification stage, based on requirements	Verification performed at design stage, based on specifications	Verification performed at development stage, based on design parameters	Verification performed at testing stage, based on test quality plan	Verification performed at implementation stage, based on functionality requirements	Verification performed at monitoring and operation stage, based on operational requirements	Verification performed at all stages
Existing European entity	Non profit organisation	No existing non-profit organisation currently carries out research or coordination in this area	Most Non-profit organisations have limited resources, and may not be able to attract sufficient experienced employees to carry out the work	Developing the needed experience may be difficult for non-profit organisation, due to financial and administrative constraints	Entity must work with all national bodies to create mutual agreements. Non-profit organisation would be seen as independent from possible negative financial influences	Non-profit organisations recognised for work with certification, such as a standard body could encourage the development of standards and certification processes	Non-profit standards organisations must be independent of compliance verification processes, and are not suitable as coordination bodies	
	Existing EC entity	A lack of public confidence in certain countries of central governments may influence effectivity of EC entity	Counteracting corruption and lack of transparency in old national entities is more feasible through a dedicated EC entity than private or non-profit organisation	Corresponding DG may not wish to lose influence by losing existing entity as independent agency	Existing entity may need complete infrastructural rehaul to create necessary entity, this may be just as costly□	Guaranteed solid financial backing required and to ensure permanency and continuity, and give impression of significant venture by EC	Infrastructure already exists, leading to more fluent assumption of entity's roles	
	Existing Research Institute	Public funding would be necessary for research institute to initiate and continue its work, as role probably not profit generating	Many institutes are already involved in research work for public administration, and have profound knowledge of needs and restrictions of public procurement	Should be orientated towards, or be prepared to undertake, standards development and application	Research Institute will have built up reputation, having knowledge and experience to back up recommendations made wrt compliance and standards	Knowledge already gained by entity will help to ensure swift implementation of verification procedures in all member states	Opportunity to enter into rapidly growing market would make option very attractive for private Reseach Institute, whose influence would reach highest levels of European government	Many institutes already have profound knowledge of innovation and current technological limitations, which would bring much needed experience to area of e-procurement
	Existing European Institute	Research Institute has added-value by being part of other research networks and working in hand with other institutions	Research Institute would have the capacity, knowledge and experience to organise and administer a complex compliance verification framework in Europe	Research institute could be extended to include other areas such as investigation into standards, compliance, management of public procurement, technical research.	Research Institute may be seen as too academic or intellectual to carry out mandatory compliance "enforcement"	Research Institutes may not be the most appropriate body to organise the management and administration of the overall framework.	European Institute may be seen as more independent of any one country's influence, and more orientated towards European harmonisation	
	Existing EC program	E-procurement entails huge investment by national governments, they may not want outside control. A programme may be more acceptable as	Programme would function more in an encouragement role, than legal enforcer. This would be carried out by other bodies.	Programme would not have sufficiently aggressive role, as ultimate coordinator and controller of compliance verification mechanism	Some Programmes, are already working on creating the necessary steps towards harmonisation of certain aspects of e-procurement in member states	Some Programmes will already have created networks and contacts with national bodies and be known in the area of e-procurement		
	Existing EC Initiative	Initialtive may be seen as EC not willing to commit more resources, through creating a dedicated body, thus perhaps detracting from the importance of the issue	Mandatory system could not be controlled by an initiative, as it would not be able to provide sufficient administration and coordination	Initiative may get "bogged down" by member states pushing forward their own national concerns onto the agenda, instead of seeking compromise at a European level	Would not have any "enforcement" role, only incentive role. Compliance verification would have to be carried out by other bodies	Initiative would leave the control in the hands of the member states, thereby removing the impression of obligation, being forced by EC. May be useful where system is voluntary	Certain initiatives already exist related to e-procurement: their experience would be invaluable for creating the necessary framework for a coordinating body: enforcement and certification would be carried out by other bodies	

Theme	Variables	Hypothesis 1	Hypothesis 2	Hypothesis 3	Hypothesis 4	Hypothesis 5	Hypothesis 6	Hypothesis 7
New European entity	Non profit organisation	Non-profit organisation could be most cost efficient agent to manage scheme, paid for by donations from EC and member states	Non-profit organisation may not be able to attract sufficient funding to ensure functioning	Non-profit organisation may have limited resources, and may not be able to attract sufficient experienced employees	Non-profit organisation may not have legal capacity to reinforce any standards applied	Non-profit organisation may be more flexible, as needs less financial organisation and administration	Implementation of non-profit organisation may be easier, as less legal and financial requirements and limitations	Non-profit organisation may be more attractive option as seen as more independent of political or industrial influences
	New EC entity	New entity will require full legal backing in European law, to support its basic functions	New EC entity must have legal capacity to reinforce any standards applied	Project must have long-term perspectives - political foresight important	To have sufficient influence in member states, any new entity must be seen as a permanent investment, with committed costs	Entity would not be affected by past "baggage" that an existing enetity may have to overcome	New entity will be formed streamlined to specific project requirements: no adaptation necessary	Entity will be created with backing of all countries, and would not be seen to be affected by individual national concerns
	New Research Institute	New Research Institute would be seen as EC supporting independent investigative research in Europe	Research Institute could provide added-value by being part of other research networks and working in hand with other institutions	Research institute could be extended to include other areas such as investigation into standards, compliance, management of public procurement, technical research.	Implementing research institute may be prohibitively costly, as contracting experienced employees vital to success and viability	Research Institute may be seen as too academic or intellectual to carry out mandatory compliance "enforcement"	Once established, research institute could generate its own funds from providing contracting services in other areas and disciplines	
	New European Institute	Political will at EC level may not exist to create sufficient backing for new entity	Bureaucracy associated with public European institute may be negative factor	Funding may be more immediately available for EC institute, allowing its rapid implementation, and perhaps more guaranteed in the long term	New entity will be created taking into account cultural and social differences that may affect its activities	New Research Institute would be seen as EC supporting innovative research in Europe	European Institute could work in conjunction with other internation al entities at a similar level, which perhaps a private research institute could not	Research institute could play a didactic role, ensuring dissemination of new ideas related to advanced public administration.
	New EC programme	Programme would not have sufficient weight or influence to function as "enforcing" agent: subcontracting this task would be essential	EC programme would not be to provide sufficient encouragement to Member States to synchronise efforts in process of compliance verification	May be difficult to convince DGs to take on management of programme, as implies much committment of possibly scarce resources	EC programme would not give impression to member states of long term investment by EC in e-procurement: programme could be shut down without completing work required	EC programme implies less implementation and administration costs than other options, as would be linked to existing DG within EC	New programmes could be built upon experience and knowledge of other related programmes	EC programmes are an acknowledged means of providing impetus to new and innovative topics
	New EC Initiative	Initialtive may be seen as EC not willing to commit more resources, thus perhaps detracting from the importance of the issue	Mandatory system could not be controlled by an initiative, as it would not be able to provide sufficient administration and coordination	Initiative may get "bogged down" by member states pushing forward their own national concerns onto the agenda, instead of seeking compromise at a European level	Would not have any "enforcement" role, only incentive role. Compliance verification would have to be carried out by other bodies	Initiative would leave the control in the hands of the member states, thereby removing the impression of obligation, being forced by EC. May be useful where system is voluntary	Possibly the least costly option of all the new entities, as it would not provide any services as such, and would be more of an encouragement to governments	
	Coordination body (temporary or permanent)	Coordination body would promote sense of leadership and administration of the issue at supra-national level without having to enforce standards, and incur related costs	Coordination body could easily be up-graded to full agency level when funding available or sufficient impetus has been generated to warrant creation of permanent controlling body	Coordination body would be most cost effective way to support mandatory verification: "enforcement" however would have to be carried out by other bodies	Coordination only not sufficient: investigation into themes related to e-procurement and standardisation must also be carried out. Coordination body would not have resources for this work	Temporary coordination body would not be able to generate sufficient impetus quickly, as mechanism will probably take much time to conceive	Coordination body's effectiveness may be "hijacked" by other coordination bodies already existing at national level.	
Financed by the EC	Existing Finance mechanisms	Full EC financing will ensure complete transparency of the whole development process, to the benefit of all parties involved.	Management of project will be under EC control, and therefore timeliness of any deliverables should be better controlled	Poor and inconsistent activity management procedures by partners can create problems for EC involvement.	Co-financing being currently used in some e-procurement implementation projects, extending to verification mechanisms should be feasible	Co-financing can assist donor coordination and harmonise delivery, reducing the administrative burden on partner governments. It enables the EC to work alongside other donors without overlap (other donors for e-procurement already exist in some countries)	Cofinancing can provide financial and policy leverage in the achievement of verification mechanism development goals.	EC investment will ensure that all interested national stakeholders will have an opinion
	Administration of mechanism	Direct administration and running of mechanism by EC may be beneficial as poor or inconsistent activity management procedures by partners could otherwise create problems.	Subcontracting could provide an important channel for the administration and coordination of the mechanism, and aid development and transfer of technology and know-how.	Special sub-contracting, where sub-contractors supply particular services (accreditation, standards development etc.) on a more or less permanent basis	Marginal sub-contracting, where infrequent or relatively minor contracts are passed on to sub-contractors	Cost-saving sub-contracting, where costs of sub-contracted services are much lower in sub-contractor firms	Capacity sub-contracting, where due to a lack of resources or particular expertise in particular periods, the entity must sub-contract particular services	Entity uses full capacity sub-contracting, where due to insufficient capacity in the EC entity a percentage of total output is regularly sub-contracted

Theme	Variables	Hypothesis 1	Hypothesis 2	Hypothesis 3	Hypothesis 4	Hypothesis 5	Hypothesis 6	Hypothesis 7
Financed by the Developer	Annual fee	Financial Investment may be very high, depending on requirements of system: annual fee may not be seen favourably	Each installation is different, therefore verification required will vary depending on complexity: more complex, more investment in compliance needed: annual fee may not sufficiently cover costs required	Limited market, as systems too specific to be implemented in private enterprise: annual fee may not bring in sufficient revenue	Committment by EC would attract industry to "new" market. Huge financial market for companies guaranteeing quality service provision. Annual fee could guarantee running cost of mechanism	Some companies are already heavily involved, but investment large, so only big players will enter: annual fee may not be sufficient alone to generate sufficient resources to pay for administration	Annual fee only logical if system mandatory.	
	Fee per service	Industry regularly pays for quality control and certifying products on a fee per service basis	Systems evolving, ensuring constant investment in new advanced technologies and thus development: more services than just compliance verification may be necessary and justifiable (eg training, regular revisions, marketing, standards research, etc)	Service for the developer could include the provision of electronic compliance tools for to the public administration on a charge-for-need basis				
	Fee per verification	Specialisation of market means that product sales may not be sufficient to cover extra costs implied in compliance verification	Primarily a one-off cost, as developer only verifies the basic system once. Other verification would be carried out on a as-needed basis per installation	Developers which include compliance procedures in their product, may have slower "to-market" time compared to those that don't, potentially losing clients	As standards are developed, compliance may become a financial burdon, requiring much effort, for any development procedures	Industry accustomed to supporting concensus and standards among products	Developer may market its products as fully compliant with set requirements in Public Procurement, leading to better sales than competitors	Marketing value high. Quality of company products known to adhere to international standards
Voluntary scheme	Voluntary scheme	The value of the final voluntary quality label attained will be seen as having less credibility than mandatory label	Disorganisation of e-procurement in some member states makes voluntary scheme impossible to coordinate	EC entity will need to invest less, both financially and with respect to effort, as scheme will depend more on developers and national bodies	A voluntary scheme may be later "upgraded" to mandatory, as standards are developed	If compliance of certain aspects is particularly low, cooperation with stakeholders must be sought to understand why and to solve the problem	Peer pressure from developers within an industry to adopt voluntary practice renders these practices in effect mandatory.	Another incentive for voluntary behaviour is a company's desire to pre-empt government regulation by adopting certain practices in advance of a legal rule compelling them to do so.
Mandatory scheme	Mandatory scheme	Legally obligatory mechanisms require considerable time and resources to prepare, not least because their legally binding nature may make them more difficult to negotiate.	Political importance and perceived value of e-procurement varies markedly between states: this will affect adoption of potentially costly mandatory schemes	Mandatory scheme must be based on and supported by standards: lack of relevant standards in any area may reduce efficiency of scheme	Mandatory scheme, and corresponding legal enforcement, needs to change with advances in technological development	Developers implementing mandatory scheme will be guaranteed greater market share through recommendation at European level	Mandatory scheme generates more confidence from users, as they know that the system quality is "guaranteed" under European law	Mandatory scheme would ensure that interoperability is achieved among all national european systems
Mixed scheme	Mixed scheme	The compliance costs in a partially mandatory regime are likely less, since there are fewer legal requirements with which the issuer must comply.	A mixed scheme yields a high level of compliance at lower cost than a wholly mandatory regime.	Mixed approach can be complimentary, with both voluntary and mandatory schemes applied to different aspects of the system, or at different stages of development	Mandatory standards can be set for critical aspects, such as security, confidentiality or transparency. Voluntary standards can then be applied to less system critical aspects	Mixed scheme may give impression that scheme will become more strict in the future, and this may act as incentive to become compliant	Voluntary parts will eventually become self-regulating and adopt self-interested compliance regulation on behalf of industry	Although mixed, preference must lie with those developers / products which comply readily with the mandatory aspect

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Internal verification	Same Developer	Many internal compliance mechanisms do not need adjustment of any sort, as they already comply to the highest national standards	Internal mechanisms must be defined and standardised at all stages, through consultation with stakeholders	Very difficult for ad-hoc internal verification procedures to attain mutual recognition	Mutual recognition may be difficult to achieve if internal mechanisms are not based on clearly defined and common methods	The people with the most knowledge of the systems are those involved in the day to day development and implementation - they should be capable of carrying out compliance verification more quickly and efficiently than outside sources	Certain aspects of internal compliance in certain stages of development are admissable, and are in fact more logical than external involvement	Cost in man months may be greater as effort is carried out using internal resources and expertise, which otherwise could be dedicated to other responsibilities
	Independent group	To ensure mutual recognition, a technical file of all internal compliance procedures carried out must be revised by a recognised body, whether internal or external	Such a mechanism is acceptable in those countries where internal verification is carried out against clearly defined national or international standards, by a defined group independent of the development process	Internal compliance audits and internal controls by independent groups are useful and common mechanisms identify potential weaknesses or exposure, and are essential to system streamlining	Internal verification by independent groups will allow each organisation to dedicate the resources at its disposal to verification compliance, and allow developer to concentrate precious resources on development	Member states may be reluctant to release information of results or revisions carried out by internal bodies or processes, particularly if the results highlight insufficiencies or negative data	An independent group provides a far greater sense of honesty and impartiality to the results of the compliance process	An independent group may be composed of experts with a greater range of necessary disciplines than the developer
Electronic verification	Verification tools (simulators, questionnaires…)	Tools simply as an online help for system developers and compliance verifiers, and results are for personal reflection only	Information provided is potentially confidential: Critical aspects such as security and confidentiality of data provided through tools and stored on a server, must be guaranteed	Training may be necessary, depending on capabilities of final user. Online user training may be provided, or courses for public administration may be provided in each member state by contracted bodies	Tools will need different language versions developed, to ensure usability, comprehension and encourage utilisation	Usage, and usability, of tools must be monitored continuously, to analyse their effectivity. Lack of usage must be questioned.	Parts of tools causing misunderstanding or confusion among users must be solved quickly and efficiently. Constant revision of tools is imperative.	Tools designed by external developer, and standards implicit in their design and implementation: therefore their use implies compliance with standards
	Methodologies	Technical adjustment may be necessary depending on the requirements of each stakeholder, and each member state	Methodologies must be used in conjunction with other electronic verification processes, and are not an end in themselves	The complexity of the verification process will have a direct influence on which methodologies may be applied	Methodologies and tools are a valid low cost alternative to data collection for compliance auditing procedures, and should be used in all development stages where feasible.	Methodologies are developed with input from all stakeholders, therefore compliance through their use will be mutually recognised.	Electronic verification methodologies may be a comprehensive resource kit related to compliance verification, and not just a stand-alone validation instrument for a single feature	Harmonised Methodologies may be designed for all aspects of the development process, both at modular level and global system level.
External third party verification	Independent experts	Independent experts may be contracted to verify very specific aspects of any system, thereby giving them a flexibility that other testing procedures may not have	Independent expert may be a more cost-efficient means of applying verification procedures	Independent experts will not be able to certify final product, unless they are recognised as certifying body, or notified body by the member state.	Some member states will not want to accede control of verification to an external body: an independent expert may be a compromise as they can easily work in-house during the whole development process	Experience and know-how of compliance verification mechanisms may be higher with independent expert, than other testing options, and quality of procedure is improved as a result	Independent experts may also be incorporated as part of the development and improvement process of a compliance verification mechanism, as they would be seen as more independent of any external business interestes	
	Accredited test house	Accredited test houses also have conflict resolution procedures integrated into the process. These are essential to the credibility of any compliance verification process	The results of all 3rd party verification procedures must be recognised mutually by all member states: this could be achieved through a mutual agreement between member states	Accredited test houses must conform to ISO standards, and are thus vigilated constantly to ensure quality of testing and accuracy of certification	Accredited test houses exist with respect to accrediting all standards, and a large number of test labs are accredited for different testing procedures and by different accreditation bodies in a large number of sectors	Accredited bodies and accreditation procedures are well accepted by both industry and public administration as a means of ensuring quality of processes and products	Accreditation bodies exist in all countries; these are recognised through mutual agreements signed with other member states and supervised by the European Accreditation Body (EA)	Accreditation and compliance verification is an integral part of all standards application procedures.
	Independent test house	Independent test houses already exist for several fields of activity, and test for compliance to standards	Independent test houses may be more beneficial where the costs outwiegh the final benefits of contracting an external accreditation body, particularly if compliance is voluntary, although the results are not certified	Independent test houses may be used during the early stages of setting up a compliance framework, and later make way to accredited testing labs	Independent test houses may also provide very important training facilities, to encourage clients to carry out their own standards testing during business processes	Independent test houses cannot certify; this process must be carried out by an external certifying body based on the results of the technical file produced. This will create a longer process		
	Notified body	Implications for mutual recognition excellent, as notified body must be an accredited body recognised mutually by all member states	Notified bodies are an accepted procedure of New Approach and Global Approach Directives. Notified bodies already exist in most member states	A notified body carries out the appropriate examinations and tests in order to check the conformity of the product with the applicable requirements, and provides certification	Compliance verification and Certifying procedures of Notified bodies are already clearly defined	Member states are responsible for the notifying and accreditation of notified bodies, and procedures for the declaration and renovation of status are well defined	Notified bodies should, basically, be excluded from the responsibility of market surveillance activities. This is to avoid conflicts of interest.	CE marking, based on standards, is an integral part of the notified body's functions. Notified bodies may also subcontract other more qualified independent bodies if necessary

Theme	Variables	Hypothesis 1	Hypothesis 2	Hypothesis 3	Hypothesis 4	Hypothesis 5	Hypothesis 6	Hypothesis 7
Quality label	Quality label	More flexible than certification, also immediately recognised as representing trust and quality	Regular renovation of label will ensure quality levels sustained over time	Quality labelling must be backed up by solid coordinating and administrative structures, and by credible standards or recommendations, and verification mechanisms	Complaint mechanisms must be integrated into the process; this must be meticulous as complaints will damage quality label image	Active marketing is vital, as users must understand what the quality label implies; information must be made actively available to all interested parties. Investments in marketing to create and maintain an image may be huge.	If development outsourced, and scheme either voluntary or mandatory, incentives for developers to sign up to the quality label scheme are implicit in the standards, and provide positive implications	If development is internal to the public authority, and verification voluntary, there is no incentive to sign up to the quality labelling scheme
Certification	Certification	Certification will not succeed if standards cannot be developed or recommended with respect to e-procurement	Certification implies the creation or adoption of standards; this has many associated costs, including compliance and non-compliance procedures	Cost will be prohibitively high if certification implies the subsequent creation of entire administrative, enforcement and management infrastructure.	Certiified off-the-shelf products minimize need for compliance testing, simplify bid analysis, and reduce procurement document complexity, cost and risk associated with procurement	Buyers of certified products get reliable assurance of conformance to standards, and interoperability	Certification implies that system has undergone rigorous testing to ensure compliance with a set of standards	Certification implies that in the event of non-compliance, faults will be corrected within prescribed timescales.
Using local entities	Governmental e-procurement offices	More acceptable from local point of view to be administered by local body	Political backing will be positive as "control" remains in-house	Increased costs not envisaged as procedures already developed and may be continued	A local entity will be able to communicate more easily with local developers, and consequently monitor progress more efficiently	EC will benefit from not having to organise and coordinate the processes within each country	Political reshuffling may cause entity and role to change between incoming and outgoing governments	Local entity not provided with enough physical and financial capacity to carry out its work
Involvement of standardisation entities	International entities	Standards and verification at European level seen positively as one less responsibility to be organised by national governments	Standards seen as a way to ease technical and legal frustration and onus in organising complex e-procurement systems	Standards seen as way of opening up public procurement markets and increasing trade	Standards that represent an international consensus on the state of the art constitute an important source of technological know-how	The propensity to overregulate for vested national interests or bureaucratic reasons is severely constrained both as to EC directives and at the national level.	Costs will be high as standards development require long process of consensus between governments and much investment of time and effort	International Standardisation most effective weapon against inherent social problems, such as corruption and lack of transparency
	National entities	Some national entities already possess "standards" or recommendations, that may be adopted at the highest level	Severe conflicts in national law wrt. to standards not resolved - delay of implementation of mechanism at national level	Legal regulation regarding e-signatures not resolved: European recommendations not implemented by countries	"Laissez-faire" type attitudes in some European cultures prevents easy adoption and monitoring of standards	Preparing standards requires much technical and organisational effort, and cost; large political input also required	Standards will lower capacity for corruption and increase transparency: may be undesirable by some political entities	Where significant differences emerge between national standards, these can constitute major impediments to trade.