OECD work on measuring the Information Society

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Sheridan Roberts, OECD; email: sheridan.roberts@oecd.org.

1 Introduction

The Organisation for Economic Co-operation and Development (OECD) consists of 30 member countries sharing a commitment to democratic government and the market economy. Best known for its publications and its statistics, its work covers economic and social issues from macroeconomics, to trade, education, development and science and innovation.

The Directorate of Science, Technology and Industry (DSTI) manages databases of internationally comparable statistics in the areas of science, technology and industry. These statistics and indicators underpin policy-related analytical work, particularly with respect to links between technology, competitiveness and globalisation.

This paper will give an account of OECD work in the area of Information Society measurement, an important part of the work of DSTI. It will focus particularly on the work of the OECD's Working Party on Indicators for the Information Society (WPIIS).

The rapid development and diffusion of information and communication technologies (ICTs) has undoubtedly been one of the most important contributors to the development of knowledge-based societies around the world (for instance, see Australian Bureau of Statistics, 2002). In 1997, OECD member countries convened an ad-hoc statistical group to start to develop indicators for the Information Society. In 1999, this group became the Working Party on Indicators for the Information Society. The main methodological achievements of WPIIS are: an activity-based ICT sector definition, narrower and broader definitions of electronic commerce transactions, model surveys of ICT usage in businesses and in households/by individuals and, most recently, an ICT goods classification. All WPIIS methodological standards can be downloaded from http://www.oecd.org/sti/measuring-infoeconomy.

This paper will describe how the WPIIS has developed Information Society statistical standards, outline work in progress and note possible areas of future endeavour.

In addition, it will describe the global *Partnership on Measuring ICT for Development* and outline OECD's role in the Partnership.

Please note that material in this paper has been drawn from internal OECD documents as well as publicly available material. References to the latter are shown in the bibliography.

2 Measuring the ICT sector

The first major achievement of WPIIS came in 1998, when OECD member countries agreed on a definition of the ICT sector as a combination of manufacturing and services industries whose products capture, transmit or display data and information electronically. This definition, based on an international standard classification of activities (ISIC Rev. 3), was considered to be a first step to obtain initial measurement of ICT sector core indicators.

The OECD ICT sector definition brings together business units that have common ICT activities. In 1998, it was felt that the industrial classification ISIC Rev. 3 was the best option available to collect statistics on an internationally comparable basis, even though it did not precisely identify all the activities that could be considered to be ICT activities. The list of ICT activities was decided on the basis of the following set of principles.

For manufacturing industries, the products of a candidate industry:

- must be intended to fulfil the function of information processing and communication including transmission and display, *or*
- must use electronic processing to detect, measure and/or record physical phenomena or to control a physical process.

For services industries, the products of a candidate industry:

- must be intended to enable the function of information processing and communication by electronic means.

One important feature of this definition is that it conceptually breaks the traditional ISIC dichotomy between manufacturing and services activities. Activities producing or distributing ICT products can be found everywhere in the economy. On the other hand, by identifying those key sectors whose main activity is that of producing or distributing ICT products, this definition constitutes a first order approximation of the "ICT producing sector".

It was recognised that the preferred way of identifying an ICT sector would have been to firstly define ICT goods and services, and then to formulate the ISIC classes that had activities (manufacturing, wholesaling, etc.) involving those goods and services. In order to obtain an initial set of indicators for the ICT sector in a limited amount of time, though, the approach taken was to first define the activities, and subsequently work on a list of ICT goods and services that could complement and help to refine the activity-based definition.

Finally, because very few retailers exclusively sell ICT products, it was agreed to postpone the inclusion of 5233 (other retail trade of new goods in speciality stores) until a commodity definition was available. Although delegates agreed to this, it was noted that in the North American Industry Classification System (NAICS), the distinction between wholesale and retail trade was blurring, reducing the rationale for including wholesale while excluding retail.

In its 2002 meeting, WPIIS reviewed and discussed the OECD 1998 ICT activity-based definition. WPIIS decided that, although the definition gives only a first approximation of the ICT sector, it should not be changed, except to take into account the split of ISIC 5150 ("wholesaling of machinery, equipment and supplies") that was introduced in the 2002 ISIC Rev. 3.1. The change made to the ICT sector definition was to replace ISIC 5150 with the two new classes 5151 "wholesale of computers, computer peripheral equipment and software" and 5152 "wholesale of electronic and telecommunication parts and equipment".

The ICT sector definition is subject to reconsideration in the context of the finalisation of ICT product classifications (see section 3 below) and the major revision of ISIC in 2007 (to Rev. 4). On this latter point, OECD is currently examining the draft ISIC Rev. 4 with a view to making a submission to the UN on "ICT industry" classes as part of the consultation process. Current indications are that changes in Rev. 4 will be significant for industries in Manufacturing; Repair and maintenance; and Database activities and on-line distribution. Some of the changes represent opportunities, for instance, there are separate categories proposed for manufacturing and for repair of computer equipment, and for specialised ICT retailing (not currently in the ICT sector). Discussions with the United Nations Technical Sub-group (of the Expert Group on Economic and Social Classifications) have commenced and a submission will be made in October this year.

The current ICT sector is defined in terms of ISIC Rev. 3.1 and is shown in Box 1 below.

Box 1. **The current OECD ICT sector definition (originally approved in 1998 and amended in 2002 to reflect ISIC Rev 3.1 changes to Wholesale): ISIC industries included in the ICT sector**

Manufacturing:
- 3000 Office, accounting and computing machinery
- 3130 Insulated wire and cable
- 3210 Electronic valves and tubes and other electronic components
- 3220 Television and radio transmitters and apparatus for line telephony and line telegraphy
- 3230 Television and radio receivers, sound or video recording or reproducing apparatus, and associated goods
- 3312 Instruments and appliances for measuring, checking, testing, navigating and other purposes except industrial process equipment
- 3313 Industrial process equipment

Services:
- 5151 Wholesale of computers, computer peripheral equipment and software
- 5152 Wholesale of electronic and telecommunications parts and equipment
- 6420 Telecommunications
- 7123 Renting of office machinery and equipment (including computers)
- 72 Computer and related activities

3 ICT commodity classifications

Commodity (goods and services) classifications and commodity statistics play an important role in basic economic analysis. The measurement of consumption, domestic production, market size, investments and international trade all potentially make use of an ICT goods classification. Many requests related to ICT commodities concern one of the following types of data:

- Household expenditures on ICT goods and services.
- Business and government current and capital expenditures on ICT goods and services.
- International trade in ICT goods and services.
- Domestic supply of, and apparent domestic demand for, ICT goods and services.

The difficulties in establishing a list of ICT products have been recognised by WPIIS since 1998. These difficulties were related to the rapidly changing character of ICT goods and services, and the dated nature of current standard classifications. The approach ultimately taken by WPIIS was to develop a classification of ICT goods first, and separately from, that of ICT services. An ICT goods classification has now been agreed by OECD member countries and is described below. In the case of a classification of ICT services, a proposal has been tabled and is briefly described below.

3.1 ICT goods classification

The guiding principles elaborated to develop the ICT sector industry-based definition were used for the ICT goods classification as well. This is appropriate given that these principles emphasise the intended use or functionality of products. The guiding principle for the delineation of the ICT sector leads to a definition of ICT goods as follows: *"ICT goods must either be intended to fulfil the function of information processing and communication by electronic means, including transmission and display, or use electronic processing to detect, measure and/or record physical phenomena, or to control a physical process"*.

Another guiding principle was to use existing classification systems in order to take advantage of existing data sets and therefore ensure the immediate use of the proposed standard. In this case, the underlying system used is the Harmonized System (HS). The HS is the only commodity classification system used on a sufficiently wide basis to support international data comparison. A large number of countries use it to classify export and import of goods, and many countries use it (or a classification derived from or linked to it) to categorise domestic outputs.

The application of the ICT product definition to selection of in-scope HS categories was a somewhat subjective exercise. The fact that the HS is not built on the basis of the functionality of products made it much more difficult. The distinction between products which fulfil those functions and products that simply embody electronics but fundamentally fulfil other functions was not always obvious.

The Annex of "A Proposed Classification of ICT Goods" (OECD, 2003b) contains the full list of proposed six-digit HS categories and groups them into the following broad categories: telecommunications equipment, computer and related equipment, electronic components, audio and video equipment and other ICT goods.

The structure plays an important role in the usefulness of the classification. In this case, it is believed that the proposed structure allows:

- Grouping of product data into categories that will likely be publishable by most countries.
- An analysis of the basic differences in consumption, production and trade patterns from country to country.
- The development of narrow and broad concepts of ICT products (for instance, some of the analysis currently available focuses on telecommunications and computer equipment only).

The proposed list of ICT goods, based on the broad interpretation of the guiding principles, is generally self-explanatory. The most important coverage issue concerns the treatment of software. Software is only partially covered in the HS, where it is treated as recorded media, much like music or video, and is subsumed within several 6-digit HS categories. The HS has not been designed to classify intangibles like software, but rather to classify tangible goods as they cross a border. Given that software is a core ICT commodity, it needs to be included in a classification of ICT commodities. WPIIS has agreed that an ICT services classification is the best place to classify all software.

Note that the concordance between the ICT goods classification and the products of the ICT sector is imperfect. This is to be expected because:

- Statistical units which are classified to the ICT sector do not only produce ICT goods. An example is the Office, accounting and computing machinery industry whose products include typewriters.
- ICT products can originate from non-ICT industries. An example is electro-diagnostic apparatus which is a product of the ISIC Rev. 3.1 class Manufacture of medical and surgical equipment and orthopaedic appliances.

3.2 ICT services

Complementing the ICT goods classification, there is an obvious need for an ICT services classification. Ideally, one would use an existing classification since it allows for the best possible use of existing statistics. In the case of service products, the international standard is the Central Product Classification (CPC). Unfortunately, the CPC is not sufficiently well articulated to describe current ICT services markets. These markets are evolving at a rapid pace, and products that did not exist when the CPC was elaborated are now growing in importance. This is the case for products such as Web site hosting, application provisioning or network management services. An attempt to address this issue is underway in North America with the North American Product Classification System (NAPCS) development project.

The NAPCS project was launched by Canada, Mexico and the United States to test the feasibility of developing a common product classification. The first phase of the project was completed in December 2000. This phase produced a classification of products originating from selected service industries, among them the core ICT service industries (telecommunications and computer services).

At the WPIIS meeting of 29-30 April 2004, Statistics Canada submitted a proposal for an ICT services classification based on NAPCS. The concept underlying the list of ICT industries was used to develop the list of ICT services. This is reasonable since that concept it is based on characteristics of products rather than on characteristics of industries. In relation to services, the concept states: *"For service industries, the products of a candidate industry must be intended to enable the function of information processing and communication by electronic means."*

The concept does not restrict the list of ICT services to those primarily produced by ICT industries, nor does it imply that all primary products of ICT industries should be included in the list of ICT commodities. However, for ICT services, it appears to be largely the case. A pragmatic approach was followed in establishing the list, based on the following assumptions:

- The primary outputs of ICT service industries are, for the most part, ICT services.
- The production of ICT services as primary outputs by non-ICT industries is not material.

Following final comments from member countries, WPIIS has agreed to forward the Canadian proposal to the UN subject to minor changes, so that it can be taken into account for the 2007 CPC revision. If the UN approves the WPIIS recommendations, the ICT Services definition will be released as an OECD standard, complementing the goods classification described above.

4 ICT usage in enterprises

One of the more important areas of WPIIS work is the development of statistical standards for measuring ICT usage and e-commerce. Statistics on the diffusion of new information technologies among businesses, individuals and public organisations are important for helping to evaluate the extent to which the use of technologies has an impact on overall economic performance. Greater use of ICT in the production process may, for example, help raise the overall efficiency of the use of capital and labour, e.g. by reducing inventories and transaction costs. For technologies based on networks, such as the Internet, the more people who are connected, the greater the potential benefits of the network owing to spillover effects. Also, the growing policy interest in issues such as universal access, the digital divide, consumer trust and privacy protection has raised demand for indicators on access to and use.

WPIIS has worked since 1999 with the Voorburg Group and individual member countries to develop a model questionnaire on the use of ICT goods and services for the business enterprise sector. The underlying idea behind the elaboration of a model questionnaire is to guide the collection of internationally comparable statistics of ICT usage and electronic commerce in enterprises across OECD member countries. After two years of experience sharing and testing of some of the questions by several OECD member countries, a final proposal for a model questionnaire on ICT usage in enterprises was discussed and adopted by WPIIS at its meeting in 2001 (see OECD, 2001a).

The questionnaire is composed of self-contained modules which can be used either in their totality or as separate modules in specific national surveys, thereby adding the possibility of international comparisons to the value of purely national information. The model is designed as an economy-wide survey vehicle but can as well be used in surveys covering specific sectors. Currently, the five core modules are:

- **A** – *General information about ICT systems.* This module relates to the type of computer-mediated devices, applications or networks that are used in the enterprise. It also measures the extent to which employees use personal computers (PCs) and the Internet in their daily work.

- **B** – *Use of Internet*. This module first focuses on the type of Internet connection used and the speed of the connection. The second part relates to business processes for which the Internet is used. Separate questions are asked about processes related to purchases (the enterprise as a customer) and homepage facilities (the enterprise as a provider).

- **C and D** – *Electronic commerce: Internet transactions and electronic transactions via EDI and other computer-mediated networks*. Drawing on the OECD work on defining and measuring electronic commerce, the questionnaire contains two modules on electronic commerce transactions. **Module C** has questions on Internet sales and purchases while **Module D** collects information on sales and purchases over EDI (Electronic Data Interchange) and other computer-mediated networks.

- **E** – *Barriers to the use of the Internet to sell goods and services, and barriers to the use of the Internet and ICT in general*. Barriers information is important to policy makers, for instance, to help monitor potential bottlenecks related to technology, cost or the lack of appropriate skills, or issues closely related to the use of the Internet to conduct transactions, such as security and logistics concerns.

In 2004, WPIIS commenced a revision of the model questionnaire which will ensure that it reflects current policy needs and priorities and is aligned, as far as possible, with country survey practices. Several new areas of measurement have been agreed for inclusion in the model questionnaire. They include questions on electronic business processes, use of electronic government services, purchasing and selling of digitised products and IT security. These proposals will lead to major changes to the structure of the model questionnaire. In particular, the inclusion of an electronic business module in the questionnaire would require changes to a number of the current questions which deal with electronic business (for instance, e-commerce questions, activities undertaken using the Internet and Web site features).

A revised model questionnaire is likely to consist of the following modules:

- **A** – *General information about use of ICT*. The revised module would include questions from the existing modules A, B and E.

- **B** – *IT security*. The revised module would include questions on IT security measures in place (e.g. anti-virus software, firewall, secure servers etc) and security incidents encountered.

- **C** – *How enterprises use ICT in their business operations.* The new module C would include items from the old modules B, C, D and E as well as new questions covering "electronic business", purchasing and selling of digitised products and dealings with government via the Internet.

- **D** – Other information about the enterprise, for example number of employees and annual turnover.

The revisions are expected to be implemented in two stages. The first stage would see incorporation of a large number of "updating" revisions and possibly some new material (for instance, IT security) by the end of 2004. The second is to incorporate remaining new material, including a module on e-business processes for the 2005 WPIIS meeting. More information on e-business measurement is presented in the following section.

5 Measuring electronic business

Measurement of electronic business is of particular interest to the Voorburg Group. A status report on OECD work in the area of electronic business statistics was presented to last year's meeting (Roberts and Bishop, 2003) and received valuable feedback. Work on this topic has progressed since then and new questions to be included in the OECD model survey of ICT usage are expected to be presented to the 2005 WPIIS meeting. An update on this work is presented in this section and some measurement and policy issues are raised for general discussion.

5.1 Background to OECD work on e-business measurement

In 1999, OECD's Working Party on Indicators for the Information Society (WPIIS) established an *Expert Group on Defining and Measuring Electronic Commerce* to "compile definitions of electronic commerce which are policy relevant and statistically feasible". By 2000, work of the Group had resulted in definitions for e-commerce transactions but not electronic business processes. In 2001, a model questionnaire on the use of ICT/E-commerce in the business sector was agreed by WPIIS but it did not comprehensively cover the range of an enterprise's possible electronic business processes. In 2002, it was agreed that a module on e-business processes be developed and the *Expert Group on the Measurement of Electronic Business Processes* was established.

In 2003, the Expert Group proposed a definition of e-business processes based on functionality rather than technology: "(automated) business processes (both intra- and inter-firm) over computer mediated networks". In addition, the Group proposed that electronic businesses processes should integrate tasks and extend beyond a stand-alone or individual application. Nine broad business functions were identified and described in terms of e-business processes, e.g. customer acquisition and retention; e-commerce; finance, budget and account management; logistics (inbound & outbound); and inventory control.

An expert meeting on measuring e-business was organised by the OECD and held in December 2003. The meeting involved delegates from national statistical offices, government policy organisations, the private sector (including computer services firms) and academia. The discussion was useful and wide-ranging but the outcome was not conclusive. The issues raised and discussed included:

- Definition of electronic business. There were disparate views expressed and the question of whether a definition was necessary was raised.
- Broad framework for describing business processes generally. Is the Porter value chain model appropriate?
- Which broad business functions are important and measurable? Are they generalisable across industries, firm size and country?
- Classification of e-business processes. Is a classification possible given the integrating and evolving nature of e-business processes? Is it necessary?
- Organisational change. It is important but is it measurable via large scale, mail-based surveys?
- Impacts. These are also important but how do we measure them?
- Networks. What kind of networks (Internet Protocol or all computer mediated networks) are we interested in measuring? The focus seems to be on IP networks.

5.2 Current work: a module for measuring e-business

A questionnaire module on electronic business was drafted following the December 2003 meeting. As noted above, the module is to be included in the OECD model questionnaire on ICT usage in enterprises. The term "electronic business" was not used in the module (and therefore not defined). The draft module has received statistical and policy input from a number of countries and organisations and their feedback has included:

- It is desirable for OECD to include non-Internet business processes and distinguish different technologies (IP versus non-IP).
- There is broad support for including email business processes (though this complicates the model somewhat).
- There is little enthusiasm for distinguishing between in-house electronic business and that done between related enterprises.
- Information on Human Resources Management processes is not seen as a priority.

- There is general support for e-government questions and questions on digitised products (sales and purchases).
- Additional areas of measurement suggested include outsourcing and drivers of business adoption of ICT.

5.3 Integration questions in the module

It is assumed that the benefits of e-business will be realised where there is a greater degree of integration between functions. The draft module has two types of integration questions. The first asks about linkages associated with e-commerce e.g. whether systems used to receive/place orders are linked with customers', suppliers' systems etc. The second is a general integration question where respondents report those business functions which are linked (with any others) via computer networks.

Both approaches are broadly supported over the alternative which is to ask about particular types of 'integrating' technologies such as ERP or SCM. Among those providing feedback on the draft module, there were mixed views on whether a list of processes could be generalisable across sectors.

5.4 E-business measurement work in the OECD – challenges and the future

OECD is working with a smaller group of interested countries/organisations to refine the module and expects to present it to WPIIS in April next year. To ascertain statistical feasibility of new questions, Statistics Canada may pilot test some of the more complicated questions.

The challenges are numerous and include:

- How to measure impacts (subjective, microdata approaches).
- The convergence of technologies (IP, non-IP).
- Measuring complex relationships, changing and little understood phenomena.
- The limitations of survey vehicles.

Voorburg delegates' views are invited on the issues raised above. Copies of the current draft module are available to those who are interested in becoming involved in this work.

6 OECD definitions of electronic commerce transactions

While electronic commerce can be viewed as a sub-set of electronic business, it is presented separately here because work started much earlier and standards are already in place.

Because of the high policy interest in electronic commerce and the mandate received by OECD Ministers in Ottawa in 1998 to "compile definitions of electronic commerce that are policy relevant and statistically feasible", WPIIS has devoted great attention to the measurement of electronic commerce. In particular WPIIS worked on the development of a framework for user needs and priorities, definitions, and statistical measurement of core electronic commerce indicators.

In 2000, OECD member countries endorsed two definitions of electronic transactions (electronic orders) based on narrower and broader definitions of the communications infrastructure. According to the OECD definitions, it is the method by which the order is placed or received, not the payment or the channel of delivery, which determines whether the transaction is an Internet commerce transaction (conducted over the Internet) or a broader electronic commerce transaction (conducted over computer-mediated networks). In April 2001, WPIIS developed guidelines for the interpretation of the two electronic commerce definitions (Figure 1).

Figure 1. **The OECD definitions of electronic commerce transactions and interpretation guidelines**

E-commerce transactions	OECD definitions	Guidelines for the Interpretation of the Definitions (WPIIS proposal April 2001)
BROAD definition	An **electronic transaction** is the sale or purchase of goods or services, whether between businesses, households, individuals, governments, and other public or private organisations, conducted over **computer-mediated networks**. The goods and services are ordered over those networks, but the payment and the ultimate delivery of the good or service may be conducted on or off-line.	**Include**: orders received or placed on any online application used in automated transactions such as Internet applications, EDI, Minitel or interactive telephone systems.
NARROW definition	An **Internet transaction** is the sale or purchase of goods or services, whether between businesses, households, individuals, governments, and other public or private organisations, conducted over the **Internet**. The goods and services are ordered over the Internet, but the payment and the ultimate delivery of the good or service may be conducted on or off-line.	**Include**:orders received or placed on any Internet application used in automated transactions such as Web pages, Extranets and other applications that run over the Internet, such as EDI over the Internet, Minitel over the Internet, or over any other Web enabled application regardless of how the Web is accessed (e.g. through a mobile or a TV set, etc.) **Exclude**: orders received or placed by telephone, facsimile, or conventional e-mail.

A meeting of the OECD Expert Group on Measuring Electronic Business took place on 28 April 2004 and, among other things, reviewed the OECD narrow and broad definitions of electronic transactions developed in 2000. The discussion was stimulated by a paper prepared by the Nordic countries which proposed changes to the definitions. The boundaries between the broad and narrow definitions have always been blurred and are becoming even more so with technology convergence. Countries have been implementing these definitions to a different extent; some have tried to measure both, some have only used the broader definition, some only the narrow, and some countries have measured an even narrower version (transactions via home pages only). While the Group agreed that there are some difficulties in implementing the OECD e-commerce definitions, it concluded that the definitions should not be changed for the time being. Some of the arguments made by members of the Group related to "time series" stability, "accumulated experience" in measurement of e-commerce and the fact that after the e-commerce "hype", the policy interest and work of the group is now more focused on electronic business processes rather than on measuring the value of e-commerce transactions *per se*. It was agreed that, while the OECD definitions should not be changed, interested countries can continue to work with the Expert Group to develop a third and more narrow definition of transactions via non-proprietary and open networks.

7 ICT usage in households/by individuals

Another important "building block" of WPIIS work is the model survey on ICT usage in households and by individuals. In 2002, WPIIS adopted a model questionnaire of the use of ICT goods and services in households and by individuals (see OECD, 2002b). As for the model survey on ICT use in enterprises, the questionnaire is composed of self-contained modules which can be used either in their totality or as separate modules in specific national surveys.

The current five core modules are:

- **A** – *Household access to computers and the Internet.* This module focuses on computer and Internet access in households, the type of device used for connecting to the Internet and the speed of the connection (distinguishing between higher and lower speed Internet services).

- **B** – *Household barriers to adoption of the Internet*. Indicators on household barriers can help monitor issues of the "digital divide" and potential bottlenecks related to information technology such as cost or security concerns.

- **C** *and* **D** – *Use of the Internet by individuals*. These questions are addressed to individuals. Module C relates to the location and frequency of use of the Internet (at home, at work and in other locations). Module D relates to the type of activities carried out by individuals while using the Internet. The questions mainly relate to information and communication intensive activities, e.g. information search – about products, employment-related information and health services; communication – via e-mail/chat rooms/Internet telephony; and interactions with public authorities.

- **E** – *Internet commerce and barriers to Internet purchases*. These questions relate to the location and frequency of individual purchases for personal use, the types and value of goods purchased and whether persons have paid on-line for those transactions. This module also addresses factors preventing individuals from purchasing over the Internet (such as privacy, security, concerns related to returning or receiving goods, etc.).

The model survey of ICT use by households/individuals is currently being revised to improve harmonisation with member country ICT usage surveys, as well as to reorient the surveys towards areas of high policy relevance such as downloading and purchasing of digitised products, email use, mobile phone use, IT security and e-government. A preliminary revision of the household/individuals survey was presented to the 2004 WPIIS meeting, with the goal of finalising changes by the end of 2004.

8 Measurement of ICT investment

Work has started fairly recently in this area of measurement in partnership with the OECD's SWIC group (Statistical Working Party of the Committee on Industry and Business Environment). A joint Expert Group on ICT investment and expenditure has been formed and the work builds on prior efforts by OECD and Eurostat to improve the measurement of ICT investment in the national accounts, notably in the area of software investment. Experts from 13 countries, Eurostat and the OECD participated in an Expert Meeting held in April this year. Problems and ways to improve business surveys covering ICT investment and expenditure were discussed at length. The group will continue to share best practices and discuss further:

- The development of a workable definition of ICT investment and clear guidelines on how this should be used in business surveys.
- The measurement of own-account software and hardware investment in business surveys.

The aim is for the group to return to the WPIIS meeting in 2005 with a more complete report, including a set of well-developed guidelines. These guidelines would also include a set of core variables, which will be developed by the OECD in co-operation with member countries. This work is being co-ordinated by Statistics Sweden (anders.hintze@scb.se) and the OECD (dirk.pilat@oecd.org).

9 The Guide to Information Society Measurement

OECD is currently drafting a *Guide to Information Society Measurement.* The objective of the Guide is to bring together WPIIS knowledge in one place for the benefit of official ICT statisticians from member and non-member countries, as well as those users of ICT statistics who want more insight into the underlying standards. In particular, it is hoped that the diffusion of experiences and lessons learnt by OECD members will be particularly useful to countries just embarking on ICT measurement.

Demand for a document such as the Guide has been strengthened by the outcome of the World Summit on the Information Society (held in Geneva, December 2003) which stated in its *Plan of Action* that "A realistic international performance evaluation and benchmarking (both qualitative and quantitative) through comparable statistical indicators and research results, should be developed to follow up the implementation of the objectives, goals and targets in the Plan of Action, taking into account different national circumstances".

The Guide will include information on ICT measurement, including definitions, classifications, methods for international harmonisation of ICT statistics and methodological issues for future measurement and consideration. It will discuss actual country experiences in the implementation of international and national standards and will present metadata information on OECD countries' survey methods and outputs. In addition, it will contain an annex on the experiences of non-member countries.

The aim is to finalise the Guide in time for the next World Summit on the Information Society (Tunis, 2005). A near-final draft is expected to be ready for approval by the next WPIIS meeting in April 2005. For more information on the Guide, see Sciadas and Roberts (2003) and the annex to this paper which contains a draft outline of the Guide.

Members of the Voorburg Group are invited to become involved in this project.

10 A partnership for measuring the Information Society

One of the outcomes from the 2003 World Summit on the Information Society held in December last year has been the formation of an international *Partnership on Measuring ICT for Development*. The Partnership was launched on the 17th of June 2004 at UNCTAD XI in Sao Paulo, Brazil. It aims to accommodate and further develop related initiatives regarding the availability and measurement of ICT at regional and international levels. The partnership document is a joint effort among all stakeholders involved, based on an inclusive approach and the principle of equality among the partners. It provides an open framework for co-ordinating ongoing and future activities, and for developing a coherent and structured approach to advancing the development of ICT indicators globally, and in particular in developing countries.

OECD is one of the partners, with the others being: the ITU, UNCTAD, the UNESCO Institute for Statistics, the UN Regional Commissions (UNECLAC, UNESCWA, UNESCAP, UNECA), the UN ICT Task Force and the World Bank. National Statistical offices (NSOs) from advanced countries are invited to contribute to partnership activities and provide expertise and advice to NSOs from developing countries, and transfer knowledge in areas such as methodologies and survey work.

The Partnership has the following objectives:

1. To achieve a common set of core ICT indicators, to be harmonised and agreed upon internationally, which will constitute the basis for a database on ICT statistics.

2. To enhance the capacities of national statistical offices in developing countries and build competence to develop statistical compilation programs on the Information Society, based on internationally agreed upon indicators.

3. To develop a global database of ICT indicators and to make it available on the Internet.

The first phase of the Partnership runs until the end of 2005 (to coincide with the next WSIS to be held in Tunis in November 2005). Major events which have occurred or are planned during this period include:

- December 2003: Joint UNECE/UNCTAD/UIS/ITU/OECD/Eurostat side event to WSIS on "Monitoring the Information Society" (Geneva).
- June 2004: Launch of the partnership at UNCTAD XI (Sao Paulo, Brazil).

- July/August 2004: Initiation of a global stocktaking exercise through a metadata questionnaire on ICT statistics sent by UNECA, UNECLAC, UNESCAP, UNESCWA and UNCTAD-UNECE to statistical offices in developing member countries, similar to OECD metadata inventory due by the end of 2004.
- October to December 2004: Regional workshops in Western Asia, the Asia-Pacific region, Africa and Latin America and the Caribbean, to consider the results of the metadata questionnaire and take stock of e-measurement activities in the regions. It is planned that the workshops will identify priority areas for action and agree on a common set of core indicators.
- February 2005: WSIS thematic meeting in Geneva under the umbrella of the Partnership, to present the results of the global stocktaking exercise and regional workshops; agree on a final list of core indicators; discuss technical assistance needs for collecting ICT statistics; present progress on the establishment of an international database on ICT indicators; and, produce input into the second phase of the WSIS in Tunis (November 2005).
- March 2005: Presentation of the list of core indicators and a partnership progress report at the meeting of the UN Statistical Commission (New York).
- November 2005: Second WSIS in Tunis.

Building on the achievements of the first phase of the partnership, the objective of the second phase (November 2005 to Spring 2008) will be to expand e-measurement work to more countries in the developing world and thus to increase ICT data availability at the international level. This will be done by revising the capacity building activities of the first phase and extending the training program to new beneficiary countries in all regions. The international database of ICT indicators will be expanded and improved, based on the results of the activities of the first phase.

OECD's main contributions to the Partnership are:

- To collect metadata information for OECD countries as part of the global stocktaking exercise described above.
- To assist with the development of a common list of core ICT indicators.
- To provide assistance on ICT statistical work through the *Guide to Information Society Measurement.*
- To participate in the development of a global database of ICT indicators, mainly by providing data for OECD countries and for some non-OECD countries.

11 Future challenges for WPIIS

While continuing to develop indicators to measure the "readiness" for the Information Society and the "use" of ICTs, WPIIS is responding to measurement needs which are increasingly sophisticated. A major challenge is developing new indicators in areas which are inherently difficult to measure – because the concepts are undefined, complex or dynamic. Examples include: trust in on-line environments (security, privacy, consumer protection), ICT investment, electronic content industries and commodities, digital delivery of products, Spam and ICT skills.

At the 2004 WPIIS meeting, delegates agreed to further work in the following areas:

- Add IT security modules to the household and business surveys (see sections 4 and 7 above).
- Undertake a scoping study for developing a measurement framework related to security, privacy and trust in on-line environments in collaboration with the OECD's Working Party on Information Security and Privacy.
- Initiate an exploratory collection of the supply of some information/digital products and further develop questions on digital delivery contained in the ICT usage surveys.

While it was agreed at the 2004 WPIIS meeting that Spam was of high interest, the contribution of official statistics to this area was less clear and it was decided that the Group would monitor the experience of France who will undertake work in this area.

Concerning ICT skills, delegates agreed that human capital plays a crucial role in the Information Society and are looking forward to Secretariat future work to discuss what role WPIIS could play, perhaps via an Expert Group composed also of delegates expert in labour market and skills' measurement.

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ANNEX: GUIDE TO INFORMATION SOCIETY MEASUREMENT – DRAFT STRUCTURE AND CONTENT

Element of the guide		Draft broad content
Opening material		Title pages, foreword, table of contents, list of abbreviations.
Chapter 1 Introductory material		General introductory material, nature of the document and why it has been produced, intended audience, outline of OECD's role in producing ICT statistics standards, contents.
Chapter 2 ICT products		
	Definition	Introduction and background, broad statistical overview, standards, international comparability, looking ahead.
	Goods	
	Services	
	ICT Trade	
Chapter 3 ICT infrastructure		Introduction and background, broad statistical overview, standards, international comparability, looking ahead.
Chapter 4 ICT supply		
	ICT sector (incl. ICT R&D)	Introduction and background, broad statistical overview, standards, international comparability, looking ahead.
	Other entities producing ICT G&S	
	Price and quality of ICT G&S	
	Patenting activity	
Chapter 5 ICT users (including ICT investment)		
	E-business and e-commerce	Introduction and background, broad statistical overview, standards, international comparability, looking ahead.
	Businesses	
	Households/individuals	
	Governments	
Chapter 6 Electronic content		Introduction and background, statistical overview, looking ahead.
Chapter 7 Domestic and global factors		Introduction and background, evidence for the importance of these factors per firm performance work, looking ahead.
Chapter 8 The road ahead		Concluding chapter including a discussion on the applicability of OECD work to non-member countries.
Annex 1 OECD standards for ICT statistics		1) Definitions: WPIIS agreed definitions and operational guidelines including e-commerce, ICT sector, ICT products, collection variables (except for those in the model surveys – these are included under 3. below)
		2) Classifications: WPIIS agreed classifications (except item categories in model survey questions – these are included under 3. below)
		3) Model questionnaires and related material including methodology, scope, classifications, concepts and definitions.
Annex 2 Output		A summary of OECD output achievements with detail via Web links as far as possible. Includes a section on indicator construction.
Annex 3 Member countries		Member country work on official ICT statistics. Includes survey metadata, contacts, Web site links and main outputs. Information on strategies and major analytical exercises will also be collected where readily available.
Annex 4 Non-member countries		Overview of what non-member countries are doing in this field, including information on regional groups and their activities.
Glossary		Glossary of terms.
Bibliography		References.