



JANUS Workshop

The Digital Divide: Opportunities and threats at the verge of EU enlargement

Brussels, 23 January, 2004

WORKSHOP REPORT

March 2004

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1. Executive Summary

The greatest power of digital technologies is their ability to overcome geographic, time and societal barriers. How we use these technologies depends on all of us. Theoretically, the technology can contribute to an inclusive Information Society. Different speeds in uptake of information society technologies (for various reasons: financial, skills, need) will lead to an increase or decrease of gaps between different economies (either socially, economically, politically or geographically). The difference in speed of uptake of digital technologies is referred to as "Digital Divide".

The key-note session of the JANUS workshop was dedicated to the *global* perspective of the Digital Divide. The issue of delocalised services was addressed, first in a general overview of this trend, and then with a focus on India as one of the leading outsourcing destinations worldwide. Generally speaking the globalisation and the possibility of delocalising services – thanks to ICT infrastructure – can lead to a situation where regions or even nations are left behind competition, i.e. a geographical Digital Divide.

The first session of the JANUS workshop was dedicated to specific aspects of the digital divide between old and new member states. Although there are important differences among the acceding countries, gaps between the EU15 and the NAS are evident regarding infrastructure development, digital literacy and the development of eMarkets and eServices. However, some NAS perform better than the laggards within the old member states. Another important aspect to be considered is the Digital Divide within each of the NAS countries (eInclusion). Findings from the SIBIS project suggest that the gap declines for age and gender, but increases for those with lower income and less education.

The second session of the day aimed to illustrate the complexity of the Digital Divide in terms of factors contributing to it as well as its various forms (between and within countries, regions, cities, general population and specific groups). The reasons for the Digital Divide are numerous and include hard, as well as soft factors. The latter also define the concept of Digital Choice, where people have the possibility to use ICT, but still may choose not to use it. As infrastructure and affordable services become more widely accessible, the importance of factors determining Digital Choice increases. This insight has important implications for the way in which governments should attempt to stimulate usage of ICT.

The workshop presentations and discussion also focused on three horizontal aspects of the Digital Divide: research policy, eGovernment and overall policy and leadership. The IST Programme offers plenty of opportunities to combat the Digital Divide in areas such as eGovernment, eHealth, eSafety, eInclusion as well as in technologies for user access and interfaces. It should be kept in mind, however, that the Digital Divide is not only about technology use. Policy makers need to offset the risk of denial of new technology through appropriate organisational transformation and policy developments.

The public sector can become a driver for eInclusion as a role model by demonstrating the advantages of ICTs. It must, however, prove that these technologies make people's lives easier - being it the civil servant in the back office or the citizen at home - by making their services more efficient and effective. Overall, a sound policy approach is needed to bridge the Divide, understanding user demands and translating them into improved services that make the advantages of ICT obvious. At the same time, nobody should be forced to adopt ICT technologies where not feasible or wanted, not in eGovernment and not at home. A multi-channel approach has to persist.

2. Summary of the JANUS workshop

2.1. *Introduction*

The digital divide – in simple words the gap between the information technology ‘have’ and ‘have-not’ – is a term which allows illustrating the socio-economic environment of the evolution of societies into the Information Society.

The digital divide is a phenomenon that can be geographical, as between nations or regions, but can also take other forms within a specific geographic region. As literacy and digital literacy merge, those with low skills levels, of different national backgrounds (immigrants, refugees, elderly, low income) are at a particular risk of being excluded from the Information Society. Also, given that more and more countries digitalise a broader set of services and the dialogue with citizens under the umbrella of eGovernment, the digital divide is not just a matter of economic development, but also an issue of wider social participation and development of our democracy. Thinking in dilemmas, on one hand global digital access and digital literacy can contribute to a more globally sustainable economic and broader democratic development. On the other hand they can also have the opposite effect of widening the divide and leading to new forms of economic exploitation and democratic exclusion.

The JANUS workshop aimed to approach the digital divide from a global perspective. Its key note speeches looked at the role of countries in the new global market in decentralised services and presented industry case studies. After setting the global frame, the JANUS workshop focused on European research with policy implications for the digital divide in an enlarged Europe.

The first part of the workshop report summarises the key elements of the workshop in a non-chronologically-order. The second part contains summaries of the speakers’ contributions.

2.2. *A global digital divide*

In theory ICTs mean that any task involving the processing and/or transmission of digitised information can be carried out anywhere where the right infrastructure is present in combination with the right workers. This (in theory) opens up new opportunities for development all over the world. But what happens in practice?

The possibility of delocalisation creates new forms of competition between regions. If companies can have their production anywhere, they can also become more selective. A small difference can thus make a big difference leading to winner takes all situations. The interplay of dynamism and inertia in shaping new geographies and a tension between centralisation and decentralisation tendencies, lead to new regional critical success factors. By a seeming paradox, the death of distance thus increases the importance of the local. However there are no universal or inevitable trends. Patterns are shaped by strategies of players on both the supply and demand side as well as by specific features of the local environment including cultural, political and geographical patterns as well as economic ones.

The IST project EMERGENCE performed a global statistical analysis to classify countries according to their ‘eReadiness’ – or their role in the new global market in delocalised

eServices. After carrying out a cluster analysis on the data of 204 countries the following typology emerged:

- e-leader: 6 large dominant 'source' economies
- e-capable: 3 smaller highly developed 'source' economies
- e-hare: 25 small but rapidly developing countries - potential 'destinations'
- e-tiger: 17 large rapidly developing countries, often existing 'destinations'
- e-maybe: 19 states - with small, highly educated population - 'source' or 'destination'
- e-loser: 114 underdeveloped countries at serious risk of exclusion

The choice of location is often incidental, a by-product of choice of outsourcer. Indian companies often put in the best bid. The first outsourcing then creates a precondition for further relocations. Intermediaries play an important role in the process. There are noticeable changes since mid-90s with Indian companies moving up the value chain.

In 2003 'offshoring' has moved from an experimental to a consolidation phase and it now forms routine part of business practice. Risks have been minimised by explicit quality standards but things still go wrong. Trends are increasingly driven by suppliers, as they are often much bigger than their clients. Relocations are now taking place within Asia as well as between US/EU/Australia and Asia. There is a very rapid growth in China & to a lesser extent other destinations e.g. Sri Lanka, Vietnam.

2.2.1. The case of India

India is currently among the most popular destinations for outsourcing/offshoring of ICT services and increasingly business services. It is also one of the biggest exporters of software in the world, the largest share of exports going to the USA. It was the aim of the third key note to shed light on India's competitive advantage over other low-wage countries in the world, and to examine the Indian government's strategy to establish and promote the Indian eEconomy.

In 1992, India liberalised its trade regulations permitting software export from India. Before, India had been pouring resources in the training of people. Rich in skills and poor in telecommunications, India introduced a policy to improve infrastructure. It established Satellite Technology Parks, and ISDN lines through kiosks which revolutionised the communication in India at the local level. It supported the setting up of NASSCOM (the Indian IT industry association) to represent the software export industry and also provided strong incentives to export software or business processes.

Indian companies successfully attracted outsourcing contracts, being ready to start at the bottom of the value chain. The skill shortage in Europe and the USA in the late 90s during the dot.com boom, the millennium bug and the conversion to the Euro accelerated the digitisation processes and consolidated India's position as the key software developer and service provider. Recently, Indian IT companies have moved up the value chain targeting new service lines such as systems integration, package implementation, IT outsourcing and IT consulting. Also they are increasingly focussing on developing complete software products on their own. With a mixture of low cost and good quality India manages to attract more ICT outsourcing contracts despite some poor experiences reported and sometimes high costs for fixing of code and debugging.

While India's overall digital performance is very good (they are part of the e-tigers group as described above), it has to watch the significant digital (and social) divide within India. Still, there are large numbers of villages which have no telephone lines, not even electricity and water. The government, however, aims to spread the benefits of the IT sector to avoid the cleavage of advanced cities and backward rural areas. A working group on 'Information Technology for Masses' was set up by the Department of Information Technology. It formulated the ambitious target of at least 100 million Internet connections by the year 2008 and one million internet-enabled IT Kiosks/Cyber Cafes to be established covering the entire length and breadth of the country. Also, over the period of five years 60,000 schools are equipped with IT infrastructure.

In order to provide incentives for the mass up-take of internet technology up to 5% budget for IT induction in government has been earmarked for public online services and content. In addition, IT literacy becomes compulsory for recruitment in public administration. Also, by moving government services and payment online, the government is expecting to get corruption down, as no human contacts are involved.

2.2.2. Eastern European Countries

The results of the SIBIS survey held in current Member States and New Accession States identify the main gaps in the development of the information society, in terms of both digital divide and digital choice. Although there are important differences among the acceding countries, gaps between the EU15 and the NAS are evident regarding infrastructure development, digital literacy and the development of eMarkets and eServices. Most of the NAS have very low levels of broadband access at home and have few well-versed Internet users compared to the EU15. Compared to other NASs, Estonia and Slovenia are further advanced in terms of the Information Society.

Research on the digital divide is providing increasingly nuanced information on the nature of this divide and the factors that contribute to it. In general, there is evidence of a North South divide, whereby Southern Member States are experiencing less take up of ICT and higher levels of inequality within their populations regarding the use of ICTs. Nevertheless, there are exceptions and variations, particularly at the regional level. When the accession states are included in the analysis, the variations and exceptions increase, making it even more difficult to generalise. On some indicators of ICT take up, for instance access to PCs, the accession countries are not behind the so-called laggards of Western Europe. Instead, a complexity of patterns can be observed.

Participants pointed out, that quantitative measures of the digital divide should be treated with care. This care requires that researchers and policymakers consider the way in which individuals view digital literacy skills and the broader context in which the respondents to surveys are embedded. For instance, many survey respondents are embarrassed to admit that they cannot read, but fewer are apprehensive to state that they cannot use a computer. Also, when reporting figures on the usage of eServices, it is important that the analyses take into consideration the availability of such services.

2.3. *Hard and soft factors: skills and infrastructure*

The usage of ICTs is affected by combinations from two sets of factors: Hard factors, such as the availability of infrastructure and the affordability of digital services, and soft factors, such as digital literacy and individuals' personal attitudes. The first characterizes the Digital Divide while the latter is defining Digital Choice. As infrastructure and affordable services become more widely spread, the most important factors determining differences in usage can be found in the realm of digital choice. This insight has important implications for the way in which governments should attempt to stimulate usage. It is not enough simply to ensure that the infrastructure is available; individuals have to be convinced of the benefits of ICT if they are to use it. An old saying is apt in this regard: "You can take a horse to water, but you can't make it drink".

Presentations at the JANUS workshop aimed to illustrate the complexity of the Digital Divide. This complexity is evident in terms of the interplay of factors that contribute to the Digital Divide and in terms of its distribution, which varies between regions and social groups. Presentations aimed at defining the Digital Divide and at providing guidance to public policy on how to reduce this complexity in order to take right decisions. Regarding the factors that contribute to the digital divide, research findings indicate that they are multifarious. Levels of usage are influenced not only by the availability of the ICT infrastructure, but also by softer factors. The success of policy initiatives depends crucially on their timing and the existing socioeconomic conditions.

Such research findings provide policymakers with insights into the most appropriate types of measures. Some of this research addresses the individual level characteristics that influence the take up of ICT. These include different groups of factors, which Connor McCaffery defined as:

- Socioeconomic factors, such as income, education and employment
- Life characteristics, such as age, gender, disability
- Socio-personal attributes, which include attitudinal and behavioural characteristics, levels of interest and awareness of the need for ICT, and understanding and acceptance of these technologies

While acknowledging that advances have been made in improving access to ICTs and the skills required to use them, Hanne Shapiro invited participants to reflect critically on the underlying assumptions and objectives of policies in this area. Increased levels of access and the presence of more information does not necessarily mean that individuals are better informed and able to take advantage of the opportunities afforded by new technologies. This requires not only the presence of adequate infrastructure and digital content, but also a learning society. Attention needs to be devoted to the question of how our education systems and policy initiatives can facilitate the development of the right eSkills.

Unleashing the potential of the learning society requires that the present challenges are recognised and addressed. These challenges include:

- Underdeveloped work and organisational practices
- The reformulation of educational systems to nurture lifelong learning
- Gaps in literacy and numeracy, and
- Gaps in interest, purpose and confidence.

To address these challenges adequately, digital skills need to be placed in the broader context of learning skills and the environment needed to strengthen these. Skills other than those relating directly to the use of ICTs affect participation in the Information Society. For example, English language skills affect Internet usage. Although many factors are at play, individuals in English speaking countries are more confident in using Internet than others. While respect for linguistic diversity is important, such insights should have implications for the design of educational institutions and practices. Accordingly one of the speakers stressed the necessity to overcome the present significant weakness in both ICT infrastructure and language skills of school age children from socially disadvantaged families.

2.4. Contribution of research to understanding the digital divide

The greatest power of digital technologies is their ability to overcome geographic, time and societal barriers. How we use these technologies depends on all of us. Theoretically, the technology can contribute to an inclusive Information Society. At the same time, the Digital divide will remain a constant risk, so we need to ensure that user needs and user participation are fully integrated in new technology development and deployment. The digital divide is not only about technology use, we need to offset the risks through appropriate organisational transformation and policy developments. Thus, a virtuous circle of actions should be established, clearly prioritising and using a structured approach to foster creativity in both advanced and low-tech environments.

In the centre of the EU vision-driven policies is the ambitious Lisbon strategy, i.e. the EU is to become the largest knowledge-based economy by 2010. This overall goal is to be supported by the establishment of a European Research Area, Enlargement, eEurope and other policies. The soon EU 25 will comprise 445 million citizens and produce a joint GDP of 8,860 bn Euro. It will also have 45% additional brainpower and 45% additional creativity. The digital divide is very relevant in the enlarged Union. There is however no East-West divide, some of the acceding countries are more advanced than the old ones. However there is a strong divide within countries.

eEurope 2005 and FP6-IST have interlinked objectives but different time scales. Under eEurope 2005, Europe should have - in the short term - modern online public services, a dynamic eBusiness environment, widespread availability of broadband and a secure information infrastructure. The action plan concentrates on eServices, eLearning, security (areas of take up) as well as on broadband, in particular for less favoured regions. ERA and as part of it, IST, pursue a longer term vision of creating research infrastructures, stimulating demand and wider adoption of ICT. IST links fundamental research and the eEurope activity, which is about broad and actual take-up. The goal is a people-centred, inclusive Information Society using the "ambient intelligence" concept where the interface is "our surrounding", technology is (almost) invisible and all senses are used. The ambient intelligence is based on high-bandwidth mobile multimedia using a laid-back mode of interaction in a context-based knowledge handling. In this scenario more than 70% of the population are on-line.

ERA will be a "single market" for research, enabling the free movement of knowledge, researchers & technology. It aims to increase co-operation, stimulate competition & achieve better allocation of resources, breaking down barriers between national, industrial and EU research with the latter accounting for only 4% of European research. Thus, ERA is to restructure the European research fabric, improving co-ordination of national research

activities & policies and accounting for most of the research carried out & financed in Europe. ERA is a European research policy that addresses not only funding of research activities (e.g. FP6), but also takes into account all relevant aspects of other EU & national policies.

IST's contribution to combating the digital divide can be made in the areas of eGovernment, eHealth, eSafety, eInclusion as well as in technologies for user access and interfaces. EU policy contributions can be made in the area of broadband and regulatory frameworks. In addition, initiatives such as INCO Euro-India, China, etc could look at the global perspective.

2.5. *eGovernment as a driver to bridge the digital divide*

The public sector can become a driver and leader in meeting these challenges. For public sector organisations to take on this leadership role with maximum effect, they must illustrate the advantages of ICTs by using them to offer their services more efficiently and effectively. There are two ways of achieving that:

Firstly, centralising back office operations can lead to immense costs savings in resources which in turn can be invested in better front office services, resulting in better, up-dated customer services. However, the introduction of eService need to be accompanied with organisational restructuring. An interesting case in this respect is Slovenia. A survey in 2002 revealed that the working post interconnectivity at all levels of government was considerably higher than the OECD average of 80%, and close to 100% at local government level. When positioning the Slovenian public administration based on this data against the OECD average, it becomes evident that Slovenia outperforms the OECD on infrastructure (Web site, Internet, email), it is however below average on organizational culture (organizational change, rewards, knowledge management) and way below OECD average in terms of institutional background (finance). The introduction of ICT was more rarely linked to organizational changes: there was considerably less decentralization, reorganization and sharing of information over the network in Slovenia than on the OECD average. As the respondents of the survey, the nearly 40% of all Slovenian respondents did not find it rewarding to share information and knowledge. At ministerial level the situation is even more severe, where more than 60% see no benefit in knowledge sharing.

Inevitably eGovernance with all its facets requires that within public administrations competence takes the place of authority, a decrease of government hierarchy levels, the share of knowledge across government organizations to function properly and personal development of staff. The involvement of all staff will then improve the quality of decision-making. To achieve this we need to abandon today's wrong approach glorifying information communication technology and ignoring human factors.

Secondly, services should be proactive; governments need to deliver services to users and create benefits. A case in point is the extended deadline for filing the tax return in the UK if it is done on-line. Another practical example of an eService creating a real benefit is the tax reimbursement policy in Hungary where on-line users receive their tax reimbursements faster when doing their tax return on-line than sending it in by post. In reality, however, many initiatives do not provide real benefits. As an example, an on-line planning permission service was given, which had a build-in delay in order not to discriminate off-line applicants. Some workshop participants thus requested the EU to encourage member states to create real benefits to users which would inspire other governments to invest more in technologies and eServices. The more attractive eGovernment services become, the more people will use them.

Furthermore, users need to be given more control to follow things up, for example, student loan payments, in which case individual students can track their own records. This means that it is crucial for policymaking to create real benefits for users to enhance the take up of eServices. In addition the availability of content in the local language is an issue in non-English native countries as it is a barrier for technology uptake. Accordingly, website content development is an important issue in Hungary as well.

A key question discussed by the Panel was whether eServices would increase or reduce the digital divide. Similarly, it could be that digital divide will take care of itself or will be tackled indirectly through other, existing policies? Or is it the case that we need a unique separate policy strategy on Digital Divide in Europe? These are all questions that have not been fully answered. There is thus a need to carry out more research into issues of user involvement and the “what if” questions: What if we allow this to continue, where will it lead? Forecast scenarios would then allow policy makers to take informed decision whether to introduce a specific service or not.

2.6. Conclusions for Policy and leadership

Insights into the causes and distribution of the digital divide have important implications for designing policy in this area. It is clear that individuals need to have the necessary incentives, in terms of perceived benefits, to engage in the information society. Policymakers need to identify how online services can fulfil needs among different groups of people. Identifying and addressing the needs of different customer groups is an important way of developing such policies.

Participants attached importance to the need of pursuing strategic and realistic targets. In addition, research efforts need to be undertaken into the benefits of services and it has to be clear what they can offer to users before suitable infrastructure can be developed. Digital technologies do not necessarily have to be homogenous to meet the needs of different EC member states but rather usefulness of services should be stressed and acceptance that there might be different needs of different people. Following from this, a responsible IS should provide sensible solutions with intermediations models and priorities.

However, designing a cohesive policy for the whole of EU is still a challenge. A particular issue is the effective coordination of policy development on governmental level, country and local. When designing and implementing policies to reduce the digital divide, it is essential not to lose sight of other policy objectives and responsibilities of public authorities at different levels. This requires continued critical reflection on the role of government in advancing the information society. Pointedly, one participant emphasised the need for a sound rationale behind government intervention in this area, particularly when there are so many other pressing demands. Freedom of choice also needs to be maintained, such that individuals can participate in society through offline means if they so choose. Only then will policy be able to contribute to a society that is both competitive and inclusive.

3. Individual contributions to the JANUS workshop

3.1. *Key Notes*

3.1.1. **Research and Policies to fight the Digital Divide, Rosalie Zobel**

Rosalie Zobel is Director of the European Commission DG INFSO-C

In the centre of the EU vision-driven policies is the ambitious Lisbon strategy, i.e. the EU is to become the largest knowledge-based economy by 2010. This overall goal is to be supported by the establishment of a European Research Area, Enlargement, eEurope and other policies. The soon EU 25 will comprise 445 million citizens and produce a joint GDP of 8,860 bn Euro. It will also have 45% additional brainpower and 45% additional creativity. The digital divide is very relevant in the enlarged Union. There is however no East-West divide, some of the acceding countries are more advanced than the old ones. However there is a strong divide within countries.

eEurope 2005 and FP6-IST have interlinked objectives but different time scales. Under eEurope 2005, Europe should have - in the short term - modern online public services, a dynamic eBusiness environment, widespread availability of broadband and a secure information infrastructure. The action plan concentrates on eServices, eLearning, security (areas of take up) as well as on broadband, in particular for less favoured regions. ERA and as part of it, IST, pursue a longer term vision of creating research infrastructures, stimulating demand and wider adoption of ICT. IST links fundamental research and the eEurope activity, which is about broad and actual take-up. The goal is a people-centred, inclusive Information Society using the "ambient intelligence" concept where the interface is "our surrounding", technology is (almost) invisible and all senses are used. The ambient intelligence is based on high-bandwidth mobile multimedia using a laid-back mode of interaction in a context-based knowledge handling. In this scenario more than 70% of the population are on-line.

ERA will be a "single market" for research, enabling the free movement of knowledge, researchers & technology. It aims to increase co-operation, stimulate competition & achieve better allocation of resources, breaking down barriers between national, industrial and EU research with the latter accounting for only 4% of European research. Thus, ERA is to restructure the European research fabric, improving co-ordination of national research activities & policies and accounting for most of the research carried out & financed in Europe. ERA is a European research policy that addresses not only funding of research activities (e.g. FP6), but also takes into account all relevant aspects of other EU & national policies.

The digital divide

The greatest power of digital technologies is their ability to overcome geographic, time and societal barriers. How we use these technologies depends on all of us. Theoretically, the technology can contribute to an inclusive Information Society.

The digital divide has four key dimensions

- Political: eDemocracy : participation, public eServices
- Social: eInclusion: gender, age, social groups
- Economic: Lisbon strategy: skills, employment, competition

- o Geographic: Cohesion: global, national, regional

These dimensions are now recognised by all DGs, so that structural funds and development funds can be used to overcome the different dimensions of the divide.

But how to fight the digital divide? Digital divide will be a constant risk, so we need to ensure that user needs and user participation are fully integrated in new technology development and deployment. The digital divide is not only about technology use, we need to offset the risks through appropriate organisational transformation and policy developments. Thus, a virtuous circle of actions should be established, clearly prioritising and using a structured approach to foster creativity in both advanced and low-tech environments.

IST's contribution to combating the digital divide can be made in the areas of eGovernment, eHealth, eSafety, eInclusion as well as in technologies for user access and interfaces. EU policy contributions can be made in the area of broadband and regulatory frameworks. In addition, initiatives such as INCO Euro-India, China, etc could look at the global perspective.

3.1.2. A new global division of labour in information/knowledge-based services, Ursula Huws

Ursula Huws is Director of Analytica and associate fellow for the Institute for Employment Studies

In theory ICTs mean that any task involving the processing and/or transmission of digitised information can be carried out anywhere where the right infrastructure is present in combination with the right workers. This (in theory) opens up new opportunities for development all over the world. But what happens in practice?

The possibility of delocalisation creates new forms of competition between regions. If you can produce anywhere you can get more selective. A small difference can thus make a big difference leading to winner takes all situations. The interplay of dynamism and inertia in shaping new geographies and a tension between centralisation and decentralisation tendencies, leads to new regional critical success factors. By a seeming paradox, the death of distance thus increases the importance of the local. However there are no universal or inevitable trends. Patterns are shaped by strategies of players on both the supply and demand side as well as by specific features of the local environment including cultural, political and geographical patterns as well as economic ones.

A brief historical overview

In the 1960s-70s a global division of labour in manufacturing industries developed. ICTs played a role in managing global production lines; some 'white-collar' work involved (e.g. typesetting in Hong Kong, Malaysia and Malta for UK customers). In the late 1970s the export of bulk data entry started, e.g. from US to Caribbean, Philippines, China. The 1980s saw a large scale 'body-shopping' from India to more developed countries in the software sector.

In the 1990s outsourcing accelerated with the global liberalisation of telecommunications and the rapid spread of ICTs including the Internet. Simultaneously there was a growth in delocalisable forms of employment (e.g. call centres). Studies conducted at that time focused on telework rather than the transfer of whole functions, but there was a growing awareness of the 'death of distance'.

Contrasting national strategies in the mid-90s

In 1992 India liberalised its trade regulations permitting software export from India. India had been pouring resources in the skilling of people. Rich in skills and poor in telecommunications, India introduced a policy to improve infrastructure. It established Satellite Technology Parks, and ISDN lines through kiosks which revolutionised the communication in India at the local level. It supported the setting up of NASSCOM to represent the software export industry and also provided strong incentives to export software or business processes.

Malaysia pursued a different strategy. It established as part of its '20-20 vision' a 'Multimedia Super corridor' and 'Cyberjaya'. But it did not have the skill base and the strategy turned out to be less successful.

Indian companies successfully attracted outsourcing contracts, being ready to start at the bottom of the value chain. The skill shortage in the North in the late 90s due to the dot.com boom, the millennium bug and the conversion to the Euro accelerated the digitisation

processes and consolidated India's position as the key software developer and service provider. But until then it was a growing share in a growing market.

eReadiness of countries

The IST project Emergence performed a global statistical analysis to classify countries according to their 'eReadiness' – or their role in the new global market in delocalised eServices. After carrying out a cluster analysis on the data of 204 countries the following typology emerged:

- e-leader: 6 large dominant 'source' economies
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- e-maybe: 19 states with small, highly educated population - 'source' or 'destination'
- e-loser: 114 underdeveloped countries at serious risk of exclusion

Complex dynamics of eWork relocation

An analysis of 62 European case studies of eWork relocation involving international or inter-regional relocation showed that the impact to outsourcing depends on the strategy. A one off relocation can be first stage in major restructuring. The second phase may be more destructive of jobs. The remaining job change and often upgrade (e.g. quality control). However, if decentralisation is part of an expansion strategy, jobs can be created on both sides.

The choice of location is often incidental, a by-product of choice of outsourcer. Indian companies often put in the best bid. The first outsourcing then creates a precondition for further relocations. Intermediaries play an important role in the process. There are noticeable changes since mid-90s – Indian companies moving up the value chain

In 2003 'offshoring' has moved from an experimental to a consolidation phase and it now forms routine part of business practice. Risks have been minimised by explicit quality standards but things still go wrong. Trends are increasingly driven by suppliers, as they are often much bigger than their clients. Relocations are now taking place within Asia as well as between US/EU/Australia and Asia. There is a very rapid growth in China & to a lesser extent other destinations e.g. Sri Lanka, Vietnam.

Conclusions and implications

- The digital divide exists within as well as between countries
- There is a qualitative as well as quantitative change in jobs in source economies as well as in early destination economies
- Much 'offshoring' is still taking place in growth sectors
- The development in the South means new markets for goods and services from the North
- The key policy question is the social distribution of the gains

3.1.3. Localization of ICT industry in India, Milind Kamblé

Milind Kamblé is Regional Manager for BENELUX at Tata Consultancy Services Belgium S.A./N.V.

Trends in Indian Software & Service Exports

The Indian software industry moved from on site ('body shopping') to more offshore presence. In 2002-03, offshore revenues grew by 49% while on site growth was 12%. Although the US remains the primary market with a 67% market share driven by BPO growth, Indian software companies increased their presence in Europe and Asia Pacific. They did so in traditional markets as well as new verticals such as Healthcare, Utilities and Retail (No. of companies targeting new verticals have increased from 116 to 184). Also, Indian IT companies moved up the value chain targeting new service lines such as systems integration, package implementation, IT outsourcing and IT consulting. Indian companies are invited and bid for global outsourcing projects and have won multi-year outsourcing projects. Moreover they are increasingly focussing on software products, as the number of companies specializing in this area has increased from 317 in 1999-00 to 453 in 2001-02.

India's value proposition

The mixture of cost, quality and productivity gains are continuing to drive the outsourcing wave to India. Cost reductions for the off shored processes currently amount to 40-60%. The labour cost arbitrage, the reason for cost savings, is likely to exist for the next 20-30 years at least in part. Learning effects and specialization have lead to in creased productivity of Indian software companies. Faster turnaround times are achieved through the time zone difference and a 24 x 7 service. Established methodologies and processes for better performance, well defined quantifiable quality and process metrics and the access to a highly qualified skill pool ensure the provision of high quality services.

Large reservoir of skilled workforce

With over 600,000 employees, India is the 2nd largest employer in the IT software and services industry. 160 universities and 500 institutes provide computer education at degree level, producing 73,000 to 85,000 professionals to join the industry every year. In addition there is a huge pool of an English speaking and computer literate workforce.

Programs to strengthen Human Capital

All Indian Institutes of Technology (IITs), Indian Institute of Science and the Regional Engineering Colleges (RECs) are doubling the intake of students. In addition the centre for electronic design & technology of India (CEDTI) trains manpower in Electronics Design & Technology. Furthermore there are plans to implement IT Enabled Distance Education programmes in collaboration with leading academic institutions. An interaction with industry of the academic institutions is considered necessary and encouraged.

Government Initiatives

The Indian government has been very supportive to the ICT industry. It has strongly supported the development of an appropriate and competitively priced telecommunications infrastructure. The long distance and international telephony sectors were opened to private participation. Internet Telephony opened in April 2002. Telecom networks have been growing at 22% for basic services and more than 100% for cellular & Internet services.

Under special schemes, Software Technology Parks (STP) and Special Economic Zones (SEZ) were established across the country. There are currently 21 STPs all over India enjoying an

income tax holiday until 2010, free imports and high speed Datacom connectivity. Only minimum value addition is required.

On the regulatory side the Indian government has enforced anti-piracy laws; special agencies are monitoring that IPRs are respected. The government has also signed MoUs with 18 countries to have a formal agreement for cooperation in the ICT sector, liberalised norms for investments of up to 100% foreign equity with full repatriation benefits and introduced a fast track clearance of goods imported by manufacturers of electronic goods. The government has also set up an IT Venture Capital Fund.

The facilitating role of Government becomes visible in IT friendly public budgets & rationalisation of taxes, aimed at promoting inward investment & creating wealth. Examples are a 100% customs duty exemption; zero duty on import of software, zero tax on venture capital gains, 90% of profits from software exports which are exempted from tax and an income tax exemption to IT software & services.

Bridging the Digital Divide

Still there are large numbers of villages which have no telephone lines, not even electricity and water. The government aims to spread the benefits of the IT sector to avoid the cleavage of advanced cities and backward rural areas. A working group on 'Information Technology for Masses' was set up by the Department of Information Technology. It formulated the ambitious target of at least 100 million Internet connections by the year 2008 and one million internet-enabled IT Kiosks/Cyber Cafes to be established covering the entire length and breadth of the country. Also, over the period of five years, 60,000 schools are equipped with IT infrastructure.

In order to provide incentives for the mass up-take of internet technology up to 5% budget for IT induction in government have been earmarked. The programme comprises Web enabled, citizen oriented government services, the promotion of the development of Indian language content and over Internet, state government portals to help rural artisans and entrepreneurs. It will also set up a one-stop-shop Internet portal for Government information and services, providing for example of public examinations. In addition, IT literacy becomes compulsory for government recruitment. Also, by moving government services and payment online, the government is expecting to bring corruption down, as no human contacts are involved in these transactions.

In addition, there will be new investments into areas of bio-technologies and bio-informatics, environment protection, microelectronics and photonics development and telemedicine.

These measures are complemented with a micro-credits program in rural areas, the development of a cheap computer for poor people and a mass awareness campaign to help to bridge the digital divide in particular in rural areas.

3.2. Session 1: Aspects of the Digital Divide in CEC countries

3.2.1. Uneven Development in the Hungarian „eEconomy”: Who are the Winners and the Losers?, Csaba Makó

Csaba Makó is Director of Research, Institute of Sociology, Hungarian Academy of Sciences

In the introductory section, the author presented the two mainstream approaches, namely the 'institutional vacuum view' and to the 'path dependency approach' the transformation process from the centrally planned economy into the market driven one. In this relation, the following cycles of the transformation process have been distinguished: "destruction-reconstruction" and the "creative" cycles. The "eEconomy" is interpreted as a possible development opportunity in the creative cycle of transformation in the post-socialist economy of Hungary. The Hungarian economy has performed well with high GDP growth rates, lower unemployment than in the EU 15, and the share of IT in exports has been as high as in Ireland. However, there are new challenges ahead and the "butterfly" of delocalised work might fly from Hungary to China as wages are increasing. Involvement of the country in the emerging eEconomy was measured by the delocalisation of various business functions using ICT or in the form of e-Work. For the characterisation of the diffusion of eWork in Hungary and two other Central and European candidate countries (the Czech Republic and Poland), the empirical evidence of the 18-country international project (EMERGENCE 2000-2003) have been analysed.*

The second section of the presentation dealt with some features of the emerging eEconomy in the countries mentioned above. The empirical experience about the diffusion of eWork calls attention to the unequal capacities and opportunities of business organisations belonging to various size categories. The large firms are better equipped with the necessary ICT and the necessary skills than the micro and small firms. However, small firms – when they have the appropriate ICT – absorb this technology and working practice better than the large companies. In Hungary, nearly 55% of the firms with 50 to 200 employees use eWork and nearly 76% of the companies with more than 200 employees this form of work. In the Czech Republic, adoption rates are even higher nearly 74% of the small and medium sized companies and more than 82% of the larger ones.

In the final section of the presentation, the author emphasized the importance of overcoming the present significant weakness in both ICT and foreign language skills of the school-age children from families with disadvantageous social - status. Nearly 60% of the children from families in a multiple disadvantaged situation and about 40% of the children from families in a disadvantaged situation have no access to the Internet at all. Of those who do have access, the vast majority of more than 80% has access through facilities at school. On the other hand, more than 78% of school-age children from families in appropriate or favourable social situations use the Internet. Similarly, nearly 30% of the children coming

* EMERGENCE (Estimation and Mapping of Employment Relocation in a Global Economy in the New Communications Environment), EU 5th Framework Project (EU-IST-1999-13420), coordinated by Ursula Huws, Institute for Employment Studies, Brighton. The results on three Central European countries participating in the project (Czech Republic, Hungary and Poland) was summarized in the following report: Csaba Makó – Roland Keszi (2003) 'E-Work in EU Candidate Countries', Brighton: *Institute for Employment Studies*, Report no. 396, p. 52. The coordination for the CE region was carried out by the Institute of Sociology – Hungarian Academy of Sciences, Budapest.

from families in a multiple disadvantaged situation and 21% of the children from families in a disadvantaged situation do not learn a foreign language. In the educational process language learning should be combined with the use of ICT; and it is very important that school children learn languages, as language skills cannot be acquired overnight. However, there is no government initiative to urge and help people to learn languages.

3.2.2. eGovernance to Bridge a Digital Divide. A Slovenian Case, Jaro Berce

Jaro BERCE is State Undersecretary at the Slovenian Government Office for EU Affairs

The strategic impact of new technology, new organizational principles, and a new knowledge paradigm is bringing influence to all our everyday life. The main characteristics of usage of the new technology is the introduction of an intelligent environment where information creation and communication and as well intercommunication can be provided through different technologies. This new digital venue also affects the public sector and public administration in particular.

Information and Communication Technology (ICT) forms an infrastructure that supports an electronic venue of an organizational social environment. It can be merely *technical* supporting the automation of tedious or repetitive tasks; it can have a *facilitating / supportive* role, using ICT to complement existing efforts / methods or can have an entirely *innovative* role, leading to the initiation of new services and new mechanisms to improve.

Knowledge Management (KM) involves the identification and analysis of available and required knowledge assets and knowledge asset related processes, and the subsequent planning and control of actions to develop both the assets and the processes so as to fulfil organizational objectives (AIAI, Sept. 2003¹). **Learning Organizations** (LO) [are] organizations where people continually expand their capacity to create the results they truly desire, where new and expansive patterns of thinking are nurtured, where collective aspiration is set free, and where people are continually learning to see the whole together (Senge 1990: 3²). **Governance** is defined as the traditions and institutions by which authority in a country is exercised for the common good (World Bank Institute, 2003³). Outline previous - a digital venue within Government could be regarded as a three-part procedure (Berce 2004⁴):

- iGovernment - converting existing processes and paper objects to digital form,
- eGovernment - converting literal services to virtual services as:
 - Those which could be public services such as: licenses, approvals, tax payments, etc., and
 - Those that could improve public transparency and accountability such as: legislation, budget spending, etc.
- eGovernance - using ICTs to promote democracy, participation, literacy, etc. However, this does not imply linking every citizen to a digital node. It only implies that the government ensures that every local or rural community has access to information available on the digital network.

In 2003 OECD carried out with the central government organizations of its 30 member states a survey on ICT and public administrations. As Slovenia is not a member of OECD a tailored

¹ See: Artificial Intelligence Applications Institute: <http://www.aiai.ed.ac.uk/~alm/kamlnks.html#def>, Sept. 2003

² Senge, M. Peter, *The Fifth Discipline. The art and practice of the learning organization*, London: Random House. 424 + viii pages, 1990;

³ World Bank Institute, *About Governance*; <http://www.worldbank.org/wbi/governance/about.html> (Sept., 2003);

⁴ Berce Jaro, *Influences of Information Society Technologies on Evolution in the Public Administration*, PhD dissertation

research was initiated. The Slovenian authority has sent 288 questionnaires to ministries, local government authorities, government offices and municipalities. A response rate close to 50% could be achieved. The rate varied by type of organization from 22.9% (municipalities) to 100% (ministries).

The survey revealed that the working post interconnectivity in Slovenia at all levels of government was considerably higher than the OECD average of 80%, and close to 100% at local government level. However, ICT budget spending was significantly lower than the OECD average, with the lowest budget at the local government level. Also the web presence of all public authorities in Slovenia was lower than at OECD level, although it had grown from zero in 1994 to nearly 70% of all public authorities in 2002. Nevertheless the Web presence of ministries (90 %) was higher than the OECD average of about 85%. On all Internet services (payments, e-forms, downloads, statistics, events, etc) Slovenia performs worse than the OECD average. The introduction of ICT was rarely linked to organizational changes: there was considerably less decentralization, reorganization and sharing of information over the network in Slovenia than on the OECD average. Like the respondents of the OECD survey, nearly 40% of all Slovenian respondents did not find it rewarding to share information and knowledge. At ministerial level the situation is even more severe, where more than 60% see no benefit in knowledge sharing. When comparing the Slovenian public administration with the OECD average, based on this data, it becomes evident that Slovenia outperforms the OECD on infrastructure (Web site, Internet, email), it is however below average on organizational culture (organizational change, rewards, knowledge management) and way below OECD average in terms of institutional background (finance).

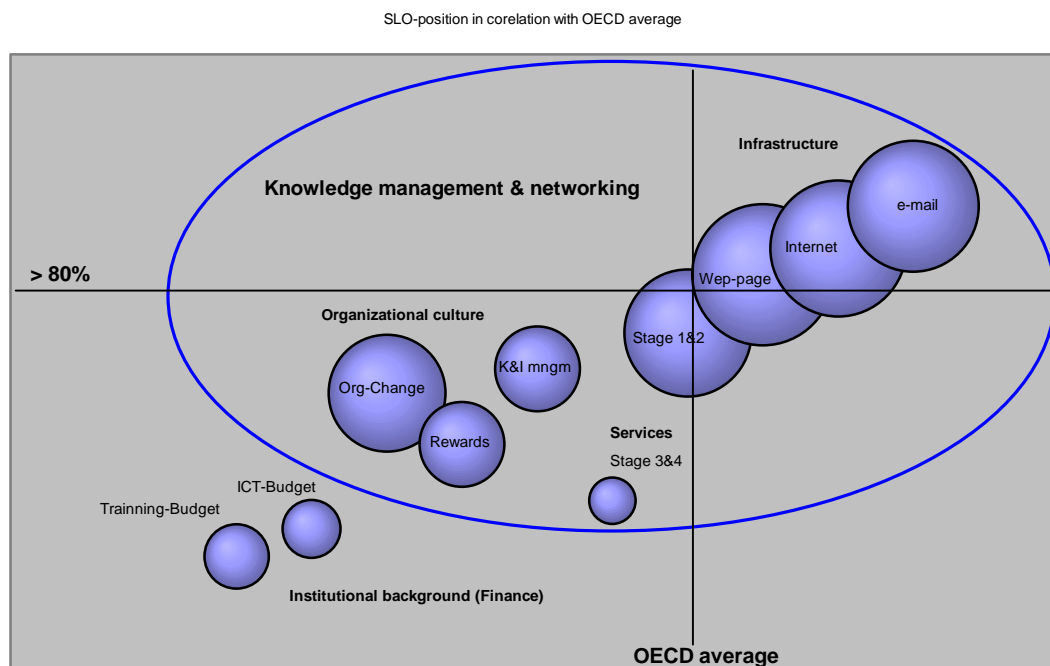


Figure 1 Positioning of the Slovenian public sector

In the period 1996 - 2000 the relative difference between Slovenia and the EU member state average in ICT usage has been decreasing. With respect to Internet access from home, for example, Slovenia has narrowed this difference from 40% in 1999 to only 2%.

However, the absolute difference (and hence the digital divide) and the time lag stay the same or are widening.

The early theories of eGovernance that have been used in different professional sources and are publicized on Internet, are narrowed down to application of information and

communication technology and thus are divided into three categories: *access to information*, *transaction services*, and (digital) *citizen participation*. Access to information - is a category that shows an openness of government to citizens. With the information communication technology, a time and geography spread can be achieved. Transaction services support consideration of government toward citizens. With usage of the new ICT services-oriented paradigm, the time and space venue can be broadened. Citizen participation - is a category that defines government cooperation with citizens. The Internet as an expansion to ICT infrastructure brings two-way communication, choice of services, and is the medium for information.

The primary role of eGovernance supported by the Learning Organization, Knowledge Management and Networking is to ensure that the focus is placed on decision-making (doing the right things) and not on increased efficiency (doing things right). Good eGovernance integrates information and communication technology that enables governance to carry out tasks with better control across time and space. An important aspect of eGovernance is the relationship between government (state and local) and society's other stakeholders (citizens, business, civil society organizations).

eDemocracy builds on eGovernance and focuses on the knowledge supporting actions, procedures and innovations.

One of the main implications of the advances in knowledge is that we are in a context of continuous restructuring, at the national, regional, sectoral, firm, and organizational levels. Particularly developing countries - and Slovenia is on the shifting edge - face risks of a growing knowledge divide with respect to developed countries on two counts (Dahlman, 2001⁵):

- They invest much less on the production of knowledge and
- They are also at a disadvantage because the institutional infrastructure is not sufficiently developed to allow them to take advantage of the new possibilities to improve their economic performance and social welfare.

Knowledge to transform the emerging digital convergence into a people-centred development that exceeds the digital divide by narrowing (lowering effect of: time distance⁶) the digital gap (also) through eGovernance is slowly evolving. Inevitably eGovernance with all its facets requires that within public administrations competence replaces authority, government hierarchy levels decrease, knowledge across government organizations is shared to improve efficiency and staff to personally develop. The involvement of all staff will then improve the quality of decision-making.

To achieve this we need to change the vision towards the Knowledge Based Society from today's wrong perception: "glorification of information communication technology and ignoring human factors".

⁵ Dahlman J. Carl; *The knowledge economy* - A special report, Guest editor; Development Outreach; World Bank Institute; fall 2001; p. 5

⁶ Sicherl Pavel, Comparison analysis of select Si indicators, MiS, November 2002

3.2.3. Benchmarking national digital divides in Eastern and Western Europe, Tobias Hüsing

Tobias Hüsing is a Researcher at empirica

Mr. Hüsing started with the introduction of the Diffusion theory and presented three scenarios of the development of the digital divide according to that theory.

In the first scenario the digital divide is a merely temporary phenomenon that slowly disappears when risk groups enter the take-off phase of adoption while the average population is stagnating. The second scenario shows a situation where the gap is closing only in the (very) long term, because short ICT innovation circles lead to the restart of the diffusion process and hence a delay. In the third scenario, a pessimistic view would imply that risk groups will not catch up in the very long term, that not even basic IS participation of parts of the population would take place and that the Digital Divide remains an issue of delay and exclusion

Mr Hüsing then continued with results from the SIBIS project that analyses the evidence of Diffusion Theory for the Digital Divide in Europe. First he examined the case of three different risk groups, namely women, the elderly and people from low income/low education social backgrounds. It appears that for the first, the Digital Divide is basically temporary. The second group catches up, yet at a slower pace and only the last group might lead to the second or third scenario described.

The project also found a strong Digital Divide (Internet users as % of total adult population) between European regions, with the smallest divide in the Northern countries; followed by the Western European ones. The divide is most obvious in some of the Southern and Eastern European countries, with Hungary and Romania at the rear light.

The SIBIS project also looked into the Digital Divide within regions and has developed a Digital Divide Index to analyse the so-called risk or disadvantaged groups (there is a policy focus on these groups) according to four dimensions gender, age, income and education. The composite index consisted of three indicators percentage of computer users, percentage of internet users and percentage of people who use internet at home.

For the gender dimension a similar picture is drawn with most eInclusion of women in the Nordic and Baltic countries the British Isles, Poland, Austria and Bulgaria. The largest gender divide can be observed in Greece, but also Germany, Italy, Portugal and Romania are comparatively poorly gender inclusive.

In general the Digital Divide is worse for the age dimension, but here such as in the overall picture; the Southern and Eastern countries display less eInclusion than the Northern countries.

Formal education seems to be strongest factor contributing to the Digital Divide in Europe, where even the Scandinavian countries perform worse than some other countries such as Austria, Germany and the UK. Eastern Europe performs worst in this dimension of the Index.

The Digital Divide Index for the income dimension shows a very similar pattern to the age dimension described above.

A comparison of the Index over time (1997/2000/2002) indicates that on a European (EU15) level the digital divide has slightly increased in education and income and slightly decreased with regard to age and gender, resulting in a rather stable overall index. The data shows that countries that only later reach certain diffusion levels have to bear more inequality in ICT adoption and while there is improvement in all leading countries, the situation worsened in all Southern European countries and remained unchanged in countries such as Germany, France and Finland. These results rather point towards serious challenges for eInclusion in Southern European Member States.

Applying the Index measurement principles to skills and benefits data, it becomes apparent that the four "disadvantaged group" categories not only differ in access and use of the internet and computers but also involve different online behaviours. Women are over proportionally unlikely to install software, as are less educated people to use eCommerce or eBanking, and older people to post messages in forums or chats, in which in turn, low income groups over proportionally engage.

The basic results from the project can be summarised as follows: The Digital Divide is not merely a divide between regions. Divides exist within regions and especially within disadvantaged regions and they are graver in the Southern and Eastern European countries as well as for the education and income dimensions. Workforce participation and types of work (blue/white collar) in the countries contribute to the gap in the latter. There is danger that unemployed who are not in the position of using ICT will become even less employable, a vicious circle that permanently excludes parts of the population from the eEconomy.

3.3. *Session II: Hard and soft factors in the Digital Divide*

3.3.1. Factors influencing access to and usage of ICTs in the EU, Conor McCaffery

Conor McCaffery is a Research Fellow at the National Institute for Regional and Spatial Analysis (NIRSA), National University of Ireland

The usage of ICTs is affected by both hard factors, such as the availability of infrastructure, and soft factors, such as individuals' personal attitudes. This insight has important implications for the way in which governments should attempt to stimulate usage. It is not enough simply to ensure that the infrastructure is available; individuals have to be convinced of the benefits of ICT if they are to use it. An old saying in apt in this regard: "You can take a horse to water, but you can't make it drink".

Research on the digital divide is providing increasingly nuanced information on the nature of this divide and the factors that contribute to it. There is evidence of a North South divide, whereby Southern Member States are experiencing less take up of ICT and higher levels of inequality within their populations regarding the use of ICTs. Nevertheless, there are exceptions and variations, particularly at the regional level. When the accession states are included in the analysis, the variations and exceptions increase, making it even more difficult to generalise. On some indicators of ICT take up, for instance access to PCs, the accession countries are not behind the so-called laggards of Western Europe. Instead, a complexity of patterns can be observed.

Regarding the factors that contribute to the digital divide, research findings indicate that its causes are multifarious. Levels of usage are influenced not only by the availability of the ICT infrastructure, but also by softer factors. The success of policy initiatives depends crucially on their timing and the existing socioeconomic conditions.

Such research findings provide policymakers with insights into the most appropriate types of measures. Some of this research addresses the individual level characteristics that influence the take up of ICT. These include different groups of factors, which Connor McCaffery defined as:

- Socioeconomic factors, such as income, education and employment
- Life characteristics, such as age, gender, disability, and
- Socio-personal attributes, which include attitudinal and behavioural characteristics, levels of interest and awareness of the need for ICT, and understanding and acceptance of these technologies.

Whatever categorisation is used, the essential point is that policymakers must recognise that a range of individual level attributes contribute to the usage of ICTs. Policy needs to be designed to address this interplay of factors. Education policy was cited as being of great importance in equipping people with the necessary skills and attitudes for taking advantage of ICT.

Policymakers also need to be aware of the possible unintended consequences of policies designed to ameliorate the digital divide. Initiatives to promote eLearning, for instance, may in fact exacerbate the problem. Individuals who take advantage of such eLearning initiatives might be more likely to use ICTs even in the absence of these policies.

There are many examples of areas where insufficient attention has been paid to the softer individual attributes that influence the usage of ICT. A specific example mentioned by Connor McCaffery is that of the town of Ennis in the west of Ireland. Large sums of money were invested in equipping the town with an information infrastructure. Attention was focused on the roll out of broadband, but little to stimulating the use of this resource. A scheme to encourage households to buy PCs for their homes was taken advantage of primarily by the well off. This raised the abovementioned concern that the policy may even have worsened the digital divide.

Telework is another example of an area where sufficient attention is yet to be devoted to the social factors that influence its usage. The necessary technology has existed for some time already. Factors that inhibit its uptake include the social isolation expected or experienced when teleworking, the perception that this will damage chances of promotion due to poor visibility in the company, and the difficulty of participating in ad hoc working groups. These are some of the barriers that need to be overcome to make teleworking more attractive.

Addressing personal characteristics such as attitudes and awareness will be challenging. There is a surprisingly large proportion of the population – around a quarter - that knows about Internet by name only. Outside larger cities where major firms are based, there are many SMEs that have a lower tendency to adopt ICTs. Even within major cities there are divides. For example, in London a high proportion of households are not connected to the Internet.

Changing such attitudes can benefit from applications that speak directly and personally to the individuals concerned. This might be in the form of “killer applications” that solve a pressing problem or become immediately indispensable. An example given by Connor McCaffery concerned foot and mouth disease in Ireland. Accessing the Internet site of the Farmers’ Union was the only way to obtain up to date and reliable information during the crisis. As a result, the usage of the Internet by farmers increased substantially. Schemes that harness the knowledge and experience of local communities can also stimulate uptake. This makes full use of the social resources available to these groups of individuals. Such innovative policies are required to ensure that these groups catch up.

3.3.2. Skills and the digital divide – a bridge over troubled water, Hanne Shapiro

Hanne Shapiro is researcher at the Danish Technological Institute and Rand Europe

While acknowledging that advances have been made in improving access to ICTs and the skills required to use them, Hanne Shapiro invited participants to reflect critically on the underlying assumptions and objectives of policies in this area. Increased levels of access and the presence of more information does not necessarily mean that individuals are better informed and able to take advantage of the opportunities afforded by new technologies. This requires not only the presence of adequate infrastructure and digital content, but also a learning society. Attention needs to be devoted to the question of how our education systems and policy initiatives can facilitate the development of the right eSkills.

Unleashing the potential of the learning society requires that the present challenges are recognised and addressed. These challenges include:

Underdeveloped work and organisational practices

The reformulation of educational systems to nurture lifelong learning

Gaps in literacy and numeracy, and

Gaps in interest, purpose and confidence.

To address these challenges adequately, digital skills need to be placed in the broader context of learning skills and the environment needed to strengthen these. For example, while the European Computer Driving Licence has been a success and has benefited many individuals, it is not enough to focus narrowly on ICT skills alone. Instead, skills must be developed that allow individuals to use the technology to analyse and synthesise information effectively.

Skills other than those relating directly to the use of ICTs affect participation in the information society. For example, English language skills affect Internet usage. Although many factors are at play, individuals in English speaking countries are more confident in using Internet than others. While respect for linguistic diversity is important, such insights should have implications for the design of educational institutions and practices.

Adapting many of the current educational systems so that they foster learning societies is a huge challenge. The basic content and pedagogical concepts in most currently used curricula are static in nature, and in them computers are treated primarily as a data and information machines. This means that the combination of computers and education is not always optimally effective. Modernising curricula requires that more attention be devoted to the development of ICT skills in combination with broader literacy and learning skills.

Education should help engender positive attitudes towards learning among students that they carry with them and develop throughout their lifetimes. Research illustrates the importance of interest and curiosity in driving participation in learning activities. Across Europe, substantial percentages of people report that they did not participate in learning in the past year due to a lack of interest; even in Nordic countries, this figure is around 20 percent.

Offering educational opportunities that engender strong learning skills and dispositions requires a reappraisal of educational objectives, pedagogical methods and measures of evaluation. Educational objectives are often framed in economic terms. New objectives should be formulated that consider the relation between individuals' identities and skills.

Many currently used pedagogical methods conceive of ICT skills in operational terms that focus on inputs and outputs. Few are based on the principles of “create, design and discover” that would be more appropriate to engendering learning dispositions. These new concepts also have implications for the definition and measurement of eSkills: the evaluation of investments in education. Such evaluations should not focus exclusively on that which is most readily measured, because the benefits of improved digital fluency are not confined to particular employment contexts. Instead, these skills have the potential to enrich the quality of individuals’ lives throughout their lifetimes, by enabling them to learn throughout life, both for self-fulfilment and economic well-being.

3.3.3. From digital divide to digital choice, Gabriella Cattaneo, Werner B. Korte

Gabriella Cattaneo is International Projects Coordinator of Databank Consulting, Werner B. Korte is Director of empirica

A combination of factors lead to the uneven distribution of ICT uptake within and among countries. Two sets of factors, referred to as digital divide and digital choice, can be distinguished. Digital divide refers to the availability of infrastructure and the affordability of digital services. Digital choice refers to digital literacy and the perceived benefits of using ICT. As infrastructure and affordable services become more widely spread, the most important factors determining differences in usage can be found in the realm of digital choice. The findings of the SIBIS project reported here illustrate the complex interplay of factors that determine participation in the information society.

The results of the SIBIS survey held in current Member States and New Accession States identify the main gaps in the development of the information society, in terms of both digital divide and digital choice. Although there are important differences among the acceding countries, gaps between the EU15 and the NAS are evident regarding infrastructure development, digital literacy and the development of eMarkets and eServices. Most of the NAS have very low levels of broadband access at home and have few well-versed Internet users compared to the EU15. Compared to other NASs, Estonia and Slovenia are further advanced in terms of the information society.

The distribution of digital literacy, an important component of digital choice, displays a similar pattern. A measure of digital literacy – COQS index of digital literacy – was presented. This index incorporates indicators of the extent to which individuals communicate with others on the Internet, obtain and install digital tools, question sources of information obtained digitally, and search for information on the Internet. The average national value of this digital literacy index shows that all of the accession countries are below the average of the current EU15. Estonia and Slovenia are the most advanced of the NAS in terms of the digital literacy of their total populations. Further, young people up to 24 years of age have higher levels of digital literacy throughout Europe.

Another component of digital literacy consists of the perceived benefits of the Internet. The results of the SIBIS survey also allow the EU15 and NAS to be compared in terms of important aspects of the perceived benefits of Internet: in particular, the use of eCommerce and the use of Internet to search for health-related information. Again, similar patterns are found as those reported above, whereby the percentages of the populations that use eCommerce or that use the Internet to search for health-related information are generally lower in the NAS than in EU15 countries. Estonia and Slovenia are again more advanced than other NASs, with a particularly high percentage of interactive online buyers in Estonia.

The results of the SIBIS survey lead to important insights on how to further develop the information society in the future:

- While infrastructure is generally available, there are still problems with affordability and bandwidth in many of the acceding countries.
- Digital literacy is generally higher among the young. However, we cannot rely on generational turnover alone if we are to achieve rapid growth. Instead, digital literacy needs to be diffused throughout the working age population.

- Since usage of Internet depends increasingly on recognisable benefits for users, the development of eServices in acceding countries must be accelerated.

The public sector can become a driver and leader in meeting these challenges. Indeed, the SIBIS survey also revealed that the gap between EU15 countries and NAS is narrower for non-commercial, non-profit information services than for commercial services. For public sector organisations to take on this leadership role with maximum effect, they must illustrate the advantages of ICTs by using them to offer their services more efficiently and effectively.

3.4. *Plenary Panel: An agenda for a European Strategy*

The JANUS workshop was concluded with an interactive plenary panel on a European Strategy to tackle the Digital Divide. The panel was chaired by Jeremy Millard from DTI, the other participants were:

Athanassios Chrissafis
Directorate C 'Miniaturisation, embedded systems, societal applications' of DG Information Society, European Commission

Matthias Müller
Policy adviser at the Landesvertretung Sachsen (Saxony Liaison Office Brussels) and IANIS network coordinator

Lidia Pola
Directorate E 'Social protection and social integration' of DG Employment and Social Affairs, European Commission

The panel led the discussion after which the floor was opened to the workshop participants. The following themes and points were raised during the panel discussion.

The social effects of the Information Society are uncertain

One of the main questions facing policymakers is whether developments in the Information Society – such as the development and roll out of eGovernment – will increase or reduce the Digital Divide. In addition, to the extent that there is already evidence of a Digital Divide, there is great uncertainty associated with future developments. Will the Digital Divide “take care” of itself without government intervention? If governments need to intervene, can they tackle the Digital Divide indirectly through other, existing policies, or is a specific policy strategy required?

Research can reduce this uncertainty

Given this uncertainty, policymakers need timely and accurate evidence upon which to base their decisions. Advances are being made, for example in developing key indicators of developments in this area. One participant expressed concerns about the usefulness of indicators, and stressed that more work needs to be done to build stronger measurements. These should take into account contextual characteristics, so that indicators are more comparable across regions and countries. For example, given differing levels of economic development across Europe, comparing measures of Internet access is not very informative. Other participants agreed that statistics should be read with care, and that indicators always have to be seen in the wider context.

In addition to quantitative indicators, it was also pointed out that more qualitative research could make an important contribution to the reduction of uncertainty. Qualitative research, such as case studies and compendia of good practice, are particularly relevant when considering the role of both hard and soft factors, discussed earlier in the workshop, in perpetuating and ameliorating the Digital Divide. One participant emphasised the importance of research on the effects of ICTs on individuals' quality of life. For example, are ICTs reducing the quality of life by making working life more demanding?

EU policy should not be imposed upon member states; European policy will develop as the benefits become apparent

European policies to tackle the Digital Divide will develop by demonstrating the contribution they can make to other areas of concern, for example employment and social inclusion. A flexible form of policy coordination is required, one that takes into account the differences between regions and member states. Digital technologies do not necessarily have to be applied homogeneously across Europe to meet the needs of different member states. In addition to regional differences, individual users and their situations and contexts are very different and need targeted handling. Finally, digital technologies do not necessarily have to be high-tech; low tech solutions are often adequate, especially for excluded individuals. The sharing of good practices was mentioned as an appropriate way of coordinating policy.

Athanassios Crissafis raised the question whether there is a tolerated level of Digital Divide or level of exclusion and Jeremy Millard asked about the importance of the Digital Divide in relation to other social divides (such as housing, work, access to health and education, etc.). Even though many of these divides are related and involve the same sets of individuals, it should not be assumed that policies and resources to tackle the Digital Divide are more important than policies and resources to tackle other divides. Furthermore, the relief of the digital divide will not automatically help to narrow other divides. Taking this into account, many of these divides need to be tackled together as part of comprehensive programmes, and researchers and consultants should broaden their vision.

Policy that addresses the Digital Divide needs political leadership

Politicians need to show clear and publicly visible leadership. This requires the formulation of clear and realistic strategic objectives for the Information Society. These might include, for example, equipping hospitals and other public services with the right technologies. In addition to being clear, such strategic objectives need to enjoy broad support. Support can be built by involving different stakeholders (policymakers, businesspeople, citizens) in their formulation. This would also address the problem that European Digital Divide initiatives – as well as government policies in general – are often seen as top-down actions, rather than responses to societal needs. In turn, eDemocracy and eParticipation as a possibility to identify societal needs can have an impact on the Digital Divide themselves.

In some cases, political objectives can be effectively supported through direct financial subsidies: Matthias Müller mentioned the Swedish example where the household purchase of PCs and rural broadband are both subsidised leading to very good results for spreading both access and skills. In the Danish context, employers can reduce their tax burden, when purchasing home PCs for their employees. Employees only have to agree to undertake PC training, and they get a free PC for private use. Employers obtain more IT savvy employees and the government (although it loses tax) helps to build up a workforce with better skills and a population with a lower Digital Divide. This example also shows the importance of engaging the private (enterprise) sector in policies to tackle the Digital Divide.

Citizens need to know the practical benefits of the Information Society

Support for the Information Society and the policies associated with it requires more than consultation with affected stakeholders. People need to be aware of the practical benefits that ICTs can offer. Awareness of the practical benefits will strengthen support for the political objectives, and increase the take-up of digital services by citizens.

An example of the practical benefits is eGovernment. eGovernment can centralise back office operations, thereby producing substantial cost savings that can in turn be invested in better front office services. In addition, services can be made more interactive, and users can be given more control. A practical example of such benefits in Hungary was discussed. There, citizens receive replies from the tax authorities faster when they send their tax return on-line than by post. Spreading awareness of such practical benefits can help increase the use of Internet among citizens who are disinclined to use it, perhaps due to the fact that they do not believe they will find much useful content in their native language. To realise the European vision of the Information Society, digital services need to be tailored to the needs of individuals in local communities.

ANNEX 1: JANUS Workshop Agenda

The Digital Divide: Opportunities and Threats at the Verge of EU Enlargement

Friday, 23 January 2004, Centre Borschette Brussels

Time	Activity		
0800	Registration and Coffee		
0900	Welcome & Keynotes – The global digital divide	Welcome	Maarten Botterman, RAND Europe, Chairman of the day
0910		Welcome	Rosalie Zobel, European Commission, DG Information Society
0930		A global digital divide: a global market in delocalised services	Ursula Huws, Analytica and Institute for Employment Studies (Emergence)
1000		Delocalising ICT services – the case of India	Milind Kamble, TATA Consultancy Services
1020		Questions and answers	
1040	Morning Coffee		
1100	Session 1: Aspects of the Digital Divide in CEC countries	Benchmarking the national digital divide in Eastern and Western Europe	Tobias Hüsing, Empirica (SIBIS)
		Uneven development in the Hungarian eEconomy: who are the winners and losers?	Csaba Mako, Hungarian Academy of Sciences – Institute of Sociology
		eGovernance as a tool to bridge the digital divide: The Slovenian case	Jaro Berce, State Undersecretary, Government Office for European Affairs, Slovenia
		Questions and answers	
1230	Lunch		
1400	Session 2: Hard and soft factors in the digital divide	Factors influencing access to and usage of ICTs in the EU	Conor Mc Caffery, National Institute for Regional and Spatial Analysis (NIRSA), National University of Ireland
		Skills and the digital divide – a bridge over troubled water	Hanne Shapiro, DTI and RAND Europe
		From digital divide to digital choice	Werner Korte, Empirica (SIBIS, STAR)
		Questions and answers	
1530	Afternoon Coffee		
1600	Plenary Panel	An agenda for a European strategy	<ul style="list-style-type: none"> - Athanassios Chrissafis, European Commission, DG Information Society - Matthias Müller, Landesvertretung Sachsen, IANIS Network coordinator - Jeremy Millard, DTI (BEEP/Prisma) - Lidia Pola, European Commission, DG Employment and Social Affairs
1700	End		

ANNEX 2: Speakers' Biographical Notes

Maarten BOTTERMAN is project manager of the JANUS project. He is also program director for Information Society at RAND Europe. Before joining RAND he worked for 4 years as Scientific Officer for the Framework Research programme on Communications Technology and Information Society, managed by the European Commission DG Information Society. His responsibilities included participation to programme preparation and evaluation activities and he initiated and managed telework initiatives and a comprehensive telework programme across Europe. Other relevant experience includes being Head of Unit for an IT Department in the Dutch Ministry of Transport, Public Works and Water Management (1987 - 1991). He holds a degree in business economics from Erasmus University Rotterdam and is an internationally recognised expert in new methods of working.

Rosalie A. ZOBEL was born in England. She received a bachelor's degree in physics from Nottingham University, UK, in 1964, and a PhD in radiation physics from London University in 1967.

She started her career in the Information Technology industry in ICL in 1967, and later held positions as a systems engineer in CERN (Centre Européen pour la Recherche Nucléaire), Geneva, Switzerland, the Atomic Energy Research Establishment, Harwell, UK, and the Max-Planck Institut für Plasmaphysik, Garching, Germany. At the latter she became operations manager of the first CRAY Supercomputer centre in continental Europe.

In 1981 she moved to the USA and took up a position in the AT&T Headquarters, Basking Ridge, USA. She held positions as senior marketing manager for open systems software both for the USA and international markets, and was responsible from 1983-1986 for the international UNIX business. In 1986 she became senior marketing manager for information technology products in AT&T Japan.

She returned to Europe in 1988 as Deputy Head of Unit of the European Community's ESPRIT Business Systems unit. In 1991 she launched the initiative in Open Microprocessor systems (OMI). From 1995 she was the Head of unit "Business systems, multimedia and microprocessor applications", and EU-coordinator of the G7 Pilot Project "Global Marketplace for SMEs". From 1999-2002 she was Director of "New Methods of Work and Electronic Commerce". From 2003 she is Director of "Components, Subsystems and Applications" in the Information Society Directorate-General of the European Commission.

Ursula HUWS is Professor of International Labour Studies at the Working Lives Research Institute at London Metropolitan University, an Associate Fellow of the Institute for Employment Studies and the Director of Analytica Social and Economic Research Ltd.

After beginning her career in educational publishing and television, with stints of employment in both the public and private sectors, she has been carrying out economic and social research on various aspects of the restructuring of labour markets, the impact of technological change, teleworking, globalisation, equality of opportunity and the future of welfare systems for over twenty years for clients including international organisations, national and local government organisations, large and small corporate clients, research foundations, trade unions and NGOs.

Her work for the European Commission extending over the past 15 years has included research and consultancy for DG Employment and Social Affairs, DG Information Society and DG Research as well as acting as an evaluator, reviewer and rapporteur. She is currently the director of the EMERGENCE and RESPECT projects, funded under the IST Programme.

Formerly a senior lecturer in research methodology at the University of North London (1990-1995), she is the author of a large number of books, articles and reports and has lectured widely throughout Europe and in Canada, the United States, Australia, India and Malaysia. Details of her publications can be found on www.analytica.org.uk

Tobias HÜSING is researcher at empirica since 2000. He has a degree from the University of Cologne where he studied economics and sociology focusing on quantitative methods of empirical research. He has long standing experience in empirical research and has been responsible for survey methodology and statistical analysis in a variety of large scale pan-European projects. Among other projects he is currently engaged in the European research projects BISER, SIBIS and eBusiness W@tch with a focus on research methodology, indicator development and statistical analysis. His research interests cover the digital divide and the Information Society at large, eCommerce and eBusiness measurement as well as methods of empirical research and statistical analysis.

Csaba MACÓ

Academic training: 1983: Academic Doctors' Title in Sociology, Scientific Qualification Committee, Budapest, 1973: Ph.D. in Sociology, Scientific Qualification Committee, Budapest, 1967: Degree (Diploma) in Economics, Karl Marx University of Economic Sciences, Budapest.

Positions: Director of Research, Institute of Sociology, HAS (2001 to present), Director, Institute of Management Education, St. István University (1998 to 201), Scientific Advisor, Institute of Sociology, HAS (1988-1990).

International Fellowship: 2002-2003: Visiting Fellow, Japanese Society for Promotion of Science (JSPS), 1196-97: EU (PHARE) Fellowship – University of Glasgow Business School) etc.

Research Activities: EMERGENCE, EU IST-2000-2003-31099, Central European Project Coordinator (2000-2003), "Statistics and Indicators on the Labour Market in the e-Economy", EU-IST-2001-32227, National coordinator (2002-2004)

Selected publications: Csaba Makó-Chris Warhurst-John Gennard (eds.)(2003) *Emerging Human Resource Practices, (Developments and Debates in the New Europe)*, Budapest: Akadémiai Kiadó, p. 211, Csaba Makó – Roland Keszi (2003) 'E-Work in EU Candidate Countries', Brighton: *Institute for Employment Studies*, Report no. 396, p.52.

Jaro Berce currently works for the Slovenian Governmental Office for EU Affairs as State Undersecretary. In his early profession stages his work was focused only in research and development of information systems and technology. Later on, with understanding that implementing information system needs also organizational and other changes, he started to build his expertise on the management consulting and entrepreneurial skills needed in companies (strategy, costs, organization structure, etc.). Since these days he has been involved in projects with multinational consulting companies and he founded his own company in 1993.

On his own or within bigger projects (PHARE, US-AID, ...) he consults and manages a sector strategic group for the Strategic Industrial Plan of Slovenia, teaches (GEA entrepreneurial academy, University of Ljubljana - faculty for electrical engineering), manages projects in the field of Information technology (information system for support of the pre-accession of

Slovenia), writes and publicly speaks on behalf of equality of profession knowledge between technical and social professions and their influence on Knowledge economy.

Conor McCaffery is a graduate of the National University of Ireland, Maynooth where he received his MA in Geography in 2001. Currently a Doctoral Fellow at the National Institute for Regional and Spatial Analysis (NIRSA) at NUI Maynooth, preparing a thesis entitled 'Access to Information and Communication Technologies & Social Exclusion in Ireland'. In 2001 published a report entitled 'The Digital Divide in the EU: National Policies and Access to ICTs in the Member States', prepared for OSCAIL, the National Distance Education Centre based at Dublin City University. This project was partially funded by the EU's Socrates Minerva Programme. Presented a paper on this research at an International Colloquium on 'eLearning in higher education: pedagogy and policy' in Queen's University Belfast (October 2002). In June 2003 was guest speaker at the INTERREG IIIB North West Europe Transnational thematic workshop in Cork on the topic 'Reducing the Digital Divide and Overcoming Peripherality'.

Hanne Shapiro works for the Danish Technology Institute, Center for Competence, IT & Analysis, and for RAND Europe as a part time research leader. She has 20 years experience in analysis of education policy, and the interlinkage between technology deployment, new skills demands and organisational and business innovation. Most lately she has been invited to participate in a High level Expert group under the leadership of Commissioner Likkänen. The past years she has conducted several foresight and scenario exercises in companies and with policy makers on the knowledge economy- Centre for Monitoring of Industrial Change, Graphical and Media sector, ICT and convergence. The Danish National Research Council - The knowledge system 2025. Confederation of Danish Industries: Firms, innovation and the knowledge system- location DK 2020.

She functions as an expert tot OECD on ICT and institutional innovation and efficiency and as reviewer on the second round on adult education and learning for OECD She has also carried out a number of policy studies with North American organisations related to ICT skills and new ways of work. Since May 2002 she has been working on a partial basis for RAND Europe as a research leader.

She has carried out several studies on changes in the engineering profession, and has functioned as expert to the 5ht framework- Flexible university, particularly relating to engineering and technical education.

She has worked on national and European policy studies related to the socio-economic development of the Information Society, including a background study to the HLEG – Information Society for US All – the Learning Labour Market, DG V. EU Programme work of relevance includes senior progamme analyst, COMETT TAO, Brussels. FORCE, SOCRATES, External programme evaluation. Cedefop/sub working group Career Space ICT user industries and demand and supply of vocational qualifications, since January 2003. With RAND Europe, she recently carried out a study on behalf of DG Information Society on Virtual Smart organisations with focus on SME innovation policies in networking.

Werner B. KORTE is director of empirica and responsible for managing many of the largest empirica research and development projects in the area of information society and statistical indicators for benchmarking and eEurope. He was and is project manager of large-scale international empirica projects in these areas providing policy evaluation and assessment and benchmarking results to public and private customers including different DG's at the EC, national ministries and Federal state and regional governments and ministries since the early

1980s and has been responsible for several market research, monitoring and benchmarking studies. Since 1989 he has been external expert to the European Commission for the development of the work programme as well as evaluator and technical reviewer for the ESPRIT Programme. From 1996 to 1999 he has been responsible for co-ordinating workgroups and directing all operations in the "Forum Info 2000: Germany's way into the information society", a major government initiative supported by the economics and research ministers. Currently he is amongst other project manager of the projects "SIBIS - Statistical Indicators Benchmarking the Information Society" and working on "EUFORIA - European Foresight Project" and "SUSTEL - Sustainable Teleworking".

Gabriella Cattaneo is the international projects co-ordinator (since 1996) of Databank Consulting, which she joined as researcher in 1990. Databank Consulting is a business unit of the Databank group, leader in Italy and Spain for competitive and customer intelligence (recently acquired by Seat-Pagine Gialle). Databank Consulting is specialised in marketing research and consulting in the ICT (Information and Communication Technologies) sectors in Italy and Europe. Cattaneo has ten years experience in socio-economic research for the European Union. Her studies focus on the analysis of the socio-economic and techno-economic processes of change in the transition towards the European Information Society, at the regional, national and international level. She has also studied the impacts of advanced information services with a specific focus on eCommerce and Internet evolution in Italy and Europe. She's presently coordinating the eEurope evaluation activities work package in the SIBIS project (Statistical indicators for benchmarking the information society) and is project leader of STAR (Socio-economic trends assessment of the digital revolution). She graduated in Political Sciences Magna cum Laude from Milan State University and is also a member of the Italian Professional Journalists Order. She is fluent in English and French.

Athanasios CHRISAFIS studied economics (PhD) at the University of Sussex, UK. After a four year period on research and academic carrier in England during 1985-1989, he moved to Brussels where he works in the European Commission. His responsibilities over the years included research and technology strategies in the field of information and communication industries, socio-economic research activities in the Esprit Programme (R&D on information technologies) and relations with the Structural Funds (the EU programme for regional and socio-economic cohesion). From 1999 to 2002 he worked in the Information Society Technologies programme, Directorate for "New Methods of Work and Electronic Commerce". His main responsibilities were the Directorates' activities on socio-economic research, on the Enlargement and South Eastern European countries, and on the digital regional economy. He is currently working in the eGovernment unit of the Information Society Directorate General.

Matthias Müller has been senior policy adviser at the Saxony Liaison Office Brussels and State Chancellery of Saxony (Enlargement, External Relations, Information Society, Social Affairs, Consumer Protection, Health, Media, Gender, and Institutional Affairs) since 1992. He is the representative of Saxony in eris@ and the IANIS Network, managing authority of IANIS

After completion of a stage with the Socialist Group of the European Parliament in 1991 (Support of the trans-border co-operation between Germany, Poland and Czechoslovakia),

Matthias Müller worked as a freelance collaborator for GEWOS Hamburg and Friedrich-Ebert-Foundation in Brussels, Erfurt and Dresden (1991-1992).

From 1973-1990, he had been scientific collaborator at the Forschungsinstitut Manfred von Ardenne in Dresden, where he worked on the development of new technologies for electron beam welding, surface treatment and software development.

Matthias Müller holds an MA in International Politics from Université Libre de Bruxelles and a diploma in Physics (Diplom-Physiker) from Technische Universität Dresden.

Jeremy MILLARD has 30 years experience working with new technology, education and training and in consultancy for technology suppliers, user groups, public authorities, governments, the European Commission, the World Bank, and the Danish and Swedish Aid Agencies. He has worked on all aspects of the Information Society, often taking the leading and management role. EU Programme work of relevance includes COMETT, RACE, DELTA, STAR, ORA, TELEWORK, ESPRIT, MLIS, the Telematics Applications Programme (TAP), ACTS and IST. He was employed by the UK Open University from 1971 to 1984 and then moved to Denmark to work with Tele Danmark Consult until March 1999. From April 1999 he is employed by the Danish Technological Institute as a Senior Consultant.

As a geographer and social scientist, Jeremy has focused heavily on regional development issues, especially in relation to new forms of work, eCommerce, eServices and eGovernment, and new business and organisational change projects in the context of the new digital networked economy. He has worked extensively with local and national government and regional development agencies in all types of area across Europe as well as in other parts of the world: rural, urban, core and peripheral. He has been involved in analysing the impacts of change at the local and regional scale, both from a theoretical perspective and in terms of practical implementation, for example by advising regional development agencies on policy formulation and practice. At present he is involved in developing a set of practical indicators for regional development, collecting and analysing cases of good practice in regional development, and coordinating a handbook for local developers on how to exploit the opportunities of the knowledge economy.

Lydia Pola's background is in linguistics, anthropology and international politics. She has been working for the European Institutions in Luxembourg and Brussels since 1988. Starting from 1991, she has been involved in Information Society related issues within the European Commission. She acted as a Project Officer in the 3rd, 4th and 5th Framework Programmes, monitoring R&D projects in the field of Human Language Technologies (DG INFSO). She has led knowledge management projects for the Informatics Directorate and acted as consultant in information systems management and business process reengineering. Within the Employment and social Affairs DG, Ms. Pola is currently responsible for policy analysis and policy development activities in the field of employment and social cohesion in the Knowledge Society. She is particularly focusing on social and human capital issues, social inclusion/eInclusion, women and ICTs

ANNEX 3: Participants List

Mr.	Abeloos	Benoit	IntairLink
Ms.	Adamovitch	Irina	SNI - Systemics Network International
Ms.	Adams	Victoria	South West UK Brussels Office
Mr.	Andersson	Karl-Erik	TietoEnator Government Services
Mrs	Bassi	Sophie	Hall Aitken
Mr.	Berce	Jaro	State Undersecretary Slovenia
Prof.	Bernabei	Giannino Cesare	Link University of Malta
Mrs.	Bonfiglioli	Elena	Microsoft
Mr.	Botterman	Maarten	RAND Europe
Mr.	Bowan	Mubarak	All Africa Students Union
Mr.	Carranza Torres	Javier	e- Consult
Mr.	Chrissafis	Athanasios	European Commission
Mrs	Costantino	Giulia	IDP European Consultants
Mr.	Culpin	Ian	Martech International SA
Dr.	Davies	Elizabeth	IST Results
Mr.	Debaisieux	Nicolas	eris@
Dr.	Del Sole	Antonio	University of Lecce, Italy
Mr.	Del Vecchio	Sebastiano	Koinè - Centro Interculturale
Ms.	Di Domenico	Germana	ISFOL
Prof.	Diaz-Prado	Edgar	University of Koblenz
Mr.	Dreesen	Johan	Enlight TestStation
Ms.	Esteves	Antonella	Avanti Communications
Ms.	Favarin	Federica	Cosmi Network
Dr.	Fayl	Gilbert	European Academy of Sciences and Arts
Ms.	Feindt	Sylvie	SFC
Mr.	Fisher	John	Citizens Online

JANUS workshop on the Digital Divide

Ms.	Genta	Daniela	Eutelsat SA
Ms.	Genuit	Silke	BSIS Networking Committee
Mr.	Goekcoel	Ceyhun	Falling Apples
Mr.	Gonzalez-Sancho	Miguel	European Commission
Dr.	Gouget	Herve	British Council
Mr.	Gruber	Harald	European Investment Bank
Ms.	Hews	Ursula	Analytica
Mr.	Hüsing	Tobias	Empirica
Mr.	Janssens	Jos	Primula
Mr.	Jeremy	Millard	Danish Technology Institute
Ms.	Jollès	Maya	McKinsey
Mr.	Kamble	Milind	TATA Consultancy Services
Ms.	Konings	Marika	Interel Public Relations & Public Affairs
Mr.	Korte	Werner	Empirica
Mr.	Lazaridis	Kostas	Greek Ministry of Transportation and Communication
Mr.	Lowe	Charles	Citizens Online
Mr.	Maekawa	Kazuyoshi	Fujitsu Limited
Mr.	Mako	Csaba	Hungarian Academy of Sciences
Mr.	Mannekens	Henk	BT
Dr.	Martin	Lynn	Univeristy of Central England
Mr.	Mc Caffery	Conor	Maynooth National University of Ireland
Ms.	Mendivi Armendariz	Nuria	Delegación del Gobierno de Navarra
Mr.	Micas	Christian	European Commission
Mr.	Mihnev	Pencho	Virtech Ltd.
Mrs	Mingels	Ronny	Arttic in Brussels
Mrs	Muehlenfeld	Claudia	ZENIT GmbH
Mr.	Mukhopadhyay	Sanjay	Independant
Mr.	Müller	Matthias	Landesvertretung Sachsen

JANUS workshop on the Digital Divide

Mrs	Murrugarra	Lady	imt - avh - upch
Mr.	Nöster	Matthias	SFC
Mr.	O'Siochrú	Sean	Nexus Research
Mr.	Parmantier	Noel	Spaceconsult
Mr.	Peeters	Raymond	Computer Associates
Mr.	Pellegrino	Luigi	ELANET
Ms.	Piersantini	Mariella	Unioncamere Piemonte
Mr.	Piracha	Shehryar	European Commission
Ms.	Pola	Lidia	European Commission
Mr.	Reilly	Marc	Intrasoft International SA
Mr.	Rocchi	Andrea	University of Tuscia
Mr.	Rosario	Jorge	ISEG - Technical University of Lisbon
Mr.	Roukens	Matthijs	TATA Consultancy Services
Mr.	Roy	Simon	ECOTEC Research and Consulting
Ms.	Seabourne	Clare	Political Intelligence
Ms.	Shapiro	Hanne	RAND Europe
Mr.	Sirolla	Armando	Independent
Ms.	Skogman	Susanne	West Sweden
Dr.	Sonnevend	Peter	Kaposvar University
Mr.	Stelmaszczyk	Pawel	Microsoft
Dr.	Terranova	Liliana	SOGEI Società Generale d'Informatica Ministero dell'Economia
Dr.	Treiber	Helga	TSA Brussels
Ms.	Ullmann	Charlotte	Caisse des depôts et consignations
Ms.	Ursa	Yolanda	INMARK
Mr.	Uzorka	Daniel	Vrije Universiteit Brussels
Ms.	Valero	Pastore	Cisco Systems
Prof.	van Zon	Hans	University of Sunderland
Ms.	Verelst	Greet	EADS Astrium

JANUS workshop on the Digital Divide

Ms.	Villacaña	Raquel	Telefonica S.A
Mr.	Weerdmeester	Ron	ETS European Training & Studies
Ms.	Zobel	Rosalie	European Commission