

**Priorities for a new strategy for European
information society (2010-2015)**

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Athens.
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Table of Contents

- 1. Background 1
 - 1.1 Introduction and scope of the report 1
 - 1.2 Methodological note 2
- 2. Online Single Market & access to creativity: an overview of current challenges for the IS 5**
 - 2.1 Technological progress, security and affordability 5
 - 2.2 Policy trends at the EU, national, regional and local levels 7
 - 2.2.1 Supporting infrastructure 11
 - 2.2.2 Supporting business 13
 - 2.2.3 Supporting citizens 15
- 3. Public Services and ICT for Quality of Life..... 19**
 - 3.1 Technological progress and changing patterns of ICTs in the public sector 19
 - 3.2 Policy trends at the EU, national, regional and local levels 20
 - 3.2.1 Supporting the public administration directly to improve eGovernment... 22
 - 3.2.2 eInclusion..... 24
 - 3.2.3 eHealth 25
 - 3.2.4 eTransport and other new initiatives 26
- 4. Conclusions 29**
- Appendix I – References 31**

1. Background

1.1 Introduction and scope of the report

The information society (IS) has been a tremendous accelerator of economic and social progress. It is an underlying factor of a prosperous and competitive economy, a sustainable environment and an open, democratic society. Recognising this, all countries and regions worldwide include the enhancement of the IS in their development plans and, through public intervention, try to speed up the establishment of Information and Communication Technologies (ICT) infrastructure, support the creation of content, accelerate the services offered and support citizens in making greater use of IT. Europe is among the global pioneers in this respect and its agenda is reinforced by the political goal of promoting a *Green Knowledge Society* heavily relying on widespread availability of fast and ubiquitous access to information, knowledge and services for the main socioeconomic actors (businesses, citizens, and governments).

However, this path to development is complex and asymmetric, depending on the capabilities and economic prospects of countries and regions. The development of infrastructure, which is the basis of the IS, depends on economic prospects and this tends to create and reinforce asymmetries. Statistics demonstrate significant differences between countries and previous research has shown under-development of the Information Society in rural areas². But at the same time, evidence shows that an efficient IS policy offers opportunities for regions to forge ahead and leapfrog. There is by now a large number of regional initiatives (with and without EU support) to take advantage of the benefits of the IS.

The scope of this report is to analyse two main aspects of the IS, namely the Single Market and the Public Services & ICT, looking at the main underlying issues and the ways different regions have addressed them. In particular, for both aspects the report will:

- address the ways technologies are evolving and how this affects the socio-economic environment;
- highlight main issues and policy aspects that regions should take into consideration in setting priorities and learning from each other in order to speed up their road into the IS. Examples are used to demonstrate types of action.

¹ SCF Associates Ltd, 2009.

² Gareis K., Muller S., 2003.

- conclude with suggestions for possible actions at the regional level and the position of the Committee of the Regions (CoR). As the course of action is path-dependent with few generic recommendations only, such suggestions are a grid for policy deliberations rather than a "one-size-fits- all" set of measures.

1.2 Methodological note

The IS is a broad and encompassing concept covering fixed telecommunications, mobile telephony, Internet access and their applications. Early on, the EU adopted policies to enhance the implementation of the IS in Europe. Specifically, we are now at the crossroads between the ending of the i2010 strategy and the next European Strategy on Information Society (the so-called Digital Agenda), an online consultation for the drawing up of which was launched by the European Commission between 4 August 2009 and 12 October 2009.

The topics addressed by this report refer to one of the three objectives of the i2010 strategy under which significant results were achieved, viz to "*boost the Single Market for businesses and users by eliminating regulatory obstacles and enhancing regulatory consistency in the telecoms sector and for audiovisual media services (in particular TV and video-on-demand)*"³, and to four of the nine issues addressed by the EC consultation, namely:

- How to reinforce the digital single market in order to support growth, innovation and new services?
- How can online services and tools, such as web 2.0, better promote user creativity, content production and service provision?
- How can the web support the modernisation of public services so that they are easily accessible to all EU citizens?
- Using ICT to improve the quality of life of EU citizens.

The development of this report is also guided by the adoption of a regional perspective. From the regional point of view the main issues to be considered are both technological and dependent on regional characteristics. In particular:

- The issue of *technological developments* is crucial, not only because IC

³ European Commission, 2009a.

technologies determine the extent to which progress can be made but also because they change very rapidly, making certain decisions obsolete. Technological change and the diffusion of new technologies are neither linear nor predictable. Shifts in standards and design, as well as disruptive technologies and radical innovations make it difficult to predict the future. As a consequence, early technological choices may prove uneconomical or lead to lock-ins. This uncertainty often leads public and private investors to delay infrastructure decisions until they have sufficient information about dominant technological designs. Correctly anticipating technological change and acting rapidly, as well as ensuring the necessary services and content for the utilisation of infrastructure, is crucial in exploiting opportunities offered by the IS.

- *Differences in regional endowments and potential* are equally important. Market failure is a typical reason why the IS in general, and next generation access (NGA) in particular, cannot develop equally. Externalities create different opportunities and in this sense three types of regions are customarily distinguished: *black*, *grey* and *white*, based on the density of their population. Black (very densely populated) regions are likely to have their infrastructure financed by the market, since capacity utilisation is expected to lead to profitable investments. At the other end of the spectrum, in white regions it is unlikely to pay for ICT infrastructure investments, making regional, national or EU support necessary. Grey regions are the most difficult to define because changes in interest rates and bank liquidity affect investment decisions. Depending on the type of region public intervention is expected to take a very different form and scope. Success or failure of policies for these regions determine whether the gap for access to the IS will become wider or narrower. In addition, the financial crisis may add complexity, limiting opportunities for regional governments to access financial resources.

2. Online Single Market & access to creativity: an overview of current challenges for the IS

2.1 Technological progress, security and affordability

The online Single Market is not explicitly defined, but the idea behind it is *"to boost the single market for businesses and users by eliminating regulatory obstacles and enhancing regulatory consistency in the telecoms sector and for audiovisual media services (in particular TV and video-on-demand)"*.⁴ ICTs and broadband, in particular, constitute the cornerstone of participation in the Single Market but, while a necessary factor, they are not a sufficient pre-condition for active participation in the IS.

Technological generations evolve and change very rapidly. Dial Up services and the first generation of mobile telephony were promoted in the 90s, followed by DSLs and the second generation less than a decade later, combined with 3G mobile telephony. Current technologies allow for fusing telephone, Internet and television and are setting new challenges for easy access and good exploitation. Universal Service obligations⁵ are continuously expanding. New applications are tested, and Internet service providers, fixed line and mobile operators as well as the media are testing alternative services and trying to attract clients to make their services profitable. Alternative technologies (in particular the use of traditional infrastructure, fibre optics or various forms of wireless/satellite connections) have different constraints, merits and costs. Businesses test models for new services in black regions, while the public sector supports their extension to grey and white regions.

New technology, aiming at facilitating the online Single Market, is now based on the NGA⁶. High-speed (broadband) and open Internet access for all is a prerequisite for the exploitation of the opportunities offered by the IS. The infrastructure is very expensive and there is a range of alternative technologies on the market (fixed or mobile lines at the local level, copper or fibre, access via cable or satellite to the backbone, the selection of open or proprietary software etc). Only black regions can be supported by private investments in

⁴ European Commission, 2009a.

⁵ A term indicating the services that have to be available to all European citizens.

⁶ The term NGA (Next Generation Access network) or Next Generation Network (NGN) is used by the ITU and other organisations, meaning a packet-based network able to provide services including Telecommunication Services and able to make use of multiple broadband, QoS-enabled transport technologies and in which service-related functions are independent from underlying transport-related technologies.

infrastructure; grey and white ones need to access public funding to support their infrastructure. However, in order to benefit from public funding and exploit the merits of the IS, investors need to take the right decisions and minimise costs (in the lifespan of the application of the technologies), while, at the same time, they have to pick technologies that do not lock them in, and select investments that will allow for the highest possible utilisation of the IS services. Because of the costs and difficulties of decision-making, although it is evident that broadband deployment is beneficial to all rural and remote communities as an opportunity for economic and social development, it comes as no surprise that there is still a lot of sub-optimal investment in NGA.

Needs among different types of users differ; companies and scientists were traditionally the main users of high-speed access but this is changing as citizens increasingly use the Internet and a new generation of Europeans mastering the web and ready to apply its innovations is coming on stage⁷. The increasing utilisation of IS opportunities is coupled with additional challenges: interoperability, standards and fraud (lack of security) inhibit utilisation and make citizens hesitate to use the Internet for commercial transactions.

In this process, the issue of creativity is emerging as a new topic. In addition to standardised services, the new digital habitat (WEB 2.0 and beyond) offers an unprecedented opportunity to unleash the creativity of Europe's citizens. The Internet is an interactive political forum, a vibrant social network and a vast source of knowledge. With new participative platforms and services, users have become active players, producers or 'prosumers' and it is essential to put new policies into place to encourage users' creativity and participation⁸. The development of platforms for social networks (Skype, YouTube, Twitter, LinkedIn etc.) has been the most successful undertaking in recent years. These networks stimulate individuals to create artistic artefacts and circulate them via the Internet. There is a rich reservoir of individual success stories that have turned into commercial products in music, creative arts and beyond.

Affordability is an important additional issue connected to technological developments. Investments in white (and partly grey) regions can be recouped only with very high costs. However, high costs of Internet access discourage users and create different conditions of access of European citizens to the IS. For this reason the EU consultation put forward the idea that "*Unlocking the economic potential of a digital single market requires the creation of a level playing field for businesses to deliver their services and products all over the EU*".

⁷ European Commission, 2009b.

⁸ European Commission, 2009a.

The harmonisation of national regulations is clearly considered to be a means of facilitating easier access of consumers and businesses to a barrier-free European digital single market. Harmonisation is considered to be important, especially in the fields of consumer protection, payment transaction costs and VAT. The provision of practical support to SMEs in particular is preferred through the harmonisation of access conditions.

The tradeoffs between rapidly recouping investments in new technology and offering affordable services are further aggravated by the economic crisis: the creation of a virtuous circle, with ICT investments leading to high utilisation, which in turn increases revenues of providers and hence recoups investments rapidly is hampered by the limited liquidity of the financial and business sector and stagnating demand on the side of consumers. ICT investments, which are expected to be part of the stimulus for recovery, are still limited.

2.2 Policy trends at the EU, national, regional and local levels

To ensure the Single Market (also called the Single European Information Space⁹), high bandwidth communications have to be possible, affordable and with a rich and diverse content and digital services. Both businesses and individuals (as consumers, in B2C, and as peers in P2P) need access to be tailored to their requirements.

European trends show significant progress but also high fragmentation, which is one of the main problems of a Single Market for the IS. Progress over the last decade has been considerable, but not sufficient.

The first generation of national broadband strategies focused on making broadband available to 100% of the population; today the focus is on higher speeds, with broadband as part of the universal service obligation, or on bringing fibre infrastructure to homes¹⁰. The EC has emphasised the importance of promoting the roll-out of high-speed broadband infrastructures in areas that currently do not have access to them, as a way to accelerate the EU's emergence from the crisis, and it has proposed to make it one of the key measures of the European Economic Recovery package. The proposal was approved by EU Member States (MS) and more than €1 billion was allocated for the development of broadband connectivity in rural areas^{11,12}.

⁹ European Commission (2009).

¹⁰ European Commission, 2009a.

¹¹ European Commission, 2009c; European Commission, 2009d, European Commission, 2009e.

¹² The economic impact of boosting Europe's Digital Economy is that more competition in broadband will generate 580 billion Euro and create 700,000 jobs by 2015, increased take-up of 3G services will generate 242

By 2008, 56% of Europeans had become regular Internet users, a leap of one third since 2004. Half of households and more than 80% of businesses now have a broadband connection. These "digital natives" hold great potential for Europe's growth. People aged 16 to 24 are the most active Internet users: 73% of them regularly use advanced services to create and share online content, twice the EU population average (35%). 66% of all Europeans under 24 use the Internet every day, compared to the EU average of 43%. Despite progress, a third of EU citizens have never used the Internet. Only 7% of consumers have shopped online in another Member State. Europe is still behind the US and Japan in R&D investments in ICT, high-speed broadband communications, and developing innovative markets like online advertising.

Source: European Commission, 2009b

The current situation is that the EU coordinates activities, benchmarks countries and regions, provides for the establishment of guidelines and, via the Structural Funds, it supports white (and occasionally grey) regions with their infrastructure. "A basic common issue is that certain founding principles for the enhancement of the IS constitute national or even European competence, in particular issues like regulation, liberalisation, competition and standard setting. In terms of regulations significant changes were made as well: the Commission has actively sought to open up competition in e-communications, remove regulatory barriers, enhance regulatory consistency and create a level playing field for Europe's operators, industry and consumers. The launch of the eYou Guide in May 2009 was an important step to empower users by explaining in plain terms European law applicable to the online world"¹³. National funds are also increasingly used for the provision of infrastructure and have a major role to play for improving consumers' trust and confidence. However, increasing utilisation of the IS is still, to a large extent, an issue at the micro-level. Bigger companies have their own strategies and financial means for encouraging usage, but SMEs and individuals rely largely, at least for their initial training and investments, on regional initiatives.

The CoR has explicitly expressed its opinion on the need to reinforce and guarantee a level playing field in the Single Market and creativity. Early opinions, starting in 2001 already pointed to the creation of a Single Digital Space and the provision of the same opportunities and benefits to all European regions. In particular in opinion CdR 52/2005 it stresses that "the challenge of achieving faster broadband services in structurally weak and disadvantaged areas calls for the allocation of significant resources from the Structural Funds and that those of

billion Euro by 2013 in Western Europe and better spectrum management can grow GDP by 0.1% annually and inject billions into the EU economy. Using the digital dividend for wireless broadband in the EU can bring 150 - 200 billion Euro in benefits.

¹³ European Commission, 2009a.

achieving rich information content, interoperability and security of transactions call for the allocation of significant resources from the research and development programmes:[...] *takes the view that high-quality broadband access at reasonable prices is one of the major factors in determining the quality of services for citizens*" and that *"the content of the new services and the new digital media must not be planned only on the basis of economic criteria but must be developed according to social and cultural needs'*. In addition, in opinion CdR 304/2008 fin the Committee takes a very proactive stance stressing that *"the requirement for an affordable functional Internet access is essential for economic, social and territorial growth and inclusion across the EU"*, requesting a very active role of regional and local authorities and noting the relevance of IS services becoming as important as water and electricity.

While the EU and national levels take responsibility for standardisation and interoperability, there is a large number of regional support schemes for access to broadband, NGA and creativity. Several dimensions need to be distinguished in order to understand the variety of such actions and to help decision-makers understand the main challenges, which are path-dependent and region-specific:

1. *The type of regions and the leverage effect necessary to stimulate investments and utilisation.* In black regions the leverage effect needed is small because it catalyses private investment more easily than in other regions. This is why black regions are the pioneers in the Single Market (with small public support or purely private funding), but also why, when undertaking projects they do it for more ambitious, less proven technologies.
2. *The strategic or fragmented nature of interventions.* The incentives offered by national or regional funds lead regions to adopt small initiatives in specific topics without prioritising their needs. In other cases however, regions have a broader agenda of their own and position their projects accordingly. While there is no doubt that strategic positioning has better results, one may argue that this is a road that only rich regions, with sufficient internal resources, can follow. Fragmented projects may be less efficient in total but may still have significant impacts in their own constituencies.
3. *The type of projects,* which may refer to the infrastructure directly, to ways of improving the supply of and demand for content (mainly through skill development) or to the direct support of costs for increasing affordability.
4. *The type of users addressed,* namely companies (distinguishing between

the needs of bigger companies and SMEs) and individuals.

Local and Regional Authorities (LRAs) are usually involved in three types of projects, which may be distinct or combined, supporting:

- Infrastructure;
- e-Business and e-Commerce;
- All citizens, as a longer-term investment with both economic and social dimensions.

2.2.1 Supporting infrastructure

This category includes the most costly projects and cases where (in white or grey areas mainly) service provision is mixed, with localities remaining isolated or subject to monopoly providers, and others where competition is fierce. This type of project accounts for hundreds of millions of Euro and is, in many countries, supported by the national budget. However, in some cases it is the regional authorities that take the lead. A number of examples related to alternative technologies, explaining background, advantages and disadvantages can be found in the European Broadband Portal¹⁴.

Finland, one of the most successful countries in broadband connection, has adopted a policy on *Making High Speed Broadband Available to Everyone in Finland* to guarantee high-speed broadband connections to create jobs in rural areas. However, in certain cases fibre optics is too expensive and satellite dishes for wireless connection can be used as an alternative. An example of this can be seen on the Danish Islands where towers and satellite dishes have been installed on all the islands, and an investment in software capable of handling all traffic on the local network (WLAN) has been made, for a total cost of around 130,000 Euro; additionally, on each of the small South Funen islands, one or two satellite dishes communicate with the mainland radios in a so-called backbone net so that the island network is connected with the mainland network.¹⁵

In the Wallonia Region of Belgium a pioneering project that aimed to identify locations covered by only one operator and to stimulate competition, generated information on broadband connectivity type, bandwidth access and additional services provided by telecoms operators. The project was fully financed through regional funds.¹⁶

¹⁴<http://www.broadband-europe.eu/Pages/ProjectHome.aspx>

¹⁵[European Broadband Portal: Broadband for the Danish small islands](#)

¹⁶eRegion Hub.

Poorer regions get significant EU and national support. EU funding contributed 75 % of the 1.5 M Euro budget of a project aiming to create a digital platform for integrated communication and management for police stations in Malopolska Region in Poland¹⁷.

The idea of supporting infrastructure dedicated to specific services can be found in several white regions. Supporting infrastructure is sometimes combined with e-Business and e-Learning aiming at both the creation of telecommunication services and their utilisation. The TELECOM FORUM¹⁸, with 1.2 million Euro co-financed by EU Structural Funds, is an example of this, promoting open source and providing users (company managers and heads of institutions from all sectors wishing to improve their day-to-day working methods) with responses to questions that they may have about IT, telecommunications and multimedia developments.

Making High-speed Broadband Available to Everyone in Finland is an ambitious multistage programme with the aim that by the end of 2010 every permanent residence must have reasonably priced access to a fixed or wireless subscriber connection with an average downstream rate of at least 1 Mbit/s. The service provider may decide on the technology it will use but a reasonable price for everyone needs to be assured. More ambitiously, by the end of 2015, nearly all permanent residences shall be within a 2 km reach of an optical fibre or cable network permitting 100 Mbit/s connections. Consumers will acquire their subscriber connection at their own expense. In built-up areas telecom operators will build high-speed connections on market terms. This will achieve population coverage of around 95%. Extending the coverage to 99% will require partly subsidised high-speed connections be provided to around 120,000 households in rural areas. Public aid - two thirds - will be provided by the state, municipalities and the EU. The costs of the project will amount to about 200 M Euro, of which telecom operators will pay at least one third. The assumption is that the high-speed connections will be used for decades and optical fibre is the only solution currently available that can, at a reasonable cost, be upgraded to meet future needs.

Source: Ministry of Transport and Communications, 2008

¹⁷ eRegion Hub.

¹⁸ eRegion Hub.

Infrastructure projects can also significantly benefit from interregional cooperation, such as in the case of the *Regions for better broadband connection*¹⁹ project with a specific focus on the exchange of experience, identification of good practices, the dissemination of lessons learned and twinning. Similarly the European Broadband Portal²⁰ operates as a one-stop shop repository of information and a web-based information platform, aimed at facilitating the exchange of ideas, experiences and good practices on broadband among relevant public and private actors.

2.2.2 Supporting business

Once the infrastructure is available the focus is on the creation of services. Projects supporting business address wealth-generating activities and agents with a direct incentive to participate. This task is both less expensive and more challenging because it is not standardised (in contrast to the creation of infrastructure) and needs to be contextualised in such a way as to serve the needs of local businesses. While the business sector has similar needs across Europe, its structural characteristics (sectoral concentration, size of companies, propensity to network locally or internationally, IS skills etc.) vary widely.

Projects related to business support need a *strategic overview*. Wales provides an interesting example. It started in the period 2000-2006 with an eBusiness Support Programme, followed by an eBusiness Impact Assessment Project designed to take a strategic perspective on what was achieved by the first programme; through this impact assessment it was recognised that in order to support businesses effectively it is important to make recommendations regarding the achievement of a broader strategic understanding of accomplishments through more efficient and relevant data analysis and reporting²¹.

Support for e-business can also be more focused on directly helping businesses integrate into the IS (in particular SMEs, which are reluctant to dedicate resources to new ventures or cannot afford the purchase or development of their own software). The main challenge for such projects is to use these businesses as catalysts and make sure that their functioning is sustainable, after public intervention stops.

E-Comercia provides an interesting example of direct support. Smaller projects are also used to provide businesses with information and thus help them exploit the IS opportunities, an example being the Hungarian Broadband Search Engine

¹⁹Regions for Better Broadband Connection web site.

²⁰<http://www.broadband-europe.eu/Pages/ProjectHome.aspx>

²¹eRegion Hub.

(HBSE)²²; with a budget of approximately 50,000 Euro the engine provides information to customers, Internet service providers and public authorities on physical access to broadband technology and service providers, with corresponding prices and package contents.

E-Comercia, created by BICs and Industry Parks in Spain at a cost of 324,000 Euro, is a platform for Business to Business (B2B) and Business to Customer (B2C) e-commerce, which also provides digital services. The main beneficiaries of e-comercia are SMEs. To make the platform attractive and representative, the target is to involve at least 150 SMEs and have opened on the platform a corresponding number of shops from all over Spain. This would increase the use of new technologies by SMEs and the level of development of the six regions where these SMEs are located. Participation is incentivised through the possibility of digitising the SMEs through platform-based shops, a CD-card (electronic catalogue), e-CRM (customer relationship management that helps the companies to manage and organise their commercial and administrative issues), as well through the support of an active promoter agent to install the shop and get the necessary training to maintain it. Each shop also receives a free 600 Euro bond to spend in the platform.

Source: eRegion Hub

²² eRegion Hub.

2.2.3 Supporting citizens

Ultimately, the creation of a single market for the IS will depend on its active use by all citizens, not only in their business but also in daily life. Despite the increasing utilisation identified during the period between 2005 and 2010, this needs further reinforcement, both through learning how to use the facilities and services offered and through the enforcement of affordable prices. A generic programme of this kind was developed in Yorkshire (UK) (the e-sy.info programme).

Small projects, like the Bremen Interactive Library²³ (Germany) can also play this role. A project with a regional budget of 100,000 Euro helps teachers develop, together with computer science students, e-learning units for teaching and self-dependent learning purposes throughout Bremen schools. The main aims of the project include the development and collection of e-learning materials for teaching purposes that foster self-dependent learning as an important component of school-based learning processes, the facilitation and improvement of access to e-learning materials for teachers and increased utilisation for teaching purposes and establishment of an assistant model, which allows teachers to transform their didactical conceptions into e-learning units with the help of computer science students.

Innovative ideas may have very low budgets. An interesting project is that of supervised Internet café for senior citizens (Café Klick)²⁴, with a budget of 20,000 Euro only. The concept behind the project, developed in 2002, is the fact that many elderly people are denied access to important sources of information and services on the Internet (such as online banking and online shopping) and do not use facilities such as word processing. This is due to their lack of confidence in their ability to handle modern media and a lower natural ease, which allows, for example, young people and those in employment to integrate new media into their daily lives. Senior citizens need special attention and specific activities to be persuaded to use the new media. The Café Klick firstly stimulated interest and made the target group curious in this new venture; secondly, it focused on making it significantly easier for senior citizens (60 years and older) to use and access the PC and the Internet through practice-oriented approaches.

²³ eRegion Hub.

²⁴ eRegion Hub.

The **e-sy.info programme** is the brand name of the South Yorkshire e-Learning Programme (SYeLP)¹, a £50 million funded project to improve economic prosperity in the region by developing learning and skills. The largest project of its kind in Europe, e-sy.info will bring e-learning services to over 37,000 adult and school age learners across South Yorkshire. The programme serves schools, colleges, libraries, community learning services and small businesses. Although the ultimate aim is to make South Yorkshire businesses competitive in the changing economy by providing them with a highly skilled and adaptable workforce, the direct beneficiaries are the citizens. The programme is working with all ages from 10 upwards: school pupils to enjoy dynamic ways of learning in class; teachers wanting to use ICT to make lessons more engaging; young people to gain extra help and learning resources at home, parents wanting to be more involved in their children's learning; job seekers looking to gain skills for employment; staff at work to improve their career prospects with new skills; businesses wanting to increase staff capabilities and productivity and gain a competitive advantage in the digital economy.

Source: eRegion Hub

Affordability is another crucial area for increasing participation. The city of Hamburg, for example, in a ten-year project (1999-2009) created the Public-Private Hamburg.de Initiative²⁵ to offer Internet access free of charge. This was a combined initiative of the city and local banks. Citizens were not expected to pay the providers but only their own telephone costs. They could receive a free-of-charge e-mail-address on hamburg.de and a free-of-charge homepage up to 10 pages, also on hamburg.de.

Stimulating *creativity* may be seen as a special case of addressing citizens. Technological developments and P2P technologies are stimulating creativity, through the market but also by means of public initiatives. There are, however, few such initiatives, probably because this type of action is easy in the sense that the social networks already provide plenty of opportunities to artists to demonstrate their activities and then let the market decide and also because using the network for demonstration and exhibition is not particularly costly; but it is also difficult because it involves artistic judgments and goes into specialised domains. Of the few initiatives of this kind that can be identified, one is the e-Culture Factory²⁶, a project whose overall objective is to establish a competence centre for application-oriented research and development in the field of e-Culture and e-Entertainment. The e-Culture factory in Bremen offers new instruments to create and communicate knowledge. It creates a platform,

²⁵ eRegion Hub.

²⁶ eRegion Hub.

which explains the interactive products and processes to politicians, representatives of the business world, culture industry and interested citizens and has a showroom which places the visitor in a science-fiction film. The visitor is able to experiment with highly developed interactive play-, learn- and think-devices.

3. Public Services and ICT for Quality of Life

3.1 Technological progress and changing patterns of ICTs in the public sector

Public services have been among the first to adopt ICTs to deal with the scale of implementation they face. At an initial stage they used computers to register large amounts of data; then the Internet was used, initially for the provision of information to citizens, then for interactive services. ICTs enabled existing services to become faster, more reliable and more cost effective. Until now the major challenge has been the adoption of appropriate and user-friendly technologies and the correct organisation of the service. But with NGA and all wireless and mobile means, public services can now increase the range of services offered, modify the organisational set up and respond to such new challenges as the aging society and globalisation.

Public services and quality of life include practically all domains of citizens' living but their means, costs and penetration differ. For the purposes of this paper it is essential to distinguish several categories of services:

- Classic eGovernment, referring to all the government services offered online, thus increasing both productivity of the public sector and the quality of services offered to the citizens, as they are faster and more easily accessible.
- eInclusion, a more recent target, on the borderline between eGovernment and eHealth, to guarantee access to everybody after recognising the very uneven utilisation of public services by the population. Unless there is public intervention, the digital divide will increase disparities. eEducation, or more generally eLearning are transversal ways of improving the effectiveness of skill provision and quality of life and assure inclusion.
- eHealth, one of the most important areas, addressing, in a broader sense, the new challenges of the ageing population and disabled people.
- Other innovative services offered to the community, which would have been unthinkable without the support of ICTs. These include eTransport, which makes transport services more efficient and improves safety but also facilitates the utilisation of public means.

3.2 Policy trends at EU, national, regional and local levels

Ensuring that all citizens benefit from ICT is one of the priorities of the EU. i2010 included for the first time a number of initiatives that take account of demographic challenges, putting citizens at the heart of policy and highlighting the economic aspects of various schemes. One of the objectives of i2010 was "*an Information Society that is inclusive, provides high quality public services and promotes quality of life*"²⁷.

While certain services are common and can be standardised there are two main reasons why the regional and local levels are crucial:

1. Most public services present context-specific features, which cannot be solved by generic national platforms. While software applications exist, they need to be tailored to individual characteristics and the best way to achieve this is to procure systems and adapt them locally.
2. The most significant parameter for the success of IS application are the skills of the people who develop, maintain and promote the system. Skills of both the producers of the service (public administration) and its users need to be developed and constantly upgraded. Skill development is a European and national priority but is best developed and monitored at the regional level.

The CoR has early on recognised the relevance of the IS for public services and quality of life, referring extensively to all areas mentioned above in its opinions. Its views address both the generic problem of bridging the digital gap and assuring access to all citizens. CoR's first opinions recognise the relevance of going digital and the role of the public service for creating jobs in the IS; e-Learning was viewed as particularly important in this context²⁸. Education and training were then reinforced with further opinions in 2003 and 2008²⁹. The latter, in particular, focuses on eInclusion as a main political target for Europe and its democratic values; it emphasises the key role and responsibility of LRAs in helping to ensure affordable broadband access in areas where the market fails, in providing leadership on pilot projects for bridging the eAccessibility gap, and in developing new approaches to citizen-centred public e-services. With regard to specific categories of services, the CoR in its opinion CdR 84/2007 fin explicitly recommends making extensive use of ICT opportunities to meet the challenges of an ageing population and thus to improve the quality of life of older people, keep them integrated with local communities and

²⁷ European Commission, 2009.

²⁸ CdR 303/2000, CdR 314/2000 fin, and CdR 198/2001 fin.

²⁹ CdR 73/2003 and CdR 5/2008 fin.

promote local and regional competitiveness through the provision of personalised services. This applies mainly in the areas of eHealth, for ageing well in the community and at home, and eLearning, to facilitate the re-skilling and employment of older people. In opinion CdR 52/2005 fin the CoR suggests using the IS for safe and clean transport. The CoR has also expressed firm views on the need to bridge the broadband gap in the context of the eGovernment Action Plan and improving the Universal Service³⁰. In opinion CdR 304/2008 fin the CoR further emphasises the key role and responsibility of local and regional authorities in helping to ensure affordable broadband access in areas where the market fails, in providing leadership on pilot projects for bridging the eAccessibility gap, and in developing new approaches to citizen-centred public e-services³¹.

European regions, responding to regional incentives, market opportunities, national support programmes and recommendations made at the EU level, have adopted a large number of initiatives at the regional and local level. Certain regions have adopted *broader strategies* for supporting, at the same time, the improvement of infrastructure and services (the region of Piemonte, in Italy, for example, or the city of Valencia in Spain, which has taken an early very ambitious stance in IS promotion); others, like Emilia Romagna (Italy), adopted a series of interlinked projects whereas the least developed ones present only fragmented activities.

Project budgets range from very high amounts (up to over a hundred million Euro), especially when related to the provision of infrastructure, to very modest ones, where small-scale studies are needed or small communities are addressed. Sources combine EU, national, regional and private funds. The mobilisation of private funds appears mainly in the areas of eHealth (such as in the Telecare Centre of Trikala in Greece), eTransport (such as in the COOPERS project, offering complex, real-time information) and occasionally in e-Learning (such as in the case of the Eastern Finland Educational Network), when the private sector expects to gain from future applications locally, or to use the project as a demonstration of its capabilities for future markets. Some issues by topic are discussed in more detail in the following paragraphs.

³⁰ CdR 272/2006 fin.

³¹ CdR 304/2008.

3.2.1 Supporting public administration directly to improve eGovernment

eGovernment is a leading policy area, with over 50 % of government services now fully available online. The interoperability of eGovernment services still represents a major challenge. Although the number of citizens using ICT to interact with public administrations is still low, the number is steadily rising³².

The offer of eGovernment services depends on the infrastructure³³ available to the government, the applications organised (a matter of both organisational design and software), accessibility and utilisation by the citizens³⁴ and, most importantly, on the electronic skills of both administration and citizens. The internal situation in terms of broadband access and utilisation by the citizens is still quite uneven within the EU and within the MS.

The EU has taken an active approach to the facilitation and stimulation of eGovernment. Besides equipping the national and regional administrations with ICT equipment, which started well before the i2010, the EU intervened in the regulatory framework of fixed and mobile telephones to stimulate competition and make access interoperable and more affordable. It also intervened with a series of communications and plans to encourage and stimulate the MS to rapidly and effectively adopt eGovernment initiatives. Last but not least, through the European Commission's Directorate-General of the Information Society and Media and the Structural Funds, the EU directly supports the improvement of infrastructure, software and skills development at the national, regional and local level.

Interoperability of eGovernment services is also a major challenge at the national level. Basic services issuing certification documents are expected to work with the same platform across the national territory to ensure economies of scale and give citizens the possibility to use the same documents all over the territory. In most MS the national administration has organised the platform for interoperable public services, which are then used at the regional and local level.

The regions, while often relying on national initiatives, have adopted important schemes. Small projects address the support of individual administrations with ICT equipment and software. Ambitious projects are trying to combine new

³² European Commission, 2009.

³³ A robust broadband network is critical to the roll-out of eGovernment applications and services (European Commission, 2009a).

³⁴ More and better integration is limited to people using broadband in line with the most recently adopted Web 2.0 principles.

organisational approaches with learning and the promotion of the IS within the administration. The *Community of practice of SIRE Representatives* project is an example of this type of initiative.

A new area where regions take initiatives is eDemocracy, where it is expected that citizens will not only be given the opportunity but really participate more actively in everyday life. *Partecipa.Net* was designed by the Emilia-Romagna region to test different methods by which citizens may participate in framing regional and local policies and managing institutional services. The first step taken toward this goal was to engage all the participants who may have an interest in the policies in question, providing them with complete information about the project and using targeted channels of communication; part of the effort consists in working toward overcoming the digital divide. The second step was to provide administrators with methods and tools (the so called e-Democracy kit) to raise citizen participation. The kit was developed in open source and is made available to all interested administrations. Though the project started in 2005 and was completed in 2007, updating of the tools and development of additional instruments is ongoing³⁵.

The **Community of practice of SIRE Representatives** project, with 150 million Euro, includes the definition of processes, activities and competences of the SIRE (Regional Informative System) Representatives; the definition of roles and community management principles; the analysis and validation of the debated issues, the proposed solutions and of the training needs that emerged in the community; as well as the evaluation of the organisation's results. The objective of the project is harmonising and increasing knowledge and technical, organisational and relational competences of the SIRE Representatives, as they coordinate and connect, from the technical and administrative point of view, within the Piedmont Region, among departments, and with the Regional Information and IT System Sector of the Piedmont Region and CSI-Piemonte. Through specific e-community tools and ad hoc training and information actions, the project aims to make the role of the SIRE point of reference more effective in promoting processes and disseminating improvement actions.

Source: eRegion Hub

3.2.2 eInclusion

eInclusion is achieved through learning, with indirect effects, or through specific projects for the participation of citizens. Interesting examples include

³⁵ eRegion Hub and Partecipa.net web site.

the Blended Learning Academy for network specialists, which provides for special education in the field of ICT, targeted at lecturers, teachers, consultants, specialists from labour offices, state administration and regional and local governments³⁶ In a broader context, the Eastern Finland Educational Network 2004-2007³⁷ - BIGnet, with 1.5 M Euro from EU, national, regional and private funding, was established to scale up and further develop the well-designed activities constructed in previous small-scale regional projects. SELF³⁸, the federal e-Learning system for the Emilia-Romagna public administration, is a project financed with regional resources and aimed at testing a regional network whose members cooperate to produce learning objects. The objective was twofold: to promote the e-Learning professional training of public employees and to manage it by means of economies of scale, thus saving money. Network members are local authorities (the Region, the provinces and the municipalities) and other public bodies who want to fulfil their professional training needs by means of e-Learning methodology. They organise themselves into a Local Learning Points (LLP), find out their employees' needs, choose the suitable e-contents from a catalogue or ask the network to produce new e-contents, offer courses and evaluate their results.

i2010 also aimed to demonstrate how ICT can improve the quality of life of citizens. This has been the main target of the eInclusion policy since 2005: "*The eParticipation preparatory scheme* (of i2010) shows how *the use of new technologies can lead to greater public participation, providing the public with new tools to make their voices heard. The ongoing CIP large-scale pilots on interoperability of electronic procurement systems and on the pan-European recognition of electronic identities will help unlock the economic potential of eGovernment across the EU*"³⁹ In 2008 the '*eInclusion: Be Part of It!*' initiative was launched. This initiative culminated with the eInclusion Vienna ministerial conference. Other examples include initiatives aiming to boost the rights of people with disabilities, elderly and socially disadvantaged persons. Given the close correlation between ICT skills and inclusion in society and the labour market, the Commission carried out a comprehensive review on digital literacy in Europe. In 2005, i2010 proposed three 'quality of life' flagship initiatives.⁴⁰

An example of citizens' participation comes from a small (21,600 inhabitants) but very dynamic Italian town in Provincia di Ferrara, Argenta, but many more projects of this kind are applied in various European regions. The

³⁶ eRegion Hub.

³⁷ eRegion Hub.

³⁸ eRegion Hub.

³⁹ European Commission, 2009.

⁴⁰ European Commission, 2009.

municipality of Argenta sponsors an e-democracy project whose aim is to use new technologies to increase citizen participation in the local political process through the creation of "*Technological Oases*". In these oases, people experiencing problems with technology can learn how to use the e-government services and the e-democracy tools developed by the municipality.⁴¹

3.2.3 eHealth

eHealth aims to improve the health and well-being of Europeans while bringing productivity benefits to complex and costly healthcare systems in the MS and increasing the competitiveness of the European healthcare industry. At EU level, two key policy initiatives were launched in 2008: one to facilitate patient access to telemedicine services and stimulate market development; and the other to help MS address cross-border interoperability of electronic health record systems to support citizens and the market. eHealth is also one of the focus areas of the EC Lead Market Initiative, which aims to accelerate market growth through schemes to improve cross-border cooperation and the delivery of health services⁴².

eHealth systems have a regional content because in each case they have to take into consideration the health infrastructure (local hospitals and health centres), geographical dimension (the size and topology of the area to be covered) and the appropriate ICT infrastructure (depending on the size of the population to serve and the topology).

A very widespread application of eHealth is the offer of primary services in remote or hard-to-reach areas such as mountainous or island regions. For example, the piloting of the Mobinet GP-Model in Central Macedonia with a private investment of 238,000 Euro provides tools for interaction between General Physicians (GP), usually located in remote or isolated areas, and the specialised personnel able to provide medical advice and expert support. The GP is equipped with a set of devices and an IT/telecom component allowing both the electronic storing of data and information on patients and real-time or asynchronous networking with the central hospital.⁴³

Similarly the *Automatisches InformationshilfeSystem (mAIS)* programme, through the application of the most up-to-date communication technology, provides an interface between disabled people and the Internet by means of an ordinary modern mobile phone. The mAIS programme can be downloaded from the

⁴¹ eRegion Hub.

⁴² European Commission, 2009.

⁴³ eRegion Hub.

Internet and installed on the phone. The information received from the Internet via a Bluetooth interface is then changed by the programme into information that can be understood by the handicapped person.⁴⁴

Homecare is another area of eHealth applications. With the number of senior citizens in the EU dramatically increasing, the burden in terms of public expense is rising concomitantly. OLDES (older peoples e-services at home), a three-year project co-funded by the EU under the Information Society Technologies Programme and using open source for eInclusion, aims to plan and implement an easy-to-use, low-cost, innovative technological platform for old people living alone. The platform will be tested by 100 elderly people in Italy, in terms of care, entertainment and companionship, clinical monitoring and domestic monitoring. The system is intended to be based on low-cost PCs and open source software with a target price of around 100 Euro per person.⁴⁵

3.2.4 eTransport and other new initiatives

If the infrastructure is available, regions are now in a position to design and implement projects that can improve both safety and quality of life. There are several examples coming from eTransport but increasingly interesting and innovative areas of application exist.

The electronic stability control (ESC) helping prevent car accidents in the case of sudden manoeuvres or on slippery roads is an example of an eTransport application. The Intelligent Car initiative, launched in 2006, promotes smarter, safer and cleaner vehicles using a mix of policy, research and communications instruments. This initiative also brought worldwide media attention to EU research in road safety and informed consumers of the benefits of these novel ICT-based safety systems.⁴⁶

An innovative project is the building of a regional network connecting GPS reference stations in Malopolska Region (Poland) along with the network management centre (2006-2007, 373,000 Euro). The management centre is equipped with software generating Real Time Kinematic /Differential Global Positioning System corrections enabling real-time and precise determining of the receivers' location. The main objective of the project was to create a modern and coherent regional positioning system via GPS using ICT tools, for the use of public institutions and available to all citizens. The system was tested by the Tatra Volunteer Mountain Rescue Service for emergency services and crisis management but it can be applied to several other areas such as geodesy,

⁴⁴ eRegion Hub.

⁴⁵ [OLDES web site](#)

⁴⁶ [Intelligent Car initiative web site](#)

cartography, photogrammetry, environmental protection, or traffic management.

4. Conclusions

Technological progress has enabled businesses, consumers and governments to become more efficient and increase the number of services they offer. Europe needs to invest in infrastructure to allow for new services or its global competitiveness will be eroded. As IS applications become more and more widespread, those countries and regions failing to integrate into the European Digital Space will continuously fall behind.

Regions offering business prospects (black regions) will be served by private funding; they may also act as pioneers to experiment alternative technologies and new ideas thus helping progress and disseminating good practices. Grey and white regions are unlikely to offer sufficient prospects to private investments and will need to be supported through EU or national financial incentives to complete their broadband infrastructure.

The industry perspective is changing rapidly, as mobile devices become widespread and alternative technologies allow for new, more rapid and more cost-effective applications. New business models allow for higher efficiency through economies of scale and addressing new niches in the global market. The EU is expected to play an important role to help create economies of scale, through research and financial incentives as well as a regulatory framework for interoperability. Producers will benefit from economies of scale and prices will be reduced. To allow European businesses to benefit from this change, appropriate infrastructure and computer skills are a prerequisite. The latter have to be disseminated throughout the entire population and not remain concentrated in small parts of it (e-Inclusion). LRAs are expected to play a crucial role by promoting learning within their territory and increasing literacy skills.

Rather than economies of scale, there is sense for LRAs to address economies of scope. Local and regional policies can support the provision of a variety of related products to make full use of the inputs, rather than specialising in the delivery of a single product. LRAs can also play a significant role in supporting local businesses to join forces for exploiting the same platform or sharing products. Finally, through e-government initiatives they can complement national e-government and offer local services tailored to the needs of the region.

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