IS NEWS

The Information Society Unit Newsletter

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Editor's Note

After enduring an untypically cold and wet winter in Seville, the sun is starting to shine and we move into a new, exciting phase of our research. Details of new political initiatives - Europe2020 and the Digital Agenda - are unfolding. Our portfolio of work seems highly relevant to finding policy solutions to some of the grand challenges facing Europe. Our work has four mutually reinforcing axes: digital economy, digital competences, digital living, and digital society.

Consequently, we have just launched a major new chapter of research on a quantitative analysis of the Digital Economy and will link this with an exploration of economic model environments that may help us to make comparative assessments of policy options. Our work on Digital Living, focused on electronic identity on the one hand and tele-health-care on the other, is rapidly gaining momentum. Equally relevant is our work on Digital Competences (linked to Innovation and Creativity and a foresight exercise on learning 2020), and on Digital Society (ICT use by migrants, care workers and youth and a study on the influence of ICT on governance models).

This re-focused research portfolio is providing valued inputs to policy makers and is in the spotlight for several of the new EU initiatives. It is also well aligned to the JRC's revised vision and mission statement which shares the same 2020 horizon.

Since the last newsletter, we have published our compendium report on Social Computing that pulls together twelve separate strands of research on the topic and additionally provides an analysis of potential impacts on society and the economy (see inside). I presented some of the findings of this work at the Swedish Presidency Ministerial Conference on eGovernment in November 2009.

In this issue, you will find more details of the work mentioned above, but if you want to delve into our reports in more depth, please do not hesitate to contact us or visit the publications page of our website. If you would like to contribute to our work or come to our upcoming workshops, or just simply debate issues with us, then please get in touch. I hope in the next issue to be able to unveil our new collaborative website (currently under development) which is being designed to provide continuous interactions with our scientific and policy-making communities.

David Broster
Head of the Information Society Unit

**European Commission - Joint Research Centre
Institute for Prospective Technological Studies**

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Future competitiveness of the EU ICT sector in emerging ICT technologies under the loupe
An interview with IPTS researcher Sven Lindmark

In 2007, the Institute for Prospective Technological Studies and the European Commission Directorate-General for Enterprise and Industry (DG ENTR) jointly launched a series of studies to analyse the prospects of success for the EU ICT industry in the face of technological and market innovations. These studies, under the common acronym "COMPLETE" (Competitiveness by Leveraging Emerging Technologies Economically), aim to gain a better understanding of ICT areas in which it would be important for the EU industry to remain, or become competitive in the near future, and to assess the likely conditions for success. COMPLETE aims to produce 6 reports, which focus on Europe's future industrial competitiveness in the following emerging technologies: Web 2.0, displays (OLEDs and e-paper), RFID, emerging robotics, online and mobile video games software and embedded software in the automotive sector. IS News interviewed Sven Lindmark, an IPTS researcher, who works in this area.

Q: You are focusing your research on the future competitiveness of the EU ICT sector. What importance does this sector have for the EU?

Sven: The ICT industry is very important for Europe, both as a major and growing industrial sector in its own right and also as a driver of productivity and innovation in other industrial sectors and public services. It is therefore important that Europe stays competitive. Indeed, the European ICT sector has some comparative advantages in differentiated goods of higher quality, including telecom equipment, telecom services and automotive electronics and software. Overall, however, as found in other IPTS projects, the European ICT sector is rather weak. It is relatively smaller, less R&D intensive, and also has a trade deficit to its main competing regions. In many parts of the ICT sector (including packaged software, Web services, consumer electronics and computer manufacturing) the world leaders are found in other regions.

Q: Where can these world leaders be found?

Sven: The main competitors for the EU ICT industry can be found in the US and Asia. The US is reinforcing its already very strong position in computing, software and IT services. In Asia, first Japan, then South Korea and more recently Taiwan have built up strong competitive positions, while China and India are rapidly catching up.

At the moment, there are still opportunities for Europe to improve. In general, ICT markets are exposed to very rapid cycles of innovation and obsolescence. Innovation is crucial for staying competitive, and it is particularly important that Europe remains at the forefront and innovates in those emerging technologies which have the potential to disrupt the current industrial structure, business models, value chains and markets. These disruptions could change the competitive positions of companies, nations and regions. And in this respect, policy can clearly make a difference.

Q: What is the underlying purpose of the COMPLETE studies?

Sven: The main objectives of each of these studies are two-fold. Firstly, emerging ICT technologies, in particular those with disruptive characteristics, are identified and their potential, including both further technological development and market success, are analysed. Secondly, the competitiveness of the European ICT industry with regard to these technologies is assessed. Based on this two-fold analysis, we identify policy options.

Q: What challenges did you face in conducting these studies?

Sven: Well, it was not obvious at first how to attack the problem analytically. By their nature, emerging technologies generate a moving target and, as a result, classical well-established methodologies cannot be used to define, observe, measure and assess their characteristics. The prospective dimension of each study becomes an intrinsic challenge that has to be solved on a case-by-case basis, using a mix of techniques to establish lead-market data through desk research, expert group discussions, company case analysis and market database construction. These are then combined with a reflection on ways and means to assess future competitiveness of the corresponding industries. At the same time, this process results in reports that are uniquely important for policy makers.

Q: What common thread do the different studies have? Do they have findings in common?

Sven: Each of the "emerging" technologies (or families of technologies) selected for study could have a disruptive impact on business models and market structures. The studies show that European companies are active on many fronts of emerging and disruptive ICT technologies and are also supplying the market with relevant products and services. Nevertheless, the studies also show that the creation and growth of high tech companies is still complex and difficult in Europe, and too many economic opportunities seem to escape from European initiative and ownership.

Each of the different studies also has some peculiarities, especially if you analyse EU competitiveness for each link in the value-chain. In **Web 2.0,** for instance, which has grown explosively in the last couple of years, Europe is lagging behind the US in the supply of Web 2.0 software and services. This is largely because the US has been able to build on its strong innovation capability in software and Web services in general. It is also interesting to see that, in cases like Web 2.0, the consumer market leads the way, rather than the business market. According to many experts, most of the economic potential for Web 2.0 lies in the business market, in what is called Enterprise 2.0. For Europe, there could be a second opportunity.

Displays are, in fact, the second largest component market in the ICT sector, with

global revenues of some €100 billion. The European display industry is strong in innovation capability, materials production, and process equipment manufacture. However, we are weaker in other parts of the value chain, and lack in particular the industrial productive capacity or eco-system to support volume production and the capability to bring innovations to market. The emerging OLEDs and e-paper technologies could provide opportunities for Europe to re-enter selected parts of the value chain, which is in fact expanding with e-Paper (think of eBooks and iPads).

In **RFID**, envisaged to be a ubiquitous part of the Internet of things, the European industry is already a major player. From chip manufacturers to label makers to system integrators, European actors hold positions in almost every link of the RFID value chain. Here, there are general barriers which prevent RFID adoption from realising its full potential. These include investment costs which, combined with lack of skills and uncertainty with respect to return on investment, hinder adoption - not least by SMEs. These barriers need to be addressed in Europe and the rest of the world.

And what about the other emerging technologies you are studying?

Sven: For the three ongoing studies, the results are still only tentative, at this point. **Embedded software** accounts for a major and growing share of the added value in a car, and is very important for the competitiveness of the European automotive industry. In this field, in contrast to, for example, packaged software, European industry appears to be leading, especially in the supply of Powertrain software. Some disruptive changes such as those induced by standardisation (e.g. AUTOSAR), are largely driven by Europe and may reinforce its strong position. On the other hand, a major disruptive force which may challenge EU competitiveness is the electric car. If and when electric vehicles begin to replace diesel and gasoline vehicles; EU companies may need to step up their investments if they want to remain leaders in Electric Vehicle Powertrain software – and perhaps they should be doing so already. In general, our preliminary results show that to stay in the lead in

embedded software, the EU auto industry must invest in emerging and future technologies with software-intensive segments, such as: Advanced Driver Assist systems (ADAS), Vehicle-to-vehicle / Vehicle-to-Infrastructure communication (V2X) and autonomous driving.

As for **games**, which are at the intersection of the ICT, software, and content industries, Europe is very active in developing games software and content. However, the major publishers and console manufacturers, which hold strong gateway positions, are mainly from Asia and the US. Online and mobile games, the major emerging trends, may disrupt this industrial structure and open up opportunities for the European industry.

Finally, most of the value of today's **robotics** industry is in the same segment as it has been for the past 30 years – automation of industrial manufacturing. This is likely to continue for the next five years, and in this segment EU companies are indeed very competitive. In this sense, robotics is not very disruptive. Still, we have tentatively identified some medium-term growth opportunities for European industries in, for instance: systems integration, a range of medical applications, cost effective robots for industrial production by SMEs and safety-enhancing applications in robot/human interaction.

Q: What policy implications do you see?

Sven: The ICT industry has been and will continue to be a major engine for growth, employment and technological innovation across the economy. This is my strong conviction. It is therefore essential to understand, and if possible to ensure, healthy future prospects for the European ICT industry. These

prospects are largely dependent on this industry's capacity for innovation. I hope that COMPLETE will contribute to a better understanding of opportunities and help shape better market conditions (financial, labour and product markets) to sustain European competitiveness and economic growth.

Specific policy implications span a wide range of generic (or horizontal) policies, including skills and venture capital supply, public procurement and creation of lead market, to more specific policies. Four of the technological areas studied also have strong potential impact on the competitiveness of user industries – Web 2.0, RFID, embedded software and robotics. Here, any demand-side policies appear to be appropriate. The importance of having strong clustered ecosystems is also a common theme across the reports.

Q: What are the next steps in your research?

Sven: Obviously we need to finalize the three ongoing studies on video games, robotics and embedded software. During spring 2010, we will investigate how well the EU is positioned to grasp the opportunities offered by emerging trends in these fields. The results will then be validated and discussed in expert workshops, where policy options will also be sketched out. These events, where industry experts, policy makers and researchers come together are usually very interesting and fruitful, not only for validating the research but also taking it a step further. Based on the conclusions and feedback from these workshops, we will finalize and publish the reports and disseminate the results to the European Commission, other policy makers, academia and interested stake-holders.

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See also the COMPLETE webpage.

Sven Lindmark is an industrial engineer with a PhD in Industrial Management and Economics. He has been working at IPTS from March 2007 till February 2010 researching investment in ICT R&D and European competitiveness in emerging ICT technologies. Previously, he was Assistant Professor and Head of the Division of Innovation Engineering and Management at Chalmers University of Technology, Sweden. Sven has researched a broad range of issues related to industrial analysis and innovation in ICT, including innovation system and competitiveness analysis, strategic management of technology, and disruptive impact of new technologies. He has long experience in projects on the ICT sector (in Sweden, Europe and globally), mobile communications, Web 2.0, RFID, displays, and different parts of the software sector.

Social Computing goes mainstream: how will it impact on society and the economy?

Growth and impact of social computing

Five to ten years ago, the majority of Social Computing (SC) applications (increasingly labelled 'social media') did not exist. Today hundreds of millions of videos, photos, blogs, social networking profiles, podcasts and others are available online. These are consulted by a majority of internet users in Europe and the rest of the world. Facebook alone, for instance, already has more than 300 million users worldwide and about 100 million users in Europe, though it was only opened to the public as recently as September 2006 (Source: Facebook). Statistics for Wikipedia are also impressive. It started in 2001 and now features more than 14 million articles, of which more than 3 million are in English. There are about 269 language versions of Wikipedia. About 1 million contributions have been made to Wikipedia and almost 100,000 people have contributed 5 times or more (September 2009, source Wikipedia).

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Social computing, apart from the unexpected and impressive growth of its applications, has two fundamental aspects that are expected to lead to major impacts on society and the economy. Firstly, it contributes to user empowerment and to users taking on new roles in the digital society and the economy, as they can now take the lead in the way products and services are shaped and used. Secondly, it gives rise to a trend towards peer-produced resources and harnessing collective knowledge. The sum of peoples' shared contributions are providing more added value than could be produced by groups, networks or communities that are small, closed and inwards-looking.

Emerging risks and challenges

Social computing poses the risk of a new 'digital divide', as new applications and technologies arise and people need to learn the critical skills and knowledge about information accuracy, reliability, and content quality. For example, patients could use peer support for self-diagnosis or citizens could be misled by political or commercial opinions. Users must have networking, collaboration, sharing and information search skills to benefit from the opportunities offered by social computing.

Major threats related to security, safety and privacy are also emerging, either new or more threatening than before. For example, security, impersonation and identity theft risks are increased, and 'cyber-bullying' and 'online grooming' represent new threats for children and youngsters. Above all, unclear data ownership and the lack of user control of own data are generating unprecedented privacy invasion risks.

Policy recommendations and future prospects

If well managed, however, social computing could have an important positive impact on the key challenges the EU is facing for 2020 and lead to increases in public service quality, democratic governance, and business productivity. Measures such as raising awareness among public service actors and enterprises on the potential of social computing, opening up public governance to embrace bottom-up, user-led initiatives and promoting the implementation of social computing applications in public services, are suggested.

Social computing initiatives are spontaneous and self-governing. They have an enormous potential for horizontal collaboration open to all users, and this challenges existing institutional governance systems which have, up until now, worked with vertical hierarchies. The co-existence of these opposite approaches will need to be carefully managed.

Published reports

The IS unit has been researching social computing for a number of years and has twelve different IPTS reports on its website, available for download. A special mention goes to the 2009 synthesis report "The Impact of Social Computing on the EU Information Society and Economy". It brings together research findings and evidence on the fundamentals of social computing media in multiple domains: industry, health, education, social inclusion, mobile, identity and public governance.

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eID Compass, an eID knowledge repository for policy makers and experts

Electronic identity (eIdentity) is becoming a key enabler of the digital economy. Appreciating the multi-layered and rapidly evolving (due to its technological component) concept of eIdentity and its many uses and implications requires rigorous, continuous and coordinated scientific studies and policy-making efforts and all the expertise we have from various fields and domains related to it. A plethora of projects, studies, initiatives, and findings related to eIdentity exist; however, any true understanding of the interdependencies between its components is still limited. Learning how to manage our own identity in all its complexity (philosophical, psychological, sociological, economic, etc.) has taken us centuries. It is only natural that humans will require much longer than the thirty years they have been grappling with digital identity to draw safe conclusions and formulate adequate policies as to its appropriate use.

To raise scientific consensus about eIdentity issues, the eID team at IPTS is launching for and in collaboration with DG INFSO a new project called eID Compass - an integrated document repository, knowledge system and debate platform. The new eIdentity expert system and forum, which is based on the current IPTS eID knowledge repository, will allow policy makers and experts to debate policy options and their socio-economic implications informally and will provide significant support to the ongoing legislative process in this area.

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SIMPHS - Strategic Intelligence Monitor on Personal Health Systems
Study on the PHS/RMT market structure and its innovation dynamics

The SIMPHS study investigates the Personal Health Systems (PHS) market, starting with the Remote Patient Monitoring and Treatment (RMT) segment. It supports policy making by providing evidence on the current state of development of RMT and identifies drivers and barriers to its large-scale take up in Europe.

Socio-economic trends pose a challenge to healthcare systems in Europe. The ageing of European populations, the rise of chronic diseases, the increasing costs of healthcare, and the shortage of skilled health practitioners are only a few examples of trends that call for new approaches to healthcare. ICT innovation in this area could offer a means of enhancing healthcare provision. The drivers and growing evidence of the benefits of RMT would justify expectations for large-scale market take up.

PHS/RMT potential

While the literature on RMT agrees that they have positive clinical outcomes, there is less consensus on how positive these impacts are when it comes to cost effectiveness. However, the US Veteran Health Administration (VHA) study reports that for Diabetes there is a 20.4% decrease in the utilisation of clinical resources; for CHF a 25.9% decrease and for COPD a 20.7% decrease. Positive outcomes have also been demonstrated in recent randomised control trials (RCT) in Italy i.e. reduction in hospital readmissions and of mortality.
The evidence is increasingly compelling about the potential impact of RMT. Estimations thereof are presented in the *"eHealth for Healthier Europe!"* study on the potential impacts of eHealth recently published by the EU Swedish Presidency (see Figure 1).

RMT market

The drivers and growing evidence on the benefits of RMT would justify expectations for large-scale market take up. However, the data gathered and analysed during this first year of SIMPHS suggests that the RMT market today is under-developed, fragmented, with small-scale operations and little integration into health and social care. Apart from cases of excellence at the level of single companies and certain regions, the field seems to still be dependent on projects, and small-scale pilots, most of which have yet to be mainstreamed and consolidated into continuous and self-sustained service.

Many estimates of the size of the market (for instance, F&S 2008 European RMT Report, GMD 2009 Report) are circulating, with varying definitions (telehomecare, telemonitoring, telecare, etc). Given the fuzziness of the market, the reliability of the figures can be questioned. Clear definitions of which stakeholders should actually be included in the RMT market are lacking. Moreover, it is difficult to estimate the value of the medical part of the RMT service. In a comparative perspective, it can be estimated that RMT **is 0.6% of the total estimated value of the eHealth market**.

Technology is not the issue…
it is all about transforming healthcare! There is a lot going on in R&D activities, pilots and experimental programmes at EU, national and regional level. However, RMT technology needs to be integrated into care pathways and to bridge the gap between the promises of technology and the reality of health- and social care. For this to happen, advances are needed at organisational and institutional level.
Since 1989, EU research funding for eHealth has exceeded €1 billion, covering more than 500 eHealth projects, out of which 23 clearly focus on RMT,

particularly in FP5, FP6, FP7, eTen and CIP. In addition, some Living Labs also tackle RMT as part of their eHealth or Active Ageing activities. Many EU projects and pilots focus on technology innovation, but there is a recent (and welcome) shift towards integrated care and organisational innovation. There are also myriads of projects and pilots funded at national and regional level, but these often lack critical mass.

The evidence gathered helps us to conclude that the landscape is dominated by pilots and programmes with very isolated cases of sustained long-term services.
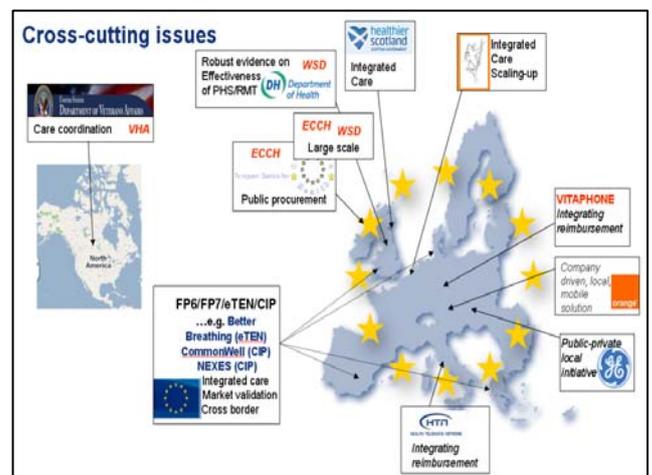

Figure 2: Cross-cutting issues EU R&D Projects & Pilots, Regional /National Initiatives

PHS/RMT not happening

In spite of the high potential of RMT, players find it difficult to develop the market in the light of regulatory uncertainty, the lack of Return on Investment (ROI), interoperability issues, uneven broadband coverage and other infrastructural bottlenecks. The lack of reimbursement is a major roadblock on the path to PHS/RMT market deployment as RMT is unlikely to be taken up if patients have to bear the total cost.
The RMT market is characterised by great variety in terms of pilot scales and ambitions, but evidence of benefits to patients and healthcare systems is building up. Most market players are "home-based" and barriers for cross-border operations are high. Strategic leadership is needed to make RMT part of healthcare institutional and organisational restructuring.

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SIMPHS Project website

Post-it 1 Reducing diabetic death	Post-it 2 reduced hospitalisation with RMT
11,000 deaths caused by complication ensuing from diabetes could be reduced in the six Member States through the combined applications of EMR and disease management	Application of telemedicine and home health monitoring could avoid 5.6 million admissions to hospitals for chronically ill patients in the six Member States
eHealth for a Healthier Europe, op.cit, p.34	*eHealth for a Healthier Europe, op.cit, p.36*

Figure 1 – Impact of RMT

Creativity and Innovation in European Education: Highlighting the Importance of ICT

Since December 2008, the eLearning team at IPTS has been collecting and analysing data on the role of creativity and innovation in formal education in the EU Member States. The underlying objective of the "*Innovation and Creativity in Education and Training in the EU Member States*" project is to provide a better understanding of how innovation and creativity are framed in the national and/or regional objectives (curricula) and how they are applied in educational practices at primary and secondary level.

Defining "creative learning" and "innovative teaching"

A literature review by IPTS provided an overview of the theoretical foundations for creativity and innovation in education, developing the notions of "creative learning" and "innovative teaching". "Creative learning" is defined as any learning which involves understanding and new awareness. It allows the learner to go beyond notional acquisition and focuses on thinking skills. "Innovative teaching" is the process leading to creative learning, the implementation of new methods, tools and contents to benefit learners and their creative potential. ICT can enable both creative learning and innovative teaching.

European school curricula under the loupe

The ongoing analysis of curricula shows that creativity is playing a role in the educational agendas of the Member States. In several countries, the term "creativity" appears quite often in the curricula for primary and secondary school. However, it is seldom defined and there are very few practical examples that explain the conceptualisation of this term and how teachers should apply it in their teaching. "Innovation" is rarely referred to – if at all. Moreover, creativity is very often framed in the context of artistic creation and production, although some countries recognise the positive contribution of ICT.

What do teachers and other educational stakeholders think?

IPTS and European Schoolnet presented the preliminary results of a survey of around 10,000 teachers from all over Europe at the Closing Conference of the European Year of Creativity and Innovation, which took place in Stockholm on 16–17 December. European teachers believe creativity is a

fundamental competence to be developed at school (94%) and claim that creativity can be applied to every domain of knowledge and to every school subject (95.5%). Creativity is not considered to be relevant only for art, music or drama. However, even though the majority of teachers believe that everyone can be creative (88%), and that creativity is not solely a characteristic of 'eminent' people (80%), the conditions for favouring creativity are not always available in European schools. Teachers (80%) consider ICT to be very important for enhancing creativity. They are mostly convinced of the usefulness of 'traditional' technologies: computers, Internet, and educational software. The potential of more recent social media such as social networking applications, blogs, and digital games remains untapped, even though most students use these new applications extensively outside the classroom.

Currently, a round of interviews is taking place with about 90 educational stakeholders, including school inspectors, and representatives from ministries of education and academia. The first interviews highlight that, while there is a widespread belief in the benefits of creativity, teaching practices are still on average quite traditional, based on textbooks and frontal teaching. There are still barriers to overcome, for example the current assessment procedure. Nonetheless, a slow shift in pedagogies can be observed all over Europe, with an increasing use of ICT applications.
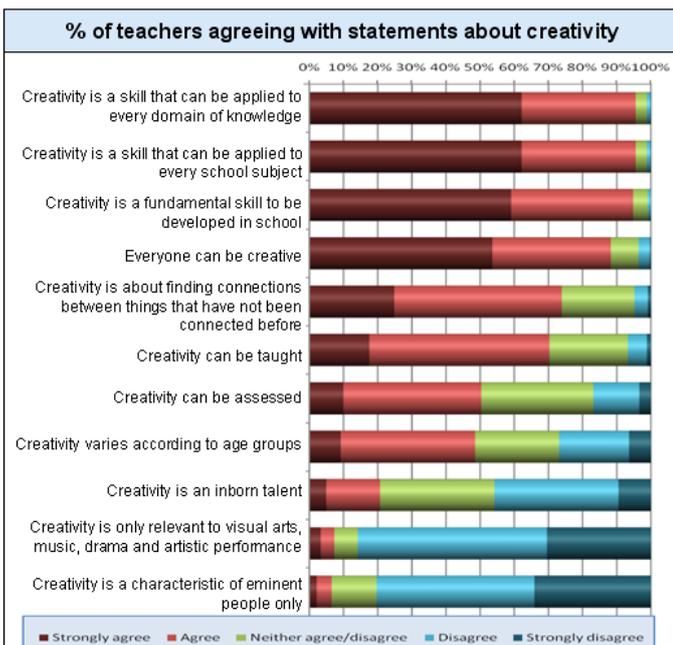
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% of teachers agreeing with statements about creativity

Source: IPTS/European Schoolnet

IPTS Paper on Electronic Identity wins "Best Paper Award 2009"

At the Fourth International Conference on "Legal, Security and Privacy Issues in IT Law (LSPI)", which took place in Malta on 3-5 November 2009, Anssi Hoikkanen presented an IPTS paper on "New Challenges and Possible Policy Options for the Regulation of Electronic Identity". The conference focused on legal, security and privacy issues in IT and was attended by researchers from university law departments, practising lawyers and experts from national regulatory bodies. The IPTS paper aimed to present our views on current regulatory challenges of electronic identity and to launch discussion in academia and among relevant public authorities.

The IPTS paper was very well received at the conference and was awarded the "Best Paper Award 2009" as the highest-quality paper overall. It generated a lot of discussion and feedback, and was considered by the experts to represent a good overview of the current regulatory challenges (lack of commonly accepted definitions, new legal issues emerging in online contexts, developments in identity markets) and the possible policy options available to address them (single market for regulation, compliance to existing legislation, soft regulatory measures). It was generally agreed that much work has still to be done to build up an accurate picture of the current situation before more detailed proposals for legislation can be made. It was also suggested that due to the fast-paced development of the field, it might be better to develop general principles rather than detailed rules for regulation.

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The Future of Learning: New Ways to Learn New Skills for Future Jobs

Education and training need to be fundamentally transformed to address the new skills and competences that Europe requires to remain competitive, overcome the current economic crisis and grasp new opportunities. To determine how education and training policy can adequately prepare learners for life in the future society, IPTS is currently conducting a foresight study on "*The Future of Learning: New Ways to Learn New Skills for Future Jobs*". This study will run over the whole of 2010 and will involve more than 300 stakeholders in developing and validating visions and imaginative scenarios on learning in 2020-2030.

The preliminary findings of the first round of expert consultations, which involved a focus group of 18 experts in generating, clustering and rating 203 statements, reveal a set of 12 thematic clusters, ranging from technological changes, to globalisation to pedagogical concepts. Anticipated changes that rate particularly high in importance, according to the experts, include the increased learner-centred, individual and social nature of learning; personalised and tailormade learning opportunities which address individual and professional training needs; a need for formal education to become more flexible, dynamic and integrated into daily life; the possibility to make education available and accessible for all citizens; and the development and implementation of innovative pedagogical concepts, addressing e.g. experiential and immersive learning and social and cognitive processes (see left hand column Fig. 1). The LifeLong Learning cluster takes a very central

Fig. 1: Thematic clusters and their ratings on importance and feasibility (on a scale from 1 to 5)

position on the cluster map and plays the role of a "bridger" to all other clusters, indicating its vital role in the future of learning.

When comparing the cluster ratings on importance and feasibility (Fig. 1), it becomes clear that, while experts are optimistic about the development of technology-enhanced learning opportunities, they are sceptical about the feasibility of implementing learner-centred approaches in formal education and, in general, the ability of formal education systems and institutions to keep pace with change and become more flexible and dynamic.

This overall tendency is confirmed and further specified when we look in detail at the 57 statements that score higher than average on importance and at the same time lower than average on feasibility, and thus indicate aspects that will

need particular attention by policy-makers. The following issues were the most prominent: the need to ensure appropriate, accessible and affordable education that caters for the learning needs of every citizen; the importance of focussing on transversal competences, such as strategic, problem-oriented, situational thinking, creativity and learning to learn; the need to align technology and pedagogy to enable high quality learning experiences; support for integrating learning into the workplace, community and home; ways to adapt assessment strategies to the manifold ways in which people actually learn; and addressing the changing role of teachers as learning mediators and guides.

More on the Future of Learning website & the IPTS related project webpage.

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Exploring ICT-enabled governance models in EU cities

The Information Society Unit is conducting **exploratory research on ICT-enabled governance models in EU cities** (acronym: **EXPGOV**), in collaboration with EUROCITIES: a network of major European cities which brings together the local governments of more than 130 large cities in over 30 European countries.

Following a preliminary analysis and discussions in the second half of 2009, and presentation of the research objectives at the EUROCITIES Knowledge Society Forum 'Autumn Event' (Lille, 28-30 October 2009, IPTS designed and conducted an online survey in order to identify the key city governance policy areas most impacted by ICTs and select significant case studies to further analyse in depth.

The preliminary analysis of the survey results, presented at the EUROCITIES Knowledge Society Forum 'Winter Event' (Brussels, 26-27 January 2010), provided a fairly comprehensive mapping of the use of ICTs in European cities and the views of policy makers, city government officials, practitioners and researchers, on the way ICTs are influenc-

ing governance processes. In addition, the analysis provided a very useful indication of the new ICT-enabled governance models that are emerging, and some preliminary classifications of their characteristics, main barriers and enablers. It also identified opportunities, risks and challenges. The results further justify the need for deeper research in order to better understand the implications of ICTs for governance at city level, and the drivers of changes in relation to ICT-enabled services and governance innovation. The EXPGOV research plan has been integrated into the EUROCITIES Knowledge Society Forum Work Plan for 2010.

IPTS is currently finalizing the conceptual and methodological framework in order to select the case studies that are representative of different city governance models in Europe, and further integrating the survey analysis which has been discussed at the recent EUROCITIES Knowledge Society Forum 'Spring Event' that took place in Tallinn on 24-26 March 2010.

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CROSSROAD: Roadmapping ICT for Governance and Policy Modelling

Governments are struggling to regulate an increasingly interdependent and complex world, as the financial crisis has shown. At the same time, citizens are becoming more active in monitoring and influencing policy decisions. Still greater complexity and more citizen involvement are envisaged for the future. Current ICT tools for collaborative governance and policy modelling offer great opportunities for decision-making in a complex world, but their use still remains an exception rather than the rule. Additionally, research on ICT for this purpose is fragmented between academic fields, application areas, and approaches to innovation in different sectors.

For this reason, the Information Society Unit at IPTS, as part of a consortium of partners with unparalleled experience in e-government and e-governance, Web 2.0 and roadmapping proposed the **CROSSROAD Project (A Participative Roadmap for ICT Research in Electronic Governance and Policy Modelling)** as a Support Action under the Objective 7.3

(ICT for Governance and Policy Modelling) of the European Union's Framework Programme 7.

The CROSSROAD project kicked-off on 12 January 2010 in Athens. It aims to deliver a research roadmap on ICT for governance and policy modelling, in order to orient different communities of research actors, domains and sectors towards a common goal. It will create a shared vision and an operational tool to support research policy and research implementation in this field. The roadmap will be based on a cross-analysis of present research directions and future scenarios for collaborative governance. It will be presented as a stand-alone report and also as an online, dynamic knowledge base.

CROSSSROAD will access wide expertise through an open, iterative, multi-method approach including in-depth desk research, restricted workshops and large-scale web consultations, in order to reach out to specialist research activities beyond those of the

traditional e-government stakeholders in Europe.

In addition to the experts drawn from the partners of the Project Consortium, a Scientific Committee of high-level experts will contribute to the development of the roadmap. Each deliverable will also be made available for validation by the online community of researchers, practitioners, and policy makers.

The first phase of the project, entailing a state-of-the-art analysis and the design of visionary scenarios at the horizon 2030, will be presented for validation at an Expert Workshop at IPTS in Seville, on 29-30 April 2010. A further online open consultation involving the wider community of researchers, practitioners and policy-makers will follow to provide further validation and ensure that the project results contribute to build consensus among the members of the research and practice community on the development of the future research roadmap.

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Stay tuned and follow us on: www.crossroad-eu.net & IPTS CROSSROAD webpage

Visit from Japan

A delegation from the Japanese Information Technology Promotion Agency (IPA), headed by Mrs. Ayako Komatsu, Director of the Security Economics Laboratory, visited IPTS last January, to exchange experiences on retrieving citizens' experiences of advanced IT services.

Recently, the IPTS published the results of a study on young people's motivations, perceptions and acceptance of risks with regard to emerging digital services. This study was based on an online survey with more than 5,200 youngsters (15 - 25 years old) in four EU Members States, namely Germany, Spain, the UK and France. It identified young people's perception of the risks posed by new eID technologies. It also investigated their acceptance levels of these risks, and their motivation regarding the use of new eID technologies.

Like IPTS, the IPA is in the process of carrying out a survey in Japan to investigate users' perceptions of advanced electronic services. The Japanese survey will focus on e-commerce experiences, such as mobile payment, and e-money and attitudes to Social

From left clockwise: Prof. H. Okada (National Institute of Informatics) , Dr. M. Bacigalupo (IPTS), Dr. W. Lusoli (IPTS), Dr. R. Compañó (IPTS), Mr. I. Takahashi (IT Research Art), Mrs. A. Komatsu (Information-technology Promotion Agency).

Networking Sites (SNS) which can affect privacy. The principal researchers in this study are Mr. Ikuo Takahashi, esq. CEO of IT Research Art, and Associate Professor Hitoshi Okada from the National Institute of Informatics. The Japanese representatives and the IPTS team exchanged experiences on scenario building exercises for horizon scanning in this dynamic field and best practices in carrying out online surveys.

Users' acceptance of advanced digital services differs in Europe and Japan due to cultural differences. Equally interesting is the fact that these two cultures share a range of similar challenges and concerns, amongst which are privacy issues, investment costs, and slow adoption of governmental services. Therefore, IPA and IPTS have agreed to exchange experiences in this important domain with a view to finding common ground for cooperation in the future.

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Recent Publications

♦   *Prospects of Mobile Search* (2010). J. L. Gómez-Barroso, R. Compañó, C. Feijóo, M. Bacigalupo, O. Westlund, S. Ramos, A. Jaokar, F. Álvarez, R. De Waele, G. Mateos-Barrado and M. C. García-Jiménez. JRC Scientific & Technical Report. EUR 24148 EN.

♦   *Learning in Online Networks and Communities* (2010). K. Ala-Mutka. JRC Scientific & Technical Report. EUR 24149.

♦   *The Potential of ICT in Supporting Domiciliary Care in Germany* (2010). H. Mollenkopf, U. Kloé, E. Olbermann, G. Klumpp Editor: C. Redecker. JRC Scientific & Technical Report JRC56575.

♦   *The Potential of ICT in Supporting Domiciliary Care in England* (2010). S. Yeandle, G. Fry. Editors: S. Kluzer, C. Redecker, J. A. Valverde. JRC Scientific & Technical Report. EUR 24150 EN.

♦   *Ambient intelligence for remote patient monitoring of chronic diseases* (2009). C. Pascu, I. Maghiros, F. Abadie. In G. Van Steendam et al. (editors) "Ambient Intelligence and Human Security. Embedding Science in Society", 2009 IFB, the book of proceedings of the International Conference "ICT that makes the difference". ISBN 978-90-73009-00-4.

♦   *Learning 2.0: the Impact of Web 2.0 Innovations on Education and Training in Europe* (2009). C. Redecker, K. Ala-Mutka, M. Bacigalupo, A. Ferrari, Y. Punie. JRC Scientific & Technical Report. EUR 24103 EN.

♦   *The Next Paradigm Shift in the Mobile Ecosystem: Mobile Social Computing and the Increasing Relevance of Users* (2009). C. Feijóo, C. Pascu, G. Misuraca, W. Lusoli. In: IDATE, editor. Changeover in the mobile ecosystem. Montpellier (France): Communications and Strategies, p. 57-77.

Recent Events in 2010

⇒   **25 March: Cost 298 Final Conference: Challenges for EU Information Society Policy Making (Seville)**
IPTS hosted the final conference by Cost 298: Participation in Broadband Society which presented the current state of the research that researchers have undertaken during the duration of the Cost298 Action. IPTS presented its work on: identity management; 3D and education; eInclusion; and communities and digital media. *Contact: Romina.Cachia@ec.europa.eu*

⇒   **22-23 March: EHRA Summit 2010 on E-health and Personalised Health Care (Sophia Antipolis)**
The European Heart Rhythm Association (EHRA) Summit 2010, organised by the European Heart House, was attended by cardiologists, physicians and industry representatives. IPTS participated with a presentation on "*Personal Health Systems: a roadmap to 2020*". *Contact: Cristiano.Codagnone@ec.europa.eu*

⇒   **16-18 March: Forum on Models of ICT Integration in Education (Madrid)**
This EU presidency conference on eLearning organised by the Spanish Ministry of Education in collaboration with DG EAC gathered representatives from the ministries of Education from EU Member States, experts from Europe and worldwide. JRC-IPTS presented in a key note the results from its work on Learning 2.0, Creativity and Innovation in E&T and preliminary results from the ongoing foresight on the future of learning. *Contact: Yves.Punie@ec.europa.eu*

⇒   **11-12 March: The Future of Information Society and Challenges for Good Governance - 11th Bled Forum on Europe Foresight Conference (Bled)**
This conference organised by Bled Forum, Centre for eGovernance Development (CeGD), and the Austrian Science and Research Liaison Office Ljubljana (ASO Ljubljana) discussed key challenges for the future development of Information Society with special emphasis on and initiatives from South Eastern Europe (SEE). IPTS participated with a presentation on " The Impact of Social Computing: Challenges and Opportunities for Europe". *Contact: Yves.Punie@ec.europa.eu*

⇒   **5-7 February: eTwinning Conference 2010: Celebrating 5 years! (Seville)**
At the 2010 eTwinning Conference, which gathered 500 invited participants from across Europe, JRC-IPTS ran 2 workshops with teachers on the future of learning, presented the results from the joint IPTS-EUN survey with teachers from Europe on creativity and moderated the closing plenary on the future of learning in Europe and on how eTwinning will contribute to it? More on our eLearning page. *Contact: Christine.Redecker@ec.europa.eu*

⇒   **20 January: Seminar on "ICT for the integration of migrants: skills, jobs and participation" (Brussels)**
In the context of the 2010 European Year for Combating Poverty and Social Exclusion, JRC-IPTS Information Society and INFSO eInclusion Units organized a joint Seminar to present and discuss recent research results on the potential of Information and Communication Technologies (ICT) for socio-economic inclusion of immigrants and ethnic minorities. More details on our Inclusion & Cultural Diversity webpage. *Contact: Clara.Centeno@ec.europa.eu*

⇒   **19 January: Workshop "Long term care challenges in an ageing society: the role of ICT and migrants" (Brussels)**
IPTS organised a workshop with policy actors from the European Commission and external organizations to discuss the results of the project "*The potential of ICT in supporting informal domiciliary carers, with particular attention to the case of immigrant care-workers*", carried out in UK, IT, ES and DE during 2008-09, and undertaken in collaboration with DG INFSO in support of eInclusion policies. See Inclusion & Cultural Diversity webpage. *Contact: Clara.Centeno@ec.europa.eu*

Upcoming events

Date	Place	Title	Contact*
15-16 April	IPTS, Seville	Workshop on the "Pan-European survey of practices, attitudes & policy preferences as regards personal identity data management"	Wainer Lusoli
19 April	Brussels, Belgium	Validation workshop of the project "ICTs for learning the host Country's language by adult migrants in the Netherlands and Sweden"	Anusca Ferrari
28 April	Brussels, Belgium	Workshop on "Automotive Embedded Software 1"	Marc Bogdanowicz
29 April	Brussels, Belgium	Validation workshop on "Assessing economic impact of Emerging Robot Technologies and competitiveness of the EU ICT industry"	Paul Desruelle
29-30 April	IPTS, Seville	Validation Workshop on "The State of Play and Visionary Scenario Design of the CROSSROAD project"	Gianluca Misuraca
25-26 May	Amsterdam, The Netherlands	Expert workshop on "Envisaging the Future of Learning"	Christine Redecker
26 May (tbc)	Brussels, Belgium	ePractice workshop on "ICT for non formal and informal language learning"	Anusca Ferrari
27 May	Brussels, Belgium	Lunchtime conference on "Creativity in Schools"	Romina Cachia & Anusca Ferrari
27 May	Brussels, Belgium	Dissemination Day on the "Future of Learning"	Christine Redecker
27-28 May	IPTS, Seville	Workshop on "The Output of R&D Activities: Harnessing the Power of Patents Data - II"	Giuditta De Prato
1-2 June	IPTS, Seville	Validation workshop on "Creative Learning & Innovative Teaching: A study on Creativity and Innovation in Education in EU Member States" (ICEAC project)	Romina Cachia & Anusca Ferrari
9 June	Ghent, Belgium	Workshop on "Exploring the Future of Mobile Search" (at the 9th Conference of Telecommunication, Media and Internet Techno-Economics)	Stavri Nikolov

* E-mail addresses are formed as follows: name.surname@ec.europa.eu

For more and updated information on our upcoming & past events, please have a look at the Events section of our website.

NEW VACANCIES: Currently the IS Unit is recruiting 3 Researchers on:
1) ICT for Socio-Economic Inclusion
2) Techno-Economic Assessment of eID Services
3) Techno-Economic Assessment of regional ICT Poles of Excellence
More information on the Job Vacancies section of our website.

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