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**COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN
PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL
COMMITTEE AND THE COMMITTEE OF THE REGIONS**

**Europe's Digital Competitiveness Report
Main achievements of the i2010 strategy 2005-2009**

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**Europe's Digital Competitiveness Report
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1. INTRODUCTION

Europe remains a global force in advanced information and communication technologies (ICT). The World Wide Web, the mobile GSM standard, the MPEG standard for digital content and ADSL technology were all invented in Europe. Maintaining this leadership position and turning it into a competitive advantage is an important policy goal. This is why in 2005 the Commission presented the i2010 strategy to boost Europe's lead in ICT and to unlock the benefits of the information society for European growth and jobs¹. This strategy outlined concrete policy measures:

- **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);
- **To stimulate ICT research and innovation** in Europe by pooling public and private research funding and focusing it on areas where Europe is or can become a global leader, such as on LTE (long-term evolution) mobile technology, which will revolutionise wireless broadband, or ESC (electronic stability control), which helps prevent car accidents in case of sudden manoeuvres or on slippery roads;
- **To ensure that all citizens benefit** from Europe's lead in ICT, in particular through first-class online public services accessible to all; safer, smarter, cleaner and energy-efficient transport and by putting the cultural heritage of the EU at our fingertips by creating the European digital library.

Over the past four years, ICT policies have confirmed their role as a major driver of Europe's economic and social modernisation and have made Europe more resilient in times of crisis. Today, they are firmly anchored in European core policies for growth and jobs. All EU Member States have ICT policies and consider them a key contributor to national growth and jobs under the renewed Lisbon agenda. i2010 has also influenced other policy areas, such as the Single Market and the Consumer Agenda. ICT policies today are implemented through various instruments, such as the Structural Funds or the Rural Development Funds.

ICT, and in particular the broadband internet, is a crucial component of the European economic recovery plan². ICT accounts for half of the rise in EU productivity and available high-speed broadband is key to new jobs, new skills, new markets and cutting costs. It is essential to businesses, public services and to making the modern economy work. This has been recognised in the Commission's proposals to speed up economic recovery by smart investments in broadband networks in rural areas, endorsed by the European Council, up to €1.02 billion.

2. KEY ACHIEVEMENTS OF i2010

i2010 was designed as the strategic framework for Europe's information society and media policies. It described the overall thrust of policy to promote an open and competitive digital

¹ i2010 — A European Information Society for growth and employment - COM(2005) 229.

² See A European Economic Recovery Plan - COM(2008) 800 - and Investing Today for Tomorrow's Europe - COM(2009) 36.

economy across Europe and it underlined for the first time the importance of ICT to improve the quality of life. Its ultimate goal is to complete the single market for ICT products and services to benefit European consumers, businesses and administrations.

The pro-competition and pro-consumer policy drive led by i2010 has produced many tangible results:

- More and more Europeans are online. The number of regular internet users has increased from 43% in 2005 to 56% in 2008; most of them use the internet almost daily and with high-speed internet access. Regular internet use is also becoming more inclusive, with the numbers of users in disadvantaged groups (the inactive, the less educated and those aged 55-64) rising the fastest;
- Europe has become the world leader in broadband internet. With 114 million subscribers, it is the largest world market and penetration rates are rising swiftly. Half of all European households and more than 80% of European businesses have a fixed broadband connection, three quarters of them with average download speeds above 2 Mbps. Broadband internet is available to 93% of the EU25 population, up from 87% in 2005;
- High rates of broadband connectivity have translated into higher usage of advanced services. Europeans are rapidly changing their habits, adopting new ways to communicate. 80% of regular internet users engage in increasingly interactive activities, e.g. communicating, using online financial services, sharing and creating new content and participating in innovative processes;
- The market for mobile phones has exceeded 100% penetration — increasing from 84% of the EU population in 2004 to 119% in 2009. This makes Europe the world leader in mobile penetration, as the rates in the US and Japan are around 80%. Consumers spend more time talking and texting at prices at least 34.5% less than in 2004, including a 70% drop in roaming charges since 2005;
- Europe has made fast progress in the supply and use of the 20 benchmarked online public services. The supply of fully available services to citizens has increased to 50% in 2007 (27% in 2004) and for businesses to 70% (58% in 2004). One third of European citizens and almost 70% of businesses in the EU use eGovernment services;
- EU-funded ICT research has played a key role in Europe's major industrial development, such as in micro- and nano-electronics, in healthcare and the EU's road safety agenda. Europe is also the home of breakthrough research, such as Giant Magneto-Resistance technology, which revolutionised the hard disk business and won the 2007 Nobel prize in physics, and ADSL technology, the basis for today's broadband internet success;
- ICT policies have been increasingly mainstreamed. Member States have recognised the importance of ICT for productivity and growth and the potential of ICT to achieve a range of socio-economic objectives. Many Member States now have integrated national ICT strategies with objectives similar to those of the i2010 initiative.

These are some of the key success stories of the past four years³. Although the potential is not yet fully reaped-the overall achievements of i2010 can best be assessed by comparing them to the objectives set in 2005 for the three strategic pillars of the initiative.

2.1. Boosting the Single Market for European businesses and users

One of the most important areas where ICT policy has made a difference for Europeans is in promoting the single market in telecoms and audiovisual media services for the benefit of citizens.

This was the key goal of the strategic objective for the first pillar of i2010:

Objective 1: A Single European Information Space offering affordable and secure high bandwidth communications, rich and diverse content and digital services.

Fragmentation in Europe's market of 500 million consumers prevents economies of scale, to the detriment of businesses and consumers. This is even more the case in the digital economy; there is no technical reason why borders should hinder the flows of wealth creation. 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. It has fostered a more coordinated approach to spectrum and the potential use of the 'digital dividend' across the Member States. The two Roaming Regulations aimed to create a European domestic market for consumers and businesses⁴.

The reform of the e-communications framework, due to be adopted shortly, will further improve the single market in a number of ways. Most importantly it will give consumers more choice and improve transparency, protecting them better against security and personal data breaches and spam by encouraging competition in new networks. A new regulatory body at European level should help ensure fair competition and more consistency of national regulation. At the same time, national regulators will gain greater independence. Year after year, annual progress reports on the telecoms framework have shown that Europe's pro-competition rules have promoted competition, investment and innovation, prices have fallen and consumers have more choice, more rights and better quality services.

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. This first multilingual online guide to users' rights in Europe addresses key areas of consumer protection online, including privacy and personal data, internet safety and security, online advertising, copyright and shopping online⁵.

Television is undergoing a period of dramatic change and the Commission has kept Europe at the forefront of developments, promoting digital broadcasting and mobile television. Building on the 'country of origin' principle, updated content rules have been agreed to pave the way

³ The attached staff working paper SEC(2009) 1060 provides a full inventory of all actions taken under i2010 during 2005-2009.

⁴ Regulations (EC) No 717/2007 and (EC) No 544/2009 on roaming on public mobile telephone networks within the Community amending Directive 2002/21/EC on a common regulatory framework for electronic communications networks and services

⁵ <http://ec.europa.eu/eyouguide>.

for new audiovisual services encompassing not only different media (terrestrial, mobile, satellite, over the web) but also different formats (interactive television, video on demand, social networking, etc.). Today, Europe has clear rules for audiovisual media services providers and quality of viewing remains ensured through limits on advertising in documentaries, news and children's programmes. Furthermore, rules on content that is racist or incites hatred have been extended to on-demand services⁶.

Commission support for films under the EU MEDIA programme, extended for 2007 to 2013 with a budget of €755 million, has helped bring films and content made in the EU to the international screen. Many films that have won global fame would simply not have left their country of production without European support⁷. EU added value is not just to fund these artistic productions, but to bring European life and culture to a wide international audience by making European films available within and outside Europe.

2.2. Stimulating ICT research and innovation in Europe

In the first decade of the 21st century, the EU lags behind other areas of the world regarding ICT R&D, notably the US, Japan and South Korea. It therefore launched ambitious research programmes to counter the deficit and to support forward-looking R&D. During the last five years, the EU has engaged in an intense pursuit of the global leaders, while in the coming years it will strive for world leadership in ICT research.

This approach is reflected in the overall objective for the second pillar of i2010:

Objective 2: World class performance in research and innovation in ICT by closing the gap with Europe's leading competitors.

Under this objective, Europe adopted its largest ever budget for ICT research and innovation, more than €10 billion for ICT under FP7 and the CIP⁸ from 2007 to 2013 to help generate the next wave of economic growth and drive the transition to a low-carbon society.

Today, e-infrastructure such as GEANT, grids, supercomputers and data repositories are catalysts of a new 'scientific renaissance' to stimulate prosperity and growth. The success of the Future and Emerging Technology scheme has shown the need to boost investment in high-risk transformative research to ensure Europe remains competitive in ICT in the long term⁹.

In addition, ground-breaking public-private partnerships have been launched. The *Artemis* and *Eniac* Joint Technology Initiatives in embedded computing systems and in nanoelectronics address crucial technologies to keep manufacturing competitive, from automotive and aerospace to energy equipment and health technologies. The *Ambient Assisted Living* Initiative has taken off and aims to make Europe a hub for developing new digital solutions for Europe's elderly people. These initiatives are helping EU industry achieve world leadership and are

⁶ Audiovisual Media Services Directive, 2007/65/EC.

⁷ e.g. 'La Vie en Rose', 'Das Leben der Anderen', 'Die Fälscher', 'Gomorra', 'Slumdog Millionaire'.

⁸ The ICT Policy Support Programme under the Competitiveness and Innovation Programme (CIP) is one of the main financial instruments under i2010, running from 2007 to 2013 with a budget of €728 million. It stimulates innovation and competitiveness through wider uptake of ICT by citizens, governments and businesses, in particular SMEs, http://ec.europa.eu/information_society/activities/ict_psp/index_en.htm.

⁹ Moving the ICT frontiers — a strategy for research on future and emerging technologies in Europe - COM(2009) 184.

ramping up R&D investment by providing incentives to both industry and Member States. Over six years, more than €6 billion has been earmarked for these three initiatives.

The EU is also a potential leader in the future internet. The Commission has started work on a public-private partnership that could underpin the design and architecture of a future internet offering faster transport of more data, more IP addresses, a more secure, privacy and data protection friendly internet that is open, interoperable and promotes innovation, competition and choice. This will expand the usage of RFID and web services. The new initiative builds on existing research priorities; e.g. the FIRE (Future Internet Research and Experimentation) Facility has started offering services to the research community to experiment on new networking and services paradigms. The European Technology Platforms have also broken new ground by acting as open platforms for cooperation between industry, academia and research institutes.

Europe can now build on these major steps to accelerate closing the ICT research gap. Research spending is only a means, however, not an end in itself. Marketing innovative products and services is the key to EU growth, jobs and competitiveness. While some Member States are topping global innovation indexes, innovation readiness remains fragmented. A stronger and more coordinated focus on research and innovation is thus crucial. A renewed strategy for ICT research and innovation in Europe was issued in March 2009¹⁰. It aims to establish Europe's leadership in ICT, facilitate the emergence of new markets and businesses for ICT and make Europe more attractive to investment in skills, research and innovation.

2.3. Ensuring that all citizens benefit from ICT

i2010 included for the first time a number of initiatives that take account of Europe's demographic challenges, putting citizens at the heart of policy and highlighting the economic aspects of various schemes.

Objective 3: An Information Society that is inclusive, provides high quality public services and promotes quality of life.

This is particularly true for eHealth, where European policies are improving the health and well-being of Europeans, while at the same time bringing productivity benefits to complex and costly healthcare systems in the Member States and increasing the competitiveness of the European healthcare industry. Two key policy initiatives were launched in 2008: one to facilitate patient access to telemedicine services and stimulate market development; and the second initiative helps Member States 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 Commission's Lead Market Initiative, which aims to accelerate market growth through schemes to improve cross-border cooperation and delivery of health services.

eGovernment is another leading policy area, with over 50% of government services now fully available online. The interoperability of eGovernment services represents still a major challenge. Although the number of citizens using ICT to interact with public administrations is still low, it is steadily rising. The transition from a 'one-stop shop' to citizen-focused services has been the focus of eGovernment policies for the last four years. The 5-year Action

¹⁰ A Strategy for ICT R&D and Innovation in Europe: Raising the Game - COM(2009) 116.

Plan adopted in 2006 committed the Commission and the Member States to deliver tangible benefits to all Europeans. The eParticipation preparatory scheme 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.

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. 2008 saw the launch of the 'eInclusion: Be Part of It!' initiative, which 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. The *Ambient Assisted Living initiative* shows how ICT helps address the challenges of an ageing population. The *Intelligent Car initiative*, launched in 2006, promotes smarter, safer and cleaner vehicles. Cars involved in a serious accident will call 112 for help in the near future. This initiative also brought world-wide media attention to EU research in road safety and informed consumers of the benefits of these novel ICT-based safety systems. 2008 witnessed the birth of *Europeana*, Europe's multimedia online library, museum and archive with more than three million books, maps, sound recordings, photographs, archival documents, paintings and films from cultural institutions accessible through a web portal available in all EU languages¹¹. Also in 2008, i2010 rose to one of the major future challenges by launching a fourth flagship initiative on *ICT for sustainable growth*, focusing on the contribution of ICT to energy efficiency.

3. IMPACT OF i2010 IN THE MEMBER STATES

The i2010 initiative has been implemented in all Member States by national strategies. Some are general ICT strategies and some address more specific policies, such as broadband, eInclusion, eHealth, eLearning and eBusiness.

The national strategies are constantly revised and updated as part of the Lisbon process. Almost all plans closely reflect the goals of the i2010 strategy.

A first wave of national ICT strategies was launched after the adoption of i2010 in 2005 and a second wave has recently followed. National ICT strategies show how the open method of coordination works in practice: some clearly refer to inspiration from other Member States. The first generation of national broadband strategies focused on making broadband available to 100% of the population; today the focus is on higher speeds, broadband as part of the universal service obligation or on bringing fibre infrastructure to homes.

Finland plans to have 1 Mbps as a universal service obligation by 2010 and 100 Mbps for all by 2015. *Germany* plans full broadband coverage by 2010 and at least 50 Mbps to 75% of its households by 2014. Several Member States also focus on the need for broadband at affordable prices. *France* aims to have full broadband coverage with a maximum monthly fee of €35 by 2012. *Portugal* focuses on optical fibre infrastructure, advanced broadband services and high-speed research networks.

¹¹ www.europeana.eu

Newer strategies address new areas, going beyond the priorities of broadband, public online services and digital literacy shared by all Member States. Many of the smaller Member States now aspire to become top European players.

Some countries are bringing new topics to the ICT agenda, such as green IT, charters for e-rights, legal measures of non-discrimination and accessibility or new ways to develop eGovernment services, skills and digital literacy or models to stimulate the development of digital content.

4. LOOKING AHEAD — FUTURE POLICY CHALLENGES

Europe's successes to date have been built on a consistent drive for fair competition in telecoms markets and a borderless market for digital content and media services. Europe's technological leadership stems from its continuous efforts to establish a critical mass of R&D in emerging fields of ICT. It has a great capacity to capitalise on its cultural resources, such as its vibrant and successful film and media sector and the European digital library. This overall policy thrust remains valid for the future.

However, the success of the EU ICT strategy over the last four years needs to be put in a global perspective. Today it is becoming apparent that, even in areas where it has global leadership, **Europe is at risk of losing its competitive edge** when it comes to new, innovative developments. For instance, Europe has positioned itself as a world leader for broadband internet but dramatically lags behind Japan and South Korea in high-speed fibre. Similarly, Europe's mobile communications success has not spilled over into wireless broadband, where Asia is emerging as the world leader. In addition, Europe is sidelined regarding internet services and applications, with the US dominating the new interactive web habitat, especially blogs and social networks.

Therefore Europe needs a **new digital agenda** to meet the emerging challenges, to create a world beating infrastructure and unlock the potential of the internet as a driver of growth and the basis for open innovation, creativity and participation. The European Council in December 2008 called for a European plan for innovation where ICT would be a key technology. Europe needs to raise its game with growth strategies to boost economic recovery and stay world class in high-tech sectors; to spend research budgets more effectively so that bright ideas are marketed and generate new growth; to kick-start ICT-led productivity to offset GDP stagnation as the labour force starts to shrink when the baby boomers retire¹²; to foster new, smarter, cleaner technologies that can help Europe achieve a factor four growth¹³ and to use networking tools to rebuild trust in Europe as an open and democratic society.

The Commission is about to launch a public online consultation on nine key areas for Europe's future ICT and media policies¹⁴:

¹² Employment in the EU is projected to shrink by about 19 million people by the year 2060, due to the fall of the working age population. This means that productivity will have to be the source of future economic growth. A recent estimate is that EU labour productivity growth would converge to a long-term historical average of 1¾%, from COM(2009) 180 - Dealing with the impact of an ageing population in the EU: 2009 Ageing Report.

¹³ 'Doubling Wealth, Halving Resource Use' E von Weizsäcker, A. Lovins and H. Lovins (1995).

¹⁴ The consultation on themes (5) and (6) below will be run jointly by the Information Society and Media and the Internal Market Directorates-General.

- (1) *Unleashing ICT as a driver of economic recovery and as a lead contributor to the Lisbon growth and jobs agenda.* This is crucial in the current economic and financial crisis and to achieve Europe's longer-term economic goals.
- (2) *Increasing the role of ICT in the transition to a more sustainable low-carbon economy.* Focusing on ICT to promote responsible energy consumption in households, transport, energy generation and manufacturing and reveal the potential to make substantial energy savings. Smart meters, efficient lighting, cloud computing and distributed software will transform usage patterns of energy sources. ICT-based solutions will be essential to Europe's efforts to manage the transition to a sustainable economy.
- (3) *Upping Europe's performance in ICT research and innovation.* Despite the achievements of the past years, European R&D is constantly challenged. A strong ICT R&D base in Europe is crucial as ICT breakthroughs are key to solving a number of challenges, such as health care, the demands of an ageing society, security and privacy and managing the transition to a low-carbon economy.
- (4) *Creating a 100% connected economy through a high-speed and open internet for all.* The potential of high-speed infrastructure for economic recovery, long-term growth and innovation in Europe must be unlocked. It will be crucial to keep high-speed, future-proof networks open to foster innovation in new services and content, for and by all users in the online sphere.
- (5) *Consolidating the online single market.* We have yet to achieve an online single market, despite solid progress during the past years. Europe still faces legal fragmentation, with payment systems, security, privacy and other obstacles that discourage businesses and consumers to go digital. . This applies also to the market for digital content where fragmentation makes it difficult for European citizens to access the full span of rich and culturally diverse online offer available across the EU
- (6) *Promoting users' creativity.* The new digital habitat (WEB 2.0 and beyond) offers an unprecedented chance to unleash the creativity of Europe's citizens. The internet today 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 in place new policies to encourage users' creativity and participation.
- (7) *Reinforcing the EU's position as a key player in the international ICT arena.* The continued success of modern ICT depends on international openness and cooperation, an internet free of restrictions on traffic, sites, platforms and the type of equipment to be attached, and free of censorship. It also depends on our ability to handle global challenges, such as international governance, security, inappropriate content and malpractice, privacy, protection of persona data and new vast address spaces (IPv6), multilingual identifiers and so on. Many of these issues can only be solved at international level. But Europe's voice often struggles to be heard.
- (8) *Making modern and efficient public services available and accessible to all.* eGovernment is increasingly a reality in Member States. However, efforts must be further pursued to increase interoperability among public administrations. On its side, to achieve this goal the Commission has proposed to pursue the successful IDABC

programme by tabling a proposal for a new programme aimed to promote Interoperability Solutions for public Administrations (ISA)¹⁵ and is pursuing its works to revise the European Interoperability Framework, aimed to define the general rules and principles for collaboration among the Member States' administrations and the EU Institutions¹⁶. The use of ICT in schools has increased significantly; the Lisbon targets to equip and connect all schools in Europe have already been met. eLearning and eHealth applications can greatly improve the quality of education and health care across the EU. However, the benefits of all these applications have not yet been realised fully. We need to avoid opening up new digital divides. The participative web offers new opportunities but also challenges public administrations, enabling citizens to review their relationship with the authorities.

- (9) *Using ICT to improve the quality of life of EU citizens* by unlocking the storehouses of Europe's cultural heritage and bringing it online. The 2008 eInclusion initiative showed the socio-political and economic importance of this and the 'eInclusion business case' is now stronger than ever to overcome the main aspects of disadvantage, such as age, education, gender and location. In the current economic downturn, disenfranchised people in particular risk being further excluded from society and the labour market.

5. CONCLUSIONS

The achievements of i2010 and the ways it has been implemented in the Member States provide a snapshot of the dynamism and range of schemes that innovative policies can produce. i2010 has laid the building blocks for a modern ICT-enabled society. Broadband is today firmly on the political agenda.

But Europe faces important decisions about how to build a seamlessly connected digital economy poised for recovery. In addition, over the coming years the internet is expected to become an essential service, crucial for us to participate fully in society.

To seize these opportunities, the Commission calls on the Member States and on stakeholders to actively cooperate in the months ahead until early 2010 to draft a new digital agenda so that Europe can emerge from the current crisis with a stronger, more competitive and more open digital economy, driving European growth and innovation.

¹⁵ See COM(2008)583.

¹⁶ See <http://ec.europa.eu/idabc/en/document/7728>.