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COMMISSION STAFF WORKING DOCUMENT

Orientations for a European Digital Agenda

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1. OBJECTIVE

In the context of the forthcoming EU2020 strategy,¹ this document sets out orientations for a **European Digital Agenda**. This agenda will define the strategy for the Union to exploit and advance the potential of digital technologies for sustainable growth and to shape a 21st century lifestyle characterised by the global connectivity enabled by the internet. This orientation paper has been published to further develop the main themes items that are emerging from the various inputs to the consultation on the European Digital Agenda, namely:

On 4 August 2009 the Commission published the “Digital Competitiveness Report”²

Equally on 4 August 2009 the Commission launched a public consultation on future digital priorities which yielded 834 responses (65% from individuals) to an online questionnaire covering nine policy areas and around 150 written submissions.³

In September 2009, the Swedish Presidency published a report on future ICT policy priorities⁴ which was discussed at a Presidency conference in Visby (Sweden) on 9-10 November 2008.⁵

On 18 December 2009 the Transport, Telecommunication, Energy Council adopted Council Conclusions⁶.

The European Commission welcomes comments on the following questions until the [] March 2010:

- Why does Europe need a digital agenda? (Chapter 2)
- What could the strategic priorities of the digital agenda be? (Chapter 3)
- How would the EU achieve the priorities identified? (Chapter 4)
- What are the next steps? (Chapter 5)

2. RATIONALE: WHY A DIGITAL AGENDA FOR EUROPE?

Over the past decade, Information and Communication Technology (ICT) has been a powerful economic driver, accounting for around one half of productivity gains in

¹ 'Consultation on the future "EU 2020" strategy', COM (2009) 647, see http://ec.europa.eu/eu2020/pdf/eu2020_en.pdf. This Working Document stipulated that “Europe should tap fully the potential of the digital economy. [...] That is why an ambitious European Digital Agenda that takes concrete steps towards the completion of an Online Single Market will be a key element in Europe's sustainable economic recovery and social development”.

² http://ec.europa.eu/information_society/eeurope/i2010/key_documents/index_en.htm#EDCR

³ 1) ICT for a growth and jobs agenda, 2) ICT for a sustainable 'low carbon' economy; 3) Improving Europe's performance in ICT research and innovation; 4) Creating a 100% connected society and economy through a high-speed and open Internet for all; 5) Consolidating the online Single Market; 6) Promoting access to creativity at all levels; 7) Strengthening EU's role in the international ICT arena; 8) Making modern and efficient public services available and accessible to all; 9) Using ICT to improve the quality of life of EU citizens, see http://ec.europa.eu/information_society/eeurope/i2010/pc_post-i2010/index_en.htm

⁴ A Green Knowledge Society, http://www.se2009.eu/polopoly_fs/1.16246!menu/standard/file/A%20GREEN%20KNOWLEDGE%20SOCIETY_CREATIVE%20COMMONS_%20WEB1.pdf

⁵ See Swedish Presidency Conclusions, "The Visby Declaration": http://www.se2009.eu/polopoly_fs/1.22793!menu/standard/file/conclusions%20visby.pdf

⁶ [ref. to be inserted]

modern economies. Underlying this growth has been the remarkable progress of digital technologies, in particular declining prices for microelectronics devices. In the process, ICT has turned into a leading high-tech sector driven by innovation and fast growing (world-class) companies: the ICT sector for instance accounts for 5% of GDP in Europe and is responsible for more than a quarter of business R&D spending.

The European markets for ICT now turn over more than €150 billion each year. However, Europe runs a trade deficit in ICT goods: which represent 10% of all extra-EU exports of goods and 14% of all imports. Asia and the US represent the major sources of computer devices and packaged software respectively. Nevertheless, Europe is a major player in the global ICT sector. Telecom equipment and electronic components in particular are important contributors to European exports and provide the core of its ICT sector.

ICT as a General Purpose Technology

Meanwhile, steady technological progress and the accumulation of ICT capital stock have positioned computing, telecommunications and the internet as pervasive "general-purpose technologies" with the power to transform the economy and society.⁷ Not only does investment in ICT across the European economy drive around 30% of the productivity gains, the ICT sector contributes 20% to overall GDP growth, despite accounting for "only" 5% of GDP in itself. Meanwhile, markets for ICT and for ICT dependent creative industries (such as publishing and broadcasting) in Europe are worth more than €650 billion.⁸

The impact of a strong ICT sector can be seen both in industry and service innovation. The share of added value from ICT in main industries is increasing: ICT represents currently almost 25% of the added value in the automotive industry, 41% in home and consumer appliances and 33% in Health/Medical Equipment⁹. Because of its innovative character, ICT is likely to continue to be the source of new waves of growth in the future. Examples are very fast broadband networks, the spread of RFID, the rise of web-based services, the emergence of healthcare applications for an ageing population etc.

As the adoption of ICT has spread, it has also started to stimulate innovation in organisational practices and open up new markets notably in service sectors such as finance, logistics, retail and wholesale. It is in these sectors that the relatively rigid, fragmented and low-tech service markets in Europe have allowed a productivity gap to open up with respect to North America's more dynamic and flexible markets. In short, European business has lagged behind on the paradigm shift towards the Digital Economy.

Experience has shown that it is common that societies need time to adjust; the prevailing processes and rules are deeply rooted, revolutionary technologies challenge those traditions and habits. ICT follows the same pattern. The first phase of fast innovation and experimentation, such as the dot com boom in the late 90s, takes time to become structurally embedded in the economy, to be taken up as a mass phenomenon and become integrated into organisational life. Only once the new

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General purpose technologies are technologies that can achieve structural change across an entire economy. Examples include steam power, railways, electricity, electronics, the automobile, the computer, and the Internet. see for example the collection by Helpman, E., (1998). General Purpose Technologies and Economic Growth. Cambridge, MA: The MIT Press.

8

KEA European Affairs, Study on the economy of culture in Europe, 2009

9

ARTEMIS strategic research agenda

technologies have been widely deployed and habits and skills adjusted do the productivity effects become visible. The challenge for Europe is to ensure that freer product, labour and service markets deliver the necessary flexibility to harvest efficiency gains throughout the economy.

Today, we have reached a tipping point where the ICT capital stock is now so substantial that its impact can be felt right across the economy. The internet has come of Age and has begun to change Society; it provides a global reach to any new idea or service innovation: when a company such as a Google starts to map the entire Earth everyone can access it and innovative services can be built on it. Web based e-commerce applications are also a potentially very important source of new business, as can be seen in the tourism and travel sectors (the world's biggest employer). Other web-based services such as healthcare applications for an ageing population are also important new areas that are set to grow on the back of easy access to very fast broadband networks and a ubiquitous internet.

Why a European Digital Agenda is needed now

In the first place, therefore, a Digital Agenda makes sense because of the strategic importance of ICT to growth and competitiveness. The European markets for ICT now turnover more than €150 billion each year. However, Europe runs a trade deficit in ICT goods: which represent 10% of all extra-EU exports of goods and 14% of all imports. Asia and the US represent the major sources of computer devices and packaged software respectively. Nevertheless, Europe is a major player in the global ICT sector. Telecom equipment and electronic components in particular are important contributors to European exports and provide the core of its ICT sector.

Secondly, broadband and the internet have become mass phenomena. The permeation of the internet into everyday life has been feeding the growth of broadband, which is now within reach of most Europeans. With more than 120 million lines, the EU is today the world's largest broadband market. Broadband is available to at least 93% of population; 56% of European households and most businesses have a fixed broadband connection, 80% of them with connection speeds above 2mps and mobile broadband is emerging. Recent literature suggests that a 10 percent increase in broadband penetration may fuel a 1% GDP growth¹⁰.

But, Europe **needs to migrate to faster and better networks**. As the internet is becoming richer in terms of videos and images, users are increasingly involved with the creative production of content, households need bandwidth for simultaneous uses and this is the necessary infrastructure underlying a wave of new applications. Europe needs to keep up with the investment taking place in other parts of the world such as Korea, Japan and USA if it wants to benefit from the next wave of growth of the Digital Economy. **The requirement is challenging as new networks are expensive.**

Thirdly, on the back of the wide take up of the internet, social changes are happening. The wide availability of information, the networked society, users' empowerment, are examples of social trends that the internet is amplifying. In particular, the young people of today, those just entering the labour market and younger, constitute a new generation of "**digital natives**" (the 16-24 years old) who are skilled users of content and services, who can download, exchange, create and

modify, distribute and share and who use the internet on a daily basis. These are the people that are driving the internet and ICT to even larger social and economic impacts.

As this happens, inequalities may become accentuated: one third of Europeans have never used the internet (mainly a matter of age, education and income levels) and large gaps in terms of quality of use are emerging across different cohorts of the population. ICT has imposed the acquisition of new skills, with more than a quarter of jobs in Europe requiring at least some basic digital skills. And even if the “digital natives” are proficient in mastering ICT tools, there is a need to develop other aspects such as critical attitudes towards information, the awareness of risks and privacy protection, inside and outside formal education systems and in a context of life-long learning.

These, then, are the reasons that a Digital Agenda is urgently needed. ICT is the most important technology driving change in the modern economy. Not only are the technologies contributing large parts of the value added of all industrial sectors, they are at the roots of organisational innovations that are needed to achieve wealth enhancing productivity changes in both the private and public sectors. At the same time, new service markets are emerging on the back of these technologies and the innovations they permit. The borderless nature of the internet is also transforming information service markets notably in the content industries but also in financial and professional services. Meanwhile a new generation of digital natives is coming into the workforce with habits and assumptions that will change the way that organisations operate. This will create many strains between age groups, between employers and workers and between the status quo and the internet-savvy entrepreneurs.

3. OUTLINE OF EUROPE'S DIGITAL AGENDA

The pervasive character of ICT, which penetrate the entire economy, means that the Digital Agenda for Europe should cover a wide range of policy-areas, well beyond the scope of traditional ICT or telecoms policy. The internet and its interplay at all levels of the economy and society oblige "Digital Europe" to be conceived in a **holistic** rather than sectoral way.

Most importantly, the European Digital Agenda brings the logic of the Single **Market to the digital economy**. When the Commission launched in 1985 its ambitious plan to achieve a single integrated market free of restrictions for the movement of goods, persons, services and capital, the focus was on **removing the obstacles** to these fundamental freedoms. This also implied the establishment of a system ensuring that competition in the common market is not distorted and the approximation of laws that was required for the proper functioning of the common market. Today, with a view to the digital economy, the approach is similar: removal of barriers that prevent Europe, its businesses and its citizens, from reaping the full potential of ICT.

The Digital Agenda should be based on a comprehensive vision, but it must also be strategic, with a limited set of priority actions that can be achieved and which are essential for its success. For this reason, the current paper isolates five priority actions for debate and further development. These areas are:

Give Europeans faster and leading-edge access to the internet

Achieve a borderless EU market for online services & content

Empower EU citizens in the digital environment

Use digital technologies to contribute to a sustainable life-style

Enhance Europe as an attractive place for investment, production and research in ICT

The following sections present possible policy measures in each priority area. They also put forward a number of possible **performance indicators** that could be used to facilitate the monitoring of progress. In addition, the next sections present a series of **"lighthouse" projects** that could be implemented by a variety of stakeholders acting on a pan-European basis and that illustrate how the Digital Agenda could visibly enrich the life of Europeans.¹¹

4. PROPOSED PRIORITY ACTIONS

4.1. Give Europeans faster and leading-edge access to the internet

Fast internet connections are a key medium through which potential efficiency gains are realised. Very fast broadband yields scope for innovative services and applications for the wide economy – such as smart metering, video-enhanced services, and eGovernment. They foster the diffusion of ideas and information, stimulate web innovation, create markets and thus promote economic growth. Fast and reliable access to the internet has become an essential prerequisite to do business, to access information, and to communicate. It is destined to be as essential as public utilities such as water, gas and electricity.

Next Generation Access (NGA)

The next stage in development of the networks, known as **Next Generation**, will bring very high speeds and symmetrical connections, which means (almost) as fast to send as to receive. Under the current technologies this possibility is offered by fibre and coaxial cable. Today, Europe lags behind other countries in the deployment of fibre. While more than half of Korean and Japanese broadband users subscribe to optical fibre connections, providing speeds up to 1 gigabit per second, 90% of European users subscribe to less than 10 megabit per second. Fibre deployment in the US is more advanced and countries like Australia have begun with an ambitious fibre roll-out.

Since the 1998 telecoms liberalisation, the provision of electronic communications infrastructure and services has been underpinned by a competitive market process; governed by a regulatory framework at EU level. This pro-competition framework has been successful and brought internet coverage to 93% of Europeans and at falling prices. However, reaching the next stage of deploying NGA may not be possible purely through stimulating competition because a major investment in expensive civil engineering works is required: such investments are unprecedented in the post-liberalisation history of the telecoms sector.¹²

In fact, **the business case for private investment by telecom operators is weak**. The business case may fail to thrive in large parts of the European territory, as investments cannot pay off over the relatively short-periods demanded by stock market investors. The first problem is that the positive benefits of a new fibre infrastructure are not reflected in the prices customers are currently willing to pay. Operators find it hard to charge for NGA more than they charge for basic broadband

¹¹ These are illustrated in Boxes in the text and in the Digital Agenda Action Plan, in Annex.

¹² Estimates vary, but the cost of installing fibre optic networks for the all of Europe could be as high as 300bn€, McKinsey (2007).

from existing infrastructure. Operators will roll out fibre where demand is densely concentrated, where cost savings are large, where competition is pushing them. But, at present, this appears only to be the case in big city markets. The second problem is that the life expectancy of civil engineering works is much longer than the investment cycle of telecom operators, which have to manage a mix of service and electronics and other facilities to manage. This problem points to a need to separate out the business model for utility type investments such as ducts and dark fibre from telecom operator business models that involve spending on electronics, software and services.

2009 Public Consultation: 88% favoured public investment in passive network construction, in the context of other public works. However, this does not mean that opinions favoured more public ownership of network provision. Rather incentives to invest are seen to be best served by vigorous policy on competition principles to open up markets (55%) and encouraging new pro-competitive business models (49%).

Thirdly, the fact that the commercial case for the deployment of NGA is weaker than the benefits that these networks will bring to European Society could lead to a suboptimal outcome from a public policy perspective. Extending NGA beyond the relatively limit areas that are economic for telecom operators represents therefore a major public policy challenge.¹³ This is why facilitating investment in leading-edge networks is an important element of the Digital Agenda, worthy of a political target of 70% population coverage of NGA by 2020.

Wireless Broadband

Although less visible in the debate on next generation access, wireless broadband already provides most of the same functions as fixed broadband and offers important data services at speeds that are increasingly competitive to fixed. Mobile is in fact a necessary stepping stone towards **seamless anytime anywhere internet access**.

Wireless broadband however offers more than traditional communications services: mobile handsets are usually personalised which makes them a perfect platform for secured monetary transactions. In addition, mobile devices are readily made "context and location aware" allowing the development of applications for travel and transport support, emergency services and health, environmental and security services. Mobile is expected to be the highest growth area especially of internet enabled devices – an area in which Europe is still the market leader. The potential gains for Europe from these services are substantial with a recent estimate putting these at an additional 0.6% of GDP to 2020. To achieve these gains Europe must move ahead proactively on **harmonisation of sufficient spectrum** for the high speed mobile web and on using the release of these radio bands in ways that set the stage for a low cost and open mobile broadband service throughout all of Europe.

POSSIBLE ACTIONS

Review of national broadband plans to make sure that they provide the operational means to meet **coverage and speed targets**;

Reinforced targeting of **High Speed Broadband Projects** through Community

¹³

"NGA white areas" are defined in the State Aid Guidelines for Broadband Deployment as those with no NGA networks and "where they are not likely to be built or fully operational in the near future by private investors". Such a definition opens up large parts of the EU to public support for NGA. [insert ref.]

Instruments (ERDF, ERDP);

Incentives for investment in **Next Generation Access (NGA)** by regulating in favour of facilities sharing and multi-fibre networks that can lower risks and reduce costs;

Reduce investment uncertainty through **proactive planning policies** such as co-ordination of infrastructure works, establishment of rights of way and mapping of infrastructure gaps;

Establish the means for Fibre Europe investments by establishing **long-term investment vehicles** for low risk/long term passive infrastructures (e.g. exploring the possibility of an EIB-backed financing instrument);

Harmonisation of EU spectrum allocation, rapid establishment and implementation of the **European Spectrum Strategy** that encourages Member States to adopt spectrum policies that increase open competition and innovation.

4.2. Achieve a borderless online market across the EU

Recent figures on the use of eCommerce in Europe show that today Europeans do not benefit from a Single Market when they are online. In 2008 only 7% of the total online transactions in the EU were made cross-border. Not only are many services simply not offered online, in many cases those services which are available are not available cross-border: a recent study for the Commission shows that 60% of cross-border internet shopping orders are not completed for technical or legal reasons.¹⁴ Thus Europeans are not able to take full advantage of the potential of the biggest market in the world and, similarly, online traders choose not to take the opportunity to extending their business beyond national borders.

4.2.1. Removing obstacles to online transactions

The internet is borderless, but online markets in the EU are separated by **artificial frontiers** such as the widespread refusal to sell across borders¹⁵, the lack of pan-EU definitions of ePayments or eSignatures for cross border services, costly dispute resolution and uncertainty on the applicable jurisdiction, which increases EU consumers' lack of confidence in the online environment. The EU online economy is not likely to reach its potential unless all barriers, including linguistic ones, are removed. In particular such barriers are likely to hold up investments in digital business systems, such as cloud computing platforms; for example current definitions of hosting of online services and offshore data processing provisions are no longer completely in line with developments in technology, thus weakening the effectiveness of safe harbour provisions for online service providers.

A first of set of targeted measures at EU level could be launched to raise consumer and business trust in cross-border e-commerce and thus stimulate new services and consumer take-up. A related *key performance indicator* could be the increase of cross-border online transactions (e.g., from today's 8% to 20% by 2015).

¹⁴ See <http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/09/475&format=HTML&aged=0&language=EN&guiLanguage=en>

¹⁵ See <http://europa.eu/rapid/pressReleasesAction.do?reference=IP/09/1564&format=HTML&aged=0&language=EN&guiLanguage=fr>

POSSIBLE ACTIONS

Establish an **EU-wide Online Dispute Resolution** system;
Establish a system of **EU online trustmarks** for retail websites;
Harmonise **EU rules on terms and conditions**;
Remove barriers to **electronic micro-payment** and payment services;
Increase trust and security by agreeing a **pan-European eID**.

4.2.2. *Achieving a borderless EU content market*

Most of the recent successful media or content distributive platforms online were born and developed across the Atlantic.¹⁶ European cultural diversity and creativity rank highest in the world but in the online environment they are struggling to keep up. As a matter of fact Europe is divided into 27 different sets of copyright rules which impede cross-border licensing practices to emerge, largely because the cost of clearing rights country by country is too high, thus destroying the incentive to offer content in all the different national markets. This situation is also preventing the development of competitive business models adapted to the digital environment. EU citizens and content users are confronted by inflexible rules preventing new media solutions from appearing and directing demand to illegal alternatives.

The poor performance of the EU in the **web services (Web 2.0)** markets is the most obvious symptom of this failure. Although there have been successful web service companies set up at national level, the extra marginal cost of extending the service to a second country is the same or very often higher than moving into the borderless and 300 million strong USA market.

The same is true for **online content services**, the costs of clearing rights and establishing licences in Europe on a country by country basis means that very often many firms simply do not bother to market their services across borders in the EU.

From a different angle, the fragmentation and complexity of the current licensing system are also hindering the preservation and dissemination of Europe's cultural heritage due to the costly and time consuming procedures needed in order to get the necessary authorisation for digitisation.

Lighthouse Project – European heritage portal

Development of the existing online portal to Europe's cultural heritage so that by 2020 it could offer 75 million digital items available to the public. This would imply the promotion of large-scale digitisation projects and the setting up of a **European rights "registry"** that brings down costs for right clearance and accessibility (in particular of books).

Lighthouse Project - TV.Europa.eu

Establishment of a Pan-European Catch-up TV service (online and mobile) to make TV programmes available after their broadcast. This would provide European consumers with access to premium near-live content (without frontiers) and would enhance the demand for broadband fibre to home and mobile services.

¹⁶

According to the figures collected by Screen Digest less than 230 million music tracks were downloaded in Europe in 2008 while in the US downloads were over a billion. In 2008 European consumers downloaded about 6.6 million movies compared with the US figure over 28.6 million. The channels of distribution are multiplying in the US, where iTunes, YouTube, Facebook, Hulu and all the major content distribution platforms commonly used in Europe were born.

In order to unleash the potential of European creativity and cultural diversity there is a need for a **coordinated action** to create a real single market for content and facilitate the digitization of Europe's cultural heritage.

Public sector information (e.g. geographic information, meteorological data, statistics, etc.) is a basis for many new information products and services. The re-use of these information resources has been harmonised at European level through the Directive on the re-use of public sector information. However, many Governments are not proactive enough in opening up their data resources and problems remain for establishing cross-border products and services based on this resource. Therefore the Directive needs to be reviewed with the aim to optimise the use of public sector information as a resource for the digital economy.

POSSIBLE ACTIONS

Establish an **EU copyright title** providing flexibility and ensuring enforcement

Make delivery of audiovisual content technologically neutral by revising the Cable and Satellite Directive to cover online services.

Put in place a **rights information database** to facilitate licensing for commercial and non commercial uses.

Create a balanced framework for the digitisation, preservation and dissemination of European **orphan and out-of print works**.

Give *Europeana* a **formal legal foundation** as the digital portal to European cultural heritage and provide it with sufficient resources to operate.

Promote open public data policies through a **review of the Directive on the Re-Use of Public Sector Information**

4.3. Empower European citizens in the digital environment

Living in the digital era means that access to the internet, and skills to use new digital technologies become a central part of our everyday life. What used to be a luxury for a few is today a basic need for all, in order to work, interact and participate fully in society. This is why Europe has to make sure that its citizens are fully empowered in the digital environment, by giving them appropriate skills, by protecting their rights online, by promoting access to public services online and across Europe.

4.3.1. Empower Europeans with Digital Skills

Making sure that everyone is able to access and benefit from ICT is a matter of equality and much remains to be done to overcome factors of disadvantage and guarantee a truly inclusive society. Digital inclusion and skills are the key elements of the rising **Digital Citizenship**.

As more and more daily tasks can be carried out online, from applying for a job to paying taxes or booking concert tickets, having easy access to the internet has become a key dimension of our daily lives. Europe needs **policies on inclusion and skills** to allow everybody to take part in the digital society. At the moment, a third of Europeans have never used the internet, over a quarter had never used a computer and 40% have no internet access at home.

This section of the population is at greater risk of being excluded both from the labour market and from the rest of society: they are less well educated, they are more

likely to be unemployed and many are older people on low incomes. Existing policies on digital literacy need to be better focused if they are to achieve by 2015 the Riga targets of *halving the digital literacy gap between disadvantaged groups and the EU population as a whole*.

Beyond that, to remain competitive on the international setting, Europe has to promote the skills needed for economic recovery. According to recent studies, the ICT practitioner skills gap in the knowledge economy is huge: between 400.000 (assuming near zero growth) rising to 700.000 jobs if the knowledge economy takes off.¹⁷ There is a need for more relevant and effective ICT training and certification and therefore for a European eSkills strategy that takes concrete steps to meeting needs for example through a target of a *minimum of 400,000 extra ICT practitioners by 2020*. One important channel for achieving this goal could be to encourage the use of online tools and digital media for re-skilling. Another indicator could be the *increase in number of regular internet users (e.g., 10% by 2015)*. The focus here would be on empowering disadvantaged groups and their carers as called for in the recent e-Government Ministerial Declaration of Malmö.¹⁸

Lighthouse project – eID for citizens and business

Establishment a platform for EU-wide public services responding to citizen needs based on electronic identity management. This could include EU-wide health information system, emergency systems, electronic commerce, and financial services all centred on service portability by users.

To have all public websites accessible by 2010 is still a distant goal: in 2007, only 5% of public websites were fully accessible. A new impetus is needed to adopt widely accepted international standards¹⁹ and by embedding these requirements into public procurement legislation.

POSSIBLE ACTIONS

- Make **Digital Literacy a priority** in the European employment guidelines and orientate the European Social Fund guidelines (Regulation 1083/2006) so that targeted funding can delivered to help achieve the target;
- Launch a web-based stakeholder platform on **Practitioner e-Skills** to promote transparent standards for e-skill profiles and the certification of ICT training, conversion courses and placement. All Community funded ICT skill programmes should be recommended to seek certification through this open practitioner-based community;
- **Systematic benchmarking** of ICT practitioner skills and proactive steps to achieve the 400,000 extra ICT practitioners by 2015, with particular emphasis on attracting Women into the ICT professions;
- **A European strategy for online skills** that promotes access to digital content and elearning.
- An **EU Accessibility Act** in the form of a Regulation based on Art. 19 TFEU to make 100% of public websites and websites providing basic services accessible by 2015

¹⁷ *eSkills Monitor study. Monitoring eskills supply and demand in Europe* (forthcoming study for the European Commission by Empirica and IDC EMEA Government Insights); for a preliminary report see <http://www.eskills-monitor.eu/>

¹⁸ See http://ec.europa.eu/information_society/activities/egovernment/conferences/malmo_2009/press/ministerial-declaration-on-egovernment.pdf, November 2009.

¹⁹ Notably, the Web Content Accessibility Guidelines 2.0 (WCAG 2.0)

- A Recommendation on the provisions for persons with disabilities in the revised regulatory framework for electronic communications.
- Follow-up the Ministerial Declaration on eGovernment with a **revised European eGovernment Action Plan 2011-2015** to achieve more effective cross-border and user-driven eGovernment services delivered with fewer public resources.

4.3.2. *ICT for sustainable healthcare in an ageing society*

Healthcare is the biggest economic sector of our Member States employing 10% of the EU's workforce. Spending in EU amounts to 9% on average and is projected to grow to 16% by 2020: driven by an ageing population leading to prevalence of chronic diseases, increased popular expectations, and rapid technological progress.²⁰ Such chronic diseases now absorb more than 70% of healthcare resources in developed countries. eHealth and in particular ICT solutions for chronic diseases management have proven to be key tools to improve patients' quality of life and achieve better quality of care.

Meanwhile, eHealth has been identified as a lead market that can contribute to innovation in other important industries such as pharmaceuticals and medical devices. Already, these healthcare sector industries represent a market of €300Bn, mostly represented by innovative SMEs (over 11,000 SMEs in Medtech sector in EU). The EU enjoys leadership in many areas of the eHealth domain, such as regional health networks, electronic health records, medical imaging and telemedicine services based on personal health systems.

Lighthouse project - eHealth Passport

Setting up a platform for secure and interoperable health record data on a pan-European basis. Offering citizens a secure, fast and multilingual access anywhere in the EU to personal health data via their mobile phone.

For these reasons, it is welcome that the Swedish Presidency Council has recognised eHealth as a tool to improve quality and patient safety, to modernise national healthcare systems, to increase their efficiency and make them better adapted to the individual needs of patients, health professionals, and the challenges of an aging society.²¹ The European eHealth Governance Initiative is a voluntary mechanism in which Member States representatives and stakeholders agree to cooperate on ICT solutions and common challenges across Europe²².

The founding stones of eHealth services in EU are health information infrastructure, interoperable health record systems and telemedicine services based on technologies for remote patient care in particular for chronically ill patients. Many pilots and solutions have already shown the benefits when combined with proper organisation, legal framework and skills. EU can proactively enable these Information society services to benefit not only the sustainability of health delivery services but also more effective interaction of patients with the health services and their ability to cope with their health conditions. In the context of an ageing, it is essential that the opportunities offered by ICT can be fully realised.

²⁰ BEPA report, Special Issue 32, December 2009

²¹ Council Conclusions:

http://www.consilium.europa.eu/ueDocs/cms_Data/docs/pressData/en/lisa/111613.pdf

²² The Initiative will be funded partially by CIP ICT PSP and partially by The Public Health programme.

The eHealth market is still emerging, not as transparent and regulated but with potential to be the fastest growing industry of both the health and the ICT sectors estimated at over 12%. There is a need for EU to accelerate the adoption of standards and common approaches for interoperability, to harmonise the certification and testing of the eHealth solutions and to promote innovation friendly procurement.

POSSIBLE ACTIONS

An eHealth roadmap including legislative actions for wide deployment of interoperable electronic health records, telemedicine services and the eHealth passport.

Further EU-scale pilot projects to test telemedicine and remote monitoring systems

Issue standardisation mandates and certification procedures in eHealth to arrive at global standards to enable larger and more competitive market for the EU industries.

4.3.3. *Empower Europeans with Digital User Rights*

Access to an open internet is now recognised as a right for all subscribers.²³ But citizens need to be able to use this right in practice. A number of existing fundamental principles and provisions of EU law already provide many safeguards as regards openness of digital services and the rights of digital users. They include, among others, the freedoms of expression and information, requirements for transparency and data protection, minimum quality of service requirements and the right to access and distribute information or run applications and services of the users' choice. However, the rights flowing from these provisions are not readily identified or understood as they are spread across a number of instruments and policies. Moreover, some of these provisions, like the ones concerning the protection of personal data, may need to be reviewed in order to take account of recent developments, such as new internet profiling techniques.

2009 Digital Agenda Consultation: Concerns for openness and user rights were high in the consultation results: 90% regarded openness as a key policy priority for the internet. There was overall a strong support for a European right of access to the internet based on guarantees non-discrimination (69%), transparency (60%) and speed/performance (52%). Moreover, a framework for user rights would include the ability to protect one's own privacy (61%), assurance of network neutrality (57%) and a universal access right (52%). Privacy is clearly a key concern as 75% of respondents felt that the principle of informed consent should be retained despite the rise of behavioural profiling through measures to reinforce transparency, simpler privacy notices etc. Legislative routes to achieve these aims received strong support (75%), amongst which EU legislation received majority support (61%).

There is therefore a potential need to **consolidate and clarify the rights of digital users**. Spelling out digital user rights in a clear manner, would increase confidence in the use of internet, improve online consumer protection and promote the internet's innovative potential.

This could be done through a **"Bill" or "Charter of Rights"** that consolidates and reaffirms the relevant existing fundamental principles and provisions of EU law. The

²³

This is effectively guaranteed by Article 1.3a of the new Framework Directive (2009/140/EC), which states that "Measures taken by Member States regarding end-users' access to or use of services and applications through electronic communications networks shall respect the fundamental rights and freedoms of natural persons, as guaranteed by the European Convention for the Protection of Human Rights and Fundamental Freedoms and general principles of Community law."

possibility of theme-specific legislative action should also be considered where necessary.

POSSIBLE ACTIONS

- **"An internet Bill of Rights"**: A consolidating act to affirm and where necessary extend the rights of digital users;
- A fundamental **review of Data Privacy** leading to legal proposals on the treatment of personal data in the context of Web 2.0 developments.

4.4. Use digital technologies for a sustainable life-style

The EU's commitment to cut its CO₂ emissions by 2020 effectively means that practical ways have to be identified and deployed to run the European economy on 20-30% less energy than today²⁴. A "low carbon economy" should use less energy and release less greenhouse gas into the atmosphere than the present economy based on unsustainable consumption of natural resources. The urgent challenge is to identify how these ICT-based services and data flows can be used to contribute to a **sustainable digital society**.

First, ICT tools can make everyday energy consumption and the associated carbon emissions **measurable, transparent and visible**. Smart metering and carbon accounting tools are examples. A recent Commission Recommendation identified some first steps towards mobilising ICT for an energy-efficient, low carbon economy²⁵. In the Recommendation, the policy goal regarding smart metering is to forge an agreement on the minimum functionalities of smart meters so that when they are deployed at national or regional levels they can support the full range of related ICT applications from consumer-awareness tools to demand-side management and, eventually, decentralised energy networks.²⁶ These tools are essential because, only when individuals and organisations are empowered to understand their energy consumption will they be able to manage it and eventually cut their carbon footprint²⁷. In the longer term, this policy track could be developed into a **Smart-Grid Strategy** allowing intelligent monitoring and management of consumption, distribution and production of energy (including the introduction of renewable energy into the grids).

Second, ICT offers potential for **structural change**, driven by dematerialised products and services. This theoretically opens up exciting opportunities for eco-efficient lifestyles and business opportunities. E-government, telework and videoconferencing are some early examples. For instance, if Europe were to replace only 20% of all business trips by videoconferencing this could save more than 22 million tonnes of CO₂ per year²⁸. The real challenge in this respect is not just to

²⁴ Recent modelling work undertaken using the International Futures modelling suite by DG INFSO indicates that renewable energy targets are likely to fall significantly short of the 20% target.

²⁵ *Commission Recommendation of 9.10.2009 on mobilising Information and Communications Technologies to facilitate the transition to an energy-efficient, low-carbon economy*, C(2009) 7604

²⁶ A high-level event taking place in February 2010 will include a specific panel on smart metering chaired by Jorge Vasconcelos (ex-president of the European Energy Regulators (CEER/ERGEG)) with the aim to define such minimum functionalities.

²⁷ The deployment of smart meters in households can enable up to 10% savings on electricity bill, see *Report on Methodology for Estimating Energy Savings*, ESMA, March 2008. [To be replaced with newer example in mid-January 2010 when interim results of another relevant study become available.]

²⁸ [insert reference].

identify areas of "potential" savings but to put in place the **mechanisms** that will enable savings to be realised across all sectors of our economy and society.

At the same time, **the ICT sector itself should lead the way** and have a "best practice" carbon footprint. The Recommendation on 'ICT for the Low Carbon Economy' had as a main aim to send a strong signal to the ICT sector on the need to credibly reinforce ICT's relevance to our low carbon economy goal. The Recommendation, in complement to existing EU legislation on the performance of individual products, aims to agree a three year plan with the sector that will lead to transparent reporting on energy intensity and carbon emissions, performance targets and a shift of the sector away from in-built product obsolescence and carbon inefficient supply chains.

Third, the character of ICT as a General Purpose Technology (noted above) is very important in the transition to a low carbon economy, thus ICT use can make a big impact on reducing energy use in other sectors. In energy intensive sectors such as Construction/Buildings and Transport/Logistics sectors there is a need to make the case for the adoption of ICT solutions through enhanced collaboration between the ICT sector and these sectors. It should also be noted that such initiatives for harnessing the potential of ICT for a low carbon economy can succeed only if there is ubiquitous access to high speed internet.

2009 Consultation - The main barriers perceived to making a transition to an ICT-enabled low-carbon economy are 1) outdated business models, 2) ignorance of the potential of ICT, and 3) a lack of accepted and transparent measurements. The areas in which the ICT industry can contribute most rapidly to a reduction in energy use in the short-term have been identified as: electrical power grids, transport/logistics, and process and behavioural change. In the long term, they would be: to reduce energy use in cities by making more attractive alternative transportation to cars, more efficient public service delivery, and green housing developments. It is clear that ICT can "empower" both users and businesses to understand the impact of their behaviour (addressing the "understanding and accounting" deficit) but, as yet, technologies and services have not been deployed sufficiently to this effect.

Some of the solutions will take time to establish, such as infrastructures for clean transport and renewable energy; many doubt that even smart grids and metering are unlikely to deliver significant energy savings before 2015²⁹. Nevertheless the groundwork needs to be laid now, to bring large-scale emission cuts towards the end of the decade (2020).

Fourth, the internet has the scope to become a crucial infrastructure for managing carbon footprint and keeping people aware in "internet time" of the effects of their lifestyle choices, purchases or service usage. All such measurement schemes however depend upon ICT tools. Today there are few accredited energy efficiency systems: the "energy star programme" for electrical appliances is an exception. One priority therefore is to **establish common frameworks for carbon labelling of goods and services**, to encourage data collection based on these agreed standards and to give businesses and consumers tools to self-assess their carbon footprint. It is crucial in the internet age that open information services markets can emerge and incentives to reduce carbon use can be put into place.

In the medium term, information from networks of sensors³⁰ will bring the "carbon hungry" processes such as mobility or waste disposals under control. The benefits of

²⁹ UK electricity regulator OFGEM, quoted in *Consortium on Digital Energy, Green Paper* June 2009.

³⁰ Several cities are deploying extensive sensor platforms: Oulu, Santander, Nice, etc.

these applications to regions and cities will be substantial, but will require standardised and open interfaces between the energy infrastructure and data networks, which are far from happening naturally; in fact experiments are generally set up in isolation with little scope for building on the connectivity of the internet.

In parallel, public authorities would benefit from common assessment framework, metrics and methodologies to compare the 'low carbon gains' of infrastructure investments and the behavioural changes that are needed to reduce carbon footprints at city and regional level as well as in national level public services. For this to happen, common frameworks for the systematic collection of relevant indicators on the low carbon economy (perhaps by national statistical agencies and Eurostat) will be needed that facilitate the comparison of projects on ICT for low carbon and in order to set.

POSSIBLE ACTIONS

Set up a Commission-led Task Force on the Implementation of Smart Grids with the mandate to give guidance on regulatory aspects of smart grids and smart meters, including minimum functionalities for smart meters, by January 2011.

Agree standards for machine readable **carbon labelling** and mandatory integration of this information into electronic point of sale and online search information.

Support online "**eco-search**" tools to present accredited energy efficiency data to citizens as they browse or e-shop for products and services.

Standardised and open systems for smart metering and other energy use measurements so that businesses and households can own and use their own energy information.

Continue to support research and public-private partnerships for increasing energy efficiency in the most energy-intensive sectors, notably in **buildings, electricity generation and transmission**, and **mobility**. Support intelligent ICT solutions for transport through the European Green Cars and the i2010 Intelligent Car initiatives.

Establish **common carbon measurement frameworks** to assess ICT based carbon reduction projects at city and urban level

Set up a "**Low Carbon Public Sector Initiative**" with the aiming of deploying ICT to measure and manage carbon emissions.

4.5. Enhance Europe as an attractive place for production, investment, and research in ICT

A strong home-grown research and innovation capacity is needed not only to advance the technology but also to be able to assimilate innovations quicker and exploit them to economic and societal advantage. For modern and competitive economies, a strong ICT-based innovation capacity is also an essential condition for growth and well being. This is reflected in research budgets worldwide where ICT typically represents more than 30% of the total.

In addition to efforts that need to be deployed in the Member States to step up the ICT research and innovation effort and to link it closer to policy development in all major economic sectors, action at European level is increasingly important as well. This is the case not only for R&D but also for innovation policy measures that ensure the wider and better use of the technology. Experience shows that in areas where a focused R&D effort was undertaken at European level and linked to policy and standardisation measures, important successes were achieved.

New research instruments such as the Ambient Assisted Living Programme (AAL) and the ICT part of the Competitiveness and Innovation Programme (CIP) are proving their usefulness

Lighthouse Project - Solid state lighting

Support for large scale test beds and pilots so that by 2015 solid state lighting can be specified for all new commercial and public buildings (e.g. hospitals and schools) and street and highway lighting. Solid state lighting is one of the quickest and most cost-effective ways to reduce energy use and to improve the competitiveness of the European lighting industry.

in bridging the gap between advanced research and the market and in creating the incentives to step up investment in innovation, which is essential for Europe to catch up with global competitors. Such schemes now need to be assessed for their potential for extension and deepening. In particular, the support to large scale pilots in the ICT part of the Competitiveness and Innovation Programme is delivering open standards and accelerating the EU-wide deployment of innovative ICT-based solutions in areas like health, ageing, energy efficiency, transport or security.

However, more needs to be done. Although the private and public sectors in the EU invest more than €40 billion per year in ICT research, this still adds up to only half as much as their major trading partners. In addition, research and innovation efforts are fragmented across Europe, and Europe lacks a single internal market for innovative ICT-based products and services.

In the light of socio-economic and technology changes and building on the experience gained in 25 years of support to ICT research and innovation in the FP, it is important today to rethink the design and implementation of our financial and policy instruments in this field.

We must **step up our support** for ICT innovation piloting, field-testing, and spreading of best practice **under the CIP**. But this will not be enough: the EU must also show the way and **join up research and innovation support with other policy initiatives**. Demand- and user-driven European-scale actions that cut across research, innovation and deployment to deliver ICT-based service infrastructures in response to societal challenges such as providing scope for independent living for the increasing number of elderly people and that could be based on innovations in pan-European electronic identity management, healthcare delivery, energy efficiency and safe and clean transport.

New mutual innovation-procurement commitments between the relevant parties are also needed that make a bridge between innovation support and public/private procurement. In this way the public sector can implement cost containment measures while opening new markets for public services that enhance the quality of life of citizens.

Such cross-cutting actions would also mean a better articulation with other policy actions such as regulation, certification, procurement and standardisation. The ability to promote new markets for innovative technologies and services, the assurance that consumers can interconnect all their digital devices and media simply and easily without artificial boundaries and the ability for citizens, businesses and public authorities to have a real choice between vendors when updating their informatics systems depends upon **open standards and interoperability**.³¹

POSSIBLE ACTIONS

- Establishing a **European Patent system** (Article 118 of the Lisbon Treaty)
- Establish a **European Digital Interoperability Framework** mandating open standards in European public services and public procurement; and interoperability of Digital Goods and Services, where appropriate;
- Streamline **standards** in the field of ICT technologies;
- Complement the Géant high speed academic network and European Grid Infrastructure with a **European cloud** for researchers and public authorities for efficient and seamless services;
- Increase European support for ICT research and development, innovation piloting, field-testing and best practice under the Research and Competitiveness and Innovation Programmes;
- Simplify EU funding programme management and participation rules to offer "light and fast" schemes;
- Join-up research and innovation support with other policy initiatives by launching actions that cut across research, innovation and deployment;³²
- Focus public investments in ICT research and innovation to **leverage more private investment** through: strategic use of pre-commercial procurement, public-private partnerships, orientation of the structural funds towards research and innovation;
- More **joint programming**, coordination and pooling with Member States and industry to overcome fragmentation and isolation of research programmes.

5. NEXT STEPS

The pervasive nature of ICT and the increasing weight of the internet in the economy and society call for a European Digital Agenda that is broad and that receives **attention at a highest policy level**. It requires considerable **coordination and synergy** in order to achieve consistent policy making and a coherent strategic vision for Europe.

This is exemplified in the *Action Plan* annexed to this paper, which lists an extensive series of actions that would be needed for the completion of the Digital Agenda across the range of affected policy domains [NB: *to be decided if the table is included at this stage*].

Contributions to this working paper will be accepted until [end March 2010].

Taking into account inputs received from the European Parliament's "own-initiative report" and the results of the Informal Telecom Council to be held on 18 to 20 April 2010 in Granada, the Commission plans to adopt the European Digital Agenda in May 2010.

Annex – Digital Agenda Action Plan

whereas Art 24 of the Universal Service Directive (2002/58/EC) provides for the Interoperability of certain Digital Consumer Equipment related to accepted standards.

The December 2009 Competitiveness Council called for such cross-cutting across actions, see "The future of ICT research, innovation and infrastructures", doc. 16128/09