i2010

Information Space
Innovation & Investment in R&D
Inclusion

i2010 High Level Group

Benchmarking Framework

Date: 20 April 2006

Benchmarking *i*2010 Proposals

1. INTRODUCTION: *i*2010

A Communication[1] on the Commission's new ***i*2010 strategy** was adopted on June 1. *i*2010– **European Information Society 2010** aims to exploit opportunities for economic growth and jobs in Europe by promoting an open and competitive digital economy. It is a key element of the renewed Lisbon Strategy and offers **a comprehensive strategy for the ICT and media sector.** It proposes three priorities for Europe's information society policies:

i) the completion of a **Single European Information Space** which promotes an open, competitive and content-rich internal market for electronic communications, media and content;

ii) strengthening **Innovation and Investment in ICT research** to promote growth and jobs through a wider adoption of ICT;

iii) achieving an **Inclusive European Information Society** that prioritises better public services and quality of life.

Benchmarking will play a central role in monitoring progress in achieving these *i*2010 priorities. In each case, a mix of indicators is needed to measure the different aspects of the objectives that are to be achieved. Policy emphasis now focuses more on complex issues of impact and usage of technologies in the wider economy and benchmarking must become more sophisticated. It is necessary to build on existing work and continue to track some indicators consistently but monitoring of progress now requires indicators that are flexible and timely.

The Commission will monitor progress through an annual European Information Society Progress Report. The report will assess developments and impact and will indicate where additional measures may be needed.

i2010 is fully in line with the new Lisbon governance cycle defined in the revised Lisbon strategy and based on the following:

- Adoption of integrated guidelines for growth and jobs for the period 2005-2008 on the basis of the Commission proposal [2],
- Adoption of National Reform Programmes by Member States based on these guidelines.
- Adoption by the Commission of a Community Action Plan covering all actions to be undertaken at European level in support of the goals of growth and employment[3].
- Reporting in spring on progress achieved both at the national and EU levels.

Given the tight link between i2010 and the Lisbon process, it is important to establish a correspondence between benchmarking and *i*2010 indicators and the integrated guidelines relevant to ICT:

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1 Available from http://europa.eu.int/information_society/eeurope/i2010/i2010/index_en.htm

2 COM(2005)141 of 12.04.2005.

3 This will be drawn up on the basis of the EU Lisbon Programme set out in SEC(2005)192.

Guideline 7. *Increase and improve investments in research and development, in particular in the private sector, with a view to establishing a European area of knowledge.*
Guideline 8. *Facilitate all forms of innovation*, Member States should facilitate the uptake of ICT and related changes in the organisation of work in the economy.
Guideline 9 : *Facilitate the spread and effective use of ICT and build a fully inclusive information society*
Guideline 16: *Expand, improve and connect European infrastructures and complete priority cross-border projects*
Guideline 21: *Promote flexibility combined with employment security and reduce labour market segmentation through*: *…geographic mobility; the promotion and dissemination of innovative and adaptable forms of work organisation*.
Guideline 24: *Adapt education and training systems in response to new skill requirements through: better identification of occupational needs and key competences, and anticipation of future skill requirements.*

The *i*2010 benchmarking definitions will therefore make an important contribution to the Lisbon process and will feed the discussion of the structural indicators.

2. MONITORING OF THE EUROPEAN INFORMATION SPACE

i2010 priority 1: A Single European Information Space offering affordable and secure high bandwidth communications, rich and diverse content, and digital services.
This priority is linked to the Lisbon Guideline 16, (*Improve EU infrastructure*) and 9 (*Innovation and ICT uptake*).
The single European Information Space aims at exploiting the benefits of convergence. Convergence is made possible by the roll-out of advanced broadband networks, connecting multiple devices and allowing content to be available on line and new services to emerge. Monitoring should be carried across the value chain and the following features themes are proposed.

THEME 1: Developments of broadband

Broadband was a focus area of *e*Europe 2005 and the effects of convergence are already visible in the deployment of broadband communications. Broadband take-up grew rapidly, by 75% in 2004 alone and there are now around 40 million subscribers or approximately 9% of the EU25 population. Broadband through ADSL, the dominant platform, now reaches 88% of the population in EU15, up from 82% one year before. There is likely to be continuity in broadband adoption and growth patterns at the same rate or higher than that of Internet in the past with an increasing diversification of platforms. Market success of 3G/3.5G may accelerate broadband take-up especially in new or lagging member states
However, Europe is behind its main international competitors: broadband connectivity in some Member States is very low and Europe has few ISPs offering bandwidths above 2Mbits. There has been little progress in the development of new networks and a particular weakness is the absence of fast fibre-optic networks. Prices are falling as a result of increased competition and higher take-up but some entry price offers are metered and have relatively low bandwidth that imply the price paid for broadband services would be higher.

- **Proposal 1: Broadband coverage**

  Indicator: percentage of population reached by switches equipped for DSL and/or living in houses passed by an upgraded cable.

  Data collection to be extended to other technologies when appropriate.

  Source: Survey of operators for electronic communications.

- **Proposal 2: Broadband take up**

  Indicator: number of subscribers broken down by platform (DSL, cable, fibre, 3G, wireless connections)

  Three data collections per year will be available and will allow calculation of penetration rates (i.e. subscriptions as percentage of population). These data will be compared with households' and enterprises' broadband subscriptions in the Community Surveys on ICT usage

  Source: COCOM[4] data on broadband subscriptions broken down by access platform

  Other indicators: these to be maintained from *e*Europe2005 benchmarking exercises: (indicator references A1, J3 etc. refer to the Council eEurope Resolution of 2003)

  J.3 Percentage of households with broadband access.
  A.1 Percentage of households having access to the Internet at home.
  J.2/H.a5 Percentage of enterprises with broadband access

  Source: Community Surveys on ICT usage

  These indicators will enable a comparison to be made of ICT usage between broadband and narrowband users and will give a better understanding of the benefits of broadband. However, results from the Community Surveys will have to be compared with ISP and operator data in order to verify their coherence.

- **Proposal 3: Speed and prices**

  Indicator: subscription numbers broken down by speed with the following thresholds: 256, 512, 1024 (Kbps), 2 and 4 Mbps. Price methodology to be tested in 2005/6 and will be defined to include installation costs and monthly charges. Prices for metered and unmetered offers will be separated

  Source: Survey of operators for electronic communications.

[4] COCOM is the Communications Committee of the National Regulatory Authorities who obtain data directly from operators.

- **Proposal 4: Multiplatform of access to the internet**

  Indicator: Percentage of households with access to the Internet broken down by device for accessing via PC, digital TV, mobile device (include all forms of mobile access; handheld computer, mobile phone, 3G) [*e*Europe indicator A.3]

  Source: Community Household Surveys on ICT usage

  Platforms access is important to assess the convergence in particular related to devices with an increasing range of devices allowing access to the internet. It is also relevant to measure inclusion. The indicator should be kept and may be revised following the problems encountered by Member States in collecting this information as it is reflected in the report on EUROSTAT mini survey.

THEME 2: Advanced services

With convergence, content is becoming available in new, diverse formats and includes content that is the digital version of traditional content. The growing availability of business content, public domain content and information, television and radio programmes, movies, games, music, and books in digital form is facilitating the creation of new services. This includes content created by individuals or groups of users, such as personal websites, weblogs or digital pictures that have a growing impact on the social aspects of the information space. The information space is also made up of a wide range of services that are not based on the provision of on-line content. Communication services and applications (email, SMS, MMS, VoIP, video conference, etc.), financial or commercial transaction services or location services associated to mobile devices.

- **Proposal 5: Availability of advanced online services**

  There is currently no comprehensive measurement of the availability and purchase of such services. Measurement will be based on compilation of different sources that might not be all compatible and complemented by market data. Pilot studies will help identify the sources.

- **Proposal 6: Usage of advanced online services**

  A service focus should be also included to monitor actual usage, service development and impact. The current version of the household survey includes only a limited number of questions on the use of the internet. Monitoring convergence requires measuring adoption of advanced services by consumers. The household survey includes questions on regular use of internet and use of internet for specific purposes. These should be kept as core indicators. But the question on the use of internet for specific purposes should be reviewed and probably expanded. Core indicators should be complemented by specific modules from the household survey. We propose a detailed module in the 2008 survey on internet usage, including user feedback on the problems encountered when using online services and benefits perceived.

  Indicators

  1. Percentage of individuals regularly using the Internet (population: age 16-74; "regularly" defined as at least weekly, "use" to include all locations/methods of access. Background variables for breakdown/tables: age, gender, employment, status, education level, bandwidth) [*e*Europe indicator A.2 plus bandwidth]

2. Percentage of individuals doing specific online activities in the previous 3 months broken down by activities, bandwidth, education, and age. (activities: sending/receiving emails, using the Internet for advanced communications, finding information about goods and services, accessing/receiving online media subscriptions (such as newspapers, newsletters), using digital broadcasting services (such as web TV or online radio), playing/downloading games and music, using Internet banking, purchasing and buying on line, and using the Internet for learning purposes) [extended *e*Europe indicator A.5]

Source: Community Household Surveys on ICT usage

THEME 3: Security

- **Proposal 7: a security module in the Community Surveys on ICT usage**

  The Community surveys have been collecting data on Internet security issues from both individuals and enterprises. However, the current questions (and the existing indicators) have proved to be inadequate – especially in the household survey: respondents do not have the technical knowledge to understand the concepts used or simply don't know whether their devices are protected and/or had a recent update
  For businesses, the indicators on the percentage of enterprises having encountered security problems and the percentage of enterprises that have updated security devices have proved not to be reliable. Only the indicator on enterprises taking ICT security precautions proved to be feasible. Security is one area where annual measurement on the basis of a limited number of questions might be questioned given the complexity of the area. The proposal to continue exploring security indicators in the surveys and piloting questions using the results of ad hoc studies undertaken as part of the i2010 security strategy. A special module of the households and enterprises Community surveys on ICT usage will be carried out in 2010. The timetable for specific household survey modules is as follows:

  - 2007: skills and digital literacy
  - 2008: advanced services
  - 2009: e-Commerce and trust
  - 2010: security

THEME 4: Impact

*i*2010 impact should be considered in relation to the overall Lisbon Objectives of growth and employment. It therefore needs to link the ICT sector with the rest of the economy and the effects of use of ICT by society at large. This will not be summarised by a limited set of impact indicators but instead should rely on key sectoral/macro indicators backed by economic studies exploring causality links between ICT and the rest of the economy. This approach will apply to the three pillars. The first pillar on creating an information space is particularly focussing on the development of the ICT sector itself while the two other pillars focus on the adoption of ICT by businesses, governments and citizens.

Growth and Investment in the ICT sector. Convergence should result in higher growth in the ICT sector which makes a major contribution to the EU economy both directly and indirectly. In terms of direct contribution, EU25 data show that the ICT sector represents

just over 5% of EU GDP and has systematically grown faster than the rest of the economy. Investment by the sector will give more precise indications on its contribution to innovation and readiness to develop the technologies which will bring about convergence. The impact of these developments on employment is hard to predict, but should be monitored in the Lisbon perspective. There is no evidence that the overall employment level in the sector has changed significantly in recent years although important internal adjustments have taken place driven by the growth of services within the sector or outsourcing.

- **Market transformation**. Indirect impacts cannot easily be measured but the Commission proposes to undertake preparatory studies in the following areas:

  - **Impact on the internal market**: to investigate whether new barriers, bottlenecks, competition problems are being created by the development of the knowledge based economy and the growth of ICT

  - **Supply-side impact:** to look at how the development of the European Information Space is impacting on business structure, size and dominance of firms.

  - **Behavioural change**: analysis of the impact of use of advanced services.

- **Proposal 8: Indicators on growth of ICT sector**

  Indicators:

  1. Share of the ICT sector in the economy measured as proportion of GDP and of total employment.
  2. Growth of the ICT sector measured as % change of value added at current and constant prices.

  The Commission will explore if investment in the ICT sector can be measured annually and if the data can also be extended to include the Content sector.

  Source: EUROSTAT Structural Business Survey (SBS), EUROSTAT National Accounts and the 60 industry database (University of Groningen). [5]

3. MONITORING OF RESEARCH AND BUSINESS INNOVATION

i2010 priority 2: To achieve world class performance in research and innovation in ICT by closing the gap with Europe's leading competitors.
This priority is in line with the Lisbon guideline 7 (on research), 8 (on innovation), 9 (on use of ICT) 21 and 24 (on flexibility and training requirements).

THEME 5: Investment in ICT research

Promoting ICT research is related to the overall objective of the European Research Area to raise total research expenditure to 3% of GDP by 2010 and the *i*2010 aim to close the gap between the EU and its major competitors in terms of investment in ICT research.

[5] The sector is defined by NACE classification as proposed in OECD WP (DSTI/ICCP/ISS(2002)2. Note that the SBS is at current prices and cannot provide growth estimates but this may be obtained from the Groningen database.

ICT accounted for 18% of total research in the EU in 1999, while in the US and Japan this was 30%. Closing the gap requires doubling investment in ICT research. This is ambitious in that it attempts to overcome a large deficit but possibly not ambitious enough in only aiming for equality not leadership. This objective should be met by measuring public and private investment in ICT research as percentage of total research.

- **Proposal 9: Investment in ICT research**

Indicators:

1. R&D expenditure by the business sector, as % of GDP and as % of total R&D expenditure.

   Source: EUROSTAT - Science and Technology Survey

2. R&D expenditure in ICT by the public sector as a % of GDP and as a % of total R&D expenditure.

   Source: ad hoc study

Statistics on R&D are collected according a common manual (Frascati) that is used by Eurostat and the OECD. According to the manual, R&D expenditure is broken down by funding unit and by performing unit. Eurostat carries out an annual survey providing R&D expenditure performed by the business sector with a breakdown by economic activity and funding sources. The data collected enable estimates to be made of R&D expenditures by companies belonging to the ICT sector broken down by source of funding – i.e. private, public, and from abroad.
A pilot study on research expenditure in the ICT sector was carried out in 2002. (*Comparaison de la recherche dans les TIC dans les grands pays industriels*). This study is currently being updated and will provide estimates for the public funding of ICT research[6]. Two indicators are proposed based on the concept of research performed (rather than funded) by private and public entities. The indicators measure expenditure in ICT R&D with respect to GDP and to overall R&D expenditure, in order to evaluate the importance of ICT in the total economic activity and in relation to the whole R&D effort.

THEME 6: adoption of ICT by businesses

ICT uptake by businesses has so far focused mainly on e-readiness, connectivity, and e-Commerce. While these core indicators will be kept, the scope of the analysis will be increased to look in more detail at the impact of internet related technologies on business processes and capture the wider adoption of advanced e-Business solutions[7]. Markets are offering innovative solutions for business with a wide range of options for networking in enterprises: use of web services, emergence of grid and utility computing, development of mobile applications for businesses. Such developments provide input to assess re-organisation of business processes and efficiency gains derived from the use of ICT.
ICT uptake and e-Business will be monitored through a basket of core indicators that will be collected either annually or every second year in the Enterprise Survey. These **core**

[6] The Eurostat survey on R&D does not explicitly provide the information on the ICT research performed by the public sector. However, the possibility of producing estimates from available data is under consideration.

[7] For example: Enterprise Resource Planning (ERP), customer relationship management (CRM), human resources functionalities, eSupply Chain Management (ESCM), eSupply Relationship Management (eSRM), e-Procurement.

indicators have been chosen for their policy relevance, reliability and their ability to capture likely substantial changes in business decisions in the next five years. Core indicators will measure basic connectivity, ICT adoption, e-Commerce and some selected aspects of e-Business[8]: most of them come from the existing Community Survey indicators to ensure continuity. In addition, the Community Survey will include every year **a thematic module** providing an insight into specific issues related to ICT use in enterprises. The e-Business Watch could be a useful tool to pilot some of these modules or identify prospective issues.

- **Proposal 10: Indicators on basic connectivity and ICT adoption**

  Indicators:

  1. Percentage of persons employed using computers connected to the Internet, in their normal work routine [*e*Europe indicator B.1]
  2. Percentage of enterprises with a LAN and using an Intranet or Extranet. [*e*Europe indicator H a6/b4]
  3. Percentage of enterprises with broadband access (also listed in proposal 2 on broadband take up). [*e*Europe indicator J.2/H.a5]
  4. Percentage of enterprises using open source operating systems [new indicator]

  Source: Community Enterprise Surveys

The indicators measure to what extent enterprises are connected (B1 and J.2/H.a5), whether they use this connection for internal purpose or to liaise with the business world. They represent a significant step beyond the simple internet connectivity or web presence which is already close to saturation in EU15.[9]
The use of open source operating systems should be calculated, since the development of the latter is linked with the development of e-business applications.
Besides, the indicator on broadband connectivity is the one for which the fastest increases are expected in the near future and it will therefore collected annually while the remaining indicators on basic connectivity will be monitored every two years. This will reduce the burden for respondents without undermining users' needs.

- **Proposal 11: e-Commerce**

  Indicators:

  1. Percentage of enterprises turnover from e-commerce as % of total turnover. [*e*Europe indicator G.1]
  2. Percentage of enterprises having received orders via computer mediated networks, where these are ≥1% of the turnover. [*e*Europe indicator G.3/H.b2]

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8 E-business will be monitored by a list of core indicators that will be integrated by a specific module in 2008.

9 Eurostat survey for the relevance of indicators for benchmarking confirmed the importance of broadband access and the use of computers by employees. However conclusions go against the indicator on Intranet and Extranet, identified as one of the top negative priorities. This indicator is, however, useful to assess whether the enterprise has adopted the basic functionalities to move towards integrated business solutions inside the company or with its business partners. The Commission services propose to keep the indicator.

3. Percentage of enterprises having purchased via computer mediated networks, where these are ≥1% of the total purchases . [*e*Europe indicator G.5/H.b1]

Source: Community Enterprise Surveys

Core e-commerce indicators should be able to capture the growth of activity which appears to be recovering from the slump that followed the burst of the internet bubble. To track the importance of e-commerce for the businesses, a first measure is given by the numbers of enterprises selling and purchasing online. The 1% threshold already contained in the previous benchmarking exercise should be kept in order to avoid an overestimation of e-commerce. The community survey is the only source providing an estimate of turnover from e-commerce, therefore a special effort is needed to get the best estimate of the phenomenon. In the light of this a broader definition of e-commerce should be used, including not only transactions made on the internet, but also those performed by other computer mediated networks[10].

- **Proposal 12 : e-Business**

Indicators:

1. Integration of internal business processes: percentage of enterprises whose internal business processes are automatically linked [*e*Europe indicator H-b3 - revised]

2. Integration with suppliers and/or customers: percentage of enterprises whose business processes are automatically linked to those of their suppliers and/or their customers [*e*Europe indicator H-b4 - revised]

3. Use of software solutions for improving relations with customers: % of enterprises using software solutions, like CRM (customer relation management), oriented at improving relations with clients[11] [new indicator]

4. Percentage of enterprises sending and/or receiving e-invoices [new indicator]

5. Percentage of enterprises selling on the internet and offering the capability of secure transactions: percentage of enterprises that make sales on the internet and whose online sales system offers the capability of secure transactions [new indicator]

6. Percentage of enterprises using advanced e-signatures[12] in the relations with their suppliers and/or their clients [new indicator]

Source: Community Enterprise Survey

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[10] Transactions made on networks other than the internet (like private networks used together with the EDI standards) should be included, in order not to underestimate the turnover from e-commerce, even if the results of the Eurostat survey on the relevance of indicators for benchmarking seem to identify this item as a negative priority.

[11] CRM software applications cover the following 3 areas: operational (front office automation), analytical (analysis of customer behaviour) and co-operational (management of the contacts with customers).

[12] The definition of advanced e-signature is the one contained in the EC Directive 1999/93.

The rationale for the above indicators is that e-Business consists of the empowerment of business processes in enterprises by using IT solutions and in particular those related to web-based technologies; the proposal is coherent with this definition by focusing on the following:

- the integration of internal business processes;
- the integration on both sides of the value chain in the streamlining of external business processes;
- the use of CRM software as one of the main instruments of a broader business strategy aimed at building more effective relations with clients.
- the exchange of e-invoices with business partners as a tool for speeding up transactions and as a result of external business integrations;

In addition to that, it is important to look at the adoption of solutions and technology that increase the security of transactions as lack of trust is a major obstacle to e-business development. Two aspects will be monitored. Firstly, the percentage of enterprises offering systems that allow secure transactions[13] and secondly, the percentage of enterprises using advanced e-signature in their relations with suppliers and/or customers.

- **Proposal 13: An e-Readiness or an e-Business Composite Indicator**

  The definition of core indicators provides a basis for computing an e-Readiness composite indicator comprising elements of ICT adoption and ICT use. It will use all the individual components already indicated in proposals 10, 11 and 12. The monitoring of an additional dimension based on the "perceived" effect of ICT by businesses is considered to be not feasible due to the low level of reliability of the indicators.

- **Proposal 14: Indicators to be dropped**

  e-Learning is not considered to be not a crucial aspect of internet applications in enterprises. However, see theme 8 for proposals on digital literacy.

  Security indicators were mostly rated as negative priorities by the Eurostat survey and should be replaced by a special module on security in 2010. The Community surveys have been collecting data on Internet security issues from both individuals and enterprises. However, the current questions (and the existing indicators) have proved to be inadequate – especially in the household survey: respondents do not have the technical knowledge to understand the concepts used or simply don't know whether their devices are protected and/or had a recent update

  For businesses, the indicators on the percentage of enterprises having encountered security problems and the percentage of enterprises that have updated security devices have proved not to be reliable. Only the indicator on enterprises taking ICT security precautions proved to be feasible. Security is one area where annual measurement on the basis of a limited number of questions might be questioned given the complexity

[13] According to the results of the Eurostat survey on the relevance of indicators for benchmarking, this item should not be kept. This is probably due to problems in understanding the question and not in the low importance of the subject. For this reason, the Commission services ask to keep the item, even if it could be necessary to rephrase the question.

of the area. The proposal is to continue exploring security indicators in the surveys and piloting questions using the results of ad hoc studies undertaken as part of the i2010 security strategy. A special module of the households and enterprises Community surveys on ICT usage in 2010 will be carried out in 2010.

Indicators on use of e-Government services by businesses will be kept as a key indicator under the third policy priority.

- **Proposal 15: Timetable for specific enterprise survey modules:**

  Tentative timetable is as follows:

  - 2007: skills
  - 2008: e-Business
  - 2009: e-Commerce
  - 2010: security

THEME 7: Impact of adoption of ICT by Business

Some impacts have already been covered (see Theme 4 for impact on the ICT sector itself and theme 5 for business investment in ICT research). An economy which is more innovative and ICT driven is expected to become more competitive. Both investment in ICT by business and related productivity gains should be the key impacts from higher adoption of ICT. Therefore, the main issues to be looked at here are investment, productivity and employment.

- **Proposal 16: Investment and expenditure in ICT in enterprises, households and government**

  Quantitative information for benchmarking and monitoring investment and expenditure in ICT is required to follow the Lisbon strategy. There is the need for a more accurate and targeted indicator on ICT investment.

  To realise this, Eurostat has launched a pilot action to develop and test methods for measuring ICT investment and expenditure by enterprises. Proxies from external sources could be used in the interim.

- **Proposal 17: Productivity impact.**

  Analysis of the productivity increase as a result of ICT has already been undertaken in the Commission's Annual Economic Review and the Competitiveness Report. The Commission has contributed to the development of a macro-economic database at the University of Groningen and it is proposed that this will be exploited to provide regular reports on the productivity impact. An other important contribution to the analysis of the correlation between ICT and productivity is expected from the Eurostat project on Micro Data Linking, launched at the end of 2005.

- **Proposal 18: Employment and Skills**

The widespread diffusion and use of ICT is changing employment, work and skill patterns. The share of the labour force with ICT skills[14] has steadily increased. It has been estimated that around 20% of total employment in modern economies can be classified as ICT-skilled employment[15] (using the broad definition). The share of ICT-skilled employment has been on the increase (in EU15) also after 2000 when it started to decrease in the US. The increasing trend in Europe is consistent with employment growth in the service sector.

While ICT have a positive effect on skills, their effect on employment is more difficult to assess. ICT are generally labour saving technologies but as a major driver of efficiency gains ICT generate long-term growth and create new jobs. The net impact should be analysed as part of proposal 17.

Outsourcing presents another difficulty in measuring the impact of ICT on employment. Manufacturing jobs have been moving from industrialised countries to less developed countries characterised by lower wages and lower production costs. A new aspect of this phenomenon is that the displaced workers are increasingly white collar ICT service sector staff i.e. highly educated employees with training and educational needs very different from those of most manufacturing employees. There are no reliable indicators for tracking outsourcing of ICT services to off-shore locations. Published statistics are very volatile and vary considerably according to the source and can be subject to major revision. However, even the largest projections of off-shore employment are smaller than normal "churning" i.e. the usual combination of redundancies, new jobs, expansions and contractions that make up employment change. A report, "*Outsourcing of ICT and related services in the* EU"[16] indicates that a number of forecasts converge towards an estimate of around 2 to 3% of all EU service employment being outsourced by 2015. An important tool for assessing the impact of ICT on employment is represented by the 2007 special module on ICT Skills, in the framework of the Eurostat survey on ICT use in enterprises: the questionnaire comprises a section on outsourcing and offshoring.

Indicators

1. % of persons employed with ICT user skills.

2. % of persons employed with ICT specialist skills.

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14 As explained in "eSkills for Europe: Towards 2010 and Beyond", Synthesis Report of the European e-Skills Forum, September 2004, a broad definition of e-Skills includes both practitioner skills required for developing, operating and maintaining ICT systems, and also end-users required for the effective applications of tools in support of work. A third category, identified as e-Business skills, includes the capabilities needed to exploit opportunities provided by ICT to ensure more efficient and effective performance of different types of organisations, to explore possibilities for new ways of conducting business and organisational processes, and to establish new businesses. See: http://europa.eu.int/comm/enterprise/ict/policy/doc/e-skills-forum-2004-09-fsr.pdf

15 OECD Working Party on the Information Economy: New Perspectives on ICT Skills and Employment (December 2004) DSTI/ICCP/IE(2004)10

16 From "Outsourcing of ICT and related services in the EU", status report commissioned by the European Monitoring Centre on Change of the European Foundation for the Improvement of Living and Working Conditions, 2004.

Source: Eurostat Labour Force Survey and Eurostat surveys on the use of ICT in enterprises and households.)[17]

4. MONITORING OF INCLUSION, PUBLIC SERVICES AND QUALITY OF LIFE

i2010 priority 3. An Information Society that is inclusive, provides high quality public services and promotes quality of life.

Monitoring will focus on two dimensions and will provide a link with inclusion aspects within Lisbon guideline 9:

- Inclusion, with an emphasis on digital literacy as a priority objective
- Public services

***THEME 8: Inclusion**:*

- **Proposal 19: Computing disparity indexes with household connectivity and usage indicators**

  One objective of inclusion is to reduce disparities and the Household Community survey provides adequate tools for measuring gaps in the take up and usage of information society services with respect to age, education level, gender, employment status and occupation.
  In addition, since different access speeds are creating a new divide amongst home internet users, it is also important in the context of e-Inclusion to track Internet access and Internet usage disparities among the different demographic groups and their types of bandwidth at home.

  Two indicators on connectivity are particularly relevant for inclusion:

  A5: The reasons for not having Internet access at home and the reasons for not having Broadband access at home[18].

  C3: The different places for accessing the Internet in the last three months (at home, at place of work, at place of education, at another person's home, at Public Internet Access points)

  It is also necessary to monitor the territorial divide. The Community surveys distinguish between Objective 1 and non-Objective 1 regions (though the enterprise survey uses the enterprise as the statistical unit, not the local unit). However, the household survey data can be broken down by degree of urbanisation (densely populated or urban areas, intermediate populated areas and thinly populated or rural areas) and this will be used as a key dimension of benchmarking on inclusion.

Source: Households Community Survey on ICT usage

- **Proposal 20: e-Accessibility**

[17] The indicator on ICT specialists will be taken from the Labour Force survey by applying the OECD definition. For the indicator on ICT users, an analysis of different sources available will be made before taking a final decision.

[18] Each year one of the two sub-indicators will be monitored.

A forthcoming study measuring progress of e-Accessibility i.e. participation of people with disabilities and older people, will provide a set of indicators in the Member States for 2006 and 2008. The indicators could be used to identify and monitor the existence and use of different approaches in the Member States and their impact on e-Accessibility.

- accessibility requirements in public procurement
- certification and assessment of accessible ICT products and services
- Web Accessibility.

This will be supplemented by data from the Community household survey on Internet access and usage by older age groups in the population.

- **Proposal 21: Measuring digital literacy**

Inclusion is a complex issue and points to problems which are not specific to the information society. Previous measurements have indicated the importance of education levels as a discriminating factor and there is a growing recognition that skills will be essential requirements for adopting ICT. Therefore *i*2010 puts a special emphasis on digital literacy. The 2006 Community Household Survey will include a module on e-Skills which could be the basis for the digital literacy special module and its subsequent measurement in the 2007 survey.

THEME 9: Public services

ICT-enabled public services and, in particular, e-Government need to be benchmarked according to:

- Availability and sophistication
- Take-up of online public services
- Impact (back office restructuring and impact on users)

The first of these has been monitored throughout *e*Europe and it is proposed that this be continued. Measurement is based on a list of 20 basic e-Government services and different levels of interactivity and sophistication. However the methodology should be reviewed. Sophistication, for instance, could include measuring other aspects relating to quality of service and good governance, e.g. user friendliness, accessibility or multiplatform availability. In addition, deeper analyses could be carried out through case studies of specific services or areas of government (e.g. justice, social security).

The Community surveys on ICT usage have recurrent questions on the use of e-Government services and these should be kept as core indicators:

- **Proposal 22 e-Government**

Indicators:

1. Number of basic public services fully available[19] on-line [*e*Europe indicator D.1*; definition of basic services to be reviewed*]
   Source: web-based survey of e-Government services
2. Percentage of individuals using the Internet for interacting with public authorities broken down by purpose (purposes: obtaining information, obtaining forms, returning filled in forms) [*e*Europe indicator D.2]
3. Percentage of enterprises using the Internet for interacting with public authorities broken down by purpose (purposes as 2 above, plus full electronic case handling) [*e*Europe indicator D.3 *additional purpose should be added: submitted proposal in an electronic tender system (e-procurement])*

Source: Community Surveys on ICT usage

The 2006 Survey will include a more detailed set of questions on e-government take-up: usage or intention to use different public services (based on the D1 list of 20 public services). Respondents will also be asked about barriers to using the Internet for dealing with public services or administrations. This could perhaps be extended to cover enterprises demand for and take-up of public services. Such developments should be envisaged only in the framework of a special module.

In the case of impact it is very difficult to define a simple indicator that measures that many aspects of back-office restructuring and provides useful information to other service developers. It would also be useful to measure impact from take-up, i.e. benefits for final users. Work is already underway[20] to develop a framework for impact and pilot tests are to be planned for 2006.

Finally, public services beyond e-Government (i.e. services of public interest not necessarily provided by public bodies, such as health or education) should also be covered possibly on a case study approach. In the case of **e-health** monitoring should be done with indicators developed in consultation with health specialists, as agreed at the first workshop. Monitoring of wider public services will contribute to benchmarking of quality of life.

CONCLUSIONS

This paper has outlined draft proposals for development of the *i*2010 benchmarking indicators for 2006-2010. It has not covered international comparisons where work is in progress to compile and assess sources. A list of sources being analysed is given in annex 2 and additions to this list are welcome.

[19] The methodology used for collecting information on availability will be the same as that used in eEurope 2002.

[20] A workshop was held in July 2005 and the papers are available from: http://europa.eu.int/information_society/activities/egovernment_research/presentations/index_en.htm

ANNEX 2. Sources of 3rd Country Data

Source	Use
Government and International Orgs	
OECD	
- Communications Outlook - IT Outlook - *content report and other topical reports*	
STI Scoreboard, Key ICT indicators	Connectivity, security, commerce
Trust (to come, scoping study exists)	
TISP, Internet Traffic Exchange	Backbone, broadband, convergence
Outreach projects for India, China, Russia, Brazil, South Africa (to come)	Comparative, edited statistics based on national non-OECD countries
ITU	
Telecoms Indicators	Pick-up, telecoms usage, supporting stats
World Telecommunications Regulatory Database (2004 data)	Regulatory overview
Asia-Pacific Telecommunications Indicators (2004 data)	Pick-up, telecoms usage
Digital Access index	Pick-up
OSILAC/CEPAL - http://www.cepal.org/socinfo/osilac/	Latin-America
The World Economic Forum Global Information Technology Report 2003-2004	e-Business pick-up
UNDP-HDRO	
World Development/Human Development Indicators (based on ITU data)	Rankings, ITU-based data
eConsumer.gov 19 national consumer protection agencies (EU/EEA countries, Australia, Japan, Korea, New Zealand, Mexico, Switzerland, US)	Consumer complaints, fraud
3rd Country sources	
US, Japanese government data	
FCC: http://www.fcc.gov/wcb/iatd/stats.html	topical surveys on user data, demographics, general usage statistics:
The Economics and Statistics Administration (ESA) of the U.S. Department of Commerce: A Nation Online studies	Data on ICTs penetration and usage in the US
The Bureau of Labour Statistics of the U.S	Computer and internet usage at work
FTC: Consumer Sentinel' **Internet Fraud Complaint center**	
CSI/FBI: Computer Crime and Security Study	
CERT/SS/Carnegie Mellon: E-Crime Watch Survey	
Department of Homeland Security	

National CERTs	Security attacks
UNDESA	Global e-Government rankings (World Public Sector Reports), infrequent, quality of services
WEF (INSEAD) Global Information Technology Report	
China Will implement OECD-modelled ICT-statistics in time. National Statistical Agency and National Development and Reform Commission (NDRC)	
Russia Surveys in line with OECD, observer at OECD	
Brazil IBGE coordinates surveys	
Commercial and NGO suppliers	
Pew Internet life, http://www.pewinternet.org/ (non-profit)	Usage patterns, internet use demographics
US Consumers Union – State of the Net http://www.consumerreports.org/	Consumer issues, security and trust
The Gartner Group quick statistics	statistics on IT Spending, Internet Access, Mobile Phones, and other ICT topics, as well as on other industrial issues
Worldband	Global bandwidth data, provider stats, price
Telegeography	of backbone (may not be necessary)
APT (Asia-Pacific): industry association	ICT markets
TPRC http://www.tprc.org/TPRC05/2005.htm Research Conference on Communication, Information and Internet Policy. Various research papers.	Qualitative, analyses
Netcraft	Web server and security data
EITO	
Internet World Stats	Estimates of Internet connectivity by country and by region. It also provides links to other sources of Internet statistics
Broadband Subscriber database	
Informa Telecoms and Media	
IDATE	
Symantec, McAfee	Security and trust surveys
SANS Institute http://www.sans.org/surveys/	Security threats, virus etc
CAIDA Cooperative Association for Internet Data Analysis,	Security attacks
The New Millennium Research Council (NMRC)	telecommunications and technology

Anti-Phishing Working Group Anglo-Saxon countries law enforcement agency data, 700 corporations	security/fraud
Accenture e-Government benchmarking**.**	e-Government service levels
PointTopic, DSL and broadband data, private.	Broadband deployment
Cachelogic, P2P data traffic analyses	P2P traffic
Economist Business Intelligence Unit – eReadiness Index (uses OECD data)	productivity, and economic impact Uses OECD data, but recalculates
TNS – Government Online	eGov