

Brussels, January 14, 2010

## CONTRIBUTION TO EUROPEAN COMMISSION'S CONSULTATION ON THE FUTURE "EU 2020" STRATEGY

DIGITALEUROPE is delighted to contribute to the European Commission's consultation on the Future "EU 2020" Strategy.<sup>1</sup>

*The world is at a turning point. So is Europe... These are no ordinary times. What Europe needs is a transformational agenda.*

José Manuel Barroso,  
President of the European Commission,  
"A Vision for EU 2020", October 2009

DIGITALEUROPE members share entirely President Barroso's sense of urgency and his call for a transformational agenda. The direction set and policies adopted over the next few years will largely determine Europe's place in the world for decades to come. Moreover, he is right to stress that:

*We already have several of the ingredients in the different strategies and instruments the EU has developed in recent years... But each of these was developed separately: they do not offer a holistic view of the kind of society we want to build for the future... We need to revise the current Lisbon strategy to fit the post 2010 period, turning it into a strategy for convergence and co-ordination to deliver on this integrated vision of EU 2020.*

Members of DIGITALEUROPE feel a special responsibility to respond to the President's initiative because the "turning point" he invokes is nothing less than the dawn of a new era in human civilisation, the digital era.

In this new era, digital technology will not be just another important feature. It will be, indeed already has become, *the defining transformational force*. The "holistic view" President Barroso calls for starts with this understanding: we are living a moment akin to the 15<sup>th</sup> century "Gutenberg moment" that powered the Renaissance, the 18<sup>th</sup> century steam power moment that triggered the first industrial revolution and the 19<sup>th</sup> century electric power moment that triggered the second industrial revolution.

Like those transformational technologies, digital technologies have rapidly become the central new drivers of productivity growth, innovation and the diffusion of knowledge throughout our economies and societies. And we are only at the beginning.

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<sup>1</sup> 'Commission Working Document - Consultation on the Future "EU 2020" Strategy', Brussels, 24.11.2009, COM(2009)647 final, [http://ec.europa.eu/eu2020/pdf/eu2020\\_en.pdf](http://ec.europa.eu/eu2020/pdf/eu2020_en.pdf).

In the digital era, the relentless development and application of ever more powerful digital technologies will accelerate the pace of economic and social transformation across Europe and around the world. There will be no opting out. Those who embrace digital technologies as the central transformational force of this new era will prosper. Those who do not will fade from relevance. Europe has fallen behind our own “Lisbon objectives” precisely because we have not yet given the digital revolution the central place it demands in our strategy. Provided we now do, there is no reason why Europe cannot, in the words of President Barroso, “exploit its full potential as the leading force for progress in a challenging world”.

The digital era does not threaten Europe. On the contrary, it creates for us infinite opportunity to exploit and leverage our many strengths in new and productive ways – and thereby to maintain the economic foundation which supports our social model as our continent ages.

Europe possesses enormous creative energy and talent, and deep commitment to human rights, individual dignity, the rule of law and democratic government. We have world-leading industries, companies and technologies throughout our industrial fabric. We have made great strides in creating a home market of continental scale. European enterprises and civil society are deeply engaged in emerging economies and societies around the world. We already lead the world in the transformation to a low-emission, resource-efficient economy - enabled largely by digital technologies.

As part of the 2020 Vision, the next Commission will develop a European Digital Agenda (accompanied by a targeted legislative programme) to tackle the main obstacles to a genuine digital single market, promote investment in high-speed Internet and avert an unacceptable digital divide.

The members of DIGITALEUROPE applaud the Commission’s point of digital departure. This contribution from DIGITALEUROPE to the consultation on the future EU 2020 Strategy joins the announced purpose, and expands on it. The digital agenda is no longer only – or even primarily – about the strength of DIGITALEUROPE’s members, indispensable though our own growth and innovation is for Europe’s future. It is rather about the pervasive uptake and innovative use of our products and services throughout the economy and society. Our members stand ready to partner Europe on this shared journey into our digital future.

## **SECTION 1**

### **SUPPORT FOR THE KEY DRIVERS OF EU 2020 AS PROPOSED BY THE EUROPEAN COMMISSION**

The future EU 2020 Strategy should be focused on “competitiveness” as the essential condition for economic growth and job-creation in the global economy of the 21<sup>st</sup> century. But “competitiveness” in current EU strategy has arguably come to span a policy agenda so broad as to lack strategic clarity and priority. It is the recognition that we are at an inflection point in human history – the digital inflection point – which leads to the necessary clarity and priority.

DIGITALEUROPE believes “competitiveness” is best understood to depend on two underlying conditions: permanent productivity growth, and permanent innovation in products, services, business processes and business models. The key drivers of EU 2020 as suggested by the Commission are rightfully based on these two ‘pillars’. As it will be further reflected in this paper, they do also comprise the adequate core elements such as education, (e-)skills and entrepreneurship, optimised research and the development of competitive, smart/interconnected infrastructures.

The wide range of evidence cited in this paper demonstrates beyond doubt that the application of digital technologies *has already become* the primary “up-stream” transformational power driving *both* productivity growth and innovation in *every* market and social service sector of the European (and global) economy. In the wake of the recent economic crisis, research has likewise begun to capture both the short and longer-term growth and employment-creating potential of investment in digital communications infrastructure.

But this is just the beginning. *The transformational power of digital technologies is itself accelerating*, largely through the relentless growth of computing, transmission and data management capacities and the exponential network effects this creates. A recent forward-looking report by the European Internet Foundation<sup>2</sup> put it this way:

*The trend is very clear...R&D investments (in digital technologies) are increasingly driven by the prospect and promise of exploding worldwide demand for the ability of individuals (and now also “things”) to communicate and collaborate with each other online, en masse... more people will be connected, with mobile devices to connect to the Internet anywhere at any time; user interfaces to access the network will be simplified and more intuitive; many new intermediate tools, applications and services will be part of the network or through the network to manage and make sense of vast volumes of data; and much content will itself be built on new technologies and tools of mass collaboration.*

The growing evidence of digital cause and macro-economic and social effect is nothing less than the emerging face of the digital age, and shows us why the building blocks necessary to deliver the transformational power of digital technologies *must comprise the heart of Europe’s Post-Lisbon strategy*. The task is urgent, the stakes – most importantly the sustainability of Europe’s social model and our climate change leadership – literally incalculable.

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<sup>2</sup> “The Digital World in 2025: Indicators for European Action”, September 2009, <http://www.eifonline.org/site/download.cfm?SAVE=10859&LG=1>

### **Digital technologies drive productivity growth**

In the words of Nobel economics laureate Paul Krugman, "... in the long run (productivity) is almost everything. A country's ability to improve its standard of living over time depends almost entirely on its ability to raise its output per worker."<sup>3</sup>

The European Commission agrees, asserting in its 2009 Ageing Report<sup>4</sup>, "Within a decade from now, labour productivity ... will become the main determinant of future economic growth."

Following decades of strong performance Europe's productivity growth has fallen since 1995, leading to a productivity gap with both the U.S. and Japan where productivity growth has risen over the same period. Productivity growth in major emerging economies is today also much higher than within the OECD, most notably Europe. We have no choice. If we are to sustain our economic strength we must overcome our productivity gap with the rest of the world, which means returning to *higher* productivity growth rates compared with other major economies.

A growing body of research leaves no doubt that the digital "intensity" of an economy is increasingly correlated with productivity improvements. A 2009 study prepared for the European Union<sup>5</sup> showed that "ICT penetration is correlated with Total Factor Productivity (TFP) growth, a key source of long-term growth." A 2009 study of the EU and US involving 13 EU statistical offices<sup>6</sup> recently concluded that, "differential gains in productivity in more intensive ICT-using industries have been an important part of the US productivity advantage over the decade to 2004." Other recent research supports these findings<sup>7</sup>.

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<sup>3</sup> Paul Krugman 1992, "The Age of Diminished Expectations: US Economic Policy in the 1980s", MIT Press, Cambridge.

<sup>4</sup> European Commission (2009), "The 2009 Ageing Report".

<sup>5</sup> "The Impact of ICT on Employment", Professor Michael Burda, PhD, December 2, 2009.

<sup>6</sup> "ICT Impact Assessment by Linking Data Across Sources and Countries", M. Franklin, Peter Stam and Tony Clayton, Office for National Statistics, UK Economic and Labour Market Review, 2009, vol. 3, issue 10, pages 18-27, available at [http://epp.eurostat.ec.europa.eu/portal/page/portal/ver-1/information\\_society/methodology/ICT\\_IMPACTS\\_Summary\\_Report.pdf](http://epp.eurostat.ec.europa.eu/portal/page/portal/ver-1/information_society/methodology/ICT_IMPACTS_Summary_Report.pdf).

<sup>7</sup> A 2002 Conference Board study concluded that, "... (European productivity) differences with the U.S. go beyond differences in the diffusion of new technologies. Nonetheless, technological diffusion is a big part of the story. There is diffusion of ICT in Europe, but at a slower pace than in the U.S. in particular during the second half of the 1990s." <http://www.conference-board.org/economics/workingpapers.cfm?pdf=E-0009-02-WP>.

A 2006 report from the i2020 High Level Group found that ICT contributed to about half of European productivity gains in the second part of the 1990s through the first half of the present decade. i2010 High Level Group Report 200/2007", April 20, 2006.

A 2007 study of ICT growth in transition countries showed that ICT plays an important role in facilitating modernization and economic performance. "ICT, Innovation, and Economic Growth in Transition Economies" prepared by ECORYS Nederland B.V. in collaboration with TNO and IDEA, 2007.

A 2009 study by McKinsey found a positive correlation exists between a country's readiness in terms of ICT and its economic competitiveness. McKinsey & Company, "Mobile Broadband for the Masses", February, 2009. The study finds that broadband can have extensive benefits for emerging markets.

A 2005 study by Harvard University showed that industries that use or produce ICT have played a disproportionate role in American growth since 1995. "Productivity: Information Technology and the American Growth Resurgence" Dale W. Jorgenson, Mun S. Ho, Kevin Stiroh.

All such research recognises that the interactions through which digital technologies actually drive productivity improvements are complex. Beyond efficiency gains, there is widespread agreement that network effects - the ability of organisations and individuals to participate in real time in much more widespread and diverse internal and external value chains – are a major factor.

At the same time, all commentators agree that while the uptake of digital tools has become the essential triggering factor for productivity improvement, it may not in itself be sufficient. One study observes that “this may depend for example on a region’s regulatory structures, political environment, and the flexibility and openness of its business culture. At an industry-level, (it) may depend on labour and organizational structures. And all ICT efforts will depend greatly on the ability to recruit and train skilled ICT workers — such as computer scientists and engineers.”<sup>8</sup> Another study suggests “that more intensive ICT-using industries make the fastest progress in catching up to the best practice ‘productivity frontier’ in economies where there is more labour flexibility.”<sup>9</sup>

Such conditioning factors vary widely across Europe. All stakeholders, at all levels, will need to participate in the elaboration and implementation of Europe’s digital agenda to ensure that it delivers the productivity growth we must achieve.

### ***Digital technologies drive innovation***

Recent research likewise leaves little doubt that digital technologies increasingly drive innovation in all sectors. Groundbreaking research into ICT impacts conducted by 13 EU member-state statistical offices<sup>10</sup> recently reported:

- “A strong link between use of high-speed internet connections by employees (in IT using firms) and the ability to innovate using ideas from outside the firm, and outside the customer/supplier chain...”
- “...network effects in knowledge management, in the effectiveness with which firms are able to convert knowledge into new products and services, and in the speed with which they are able to communicate them... ICT intensive industries in Europe show the tendency seen in the U.S. ... for successful firms to be better able, and quicker, to replicate market share winning innovations across production and distribution networks.”

Beyond enabling innovation in existing industries, products and services, the world’s rapidly evolving digital infrastructure, most notably the capabilities built into and on the internet, create the foundation for entirely new industries, products and services.

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<sup>8</sup> See “Who cares? Who dares?” prepared for the European Business Summit by Insead with the support of Microsoft, Shell and the Federation d’Entreprises Belges (FEB); Economist Intelligence Unit “How technology sectors grow, Benchmarking IT industry competitiveness 2008”; European Commission Communication “eSkills for the 21st Century: Fostering Competitiveness, Growth and Jobs”.

<sup>9</sup> “ICT Impact Assessment by Linking Data Across Sources and Countries”, Op. cit.

<sup>10</sup> U.K. Office for National Statistics, Op. cit.

## **Digital infrastructure investment drives both short and long-term growth and job creation**

In the wake of global economic turbulence, Europe finds itself needing to stimulate both short and longer-term growth and job creation. Recent studies from a range of different countries confirm both the short and long-term growth and job-creating power of digital infrastructure investment, not just from the construction of the infrastructure itself but also from the immediate, strong and durable “multiplier” effects of enhanced digital capability throughout the economy, especially for small businesses.

- A 2009 World Economic Forum report<sup>11</sup> found that such infrastructure stimulates “both upstream (i.e. ICT sector) capacities (R&D, product design, applications development) and downstream services (logistics, e-health, smart grids, etc) thereby acting as a multiplier for economic growth.”
- A 2009 study by Micus Management Consulting on behalf of the European Commission<sup>12</sup> found that greater broadband network adoption in the European Union would, in a base-case scenario, create over one million jobs between 2006 and 2015 and contribute to €849 billion in economic activity.
- For Germany alone<sup>13</sup> a 2010-2020 scenario for the aggressive roll-out and extension of broadband and ultra-broadband coverage at a cost of about €37 billion would generate €170 billion indirect and indirect GDP and create an estimated 968,000 jobs “not only in terms of construction, but also longer-term externalities such as accelerated innovation and new business creation, and the attraction of jobs from other countries as a result of the recomposition of industrial value chains.”

A 2009 study by McKinsey<sup>14</sup> found that raising broadband penetration levels in the less mature Central and Eastern Europe and markets could result in .9 – 1.3 million additional jobs and 60-80billion in additional GDP.

In April 2009 the Information Technology & Innovation Foundation (ITIF) found<sup>15</sup> that £ 15 billion invested in the UK’s ICT infrastructure (broadband networks, intelligent transportation systems, and smart power grids) would create approximately 700,000 UK jobs, over half of which would come from small businesses.

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<sup>11</sup> World Economic Forum (Davos) 2009 report, “ICT for Economic Growth: A Dynamic Ecosystem Driving the Global Recovery, page 3

<sup>12</sup> Micus Management Consulting, “The Impact of Broadband on Growth and Productivity: A Study on Behalf of the European Commission”, 2009. Note that this projection corresponds to a constant adoption rate equal to European average over 2004-2006.

<sup>13</sup> “The impact of broadband on jobs and the German Economy”, Drs. Katz, Vaterlaus, Zenhäusern, Suter and Mahler, May 2009.

<sup>14</sup> McKinsey & Company, “Mobile Broadband for the Masses”, February, 2009. The study finds that broadband can have extensive benefits for emerging markets.

<sup>15</sup> Jonathan Liebenau, Robert Atkinson, Patrick Karrberg, Daniel Castro, and Stephen Ezell, “The UK’s Digital Road to Recovery”, The Information Technology and Innovation Foundation, April 2009.

- In January 2009, ITIF projected<sup>16</sup> the creation in the U.S. of 949.000 jobs - over 500.000 in small business - from an investment of \$ 30 billion split evenly between broadband, health and smart power grid infrastructures. Such investment was found to “(1) contribute to significant immediate direct and indirect job growth in our economy; (2) create a ‘network effect’ throughout the economy that, in some cases, doubles the number of directly created jobs; and (3) provide a foundation for longer term benefits, including government cost savings, economy-wide productivity, and improved quality of life for Americans.”

It is important to note that these projections are all (with the exception of part of the German study) still predicated on investment in the current generation of digital technologies and broadband capacities. So-called “next-generation-networks” and digital tools will over the next decade enhance the multiplier effect.

### ***Digital technologies to sustain our social model***

The growing power of digital technologies to drive productivity growth, innovation and employment assumes its full significance in the context of Europe’s aging population.

It is not news that Europe is aging. In its 2009 Ageing Report<sup>17</sup> the European Commission projects that “low birth rates, rising life expectancy and continuing inflow of migrants can be expected to result in an almost unchanged, but much older, total EU population by 2060, meaning that the EU would move from having four working-age people (aged 15-64) for every person aged over 65 to a ratio of only two to one.”

The Commission goes on to state the obvious: “With decreasing labour supply, productivity will have to be the source of future economic growth. A prudent assumption is that Member States’ labour productivity growth would converge to a long-term historical average in the EU of 1¾%, close to that recorded in the US over the very long term. As a result, the annual potential GDP growth rate would decline significantly. A shrinking working-age population will act as a drag on growth and on per capita income.” The OECD has estimated that European GNP per capita will be 18% lower in 2050 than it would be with a constant dependency ratio.<sup>18</sup>

It is self-evident that our ability to sustain our social model will depend on our ability to significantly outperform these projections, which means raising our long-term average productivity growth well about the Commission’s assumption of 1¾%.

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<sup>16</sup> ITIF reference, <http://www.itif.org/files/roadtorecovery.pdf>.

<sup>17</sup> European Commission (2009), “The 2009 Ageing Report”.

<sup>18</sup> OECD (2001), “Trends in Immigration and Economic Consequences”.

Almost a decade ago, EU Member States adopted a clear three-part strategy for confronting these demographic realities<sup>19</sup> :

1. reducing debt at a fast pace;
2. raising employment rates and productivity;
3. reforming pension, healthcare and long-term care systems

The recent crisis-driven increase in public debt makes the first objective more difficult, which in turn makes the other two all the more urgent.

### *Raising employment rates and productivity – the digital dimension*

The power of digital technologies to drive productivity growth has already been highlighted. But they will also prove instrumental in raising European employment rates. The European Commission reports<sup>20</sup> that “almost all Member States have tightened the eligibility requirements for receiving a public pension, notably by raising the retirement age and restricting access to early retirement schemes... While the employment rates of older workers have been rising in recent years, there is still a lot of room for further progress. Only around 50% of people in the EU are still in employment by the age of 60.” Clearly efforts must focus on exploiting this significant potential to increase the workforce and decrease the number of dependents.

At the same time, the European Commission expects<sup>21</sup> that for the EU as a whole, the labour market participation rate (those of working age actually working) is expected to increase from 70½% in 2007 to 74% in 2060, but that employment is nevertheless projected to shrink by about 19 million people. Efforts must likewise focus on increasing the participation rate of working-age Europeans beyond the 74% now projected.

Improving access to ever more powerful digital networks and tools, and the skills to use them, will be instrumental in both these efforts:

- An October 2009 report<sup>22</sup> commissioned by the UK Champion for Digital Inclusion found that “10.2 million adults (21% of the U.K. population) have never accessed the internet, including 4.0 million adults (9%) who are both digitally and socially excluded... The spread of digital skills and online employment tools can significantly increase employment and earning power, particular among disadvantaged and older job-seekers.”
- Raising the employment rate means helping more job-seekers find work. Digital tools and platforms already provide access to much wider job markets and greatly improve the chances that a job-seeker finds work<sup>23</sup>.

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<sup>19</sup> Stockholm European Council in 2001.

<sup>20</sup> European Commission, op. cit.

<sup>21</sup> European Commission, op. cit.

<sup>22</sup> “The Economic Case for Digital Inclusion,” Price Waterhouse Coopers, October 2009.

<sup>23</sup> For a useful discussion of the current state of on-line job-hunting, see:

[http://www.quintcareers.com/job-board\\_death\\_march.html](http://www.quintcareers.com/job-board_death_march.html)

## *Reforming pension, healthcare and long-term care systems – the digital dimension*

In its 2009 Ageing Report,<sup>24</sup> the European Commission asserts that “in the fields of pensions, health care and long-term care, (it) will continue to support Member States in their effort to improve the efficiency and effectiveness of social spending...” Improving the efficiency and effectiveness of health care in particular will trigger a virtuous circle of age-related benefits. Again in the words of the European Commission<sup>25</sup>, “A population in better health will be able to work longer as it grows older, allowing higher productivity and labour participation, and will need less healthcare, ultimately resulting in decreased pressure on public finances. Increasing the healthy life expectancy will be a crucial factor in ... attracting more people into employment and retaining them on the labour market.”

We have barely begun to exploit the potential of digital technologies to improve the productivity and quality of health care. A recent joint study by the EU and the OECD<sup>26</sup> finds that “the diffusion of ICT in the health care system to date has been... limited in comparison with that in other sectors of the economy in OECD countries. Moreover, adoption in health care has not diffused evenly through the health care market. Currently, the most mature ICT applications are in the financial and administrative domains. Digital reporting of laboratory and radiology results is also well established in many countries. In comparison, adoption of applications aimed at improving the quality and timeliness of patient care has been slow.”

## *The Silver Economy – digitally enabled opportunities in ageing*

The ageing of Europe does not just present difficulties to overcome, as the European Commission recognises<sup>27</sup>: “Societies in which people live longer also offer opportunities for developing new products and services. The growth possibilities in these future markets are large and, as living longer is not a phenomenon confined to Europe, the solutions, products and services developed can be exported to third countries, opening new markets there.

Exploiting these opportunities will increasingly rely on the enabling power of digital technologies, as can be seen for example from new product and service initiatives adopted within the recently established Silver Economy Network of European Regions<sup>28</sup>.

## ***Digital technologies drive Europe’s climate change leadership***

Europe has established itself as the leader in the global effort to combat climate change. The practical ability of economic operators and individuals to reduce emissions and increase efficiency will increasingly depend on the transformational power of digital technologies – particularly their growing power to capture and process real-world, real-time data.

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<sup>24</sup> European Commission, op. cit.

<sup>25</sup> European Commission, op. cit.

<sup>26</sup> “Achieving Better Value for Money in Health Care” (2009); OECD Health Policy Studies; <http://browse.oecdbookshop.org/oecd/pdfs/browseit/8109171E.PDF>

<sup>27</sup> European Commission, op. cit.

<sup>28</sup> <http://www.silvereconomy-europe.org>

In a March 2009 Communication on “Mobilising ICT to Facilitate the Transition to an Energy Efficient, Low-Carbon Economy”,<sup>29</sup> the European Commission stressed that, “(ICTs) are known for their broader, economy-wide capacity for energy saving and for their potential to effect rapid and profound change across every facet of society, government and industry.” The Commission noted that the production and use of ICT equipment itself is responsible for about 2% of Europe’s carbon emissions, but that by 2020 ICTs are expected to drive emissions reductions of up to 15% of the remaining 98%, as well as cost savings. This enabling role will include:

- *Helping scientists monitor and measure climate change:* At the most fundamental level, digital technologies are helping society understand the carbon emissions problem. This role is large and growing.<sup>30</sup>
- *Allowing individuals and businesses to manage their own energy consumption:* Recent studies have shown that digital monitoring and management of resources can reduce energy consumption in buildings by 17% and reduce carbon emissions in transport logistics by up to 27%.<sup>31</sup>
- *Replace commuting with collaboration tools:* Tools such as online chat capabilities and videoconferencing have the potential to drastically reduce the amount of GHG emitting travel – including daily commuting - required for social and business purposes.<sup>32</sup>
- *Smart power and mobility:* Smart energy grids and transport networks have the potential to reduce carbon emissions on a grand scale.<sup>33</sup>
- *Sustainable energy innovation:* Digital capabilities underlie the development, commercialization and operation of major new renewable energy sources. For example, offshore wind farms are controlled remotely with digital solutions which can detect and repair problems from remote locations.<sup>34</sup> Smart Grid technology is likewise enabling better management of solar technologies.<sup>35</sup>

<sup>29</sup> “Communication from the Commission on mobilizing Information and Communication Technologies to facilitate the transition to an energy-efficient, low-carbon economy” COM: (2009) 111 final.

<sup>30</sup> One example: global telecommunications systems generate real-time exchanges of meteorological data and other information between international and national centers. “ICTs and Climate Change: ITU-T Technology Watch Report #3”, International Telecommunications Union, December 2007.

<sup>31</sup> European Commission Communication “On Mobilizing Information and Communication Technologies to Facilitate the Transition to an Energy-efficient, Low-carbon Economy” COM: (2009) 111 final.

<sup>32</sup> “Smart 2020: Enabling the Low Carbon Economy in the Information Age” Global e-Sustainability Initiative (GeSI).

<sup>33</sup> Commission Recommendation on “Mobilizing Information and Communications Technologies to Facilitate the Transition to an Energy-Efficient, Low-Carbon Economy”, Brussels, 9.10.2009 C(2009) 7604 final

[http://ec.europa.eu/information\\_society/activities/sustainable\\_growth/docs/recommendation\\_d\\_vista.pdf](http://ec.europa.eu/information_society/activities/sustainable_growth/docs/recommendation_d_vista.pdf).

<sup>34</sup> “High Tech, Low Carbon”, DIGITALEUROPE, April 2008, available at

[http://www.digitaleurope.org/index.php?id=32&id\\_article=223](http://www.digitaleurope.org/index.php?id=32&id_article=223).

<sup>35</sup> “Smart Roads. Smart Bridges. Smart Grids”, Wall Street Journal, February 17, 2009

In sum, digital technologies are changing the very nature of the climate change challenge: helping scientists understand the problem, supporting sector-specific innovations, creating new industries and business opportunities in the fast-growing “green economy”, empowering organisations and individuals to reduce their carbon footprints, and creating the awareness and debate that will maintain Europe’s leadership position through 2020 and beyond.

There are three main barriers hindering the transition to an “ICT enabled” low carbon economy:

a) *Lack of accepted and transparent measurements*

The lack of accepted/transparent measurement - gathering and tracking environmental data is one of biggest challenges facing organizations today. Measurement, reporting and verification of emissions are a vital step for organizations looking to increase awareness of the impact of climate change. It enables them to lower costs by identifying efficiency measures, reduce climate change related risk to the business and also reveal commercial opportunities. It also enables a fuller assessment of senior management’s options with regard to strategic direction, innovations and capital projects. These developments will not only help companies reveal emission hot spots so that these can be better managed, but also help to prepare companies for future regulation.

b) *The ignorance of ICT potential*

On the one hand ICT products consume energy but on the other hand they provide the technologies that reduce energy consumption and emissions. To date the focus has been on improving the energy efficiency performance and carbon footprint of ICT products. This means that the —macro story of ICT enabling energy and emissions savings has received less attention. It is only with recent studies, such as Smart 2020, that the quantification and evidence base of ICT’s enabling potential has received more attention. We would also include —too few real-life examples under the heading of —ignorance of ICT potential.

c) *Outdated business models*

Many business models are based on the traditional carbon intensive economy and there is still an uptake issue in relation to new technologies that change the way we work and live.

In addition to the three main barriers identified above, the following other points need to be taken into consideration as important challenges and opportunities. Firstly, the need to set-up regulatory regimes promoting competition, attracting capital and enabling innovation in order to enable the horizontal take-up of ICT through other sectors. Secondly, Europe should address the lack of incentives for SMEs as well as the lack of “green” ICT skills. Last but not least, Europe needs to address the lack of direct funding for accelerating research into renewable and sustainable low-carbon energy sources.

In order to move to a low carbon economy, the sustainable outcome needs to be the profitable outcome, for both businesses and consumers. Ubiquitous, reliable and affordable fixed and wireless broadband would be the backbone of a modern low carbon information infrastructure that would support new business models and lifestyles. This would help new, sustainable business models emerge.

Finance and investment decisions are a major issue. Cash flow and payback periods drive purchasing decisions. There needs to be clear economic benefits, for businesses and consumers alike, in order to change behaviour.

Environmentally friendly consumption needs to be rewarded. There also needs to be demand stimulation in the market which in turn will drive further innovation in low carbon technologies. This highlights the vital need for adequate economic incentives for businesses to attract private capital and invest in green R&D; for adequate basic research at universities, coupled for example with world class start-up incubation sites at universities in which the private sector could participate; and for continued adequate intellectual property protection to —incentivize and protect R&D in this area. Public investments in green technologies, and tax incentives or subsidies for the private sector and consumers to do invest in green technologies, could help increase the volume, reduce the price and increase the uptake of green ICT technologies. Strategic business partnerships between the ICT sector and the buildings transport and energy sectors would also help drive new business models. The European Commission could certainly play an important role in stimulating the development of such partnerships. Local, regional and national governments need to lead by example - e.g. demonstrate the potential of ICT to reduce energy consumption in office buildings through intelligent energy management technology; prioritise smart grid investments; and use state of the art flexible work and virtual meeting programmes.

Today there are factors like “cost” that cause people to continue with unsustainable consumption patterns.

Cost is often a constraint and can discourage sustainable consumption. Cultural habits drive consumption behaviour and there is often an ignorance and reluctance to change behaviour. Furthermore, integrating ICT based business processes and transformation requires a significant input of capital and human resources in order to be successful.

As regards the ICT sector, the most important measures through which policymakers can help speed up the transition to low carbon economy in the next 2-3 years are:

a) Green public procurement

Purchase energy efficient technologies and drive innovation in these technologies by signalling procurement needs/decisions to the market.

b) Support investments in key infrastructures

Key digital communications infrastructure as outlined above; smarter electrical power network, also integrating renewables into the grid.

## c) Set fiscal incentives.

Broad range of financial incentives (capital, fiscal etc) e.g. for companies to invest in smart grid technologies at any phase of the electricity generation, distribution and consumption system.

DIGITALEUROPE believes that ICT companies already lead the rankings of the most energy-efficient industrial sectors. In addition, the ICT sector can best lead by example by committing to reporting all direct greenhouse gas (GHG) emissions and indirect emissions from consumption of purchased energy (GHG Protocol scope 1 and 2 reporting).

The ICT sector also has the opportunity to take the lead and participate in the establishment of cross sector and cross stakeholder partnerships (cities, regions, other sectors).

There are three main areas in which the ICT industry can contribute most rapidly and usefully to reduction in energy use in the short term: Electrical power grid (including smart metering), transport/logistics and services delivery (public and general).

Macro policies such as tax incentives, economic stimulus and research grants for collaborative groups working on targeted initiatives are some of the key regulatory changes that would most effectively promote transition to a low carbon economy.

DIGITALEUROPE believes that the play of market mechanisms, jointly with EU funding and to some extent with regulatory changes can best stimulate investments in infrastructure for the low carbon economy.

In particular we believe that the price to pay for carbon emissions should be set sufficiently high, and that broad based market incentives to encourage innovation should be in place without favouring one technology over another. When we refer to regulatory changes we think about macro policies offering incentives and economic stimulus. Finally, through EU funding we aim to get further ahead in scaled up investment in key ICT infrastructure.

When we look at the vision and development of "smart city" strategies, we believe that ICT can mostly help to reduce energy use in cities through urban planning; through „green' housing developments; and through more efficient delivery of public services.

Transportation, buildings and energy grids are three of the largest CO2 emitting sectors according to the IPCC. ICT can provide solutions for doing things smarter in each of these areas. Dematerialization of goods and services necessary to meet a city's needs and infrastructure, e.g. bringing information to people rather than people to information is an important part of "smart city" strategies.

ICT solutions resulting in less need for commuting and business travel are one of the ways in which ICT can best contribute to reducing transport emissions.

Examples include eco-cost-based transport/travel, where a ICT system will offer the transport path with the least carbon footprint looking at a number of parameters like Time-of-Day, carbon-footprint status of the several travel alternatives (quota's), priority etc.

While we appreciate that – as some people point out – the potential downside of greater efficiency is that it may encourage more of the unsustainable activity, we see emerging evidence of measurable ICT enabled gains in energy efficiency that have managed to avoid the so called rebound effect (i.e. increase in unsustainable patterns) and have produced net reductions in energy/resource use.

There are numerous examples of data centre consolidation. Consolidation, compression and efficient design can achieve significant space reduction, and reduced electrical power and cooling costs. When looking at how ICT enables efficiency in other sectors, FIAT's eco: Drive uses in-car diagnostics to analyse driving and then educates the car owner on how to improve his/her ability in order to reduce fuel consumption.

DIGITALEUROPE's 2008 publication "High Tech: Low Carbon; The Role of the European Digital Technology Industry in Tackling Climate Change" illustrates relevant projects at regional/city/local level which are examples of successful transition to low carbon economy. We believe that changes in business models and cross sector partnerships are the broader transformations needed to decouple economic growth from the use of material resources.

## SECTION 2

### THE FUTURE OF THE ICT SECTOR FOR EUROPE

Europe's future well-being depends on harnessing the growing transformational power of digital technologies, products and services throughout industry and society. It is essential to recognise, however, that this vision can only be realised if Europe is itself also home and host to a dynamic, growing, leading-edge ICT sector tightly interwoven into our wider industrial fabric.

Indeed, the indispensability of home-grown ICT is nothing less than the central meaning - and hard reality - of this newborn digital age. No region of the world will be able to maintain its economic strength solely on the basis of imported digital skills, innovation, products and services. And by the same token, no region of the world will be able to maintain the ICT sector it needs if that sector is not also a leader in global markets. Europe's ICT sector continues to grow and to innovate. We are ready, willing and able to meet this challenge, but we cannot do it alone.

- Currently, there are an estimated 680,000 enterprises across the EU 27 involved principally in ICT manufacturing and service industries with roughly 6 million<sup>36</sup> people directly employed and a value added approaching €500 billion.<sup>37</sup>

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<sup>36</sup> Information Society Research & Innovation: an evaluation of the Sixth Framework Programme led by Esko Aho, May 2008.

<sup>37</sup> Ibid

The sector itself represents 4.5% of European GDP and an estimated 6% if the value added of ICT in other sectors is also accounted for.<sup>38</sup>

- According to the OECD, the digital technology industry shows the highest rates of value-added growth in the European Union.<sup>39</sup> Further proof of ICT's importance to Europe comes from the October 2009 report by the International Data Corporation (IDC) which revealed that in 2009 ICT-related activities will have generated €265 billion in tax revenues across the EU and European enterprises will have spent some €305 billion on ICT.<sup>40</sup>
- ICT now accounts for one third of all EU employment in business research, almost one fifth of the total of business and government R&D expenditure, and more than one fifth of all EU patents<sup>41</sup>.
- The Economist Intelligence Unit's third annual ITC Industry Competitiveness Index<sup>42</sup> released in December 2009 assesses and compares the IT industry environments of 66 countries to determine the extent to which they support the competitiveness of the IT sector, and finds that "EU countries are well-positioned to leverage the IT sector for long-term growth... Five of the top 10 countries on the index are EU Member States with northern European countries, including Finland (2), Sweden (3), Netherlands (5), and the UK (6), placing particularly well. Of the 24 EU countries included in the index, all but four are ranked in the top half."

But while these figures confirm that ICT is a large and growing piece of Europe's industrial, technological and employment base, comparisons with other leaders sends a clear message: we must and can do much better.

- ICT's relative weight in the economy remains smaller in Europe than elsewhere in the OECD, especially compared to Korea and Japan – mostly due to Europe's weakness in ICT manufacturing.<sup>43</sup>
- Europe represents one third of the global market for ICT worth an estimated €2,000bn which is growing at 4% per year. But its ICT sector takes only 23% of the total global value added.
- The EU ICT sector invests less in R&D as a function of its size than its main competitors. This is because nearly all R&D growth in the EU ICT sector takes place in the computer services & software sub-sector, again reflecting weakness in ICT manufacturing.

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<sup>38</sup> Strategy for ICT R&D and Innovation in Europe: Raising the Game, European Commission March 2009: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2009:0116:FIN:EN:PDF>

<sup>39</sup> OECD Key ICT indicators.

<sup>40</sup> From IDC October 2009 report: "Aid to Recovery: the Economic Impact of IT, Software and the Microsoft Ecosystem on the Economy," page 1.

<sup>41</sup> Communication from the Commission: "A Strategy for ICT R&D and Innovation in Europe: Raising the Game," page 2 quoting the OECD's 2003 report "ICT and Economic Growth."

<sup>42</sup> "Resilience amid Turmoil: Benchmarking IT Industry Competitiveness 2009," available at [www.bsa.org/globalindex](http://www.bsa.org/globalindex).

<sup>43</sup> JRC Scientific and Technical Reports, "The 2009 Report on R&D in ICT in the European Union", 2009, page 82, <http://ftp.jrc.es/EURdoc/JRC49951.pdf>.

- The USA spends twice as much as the EU on ICT R&D. Indeed company data suggests that among the biggest R&D spenders, the entire advantage of the USA is due to the ICT sector alone. As the Commission's 2009 Communication remarks, because "Europe has relatively few world-recognised ICT poles of excellence," attracting students, researchers and private investments is difficult: "California alone attracts twice as much venture capital as the whole of Europe."<sup>44</sup>

## SECTION 3

### BUILDING THE DIGITAL ECONOMY NOW

Achieving the EU 2020 vision demands a concerted effort, starting now, to put in place its five essential building blocks and to make progress regarding the external dimension (trade policy):

- the Digital Single Market
- ICT Research & Development
- Digital Infrastructure/Next Generation Networks
- e-Skills
- Online Trust & Security
- Trade policy

The industries represented by DIGITALEUROPE are committed to play the leadership role incumbent on us in each of these areas. Success will likewise necessarily depend on a robust supporting public policy framework for each.

#### **Building block 1: The Digital Single Market**

- **It is past time to make the creation of a Digital Single Market a central priority of Europe's Digital Agenda. As for the "1992" single market push, success will depend on strong Presidential leadership and effective collaboration across areas of competence and responsibility within the EU institutions, and between EU institutions and Member States.**

The European Union has an opportunity to emerge from the current recession more productive, innovative, competitive and knowledge driven than before. In order to grasp this opportunity Europe needs to build a Digital Single Market. The European Union has a Single Market for goods, people, capital and to some extent services.

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<sup>44</sup> Ibid, page 4 quoting E&Y study: "Global Venture Capital Insights and Trends 2008".

This is the crown jewel in Europe's competitiveness, permitting a huge growth in intra-community trade since its inception as well as attracting significant investment.

As more and more economic, cultural and political activity moves online we are confronted with the irony that while the internet is borderless, much online activity stops at national borders. This is due to regulatory fragmentation and excessive red tape making it difficult for consumers and businesses to transact across national borders whether using e-commerce platforms for tangible products, or for online services such as music.

Fully leveraging Europe's digital strengths into sustainable jobs, economic wealth and global competitiveness requires a continental-scale digital single home market where business can be conducted online between buyers and sellers anywhere at least as easily as it can be through traditional channels.

Indeed, while Europe has successfully dismantled cross border barriers to trade in most physical goods and many services, online channels for internal trade in the very same goods and services may run into severe internal market fragmentation arising from diverse national regulation of on-line activity. Consumers are thus deprived of greater choice and Europe-wide comparison shopping for the lowest price, while retailers are denied highly cost-effective access to Europe's 350 million consumers. The situation is particularly prejudicial for SMEs, the "engine of the European economy."<sup>45</sup> The prejudice is even more acute for creators of new digital products and services which by definition can only be promoted, sold and distributed on-line. A recent study<sup>46</sup> found that such opportunity costs are not theoretical:

- Due to barriers to e-commerce, while 150 million EU citizens – a third of our population – shops over the internet, only 7 percent of these online shoppers cross their national borders.
- Only 21 percent of online retailers sell in other Member States, and only 20 percent of trade across borders is in services although the service sector represents 70% of EU value added!
- 60% of cross-border purchases are blocked; in the case of computer and electronic equipment, the failure rate reached 80 percent.<sup>47</sup> Only Austria and Spain had success rates slightly above 50 percent, while Romania, Bulgaria, Latvia and Belgium had the worst record of purchasing failures.

Our continuing political neglect of this situation is arresting: even as European buyers and sellers have moved online in ever greater numbers over the last decade, we seem to have forgotten that opening the single market for conventional commerce through the late 1980's produced an additional 2.2 percent of GDP and 2.75 million more jobs between 1992 and 2006.

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<sup>45</sup> Future Internet Enterprise Systems (FinES) Cluster Position paper, Version 1, 15 May 2009.

<sup>46</sup> "The Single market as a Tool to Improve Growth and Adjustment in The European Economy," by Adriaan Dierx, Fabienne Ilzkovitz

<sup>47</sup> "Report on cross-border e-commerce in the EU," European Commission 2009

[http://ec.europa.eu/consumers/strategy/docs/com\\_staff\\_wp2009\\_en.pdf](http://ec.europa.eu/consumers/strategy/docs/com_staff_wp2009_en.pdf)

Final report of the Content Online Report, May 2009,

[http://ec.europa.eu/avpolicy/docs/other\\_actions/col\\_platform\\_report.pdf](http://ec.europa.eu/avpolicy/docs/other_actions/col_platform_report.pdf).

The same commitment to creating a continental-scale home market was fundamental to the global success of European mobile technology when 20 years ago Europe introduced a single GSM standard for mobile telephony buttressed by deregulation of the telecom sector.

In contrast over the last ten years, Europe has conspicuously and systematically failed to address the obstacles fragmenting our digital markets.

- Great European digital innovators like Skype or Spotify must deal with cyber frontiers which prevent them from providing a single pan-European service to all 27 Member States.
- The EU Services Directive in particular fails to break-down such barriers because it excludes the “country of origin principle,” meaning that providers of digital products and services still have to deal with 27 different sets of national legislation.

To complete the Digital Single Market the European Union must address barriers such as: national management of copyright licensing; inconsistent, opaque and subjective private copy levy systems unfit for the digital age; diverging data privacy rules; different consumer protection regimes; differing interpretations of intermediary liability; radio spectrum usage harmonization; payment systems that facilitate cross-border transactions; and VAT reporting.

DIGITALEUROPE believes it is no coincidence that European companies have been globally successful in the mobile technology industry: the GSM Directive, the Single Market and telecoms liberalization allowed European companies in network infrastructure, mobile handsets and mobile network operation to grow to scale in the ‘home’ market before going global. In the internet, where much of the innovation and margin has moved, almost all the industrial success stories are from the US. We believe this is, in part, because of the scale that the large domestic US market has afforded these players. Internet entrepreneurs in the EU face tremendous hurdles in crossing borders and in getting to scale. By remaining sub-scale they cannot compete with larger players and rarely grow beyond their domestic markets.

DIGITALEUROPE was delighted to see President Barroso talk of the need to build a genuine Digital Single Market in his ‘Political Guidelines for the next Commission’ transmitted to the European Parliament in September 2009<sup>48</sup> and to see the need for a Digital Single Market included in the Visby Declaration.

The building of a Digital Single Market requires that the European Union’s leaders pursue greater harmonization across a number of areas impacting on online commerce and service provision. A horizontal approach to policymaking will be required to make progress across a number of apparently unrelated areas. The policy areas mentioned below as examples each represent a barrier to a Digital Single Market.

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<sup>48</sup> [http://ec.europa.eu/commission\\_barroso/president/pdf/press\\_20090903\\_EN.pdf](http://ec.europa.eu/commission_barroso/president/pdf/press_20090903_EN.pdf).

## Copyright Management: Licensing and Levies

Access to legal digital content must be made easier and more attractive across a Digital Single Market. To this end, the highest priority of digital copyright policy should be to (i) foster a climate conducive to the development of a vibrant and thriving market for the distribution of legitimate digital content through attractive and innovative services for the benefit of consumers, where (ii) right holders are fairly compensated; and which (iii) is supportive of Europe's unique cultural wealth and diversity, but (iv) is intolerant of unauthorised copying.

Policy should focus on delivering effective and efficient pan-European licensing to ensure seamless access to digital content, with the market characterised by willing rights holders and willing commercial licensees. In order to achieve this goal, impediments to efficient licensing have to be removed.

## Consumer Rights legislation

Each European Union Member State operates different consumer protection rules. These rules often provide good protection for domestic consumers. However, the diverging rules are difficult for consumers from other European countries to understand making them unsure as to their rights and reluctant to shop across border. Differing rules also dissuade small businesses from trading with consumers across borders as they do not have the resources to understand these different sets of rules.

The result of the different consumer protection regimes is very low levels of intra-EU trade online in goods and services. This is demonstrated by European Commission surveys stating that, for example, while 51% of EU27 retailers sell online, only 21% are currently selling cross-border. In 10964 cross-border shopping tests 61% of orders would have failed, often because traders refused to serve the consumer's country<sup>49</sup>.

DIGITALEUROPE supports the European Commission's proposed Directive on Consumer Rights as a remedy to this situation. In particular we believe that the 'maximum harmonisation' approach is critical.

## Intermediary Liability

It is imperative that the rules in the E-Commerce Directive governing the liability of intermediaries are implemented and applied consistently throughout the European Union. Differing legal interpretations of the liability regime create a 'chilling' effect on the desire of internet players to operate in certain countries and, potentially, in the whole EU. This is even more critical in the online world where players can establish once while serving many markets.

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<sup>49</sup> European Commission press release "Dismantling barriers to cross-border online shopping: Frequently Asked Questions" MEMO/09/475, Brussels, 22 October 2009, <http://europa.eu/rapid/pressReleasesAction.do?reference=MEMO/09/475&format=HTML&aged=0&language=EN>.

The E-Commerce Directive has a positive impact on the European economy by encouraging economic growth, promoting innovative business models, creating jobs, enhancing cultural diversity and benefiting consumers. Over-regulation and bureaucracy impede innovation and add substantial costs. Other EU legislation should not erode the limitation of liability provisions established for online intermediaries.

The marketplace is showing that collaboration within and amongst industry, and new and innovative approaches to consumer propositions, are the best ways to meet challenges such as piracy and copyright infringement. Ultimately, no technological solution is perfect and intermediaries should continue to be immune from liability for third party content posted without the intermediary's knowledge.

### Radio spectrum

Mobile broadband is a critical part of the modern information society. Consumers will benefit from harmonized spectrum usage across the European Union through more choice of device brands/models and economies of scale resulting in lower device and infrastructure prices. In addition, harmonization supports roaming across different countries.

### Privacy and Data Protection

Effective protection of personal data is a critical element of trust in online services. While the data protection and privacy directives<sup>50</sup> have provided sound principles for data protection and privacy their divergent national implementation has raised obstacles to the free movement of data between Member States. Currently, the rules for the protection of personal data vary by member state and even by region. National differences include e.g. different and parallel administrative formalities, differing interpretations on fundamental concepts such as personal data and inconsistent rules on marketing permissions. The rules governing international transfers of personal data outside Europe are outdated and bureaucratic and are unfit for the era of cloud computing. They make it complex and burdensome for companies to comply with applicable rules, are inconsistent with the goal of a Digital Single Market and do not lead to a better end result: enhanced protection and appropriate use of personal data.

National rules should be harmonized and administrative procedures should be streamlined and more geared towards an ex post assessment as opposed to ex ante to better serve a Digital Single Market. Enforcement should be harm based. Rules governing international transfers of personal data should be streamlined into one European system, in a global context to reflect the global nature of internet. A system based on accountability could help achieve this.

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<sup>50</sup> Directive 95/46/EC of the European Parliament and of the Council of 24 October 1995 on the protection of individuals with regard to the processing of personal data and on the free movement of such data; and Directive 2002/58/EC of the European Parliament and of the Council of 12 July 2002 concerning the processing of personal data and the protection of privacy in the electronic communications sector (Directive on privacy and electronic communications).

## Payment Systems

It is vital that inexpensive and secure payment systems be available to internet users across Europe in order that they can profit from online goods and services. Payment systems need to be common to merchants in different EU countries in order that cross border commerce functions as smoothly as possible.

## WEEE Recycling schemes

The Commission Communication on Cross Border Business to Consumer Ecommerce in the EU pointed out that nationally administered recycling schemes [WEEE Directive] can prohibit on-line cross border sales of electrical and electronic products. The WEEE Recast proposal seeks to harmonise elements of the systems, notably registration and reporting while maintaining and improving proportionate distribution of responsibilities.

It is imperative that future legislation and national implementation seeks to avoid unnecessary fragmentation and the existing barriers are removed and actors are treated equally.

Only by completing the Single Market with its digital component will the EU achieve fully its original goal of creating a genuinely integrated European market. The Single Market is about bringing down barriers and simplifying and harmonizing existing rules to enable everyone in the EU - citizens, consumers and businesses - to make the most of the opportunities offered to them by allowing direct access to 27 countries and 480 million people.

The Digital Single Market is critical to Europe's success in the new higher margin world of the internet upon which substantial part of our post-recessionary growth must be built.

## Building Block 2: ICT Research & Development and IPR protection

- **Only permanent, productive European ICT research & development on a scale comparable to other global leaders can ensure the future growth and global competitive strength of Europe's ICT industries. It will take renewed and concerted effort across Europe to reach this benchmark.**

The EU presently accounts for a quarter of worldwide private ICT R&D spending, a third of all R&D employment and a fifth of all patents. Private and public sector ICT R&D exceeds €40 billion each year in the EU, and growth in R&D investment among EU ICT companies is currently higher than that of non-EU companies despite the economic crisis.<sup>51</sup> Nevertheless, this represents only half what the US spends each year.<sup>52</sup>

Europe's relatively lower level of R&D investment is due in part to the continued fragmentation of the market for digital goods & services, resulting in sluggish development of high-growth SMEs.

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<sup>51</sup> The EU Industrial R&D Investment Scoreboard 2009, <http://ftp.jrc.es/EURdoc/JRC54920.pdf>.

<sup>52</sup> Ibid

It is also due to the fragmentation of European ICT R&D itself, despite pioneering efforts such as the EU's Joint Technology Initiatives (JTIs) and Joint Research Programmes under the seventh Framework Programme for R&D (FP7). This results in duplication of effort, lack of critical mass, difficulties in addressing common challenges jointly and, in the end, sub-optimal returns on R&D investments.<sup>53</sup>

Other consequences of Europe's relative R&D weakness are a growing deficit in qualified ICT R&D skills - resulting in several hundred thousand unfilled posts<sup>54</sup>, and relatively few world-recognised ICT poles of excellence that attract top-class talent. A concentration of such talent is the magnet that draws R&D investment: California alone attracts twice as much venture capital as the whole of Europe.<sup>55</sup>

While governmental spending accounts for only one third of Europe's total, it nevertheless plays a crucial role through its support for basic and applied research that is high risk and far from commercialisation.<sup>56</sup> Here again, Europe lags behind the US: in terms of government R&D as a percentage of GDP, EU levels are 85 percent of the US expenditure for the EU-15 while the EU-10 represents only 47 % of the US level. At member-state level the picture is varied<sup>57</sup>.

European public support is set to grow in the coming years, notably through EU framework research programmes where annual commitments to collaborative ICT R&D will increase from €1.1bn in 2010 to €1.7bn in 2013 under the Seventh Framework Programme for R & D (FP7). At the same time the EU has invited Member States "to match this budget increase" in their national programmes by re-orienting some existing public resources and by seeking new ways of securing public and private funds.<sup>58</sup>

We are on the right track, but have yet to adopt a firm benchmark objective, strategy and programme which will close Europe's R&D gap with the US and other leading ICT centres.

## EU Priorities in the area of Intellectual Property Rights (IPR)

1. Sustain and, wherever appropriate, enhance the level of the quality of the existing IPR system in Europe to foster innovation and competition, and to ensure that European Industry can effectively compete in global markets.

<sup>53</sup> "Strategy for ICT R&D and Innovation in Europe: Raising the Game" European Commission, March 2009, <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2009:0116:FIN:EN:PDF>

<sup>54</sup> Strategy for ICT R&D and Innovation in Europe: Raising the Game,

<sup>55</sup> Ibid

<sup>56</sup> For example, nanotechnology may become for the 21<sup>st</sup> century what steel was for the early 20<sup>th</sup>, but commercialisation is very far away. 52% of European nanotechnology research is publicly financed with the private sector providing 43%, and venture capital the remaining 5%. *The Atlantic Century: Benchmarking EU and US Innovation & Competitiveness*, European-American Business Council, February 2009, <http://www.itif.org/index.php?id=226>.

<sup>57</sup> Sweden leads, spending 17% more than the US (as a percentage of GDP) and France spends 5% more. The UK and Spain stand at 75 percent below the US level. Ibid

<sup>58</sup> Strategy for ICT R&D and Innovation in Europe: Raising the Game, European Commission March 2009: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2009:0116:FIN:EN:PDF>

2. Establish an appropriate, unitary procedure for enforcing European patents coupled with a unitary "EU Patent" to enhance legal certainty as well as procedural and cost efficiencies.

The litigation system needs to fulfil the criteria of quality, efficiency, reliability, predictability and cost-competitiveness. The system should be based on the reduced language regime of the European Patent Office and should leave an opt-out option for European (EP) patents. A unitary procedure has been suggested for enforcing European patents in order to meet the criteria above. However, proposals thus far for a unitary procedure have raised concerns that these criteria will not be met.

The EU patent should be cost-competitive for all sectors and should not re-open the European Patent Convention because to do so would lead to considerable delays; the EU patent would not become operational for another decade or even longer because of complex ratification procedures. When the EU Patent thus builds on the existing EP patent for EU Member States, the EU Patent must<sup>59</sup> be based on Article 114 TFEU. The quality and uniformity of the current, successful European patent system should not be affected, and the minimum quality requirements of the UN's Patent Cooperation Treaty should be fully respected. The EU Patent should limit translation requirements to a minimum; absent a dispute no additional translations should be required. The availability of machine translations which have no legal effect will accommodate the information needs of all user groups.

3. Ease access to the European IPR system especially for SMEs, in particular through further improved patent application and grant procedures at reasonable cost, through further refined patent databases and search engines, and translation facilities. States that have not yet joined the London Agreement on reducing translation costs for European patents should do so as soon as possible as this would result in major cost savings for users.

4. Review the territorial copyright framework in Europe. In particular the EU must take a leadership role on aspects impeding the functioning of the Internal Market, for example more efficient pan-European licensing of digital content, a more rational approach to the copyright exceptions including the possible harmonisation of the private copy exception, and the fragmented, outmoded private copy levy systems across many Member States.

5. Develop and execute a comprehensive public awareness campaigns (a) on the benefits of IPR for European innovation and competitiveness, and (b) regarding copyright explaining to consumers what they may and may not legally copy, as well as emphasising that unauthorised copying (piracy) outside the scope of any private copy exception is unacceptable.

6. Create favourable transactional and IPR framework conditions to facilitate cooperation and knowledge transfer between industry and the research sector in Europe.

7. Influence mechanisms for recognition and appropriate enforcement of European industries' IPR in global markets, in particular in the BRIC countries.

8. As innovative sustainable technologies are going to play a central role in the new 'green' economy, IP rights in green technology should be promoted as key drivers of competitiveness, job creation and long-term economic growth in Europe. The EU must

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<sup>59</sup> In view of the text of Article 118 TFEU and ECJ decision 350/92 and ECJ opinion 1/94.

emphasize the importance of clean technology IPRs as an essential incentive to create clean technology in the framework of international climate change negotiations.

### **Building Block 3: Digital Infrastructure/Next Generation Networks**

- **The winners in the digital world of tomorrow will be those with access to so-called “next generation networks (NGNs)”. The three defining features of NGNs will be: 1) the ability to transmit vastly greater volumes at much higher speeds; 2) “symmetry” – the ability to do so in both directions; 3) mobility – the ability to do so through wireless transmission. Together these three capabilities will trigger an explosion of new and much more powerful network-based interactive digital services – often referred to as “the cloud”. Europe is strongly positioned, but we must stay on the leading-edge of NGN technology and roll-out.**

Fibre optics is currently the lone technology able to deliver high-volume, high-speed, symmetrical transmission. Today, most of Europe’s digital (internet) transmission relies on copper telephone networks, coaxial cable networks and satellites. While these technologies may be capable of greater volumes and higher speeds, none can deliver symmetry.

Symmetry is essential for the next stage of pervasive digital interaction, for example allowing residential consumers to increasingly behave like businesses in terms of data flow - uploading as much as downloading from the net. With a total population of about 500 million, the EU today can boast no more than two million subscribers across the EU with access to high-speed, symmetrical fibre-based networks.

Fibre-to-the-home did grow by 40% between July 2008 and July 2009, but at the moment represents just 1.75% of the total lines in Europe.<sup>60</sup> Europe’s leading broadband technology, DSL (Digital Subscriber Line) with some 94 million lines, is not symmetrical.

By way of comparison, Japan, with a population of 128 million, has made the development of a fibre-based network a key priority. Today over 10 million Japanese subscribers have fibre access. Across Asia there are perhaps 30 million subscribers, and in the US roughly 8 million benefit from fibre broadband.

- Rolling out ubiquitous modern broadband networks across Europe will require major investment – an estimated € 300 billion – where the private sector will have to play the major roll in urban areas, with public authorities providing the fundamental if supplementary role in the rural areas.<sup>61</sup> While this may seem a daunting number, it needs to be seen in the context of the historic moment we are living. All research shows that the risk lies in missing this opportunity;

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<sup>60</sup> Broadband Access in the EU: Situation at 1 July 2009”, published 18 November 2009, [http://ec.europa.eu/information\\_society/eeurope/i2010/docs/interinstitutional/cocom\\_broadband\\_july09.pdf](http://ec.europa.eu/information_society/eeurope/i2010/docs/interinstitutional/cocom_broadband_july09.pdf).

<sup>61</sup> “ICT for Economic Growth: a Dynamic Ecosystem Driving the Global Recovery,” World Economic Forum, 2009.

- On the demand side, it is clear that Europeans will migrate to enhanced network performance where available. In fact we are currently global head of the class for overall broadband uptake<sup>62</sup>;
- A 2008 study for the European Commission estimated that faster broadband deployment in Europe could create one million jobs and growth of up to €850 billion through 2015;<sup>63</sup>
- It is estimated that the Internet has generated \$300 billion in economic activity in the US, and now employs 1.2 million people in jobs that did not exist two decades ago.<sup>64</sup> Even now, for every dollar invested in broadband (fixed and wireless), the U.S. economy is expected to see a tenfold return<sup>65</sup>.
- Another study reveals that in developed countries an increase of broadband access of ten subscribers per 100 inhabitants corresponds to a 1.2 percent increase in per capital GDP growth.<sup>66</sup>

## **Building Block 4: e-Skills**

- **E-skills drive global competitiveness.<sup>67</sup> The World Economic Forum already estimates the correlation between digital skills and global competitiveness at 85%.<sup>68</sup> The message is clear: Europe's ability to both grow our ICT sector and drive the penetration of digital technologies throughout industry and society will depend most fundamentally on the availability of individuals with the necessary understanding and skills at all levels of the value chain. In view of this objective, the outlook is alarming. To exploit the opportunities of the digital age, we must change the trend.**

Europe continues to suffer from a chronic shortage in digital skills in all sectors, but especially in key sectors such as software and computer industries<sup>69</sup>.

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<sup>62</sup> As of 1 July 2009, 24% of the EU population had a broadband access line subscription, up from 21.6% a year previously, and a mobile broadband penetration rate of 4.2 per 100 citizens, a 54% increase from January 2009. Denmark (37%) and the Netherlands (36.2%) continue to be world leaders in broadband uptake. Nine<sup>62</sup> EU countries are above the United States, at 25.8% and slowing according to [OECD May 2009 statistics](http://ec.europa.eu/information_society/eeurope/i2010/docs/interinstitutional/cocom_broadband_july09.pdf). *Broadband Access in the EU: Situation at 1 July 2009*: [http://ec.europa.eu/information\\_society/eeurope/i2010/docs/interinstitutional/cocom\\_broadband\\_july09.pdf](http://ec.europa.eu/information_society/eeurope/i2010/docs/interinstitutional/cocom_broadband_july09.pdf)

<sup>63</sup> Ibid, quoting "The Impact of Broadband on Growth and Productivity, a Study on behalf of the European Commission, Micus Management Consulting, 2008.

<sup>64</sup> Interactive Advertising Board and Harvard Business School, June 2009.

<sup>65</sup> ICT for Economic Growth: A Dynamic Ecosystem Driving the Global Recovery, World Economic Forum (Davos), page 2 quoting the US Committee on Appropriations, "The American Recovery and Reinvestment Act of 2009, January 2009.

<sup>66</sup> Ibid, quoting "Economic Impacts of Broadband, Information and Communications for Development 2009," World Bank Washington, D.C. 2009, pages 35-50.

<sup>67</sup> "Who cares? Who dares?" prepared for the European Business Summit by Insead with the support of Microsoft, Shell and the Federation d'Entreprises Belges (FEB).

<sup>68</sup> Ibid

<sup>69</sup> The Council of European Professional Informatics Society (CEPIS) estimates that Europe could face shortages of up to 70,000 ICT practitioners in 2010.

Very recent studies<sup>70</sup> forecast that the EU labour market will face a shortage of up to 384,000 ICT practitioners by 2015 out of an anticipated total of between 4.95 and 5.26 million ICT practitioners, up from the current level of 4.7 million. Depending on the specific occupation, this gap will represent between 1.7% and 13% of the total demand.

Moreover, in addressing digital competitiveness, Europe tends to focus on the digital technologies themselves. Yet due to the global ubiquity of these technologies, digital products and services and their corresponding employment are essentially the same anywhere in the world<sup>71</sup>. As a result, global competition extends not only to products and services, but to the jobs themselves – many of which can be performed anywhere by skilled individuals, thanks again to digital networks and tools.

So to remain competitive, not only does Europe have to increase the supply of digital skills, we also have to ratchet up the level our skills<sup>72</sup>. (There are even concerns that the iPod generation which is now entering the workforce, and which reveals great agility with digital gadgets, may not necessarily understand how to work with these technologies and how to apply them to business situations.)

In Europe today, only 14% of existing jobs do not require digital skills. By 2015 a full 90% of all jobs in Europe will require some set of ICT skills whatever the industry or service sector.

<sup>73</sup>

Europe's weaknesses extend to the three types of e-skills needed for a competitive and inclusive society: 1) literacy and basic ICT skills including math & science; 2) occupational skills required for the job market and which are developed in school, but increasingly on the job; 3) global knowledge economy talents which are less tangible, but involve leading teams, anticipating change and which are critical for innovation.

Although Europe fares better than many of its competitors with regard to basic and occupational skills, it excels in none of the three. INSEAD ranks Europe with a B for basic skills, B- for occupation skills and C for GKE talents.<sup>74</sup> But there is no reason why Europe cannot excel - Finland, Denmark and Sweden take the top three rankings!

While working-life training will be an essential part of the solution, it is the education system itself that holds the key. Europe's education systems - from primary to university level - are in need of a systematic transformation to better integrate digital literacy into the curriculum. Such a transformation will require close collaboration between education and business, an understanding of the need for fundamental reforms, and significantly more investment.

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<sup>70</sup> Empirica and IDC, eSkills Monitor "After the crisis, the e-Skills gap is looming in Europe," 3 December 2009.

<sup>71</sup> The need for digital skills now extends to all sectors and all levels of employment: white collar jobs are already performed primarily on computers and portable devices, and workers in retail and logistics use mobile devices for tracking inventory and shipments.

<sup>72</sup> European Commission "eSkills for the 21st Century: Fostering Competitiveness, Growth and Jobs", page 4.

<sup>73</sup> IDC White paper on "Post Crisis: e-Skills are needed to Drive Europe's Innovation Society," November 2009.

<sup>74</sup> "Who cares? Who dares?" prepared for the European Business Summit by Insead with the support of Microsoft, Shell and the Federation d'Entreprises Belges (FEB).

Europe on average spends about half as much as a percentage of GDP on higher education as do the US and Japan.

A recent Economist Intelligence Unit study identified the best-performing countries in developing the right ICT talent as the US, Singapore, the UK, Ireland and South Korea. The EIU suggests that the key to these countries' success lies in their having vigorously expanded enrolment in higher education including science and engineering. They also maintain world-class universities or technology institutes and their institutions have started to train technologists with business and management skills, not just technical skills.<sup>75</sup>

More broadly, the individual and societal benefits of equipping everyone with digital skills have been widely confirmed, yet some 48% of the European population remains digitally excluded<sup>76</sup>. This figure masks a North/South divide where the Nordic countries and the Netherlands boast an internet penetration rate of over 80% where as countries like Greece and Portugal hover around 40%. The digital exclusion rate rises to 60% for people living with a disability and to 62% for those over age 65.<sup>77</sup> 51% of those with just a basic secondary education are digitally excluded. In the UK alone the potential economic benefit of getting everyone online is an estimated £22 billion.<sup>78</sup>

Over two years ago European Commission Communication<sup>79</sup> set out the strategy and identified all the necessary steps we must take to overcome our digital skills crisis. We know what we have to do. Now we have to do it.

## **Building Block 5: Trust & Security**

➤ **A trusted and secure online environment is a prerequisite for the further development of Europe's digital economy and digital single market. As reliance on the internet grows, so do concerns about its security for all categories of users – private individuals, businesses and governments. The foreseeable explosion in digital services will reinforce demands for robust and secure networks, including a framework for secure online payments.**

Lack of consumer and public trust in the internet is related directly to issues of privacy and security. A May 2009 Eurobarometer survey<sup>80</sup> found that only 12% of Internet users believe that transactions over the net are safe. 46% described them as "rather safe," but 39% have "major doubts" about safety and a full 42% do not have any confidence in digital financial transactions.

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<sup>75</sup> Economist Intelligence Unit: How technology sectors grow, Benchmarking IT industry competitiveness 2008

<sup>76</sup> <http://www.internetworldstats.com/stats4.htm>

<sup>77</sup> Ibid

<sup>78</sup> Champion for Digital Inclusion, PriceWaterhouse coopers, 2009.

<sup>79</sup> "e-Skills for the 21<sup>st</sup> Century: Fostering Competitiveness, Growth and Jobs".

<sup>80</sup> "Confidence in Information Society," Euro-barometer, May 2009; [http://ec.europa.eu/information\\_society/policy/nis/docs/eurobarometre/confidence\\_infosoc\\_summary\\_30\\_4\\_09.pdf](http://ec.europa.eu/information_society/policy/nis/docs/eurobarometre/confidence_infosoc_summary_30_4_09.pdf). Please note that DIGITALEUROPE understands the term "safe" used in this survey to mean "secure".

At the same time, daily internet users were found to be significantly more confident than those who use the net less often (62% vs. 48%) and those with an educational degree more at ease than those with only a basic education (64% vs. 48%)<sup>81</sup>. These findings suggest that overcoming consumers' security concerns requires not just more secure systems but also investment in digital literacy – which also opens access to a wider range of digital benefits.

Without concerted action to better secure and communicate the protections and rights for online service users (and the clear the link between digital participation and individual prosperity), consumer scepticism could stall the roll-out of innovative internet-based services such as digital health which rely on the use of a wide range of confidential personal data. It could also undermine the success of e-government public services such as on-line tax filing or license applications. Even more fundamentally, the development of “cloud computing” and software as a service could run into difficulty if companies and individuals refuse to trust third parties with their data<sup>82</sup>.

Optimising the data protection regime in the EU is integral to user rights being better protected in the online environment and users becoming more confident when employing online services. Data protection laws in the EU should be further harmonised and existing EU legislation in this field should be better implemented and communicated to internet users.

At the same time, it is imperative that network and information security in Europe is strengthened and networks become more resilient against threats, whether these are brought on by natural disasters or cyber attacks. We therefore support President Barroso's announcement that the incoming European Commission will propose “a major initiative to boost network security”.<sup>83</sup> A major digital catastrophe –for example physical damage to critical digital networks (e.g. following Hurricane Katrina), a large scale cross-border cyber attack (e.g. in Estonia in 2007) or an instance of massive fraud - could all but eliminate consumers' trust in the internet. This would be disastrous, as the mass take up of online commerce by consumers will be instrumental in the digital transformation of the European and world economies<sup>84</sup>. We believe that dialogue and partnership among all key stakeholders – primarily between industry and public authorities is crucial to tackling these challenges to network and information security.

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<sup>81</sup> Ibid

<sup>82</sup> Ibid

<sup>83</sup> José Manuel Barroso “Political guidelines for the next Commission” Brussels, 3 September 2009, available at [http://ec.europa.eu/commission\\_barroso/president/pdf/press\\_20090903\\_EN.pdf](http://ec.europa.eu/commission_barroso/president/pdf/press_20090903_EN.pdf).

<sup>84</sup> Swedish Presidency: A Green Knowledge society.

## **Building Block 6: The external dimension - Trade Policy Objectives for Europe**

- **The members of DIGITALEUROPE need to be able to rely on favourable, reliable and sustainable trade conditions in the global digital economy. The EU should be strongly committed to free, balanced, open and fair trade as a driver of productivity, innovation, job creation, improved competitiveness and service quality.**

With the lack of achievement in the international trade talks (Doha round) under WTO there is a growing risk of the creation of fragmented trade requirements in bilateral agreements. This should be avoided e.g. by the use of internationally accepted standards. A key priority for Europe should, however, be to finish the round quickly to restore confidence in the WTO as an important player in trade. Then it is instrumental to set out a post-Doha agenda permitting the WTO to play a central role in further liberalisation of trade.

The current system of resolving customs disputes is cumbersome, non-transparent and time consuming. There is therefore a need for ensuring simple, timely and transparent customs decisions that can apply throughout the European Union and be used by all economic operators equally.

The world is facing increased levels of international organized crime, terrorist attacks and other public security issues, so the need to pay continuous attention to public security issues is indisputable. Both customs controls and the actions carried out by the economic operators play an important role in achieving security in the supply chain. Given the importance of tackling public security issues, an improved and more equitable partnership between Government Agencies and economic operators is essential if the right balance is to be achieved.

The next generation digital economy presents massive opportunities for the EU in terms of growth and employment, productivity gains, competitiveness as well as the reduction of carbon emissions.

With the above in mind the following trade objectives should be pursued:

### External market

- Zero tariffs and zero non-tariff barriers, world-wide in a sustainable multilateral, rules-based trading system affording maximum access to markets with the minimum of barriers.
- Ensure the use of internationally accepted standards and standard data sets in bilateral arrangements, both in the context of trade agreements and international supply chain security, as they would also be applied in multi-lateral arrangements.
- An internationally agreed roadmap and a target date for the expansion of the Information Technology Agreement. The Information Technology Agreement needs to be expanded in terms of product and geographic scope, include a smart and quick update mechanism and provide for the removal and prevention of non-tariff barriers

## Internal market

- Alignment of national standards with international standards.
- Creation of a “European Customs Tribunal” to replace the current system of BTIs and customs disputes having to go through national customs administrations and Courts.
- Continuation and improvement of Government and industry partnerships to ensure the necessary security environment.

## ABOUT DIGITALEUROPE

**DIGITALEUROPE** is the pre-eminent advocacy group of the European digital economy acting on behalf of the information technology, consumer electronics and telecommunications sectors. We are dedicated to improving the business environment, and to promoting industry's contribution to economic growth and social progress in the European Union.

**DIGITALEUROPE** ensures industry participation in the development and implementation of EU policies. DIGITALEUROPE's members include 58 leading corporations and 40 national trade associations from all the Member States of EU; altogether 10,000 companies with 2 million employees and €1,000 billion in revenues. You can learn more about our activities via <http://www.digitaleurope.org>

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