Communities and Local Government

An Analysis of International Digital Strategies:

Why develop a digital inclusion strategy and what should be the focus?

Research Report

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Department for Communities and Local Government

The findings in this report are those of the authors and do not necessarily represent those of the Department for Communities and Local Government.

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Chapter 1

Introduction

This report provides results from the analysis of documents and contact with Digital Inclusion experts in 30 countries undertaken by IECR. Ten countries were selected for in-depth analysis (see Appendices for country reports), e Inclusion activities for 20 additional countries were found in national review documents prepared for the Lisbon Ministerial event in December 2007.

Discussions and analysis have highlighted significant differences in activities and approaches between countries. For example, countries are at different stages of development in their adoption and recognition of a role for digital technologies. Countries like New Zealand and the UK have well established eGovernment regimes and are at the forefront in considering digital inclusion issues. Others such as France (where a Minister of State for the Digital Economy was recently appointed) and Austria are due to announce policies shortly (31 July and autumn 2008 respectively). National administrative structures are influential – federal/decentralised countries such as Australia, Austria, Italy and the United States are 'obliged' to adopt bottom-up approaches and there is little central strategic policymaking. Cultural 'traits' are also evident – France and New Zealand place great emphasis on technology to support national and indigenous culture. Singapore and the United States focus on the use of technology to support economic growth with little national government consideration of inclusion per se. In many countries the full extent of digital inclusion or equality matters has yet to be realised. Many still regard digital inclusion as a matter predominantly concerning the digital divide.

Acknowledging these differences is important because activities (even best practice activities) may not be appropriate in the UK. The UK administrative and cultural context is unique and the focus for UK policies is developing apace. This document is therefore a synthesis from our research of challenges, activities, strategies and initiatives. The strategic approaches adopted by other countries are best encapsulated by five key goals, see below.

Key Policy Goals	Headline Statement
1 Accessibility for all	Accessibility to all technologies for citizens regardless of ability should be a goal
2 Digital equality	High speed minimum standards for home internet access will enable all citizens to benefit equally from future advances in technology
3 Literacy and digital competence	Enhancing basic literacy and technological literacy will improve life chances and facilitate lifelong learning
4 Technology to enhance independence and ageing	The groups that probably have the most to gain from technology are the least connected
5 Technology for inclusion	Simplify the life of users and improve the efficiency of service delivery to all citizens

Chapter 2

Challenges

International analysis identifies challenges that are common across many countries. These provide an important checklist, often of more practical issues, that any digital inclusion strategy should address. Key challenges concern:

1. e Inclusion is not a priority. There is a need to raise the awareness of the benefits of technology. A significant champion or sponsor is required and/or a clear strategy needs to be developed.

2. e Inclusion poses new challenges, but activities must fit with policies for equality in general. For example there is a clear relationship between general literacy and digital literacy.

3. There is a lack of joined up government. Common standards and interoperability are not present in some countries, data-sharing to better service citizen needs is problematical and the status of electronic signatures is unclear.

4. All countries want to enhance the extent, speed or quality of their digital infrastructure.

5. There is a need to make technology products more accessible and affordable. A handful of countries are considering mandatory regulations concerning the accessibility of products and systems.

6. Many countries have a rapidly ageing population.

7. The Internet and many digital technologies enable communication. Most use will be for the good, but a small proportion may be illegal or offensive (for example illegal scams, subversive literature or pornography). Government must be resolute in the belief that their encouragement or financial assistance is justified when there is criticism of their support in the media.

The next two sections provide a synthesis of strategic objectives and opportunities that that have been used in other countries to justify and present strategies.

Chapter 3

The need for a digital inclusion strategy

Unprecedented change offered by new technologies requires coordination and partnership to ensure potential benefits and opportunities are enhanced and shared by all citizens. For example the pace of technological change was thought to be so great in New Zealand that their 2005 strategy was redeveloped in 2008. Singapore has regular reviews to re-evaluate their strategy. Digital equality strategies need to be reviewed regularly to keep pace with the speed of technological change.

A strategy is required to seize and enhance benefits and opportunities and to overcome barriers in the efficient use of technology to serve all citizens.

e Inclusion, the benefits of technology and the extent of the proposed digital inclusion strategy are poorly understood by many groups. There is a need to raise the awareness of opportunities and benefits provided by technology. One role for the strategy will be in raising awareness, demonstrating what is possible and encouraging all stakeholders to seize and enhance the opportunities that can be provided for all citizens. The benefits of technology to enhance many existing policies and initiatives to address inclusion have not been widely recognised. *[addresses Challenges 1and 2]*

Social exclusion is frequently a multifaceted problem that requires joint intervention by many agencies working in partnership. Partnership working poses numerous challenges. A digital inclusion strategy can provide the guidance or leadership to address some of these problems and encourage joined up working. Infrastructure and secure data exchange can be developed to enhance the sharing of information, common interoperability standards and protocols can be developed to facilitate communication and data exchange, electronic signatures and public key certificates can be securely provided from a trustworthy source. *[addresses Challenge 3*]

In most countries stakeholders have become engaged where they have an interest. Commercial stakeholders are keen to become involved if there are potential economic benefits. One role for a strategy is to ensure that in areas where there might be market failure (or limited economic benefits) government can intervene to ensure the benefits of technology spread to all citizens. Two examples illustrate this issue. Firstly, in many countries stakeholders have suggested it is uneconomic to provide connectivity, broadband or high-speed broadband to rural areas. A strategic decision to provide 'universal access' (or minimum standards of access) can empower regulators or encourage bundling solutions to overcome potential market failure. Secondly, some technology products, systems and web pages cannot be used by all citizens. Public and private sectors frequently

err towards a 'one-size-fits-all' solution. Ensuring one size really does fit all citizens or providing additional components to ensure universal usability is usually perceived as more costly, though this is not always the case. One role for a strategy is to mandate the need for accessibility for all citizens. *[addresses Challenges 4 and 5]*

The UK, along with 33 other EU member states, signed up to targets concerning the i2010 programme in Riga in June 2006.

The primary Riga targets are:

- Gaps in internet usage between current average use by the EU population and use by older people, people with disabilities, women, lower education groups, unemployed and 'less-developed' regions should be reduced to a half, from 2005 to 2010.
- Geographical Divides: Significantly reduce regional disparities in internet access across the EU, increase the availability of broadband (coverage) in underserved locations, and aim for broadband coverage to reach at least 90 per cent of the EU population by 2010.
- Inclusive e-Government: Promote and ensure accessibility of all public web sites by 2010. Designing and delivering key services and public service policies in a user centric and inclusive way, using channels, incentives and intermediaries that maximise benefits and convenience for all so that no one is left behind.
- Digital Literacy: Reduce by half by 2010 the digital literacy gap between the EU population and the unemployed, immigrants, people with low education levels, people with disabilities, and elderly, as well as marginalised young people.

The current message from the EC is that generally progress towards the Riga targets is only happening at half the speed necessary to reach them by 2010. Without policy intervention and swift and appropriate action disparities are likely to remain and in some cases widen.[1].

Finally, research commissioned by the European Union[2] and undertaken by a member of the IECR team provides an insight into the economic benefits of achieving digital equality. It was estimated that the annual costs of social exclusion in the EU27 is somewhere between €440 billion and €764 billion. Even if e Inclusion policies reduce these costs by only a few per cent it would amount to a saving of tens of billions of Euros. The research also estimated that reaching the goals of a digitally included society could boost economic growth in Europe and increase Europe's GDP by an estimated €127 billion in the next five years.

[1] Riga dashboard http://ec.europa.eu/information_society/activities/e Inclusion/docs/i2010_initiative/ rigadashboard.doc

[2] Codagnone, C (2008) Impact assessment of the communication on the i2010 European initiative on e Inclusion

The study also highlighted that digital inclusion also represents a social and an economic opportunity for people currently at risk of exclusion. e Inclusion is an economic opportunity as well as a social necessity. Many of the European Union's Riga targets are best achieved, and often undertaken with greater impact and efficiency, if ICT for inclusion is an integral part of other mainstream policies, for example in education, innovation, transport, employment.

Chapter 4

Developing and presenting a digital strategy

A common characteristic in many countries developing a digital strategy has been the involvement of public, private, third sectors and citizens in a consultation process. In New Zealand and Canada national summits were held; the two day New Zealand event was attended by more than 540 people. France and Austria are currently undertaking consultative activities in advance of launching digital strategies later this year.

In Singapore public involvement included focus groups and the Express IT! iN2015 competition. The competition encouraged people to submit entries about how they envisaged technology and the national strategy would impact on the way they would live, work, learn and play in 2015.

Our research sought 'insider viewpoints', from local experts about the real issues, problems and missed opportunities that lay behind the many written documents we read. Several commented that there was a vital need to raise awareness of the benefits of technology in addressing exclusion. Some were disappointed at the extent to which debate became bogged down in the traditional area of overcoming the digital divide. The most important thing a UK strategy could do is to raise awareness of the benefits of technology, champion the benefits of technology for inclusion and drive forward an ambitious strategy that makes digital equality a priority.

Singapore provides one of the best examples of a strategy that raises awareness and assists understanding of sophisticated concepts and scenarios. The Singapore *Innovation, Integration, Internationalisation* report demonstrates many complex concepts and relationships concerning the potential outcomes of the National Strategy to foster and engage the diverse needs of all learners in Singapore by 2015.

Chapter 5

Components of a strategy

The remainder of this paper uses the results of international research to highlight the five key goals that encapsulate the diverse objectives adopted in other countries. Some are relatively conventional, others are ambitious and provocative.

The five goals are supported by 50 action areas that have been developed to support the achievement of the goals (abbreviations for the countries where initiatives have been introduced are provided, these lists may not always be comprehensive).

5.1 Accessibility

Accessibility to all technologies for citizens regardless of ability should be a goal

Accessibility largely concerns the strategic need for government or other authoritative organisations to stipulate (and monitor adherence to) standards. Accessibility concerns the ease of use of hard technology (things you can touch) as well as at the interface on computer screens and mobiles. Accessibility for all citizens regardless of ability should be a goal.

Several countries are starting to promote the universal usability of technology. The US Rehabilitation Act (amended by Congress in 1998 – *www.section508.gov*) requires Federal Agencies to make their electronic and information technology accessible to people with disabilities. Section 508 was introduced to eliminate barriers in information technology, to make available new opportunities for people with disabilities and to encourage development of technologies that will help achieve these goals. The US law applies to all Federal Agencies when they develop, procure, maintain, or use electronic and information technology. This requirement has spread beyond the public sector. The US Patent and Trademark Office (*www.tecaccess.net/content/accessibility/winwin.shtml*) strictly enforced Section 508 compliance for new products and it has been suggested this was a critical turning point in ensuring more inclusive technology product development by the private sector.

In Europe Finland, Greece and the Netherlands are promoting 'design for all'. Greece and Finland have established networks of design centres and other organisations to promote design for all. Norway is considering introducing mandatory universal design of ICT for public use by 2019. The Norwegian Ministry of the Environment (2007) defines universal

design as "the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialisation. The universal design strategy is normative, providing a framework for specifying the qualities of products and environments such that these may be used by all members of society on an equal footing.

Design and usability standards also encompass issues about:

- Mandatory regulations for ICT accessibility for government purchasing (USA)
- Design for all networks and centres (FIN, GR, NL, N)
- Promotion of design for all in appropriate higher education courses and amongst industry (N)
- National resource centres demonstrating participation, accessibility and assistive devices (N)

The Web Accessibility Initiative (WAI) develops strategies, guidelines, and resources to help make the Web accessible to people with disabilities. The guidelines are widely regarded as the international standard for Web accessibility. In several countries they were largely unknown and not adopted. In the UK only 37 sites achieved WCAG 1.0 level A accessibility standards compliance (SOCITM, 2008). Austria established a goal of having all public web sites compliant by 2008, Estonia has mandated for 100 per cent compliance by 2010. A growing number of countries believe it is imperative that government and other public organisations should attain a minimum level of WAI accessibility standards by a specific end-date.

Web design and usability standards also encompass issues about:

- Accessibility standards and guidance for web developers (A, BG, CZ, DK, EE, FIN, IRL, I, LT, NL, N, PL, RO, UK)
- (naming and shaming) Portals that monitor compliance of government/all web sites with minimum benchmarking standards (NL, PL)
- 'Best on Web' networks, centres or competitions that test and show-case 'off the shelf' products (DK)

5.2 Addressing the digital divide

High speed minimum standards for home Internet access will enable all citizens to benefit equally from future advances in technology

This goal focuses on digital infrastructure and access to technology. Adequate (high speed) infrastructure will be vital to enhancing the benefits of technology for work, learning,

service delivery and recreation in the future. Many countries have established goals to extend geographical access to broadband or to enhance connection speeds. High speed Internet links to the home will provide the basis for all citizens to share equally the benefits of future advances in technology. Australia has a goal to provide minimum download speeds of 12 Mbps to 98 per cent of homes and businesses. In Singapore a goal of 20Mbps access for 80 per cent of citizens by 2012 has been established.

Due to costs of provision the roll out of infrastructure will never be ubiquitous. The first areas to receive cable were the dense inner-city housing estates. The last to receive broadband have been rural locations, very high speed broadband could be limited to urban locations. Quality of service divides will always exist unless there is intervention. In Italy government has created, in partnership with the private sector, a company to lay down a fibre optic infrastructure throughout the country. In New Zealand 'fibre to the home' was considered too ambitious, instead fibre to a widespread network of local 'nodes' has been targeted. Italy, Slovenia and Turkey are exploring WiMAX as a method of providing access in rural locations.

An ambitious goal for minimum home access speeds for all households in the UK regardless of location by 2015 could be established. Innovation, bundling, regulation and incentives could be developed to support the market to achieve these goals. The goal could be re-visited on a regular basis. The UK is in a highly advantageous position, it is a small densely populated island with a de-regulated market full of many competitive and innovative companies.

Infrastructure could also encompass issues about:

- The return path on set top boxes (UK)
- Roll out of dark fibre and other infrastructure (I, NZ)
- WiMax as an alternative to local loop expansion (I, SI, TKY)
- Support for new infrastructure technologies (I)

There is still much to be done in addressing the more traditional concept of the digital divide. Almost half the households in the UK are not connected and thus unable to receive directly the benefits provided by technology. Addressing the digital divide would also encompass the more traditional issues concerning access to technology for those not currently utilising technology. The countries examined in our study have adopted a wide range of initiatives to address the digital divide. Activities in this area will encompass issues about:

- Public Access Centres (BG, CZ, FIN, H, I, LV, N, PL, P, RO, UK and others)
- Incentives and encouragement to adopt and utilise technology (all countries)
- Grants and loans for everyone, excluded, children or specific groups to purchase technology (FIN, I, LV, P, RO)

- Free laptop for every child (this will provide benefits for parents and grandparents)

The next strategy component addresses skills and competence issues.

5.3 Literacy and digital competence

Enhancing basic literacy and technological literacy will improve life chances and facilitate lifelong learning

Digital literacy is inextricably associated with basic literacy. Every year 100,000 pupils leave school functionally illiterate, there are more than five million functionally illiterate people in the UK (13 per cent of the population aged 16-65). The two areas have been addressed through complementary policies in some countries. Technology can be an incentive for younger people to engage with learning and it provides access for everyone to a huge amount of learning materials. Nervous adults attending internet taster classes often admit that a lack of basic literacy is a reason why they cannot use search engines.

In Austria the eFit initiative brought together all tiers of learning institutions to enhance the development and use of digital learning materials and equipment. The initiative aims to provide eLearning materials for all by 2010. On demand learning materials are also being developed to facilitate lifelong learning in the Czech Republic. Basic literacy and technological literacy provide the skills for all citizens to engage in lifelong learning.

Literacy and digital competence also encompasses issues about:

- National skills strategy (I)
- Lifelong learning goals (BG, CZ, EE, FIN, IRL, LT, NL, N, UK)
- ICT strategy for schools and/or school children (A, D, IRL, NL, N, UK)
- ICT support strategy or policy for teachers, third sector and/or carers (P, RO)
- Awareness and confidence building (A, CZ, EE, FIN, GR, LV, LT, NL, PL, RO, CH, UK)
- Support and training for all or excluded groups (CZ, IRL, LV, LT, NL, UK)
- Online/DVD literacy materials (A, CZ, D, I)
- Online/DVD digital literacy materials (A, CZ, D, I)
- ICT mentors (H, UK)
- Annual contest abut ICT for grandparents and grandchildren (HUN)
- 'Netsafe Now' Once a year event about safety on the internet (DK)

5.4 Technology to enhance independence and ageing

The groups that probably have the most to gain from technology are the least connected

The UK has a rapidly ageing population. Older people are among the least connected in society, and the option exists to do more to encourage them to use technology. In Austria the Seniorkom initiative has provided digital training for more than 20,000 older people. However, a high proportion of older people and the disabled will refuse to adopt technology. It is important that technology is used to ensure they are more included in society. They can be beneficiaries of technology without having to use technology. Many assistive technologies have been developed to enable the elderly and disabled to live more easily. Indeed, the EU recently announced 600 million Euro funding for an 'Ageing well' initiative.

One of the areas where technology can be most beneficial for older people, the disabled and other excluded groups is in helping them to maintain independence. However, an independent person can still be lonely and isolated. Technology can also be useful to overcome their isolation and lack of social contact or to simply give them a greater choice of interests and leisure pursuits in their home.

Using technology to address independence and isolation would encompass issues about:

- Support and/or funding for the development of assistive technologies
- Establishment of interoperability/compatibility standards for assistive living technologies
- National resource centres and demonstration initiatives and centres on ambient assisted living (I, NL, SI)
- Centres of excellence for inclusive technologies for older people (I)
- Entertainment and communications portal for older people (I, NL, PL, P, RO, S)
- Development of online activities for the University of the 3rd Age (AUS, CZ)

Additional support to provide older and disabled people with basic digital literacy can also be required in some cases. These initiatives will be similar to those in the digital competence section.

- Awareness and confidence building (A, CZ, EE, FIN, GR, LV, LT, NL, PL, RO, CH, UK)
- 'Connected not excluded' initiative to reduce ICT anxieties for older people (D)
- Development and support for voluntary organisations assisting older people to use ICT (POL)
- Support and training (A, BG, CZ, DK, FIN, I, LT, N, P, S, UK)

- Online/DVD digital literacy materials
- ICT mentors (H, UK)
- Annual contest abut ICT for grandparents and grandchildren (H)
- 'Netsafe Now' Once a year event about safety on the internet (DK)

5.5 Technology for inclusion

Simplify the life of users and improve the efficiency of service delivery to all citizens

Technology has the ability to support service delivery in the back office and at the interface with citizens. Social exclusion is frequently a multifaceted problem that requires joint intervention by many agencies working in partnership. Partnership working poses numerous practical and administrative challenges. Technology can support joined up working. Infrastructure and secure data exchange can be developed to enhance the sharing of information, common interoperability standards and protocols can be developed to facilitate communication and data exchange, electronic signatures and public key certificates can be securely provided from a trustworthy source. The UK is considerably ahead of many other countries in these areas and new developments, such as the data hub, will enhance this position, but integration to better provide personalised services to all citizens is still in its infancy. However, at the root of better service provision is the need for more information sharing. Data and information are required to better understand the characteristics and needs of excluded groups, to better target services to meet their needs and to better monitor that intervention and the services have been successful in enhancing inclusion.

Data protection and data security are hot topics in many countries. Interestingly, France has introduced a secure user identification systems that guarantees data security and enables citizens to control the use of their personal data by public bodies.

Technical and infrastructure issues associated with enhancing services for inclusion will encompass issues about:

- Single portals (AUS, CZ, EE, GR, LV, LT, NL, P, RO, SI, TKY, UK)
- Interoperability goals, XML schema and guidelines(FIN, D, I, N, P, RO, SI, UK
- Style guidelines and WAI compliance (A, BG, CZ, DK, EE, FIN, IRL, I, LT, NL, N, PL, RO, UK)
- Data sharing (EE, F, LT, N, PL, UK)
- Secure data exchange (EE, F, LT, N, NZ, PL, UK)
- Electronic signatures (A, BG, SL)
- Public key infrastructure from trusted sources (EE)

Another key barrier restricting the use of technology to enhance inclusion is a lack of understanding of many groups about the benefits of technology and the benefits it can provide. The UK Digital Inclusion Project portal, developed by IECR, which maps more than 400 initiatives against the 198 Local Area Agreement National Indicators provides many excellent examples of projects that provide better quality services to excluded groups more efficiently. However, most are not widely known and many are operating in isolation when opportunities for joining up could provide considerable benefits to excluded groups. There is a need to highlight the best digital inclusion initiatives more widely in the public and third sectors and to promote the benefits of technology for inclusion.

Promotional issues associated with enhancing the use of technology for inclusion will encompass issues about:

- A champion and/or mandatory requirements
- Promoting the benefits of technology for excluded groups
- Providing more opportunities for practitioners, IT specialists and excluded groups to meet together to discuss common needs

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Appendices

International Country Reports

Austria

Broadband subscribers per 100 inhabitants (Dec 2007)[a]	**19 (OECD avg 20)**
Businesses (>10 emps) using broadband (2006)[b]	**70 per cent (OECD avg 79)**
Average broadband speed (Oct 2007)[c]	**4,920 Mbits/sec (OECD avg 13,700)**

Overview:

The development of information society in Austria is in line with EU average. EGovernment is the only area where Austria is showing clear leadership and it is also the area where strategic coordination between ministries and institutional levels is more developed and effective

There is no fully fledged digital strategy – instead an ICT Master plan "for discussion" (2005), and a i2010 strategy "brochure"(2006) have been published. Coordination is happening largely at operational level or as improved information-sharing between ministries.

However a recent public-private high-profile initiative (the Internet Offensive) aims at ensuring a wider discussion leading to a high-profile Internet Declaration in Autumn 2008.

There is no strong central planning of ICT policy. Instead, there is a strong role of regulatory agency, of regions (Lander), of ICT industry, of civil society.

There are many initiatives relevant for digital equality / e Inclusion: focussing on accessibility, broadband (move from infrastructure to us, e.g. tax incentives to demand), training for senior and eLearning.

Key lessons:

Difficulty in ensuring coordination with no legal mandate for policy-making at federal level. Positive coordination is happening at the operational level.

eGovernment as strategic policy area for overall ICT policy.

Insider viewpoint:

There is a feeling sometimes that too much coordination (advisory board, task force) makes things more difficult rather than easier. In a country such as Austria, with no strong federal competence on ICT policy, coordination mechanisms can become excessive and redundant. Instead of coordination efforts greater progress might be made if there was improvement in information sharing and coordination at the operational level between different Ministries. This could significantly improve the consistency of the different initiatives, avoiding redundancies and duplication.

In terms of designing an ICT strategy, especially towards a wider take-up of broadband and web services, the role of the ICT industry is increasing (as shown by the "Internet Offensive" initiative).

1. Introduction

Austria is leader in Europe in the field of eGovernment, having reached nearly 100 per cent of online services availability. In other fields of Information Society, such as broadband uptake and ICT usage, however, Austria performs only slightly better than EU average.

There is no fully-fledged digital strategy available: many scattered initiatives are brought together by an information "brochure" produced when Austria was President of the EU (2006), and by an ICT Master Plan "for discussion" delivered by the Regulatory Agency in 2005.

Coordination appears to be carried out more "ex post" than "ex ante", and more at the operational level. The main reason for this weak strategic approach lies in the fact that Austria is a federal state and in the ICT policy field few legally binding obligations are in place. Another reason mentioned is that the ICT sector is not very important in the Austrian economy.

The key focus areas of Information Society policies are: e Inclusion; eHealth, eGovernment and broadband.

Austria places eGovernment as a flagship project across different priorities. The importance of modern public services is highlighted in different policies such as broadband, teacher training and e Inclusion.

However in 2008, the high-profile public-private initiative Internet offensive[3] aims to develop a high-impact "Internet Declaration" in Autumn 2008. It has organised a high-profile workshop in order to deliver recommendation in the following fields:

- Education and generations
- Health and society
- Culture and media
- Security and consumer protection
- Economic, infrastructure, e-government
- Science and research

RATIONALE for the i2010 "strategy brochure"

"The fastest-growing branch of economic activity, the ICT sector, is to be used as the central growth engine to achieve the goals in the framework of partnership for growth and employment".

"It is also clear that the information society and the issues connected to this term require coherent and horizontal solution strategies. Coherence, bundling and linking are i2010 Austria's central elements. Only when all the participants act in concert can the great opportunities of the information society be optimally exploited".

2. Governance structures to oversee digital strategy/issues

ICT policy is coordinated by the Federal Chancellery. Governance is quite complex as it is a federal state and many initiatives are designed and carried out by the Regions ("Lander") and there are few legally binding obligations to ensure cooperation between the federal level and the Lander in the field of ICT policy.

In the specific field of eGovernment, coordination across ministries and institutional levels is more visible and effective through the figure of Chief Information Officer.

The Austrian Regulatory Authority (RTR) is involved in the policy-making process as a think-tank, as it has been in charge of preparing the "ICT Master Plan" in 2005. It also is involved in monitoring IS policy (eg on broadband) and in training measures for citizens.

[3] http://www.internetoffensive.at/

The civil society plays a key role in policy implementation. For example, the national initiative on IT training for elderly is entirely implemented through the major Austrian organisations representing the ageing population.

According to the OECD Austria country review (2005) "Policy responsibilities and programme implementation are spread across a large number of ministries and bodies; informal information exchange and programme evaluation practice may be insufficient to identify and meet emerging challenges". However the same OECD suggests that "a paradoxical situation has developed. While many urge an overarching national strategy, most initiatives exhibit successful coordination at the operational level". Also, the interviewee pointed out that information-sharing appears sometimes more effective than strategic coordination, which is cumbersome in the absence of strong central competence in this field.

Perhaps because of the presidency of the EU, held in 2006, information society policy appears to be heavily linked to EU policy priorities, which help to give a consistent unified framework to the separate national initiatives.

3. Strategic goals and areas/themes for action

While there is no fully-fledged strategy, the key priorities are clearly spelled in various policy documents.

Accessibility

Austria puts a strong emphasis on accessibility of public websites. The E-Government Act requires administrations to ensure barrier free access to public websites for all. By 1 January 2008 the design of such online services has to conform to international standards of accessibility.

The Austrian eGovernment strategy also includes the Styleguide 2.0 for online forms. This is a standard layout for all eGovernment forms to facilitate navigation for users and sets minimum requirements, such as conformity with Level A of the WAI guidelines.

Broadband coverage and demand

Universal infrastructure coverage is a continuing challenge because of low population density in rural areas, largely in the mountains. According to the Austrian Regulatory Authority (RTR) about a third of 17,245 settlement points with a total population of around 1 million were not covered for broadband in late 2003.

Austria's Broadband strategy contains both a demand and supply side approach:

- Tax concessions since 2003 with a view to promoting broadband penetration (expense of a new individual broadband subscription inclusive monthly basic fee with a maximum cap for current use is tax deductible);
- Specific incentive scheme for broadband connection of areas not covered so far ("white spots"). By year-end 2007 full coverage of broadband availability is to become a reality in order to create access to modern services; Federal funding of 10 million euros can be used by the regions with similar regional funding to fund up to 20 per cent of investment costs in new broadband infrastructure. Coverage is expected to increase to close to total by 2007;
- Stimulation of "digital competence" of private citizens through actions of the regulatory authority RTR GmbH in close cooperation with the Federal Ministry of Transport, Innovation and Technology;
- The Federal Chancellery has a WLAN initiative in conjunction with e-government. Together with private hot-spot providers, all e-government services with the domain name ìgv.atî have been offered free since March 2003.

Further info: *http://www.bmvit.gv.at/en/telekommunikation/broadband.html*

Internet training for seniors

The umbrella organisation of the Austrian organisation for older people, the Austrian Senior Citizen´s Council, started using public funds for the initiative "Seniorkom.at" in cooperation with Telekom Austria. The aims of the project are to raise the awareness about the digital divide among politicians, representatives of the economy, as well as among young people, to enhance the dialogue and understanding between different generations and to facilitate access to the Internet for older people by providing a series of programmes. 20,000 elderly people in Austria have been familiarised with the computer and the Internet by means of various schooling programmes (trainings, Internet-Platform www.seniorkom.at).

Training

In 2000, the "eFit Strategy" was developed, which brings together schools, further education in universities and technical universities, life-long education and culture, in several initiatives on the spread of ICT skills and increase of ICT literacy as part of the Lisbon Process objectives.

In 2005, eFit entered its next phase called eFit2. It aims to increase the sustainability of the projects under way and ensure the necessary technical infrastructural and pedagogical conditions for the establishment of new media and changed learning cultures in the Austrian educational system. One of the objectives was to increase the future employability

and job opportunities of children and youth through well-founded media literacy and e-literacy, and as a result contribute to a society with high economic productivity,

eFIT has undergone an internal interim assessment with the following results:

- In 2000, 63 per cent of schools had Internet access via ADSL, it is now 100 per cent.
- Between 2001 and 2003, EUR 32.2 million were allocated to further expand the IT infrastructure in private and state-run schools, under the title ìComputer Billionî.
- By December 2004, 470 000 ECDL (European Computer Driving Licence) examinations had been taken, with 112,000 in 2004. Approximately 100 000 pupils and teachers have completed the ECDL within the framework of eFit.
- IT job offers for women doubled in 2003-04 (3,917 participants).
- In accordance with the goals set by European education policy, digitisation projects to set up image data banks have been undertaken in museums since 2001, using the very effective TMS (The Museum System) museum data bank.

The follow-up to eFit2 is now called Future Learning, and it focuses on three priorities: New forms of learning and non-directive learning arrangement; creativity; and mobile computer interface. Among the most relevant initiative we can mention:

- the eContent initiative, building on the successful "Edumoodle" initiative (*http://www.edumoodle.at/moodle/*) aims to support approximately half of the classes with elearning material in all subjects until the end of 2010.
- social software: Learning-communities, Wikis, Weblogs and ePortfolios will be implemented systematically in education and pedagogical used. Pupils therefore get an active role in generating knowledge. As well, teachers are networking and the school becomes a "learning organisation".
- New equipment: Target will be the test and tentative use of new processes and equipment for the learning process. The range starts from a sub notebook PC (like the often mentioned "one laptop per child") to mobile telephones with web access.
- Teachers' training: Target will be the test and tentative use of new processes and equipment for the learning process. The range starts from a sub notebook PC (like the often mentioned "one laptop per child") to mobile telephones with web access.
- Reduction of barriers: For special target groups (isolated children and children in hospitals – project IICC, migration pupils, mentally and physically disabled pupils, but also the design of "free learning locations in full-day schools") the information technology will be a part of the learning process. Barrier free websites and virtual networks have to be further developed (eg www.cisonline.at).

eGovernment

Austria places strategic importance on eGovernment, as a leverage for wider societal transformative adoption of ICT.

With specific regard to digital equality, accessibility has a high priority as described above. Furthermore, legislation on electronic documents is seen as an important factor for inclusiveness: authentic electronic documents are in place which are delivered electronically for those who wish it. The so-called official electronic signature is defined by law and guarantees legal certainty. Thus disabled/ blind/ people, people who cannot leave their homes can take advantage of electronic documents.

Other ICT initiatives, less related to digital equality are:

- Switch to Digital Television broadcasting
- Research and development
- ICT in business
- eHealth

4. Key challenges identified

- Coordination between ministries and between institutional levels
- Low take-up of eGovernment
- e Inclusion, target groups which show multiple problems beside internet access
- Low take-up of broadband

5. Key targets, actions and lead agencies

Theme	Target/objective	Lead agency
Broadband	98% coverage by end 2007 (achieved)	Federal Ministry of Transport, innovation and Technology
e Inclusion/ eSkills	Every school with broadband, provide high-quality eLearning content, increase employment opportunities of children and eliminate inhibitions of older people to access ICT	Federal Ministry of Social Security and Consumer Protection Ministry of Education and Arts
Government	All public websites accessible by January 2008	eGov state secretary (within the Federal Chancellery) CIO Platform Digital Austria

Australia

Broadband subscribers per 100 inhabitants (Dec 2007)[a]	**23 (OECD avg 20)**
Businesses (>10 emps) using broadband (2006)[b]	**82 per cent (OECD avg 79)**
Average broadband speed (Oct 2007)[c]	**12,130 Mbits/sec (OECD avg 13,700)**

Overview:

Australia is a federal country and central government has not been overly active in promoting digital inclusion. The main policy emphases are eGovernment and Broadband roll out. The Department of Education has also been active in developing the digital education revolution programme.

Key lessons:

It has been difficult to achieve co-operation, co-ordination and consultation across separate tiers of government. The implementation of broadband infrastructure across large distances has been problematical. Achieving the 12 Mbps target for 98 per cent of Australian homes and businesses will be challenging.

Insider viewpoint:

The emphasis on e-government and the infrastructure for a national high-speed network once implemented with have major impacts on communications and movement towards a digital economy. The Digital Education Revolution programs have the potential to significantly change the delivery of education and will present challenges to education administrators and teaching staff in implementing and taking advantage of the opportunities presented by these programs.

1. Introduction

As Australia is a federation, responsibility and activities in digital strategy can appear under both Federal and State and Territory governments. The concentration of this report will be at the federal Level. Digital strategy and related activities are undertaken within three main Commonwealth (Federal) government departments:

The Australian Government Information Management Office (AGIMO), Department of Finance and Deregulation

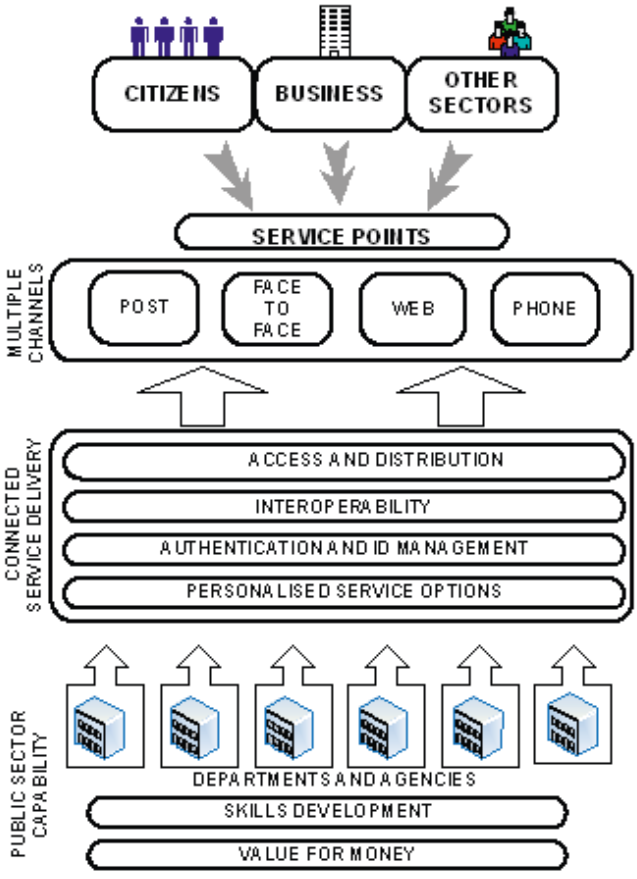
The AGIMO "is working to make Australia a leader in the productive application of information and communication technologies (ICT) to government administration information and services".

The Australian Government's 2006 e-Government Strategy, **Responsive Government: A New Service Agenda** was launched on 30 March 2006. The strategy charts how the Government is building on progress in e-government to date, and how the Government is progressing towards the vision of connected and responsive government by 2010.

The Strategy charts how the Government is building on progress in e-government to date and moving towards the vision of a connected and responsive government by 2010. Activities are in four main areas:

- meeting users' needs
- establishing connected service delivery
- achieving value for money
- enhancing public sector capability.

Figure 1: Connected Government – Client's View



Department of Broadband, Communications and the Digital Economy

"The Department's vision is that Australia will continue to develop world-class communications and information technology that will build on the creativity of our people and the opportunities provided by new technologies, to enrich the economic and social wellbeing of all Australians."

Its major focus at the moment is the Australian Government's commitment to provide up to $4.7 billion and to consider necessary regulatory changes to facilitate the roll-out of a new open access, high-speed, fibre-based broadband network, providing downlink speeds of at least 12 megabits per second to 98 per cent of Australian homes and businesses. A Request for Proposals was released on 11 April 2008 to roll out and operate the broadband network – proposals were due on 25 July 2008.

In addition, the Department is responsible for the Australian Broadband Guarantee to provide all Australian residents with access to affordable metro-comparable broadband services.

Department of Education, Employment and Workplace Relations

The Department is responsible for the **Digital Education Revolution** – a program with the aim "to contribute sustainable and meaningful change to teaching and learning in Australian schools that will prepare students for further education, training, jobs of the future and to live and work in a digital world".

The Australian Government is committing new funding of $1.2 billion over five years.

The major initiative is the National Secondary School Computer Fund; The Hon Julia Gillard MP, Deputy Prime Minister and the Minister for Education, officially announced the list of successful schools of Round One of the National Secondary School Computer Fund on 12 June 2008.

Of the 902 schools that applied for Round One funding, 896 schools were successful. This will see 116,820 computers provided to these schools, improving the computer-to-student ratio from 1:8 or worse to a target ratio of 1:2.

In addition other major initiatives being undertaken include:

- Fibre Connections to Schools
- Online curriculum tools and resources
- Training of new and continuing teachers in the use of ICT
- Development of online learning and access
- Develop support mechanisms for schools in the deployment of ICT

2. Governance structures to oversee digital strategy/issues

The Australian Government Information Management Office (AGIMO)

The Australian Government Information Management Office (AGIMO), in consultation with the Secretaries' Committee on ICT (SCICT), the Business Process Transformation Committee (BPTC) and the Chief Information Officer Committee (CIOC) oversees and coordinates implementation of this strategy and tracks progress towards the 2010 target. Liaison with the states and territories occurs through the Online and Communications Council (OCC) to ensure a fully national approach.

National Broadband Network

Panel of Experts has been set up to assess National Broadband Network proposals. The Panel will be supported by the Department of Broadband, Communications and the Digital Economy, with support from other key departments and specialist advisors in relation to economic regulation and technical, legal and financial and commercial issues.

The Australian Competition and Consumer Commission (ACCC) will provide advice on pricing and competition issues and deliver a written report to the Panel.

Australian Broadband Guarantee

The Australian Broadband Guarantee is overseen by the Department of Broadband, Communications and the Digital Economy.

Digital Education Revolution

The various aspects of the Digital Education Revolution are administered by the Department of Education, Employment and Workplace Relations and are undertaken in consultation with stakeholders in the various state and territory government bodies.

3. Strategic goals and areas/themes for action

National Broadband Network

The scope of the National Broadband Network,

- deliver minimum download speeds of 12 megabits per second to 98 per cent of Australian homes and businesses
- have the network rolled out and made operational progressively over five years using fibre-to-the-node or fibre-to-the-premises technology
- support high quality voice, data and video services including symmetric applications such as high-definition video-conferencing
- earn the Commonwealth a return on its investment

- facilitate competition in the telecommunications sector through open access arrangements that allow all service providers access to the network on equivalent terms
- enable uniform and affordable retail prices to consumers, no matter where they live.

Fibre Connections to Schools

The objective of the FCS is to develop Australian schools as technology-rich learning environments that are underpinned by access to high speed broadband infrastructure that:

- is acquired on a basis that allows it to be used to its maximum capacity
- facilitates collaboration between schools and across schools networks
- contributes to wide policy goals relating to education, social inclusion, workforce participation and productivity.

National Secondary School Computer Fund

The objective of Round One funding was to bring those schools with students in years 9 to 12 with a computer to student ratio of 1:8 or worse to a target ratio of 1:2.

In Round Two, the Government will be seeking to move all secondary schools to the target computer to student ratio of 1:2. By the end of 2008 funds will be available for all schools to move to a target ratio of 1:2.

4. Key challenges identified

Australia is a federation and a continent with its population spread over a very large area. To successfully implement these large infrastructure projects requires:

- Cooperation, coordination and consultation across separate tiers of government.
- Implementation of infrastructure across large distances.

5. Key targets, actions and lead agencies

Department of Education, Employment and Workplace Relations

Expenditure of $1.2 billion over 2007 – 2012 to reduce the computer to student ratio in secondary schools to 1.2.

Department of Broadband, Communications and the Digital Economy

Facilitate the roll out of a national broadband network over five years to deliver minimum download speeds of 12 megabits per second to 98 per cent of Australian homes and businesses.

The Australian Government Information Management Office (AGIMO), Department of Finance and Deregulation

The e-government strategy has vision of a connected and responsive government by 2010. The government will improve its structures and processes so that "In each year from 2006 to 2010, in support of program outcomes, the government will send ten per cent fewer letters – either paper or electronic – to citizens. By 2010, the government will have halved the number of forms that must be filled in. The nature of forms will also change. Rather than numerous static forms, either electronic or paper, dynamic forms will be available from a single entry point where users can automatically enter required details already held by other government agencies, complete their details electronically, and trace the resulting actions online".

Australia Appendix

Actions and lead agencies

Digital Education Revolution – Department of Education, Employment and Workplace Relations

Digital Education Revolution has a budget of $1.2 billion over 2007 – 2012 with an expected allocation of:

2007-08 ($m)	2008-09 ($m)	2009-10 ($m)	2010-11 ($m)	2011-12 ($m)
100	400	300	200	200

National Secondary School Computer Fund

Grants of up to $1 million for schools to assist them to provide for new or upgraded information and communications technology (ICT) for secondary students in years 9 – 12.

The first round of funding announced on 12 June 2008 with 896 secondary schools across Australia receiving funding for 116,820 computers.

Fibre Connections to Schools

A contribution of up to $100 million to support the development of fibre-to-the-premises (FTTP) broadband connections to Australian schools.

Online curriculum tools and resources

$32.6 million over two years to supply students and teachers across Australia with online curriculum tools and resources to support the national curriculum and conferencing facilities for specialist subjects such as languages.

Training of new and continuing teachers in the use of ICT

Working with States and Territories and the Deans of Education to ensure that new and continuing teachers have access to ICT that enables them to enrich student learning.

Development of online learning and access

The development of online learning and access which will enable parents to participate in their child's education.

Develop support mechanisms

$10 million over three years to develop support mechanisms to provide vital assistance for schools in the deployment of ICT provided through the National Secondary School Computer Fund.

Department of Broadband, Communications and the Digital Economy

National Broadband Network

The Australian Government has committed to provide up to $4.7 billion and to consider necessary regulatory changes to facilitate the roll-out of a new open access, high-speed, fibre-based broadband network, providing downlink speeds of at least 12 megabits per second to 98 per cent of Australian homes and businesses.

Request for Proposals released 11 April 2008

Australian Broadband Guarantee

The Australian Broadband Guarantee provides all Australian residents with access to affordable metro-comparable broadband services. The program offers financial assistance (in the form of incentive payments) to registered internet service providers to supply metro-comparable broadband services to residential and small business premises where such services would not otherwise be available.

The Australian Government has allocated $270.7 million over the next four years to fund the Australian Broadband Guarantee.

"Minister to lead international drive for digital economy"

The Minister for Broadband, Communications and the Digital Economy, Senator Stephen Conroy, was vice-chair of the OECD Ministerial Meeting on the Future of the Internet Economy (17–18 June) where he led a panel discussion, Building Confidence. He also addressed the Korea-Australia-New Zealand (KANZ) Broadband Summit (19–20 June).

Canada

Broadband subscribers per 100 inhabitants (Dec 2007)[a]	**27 (OECD avg 20)**
Businesses (>10 emps) using broadband (2006)[b]	**91 per cent (OECD avg 79)**
Average broadband speed (Oct 2007)[c]	**7,800 Mbits/sec (OECD avg 13,700)**

Overview:

Canada was at the forefront of early countries to target widespread digital access and its 'Connecting Canadians' programme was effectively a digital strategy, introduced in 1997 and tasked with making Canada the 'most connected nation in the world'. Cornerstones of this strategy were the Communities Access Program' (CAP) and the Electronic Commerce Strategy. The Connecting Canadians programme has effectively ended and no longer constitutes a strategy for the future.

Currently, the Canadian Government is focussing on the development of a Digital Information Strategy (CDIS). This was initiated by the Libraries and Archives Canada as a result of their concerns over the potential loss of precious information and the need to archive and secure its availability to all Canadians in the future digital age. A National Summit took place in 2006 leading to a draft Canadian Digital Information Strategy (Consultation completed May 2008). This identifies 3 challenges; Strengthening Content, Ensuring Preservation and Maximising Access and Use and recognises that in its current form it still lacks much important detail. Although there does not appear at present to be a formal Government strategy relating to other aspects of Digital Inclusion in Canada, the Digital Information Strategy has itself developed to encompass the broader aspects of digital inclusion such as broadband access.

Today, Canada is one of the most connected countries in the world, yet it can be argued that the Government's apparent refusal to legislate against the commercial dominance of key players in the broadband supply market is having an adverse effect on the accessibility of Canadians to affordable digital services. The influential organisation 'Telecommunities Canada' has called, inter alia, for development of a 'National ICT Strategy' and a new 'Digital Opportunities Strategy'.

Key lessons:

Early Digital Strategies have achieved their short term goals and lost momentum. The direction of current strategy has been shaped by underlying interests of the agency driving the process. Clear strategy has only emerged where stakeholders have a vested interest. Federal structure and adherence to a market driven policy may be inhibiting development of a comprehensive new strategy to replace original ground breaking initiatives established at the beginning of the digital revolution. Federal Structure has led in some cases to fragmented initiation of strategy in different ways in different provinces. The development of a Canadian Strategy references and has been influenced by New Zealand's 2005 Digital Strategy.

Insider viewpoint:

Aside from proposing a national strategy to identify, value and preserve Canada's digital information assets, the Canadian Digital Information Strategy expands on the concept of information as an asset and the importance of maximizing access and use to create information-based economic opportunities. The key assumption that information access, in particular equitable access, supports Canada's societal and economic goals is sound. Broadband continues to be an important piece of the puzzle with respect to democratic, ubiquitous and equitable access to digital information.

CDIS, although recognising many of the broader issues, is primarily focussed on digital information assets and could be viewed as only one part of what could be a much broader digital strategy to address many of the issues raised. For a digital strategy to be successful there is a requirement for a practical infrastructure to reach Canadians and ensure that broad access and use is available. The existing Community Access Project has unique potential to support this approach and if it were to be continued it might be integrated into the strategy as an already existing solution to provide critical access for Canadians.

1. Introduction

Connecting Canadians programme

Introduced in 1997, the goal of the Connecting Canadians program was ***" to make Canada the most connected nation in the world..."*** The Community Access Program (CAP), which became a cornerstone of the federal Connecting Canadians programme, was first introduced in 1995 to ***"help provide Canadians with affordable access to the Internet and the services and tools it provides."*** CAP has become a critical part of the infrastructure of many communities across Canada, evolving into 13 different provincial/ territorial projects. The CAP programme was still alive for fiscal year 2007-8 but it appears funding may not have been renewed for 08/09 following major budget cuts from

$25 million in 2004-5 to approximately $9 million in 2007. Once encompassing 8,800 sites across Canada (Industry Canada, 2005a), the remaining number of active sites is 3786. Other initiatives undertaken within the Connecting Canadians programme included SchoolNet (ended 2007), VolNet (ended 2002), Smart Communities (ended 2004), Canadian Content Online, Candian Governments Online and the development of an Electronic Commerce Strategy.

Canadian Digital Information Strategy (CDIS)

In 2005, Library and Archives Canada (LAC) initiated a dialogue reflecting the range of interests in the digital field, with the goal of framing a Canadian Digital Information Strategy. Initially this was driven by the need to determine the elements of a national strategy and the forms of collaboration and investment that will strengthen and sustain Canada's digital heritage. Through a series of meetings, LAC consulted with over 200 stakeholder organisations from a variety of sectors: publishing and media producers, creators, rights bodies, academics, provincial and federal officials, and memory institutions. The consultations culminated in a National Summit in 2006 at which broad consensus on the elements of a national strategy emerged, which in turn led to the development of a Canadian Digital Information Strategy document drafted in 2007 for review by interested parties. The strategy now covers a broader field than the original digital heritage aspect, encompassing Canada's scientific and government digital information and with references to accessibility and usability for all. The review period is closed; however, the Draft Strategy remains available. All responses to the 2007 Draft Strategy are posted online *http://www.collectionscanada.gc.ca/cdis/012033-1050-e.html*

The Canadian Digital Information Strategy outlines the need for a strategy:

'To date, Canada has lacked a master plan to guide its scientific, cultural, and education communities, businesses, and civil society in the production, use, sharing and preservation of its vast and growing body of digital information. While Canadian organisations and individuals invest substantially in the creation of digital content, it has become apparent... that the management of digital information in Canada is fragmented and inadequate. Our investment in digital content creation is not accompanied by a coherent national strategy for its access and preservation.'

2. Governance structures to oversee digital strategy/issues

The main elements of Digital Strategy in Canada are overseen by two Government Departments:

- **Industry Canada** leads on matters relating to e-commerce, digital access and broadband, including administration of the Communities Access Project.
- **The Strategic Office, Library and Archives Canada** is responsible for development and implementation of the Canadian Digital Information Strategy. Initial consultations were followed by a 'National Summit' which involved 200 stakeholders from a wide range of backgrounds. Library and Archives Canada established a Canadian Digital Information Strategy website within their own Collections Canada website *http://www.collectionscanada.gc.ca/cdis/index-e.html*

3. Strategic goals and areas/themes for action

The Strategy Development Committee has considered digital information to include all ***"digital material that is created, used, shared, accessed and preserved in a digital format"***

The draft Canadian Digital Information Strategy identified three challenges; ***Strengthening Content, Ensuring Preservation and Maximising Access and Use.*** The hope is that it will act as a springboard for discussion and debate and it is recognized that the current document is missing some important detail regarding its many recommended actions, elements such as leadership, partners, costs, and funding sources which will be finalised once buy in from stakeholders has been confirmed following review of the draft.

Stated goals for Canadian Digital Information Strategy include:

- Enable more of Canada's rich cultural heritage, its scientific information and research data, and the body of information emanating from its governments (all of which are fast becoming digital) to be managed, available, known, and used, now and into the future, for societal and economic benefit.
- Clarity of vision for collaborative effort across sectors and jurisdictions and investment from both private and public sectors to make Canada the most information rich and information literate country in the world.
- Identify, value and preserve digital information assets, and use those assets to educate youth, to foster a common cultural identity and pride in the country's accomplishments, and to create new knowledge and new products that advance the country's economy.
- Provide ubiquitous and democratic information access for all Canadians and support the common goal to live in an inclusive and progressive society.

Key assumptions of Digital Information Strategy

Several key assumptions have guided and informed the discussions that led to articulation of this Strategy:

- **The time is now –** All digital information is at risk and there is significant urgency to implement the Strategy in a timely manner. Delay could result in many of the digital assets currently being created being lost, as will economic opportunities arising from improved information asset management.
- **Change is constant –** Digital technologies will continue to change rapidly, requiring a Strategy that can evolve, together with a sustained effort to act upon it.
- **Stakeholders are supportive and engaged –** Overcoming digital information challenges requires collaborative effort and investment within and across jurisdictions and sectors. There is support for an inclusive and distributed strategy to achieve the vision-one that is respectful of jurisdictions, that builds on existing capabilities and ongoing initiatives, and that supports smart partnerships and synergies.
- **Interoperability and open access strategies are key –** The management and flow of information is advanced by widespread adherence to open international standards that foster interoperability, by adoption and sharing of emerging best practices, and by reducing barriers to access.
- **Information access and use supports Canada's societal goals –** In society, equitable information access fosters equal opportunity for learning, creative and commercial enterprise.
- **Information access and use supports Canada's economic goals –** An information-rich society is vital to Canada's competitiveness in knowledge-based industries and to the country's economic growth.
- **Investments must be strategic, leveraged and rewarded –** There are costly dimensions to the challenges of digital information. The Strategy aims to inform and encourage strategic investment by Canadian governments and the private sector.
- **The model must be distributed –** The Strategy advances a networked model, building on strengths and building strength, across the country.
- **Canada can be a world leader –** We have the leadership and collaborative capacity to coalesce our resources, our technological capabilities and our efforts in order to achieve the vision.

4. Key challenges identified

Challenge 1 – Strengthening content

Long-term outcome: Canada's information assets and accumulated knowledge are in digital form.

The Strategy envisions a rich and coherent body of Canadian digital content that reflects the Canadian experience and meets the needs of an increasingly online body of Canadian users. Strengthening Canadian digital content will require a conscious and collaborative effort from all sectors to convert analogue content held in repositories across the country, together with a similar effort to strengthen the creation of enduring high-quality 'born digital' information.

Four key objectives are identified (See Appendix 1 for detail)

- Digitisation of Canada's textual, image, audio and audio-visual heritage on a mass national scale.
- Provision of a conducive environment for the growth of Canadian digital content production.
- Improve digital content production practices in order to serve national objectives in terms of management, long-term preservation, access and use, and rights protection.
- Encourage diversity in digital content production.

The stated goals are:

- To realise the systematic development and management of a vast body of high-quality Canadian cultural, scientific and government digital information for dissemination, access and use.
- To promote the development of strong digital content industries in Canada.

Challenge 2 – Ensuring Preservation

Long-term outcome: Canadians have ongoing access to their country's digital knowledge and information assets, and future generations will have evidence of contemporary intellectual, scientific and creative accomplishments.

The strategy notes that managing this growing body of digital information is an immense challenge and requires a collaborative effort and there is an urgent need to assign accountability; to foster widespread adoption of standards, policies, practices, procedures, and technologies that enable the implementation of strategies; to build institutional capacity; and to ensure there are trained people in place to accomplish the task.

Five key objectives are identified:

- Conduct a national appraisal of digital information priorities for long-term retention and preservation, and accelerate capture accordingly.
- Develop a distributed network of Trusted Digital Repositories (TDRs) with responsibility to capture, manage, preserve and provide access to Canada's digital information assets, covering cultural heritage content of all types, scientific data and research and government information.
- Foster Canadian research and development that advances the goals of better managing, sustaining and providing access to digital information, and contribute research outcomes to the global effort.
- Develop new workplace skills capacity for digital information management and preservation.
- Raise the public and political profile of digital preservation issues.

The stated goal is to:

- Develop a robust national capacity to preserve digital content of enduring cultural and scientific value to Canada and Canadians.

Challenge 3 – Maximising Access and Use

Long-term outcome: Canadians have optimal access to Canadian digital information important to their learning, businesses and work, leisure activities, and cultural identity; and Canadian content is showcased to the world.

This Strategy seeks to foster the widespread availability and diverse use of Canadian digital information resources. There is a need to be sure that the opportunities provided by Canada's high levels of connectivity and Internet use are exploited to society's greatest advantage.

Five key objectives are identified:

- Foster democratic, ubiquitous, and equitable digital information access within our society.
- Enhance visibility of and seamless access to Canadian information within the global digital information environment.
- Provide timely and open online access to Canada's public information and publicly-funded research information and data.
- Effectively communicate, manage and protect a balanced digital copyright regime.
- Increase the funding and dissemination of digital information user research.

The stated goals are to:

- Foster optimal access to Canada's digital information assets to everyone, everywhere, and via all devices.
- Promote access and use of Canadian information within a global information environment.

Further challenges

It is clear that Canada needs to reconcile the desire to allow market forces to regulate the suppliers of digital access technology with the desire to ensure digital accessibility to all elements of Canadian Society.

The Telecommunities Canada panel believes that the *"market will fail. But where it will fail is in delivering real broadband across all of Canada, not just to "high cost" rural and remote areas. The capacity for framing public policies on Internet use and socioeconomic development must not be abandoned to the market (ie to the prime telecommunications carriers)".*

It proposes a National ICT Strategy to enhance the industry's ability to resist change rather than to adapt to it and suggest that: *"Emerging economic lessons from broadband use are making it clear that local access and ownership is a critical driver in economic development. Local access to broadband infrastructure is best delivered through municipalities and local consortia – in all regions, not just rural and remote. A true national ICT strategy that accepts the implications of IP will favour the proliferation of locally owned networks, and not a concentration of national telecommunications infrastructure providers."*

The panel also challenges the Government to formulate a new Digital Opportunities Strategy which *"will capitalise on and extend the existing infrastructure enabled largely by the Community Access Programme and its provincial partners. As part of this strategy, a Digital Opportunities Secretariat should be formed to coordinate cross-departmental measures to ensure full use of Canadians extensive investment and experience in community-based approaches to the uses of the Internet for local development."* [1]

[1] (Source – A representation from Telecommunities Canada with respect to: Order under Section 8 of the Telecommunications Act – Policy Direction to the Canadian Radio-television and Telecommunications Commission. Canada Gazette, Part I, Vol. 140, No. 24 — June 17, 2006.)

5. Key targets, actions and lead agencies

Three outcomes sought:

Three long-term outcomes are expected from the actions proposed in the Canadian Digital Information Strategy:

1. Canada's information assets and accumulated knowledge are in digital form.

2. Canadians have ongoing access to their country's digital knowledge and information assets, and future generations will have evidence of contemporary intellectual, scientific and creative accomplishments.

3. Canadians have optimal access to Canadian digital information important to their learning, business and work, leisure activities, and cultural identity.

The ultimate objective:

Canadian Digital Information Strategy concludes that ***"the challenge of ensuring that there is and continues to be an abundance of Canadian digital content is achievable, but our success will be determined in large measure by how well we choose to collaborate across sectors and jurisdictions, and how often we find ways to learn from each other and adapt consistent models and approaches that contribute to a strong national digital information environment. The effort will benefit from diverse input. And ultimately, all Canadians will benefit from being able to exploit an information-rich environment to contribute to our culture, society and economy."***

Lead Agencies:

The Government Department Library and Archives Canada leads development of the Canadian Digital Information Strategy. The Strategy is still in the early stages of implementation and lead agencies to carry forward the actions outlined in Appendix 1 have yet to be defined.

Canada Appendix

Canadian Digital Information Strategy

14 Objectives and 56 Actions

Objective	Action
Digitise Canada's textual, image, audio and audio-visual heritage on a mass national scale.	Undertake a five to ten year national digitisation project to convert Canada's cultural, scientific and government heritage according to an ambitious set of conversion targets and appropriate national standards.
	Advance the development and implementation of comprehensive provincial digitisation strategies as part of the national project.
	Develop national collaborative approaches for digitisation that support free and open access to digitised content that derives from the Canadian public domain.
	Obtain a new digital copyright regime that will enable digitisation of orphan works by not-for-profit institutions without a motive of gain.
	Promote and develop private-public partnerships to maximize digitisation efforts.
Provide a conducive environment for the growth of Canadian digital content production.	Encourage the development of digital production and delivery, and the exploration of new business models, among industries engaged in content production.
	Encourage communities of practice to develop standards-based and interoperable production practices, processes, infrastructure and tools for digital content production.

Objective	Action
Improve digital content production practices in order to serve national objectives in terms of management, long-term preservation, access and use, and rights protection.	Foster the adoption of recognised, open standards, and the development and sharing of best practice guidance and of standards-based tools, within communities of content creators.
	Build requirements for sound practices into Canadian funding programs that support the production of new digital content. Such practices include: digital information and data management plans; data quality control plans; standards-based metadata; timely online publication of research outcomes; and deposit of data and research outcomes with appropriate repositories.
	Foster approaches across academic research environments to reward researchers for sound practices.
	Provide instruction in academic programs in digital information and data lifecycle management, including preservation, metadata, ethics, copyright and licensing, privacy and security.
	Ensure effective implementation of a system for persistent identification of digital resources.
	Encourage digital content production practices that facilitate conversion to alternative formats when required.
	Develop technical capacity among digital content producers for automated transmission to Trusted Digital Repositories.
	Develop and implement comprehensive e-records strategies that address policy, regulatory instruments, standards, and systems for government information production and management.
Encourage diversity in digital content production.	Target support for digital content production by, and for, diverse communities including Aboriginal, linguistic, cultural, and print disabled communities.
	Investigate and implement international standards, best practices and technological solutions that will enable digital content creation, preservation, access and use by diverse communities.
	Provide tools and services, including technology solutions where necessary, that enable communities to create, preserve, access and use their own digital content.

Objective	Action
Conduct a national appraisal of digital information priorities for long-term retention and preservation, and accelerate capture accordingly.	Define and establish, on a national basis, roles and responsibilities for digital information capture and long-term preservation by broad category/type of information.
	Study the need for redundancy and/or dark archives, and to what type of information this need applies.
	Implement legal deposit at national and, if applicable, provincial levels for specific types of published digital content.
	Implement a national approach to web archiving.
	Determine roles and develop approaches to selectively capture and preserve: informal content such as blogs, podcasts, online music, and user-created videos and photography; scientific and research data; and digital broadcast content.
Develop a distributed network of Trusted Digital Repositories (TDRs) with responsibility to capture, manage, preserve and provide access to Canada's digital information assets, covering cultural heritage content of all types, scientific data and research and government information.	Explore and recommend network models appropriate for each sector (cultural heritage, science and research, and government).
	Create TDRs and data archives on a national scale.
	Develop funding mechanisms to begin to build distributed institutional and technological TDR capacity across Canada with federal and provincial seed funding.
	Develop common services as required so that duplications of effort and costs are minimised.
	Support standardised TDR development through the promotion of common attributes and open standards; provision of guidance and training; and development and sharing of open source tools.
	Build the requirement to archive to a digital repository, and support the costs of that process, into funding programs that produce digital content.
	Establish a national TDR certification process to enable digital content depositors, rights holders, and users to recognise trustworthy digital repositories.

Objective	Action
Foster Canadian R&D that advances the goals of better managing, sustaining and providing access to digital information, and contribute research outcomes to the global effort.	Identify existing strengths and gaps in preservation research in Canada and internationally with a view to developing a collaborative Canadian digital preservation research agenda, including a planned set of digital preservation test bed projects.
	Increase funding available to digital preservation research, and increase the dissemination of research results in both official languages.
Develop new workplace skills capacity for digital information management and preservation.	Develop new competencies and positions such as 'digital curators' who would have stewardship responsibility for digital information, whether in an institutional setting or as part of research teams.
	Develop training and degree programs that will build the skills necessary for digital information curation.
Raise the public and political profile of digital preservation issues.	Develop a Canadian advocacy strategy for digital preservation issues.

Objective	Action
Foster democratic, ubiquitous, and equitable digital information access within our society.	Address gaps in geographic broadband or wireless coverage in order to facilitate digital information access.
	Ensure that Canada's network capacity is sufficient to serve distributed preservation and high rates of popular use of high bandwidth content.
	Implement affordable data download plans to encourage widespread mobile access to the Internet.
	Provide mechanisms through which Canadians engaged in learning, non-profit community-based activities, or private study can access a broad body of available digital content without direct cost to the individual. Mechanisms include free Internet access points through libraries and other community centres, and national and provincial consortial licensing of selected commercial information resources through libraries.
	Develop mechanisms that will enable Canadians with print disabilities to access information in alternative formats and to use adaptive technologies for broad scale information accessibility.
	Increase delivery of information literacy programs within educational systems, libraries, and community groups.
	Consider the need for new models to aggregate and provide access to digital content, taking into account diverse user communities, new developments in technology, and the increasingly participative and 'intelligent' web environment.
Enhance visibility of and seamless access to Canadian information within the global digital information environment.	Develop a strong role for the TDR network as an interoperable access gateway to Canadian digital information.
	Encourage development of specialised aggregation services and advanced research and knowledge discovery tools (eg for text and data mining).
	Pursue means to optimize Canadian content for indexing by major search engines and specialised aggregation services.
	Review policy and licensing practices for Crown copyright with the view to facilitate access, use and re-use of public sector information and content; to unify licensing policy across the public sector; and to remove cost recovery-based barriers to access.

Objective	Action
Provide timely and open online access to Canada's public information and publicly-funded research information and data.	Strengthen online dissemination of government information through an expanded digital Depository Services Program.
	Develop and implement consistent open access policies for research funding agencies and governments to ensure that Canadians have access to publicly funded data and information.
	Develop funding models that cover the cost of publication and data dissemination to ensure that open access benefits both users and rights holders.
	Implement tools and policies that support on-demand translation of unilingual information and that support conversion to alternative formats for those with print disabilities.
Effectively communicate, manage and protect a balanced digital copyright regime.	Foster public understanding of copyright, fair dealing, the public domain and the variety of licencing models available in the information marketplace.
	Develop tools to support rights research and permission requests for the use of copyrighted material.
	Develop tools to assist rights holders in understanding and evaluating options available to exercise their intellectual property rights.
	Contribute to international development efforts on rights metadata and to adoption in Canada of standardized metadata for recording information on copyright status, rights holders, and terms and conditions for use; and promote solutions that attach the metadata to the digital object, while enabling all legally permitted uses of that object.
	Promote easy licencing of in-copyright digital content where appropriate with tools such as web permission forms, micro-payment mechanisms, and pre-approved permissions.
Increase the funding and dissemination of digital information user research.	Identify existing strengths and gaps in user research in Canada and internationally with a view to developing a Canadian research agenda in this area.

Estonia

Broadband subscribers per 100 inhabitants (Dec 2007)[a]	**20 (OECD avg 20)**
Businesses (>10 emps) using broadband (2006)[b]	**94 per cent (OECD avg 79)**
Average broadband speed (Oct 2007)[c]	**Not available (OECD avg 13,700)**

Overview:

Estonia is a small country, but it is amongst the most developed information societies in Europe, with uptake of Internet and broadband above EU average, innovative egovernment solutions such as eID and eVoting, and a successful ICT industry (eg Skype).

Estonia singles out the formation of a knowledge society as one of its strategic goals. Special emphasis is put on the widespread attainment of ICT skills, and on wider reach of broadband in peripheral areas.

Because of the strategic importance of ICT, Estonia has a strong tradition of strategy development in this field. The first digital strategy (Principles of Information Society) was developed in 1998. This strategy was updated in 2004 and again in 2006 with a longer timeframe (up to 2013). The strategy development process is strongly linked to European policies, partly because EU structural funds are a very important source of funding for Information Society policies.

The strategy defines general and long-term strategic "Principles" for an information society. These principles are then adapted to technological and political change through an annual Implementation Plan, defined by integrating the initiatives of each Ministry, which also take care of funding their initiatives.

The implementation plan sets out clearly the actions, the targets, the budget and the administration in charge of the action, as well as the relation with the political priorities of the governing party.

Key lessons:

Definition of long-term "Principles" to ensure consistency across government agencies, across different governments and across time, while maintaining flexibility through annual implementation plans which take into account technological development and political change.

ICT as key priority for economic and social development. ICT skills crucial for both societal inclusion and economic development.

Innovative e-government solutions designed to lead overall development of information society (such as eID and establishing the legal validity of electronic documents).

Insider viewpoint:

The strategy has been useful to ensure consistency between the projects submitted by different ministries. However negotiating with individual ministries remains a challenge, which requires hard work, and there is the risk of becoming "just the secretary" of other ministries.

The most effective coordination tool, besides the strategy itself, is the fact that the budget of the strategy is partly put by the Ministries, and part by RISO – the independent department of the Ministry for Economic Affairs and Communication coordinating the implementation plan.

This central budget (coming from EU Structural Funds) is distributed to the different initiatives in a semi-competitive mode. Furthermore, the individual Ministries' budget has to be negotiated with the Budget ministry through RISO.

1. Introduction

Estonia is one of the most advanced information societies in Europe. Broadband access is above the EU average and its growth is still relatively high. It is home of European success stories in ICT industry such as Skype. Estonia holds the largest functioning public key infrastructure in Europe, based on use of electronic certificates installed in the citizen's Identity Card. Approximately 80 per cent of Estonia's population holds an ID-card and legislation has been brought into force that imposes the obligation to accept digitally signed documents on public sector institutions.

There is no dedicated strategy for e Inclusion, but it is part of a sector-specific strategy, namely of Information Society strategy. In this field, the first strategic document was adopted by the National Parliament back to 1998. Interestingly, the document is not a strategy but **a statement of principles** ("Principles of Estonian Information Policy"), which serves as a basis for policy making to support the rise of the information society. It was then updated as a strategic document (2004-2006).

In 2006, a new strategic document was approved: "Estonian Information Society Strategy 2013", setting out the general framework, objectives and the development of the knowledge based society and economy. The strategy is then implemented on the basis of annual Implementation Plans.

The strategy focuses on three actions:

- the development of citizen-centred and inclusive society
- the development of knowledge-based economy
- the development of citizen-centred, transparent and efficient public administration

Relation with other strategies

The IS strategy is aligned with priorities set out in the Estonian Action Plan for Growth and Jobs 2005-2007 and the Estonian National Development Plan for the Implementation of the EU Structural Funds 2007-2013. In addition, the strategy complements several other sectoral development plans, such as the Estonian Enterprise Policy 2007-2013, the Estonian R&D strategy "Knowledge-Based Estonia 2007-2013", the Strategy for the Preservation of Estonian Digital Heritage 2007-2010. e Inclusion measures are also present in the Lifelong Learning Plan 2005/2008.

Rationale for the ICT strategy:

ICT is seen as strategic to the socio-economic development of Estonia, and planning is needed in order to reap the benefits of ICT for all. Large societal take-up of ICT is necessary to ensure both social cohesion and economic development. "The more citizens, enterprise and the public administration get established in the information society, the more important it becomes, how to employ the new possibilities in a manner that would benefit us all".

Also, the strategy is special for several reasons: "Never before have activities related to the development of the information society in Estonia been planned for such a long period. We have reached a level, where these are not single projects, services and technologies that need to be focused on, but more general and long-term goals rather. When reading the strategy, one might note the less frequent than expected use of the prefix "e". This is because the strategy seeks to contribute to the improvement of the living standard, economy, and public services, not just to some individual phenomena beginning with "e" that have been developed for a chosen few".

2. Governance structures to oversee digital strategy/issues

The Ministry of Economic Affairs and Communications is the main coordinator of activities in Estonia.

In developing the strategy, the ministry involved all ministries, the State Chancellery, as well as organisations representing the third sector and scientific circles.

The strategy is implemented on the basis of annual Information Society Implementation Plans. These implementation plans ensure flexibility, taking into account technological evolution and changing political priorities.

At the beginning of each year, government agencies whose fields of activity and competence are encompassed by the strategy submit to the Ministry of Economic Affairs information about the ICT development works they intend to carry out during the following year, with due respect to the principles set out in the strategy in elaborating organisational, sectoral and regional development plans. The Ministry of Economic Affairs and Communications as well as other related ministries integrate this information in a draft Information Strategy Implementation Plan, discussed according to the State Budget Strategy and then submitted to the Government for approval.

Implementation

The implementation plan is realised in the form of project-based development works in accordance with the principles set out in the Estonian IT Architecture and Interoperability Framework. Projects are financed both from the state budget and the EU structural funds. Expenses related to the activities to be funded from the state budget are planned by the respective implementing agencies, while central and cross-institutional activities are financed via the Structural Funds.

In order to achieve the objectives of the strategy, sectoral expert groups will be established for all three action fields. The expert groups will bring together representatives from respective ministries, the third sector as well as from academic circles. Their task will be to continuously analyse the current situation and evaluate the topicality and significance of objectives set out in the Information Society Strategy. Based on their analysis, expert groups will make reasoned proposals to be considered in the drafting of the priorities and activities of the Information Society Implementation Plan. In addition, the results of their analyses will contribute to the updating of the Information Society strategy itself.

3. Strategic goals and areas/themes for action

We here present all elements in the strategy, and highlight in bold those that are most relevant to digital equality.

The strategy starts by providing an update of the general **"Principles"** set out in 1998 for the first time.

- the development of the information society in Estonia is a strategic choice with public sector leading the way in pursuing its principles;
- **the information society is developed in a coordinated manner in co-operation between the public, private and third sector;**
- the public sector is a smart customer, ensuring that in public procurements as much freedom as possible is left for innovative solutions;
- **the information society is created for all Estonian residents, whereas particular attention is paid to the integration of social groups with special needs, to regional development and to the strengthening of local self-initiative;**
- the consistency of the Estonian language and culture is ensured;
- the interests of both the creators and the users of intellectual property are taken into account;
- the development of the information society must not undermine people's sense of security. The protection of basic rights, personal data and identity must be ensured, and mitigation of non-acceptable risks in information systems must be guaranteed;
- activities aimed at the development of the information society are linked to the R&D efforts in Estonia;
- the information society and the opportunities it brings are taken into account in the elaboration of all sectoral policies;
- trends occurring in the EU and elsewhere in the world are taken into consideration. Furthermore, as an active partner, Estonia shares its experience and learns from others;
- the public sector employs the already existing technological solutions (ie the ID card, the data exchange layer X-Road) and avoids duplication of IT solutions;
- the public sector reorganizes its business processes so as to ensure a one- off collection of data from citizens, entrepreneurs and public bodies; the public sector gives equal treatment to different hardware and software platforms and ensures interoperability of information systems by using open standards;
- the collection of data and the development of ICT-solutions proceed from the principles of re-usability.

The strategies spells out a vision where "Estonia is a constantly developing, inclusive society, **raising the living standard of everybody**. The wide take-up of ICT in all fields of life (ie culture, education, health care, employment, and internal security) allows to improve citizens' quality of life as well as to actively involve them, **risk groups included**, in public life".

In concrete, the strategy focuses on three actions:

1. Citizens: the development of citizen-centred and **inclusive society,** which focuses on broadening access to digital information and improving skills and opportunities for participation

2. Business: the development of knowledge-based economy, which aims to increase the ICT uptake in all economic sectors and the competitiveness of the ICT sector;

3. Public administration: the development of citizen-centred, transparent and efficient public administration, the public sector functions efficiently while collecting, using and maintaining data necessary for ensuring the provision of public goods in a common and systematic manner

With particular regard to Action 1 (Citizens), the implementation plan focuses mainly on providing **broadband access** in remote areas, on providing **digital literacy** and competences, and on ensuring **WAI accessibility** of public websites.

The project Village Road 3 aims to improve the availability of **broadband** internet in scarcely populated areas, where the private sector has no economic interest to invest. By the time of the completion of the programme, the availability of broadband internet in remote areas will be as high as that in densely populated regions, although the speed of broadband might be lower. The target group of the programme includes local government agencies as well as people residing in areas of market failure. In 2007/2008, the implementation plan devotes about 1M Euros in order to make Internet service with at least 256K available throughout Estonia.

The **digital literacy** initiative builds on the work of the Look@World Foundation, established in 2001 by ten leading ICT companies in Estonia with an aim to considerably increase the number of internet users, raising thereby the living standard of Estonians and the competitiveness of the economy. The projects carried out so far include basic computer and internet training for 100,000 people in Estonia, development and implementation of the eSchool environment and opening nearly 500 public internet access points in Estonia. The implementation plan 2007/2008 devotes about 1M Euros to provide training course for different groups of population, with the objective of training an additional 300.000 people (about 25 per cent of total Estonian population).

In addition to training, an **information campaign** is planned in order to raise awareness about information society in general and specific services such as e-services for enterprises, ID card and the citizens' portal.

A specific initiative is dedicated to ensuring that public sector websites respect **WAI (Web Accessibility Initiative) guidelines**. In the elaboration of centrally developed portals, such as www.eesti.ee, www.riik.ee, these guidelines have been followed; however, compliance to WAI standards still needs to be raised in individual public agencies.

Under Action 2 (Business), a specific action is devoted to the reorganisation of general, vocational and higher education so as to ensure conformity of labour skills to the requirements of knowledge-based economy. The objective is to provide workers of all professions with ICT skills and competence in order to cope in the knowledge- based economy. To this end, national curricula will be modernized and electronic study materials, learning environments and e-courses will be developed and taken into use at all educational levels. However, no specific action is envisaged within the 2007/2008 Implementation Plan.

Under Action 3 (Public Administration), the role played by public services in overcoming digital exclusion is clearly spelled out.

First, non-users often lack motivation for accessing the Internet, and survey indicates that eHealth and other social services have a strong potential **to boost motivation** to use the Internet. In the 2007/2008 implementation plan, priority is given to workflow management systems that enable citizens to monitor the status of their procedure (eFile); to electronic health record, digital presciption/registration (eHealth); to the national transport information system (YTRIS); as well as to back office integration systems.

Secondly, the widespread diffusion of **electronic ID cards**, and the legal validity of electronic documents, are seen as strategic tools to **ensure trust** towards e-services and avoid possible privacy infringements. In the Implementation Plan, it is reported that "in order to ensure the sustainability of eEstonia, it is important that the providers of e-services would implement and give preference to secure personal identification solutions and that public trust towards e-environments is maintained. Thus, awareness of security risks as well as wide use of PKI-based electronic identity solutions play a crucial role." It is worth noting that Estonian governmental websites suffered serious cyber-attacks in 2007.

4. Key challenges identified

- "real broadband" Internet in rural areas
- ICT skills and motivation to use online public services
- WAI Accessibility throughout government agencies
- Usage of eID card

5. Key targets, actions and lead agencies

On page 57 is a list of activities included in the Information Society Strategy. Highlighted are the initiatives which are included in the 2007/2008 implementation plan.

The Implementation Plan 2008/2009 has just been approved, but is only available in the Estonian language. There are two new initiatives in the plan, one on fighting cybercrime and one on e-procurement.

Action	Initiative					Responsible authority
ACTION I: Development of citizen-centred and inclusive society						
Target		**2006**	**2007**	**2008**	**2010**	**2013**
Percentage of computer users in households (possession of home PC s in households)		48%	53%	58%	65%	75%
Internet penetration in households		42%	48%	50%	55%	60%
Number of people having attended ICT training				100,000	200,000	300,000
Share of individuals aware of public e services			Survey	30%	50%	75%
Compliance of public sector websites with WAI quality criteria		6%	30%	60%	100%	100%
Broadening technological access to digital information						
.	Development of data communications networks in areas of market failure and ensuring their commercialisation					Ministry of Economic Affairs and Communications, Ministry of Internal Affairs
	Ensuring favourable environment for the development of new telecommunications technologies and technological convergence, including the take-up of digital TV					Ministry of Economic Affairs and Communications
	Bringing public sector websites into compliance with WAI quality criteria					Not mentioned
	Further development of the Citizen portal at www.eesti.ee					Ministry of Economic Affairs and Communications

Action	Initiative	Responsible authority
Improving skills and widening possibilities for participation		
	Continuous upgrading of knowledge and skills of all members of society in order to ensure their ability to cope in the information society	*Ministry of Education and Research, Ministry of Economic Affairs and Communications*
	Development and promotion of internet-based learning environments (eLearning)	Ministry of Education and Research, Ministry of Social Affairs
	Raising public awareness about the information society	Ministry of Economic Affairs and Communications, Ministry of Internal Affairs and other agencies
	Digitisation and digital preservation of cultural heritage, making it available via the internet for citizens, and integrating it with eLearning environments	Ministry of Culture
	Widening opportunities for participation in decision-making processes (eDemocracy)	State Chancellery, Ministry of Justice
	Implementation of flexible work arrangements	Ministry of Social Affairs, Ministry of Internal Affairs, Ministry of Finance
ACTION II Development of knowledge-based economy • ***By 2013, the productivity per employee in Estonian enterprises will account for 75% of the EU average*** • ***By 2013, the share of ICT enterprises in the national GDP will amount to 15%***		
Promotion of ICT uptake by enterprises;		
	Supporting the ICT uptake and use of eBusiness through business and innovation support measures	Ministry of Economic Affairs and Communications, implementing agency: Enterprise Estonia

Action	Initiative	Responsible authority
	Re-organization of general, vocational and higher education so as to ensure conformity of labour skills to the requirements of knowledge-based economy	Ministry of Education and Research
	Development of a common service space for the public, private and third sector	Ministry of Economic Affairs and Communications
	Widening the opportunities of re-using public sector information by the private and third sector	Ministry of Justice, Ministry of the Environment, Ministry of Economic Affairs and Communications
	Ensuring a favorable environment for the development of eBusiness	Ministry of Justice, Ministry of Economic Affairs and Communications and other ministries
Increasing the competitiveness of the Estonian ICT sector		
	Bringing in IT education in accordance with the requirements of the ICT sector	Ministry of Education and Research
	Supporting the internationalization of the Estonian ICT sector	Ministry of Economic Affairs and Communications; implementing agency: Enterprise Estonia
	Facilitating the development of high-quality and innovative information society and media services as well as settling intellectual property related issues	Ministry of Culture, Ministry of Economic Affairs and Communications
	Elaboration and implementation of principles concerning the outsourcing of services necessary for the functioning of the state information system	Ministry of Economic Affairs and Communications
	Increasing the role of the Estonian ICT sector in the development of the country's defensive capacity	Ministry of Defence, Ministry of Economic Affairs and Communications

Action	Initiative	Responsible authority
ACTION III Development of citizen-centred, transparent and efficient public administration • ***By 2013, citizen satisfaction with public sector e-services will reach 80%*** • ***By 2013, satisfaction of businesses with public sector e-services will be 95%***		
1. Improving the efficiency of the public sector		
	Transforming public sector business processes so as to make better use of advantages and possibilities enabled by the application of ICT.	Ministry of Finance, State Chancellery, Ministry of Economic Affairs and Communications, Ministry of Justice, and other ministries.
	Increasing the efficiency of policy formulation through better use of data and increased research about the impact and challenges of the information society.	Ministry of Economic Affairs together with other ministries
	Development of electronic authentication and authorization mechanisms, including participation in cross-border eID (electronic identity) projects.	Ministry of Economic Affairs and Communications, Ministry of Internal Affairs and other ministries
	Development of systems necessary for increasing the efficiency of state and local government agencies	Ministry of Economic Affairs and Communications together with other ministries
2. Provision of user-friendly public sector e-services		
	Integration of the public, private and third sector into one service space to improve the quality of service provision in the public sector.	Ministry of Economic Affairs and Communications together with other ministries
	Identification, development, launch and active implementation of high impact services (eProcurement, eInvoicing etc).	Central and local government agencies
	Development of public sector e-services in different fields of life for citizens, businesses and public sector agencies	Central and local government agencies
	Opening up of Estonian e-services for the citizens of other countries, especially those from the EU member states.	Central and local government agencies

France

Broadband subscribers per 100 inhabitants (Dec 2007)[a]	**24 (OECD avg 20)**
Businesses (>10 emps) using broadband (2006)[b]	**86 per cent (OECD avg 79)**
Average broadband speed (Oct 2007)[c]	**44,160 Mbits/sec (OECD avg 13,700)**

Overview:

Having led Europe into the digital era with Minitel, France lost ground during the rise of the Internet which it was late to espouse, but in recent years the RE/SO 2007 plan and other initiatives have seen it make great strides in digital development, including the completion of the ADELE action plan to enable almost all public administration to be undertaken digitally.

Following the change of Government in 2007 no formal overall national digital strategy currently exists in France, but the newly created Secretary of State for the Digital Economy is at the time of writing engaged in consultations prior to presenting a strategic plan to the Prime Minister by 31 July 2008.

Key lessons:

*A focus on the state leading the way in digital matters has meant a concentration of strategy in the field of electronic administration of public services. The existence of a range of disparate interministerial committees and other government units each with some digital elements, together with changes in governance by successive Prime Minsters have contributed to a lack of a truly coordinated **national** strategy covering **all** digital issues until now.*

Insider viewpoint:

France suffers from a lack of awareness of digital issues amongst its elite. France is also a victim of the diffuse nature of its decision making structures. The 2002 initiative to create an 'Agence pour le Développement de l'Administration Electronique' [Electronic Administration Development Agency] was a very encouraging sign. Sadly this Agency was dissolved in 2005 by the next Prime Minister and replaced by a simple administrative directorate of the Finance Minister. That was seen as a retrograde step in the approach to the challenges

of the Information Society. After a year of transition it is hoped that the plan to be announced in July will be ambitious – in any case there is great expectancy amongst the key players in the digital world in France.

1. Introduction

France led Europe into e-commerce with Minitel over 20 years ago and as such was at the very beginning of digital accessibility in Europe. At the turn of the century the pre-existence of Minitel meant France lagged behind the rest of Europe in developing inclusive Internet-based digital access and e-commerce.

The five year plan **RE/SO 2007** for a *'Digital Republic in an Information Society'* was formulated and presented by the Prime Minister in November 2002 with the objective of **achieving a digitally inclusive society favourable to the development of digital infrastructure, content and services available to everyone, with the state leading the way in making public services available to all digitally**. A major element of this was the **Plan Stratégique de l'Administration Electronique (PSAE)** , a strategic plan for e-Government 2004-2007 formulated by the Electronic Administration Development Agency formed in 2002, key to which was the Government's action plan presented as **ADELE (ADministration ELEctronique)** introduced by the Prime Minister on 9 February 2004 to develop and implement electronic delivery of public services. PSAE and Adele have now been superseded by the **'Schéma Directeur de l'Administration Electronique 2006-2010'**, a strategic plan for electronic administration of public services which adheres to the principles of ADELE.

In 2003 the fourth **Comité Interministériel de la Société de l'Information (CISI)** established, inter alia, the **Délégation aux Usages de l'Internet (DUI)** to ensure France regained perceived lost ground. Priorities included public access to the internet (netpublic), the equipping of the people, promotion of alternative connection technologies (Wifi etc), Internet user safety and training in ICT.

The most recent (fifth) CISI in July 2006 outlined **three key strategic themes** (see 3 below)**.** This was the nearest thing to a national strategy in France following the change of government in 2007 and the end of the RE/SO 2007 plan. The influential '**Commission for the Liberalisation of French Growth**' set up by President Sarkozy called in its report (La Documentation Française – January 2008) for the definition and implementation of a national digital strategy. One of the prime functions of this strategy would be to co-ordinate the many diverse organisations that currently have a hand in digital matters. A Secretary of State for the Development of the Digital Economy, Eric Besson, was appointed in March 2008 and tasked with presenting a national strategic plan for the development of the digital economy by 31 July 2008. At the time of writing he is engaged in consultations to this end.

2. Governance structures to oversee digital strategy/issues

The **Secretary of State for Future Developments, the Evaluation of Public Policy and the Development of the Digital Economy** is a new post created in March 2008. The incumbent, Eric Besson, is responsible for preparing a national strategy and its subsequent implementation.

The **Comité Interministériel de la Société de l'Information (CISI)** [Interministerial Committee for the Digital Information Society] was first established in 1998 and defines broad strategy and priority actions for the integration and development of new technologies. The committee is responsible for technical, social and legal issues relating to all aspects of ICT. The Committee convenes irregularly to review previous initiatives and develop strategy around particular themes.

The **Conseil Stratégique de Technologies de l'Information (CSTI)**, [Strategic Council on Information Technology] 'chaired' by the French Prime Minister and composed of leading entrepreneurs from industry and R&D, is responsible for presenting recommendations to Government concerning 'major orientations' in the field of information technologies.

The **Direction Générale pour la Modernisation de l'Etat (DGME)** [Ministry for the Modernisation of the State] now oversees the Schéma Directeur de l'Administration Electronique 2006-2010, having superseded a number of government agencies with involvement in digital matters in recent years including ADAE which was responsible for the ADELE programme.

A number of other government agencies have also had remits including some digital element (Educnet, Telecom.gouv, Synergies), it remains to be seen if the new strategy currently being formulated will provide for a more unitary responsibility over digital strategy in France, and which existing and/or new agencies will be tasked with its implementation.

3. Strategic goals and areas/themes for action

Fifth Comité Interministériel de la Société de l'Information – July 2006

The outcomes of this Interministerial Committee on the (Digital) Information Society – announced by the French Prime Minister in 2006 – outline three strategic themes:

- Encouraging use of the Internet
- Improving public services by mobilising new (digital) technologies
- Using these new technologies to reinforce the competitiveness of French industry

Strategic Plan for the development of the digital economy

At the time of writing this plan is under development for presentation to the French Prime Minister on 31 July. It will constitute the national digital strategy to 2012. Consultation with players from all aspects of the digital economy is part of the process including suppliers of network access, hardware and software, users, user groups, commercial and voluntary enterprises, content providers, and developers of creative material.

Workshops are being held across the country under four principal themes: **Networks, Content, Usage and Governance**.

The plan focuses on five principal objectives and 27 themes of work.

Five Principal Objectives:

- Enable all French people to access digital networks
- Facilitate the development of new content on the Internet
- Diversify the use of digital technology
- Adapt France's organisation and governance to the digital revolution
- Build the society of tomorrow thanks to 'digital'

27 Themes of Work: Detailed propositions are formulated under 27 themes of work in the document 'Pistes de Travail' upon which the consultation process is based. For each theme a range of actions are proposed and these will be debated during the consultation process prior to finalising the strategy – see France Appendix.

The Consultation Process

A series of workshops under the four principal themes is being held in Paris and around the country together with conferences and an e-forum in order to solicit the views of the population with regard to the propositions in the 27 themes and develop a robust strategy.

Schema Directeur pour l'Administration Electronique 2006-2010

This is effectively a digital strategy for the public services in France, succeeding the ADELE programme of 2002-2007. The latest (gamma) version published in September 2007 is defined as a performance approach built on three principles:

- Simplify the life of the user
- Improve the efficiency of public services
- Value the employee in their work

The strategy is built around 6 thematic 'domains':

Domain	Objective
Integrated Services	Use Information Technology to simplify administration by applying a 'user centred' approach.
Sectoral Services	Enable the alignment/integration of systems across ministerial portfolios
Transverse Functionality	Encourage a modular approach to systems development by identifying standardisable functions and common layouts and solutions enabling reductions in initial and ongoing costs
Support Functions	Provide support functions to enhance use of the systems and mutualisation.
Development of Information Systems	Enable development of applications more appropriate to the needs of the users by internal and external processes to maximise the benefits of technical innovation
Infrastructure Services	Rationalise investment in technical infrastructure by sharing services across departments

4. Key challenges identified

The ADELE action plan identified three key challenges:

- Simplify administrative procedures in order to make life easier for citizens, businesses and local authorities
- Guarantee data security and confidentiality through the use of secure user identification systems and the possibility for citizens to control the use of their personal data by public bodies
- Contribute to the modernisation of public administration and deliver about EUR 5 billion in annual savings by 2007 through productivity gains.

The prospectus for the new digital strategy has identified a range of challenges:

The market for digital technologies in France grew 2.6 per cent in 2007, 30 percent less than the European average and 50 per cent less than that of the USA. This confirms structural weaknesses in the digital economy which pose several challenges:

- Need to increase penetration in terms of digital access to at least the European average.
- Need to increase penetration in terms of digital equipment to at least the European average
- Accelerate development of high capacity broadband infrastructure
- Counter industrial weakness in many sectors of the digital economy
- Improve the contribution of the digital economy to French production

These challenges currently constitute a brake not only on the development of France's digital economy but also on its cultural and social influence in the digital universe. Further challenges that must be addressed by the strategy are:

- To continue to modernise public services
- To create and distribute new services in the fields of culture, education, training, health, and democratic public debate
- Child protection
- Protection of copyright

To address these challenges the President has called on France to make a 'Great Digital Effort'.

5. Key targets, actions and lead agencies

The Department of the new Secretary of State for Development of the Digital Economy will lead on the development and implementation of the forthcoming digital strategy. Key targets and actions are being established at the time of writing through a series of workshops held in Paris and around the country, together with various conferences.

France Appendix

The new digital strategy – 5 objectives, 27 themes and the proposed actions to be debated during consultation

Objective	Theme	Actions for Debate
Enable all French people to access digital networks	Facilitate access to fixed/ mobile High Speed digital services for 100% of the French Population by 2012	A wide range of contributory commercial, legislative and technical measures to increase accessibility to both fixed and mobile high speed broadband
	Offer a new digital audiovisual environment with digital terrestrial television for all by 2012 and support distribution of Hi Definition TV, Personal mobile TV and digital radio	Complete the close down of analogue TV in a planned way
		Increase presence in homes by increased communication and partnerships with suppliers, dedicated assistance for aged and disabled and funding for disadvantaged homes
		Enhance development of Hi Definition TV, Personal mobile TV and digital radio by enabling technical developments and complementary technologies
	Make France one of the European Leaders in high speed broadband	Develop and promote investment in high speed broadband networks, including establishing the right of all tenants to individual network access and the statutory 'fibreing' of all new blocks of flats from 2012
		Ensure competitive conditions that will benefit the consumer
		Enable existing public networks to participate (water, gas etc)
		Develop high speed mobile access (4G, 2.5GHz) and release existing unused frequencies

Objective	Theme	Actions for Debate
	Increase use of digital equipment and services	Develop an integrated platform offering all French people equipment, connection and training at 1 Euro per day
		Facilitate equipment recycling
		Ensure deployment of the 'accompanied internet' facility for low income households
		Facilitate training for socially excluded groups
		Guarantee digital accessibility for the disabled
		Develop public digital access points
	Reduce the 'Overseas Territories Digital Divide '	Reduce taxes on underwater cables
		Launch Digital Terrestrial TV for Overseas Territories
Facilitate the development of new content on the Internet	Improve the distribution of Cinematic, audiovisual and musical content	Improve the protection of online content
		Facilitate distribution in all digital formats of the National Cinematographic Centre's library.
		Prepare for the arrival of personal mobile TV
	Secure the distribution of the written word and the press in the digital economy	Ensure fair treatment of written word (VAT rates, legal issues etc)
		Active involvement in European (Europeana) and national (Gallica) projects to digitise archived documents

Objective	Theme	Actions for Debate
	Ensure the protection of children	Open an online helpline for all parties concerned, parents, children etc)
		Integrate an 'Internet use' module in the civic education programme
		Launch a concerted campaign aimed at all concerned with child protection
		Apply the European Video Game Classification System
		Make *Internetsainscrainte.fr* the definitive site relating to all matters of child protection and the digital environment
		Establish a professional code of ethics for all parties
	Battle against Cybercriminality	Establish a charter of good practice amongst the network suppliers, content providers and authorities
		Double the numbers of detectives trained in cyber crime
		Blocking of child pornography sites
		Create within the context of Europol a European platform for information exchange on cyber crime and illegal sites

Objective	Theme	Actions for Debate
	Keep up with the development of the mobile internet and the 'Internet of Things'	Create a unified European market for users of the mobile internet, RFID technology and the future 'internet of things'
		Accelerate the transition of the network to the IPv6 standard
		Oversee the putting in place at a European level of technologies for the protection of privacy of the individual in the world of chips, mobile internet and RFID.
	Develop the video game sector	Develop a cultural policy for video games
		Improve the financing of the video game in France
		Promote 'Serious Gaming' and develop its educational aspects
	Develop the software sector	Pursue R&D and creation of businesses
		Create training programmes adapted to the needs of the digital world in general and the software industry in particular
		Promote effective financing to facilitate greater risk taking
		Promote competition between free and proprietary software
	Adapt training programmes to digital needs	Adapt initial training to the needs of industry
		Create relevant training pathways throughout university life
		Reinforce the link between research, training and professionals
		Establish a reference of all occupations with a digital aspect

Objective	Theme	Actions for Debate
Diversify the use of digital technology	Reinforce confidence in digital technology	Facilitate the use of certificates and electronic signatures
		Reinforce confidence in the security of public sites and the personal handling of remote processes.
	Develop digital use in school education	Prolong the programme to equip primary schools digitally
		Generalise digital workspaces in colleges and secondary schools, and an objective of zero paper for internal communications in schools by 2010
		Develop the diffusion of digital resources
		Establish a programme of continuous training for teachers, heads and inspectors
	Build the 'Digital University'	Pursue the equipment of establishments with digital infrastructure
		Facilitate student access to digital services
		Develop digital resources and their use in universities
	Deploy digital technologies in the health service	Facilitate access to knowledge about health matters
		A service of personal medical files in digital format to be available to all health professionals
		Improve the quality of care by greater computerisation of the admission systems, hospital records, aids to decision making, information sharing etc.
		Develop systems for support and care of patients at home

Objective	Theme	Actions for Debate
	Develop electronic commerce	Put in place a national information campaign
		Work with the French banking federation towards a secure method of online payment
		Develop a site to help creation of online enterprises
		Propose standard terms and conditions for use by small e-businesses available on a government site
	Encourage teleworking	Develop teleworking in the public sector
		Tax benefits for teleworkers
	Make the State exemplary in its development and application of digital technology	Present a unified perspective of electronic public services
		Provision of public services as close as possible to the user via the internet, dedicated phone numbers, deployment of multipurpose public service desks in rural areas etc.
		Remove remaining non digital elements in the provision of public services by 2012
		Develop new online services
		Ensure accessibility and interoperability of public services
		Develop the effectiveness of public information
		Develop mutualisation of digital services

Objective	Theme	Actions for Debate
	Facilitate digital access to justice	Creation of universal portals for access to judicial information from anywhere in the country
		Video conferencing facilities to enable defendants to be put in direct contact with lawyers etc even when some distance from the nearest court.
		Reduction in use of materials (paper etc) by the interconnecting of police and judicial staff
	Accelerate competitivity and business growth	Train business managers in the challenges and methods of e-business
		Support the digital transformation of businesses
		Make the State a driver for the digital transformation of businesses
Adapt France's organisation and governance to the digital revolution	Combine the various regulatory and consultative organisations with a digital element	Create a National Digital Council with three primary functions: • Strategic orientation through dialogue between key players at the highest level • Development of codes of conduct and good practice in concert with the key players in the sector • Ensure adherence to these codes through the auspices of a magistrate (ombudsman)

Objective	Theme	Actions for Debate
	See the emergence of governance of the internet at European and international level.	Facilitate a better understanding amongst businesses and citizens of the strategic, economic and political issues at the heart of governance of the internet
		Ensure unicity of functionality and internet access across all platforms and especially in the mobile internet and the future internet of things
		Ensure a Europewide understanding of the critical infrastructures for the internet of things and federate the whole of the EU around the French governance structure for the internet of things (Racine ONS)
Build the society of tomorrow thanks to 'digital'	Support the development of research, innovation and business creation	Make ICT a priority of the national policy on research
		Reinforce the links between the academic research community and business in the field of ICT

Objective	Theme	Actions for Debate
	Turn to digital to stimulate the environmental step change in society	Improve materials and production processes
		Assist in the battle against climate change using digital technologies in improving public transport, reducing congestion, improving the efficiency of household products and developing intelligent windows.
		Favour digital processes in reducing our environmental footprint by facilitating increases in teleworking, video conferencing, digital archiving, online collaborative working etc.
	Make digital a tool for building the town of the 21st century	Facilitate the access of all to the digital economy
		Reinforce social links through digital technology
		Application of technology to develop services, especially for the socially disadvantaged
		Develop mobile digital technology to ensure continuous access to networks and to local services

Italy

Broadband subscribers per 100 inhabitants (Dec 2007)[a]	**17 (OECD avg 20)**
Businesses (>10 emps) using broadband (2006)[b]	**70 per cent (OECD avg 79)**
Average broadband speed (Oct 2007)[c]	**13,060 Mbits/sec (OECD avg 13,700)**

Overview:

Italy shows a development of Information Society in line with EU average, and a lack of a long-term strong unitary strategic approach to Information Society policies. The Minister for Public Administration and Innovation is in charge of Information Society, who coordinated the inter-ministerial committee for Information Society.

With regard to digital equality themes, there are many initiatives, scattered between different ministries and institutional levels. Strong emphasis was given to geographical divides, with particular emphasis on overcoming the gap of Southern Italy, also in connection with EU Structural Funds.

Rapid government changes, and a quasi-federal structure, have not helped the consistency and strength of Information Society policies over time.

Key lessons:

Lack of long-term strategy, combined with continuous government change, reduces the impact of policy measures.

There is an important role for national government in ensuring coordination work at the regional level.

Stronger central strategy in areas where government role is less challenged: eGovernment and broadband.

Insider viewpoint:

No strategic priority given to Information Society overall. eGovernment is the most important policy priority of Information Society policy.

Successful ad hoc collaboration of Ministry for Public Administration and Innovation with specific ministries (Education and Health).

1. Introduction

Italy presents a mixed picture on information society developments. Italy is amongst the leading countries in terms of quality and availability of e-Government services but still below the EU average for fixed connectivity, digital skills of the population and use of Internet by households.

The competence for Information Society policy belongs (interestingly enough) to the Minister for Public Administration and Innovation, and Information Society policy is largely dominated by eGovernment.

There is no unitary information society strategy, but rather a collection of different initiatives, carried out at the national and at the regional level. The last strategic document on Information Society was published in 2002 (Guidelines for Information Society policy). A stronger central strategic approach has been used for the two themes where the legitimacy of government intervention is not questioned:

- e-government policy: it is quite telling that the Ministry of Public Administration is also in charge of innovation policy: it appears that innovation policies centre very much around innovation inside public administration.
- broadband infrastructure. Particular attention has been given to geographical e Inclusion, in particular addressing the infrastructural problems of Southern Italy.

In both of these cases, competences were fragmented between different institutional levels, and coordination was necessary to avoid redundancy and fragmentation. In the two cases (broadband and eGovernment) where structured strategic approaches were adopted, the Rationale was to be found in a Double failure: a market failure in delivering the socially-desirable outcomes, and a "fragmented policy failure" of many scattered initiatives carried out by different ministries and different institutional levels.

2. Governance structures to oversee digital strategy/issues

With the new government of 2008, the Ministry in charge of information society and digital divide issues is the Ministry for Public Administration and Innovation. However many different ministries are involved in the specific actions. At the moment governance structures are not clear. There are many different bodies to ensure coordination between ministries and between different administrative levels. In particular, the policy area is coordinated through the Information Society Ministers' Committee, but cooperation often happens on ad hoc specific themes, such as on ICT in schools with the Ministry for

Education. Coordination with regions takes place in the Commission for Technological Innovation in Regions and Local Authorities.

Following the frequent government changes in Italy, the governance structure has changed. It has therefore proved difficult to maintain a long-term ICT strategic approach.

The monitoring of Information Society and digital divide is ensured by private-led initiatives, such as the Broadband Observatory.

3. Strategic goals and areas/themes for action

While there is no self-contained unitary strategy, the key priorities emerging from policy documents are described below.

Broadband infrastructure

The coverage of broadband infrastructure is one of the most important policy priorities, also because southern Italy presents a clear gap. The urge to intervene lies in the fact that market-led infrastructure is perceived to have reached its peak, and that current black spots are unlikely to be reached by market forces alone (permanent digital divide).

The broadband interministerial committee was launched in 2006, and it is composed of the three ministries with relevant competence. Its mission is to coordinate the different national and local initiatives for the development of broadband.

A government company has been created (Infratel) to lay down fibre optics infrastructure, together with telecom operators and regional governments. The regional level of government is the main actor in this infrastructural action.

The objective is to provide broadband access as a factor of competitiveness for companies; and to guarantee to all citizens the right to access online services. In other words, the strategy sets broadband as universal service.

To do so, 5 key objectives are spelled out:

- coordinate local initiatives
- enhance new technologies and competition
- create the enabling conditions for the provision of digital services and content
- stimulate demand and enhance digital literacy
- monitor the implementation

The committee published "Guidlines" for infrastructure interventions by the regions. The rationale for these central guidelines lies in the following critical elements of existing regional and local policies:

- interventions are inhomogeneous both in strategic and operational terms
- some interventions are redundant
- lack of total coverage of population
- lack of mutual learning and best practice learning

The guidelines also include common methods for overcoming the broadband digital divide. The guidelines are dynamic and built on the basis of existing best practices. They spell out shared approaches to:

- the policy-cycle for overcoming digital divide , from problem setting to evaluation
- the measurement of digital divide
- the definition and planning criteria of operational measures, in partnership with telecom operators
- the different execution models (supply led, demand led, etc)
- the different possible technological solutions (including WIMAX)

However it is not clear yet how the new government will pursue these initiatives.

There is no national initiative on ICT for ageing population. Instead, there are many scattered initiatives at the local and regional level, and by NGOs.

Access to ICT

There is no fully-fledged strategy for enlarging ICT access, but rather a series of specific initiatives. The most relevant are:

- Public access centres: Southern regions launched a project for public internet access points, for a total value of 80 M Euros, financed through national funds.
- Subsidising computer purchases in the years 2003-2006, 16 years-old students could receive 170 Euros for purchasing a computer. This option, which included an ECDL course, was used by about 10 per cent of eligible population. A similar loan scheme was launched for university students, and another one for teachers.
- Several ongoing projects to ensure open wifi connection in universities for university students.
- In 2004, RAI, the public broadcasting service, launched a series of TV shows to enhance digital literacy of elderly people.

eGovernment

eGovernment policy in Italy is based on two main documents.

The 2007 Strategy "Towards the National eGovernment System: Strategic Lines" focuses on the sharing of common and consistent objectives between all types of administrations (concept of 'cooperative governance'). The aim is to guarantee full administrative interoperability, pursuant to the principle according to which citizens should perceive the Public Administration as a single entity.

The new strategy identifies two complementary fields of action:

- Computerisation of public services, with user-centricity as its key component
- Modernisation of the public administration's work organisation and processes (back-office), by establishing brand new and re-engineered internal processes.

The priority is to re-launch the administrative reform through a consistent multi-level strategy combining technological innovation, legislative levers, organisational and management changes, as well as the valorisation of the human capital and the measurement and evaluation of results.

The second key document is the 2005 eGovernment code, which mandates public administrations to:

- share relevant information among them by electronic means in order to make life easier for citizens and businesses
- make a minimum set of contents and services available on their websites, including a comprehensive organisation chart, an email directory, a list of eServices, the possibility to download forms, and details about administrative procedures
- communicate by email, namely for the exchange of documents and information
- accept online payments from citizens and businesses (starting in June 2007)
- use the electronic ID card and the National Services Card as standard means of granting access to online services (starting on 1 January 2007).

The Code furthermore grants citizens and businesses with the right to demand and obtain that public administration bodies use electronic means in their day-to-day relationship with users.

With specific regard to digital equality issues, an interesting initiative was launched to promote the diffusion of eGovernment services, with particular regard to small municipalities (below 5000 inh.). Forty million Euros were provided to consortia of small municipalities in order to build Territorial Service Centres (a sort of "shared services" approach).

With regard to inclusive eGovernment, the central government co-financed 25 local projects for delivering government services via digital terrestrial television, which enable the provision of eGovernment services to people not using the Internet.

Accessibility

The 2004 Accessibility Law provides the requirement for accessibility of all public websites, based on the constitutional principle of equality of all citizens. It states that public services and information should be accessible, that disabled people should be provided with adequate IT working instruments and equipment, and that the public procurement of ICT goods and services should always take accessibility into consideration.

4. Key challenges identified

- Infrastructure of peripheral areas, esp. in Southern Italy
- Inclusion of small municipalities in eGovernment services

5. Key targets, actions and lead agencies

THEME	TARGET	LEAD AGENCIES
ICT and ageing	Several local initiatives	Regional and local governments
Broadband	Provide broadband coverage to 90% of the population	Broadband inter-ministerial committee, including Ministry for Communications, for Local Authorities, and for Innovation
ICT access	Subsidies for Computer purchases by students and teachers Training courses (also via TV) Public Internet Access Points in Southern Italy	Ministry for Public Administration and Innovation
eGovernment	Shared Service centres for small municipalities	Ministry for Public Administration and Innovation
Accessibility	All public websites to be accessible	Ministry for Public Administration and Innovation

Italy Appendix

Actions and lead agencies

The Department of Innovations and Technologies policies and projects in place

- Initiatives focused on:
  - the participation for all in the Knowledge-based Society,
  - Enabling access of all citizens to public services,
  - Fighting "ageing" divide,
  - Including small municipalities,
  - Improving multi-channel access to public services,
  - Increasing citizens participation in decisional processes.
- Projects in favor of the ICT diffusion and utilization
  - Fly with Internet (Vola con Internet – PC ai giovani in Italian)
  - Pc for Teachers (PC agli insegnanti in Italian)
  - Pc for Families (PC alle famiglie in Italian)
  - RAI literacy (RAI alfabetizzazione in Italian)
  - Pc for undergraduates (Un cappuccino per un pc in Italian)
  - WiFi@University, to support adoption of WIFI networks and online services
  - Integrate plan for teaching Southern Italy the use of web (Piano integrato per formare il Sud all'uso della rete in Italian)
  - Public Access Points to advanced digital services (Centri di accesso pubblico a servizi digitali avanzati (CAPSDA) in Italian)
  - Social connectivity advanced systems (SAX) (Sistemi avanzati di connettività sociale (SAX) in Italian)
  - Innovation skills for PMI
- Projects to improve the access to education and training:
  - e Inclusion (e Inclusion in Italian)
  - Accessibility Project (Progetto Accessibilità in Italian).

ACTION ON BROADBAND

The objective is to reduce by 2010 the percentage of people who don't use ICT (nowadays 30-40 per cent of Italian population) and to provide broadband access to 90 percent of population at least.

Eolie Wireless

Eolie Wireless is a project of Comune di Lipari which aims to build up a wireless broadband network to connect through a VoIP platform all the offices of local administration, displaced among 6 of the 7 islands which are the Eolie archipelago.

Public Access Centers

All the Regions in the South of Italy have ongoing projects aimed at creating a Public Center with broadband connection for the access of citizens to services. The cost of the projects totals about 80 million euros, mainly financed through the funds for the less developed areas (national funds) (Centri di accesso pubblico a servizi digitali avanzati (CAPSDA) in Italian).

Broadband for everyone and everywhere in Trentino (Province of Trento): 100 million euros to create a broadband network with 700 km of optical fibres and 92 nodes, and a wireless network with 750 sites and 1600 access points.

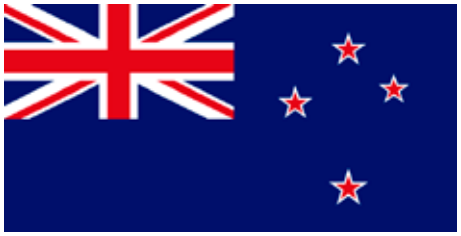
Territorial services centres (CST) addressed to municipalities with fewer than 5000 inhabitants, where the digital divide is high (funds about 40 million euros) to support aggregation of small municipalities.

e-government services on Digital Terrestrial Television (7 million euros to co-fund 25 municipal projects).

An Interministerial Broadband Committee has been created on January 2007 with the goal to grant the complete broadband territorial coverage in 5 years' time.

Minister for Telecommunications and Minister for Defense announced a common initiative to utilise frequencies to increase the broadband territorial coverage through Wi-Max.

New Zealand



Broadband subscribers per 100 inhabitants (Dec 2007)[a]	**18 (OECD avg 20)**
Businesses (>10 emps) using broadband (2006)[b]	**81 per cent (OECD avg 79)**
Average broadband speed (Oct 2007)[c]	**13,060 Mbits/sec (OECD avg 13,700)**

Overview:

New Zealand is the only country in our study to have a digital strategy. The April 2008 document, based on ideas discussed at a national digital summit, identifies four enablers (connection, confidence, content and collaboration) that are underpinned by 34 actions. Sixteen government agencies across government are leading the actions.

The strategy places great emphasis on 'connectivity', particularly broadband. This is probably because the market is relatively small and has only recently been 'opened' to competition. The strategy also places emphasis on retaining and enhancing New Zealand's indigenous Maori culture mainly through 'content' actions. Copyright in digital environments might be relevant in the UK and there appears to be a 2001 EU directive on cyber-crime.

The strategy is well produced and has some neat conceptual ideas, such as the diagram below that encapsulates relatively simply the relationship of the four Cs enablers with the key strategic outcomes, see conceptual diagram overpage.

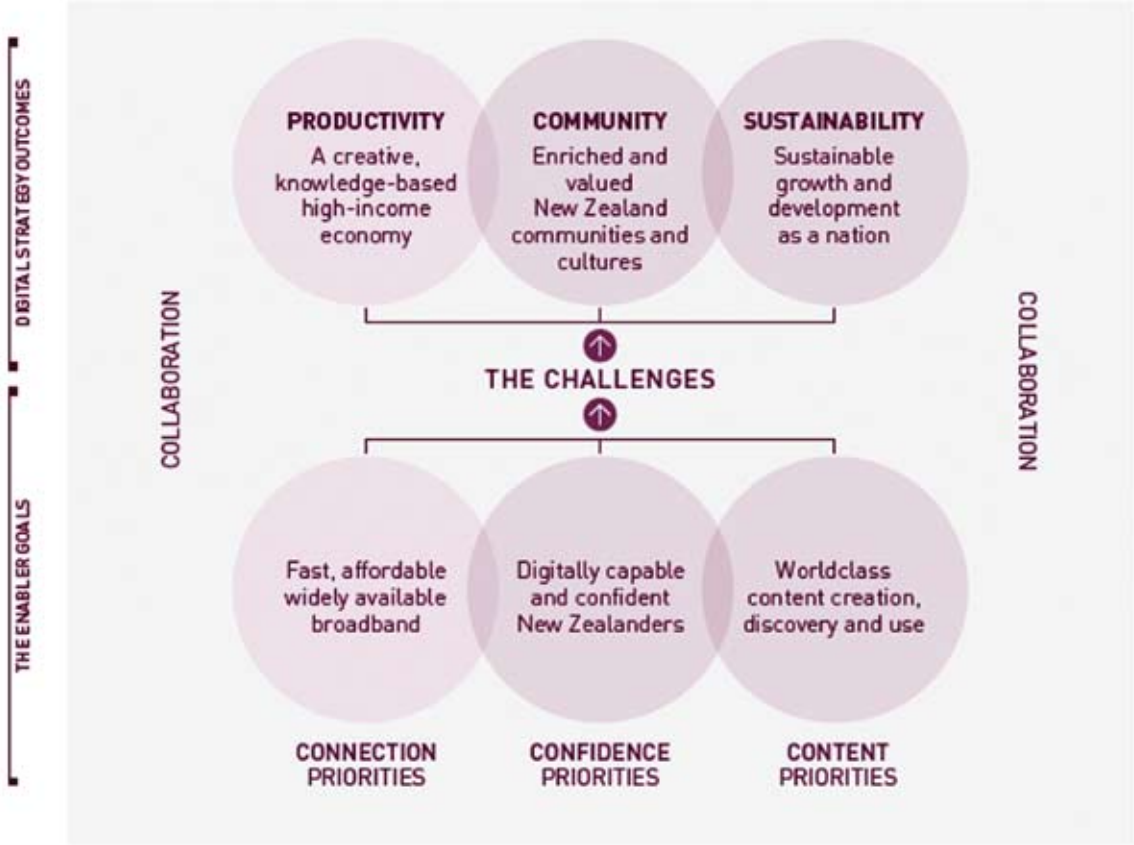
Key lessons:

Summit for consultation. Clear structure with outcomes and enablers identified. Contribution/input from 16 government agencies with lead organisations designated. Emphasis on fast efficient broadband is probably less relevant in the larger UK market.

Insider viewpoint:

The summit attracted a great deal of interest, but it was hard to get the level of debate beyond infrastructure and providing the skills and motivation for everyone to access the Internet. Maori culture issues were a hot topic at the time and

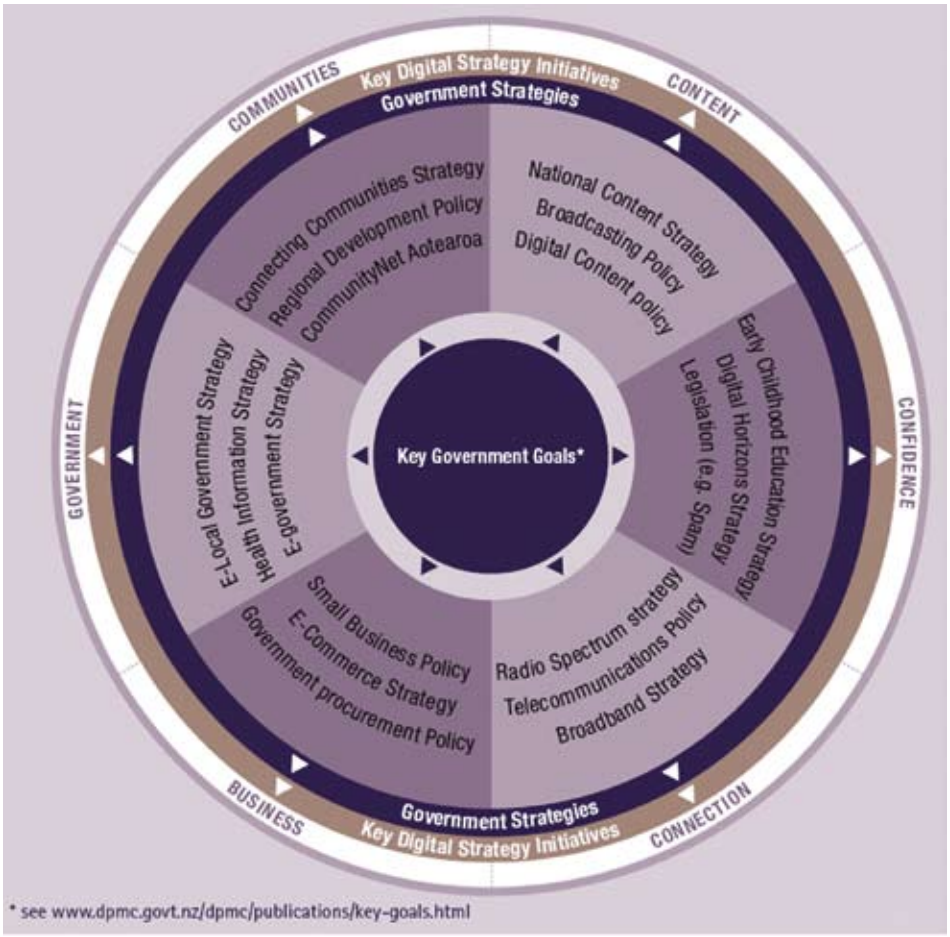
permeated into the strategy to a greater extent than otherwise might have been the case. Health and telecare to provide some people with greater independence were thought to be important but the Health Ministry was not interested and with no support these could not be taken forward. Collaboration and input from the private sector was encouraged, where it was beneficial to them, but they were less enthusiastic about making the large infrastructure investments to provide broadband to rural areas unless there was public sector support.



1. Introduction

New Zealand's 2005 ***Digital Strategy*** document was a five-year action plan to maximise the opportunities that Information and Communication Technologies (ICT) could bring, it set out targets and key actions. Clear links with other government priorities were recognised (see figure above).

The pace of change has been so great that less than three years later, on 14 April 2008, a ***Draft Digital Strategy 2.0*** was published. The strategy builds on the 2005 *Digital Strategy*. To meet the objective of having a 'Strategy of Action owned by all of New Zealand' a digital future summit was held on 28 and 29 November 2007, the strategy draws heavily on outcomes from the summit attended by 540 people.



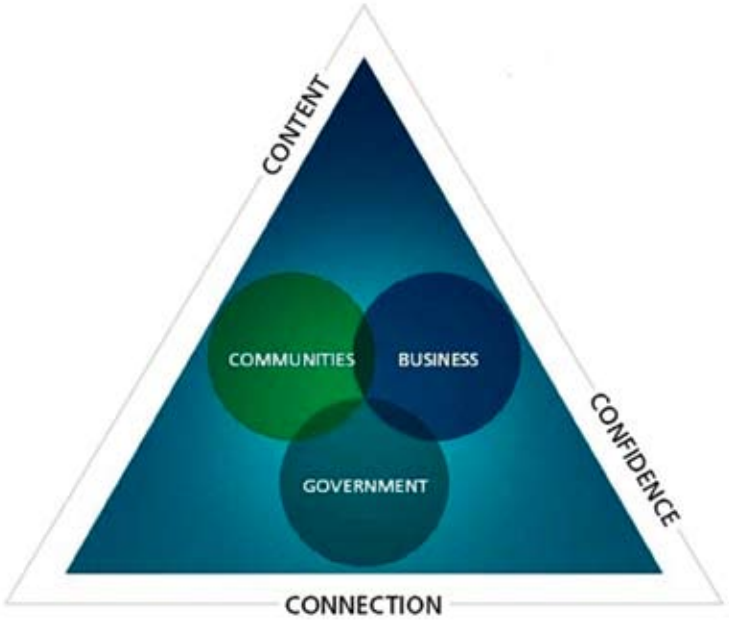
The explanation for developing a strategy was similar in both documents – unprecedented change requires coordination and partnership to harness benefits – "***In this time of rapid and unprecedented technological change, we need to work together to harness it and create a digital future – for all New Zealanders***" (2005 strategy).
"***For the first time the Government is looking seriously at ICT issues as a whole and, more importantly looking at how they affect New Zealand's people, businesses and culture, seeking to identify areas for action and areas for co-ordination***" (2008 draft strategy).

2. Governance structures to oversee digital strategy/issues

A digital strategy Advisory Group, including community and business representatives, was established in 2005 to 'provide oversight of many initiatives and ensure that the various actions proceed in step'. The group regularly reports to David Cunliffe, the Minister for Communications and Information, and other Digital Ministers directly. Cunliffe was the Minister overseeing the development of both strategy documents.

A web site has been established to provide citizens and businesses with information about progress on the strategies and to initiate debate and input, see *http://www.digitalstrategy.govt.nz*

3. Strategic goals and areas/themes for action



The 2005 Digital Strategy identified three enablers, known as the three Cs, for ensuring all New Zealanders can take advantage of their digital future: ***connection***, ***confidence*** and ***content***. The summit affirmed that the three Cs were still the critical enablers. However, the summit also recognised that the agents of change – communities, businesses and government – can no longer be considered in isolation from each other. ***Collaboration*** is the new fourth enabler of the digital strategy.

Connection

The 2008 goal is ***The widespread availability of fast and affordable broadband meeting the needs of New Zealanders***. The 2008 draft states 'bandwidth is now even more important than when the 2005 Digital Strategy was launched' (p16). OECD statistics suggest average broadband speeds and connectivity levels are similar to international averages (see page 1 data). Government's long term goal is fibre-to-the-home (FTTH). However, this is thought to be uneconomic at present, so instead four key infrastructure gaps where investment is required have been identified. These are:

- Fibre-to-the-node infrastructure (FTTN an intermediate step towards FTTH). The goal for this activity is that 80 per cent of users can access broadband connections of at least 20Mbps and 90 per cent can access broadband connections of at least 10Mbps by 2012.
- Open-access urban fibre loops in 15 cities by 2012.
- Rural broadband infrastructure. Goal to improve terrestrial broadband, from 93 per cent to 97 per cent of the population by 2012, with more affordable satellite solutions for remote locations.
- Enhance New Zealand's international connections by connecting an additional international cable by 2012.

Nine clear actions are stipulated, with clear lead bodies (government agencies, see Appendix New Zealand) that will contribute to the achievement of the above goals. Many of the earlier connection goals were facilitated by the rapid passage of the Telecommunications Amendment Act 2006. The Act marked the beginning of a new telecommunications era in New Zealand's environment. Key outcomes were the unbundling of the local loop, the operational separation of Telecom New Zealand and a much stronger role for the Telecommunications Commissioner.

Many of the targets of the 2005 Digital Strategy have been achieved, many of those remaining were considered not ambitious enough in the current environment. These changes were thought to be responsible for increasing New Zealand's performance in OECD broadband adoption benchmarking studies since 2006.

In addition, a Government Shared Network (GSN – similar to the UK hub) was established to provide a platform for high-speed, secure, network-based collaboration between public sector agencies launched in 2006. The Kiwi Advanced Research and Education Network (KAREN) went live in 2006. It provides ultra-high speed networking for all New Zealand tertiary institutions and research organisations.

Confidence

The 2008 goal is to create ***digitally capable and confident New Zealanders transforming our economy, strengthening national identity and enhancing sustainability.*** The 2008 draft states 'digitally capable New Zealanders will lift their economic performance and build more cohesive communities' (p20). *Confidence* has two dimensions capability and security. Capability actions will be coordinated around three priorities:

- Equipping managers with the skills needed to engage with and use ICT to increase productivity and innovation.
- Reducing shortages of skilled ICT practitioners.
- Developing digital literacy and confidence in the workforce and their communities.

Nine clear actions are stipulated that focus on workforce training, secondary school careers development and the development of basic digital literacy in schools, see Appendix 1.

A further set of activities concern actions to improve national and personal digital security, see Appendix New Zealand. Actions focus on:

- Improving New Zealand's cyber-threat detection, reporting and response capabilities.

- A review of New Zealand's ICT security laws in light of developments in digital technology and international treaties, such as the European Convention on Cyber Crime.
- Raising ICT security and safety awareness in businesses and households.

One of the suggested outcomes is the establishment of a national cyber crime centre.

Content

The 2008 draft strategy was greatly influenced by the Digital Content Strategy, launched in 2007. It focused on the value of creating, discovering and using New Zealand-born ***digital content***. The 2008 goal is rather more obscure than the previous two – ***New Zealanders are worldclass at creating, discovering and using digital content to create value, improve their lives and communities, and enable sustainable development.***

The five element framework developed for the ***Content Strategy*** is utilised by the draft strategy to explain why many of the suggested actions are necessary. Actions include switching to digital television in 2012, creation of digital repositories that enable communities to reflect their rich histories, stories, cultures and environment. Opportunities to develop the creative sectors (Music and Performing Arts; Film, Television and Radio; Advertising and Marketing; Software Development and Interactive Content; Writing, Publishing and Print Media; and Architecture, Design and Visual Arts) were explored by the Culture Minister in New Zealand with her Australian counterpart (see *Building a Creative Innovation Economy*).

Two further components of content activities are the delivery of integrated, accessible and customised government information and services to citizens by 2010 (this is part of the e-Government Strategy). Amendments to the Copyright Act 1994 have also been introduced so that it remains relevant and effective in a digital environment.

Content actions (see Appendix 1) concerning digital business will be coordinated around three priorities:

- Accelerating the growth of digital businesses with competitive advantage.
- Increasing the use of worldclass productivity tools to drive productivity and innovation throughout the economy.
- Greater government emphasis on ensuring more open access to publicly funded scientific and cultural research that is vital to stimulating innovation.

Collaboration

Is the new fourth enabler in the 2008 draft strategy. Unlike the other three no single goal or actions are suggested for this enabler. The digital summit highlighted the need for collaboration in broader terms – between communities, businesses, government, researchers and Maori, who can work together in achieving New Zealand's digital potential. Emphasis is placed on supporting Maori culture before going on to more generic issues.

Community Partnership Funding has provided support for collaborative initiatives between ***community and voluntary sector organisations*** to share knowledge, interact in new and better ways, and to develop effective partnerships. In the ***business*** sector it is suggested a new spirit of collaboration has been seen, particularly in the telecommunications sector, following the 2006 regulatory reforms. It is thought to be essential for firms in other sectors to become aware of the potential of digital tools to improve productivity.

Local Government activities have been catalysed by the Local Government NZ Broadband Forum held in February 2008. The event was used to launch the *Digital Communities Action Plan*. This is a draft framework developed by Local Government New Zealand and the Economic Development Association of New Zealand to strengthen the digital readiness of regions and communities. The communities action plan has five key themes, see below. The plan is a whole-of-community (inclusive) initiative designed to meet the challenges of developing a nationwide broadband economy.

To drive forward partnership and collaboration government has consulted with ICT sector representatives and broader interest groups, community organisations and individuals and agreed to support the establishment of an 'overarching forum' for members to work with each other and collectively with the government on digital strategy related initiatives.

Collaboration has also been central to the development of a large number of government strategy documents. Many of the documents have been prepared by leading central government agencies in collaboration with other groups. Key documents include:

e-Government Strategy (*www.e.govt.nz*) The e-Government Strategy is the all-of-government approach to transforming how agencies use technology to deliver services, provide information and interact with people as they work to achieve the outcomes sought by government.

New Zealand's Digital Content Strategy (*www.digitalcontent.govt.nz*) New Zealand's digital content strategy aims to ensure that New Zealanders are innovative, informed and capable in telling cultural stories, experiencing their heritage and cultures, and creating their digital future.

New Zealand Geospatial Strategy (*www.linz.govt.nz*) The New Zealand geospatial strategy is designed to improve knowledge of and access to the geospatial assets owned, maintained or used by government.

Public Broadcasting Programme of Action (*www.mch.govt.nz*) The government's Public Broadcasting Programme of Action outlines six priorities to guide public broadcasting policy development to 2010.

ICT Strategic Framework for Education (*www.minedu.govt.nz*) The ICT Strategic framework for education aims to improve learner achievement in an innovative education sector, fully connected and supported by the smart use of ICT.

Health Information Strategy for New Zealand (www.moh.govt.nz) The Health Information Strategy provides a direction for the health and disability sector to improve information management and information sharing, to underpin better health and disability outcomes for New Zealanders.

New Zealand Research Agenda (www.morst.govt.nz) The New Zealand research agenda (NZRA) signals the policy direction for New Zealand's research, science and technology (R S&T) investments and activities towards 2020.

Interestingly the Ministry of Health published a *Health Information Strategy* in August 2005, but none of the actions relate to the Ministry of Health.

4. Key challenges identified

The digital future summit held in November 2007 identified six key challenges and posed questions to be addressed during the consultation period and later by government. Input in addressing these challenges was requested in the final sections of the 2008 draft strategy. The challenges are:

The agents of change must collaborate: "The more effectively that central government, local government, businesses and communities work together, the faster broadband connectivity will happen. How can we work together more effectively?"

We need faster and cheaper broadband: "Fast, affordable and broadly available internet access is essential for us to make the transition to a digital economy. What immediate practical steps can be taken to make this happen?"

Make better use of digital technology across the economy: "Increasing productivity and innovation is key to transforming the New Zealand economy. How can digital technologies be leveraged in the quest for higher productivity?"

Think differently about digital technology: "A mindset change to adopt technology and 'be digital' is needed across New Zealand to take us forward. How do we do this?"

Ensure that everyone benefits from being digital: "The digital revolution is not being shared equally across all ages, regions, ethnic groups and other communities in New Zealand. How can the digital divide be bridged?"

Make better use of digital technology for sustainability: "The issue of sustainability is affecting every part of our economy and society. How can digital solutions be leveraged to help us achieve our sustainability goals?"

5. Key targets, actions and lead agencies

Each of the three enabler sections has a long list of actions, with reasons and a timespan for activity. Responsibility for each action has been allocated to a central government agency. The table below provides an overview of the 34 actions that will be overseen 16 separate government agencies. Implementation of the strategy has become pervasive across most of the leading Ministries and organisations. Full details of all actions can be seen in the Appendix.

No methods to monitor the progress of actions were stipulated.

Enabler	Number of actions	Lead Agencies
Connection (9)	9	Ministry of Economic Development Commerce Commission Ministry for the Environment State Services Commission Local Government New Zealand
Confidence (13)	9 for capability	Department of Labour Tertiary Education Commission Ministry of Education* National Library of New Zealand
Confidence (13) contd.	4 for security	State Services Commission New Zealand Police Ministry of Justice Ministry of Education*
Content (12)	7 for digital culture	Ministry of Culture and Heritage* Ministry of Economic Development NZ on Air National Library of New Zealand Archives New Zealand
	5 for Digital business	Ministry of Economic Development New Zealand Trade and Enterprise State Services Commission Ministry of Research, Science and Technology*

* Ministries and agencies publishing key documents contributing to the digital strategy (see 3)

New Zealand Appendix

34 Actions and the 16 lead agencies designated by the 2008 draft Digital Strategy

Connection actions

Action	Contributes to Priorities	Lead Agency	Timing
Accelerating broadband investment Develop and implement mechanisms designed to accelerate investment in broadband infrastructure.	Facilitating the deployment of high-speed broadband infrastructure	Ministry of Economic Development	2008
Progressing competition in the telecommunications sector Remove barriers to market entry and promote competition in service provision to end users.	Promoting a robust and competitive telecommunications market	Commerce Commission	Ongoing
Revising the Telecommunications Service Obligations (TSO) Improve incentives to invest in rural New Zealand by revising the TSO.	Promoting a robust and competitive telecommunications market	Ministry of Economic Development	2008
Encouraging competition in the wireless market Allocate spectrum: 2.3GHz and 2.5GHz for innovative shared access arrangements (including provisions to protect Maori language and culture); and 70/80GHz for high-speed broadband.	Promoting a robust and competitive telecommunications market	Ministry of Economic Development	2008
Improving access to the transport corridor Pass the Utilities Amendment Bill to improve access to the transport corridor and develop a National Code of Practice.	Facilitating the deployment of high-speed broadband infrastructure	Ministry of Economic Development	2008-2009
Adopting national environmental standards for telecommunications services Adopt national standards for a range of telecommunications services to remove regional inconsistencies under the Resource Management Act and facilitate faster roll-out of services.	Facilitating the deployment of high-speed broadband infrastructure	Ministry for the Environment	2008

Action	Contributes to Priorities	Lead Agency	Timing
Promoting 'broadband friendly councils' Work with local authorities to develop: • 'know how guide' for local government and community groups that are developing business cases for improving broadband connectivity in their local areas • 'broadband friendly protocol' for local authorities and industry.	Facilitating the deployment of high-speed broadband infrastructure	Local Government New Zealand and Ministry of Economic Development	2008
Aggregating public sector demand Work on adopting a common framework for public sector broadband demand aggregation, including health and education.	Facilitating the deployment of high-speed broadband infrastructure	State Services Commission	2008
Using the National Broadband Map Use the National Broadband Map effectively to support regional broadband planning and business case preparation.	Facilitating the deployment of high-speed broadband infrastructure	State Services Commission	Ongoing

Capability actions

Action	Contributes to Priorities	Lead Agency	Timing
Developing a unified skills strategy Take a unified approach to ensure New Zealand individuals and orgs. can develop and use the skills needed in workplaces of the future. Work to date includes building firms' capability to help managers and workers to increase their understanding of the benefits of ICT-enabled productivity and innovation and their capability to engage with and use ICT.	Equipping managers with the skills needed to engage with and use ICT to increase productivity and innovation	Department of Labour and Tertiary Education Commission	A discussion document will be released for consultation with stakeholders in April/May 2008.
Implementing the National ICT Skills Collaboration (NISC) initiative Collaborate with industry to deliver projects to reduce ICT skill shortages, including internships, promote ICT careers, programmes to increase participation from under-represented demographics and improve communication between education providers and businesses	Reducing shortages of skilled ICT practitioners	Department of Labour	Main initiatives will commence in 2008
Sourcing talent for New Zealand's ICT sector Implement an action plan to enhance the ability of New Zealand ICT companies to recruit and retain skilled migrants.	Reducing shortages of skilled ICT practitioners	Department of Labour	2008-2009
Developing well qualified ICT professionals Improve the professional standing of ICT careers and the competencies of ICT workers. This will ensure ICT qualifications meet international benchmarks, and all ICT employees in New Zealand have access to high-quality professional development and training.	Reducing shortages of skilled ICT practitioners	Department of Labour and Ministry of Education	2008-2009

Action	Contributes to Priorities	Lead Agency	Timing
Reforming tertiary education Ensure a tertiary education system that provides quality, relevant education and training that contributes to the government's economic developmental goals. Work with a selection of key organisations and businesses in the ICT sector to understand the sector's training and education requirements. This will help ensure that tertiary education investment decisions align with the needs of the ICT sector.	Reducing shortages of skilled ICT practitioners	Tertiary Education Commission	From 1 January 2008
Implementing the Digital Technologies Framework Deliver specialised and in-depth digital skills to students in years 11 to 13. Provide teachers with appropriate resources and knowledge to ensure that more students leave secondary school with specialist digital technology skills, knowledge and credentials that are appropriate for tertiary institutions and the workforce.	Reducing shortages of skilled ICT practitioners	Ministry of Education	60 schools in 2008 120 schools in 2009
Delivering the New Zealand Curriculum technology learning area (TLA) Enable students to develop a broad technological literacy, through the TLA (one of eight learning areas for schools), that will equip them to participate in 21st century society as informed citizens and give them access to technology-related careers.	Developing digital literacy and confidence in the workforce and our communities	Ministry of Education	2008-2010
Applying Foundations for Discovery: Supporting Learning in Early Childhood through ICT: a framework for development Use ICT meaningfully in early childhood education services to help children grow up as competent and confident learners and communicators.	Developing digital literacy and confidence in the workforce and our communities	Ministry of Education	2007-2009

Action	Contributes to Priorities	Lead Agency	Timing
Implementing the Aotearoa New Zealand People's Network Enhance New Zealand's public library network by establishing free internet access via libraries – providing computer and ICT hardware, onsite support and skill building, tools to encourage users to create, access, share and preserve content and community digital storehouses for citizen-created content.	Developing digital literacy and confidence in the workforce and our communities	National Library of New Zealand	2007-2011

Security actions

Action	Contributes to Priorities	Lead Agency	Timing
Reviewing New Zealand's cyber security response capability with a focus on government and industry	Ensuring a level of internet and telecommunications security that is consistent with the promotion of the social and economic wellbeing of New Zealanders and an effective network infrastructure	State Services Commission	2008
Establishing a National Cyber Crime Centre	As above	New Zealand Police	2008
Reviewing the alignment of New Zealand's laws with the European Convention on Cyber Crime and progressing New Zealand becoming a party to the Convention	As above	Ministry of Justice and New Zealand Police	2009
Supporting the Internet Safety Group Support the provision of comprehensive ICT security and safety education and awareness raising, including to schools, businesses and households, and research into online social networking issues.	As above	Ministry of Education	Ongoing

Digital culture actions

Action	Contributes to Priorities	Lead Agency	Timing
Switching to digital television The analogue switch-off date will be set in 2012 or when 75% of New Zealand households have a set-top box, whichever comes first.	Improving the creation, discovery and use of New Zealand-grown content	Ministry for Culture and Heritage and Ministry of Economic Development	2012 or when household penetration is above 75%
Reviewing the regulatory environment for digital broadcasting and new digital media	As above	Ministry for Culture and Heritage and Ministry of Economic Development	2008
Launching the second Maori channel – Te Reo	As above	Te Puni Kökiri	2008
Developing NZ On Screen An online portal for access to archival New Zealand audio-visual content.	As above	NZ On Air	2008
Delivering Digital New Zealand A programme to progressively enable communities around New Zealand to connect with, access and create content for digital repositories that reflect their rich histories, stories, cultures and environment.	As above	National Library of New Zealand	By 2011
Developing the Kiwi Research Information Service A nationwide network of research repositories to ensure New Zealand's publicly funded research results are available online.	As above	National Library of New Zealand	By 2008
Implementing the Digital Sustainability Strategy A strategy to ensure that electronic public records are appropriately maintained by government agencies and are accessible as public archives for as long as they are needed.	As above	Archives New Zealand	By 2011

Digital business actions

Action	Contributes to Priorities	Lead Agency	Timing
Engaging with industry to identify areas where more targeted government investment could support the establishment and growth of internationally competitive digital businesses	Accelerating the growth of digital businesses with competitive advantage	Ministry of Economic Development	2008
Implementing proposals to enhance engagement with internationalising firms This involves: • more effective support for developing international operations • intensive engagement with large firms that have significant growth potential • more integrated in-market support • experience-based international management education.	Accelerating the growth of digital businesses with competitive advantage	Ministry of Economic Development and New Zealand Trade and Enterprise	2008–2009
Reducing barriers to local firms in supplying to government This includes: • rolling out a whole-of-government ICT procurement policy • new guidelines for the treatment of intellectual property (IP) rights in ICT contracts to encourage suppliers to leverage the IP created in developing ICT solutions for government • holding forums to increase New Zealand firms' awareness of how to participate in the procurement process.	Increasing the use of worldclass productivity tools	Ministry of Economic Development	2008

Action	Contributes to Priorities	Lead Agency	Timing
Using technology to transform the provision of government services for New Zealanders Transform government services so that New Zealanders can: • access multiple programmes from one place at the same time • use multiple channels, such as online, email, telephone and in person, to interact with government agencies without a break in service • provide the same information once, rather than providing the same information to different government agencies.	Increasing the use of worldclass productivity tools	State Services Commission	By 2010
Delivering the New Zealand Scientific and Research Programme of Action This is a collaborative programme of action between agencies involved in commissioning and undertaking science, research and academic studies, to ensure open access to research results in New Zealand.	Using our knowledge and research to stimulate innovation	Ministry of Research, Science and Technology	2007–2011

Singapore

Broadband subscribers per 100 inhabitants (Dec 2007)[a]	**69 per cent**
Businesses (>10 emps) using broadband (2005)[b]	**77 per cent (OECD avg 79)**
Average broadband speed (Oct 2007)[c]	**n/a Mbits/sec (OECD avg 13,700)**

Overview:

Singapore does not have a nationally driven digital inclusion strategy but has developed a 10-year master plan to help realise the potential that infocomm (the term used to refer to the combination of information technology and telecommunications) can offer to improve individual, government and business. The document, titled 'Intelligent Nation 2015' (iN2015), presents what can be regarded as an exemplar effort to develop a truly comprehensive and coherent strategy to guide development and best use of Infocomm at micro and macro levels of society.

iN2015 does not exclusively address issues of digital inclusion except for one short section in the last chapter but issues of digital inclusion are tacitly addressed throughout the document. The potential benefits that infocomm has to offer to all aspects of society, government and businesses are taken into account making the strategy inclusive by nature. For example, plans and programmes detailing improvements in healthcare delivery and education through the use of infocomm that will benefit all citizens in Singapore. Disappointingly, the section that does address digital inclusion (Chapter 3: Realising the Vision – Society pg. 101) lacks strategic overview and implementation see through. Digital inclusion is examined from a narrow perspective that fails to consider the majority of elements contributing to social exclusion and only three socially excluded groups are identified (the elderly, needy students and the disabled).

The document however does present some good practice examples that should be considered. iN2015 depicts a strong and clear vision of the ideal state Singapore aims to achieve. It is possible the document is overambitious in some of its objectives but at the same time it recognises that some of the goals are based on current assumptions that might change overtime and therefore there is a need to re-think and re-evaluate the strategy periodically throughout its implementation.

It follows a sound format where goals are established, the current context is examined, potential for an ideal state is explored, strategies are set to bridge the gap between current context and ideal state, clear programmes and initiatives have been developed to achieve strategies and on occasions key challenges and enablers are also identified. This is true for most goals although on occasions the document is weak in depicting how certain goals will be achieved. Finally, the document successfully considers the interrelation between strategies and the need for complementarities across programmes to achieve overall goals.

iN2015 is the result of a joint effort between the private, public and people sector. The public was involved in the creation of the strategy through the use of focus groups and the Express IT! iN2015 competition. The competition encouraged people to submit entries from students and the general population on how they envisioned infocomm would impact the way they lived, work, learn and play in 2015. The public sector participated through several discussions where they set forward ideas on how their sectors could be transformed through the use of infocomm and realistic propositions on how to achieve set transformations.

Key lessons:

Strong, clear and ambitious vision. Sound structure setting goals, revising current context, describing desired state, depicting strategies to bridge the gap between current and ideal state and proposing programmes and initiatives to achieve goals. The masterplan is inclusive in its reach to the overall population in this way pre-empting further digital exclusion problems. There is a strong emphasis on R&D of new technologies and new uses. It considers, if briefly, the need for constant change management and the people element. A good example of engagement and ownership through the involvement of the general public and the public and private sectors.

1. Introduction

iN2015 is a 10-year masterplan by the Government of Singapore to help realise infocomm potential. The document sets out a clear and strong vision:– **"An intelligent Nation, a Global City, powered by Infocomm".**

Singapore envisions a future where all students will have a personal device that will transform the learning experience by superseding text books and classrooms with access to interactive learning resources, school lessons with teachers based around the world and personalised learning plans and assessments, delivered via ultra-high speed broadband networks. Learning will take place at the time and place most suitable for each individual and following customised learning plans. Singapore also has plans for a personalised and improved healthcare delivery service that removes the present boundaries of the

healthcare system by integrating in a holistic manner the complete medical history and updated records for each patient and provides tailored information for each individual based on his or her medical needs. This would enable amongst other things long-term monitoring and timely follow-up action, based on screening and test results. As stated in the document part of iN2015 vision is "a life when visiting the doctor means staying at home". Singapore is striving for a life that enables individuals to buy cinema tickets straight from advertisements at bus stops and for every citizen to have a digital secretary.

iN2015 provides a detailed roadmap, a blue-print as referred by many, to achieve the set vision. The document introduces an overview of the vision, **"An intelligent Nation, a Global City, powered by Infocomm"**, illustrated by scenarios such as the ones describe above, and depicts how infocomm can improve the way Singaporean's will live, work, learn and play in 2015. The vision is underpinned by three key themes: innovation, integration and internationalisation, which set the direction of future development and use of infocomm.

The national strategy sets to achieve key strategic targets at a macro-economic level and for this purpose proposes four strategic thrusts that harness Singapore's ability to *innovate, integrate and internationalise*.

The overall plan of iN2015 is to develop a globally competitive infocomm industry driven by an infocomm-savvy workforce and globally competitive manpower that will place Singapore as a leader in the global market. For this iN2015 seeks to gain competitive advantage by driving the transformation of Singapore's key economic sectors, government and society through the use of infocomm. It must be noted that Singapore is already in a privileged position compared to other countries in matters of infocomm. This has been the result of more than twenty years of implementing national infocomm masterplans that have resulted in a solid infrastructure, high connectivity rates, efficient government services and significant business transformation. Infocomm has also been an important element of Singapore's Research and Development (R&D) agenda. At present Singapore has the highest ratio of infocomm-related patents in the world and iN2015 will support this trend by working to create technological breakthroughs rather than just exploiting technology. Singapore has also successfully aligned infocomm masterplans and programs to sectoral and nationals plans. iN2015 follows this tradition by outlining how infocomm can help sectoral plans achieve long-term objectives.

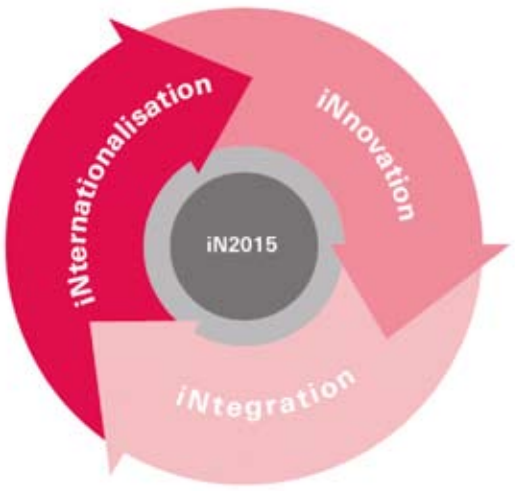
In addition to the iN2015 main document there are ten detailed reports, which elaborate how infocomm will help transform businesses and lives, fuel competitive enterprise, provide technological infrastructure and develop human capital.

2. Governance structures to oversee digital strategy/issues

iN2015 is the result of a combined effort of a group of individuals including:– iN2015 Steering Committee and ten sub-committees (seven in key economic sectors and three in supporting infocomm related areas of technology infrastructure, manpower and enterprises). Feedback was provided by members of the public through focus group and a competition encouraging people to contribute their views on how infocomm could improve their lives in 2015. The document does not describe the specific governance structures that will be set in place to implement iN2015 however, it is obvious from the reading that its implementation will be a joint effort led by the Development Authority of Singapore (IDA) and bringing together the committee and sub-committees of iN2015, public organisations, private businesses, the various economic sectors, research bodies, the general public and alliances with overseas enterprises.

3. Strategic goals and areas/themes for action

iN2015 vision is underpinned by three key themes: ***innovation, integration and internationalisation*** that will set the direction of future development and use of infocomm.



Singapore aims to achieve economic differentiation through high levels of ***innovation*** that will enable transformation of the economic sector as well as throughout society. Innovation will stem as much from innovative use of infocomm as from the creation of new intellectual property. The capabilities of ***integration*** provided by infocomm will play a key role in achieving the level of synergy and connectedness sought between businesses, government and individuals to harness resources and capabilities. Some of the ways in which iN2015 is planning to exploit integration capabilities of infocomm is through the Health Information Exchange to integrate currently fragmented medical records in the private and public sector to offer better medical care. It also plans to link up different trade process into one

single platform to enhance trade flows and maintain Singapore's position in global trade. Integration capabilities will also aid the emergence of new services. For example, iN2015 strives for greater integration between the Digital Media and Entertainment sector and the Education sector to develop interactive and immersive learning content. Finally, because Singapore is such a small country opportunities for ***internationalisation*** are vital to secure a place in the global economy. Utilising infocomm to develop greater opportunities for internationalisation is key for Singapore to access global resources as well as to export products, services and companies.

iN2015's vision and key themes aspire to achieve three strategic goals or macro-economic targets these are:

- #**1** in the world in harnessing infocomm to add value to the economy and society
- **2-fold** increase in value-added of infocomm industry to S$26 billion
- **3-fold** increase in infocomm export revenue to S$60 billion
- **80,000** additional jobs
- **90%** of homes using broadband
- **100%** computer ownership in homes with school-going children

Key targets, actions and lead agencies

The essence of the iN2015 document is to drive the use of infocomm in more innovative and sophisticated ways to *transform Singapore's key economic sectors, government and society*. The foundation pillars to enable transformation of sectors, government and society are: an ultra-high speed pervasive intelligent and trusted infocomm infrastructure, a savvy workforce and competitive manpower and a globally competitive infocomm industry.

Strategic Thrust 1 – Establish an ultra-high speed, pervasive, intelligent and trusted infocomm infrastructure

	Today	Imagine your world in 2015 with ...
Speed	High-speed (megabits per second)	Ultra-high speed (gigabits per second[17])
Reach	Broadband to premises (such as homes, schools and offices)	Seamless broadband to anyone, anywhere, anytime
Intelligence	Stand-alone data from individual sources	Real-time sensor-based, integrated information from multiple sources
Trust frameworks	Organisation-centric	National and global

The ideal infocomm infrastructure that iN2015 proposes is one that is fast, intelligent and trusted. The aim is achieve gigabits speed that will deliver broadband access to anyone, anywhere and anytime. An intelligent infrastructure will deliver real-time sensor-based information, integrated from multiple sources. A trusted infrastructure will provide Singapore with a differentiating factor that is sustainable and cannot be easily emulated. A trusted infrastructure is also critical to enable some of the new services that are planned such as the personalised healthcare system. iN2015 has set the target of 90 per cent of Singapore's households and business with more the ten employees to be using the new infrastructure by 2015. To achieve this target two strategies were developed.

Realising the Leading National Infocomm Infrastructure – requires two elements: *Networks and National Enabling Platforms Policies and Standards*. Singapore's *networks* will consist of a combination of a National Fibre Network providing ultra-high speed capable of supporting new services and applications. And a Wireless network composed of diverse wireless technologies (eg 3G, Wi-Fi, WiMAX). This mixture of networks was designed to secure pervasive access across the whole country. While the wired network will connect all homes, schools and businesses, the wireless network will provide access in parks, tourist locations, shopping malls, bus stops and lobbies of hotels and other commercial businesses. *National Enabling Platforms Policies and Standards* will ensure that the new platform is trusted, seamless and cost-effective. Other national programs such as National Trust Framework have been designed to address issues of security, privacy and identity. iN2015 focuses on developing the next generation of electronic payments and enhancing inter-operability to guarantee a seamless access to networks and the capability of aggregating commonly available computer resources into new business models. The new infrastructure will also allow to access location specific information in a cost-effective manner.

Creating an Environment for the Innovation and Commercialisation of New Applications – will be achieved by promoting new applications and services through the use of showcases, in a live, commercial environment at carefully selected locations. The engagement of key users in order to secure an infrastructure that will meet market needs is also considered to be vital. iN2015 specifically mentions the involvement of the media industry to secure bandwidth-intensive content, homeland security engagement for matters of location-based information, transport industry for traffic sensor information, participation of hospital on privacy-related infrastructures and schools on pervasive broadband access.

Strategic Thrust 2 – Develop a Globally Infocomm Industry

To create a globally competitive infocomm industry Singapore needs to augment depth of infocomm enterprises as well and increase diversity in the industry. Currently the industry relies on a small number of players specialised in activities that provide very limited added-value. iN2015 plans to drive the industry towards higher value-added activities such as

creating and exploiting intellectual property whilst simultaneously developing stronger local enterprises that ensure sustainability of the industry. The document proposes various strategies to achieve this. First, is to **Strengthen the Development of the Industry's Domain and Technology Capabilities** by competing on value, premium services and developing niche technologies. It is suggested that this can be achieved by greater collaboration between enterprises and with research institutes and institutes of higher learning. The second strategy is to **Embark on a Concerted International Branding and Marketing of "Made-by-Singapore" Infocomm Products and Services** to create a single brand for all enterprises and offerings and to market this brand widely and aggressively. The aim is to raise the perceived value and recognition of quality and reliability of Singapore's infocomm products and services both at a national and international level. Third, is to **Nurture the Expansion and Growth of Local Infocomm Enterprises**, for this purpose iN2015 proposes an iLE internationalisation Programme that will support enterprises by providing market intelligence and assistance in establishing overseas networks that provide entry to international markets. The report suggests capitalising on Singapore's success in e-Government by commercialising government-held intellectual property on e-Government and setting up an e-Government Leadership Centre to provide training to other governments. To support the realisation of the previous strategies iN2015 suggests to **Develop Sectoral Solutions for Exports** through the development of partnership projects that will facilitate partnerships between local enterprises and multinationals to create infocomm solutions for overseas markets. Finally, to achieve a truly global infocomm industry iN2015 proposes to **Attract and Nurture a Vibrant Pool of Infocomm Technopreneurs and Start-ups** that will secure diversity of technology capabilities ad spur innovation of the local industry as a result of knowledge sharing between local and foreign workforce.

Strategic Thrust 3 – Develop an Infocomm-savvy Workforce and Globally Competitive Infocomm Manpower

iN2015 guides the development of two types of infocomm professionals. On the one hand there is a need for professionals with the ability to guide infocomm use at a strategic level, while on the other hand, there is a need for professionals with deep technical expertise that can drive R&D. To achieve this aim three strategies are proposed. **Develop Infocomm Competencies in Key Economic Sectors** for which it is necessary to improve the understanding of decision-makers about the strategic advantages that can be gained from integrating infocomm in business operations. Parallel to this is the need for a workforce with sophisticated infocomm skills and an innovative mindset. iN2015 recognises the need to **Develop Globally Competitive Infocomm Professionals** and for this purpose proposes three programmes that will be applied to a pool of techno-strategists and a pool of technologist to enhance competencies. The three programmes will consist of a *National Infocomm Competency Framework* to set skills and training requirements at a national level; *Work-study Opportunities* to provide fresh graduates with hands-on experience; and *Talent Exchange Partnerships* to share knowledge between local and foreign infocomm professionals. Lastly, iN2015 aims to **Develop, Attract and Retain Infocomm Talent**

and proposes a number of initiatives for this aim (scholarships, infocomm courses, national campaigns and infocomm co-curricular activities).

Strategic Thrust 4 – Spearhead the Transformation of Key Economic Sectors, Government and Society through more Sophisticated and Innovative Use of Infocomm

The transformation of key economic sectors, government and society through the use of infocomm is at the heart of iN2015. The document provides a lengthy and detailed explanation of how new possibilities for *innovation, integration and internationalisation* provided by the use of infocomm, will drive the transformation of key economic, sectors, government and society in ways that will enrich the lives of Singapore's citizens. The document specifically puts forward proposals for the transformation of eight key sectors:– **Digital Media and Entertainment, and Education and Learning, and Financial Services, and Healthcare and Biomedical Sciences, and Manufacturing and Logistics; Tourism, and Hospitality and Retail; Government, and Society**.

The following is a very brief summary of key information that should enable easy identification of areas of possible interest for the UK government. It was thought that following the same structure as the original iN2015 would ena ble the reader to easily refer back to the main document for more detailed information in the event that areas of interest were identified.

Digital Media and Entertainment

Desired Outcomes by 2015 – Singapore to be established as a DME capital offering innovative content, services and technologies to the world.

Strategies – Strategy 1: Develop Singapore as a Centre of Creation and Commercialisation

Strategy 2: Develop Singapore as a Global Node to Provide Core Services and Infrastructure for DME Sector

Education and Learning

Desired Outcomes by 2015 – To foster an engaging learning experience to meet the diverse needs of learners in Singapore, through innovative use of infocomm

Strategies

Strategic Thrust 1	Strategic Thrust 2	Strategic Thrust 3
Creating an enriching and personalised learner-centric environment in our educational institutions	Building a nation-wide Education and Learning infrastructure	Positioning Singapore as a centre for innovation in the use of infocomm technologies for the Education and Learning sector
• Use infocomm to support changes in pedagogics in our educational institutions • Develop new learning resources and new infocomm-enabled assessment modes • Build capabilities of teachers, school leaders and curriculum planners • Development incubator educational institutions that will generate innovation in the use of infocomm to support engaged learning	• Make broadband infrastructure affordable and accessible to education institutions • Build a network of knowledge assets for lifelong learning	• Forge strategic partnerships with key companies and research institutions in this field and locate test-bedding, prototyping and R&D centres in Singapore • Develop a R&D agenda on new technologies and models for harnessing infocomm in Education and Learning • Develop capability in industry to harness infocomm for Education and Learning

Financial Services

Desired Outcomes by 2015 – Singapore to be a Trusted Gateway to emerging Asia and an Innovative Hub for Financial Services through the use of infocomm to capture those emerging opportunities.

Strategies – Strategy 1: Develop Singapore into a Trusted Gateway to Financial Services in Asia

Strategy 2: Establish Singapore as a Centre for Infocomm Innovation in Financial Services

Strategy 3: Enable Commerce through a Next-generation e-Payment Infrastructure

Healthcare and Biomedical Sciences

Desired Outcomes by 2015 – To accelerate sectoral transformation through an infocomm-enabled personalised healthcare delivery system to achieve high quality clinical care, service excellence, cost-effectiveness and strong critical research

Strategies

Goal	To accelerate sectoral transformation through an infocomm-enabled personalised healthcare delivery system to achieve high quality clinical care, service excellence, cost-effectiveness and strong clinical research			
Outcomes	Well-integrated quality healthcare	Cost-effective healthcare services	Greater ability of public to manage their health	Strong clinical and health services research
Strategic Thrusts	Enable integrated healthcare services		Enable integration between healthcare and advances in biomedical sciences	

Manufacturing and Logistics

Desired Outcomes by 2015 – A supply chain nerve centre and high value manufacturing hub, powered by infocomm

Strategies

Goal	A supply chain nerve centre and high value manufacturing hub, powered by infocomm	
Outcomes	Enhanced competitiveness of manufacturing and logistics sectors	
Strategies	Establish Singapore as a supply chain nerve centre	Establish Singapore as a high value manufacturing hub
Programmes/ Initiatives	• Build adaptive supply chains • Develop a national integrated infocomm platform for supply chain management • Entrench world-class status of key supply infrastructure	• Enable complex manufacturing capabilities

Tourism, Hospitality and Retail

Desired Outcomes by 2015 – Using infocomm to transform the tourism, hospitality and retail sector, differentiating Singapore as a leading travel destination

Strategies – Strategy 1: Create Seamless and Personalised Services for the Visitor

Strategy 2: Improve Industry Efficiency

Strategy 3: Extend to New Areas

Government

Desired Outcomes by 2015 – Integrated Government that delights customers and connects citizens through infocomm

Strategies – Strategy1: Increasing Reach and Richness of e-Services

Strategy 2: Increasing Citizen's Mindshare in e-Engagement

Strategy 3: Enhancing Capacity and Synergy in Government

Strategy 4: Enhancing National Competitive Advantage

Society

Desired Outcomes by 2015 – An All-inclusive Digital Society

Goal	An All-inclusive Digital Society			
Outcomes	Society is equipped with the necessary infocomm competencies and is well-connected through infocomm	No student is denied a computer and Internet access because of lack of funds	People with disabilities are able to integrate with the mainstream workforce through the help of infocomm	Society uses infocomm persavely to enrich lives

Strategies – Strategy 1: Bridging the Digital Divide (engaging the elderly, equipping the needy students, empowering people with disabilities, providing access for all)

Strategy 2: Enriching Lives (personalised information to anyone, anytime, anywhere; user centred services)

USA

Broadband subscribers per 100 inhabitants (Dec 2007)[a]	**23 (OECD avg 20)**
Businesses (>10 emps) using broadband (2006)[b]	**n/a per cent (OECD avg 79)**
Average broadband speed (Oct 2007)[c]	**8,860 Mbits/sec (OECD avg 13,700)**

Overview:

There is currently no digital inclusion strategy being driven at a US federal level. There are numerous local and state wide digital inclusion initiatives throughout the US These are tactical rather than strategic efforts, focusing on connectivity and broadband promotion with digital inclusion being part of the overall strategy. Some states have formed Task Forces but again the focus is mostly on broadband deployment. Other states, such as Washington, have passed legislation (Second Substitute Senate Bill 6775) addressing digital literacy and technology training needs of low-income and underserved areas. There are also a number of white papers, most notably Microsoft's, highlighting the important need for a national digital inclusion strategy. Action is most evidently noticed at a city level where some excellent examples of digital inclusion programmes are being implemented (eg Minneapolis, Boston, San Diego, Seattle, Philadelphia, and Miami).

The city of San Francisco has developed a Digital Inclusion Strategy, which aims to achieve ubiquitous free and affordable Internet access for all San Franciscans; a review of this strategy is provided by this document.

Key lessons:

Efforts to address digital inclusion in the US are so fragmented that key lessons are best drawn from Microsoft white paper: "A Road Map Toward Digital Inclusion: New Imperatives Offer Municipalities Social and Economic Opportunities". The white paper reviews current digital inclusion programmes in the US and draws out several common characteristics present in the most successful initiatives.

Source: A Road Map Toward Digital Inclusion: New Imperatives Offer Municipalities Social and Economic Opportunities

Insider viewpoint:

It was difficult for insiders to picture how a strategy at national level would look. There was agreement that a Federal strategy was needed to systematically incorporate technology in the lives of all and help achieve basic technology literacy levels in all sectors including: education, housing and workforce. Government efforts were also deemed necessary to persuade more social agencies to join the cause and increase community group buy-in through alliances with non-profit organisations. It was felt that government collaboration is the key to providing economically disadvantaged groups with access to computers. For example, local government's partnership with Dell to help families purchase computers; insiders expressed the need for more programmes targeting access.

One insider considered that they key to developing a successful strategy and implementation programmes is to have accurate and up-to-date demographic information about computer use, subscribers and geography.

1. Introduction

San Francisco's Digital Strategy aims to provide access to all its citizens and close the digital divide, while simultaneously addressing other divides such as, educational, health and economic. The Strategy recognises that digital inclusion is not only about providing access but also about providing skills, relevance and social support. For this purpose the Strategy is founded on two sets of elements: Digital Inclusion Elements that focus on providing access and Digital Empowerment Elements that focus on expanding the value of information technology.

San Francisco's Digital Inclusion strategy focuses on the most underserved neighbourhoods, disadvantage residents, low-income, limited English speaking and disabled population. It was thought that investing in these groups is a key factor to promote innovation, economic growth and social justice.

2. Governance structures to oversee digital strategy/issues

San Francisco Digital Inclusion is facilitated by San Francisco Department of Telecommunications and Information Services (DTIS) and its implementation is overseeing through the collaborative effort of the public, private, educational, philanthropic and non-profit sectors.

City and County of San Francisco – DTIS is the lead department overseen implementation and coordination of all the digital inclusion programmes proposed by the Strategy. DTIS will also secure collaboration from a number of departments

including: The Mayor's Office of Community Development, Mayor's Office of Economic Development, Department of Children Youth and Families, Department of Health and Human Services.

Digital Inclusion Community Task Force – was created to assist and advice the City and County of San Francisco on its digital inclusion programmes. The Task Force is conformed of business community leaders, non-profit and philanthropy sectors with experience on technology, affordable housing, community development, human and social services.

Non-profit and Community Based Organisation – provide ideas, training, support content and services.

Philanthropic Organisations and Corporations – provide financial and in-kind resources to support the various digital inclusion programmes.

San Francisco Unified School District and Higher Educational Institutions – participate in the development of programmes to increase access for students. DTIS also liaises with higher education institutions to leverage their technology expertise, training courses, facilities and studentship programmes.

3. Strategic goals and areas/themes for action

San Francisco Digital Inclusion strategy aims to create universal, affordable broadband access for all citizens. For this purpose, the City plans to deploy a citywide wireless network with the support of public and private partnerships. However, there is a recognition that access alone does not translate into inclusion and hence the Strategy sets four major objectives:

- Support all San Franciscans in acquiring the technology and skills needed to use the Internet to access jobs, education, healthcare, government services and other information services.
- Create a more vibrant San Francisco by leveraging the Internet to enhance communication, empower new voices, enhance civic engagement and increase the connectedness of physical and cultural communities.
- Further enhance San Francisco's role in the local, regional and global economy by expanding opportunities for innovation and participation.
- Encourage collaboration throughout San Francisco by partnering with existing organisations serving the community, strengthening technology adoption and advancing digital empowerment.

4. Key targets, actions and lead agencies

The San Francisco Digital Inclusion strategy focuses on six key programmatic areas which meet the Digital Inclusion and Digital Empowerment criteria set by the Strategy.

Digital Empowerment Elements	Enhanced Digital Literacy Programs	Relevant, Multilingual Content and Applications
Digital Inclusion Elements	Free and Affordable Wireless Internet Access	Computer Ownership and Basic Skills Training
	Accessible Solutions	Digital Safety and Responsability

Free and Affordable Wireless Internet Access – the programme will offer a ubiquitous free basic service designed for reading email and searching the Internet. In addition to this the City will provide low-cost, high bandwidth service offerings through private-sector partners, Google and EarthLink.

Computer Ownership and Basic Training Programmes – seeks to expand computer ownership to all citizens and provide basic skills to leverage use of technology.

Online Safety and Responsibility Resources – encourages people to use the Internet responsibly and to protect their digital privacy and security.

Accessible Solutions – aims to enable people with disabilities and the elderly to use computers and access the Internet more easily.

Enhanced Digital Literacy Programmes – will focus on supporting users to overcome the basics and progress from being beginners to expert users and for some to become digital innovators or professionals.

Relevant, Multi-language Internet Content and Online Services – will promote multi-lingual web portals, community based web sites, content development training programmes, and new collaborations across San Francisco's communities.

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