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STATISTICAL CLASSIFICATION FRAMEWORK FOR THE INFORMATION ECONOMY

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INTRODUCTION

☞ Information and technological (r)evolution

Information and Communication Technologies behind this (r)evolution

☞ Creation of (digital) information content (online entertainment content,...)

=

- 1) New Products (goods and services);
- 2) New Economic Activities (Industries);
- 3) New Skills and Occupations,...

☞ Need for international statistical standards

= ICCP called (in 1996) for and expert panel (today's WPIIS) to:

- 1) set up Information society statistics conceptual framework – *Chapter 1*
- 2) agreed on the guiding principles (definition, classification used,...)
- 3) develop ICT and content related classification standards – Chapter 2, 3, 4, 7
- 4) implement these standards, collect and present international comparable data

- **CLASSIFICATION FRAMEWORK OF INFORMATION ECONOMY**
 - CONCEPTUAL FRAMEWORK FOR CLASSIFICATION STANDARDS
 - INFORMATION ECONOMY DESCRIPTION
 - AREAS OF ICT RELATED CLASSIFICATIONS STANDARDS
- **THE OECD ICT SECTOR CLASSIFICATION STANDARD**
 - CURRENT ICT SECTOR BASED ON ISIC Rev. 3.1
 - PROPOSAL FOR REVISED ICT SECTOR BASED ON ISIC Rev. 4
 - PROPOSAL FOR CONTENT AND MEDIA SECTOR BASED ON ISIC Rev. 4
- **THE OECD ICT PRODUCTS CLASSIFICATION STANDARDS**
 - ICT GOODS
 - CURRENT DEFINITION BASED ON HS 2002
 - PROPOSAL BASED ON CPC Ver. 2
 - ICT SERVICES (ACCEPTED; BASED ON CPC Ver. 2)
 - CONTENT AND MEDIA PRODUCTS (PROPOSAL; BASED ON CPC Ver. 2)

CONCEPTUAL FRAMEWORK FOR STANDARDS OF IE

INFORMATION SOCIETY AND INFORMATION ECONOMY

Supply side (producers & product.)

Which industries?

ICT & content sector

Which entities?

Produce ICT goods, services; content

About them?

Industry, size, ownership, ...

About their products?

Type of, and revenue from, their production

How much?

Production, Turnover, Value added, Income

How long?

Business demography

Employment?

How many persons employed, occupation

Where?

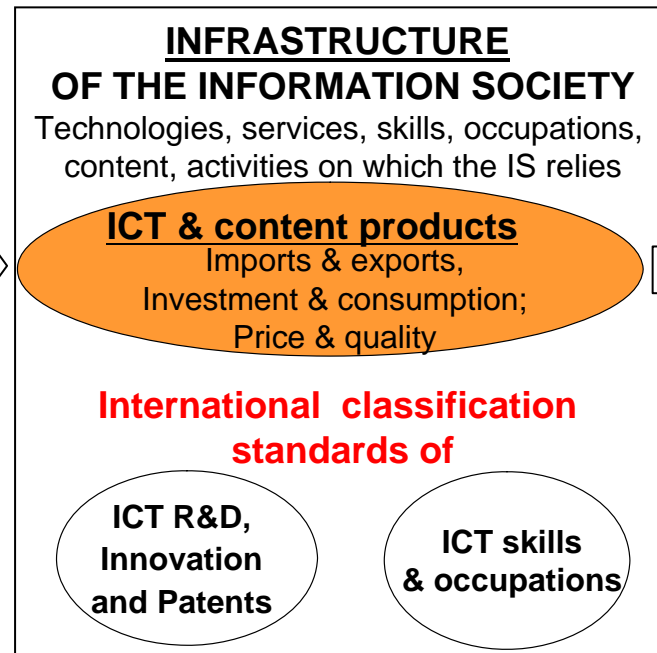
Location of operations, customers, suppl.

Innovation?

Innovative activities (patenting, R&D)

What impacts?

On the entity, economy, society



Demand side (users and uses)

Which entities?

Which activities?

About them?

How?

How much?

Employment?

Where?

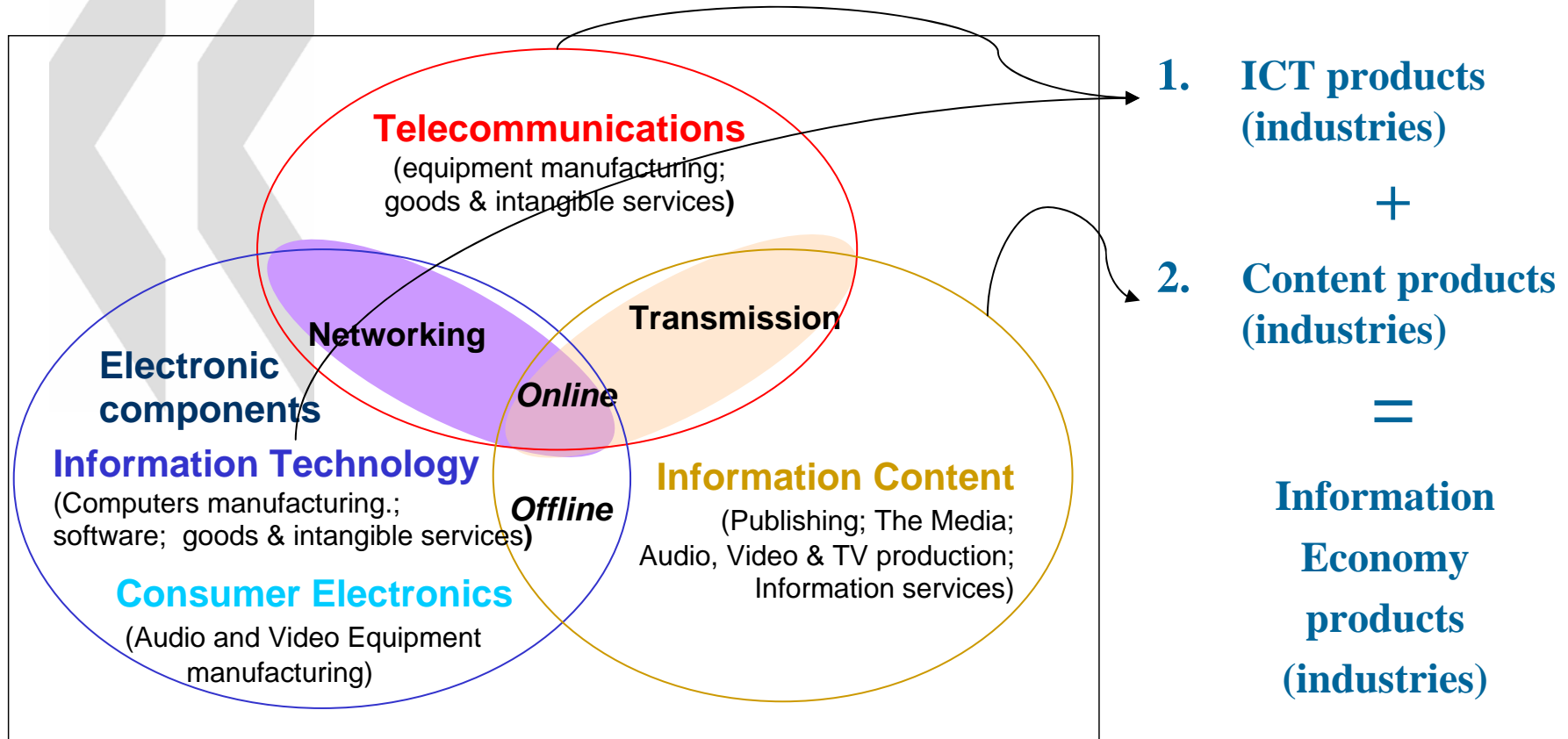
Innovation?

ICT in a wider context.....

Social and economic factors affecting ICT use and development
Effect of domestic policy and regulatory environment on ICT use & development
Influences of ICT on society, the economy and the natural environment
Global factors and relationships

INFORMATION ECONOMY DESCRIPTION

- ☞ **Convergence between Information Technologies, Communications Technologies and related content production and distribution**



This convergence justifies the gathering (classification) of these products (industries) in the smallest possible number of homogeneous groups (ICT sector, content sector) as already done for agriculture, manufacturing, construction or trade.

AREAS OF ICT RELATED CLASSIFICATIONS STANDARDS

1) ECONOMIC ACTIVITIES (INDUSTRIES) CLASSIFICATION STANDARDS

INFORMATION ECONOMY SECTOR

1 a) OECD ISIC-based **ICT sector** (1998, 2002, 2006 Revision)

Chapter 4 in the OECD Guide to Measuring the Information Society (OECD, 2005)

1 b) OECD ISIC-based **Content and media sector** (expected 2006)

Chapter 7 in the OECD Guide to Measuring the Information Society (OECD, 2005)

2) COMMODITY/PRODUCTS (GOODS AND SERVICES) CLASSIFICATION STANDARDS

2 a) ICT products

- OECD HS-based **ICT goods** (2003, CPC-based revision in 2007)

- OECD CPC-based **ICT services** (agreed 2006)

Chapter 2 in the OECD Guide to Measuring the Information Society (OECD, 2005)

2 b) Content and media products (proposal 2006)

3) HUMAN RESOURCES

i. ICT education (ISCED 97) and ICT skills

ii. **ICT occupations (ISCO 88; 2006 Revision based on ISCO 08)**

Chapter 8 in the OECD Guide to Measuring the Information Society (OECD, 2005)

4) SCIENCE AND TECHNOLOGY

i. ICT related Field of Science and technology (2006? – based on FOS classification)

ii. ICT related R&D (Frascati Manual 2002 Annex 4)

iii. **ICT patents (2001, 2003, 2006 R – based on new IPC) - Chapter 4 in the Guide**



THE OECD ICT SECTOR CLASSIFICATION STANDARD

ICT SECTOR STANDARD DEVELOPMENT (i)

👉 In 1998, OECD countries agreed on an **ICT sector classification standard** based on the set of the following guiding principles to **identify ICT industries (economic activities)**:

1) **ICT definition** – following broad underlying concept (*main guiding principle*) to **define ICT economic activities (industries)** was proposed to be used:

1a) For **manufacturing industries**, *the products (goods)* of a candidate industry must:

- fulfil the function of information processing and communication including transmission and display,

or

- use electronic processing to detect, measure and/or record physical phenomena or control a physical process.

1b) For **services industries**, *the products (services)* of a candidate industry must be intended to enable the function of information processing and communication by electronic means.

- 2) **Classification system** – the following underlying international industrial classification system (the UN International Standard Industrial Classification of all Economic Activities Revision 3) was proposed to be used **to delineate ICT industries**
 - 3) **Alternate structure (main output categories used)** – it is proposed (*for outputs*) to group ICT industries into two main subsector (**ICT manufacturing and ICT services subsector**)
 - 4) **Implementation** – concordances with other national industrial classifications were developed, data collection (data sources, variables and core tables), data dissemination and relevant analysis production (OECD publications) have been step by step carried out
- ☞ **In 2002** the ICT sector (2002 OECD update) became an “**alternate structure**” of the UN International Standard Industrial Classification of all Economic Activities Rev. 3.1.

ICT MANUFACTURING SUBSECTOR

List of ICT related economic activities (manufac. industries) expressed in terms of ISIC Rev. 3.1

Group	Class	Description
DIVISION 30		MANUFACTURE OF OFFICE, ACCOUNTING AND COMPUTING MACHINERY
DIVISION 32		MANUFACTURE OF RADIO, TELEVISION AND COMMUNICATION EQUIPMENT & APPARATUS
321	3210	Manufacture of electronic valves and tubes and other electronic components
322	3220	Manufacture of television and radio transmitters and apparatus for line telephony and line telegraphy
323	3230	Manufacture of television and radio receivers, sound or video recording or reproduction apparatus, and associated goods
Borderline cases	3130	Manufacture of insulated wire and cable
	3312	Manufacture of instruments and appliances for measuring, checking, testing, navigating and other purposes
	3313	Manufacture of industrial process control equipment

- 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 control a physical process.

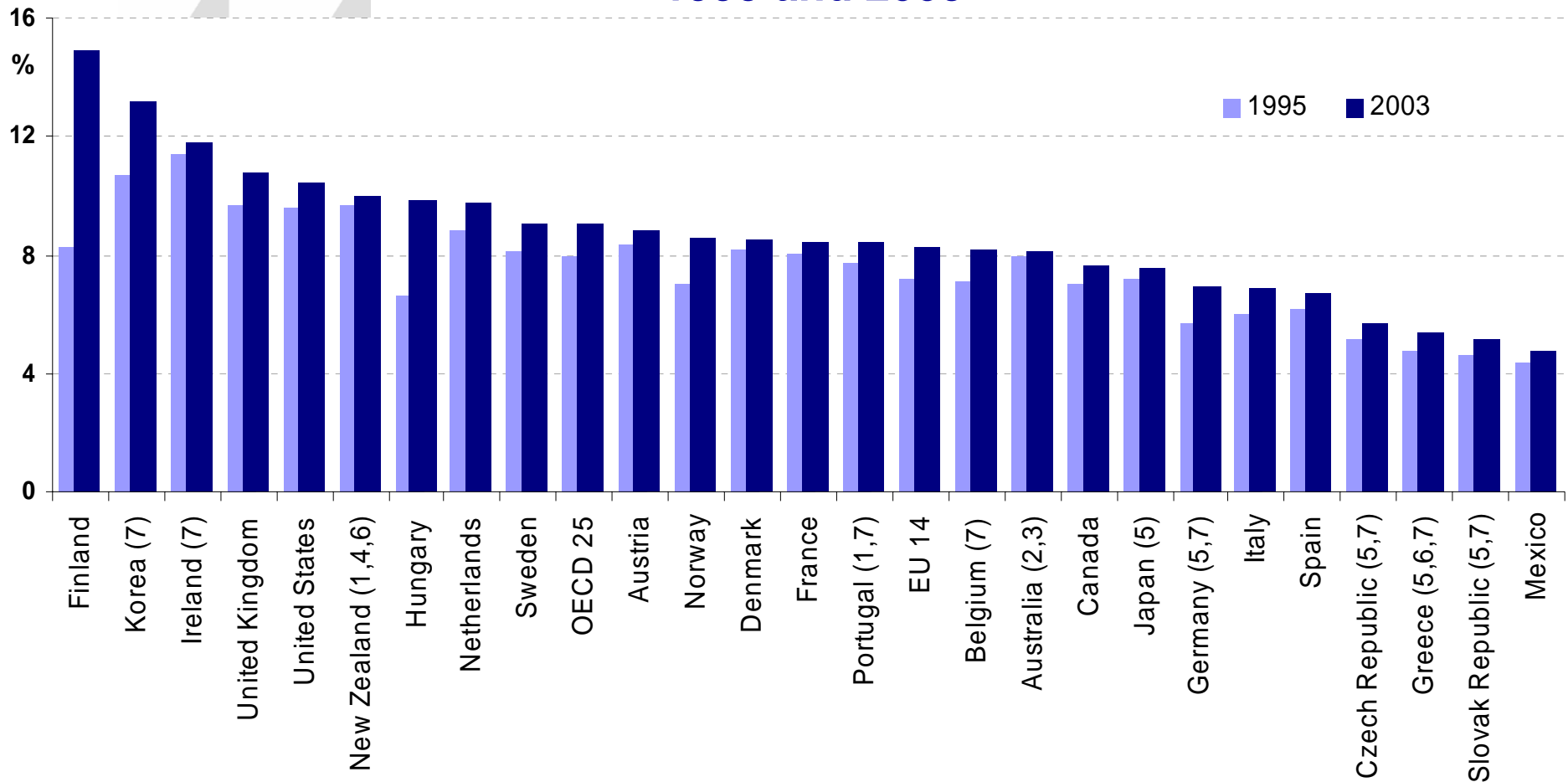
ICT SERVICES SUBSECTOR

List of ICT related economic activities (service's industries) expressed in terms of ISIC Rev. 3.1

Group	Class	Description
Goods related services (wholesale of ICT equipment)		
	5151	Wholesale of computers, computer peripheral equipment and software <i>(new class replacing partly the old 5150 class from the 1998 definition)</i>
	5152	Wholesale of electronic and telecommunications parts and equipment <i>(new class replacing partly the old 5150 class from the 1998 definition)</i>
	7123	Renting of office machinery and equipment (including computers)
Intangible services		
642	6420	Telecommunications
DIVISION 72 COMPUTER AND RELATED ACTIVITIES		
721	7210	Hardware consultancy
722	7221	Software publishing
722	7229	Other software consultancy and supply
723	7230	Data processing
724	7240	Database activities and online distribution of electronic content
725	7250	Maintenance and repair of office, accounting and computing machinery
729	7290	Other computer related activities

Borderline case

Share of ICT value added in the total business sector value added, 1995 and 2003



Source: OECD, OECD Key ICT indicators 2006

(OECD estimates, based on national sources; STAN and National Accounts databases, March 2006).



2006 PROPOSAL FOR ICT SECTOR REVIEW

Main aim of the ICT sector review is to keep this standard contemporary and attempt to preserve continuity to the extent possible. This is a particular challenge for ICT standard where new ICT related goods and services rapidly emerge and evolve.

Context – main reasons, rationale related to this review:

- 1) **Dynamic nature of ICT related activities** – The emergence of new ICT related activities (web portals, e-commerce etc) and rapid changes in the current economic activities related to ICT production (mobile phones manufacturing)
- 2) **Recent ICT goods and services classification standards development** – the ICT sector definition is subject to reconsideration in the context of the finalisations of ICT products classifications. In particular, the ICT sector definition is impacted by changes in both ICT goods [DSTI/ICCP/IIS(2006)1] and ICT services [DSTI/ICCP/IIS (2006)1] classification proposed in terms of the new UN's Central Product Classification Version 2 at the 2006 WPIIS meeting.
- 3) **New ISIC Rev 4** - The United Nations Statistical Commission, at its session on 7 March 2006, approved the revised structure of the UN International Standard Industrial Classification of all Economic Activities Revision 4. New ISIC Rev. 4 is a main driver of ongoing ICT sector classification standard review and the ongoing rapid development of ICTs was one of the primary reasons for the ISIC modification.
- 4) **ICT sector as an 'alternate structure' in the new ISIC Rev. 4 publication (2007)** - The OECD, Eurostat and the United Nations Statistical Division are interested in improving the ICT sector classification standard and in inclusion of this standard in the new ISIC manual as international recommendation.

Review of the ICT sector definition reflects:

- 1) **The experiences from the implementation and use of the current ICT sector definition**
- 2) **Outputs of the OECD and Eurostat meetings dealing with ICT classifications issue - Namely the May 2006 OECD WPIIS meeting and the June 2006 Eurostat WG on ICT statistics meeting and related Task Forces**
- 3) **Output of a small OECD ad hoc expert group** - An Expert Group on the 2006 ICT Classifications Review (8 countries) was set up after the last WPIIS meeting to help solve some issues related to the ICT sector classifications review raised during the WPIIS meeting.
- 4) **The ‘Content’ sector development as part of the ‘information economy’** - open issue since 1997 (see new proposal based on ISIC Rev 4)
- 5) **NAICS based Information sector** - Division 51 of the North American Industry Classification System (NAICS) since 2002 as an “alternate structure” in ISIC Rev. 3.1

The following issues were also considered in this proposal:

- **Comparability between the ICT sector definitions** - based on the ISIC Rev. 3.1 and Rev. 4.
- **Comparability between the ICT sector and ICT products classification**
- **Further implementation and use of ISIC Rev. 4 based ICT classification standard**

- The ICT sector review is based on the same general underlying concept that was used in the previous development of this standard.
- It emphasizes the intended use or functionality of products that are main outputs of the economic activities (industries) concerned.
- In addition it is proposed to add the word “primarily” for a function of the product that must be fulfilled and to specify “electronic means” when referring to the information processing and communication.
- Main proposed change is restriction of the scope (definition) used for determining ICT manufacturing activities
- *See next slides for detailed information about guiding principles proposed to be used for ICT manufacturing and ICT services subsector review*

ICT RELATED MANUFACTURING ACTIVITIES (i)

It is proposed to **restrict the scope (definition)** of ICT manufacturing activities and use only first part of the current guiding principle (in other words, not using second part: “products of a candidate manufacturing industry must use electronic processing to detect, measure and/or record physical phenomena or control a physical process”).

Main arguments for this restriction are:

- The current OECD ICT manufacturing subsector definition includes a broader range of ICT related industries than is often used for some analytical purposes or **understood by the large public**.
- As additional items fulfil the guiding principles used for definition of ICT goods (mainly its second part) **a broader range of economic activities (industries)** will need to be added.
- In addition, many goods that are outputs of these activities (e.g. measuring equipment) based on this broad concept were **not considered as ICT relevant for a final list of ICT goods** that was agreed in 2003 (2003, OECD).
- Also the service activities included into the current definition for the ICT service subsector are **not related** to the second part of this guiding principle.

Reviewed guiding principle (definition) to determine the ICT manufacturing activities:

“The products of a candidate manufacturing industry must be intended to primarily fulfil the function of electronic information processing and communication (including transmission, recording, storage and display)”.

+ *This includes also production of electronic components*

Example of ICT related manufacturing economic activities:

- ☞ **Communication** is interpreted here as an electronic transfer of information (including data, text, pictures, voice and video) from one location to another. The commonality of economic activities classified here is the production of (carrier) equipment with a main function to enable transmission of content, without being involved in its creation. The transmission facilities that carry out these activities may be based on a single technology or a combination of technologies. It includes economic activities that design, develop, manufacture and sell mainly telecommunication equipment such as mobile phones, fixed telephone sets and solutions (equipment, instruments and related services) for data, video and voice networks.
- ☞ **Information processing (i)** here means the electronic capture, collection, storage, manipulation, transmission, retrieval, and presentation of information in the form of data, text, voice, or image in a digital form and includes telecommunications and office automation functions and includes businesses that design, develop, manufacture and sell information processing products such as computers, computer peripheral (input-output) equipment and related computer systems and some services.
- ☞ **Information processing (ii)** here also means following functions: digital information reception, recording, reproducing, storing and displaying. The activities primarily engaged in manufacture of electronic audio and video equipment for home entertainment, motor vehicle, public address and musical instrument amplifications are included here. In addition the businesses engaged in manufacturing photographic and photocopying equipment (e.g. digital cameras) are also concerned. And finally, the business primarily engaged in manufacturing magnetic and optical recording media, such as blank magnetic tape, blank diskettes, blank optical discs, hard drive media, and blank magnetic tape cassettes are included.

It is proposed to use same guiding principle (definition) as for the current ICT services:

The products of a candidate ICT services industry must be primarily intended to enable the function of information processing and communication by electronic means.

Example of ICT related economic activities to be about fulfil proposed guiding principle (definition):

- Providing expertise in the field of information technologies (writing, modifying, testing and supporting computer software to meet the needs of a particular client);
- Providing telecommunications and related service activities, that is transmitting voice, data, text, sound and video without being involved in the creation of the content that is transmitted (telecommunications services);
- Planning and designing computer systems that integrate computer hardware, software and communication technologies (computer systems design services);
- On-site management and operation of clients' computer systems and/or data processing facilities; and other professional and technical computer-related activities (computer disaster recovery services, software installation services);
- Providing infrastructure for hosting, data processing services and related activities, as well as the provision of search facilities and other portals for the

☞ **Software publishing** but also **licensing of rights** to reproduce and distribute computer software protected by copyright are other service activities to be consider as ICT relevant.

☞ In addition, goods related services that enable the **distribution** (such as ICT wholesale and retail trade), **renting, leasing, repairing, maintenance and installation of ICT** equipment should be considered.

UNDERLYING CLASSIFICATION SYSTEM USED – ISIC R4

New ISIC Revision 4 was modified to better reflect the needs for a classification of ICT industries (mainly services) as one of the main objectives of the ISIC revision was to reflect the growing importance of "information" in the economy and in society.

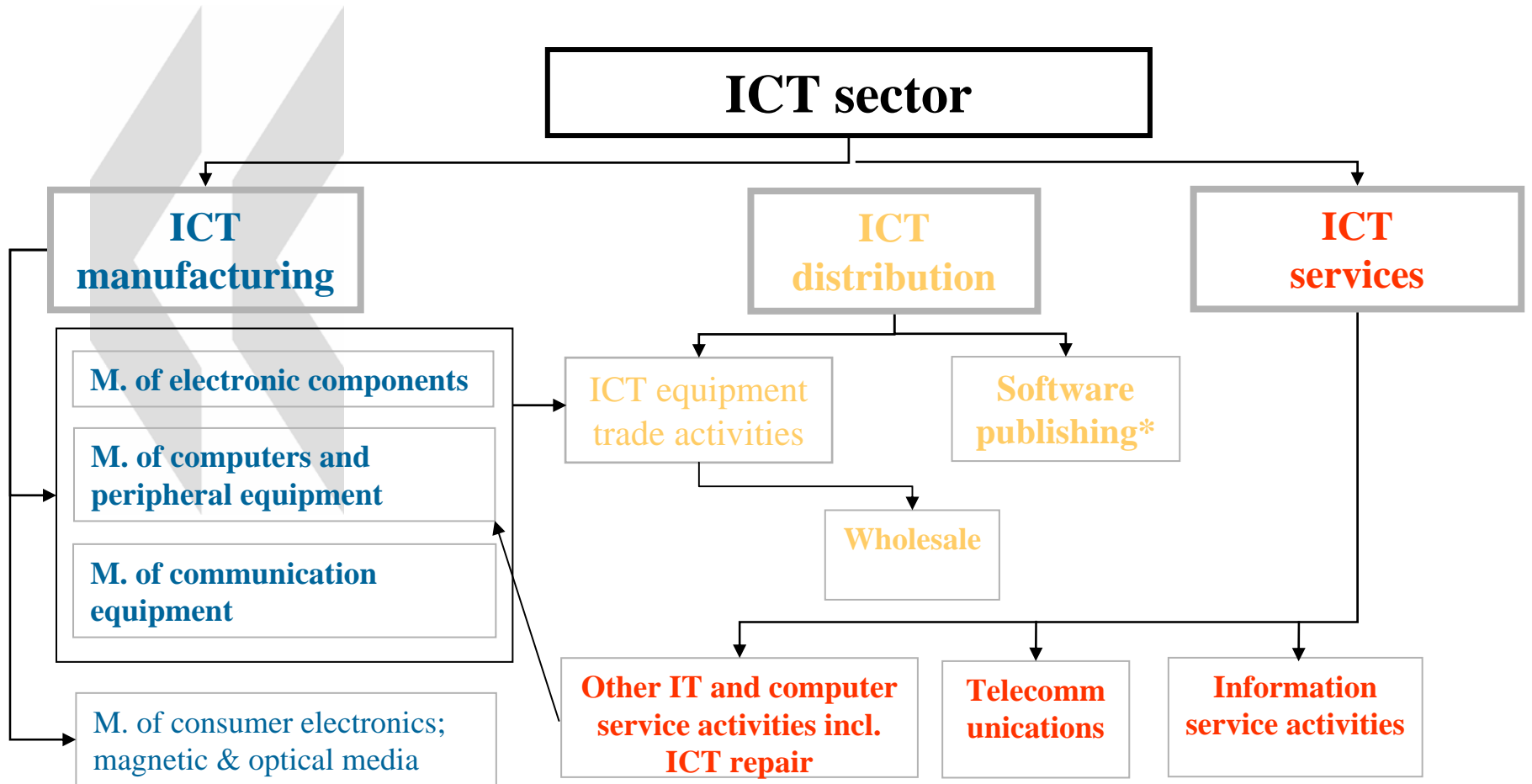
- As a result the following two main changes relevant to ICT sector classification were introduced:

- Division 26: **Manufacture of computer, electronic and optical products**
- New Section J: **Information and communication.**

- In addition it will be possible to:

- **Better identify** ICT activities classifications compare to the current revision:
 - Manufacture of computers and peripheral equipment
 - Manufacture of communication equipment etc.,
 - And most ICT related service activities (e.g. Telecommunications, IT service activities)
- **Newly identify** ICT goods related services such as:
 - Retail sale of ICT equipment in specialized stores.
 - Repair of ICT equipment
- **Cover activities** did not exist or early stage of development when ISIC Rev. 3.1 was elaborated
 - Web site hosting,
 - Web portals,
 - Wireless telecommunications activities

STRUCTURE TO BE USED (ICT CATEGORIES)



The structure plays an important role in the usefulness of the classification.

Proposed structure should enable better statistical and analytical work with ICT sector data.

The proposed ICT sector breakdown is based on common characteristics of the included ICT producing industries.

'ICT Manufacturing Activities'

ISIC Rev. 4 divisions, groups and classes

Division 26 **Manufacture of computer, electronic and optical products (partly)**

Class 2610 **Manufacture of electronic components**

Class 2620 **Manufacture of computers and peripheral equipment**

Class 2630 **Manufacture of communication equipment**

Class 2640 **Manufacture of consumer electronics**

~~Class 2651~~ ~~Manufacture of measuring, testing, navigating and control equipment~~

~~Class 2652~~ ~~Manufacture of watches and clocks~~

~~Class 2660~~ ~~Manufacture of irradiation, electromedical and electrotherapeutic equipment~~

~~Class 2670~~ ~~Manufacture of optical instruments and equipment~~

Class 2680 **Manufacture of magnetic and optical media ??? (ICT or content sector)**

~~Group 273~~ ~~Manufacture of wiring and wiring devices (partly)~~

~~Class 2731~~ ~~Manufacture of fibre optic cables ???~~

~~Class 2732~~ ~~Manufacture of other electronic and electric wires and cables~~

~~Class 2733~~ ~~Manufacture of wiring devices~~

~~Class 2790~~ ~~Manufacture of other electrical equipment~~

~~Class 2817~~ ~~Manufacture of office machinery and equipment~~

'ICT Repair Activities'

ISIC Rev. 4 division, groups and classes

Division 95 Repair of computers and personal and household goods (partly)

Group	Class	Description
951		Repair of computers and communication equipment
	9511	Repair of computers and peripheral equipment
	9512	Repair of communication equipment
<hr/>		
952		Repair of personal and household goods (partly)
	9521	Repair of consumer electronics
	9522	<i>Repair of household appliances and home and garden equipment</i>
	9523	<i>Repair of footwear and leather goods</i>
	9524	<i>Repair of furniture and home furnishings</i>
	9529	<i>Repair of personal and household goods, n.e.c.</i>
<hr/>		
	3313	Repair of electronic and optical equipment

'ICT Trade and Renting Activities'

ISIC Rev. 4 groups and classes

Group Class **ICT TRADE ACTIVITIES**

465		Wholesale of machinery, equipment and supplies
	4651	Wholesale of computers, computer peripheral equipment and software
	4652	Wholesale of electronic and telecommunications equipment and parts
	4653	Wholesale of agricultural machinery, equipment and supplies
	4659	Wholesale of other machinery and equipment

474 ~~Retail sale of ICT equipment in specialized stores~~

	4741	Retail sale of computers, peripheral units, software & telecommunication equipment in special stores
	4742	Retail sale of audio and video equipment in specialized stores

Group Class **ICT RENTING, LEASING and LICENSING ACTIVITIES**

		Renting and leasing of other machinery, equip. & tangible goods n.e.c. (borderline class)
773	7730	
774	7740	Leasing of no financial intangible assets (borderline class)

'ICT Service Activities'

ISIC Rev. 4 divisions, groups and classes

Group Class ICT PRODUCING SERVICES

DIVISIONS 58 PUBLISHING ACTIVITIES (PARTLY)

~~581 Publishing of books, periodicals and other publishing activities (content activities)~~

582 Software publishing

DIVISIONS 61 TELECOMMUNICATIONS

611 6110 Wired telecommunications activities

612 6120 Wireless telecommunications activities

613 6130 Satellite telecommunications activities

619 6190 Other telecommunications activities

'ICT Service Activities'

ISIC Rev. 4 divisions groups and classes

Group	Class	ICT PRODUCING SERVICES
DIVISIONS 62		COMPUTER PROGRAMMING, CONSULTANCY AND RELATED ACTIVITIES
	6201	Computer programming activities
	6202	Computer programming, consultancy and related activities
	6209	Other information technology and computer service activities
DIVISIONS 63		INFORMATION SERVICE ACTIVITIES
631		Web portals, data processing, hosting and related activities
	6311	Data processing, hosting and related activities
	6312	Web portals
632		Other information service activities
	6321	News agency activities
	6329	Other information service activities n.e.c.

ISIC R4 – BASED ICT SECTOR PROPOSAL

It is proposed to include the following industries in terms of the ISIC Rev. 4 into the OECD ICT sector definition (**list of industries** “ISIC Rev. 4 divisions, groups and classes” included into the revised ICT sector definition)

ISIC Rev. 4 code		Description
Group	Class	
ICT MANUFACTURING ACTIVITIES		
261	2610	Manufacture of electronic components
262	2620	Manufacture of computers and peripheral equipment
263	2630	Manufacture of communication equipment
264	2640	Manufacture of consumer electronics
268	2680	Manufacture of magnetic and optical media
ICT EQUIPMENT TRADE ACTIVITIES		
<i>Wholesale of ICT equipment</i>		
	4651	Wholesale of computers, computer peripheral equipment and software
	4652	Wholesale of electronic and telecommunications equipment and parts

ISIC R4 – BASED ICT SECTOR – PROPOSAL (ii)

ISIC Rev. 4 code	Description
SOFTWARE PUBLISHING	
582	5820 Software publishing
ICT SERVICES	
DIVISIONS 61	TELECOMMUNICATIONS
611	6110 Wired telecommunications activities
612	6120 Wireless telecommunications activities
613	6130 Satellite telecommunications activities
619	6190 Other telecommunications activities
DIVISIONS 62	COMPUTER PROGRAMMING, CONSULTANCY AND RELATED ACTIVITIES
	6201 Computer programming activities
	6202 Computer consultancy and computer facilities management activities
	6209 Other information technology and computer service activities
INFORMATION SERVICE ACTIVITIES	
631	Web portals, data processing, hosting and related activities
	6311 Data processing, hosting and related activities
	6312 Web portals
REPAIR OF ICT EQUIPMENT	
951	Repair of computers and communication equipment
	9511 Repair of computers and peripheral equipment
	9512 Repair of communication equipment



THE OECD ICT PRODUCTS CLASSIFICATION STANDARDS

ICT PRODUCTS STANDARD DEVELOPMENT

☞ In December 2003 an ICT goods classification expressed in terms of the **Harmonised System (HS 2002) of the World Custom Organization** was finalised and approved by ICCP [DSTI/ICCP/IIS(2003)1/REV2] as a first step in the definition of ICT products (goods and services). It is based on **the same principles (definition)** used to describe ICT manufacturing economic activities (industries): ***“candidate good must be intended to fulfil the function of information processing...”***

☞ It was agreed at the **2006 WPIIS meeting** to use the revised **UN’s Central Product Classification (CPC, Version 2)**, as the underlying international product classification system for the ICT goods classification review. **A final list of ICT goods should be expressed in terms of this standard.**

☞ The **ICT services** classification expressed in terms of the CPC was proposed in 2004 [DSTI/ICCP/IIS(2004)2] and has been approved by ICCP in terms of Central Product Classification, Version 2 in 2006 [DSTI/ICCP/IIS(2006)11]. Also ICT services are based on the principles used to identify ICT service economic activities (industries): ***“candidate service must be intended to enable the function of information processing...”***



ICT GOODS

CURRENT ICT GOODS DEFINITION

ICT goods guiding principle

- **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

ICT goods broad categories based on six-digit HS categories



- telecommunications equipment
- computer and related equipment
- electronic components
- audio and video equipment
- other ICT goods

CURRENT HS-BASED LIST OF ICT GOODS

Computer equipment

8471	847330
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Telecom equipment

8517	852790
852020	852910
852510	853110
852520	854420
852530	854470
852610	

Electronic components

850431	853224
850450	853230
850490	8533
852330	8534
852460	8540
852990	8541
853221	8542

Audio and video equipment

8518	852320
8519	852390
852010	852540
852032	852712
852033	852713
852039	852719
852090	852721
8521	852729
8522	852731
852311	852732
852312	852739
852313	8528

Other ICT goods

846911	9024
847010	902620
847021	902710
847029	902730
847040	902740
847050	902750
847310	902780
847321	9028
847350	9029
852691	903010
852692	903020
901041	903031
901042	903039
901049	903040
9014	903082
901540	903083
901580	903110
901811	903120
901812	903130
901813	903141
901814	903180
901819	903190
902212	903210
902213	903220
902214	903289
902219	903290

1) ICT goods classification:

An agreement was reached on the inclusion of the following goods (**list of ICT goods**) expressed in terms of the six-digit **HS (2002) categories** the ICT goods definition

2) Structure (broad categories)

used : ICT codes expressed in terms of 6-digit HS were grouped into the following broad categories:

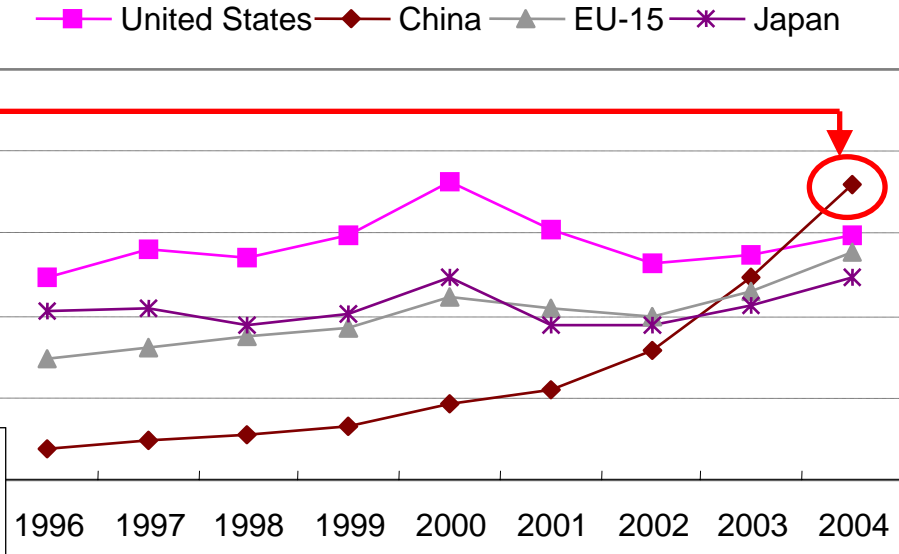
- ☞ **Telecommunications equipment.**
- ☞ **Computer and related equipment**
- ☞ **Electronic components.**
- ☞ **Audio and video equipment.**
- ☞ **Other ICT goods.**

Recent features for trade in ICT goods IN China (1)

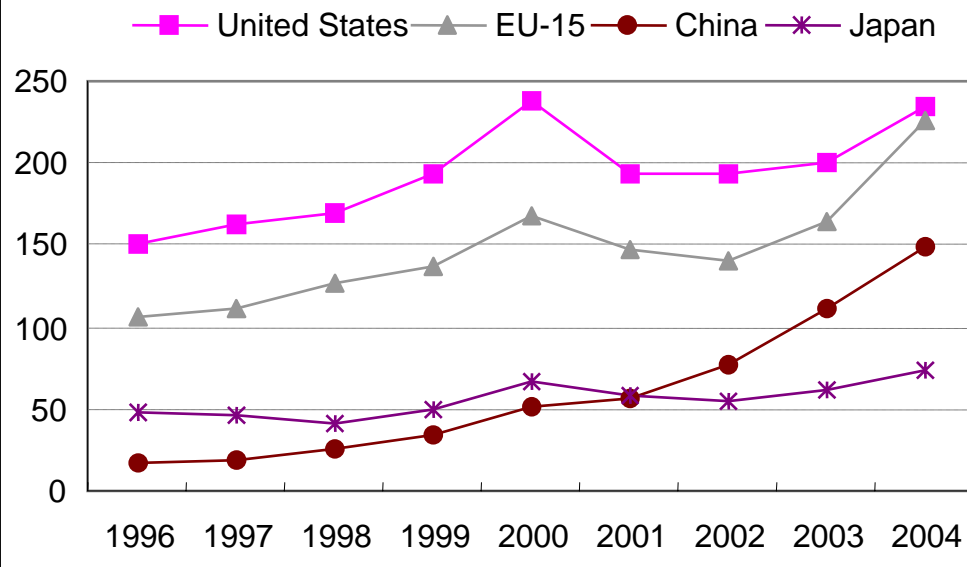
USD millions, current prices

China is now the biggest exporter of ICT goods

Exports of ICT goods



Imports of ICT goods



Source : ITCS database. Data for the EU excludes intra-EU trade.

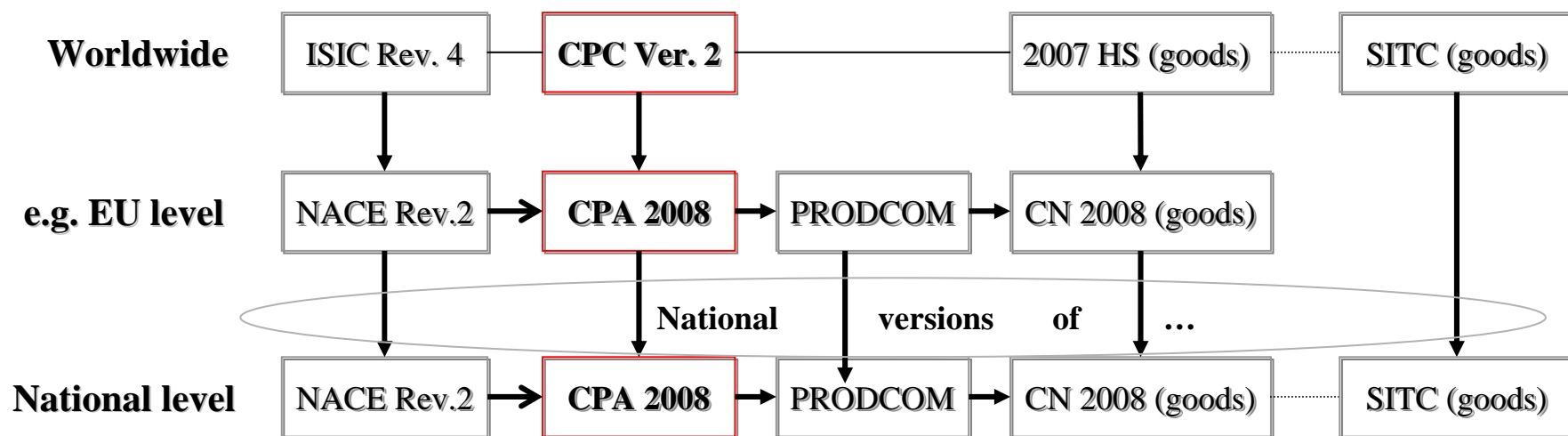


PROPOSAL FOR ICT GOODS REVIEW

CPC Ver. 2 IS PROPOSED TO BE USED

It is proposed to use the UN Central Product Classification (Version 2) as underlying system to classify ICT goods instead of HS

- New CPC version enable better identification of ICT goods at its lower levels (groups, classes and subclasses)
- CPC goods definitions maintain to be largely HS-based
- To extend the use of the ICT goods standard beyond trade statistics
- Having the same statistical framework as for ICT services
- Better comparability with ICT manufacturing industries
- For international comparison



CPC VER. 2 – BASED ICT GOODS (FIRST PROPOSAL)

List of ICT related CPC 2 groups to be included into ICT Goods classification standard

Division 45 Office, accounting and computing machinery (partly)

Group 451 Office and accounting machinery, and parts and accessories thereof (partly???)

Group 452 Computing machinery and parts and accessories thereof

Division 47 Radio, television and communication equipment & apparatus (partly)

Group 471 Electronic valves and tubes; electronic components; parts thereof

Group 472 Television and radio transmitters; television, video and digital cameras; telephone sets

Group 473 Radio broadcast and television receivers; apparatus for sound and video recording

Group 474 Parts for the goods of classes 4721 to 4733 and 4822

Group 475 Disks, tapes, solid-state non-volatile storage devices and other media, not recorded

~~Group 476 Audio and video disks, tapes and other media, recorded (content ???)~~

~~Group 478 Packaged software (services)~~

Group 479 Cards with magnetic strips or chip

ELECTRONIC COMPONENTS

CPC	ISIC	Description
Group 471 - Electronic valves and tubes; electronic components; parts thereof		
<i>Semiconductors</i>		<i>The main ICT items in this category</i>
47160	2610	Electronic integrated circuits and microassemblies
47150	2610	Diodes, transistors and similar semi-conductor devices; photosensitive semi-conductor devices; light emitting diodes; mounted piezo-electric crystals
<i>Printed circuits and electronic subassemblies</i>		
47130	2610	Printed circuits
<i>Other electronic components</i>		
47110	2610	Electrical capacitors (only partly ICT item in 2003 definition)
47120	2610	Electrical resistors (except heating resistors)
47140	2610	Thermionic, cold cathode or photo-cathode valves and tubes (including cathode ray tubes)
<i>Parts of electronic components</i>		
47171	2610	Parts for the goods of subclass 47110
47172	2610	Parts for the goods of subclass 47120
47173	2610	Parts for the goods of subclasses 47140 to 47160
<i>Group 479 Cards with magnetic strips or chip (new CPC is more detailed)</i>		
47910	2220	Cards with a magnetic strip
47920	2620	"Smart cards"

COMPUTER AND RELATED EQUIPMENT

CPC	ISIC	Description
45142	2620	Point-of-sale terminals, ATMs and similar machines capable of being connected to a data processing machine or network <i>(new CPC code – only partly ICT item in 2003 definition)</i>
Group 452 - Computing machinery and parts and accessories thereof		
45221	2620	Portable automatic data processing machines weighing not more than 10 kg, such as laptop and notebook computers
45222	2620	Personal digital assistants and similar computers
45230	2620	Automatic data processing machines, comprising in the same housing at least a central processing unit and an input and output unit, whether or not combined
45240	2620	Automatic data processing machines presented in the form of systems
45250	2620	Other automatic data processing machines whether or not containing in the same housing one or two of the following types of units: storage units, input units, output units
45261	2620	Input peripherals (keyboard, joystick, mouse etc.)
45262	2620	Scanners (except combination of printer, scanner, copier and/or fax)
45263	2620	Inkjet printers used with data processing machines
45264	2620	Laser printers used with data processing machines
45265	2620	Other printers used with data processing machines
45266	2620	Units performing two or more of the following functions: printing, scanning, copying, faxing
45269	2620	Other input or output peripheral devices
45271	2620	Fixed media storage units
45272	2620	Removable media storage units
45281	2620	Sound, video, network and similar cards for automatic data processing machines
45282	2620	Network communications equipment (e.g. hubs, routers, gateways) for LANS and WANS
45289	2620	Other units of automatic data processing machines
45290	2620	Parts and accessories of computing machines

CPC is more detailed than HS 2007

TELECOMMUNICATIONS EQUIPMENT

CPC	ISIC	Description
47211	2630	Transmission apparatus incorporating reception apparatus
47212	2630	Transmission apparatus not incorporating reception apparatus
<hr/>		
Class 4721 Telephone sets, including telephones for cellular networks or for other wireless networks; other apparatus for the transmission or reception of voice, images or other data, including apparatus for communication in a wired or wireless network (such as a local or wide area network)		
47221	2630	Line telephone sets with cordless handsets
47222	2630	Telephones for cellular networks or for other wireless networks
<hr/>		
47223	2630	Other telephone sets and apparatus for transmission or reception of voice, images or other data, including apparatus for communication in a wired or wireless network.
47401	2630	Parts for the goods of subclass 47221 to 47223

CONSUMER ELECTRONICS (i)

CPC	ISIC	Description
<i>Sound, video and image recording and reproducing apparatus</i>		
47213	2630	Television cameras
47214	2630; 2640	Video camera recorders
47215	2670	Digital cameras
48322	2670	Photographic (including cinematographic) cameras – not ICT item in 2003 definition
47321	2640	Sound recording or reproducing apparatus
47323	2640	Video recording or reproducing apparatus
<i>Radio broadcast and television receivers</i>		
47311	2640	Radio broadcast receivers (except of a kind used in motor vehicles), whether or not combined with sound recording or reproducing apparatus or a clock
47312	2640	Radio broadcast receivers not capable of operating without an external source of power, of a kind used in motor vehicles
47313	2640	Television receivers, whether or not combined with radio-broadcast receivers or sound or video recording or reproducing apparatus

CONSUMER ELECTRONICS (ii)

CPC	ISIC	Description
<i>Other audio, video and photographic equipments and parts</i>		
<i>Monitors and projectors</i>		
47314	2640	Monitors and projectors, not incorporating television reception apparatus and not principally used in an automatic data processing system
47315	2640	Monitors and projectors, principally used in an automatic data processing system
48323	2670	Cinematographic projectors, slide projectors and other image projectors, except microform readers - not ICT item in 2003 definition
48330	2670	Microfilm, microfiche or other microform readers - not ICT item in 2003 definition
47331	2640	Microphones and stands therefor; loudspeakers; headphones, earphones and combined microphone/speaker sets; audio-frequency electric amplifiers; electric sound amplifier sets
<i>Parts of consumer electronics</i>		
47402	2630	Parts for the goods of subclasses 47321 to 47323 and 47331
47403	2630, 2640	Parts for the goods of subclasses 47211 to 47213, 47311 to 47313 and 48220

CONSUMER ELECTRONICS (iii)

CPC	ISIC	Description
<i>Video games consoles</i>		
38580	5820???	Video games of a kind used with a television receiver (<i>not ICT item in 2003 definition</i>)
Group 475 Disks, tapes, solid-state non-volatile storage devices and other media, not recorded		
47530	2680	Magnetic media, not recorded, except cards with a magnetic stripe
47540	2680	Optical media, not recorded
47550	2620	Solid-state non-volatile storage devices
47590	3290	Other recording media, including matrices and masters for the production of disks

*Not possible to distinguish this category in a new HS 2007
(no recorded and non-recorded media)*



ICT SERVICES

Software related products (other than custom) not consolidated under a single heading of the classification. Remains classified in different areas depending on the mode of delivery:

- **Software on a physical media in group 478 - Packaged software**
- **Software downloaded from the Web in group 843 - Online information provision**
- **Software original code in group 831 - Management consulting and management services; information technology services**
- **Software accessed on-line in group 843 - Online content**
- **Software licensing in group 733 - Licensing services for the right to use non-financial intangible assets**

List of ICT related CPC 2 codes included in the ICT Services classification standard

Code	Description
841	Telephony and other telecommunications services
8411	Carrier services
8412	Fixed telephony services
84121	Fixed telephony services - access and use
84122	Fixed telephony services - calling features
8413	Mobile telecommunications services
84131	Mobile telecommunications services - access and use
84132	Mobile telecommunications services - calling features
8414	Private network services
8415	Data transmission services
8419	Other telecommunications services
842	Internet telecommunications services
8421	Internet backbone services
8422	Internet access services
8429	Other Internet telecommunications services

Leasing or rental of ICT equipment

- 73123 Leasing or rental services concerning office machinery and equipment (excl. computers) without operator
- 73124 Leasing or rental services concerning computers without operator

8313 Information technology (IT) technical consulting and support services

- 83131 IT technical consulting services
- 83132 IT technical support services

8314 Information technology (IT) design and development services

- 83141 IT design and development services for applications
- 83142 IT design and development services for networks and systems

8315 Hosting and information technology (IT) infrastructure provisioning services

- 83151 Website hosting services
- 83152 Application service provisioning
- 83159 Other hosting and IT infrastructure provisioning services

Business process management services

- 83117 Business process management services

8316 IT infrastructure and network management services

83161 Network management services

83162 Computer systems management services

8713 Maintenance and repair services of computers and peripheral equipment

Published Software

478 Packaged software

83143 Software originals

8434 Software downloads

84392 On-line software

73310 Licensing services for the right to use computer software



THE OECD CONTENT AND MEDIA CLASSIFICATION STANDARDS

The issue of content products and sector definitions has been discussed previously at many WPIIS meeting but so far no final consensus was reached:

- ☞ 1st meeting 1997 – The need for a definition of the Content sector is highlighted.
- ☞ 2nd meeting 1998 – A decision is taken on having separate definitions for the ICT and the Content sector.
- ☞ 6th meeting 2002 – A definition of the Content sector as a component of the Information economy [DSTI/ICCP/IIS/RD(2002)10] was proposed using following **guiding principles (content characteristics)** to identify content products:

- 1. It is an organized message intended for human beings.*
- 2. It results from an organized production activity.*
- 3. It is combined with, or carried by, a medium.*
- 4. Its diffusion is not restricted to a list of privileged recipients.*
- 5. Its diffusion requires a communication medium, i.e. a mass diffusion medium.*
- 6. Its diffusion requires the intervention of a publisher that is of a publishing business.*

- ☞ **A content product corresponds to an organized message intended for human beings published in mass communication media.**
- ☞ **The value of such product to the consumer does not lie in its tangible qualities but in its information, educational, cultural or entertainment content.**
- ☞ **The content sector is the group of economic activities that are primarily engaged in the publishing and/or the electronic distribution of content products:**
 - ☞ ***Publishing activities***
 - ☞ ***Motion picture, video and television programme production***
 - ☞ ***Broadcasting and programming activities***
 - ☞ ***Other information service activities***

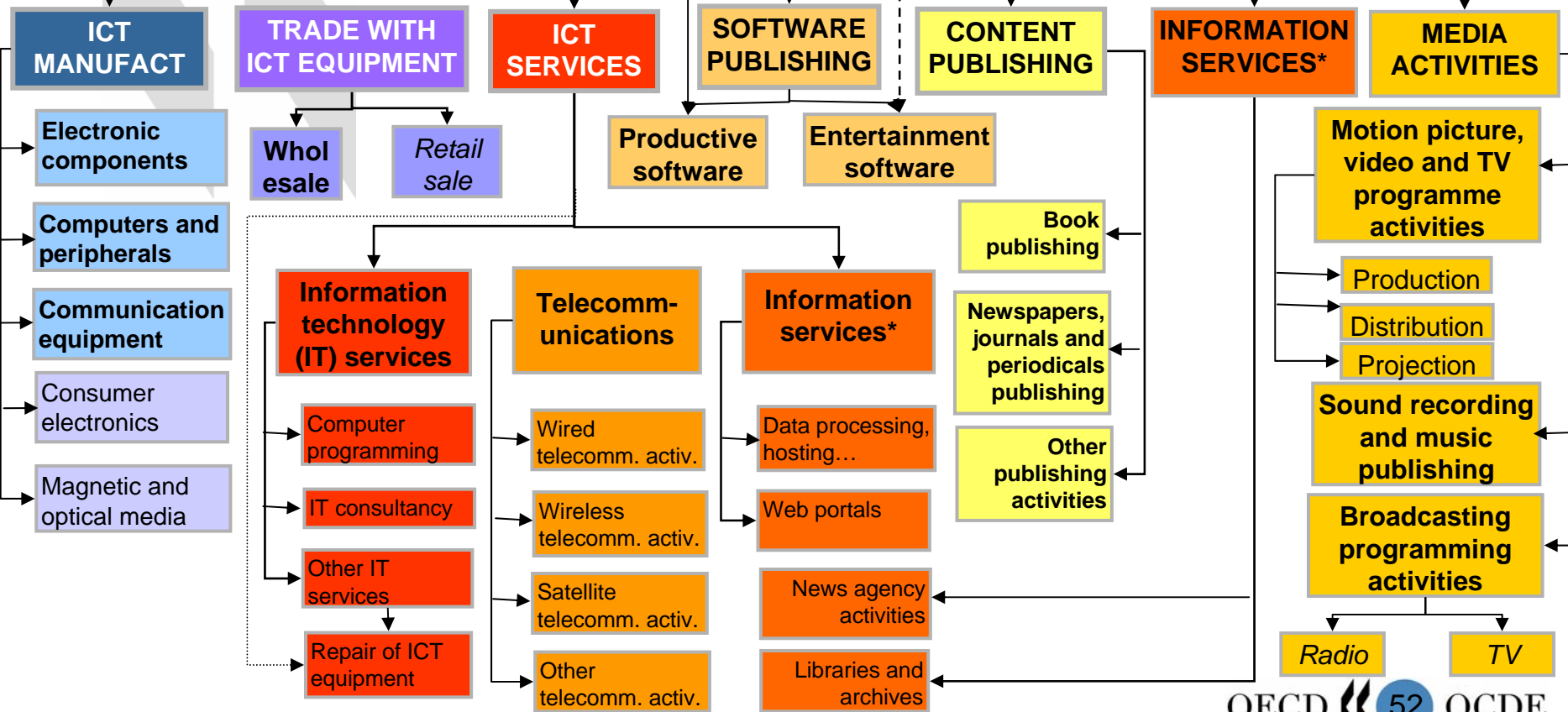
CONCEPT OF INFORMATION ECONOMY SECTOR

ECONOMIC ACTIVITIES (INDUSTRY) OF INFORMATION ECONOMY

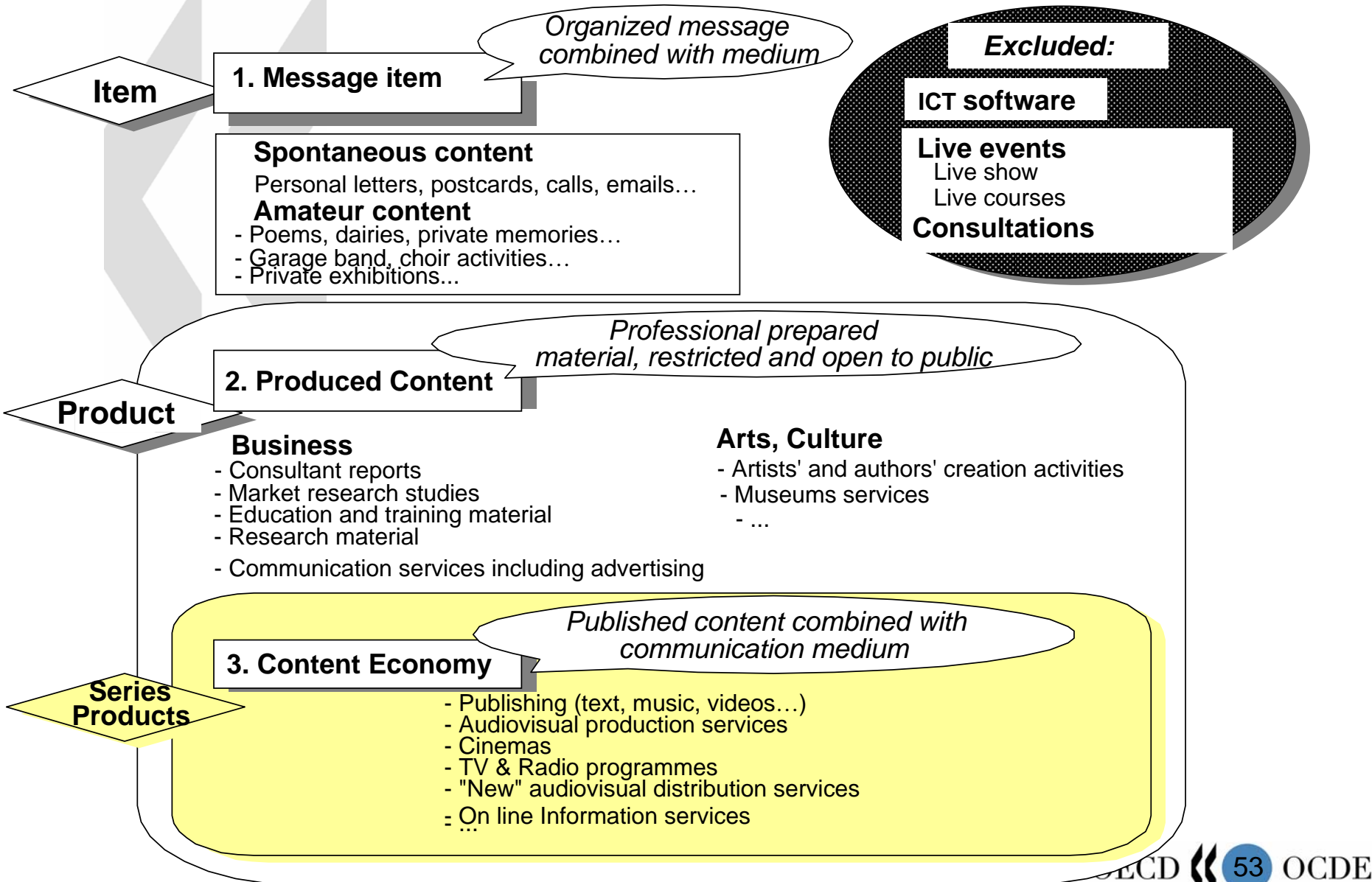
INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) SECTOR

CONTENT AND MEDIA SECTOR

COPYRIGHT ACTIVITIES



Content mapping



ISIC R4 - BASED CONTENT AND MEDIA SECTOR (PROPOSAL)

The following economic activities expressed in terms of ISIC Rev. 4 industrial divisions or groups from the new Section J are proposed to be included in the Content and media sector definition:

58 PUBLISHING ACTIVITIES

581 Publishing of books, periodicals and other publishing activities

5811 Book publishing

5812 Publishing of directories and mailing lists

5813 Publishing of newspapers, journals and periodicals

5819 Other publishing activities

582 *Software publishing (partly – only multi-media/entertainment software)**

59 MOTION PICTURE, VIDEO AND TELEVISION PROGRAMME PRODUCTION

591 Motion picture, video and television programme activities

5911 Motion picture, video and television programme production activities

5912 Motion picture, video and television programme post-production activities

5913 Motion picture, video and television programme distribution activities

5914 Motion picture projection activities

592 Sound recording and music publishing activities

60 BROADCASTING AND PROGRAMMING ACTIVITIES


601 Radio broadcasting

602 Television broadcasting and subscription programming

632 OTHER INFORMATION SERVICE ACTIVITIES

6321 News agency activities

6329 Other information service activities n.e.c.



PRELIMINARY PROPOSAL FOR CONTENT AND MEDIA PRODUCTS

CPC VER.2 - BASED CONTENT AND MEDIA SECTOR PRODUCTS (PROPOSAL)

ISIC Rev. 4 Class	CPC Version 2		Description	Correspondences	
	Grou	Class Subcla		HS 2007	CPC1
	322			Books, in print	
5811		3221	32210	Educational textbooks, in print	4901.10*, .99*
5811		3222	32220	General reference books, in print	4901.10*, .91*, .99*, 4905.91
5812		3223	32230	Directories, in print	4901.10*, .99*
		3229		Other books, in print	
5811			32291	Professional, technical and scholarly books, in print	4901.10*, .99*
5811			32292	Children's books, in print	4901.10*, .99*, 4903
5811			32299	Other books n.e.c., in print	4901.10*, .99*
	323			Newspapers and periodicals, daily, in print	
5813		3230	32300	Newspapers and periodicals, daily, in print	4902.1
	324			Newspapers and periodicals, other than daily, in print	
5813		3241	32410	General interest newspapers and periodicals, other than daily, in print	4902.90*
5813		3242	32420	Business, professional or academic newspapers and periodicals, other than daily, in print	4902.90*
5813		3249	32490	Other newspapers and periodicals, other than daily, in print	4902.90*
	325			Printed maps; music, printed or in manuscript; postcards, greeting cards, pictures and plans	
5811		3251	32510	Maps and hydrographic or similar charts (including wall maps, topographical plans and globes), printed, other than in book-form	4905.10, .99
5920		3252	32520	Music, printed or in manuscript	4904
5819		3253	32530	Printed or illustrated postcards; printed cards bearing personal greetings or messages, with or without envelopes or trimmings	4909
5819		3254	32540	Printed pictures, designs and photographs	4911.91
7110		3255	32550	Plans and drawings for architectural, engineering, industrial, commercial, topographical or similar purposes, being originals drawn by hand; hand-written texts; photographic reproductions and carbon copies of the foregoing	4906

CPC VER.2 - BASED CONTENT AND MEDIA SECTOR PRODUCTS (PROPOSAL)

ISIC Rev. 4 Class	CPC Version 2		Description	Correspondences		
	Class	Subcla		HS 2007	CPC1	
	Grou	Class				
	326			Stamps, cheque forms, banknotes, stock certificates, brochures and leaflets, advertising material and other printed matter		
5819		3261	32610	Unused postage, revenue or similar stamps; stamp-impressed paper; cheque forms; banknotes,	4907	32510
5819		3262	32620	Trade advertising material, commercial catalogues and the like	4911.1	32530
5819		3263	32630	Transfers (decalcomanias) and printed calendars	4908, 4910	32560
5819		3269	32690	Other printed matter	4911.99	32590
	476			Audio and video disks, tapes and other media, recorded		
5920		4761	47610	Musical audio disks, tapes or other physical media	8523.29*, .40*	47520*
5911		4762	47620	Films and other video content on disks, tape or other physical media	8523.29*, .40*	47520*
		4769		Other recorded disks, tapes or other physical media		
5811			47691	Audio books on disk, tape or other physical media	8523.29*, .40*	47520*
5811			47692	Text-based disks, tapes or other physical media	8523.29*, .40*	
5920			47669	Other non-musical audio disks and tapes	8523.29*, .40*	47520*
		8363		Sale of advertising space or time (except on commission)		
5812, 5813, 5819			83631	Sale of advertising space in print media (except on commission)		83631
6010, 6020			83632	Sale of TV/radio advertising time (except on commission)		83632
5813, 5819, 6311, 6312			83633	Sale of Internet advertising space (except on commission)		83633
5911			83639	Sale of other advertising space or time (except on commission)		83639
		8431		On-line text based information		
5811			84311	On-line books		84300*
5813			84312	On-line newspapers and periodicals		84300*
		8432		On-line audio content		
5920			84321	Musical audio downloads		-
6311			84322	Streaming audio content		84300*
		8433		On-line video content		
5911			84331	Films and other video downloads		-
6311			84332	Streaming video content		84300*
6311			84391	On-line games		84300*
6311			84393	On-line adult content		84300*
6312			84394	Web search portals		84300*
5819			84399	Other on-line content		84300*

CPC VER.2 - BASED CONTENT AND MEDIA SECTOR PRODUCTS (PROPOSAL)

ISIC Rev. 4 Class	CPC Version 2		Description	Correspondences		
	Grou	Class Subcla		HS 2007	CPC1	
	844			News agency services		
6321		8441	84410	News agency services to newspapers and periodicals		84410
6321		8442	84420	News agency services to audio-visual media		84420
	846			Broadcasting, programming and programme distribution services		
		8461		Radio and television broadcast originals		
6010			84611	Radio broadcasts originals		-
6020			84612	Television broadcasts originals		-
		8462		Radio and television channel programmes		
6010			84621	Radio channel programmes		-
6020			84622	Television channel programmes		-
		8463		Broadcasting services and multi-channel programme distribution services		
6010, 6020			84631	Broadcasting services		96160
6110, 6120, 6130			84632	Home programme distribution services, basic programming package		84170*
6110, 6120, 6130			84633	Home programme distribution services, discretionary programming package		84170*
6110, 6120, 6130			84634	Home programme distribution services, pay-per-view		84170*

CPC VER.2 - BASED CONTENT AND MEDIA SECTOR PRODUCTS (PROPOSAL)

ISIC Rev. 4 Class	CPC Version 2		Description	Correspondences	
	Class	Group		HS 2007	CPC1
	961			Audio-visual and related services	
		9611		Sound recording services	
5920			96111	Sound recording services	96111*, 96130*
5920			96112	Live recording services	96111*, 96130*
5920			96113	Sound recording originals	-
		9612		Motion picture, video tape, television and radio programme production services	
5911, 6020			96121	Motion picture, video tape and television programme production services	96121*, 96130*, 96149*
6010			96122	Radio programme production services	96122, 96130*, 96149*
5911			96123	Motion picture, video tape, television and radio programme originals	-
		9613		Audio-visual post-production services	
5912			96131	Audio-visual editing services	96112*, 96142*
5912			96132	Transfers and duplication of masters services	96112*, 96142*
5912			96133	Colour correction and digital restoration services	96142*
5912			96134	Visual effects services	96142*
5912			96135	Animation services	96121*
5912			96136	Captioning, titling and subtitling services	96142*
5912			96137	Sound editing and design services	96112*, 96142*
5912			96139	Other post-production services	96142*
5913, 6010		9614	96140	Motion picture, video tape, television and radio program distribution services	96141
		9615		Motion picture and video tape projection services	
5914			96151	Motion picture projection services	96151
5914			96152	Videotape projection services	96152
7722		7322	73220	Leasing or rental services concerning videotapes and disks	OECD 732059 OCDE
7740		7332	73320	Licensing services for the right to use entertainment, literary or acoustic originals	73320

In summary (i)

Based on ISIC Rev. 4

- ICT sector (manufacturing and services)
 - Agreed by expert group
 - On OLIS for declassification
 - Probably declassified before the end of the year (?)
- Content and media sector
 - Agreed by expert group
 - On OLIS for declassification
 - Probably declassified before the end of the year (?)

In summary (ii)

Based on CPC ver. 2

- ICT goods
 - Proposal in front of expert group
- ICT services
 - Agreed and declassified
- Content and media products
 - Proposal in front of expert group

ICT PATENTING ACTIVITY CLASSIFICATION

Patents are an intellectual property right issued by authorised bodies to inventors allowing them to make use of, and exploit, their inventions for a limited period of time (generally 20 years).

ICT-related patents definition development

Based on the list of International Patent Classification (IPC) codes that are assigned to ICT-related patents.

- 1) **In the initial phase (2001)** - The following IPC classes were proposed to be included in the provisional definition of ICT-related patents:
 - **G06 (Computing; Calculating; Counting);**
 - **G11 (Information Storage);**
 - **HO4 (Electric Communication Technique)**

- 2) **The current ICT-related patents definition (2003)** – Classification at more detailed level of the seventh edition of IPC codes (next slide)

- 3) **The 2006 ICT-related patents definition revision** – It will be based on the next IPC classification edition (eighth) which enter into force on 1 January 2006 and the revision of the ICT sector and products definitions

LIST OF ICT PATENTS

<i>IPC code</i>	<i>Details</i>
Telecommunications	
G01S	Radio navigation
G08C	Transmission systems for measured values
G09C	Ciphering apparatus
H01P, H01Q	Waveguides, resonators, aerials
	Semiconductor lasers: H01S003-025, H01S003-043, H01S003-063, H01S003-067, H01S003-085, H01S003-0933, H01S003-0941, H01S003-103, H01S003-133, H01S003-18, H01S003-19, H01S003-25, H01S005
H03B-D	Generation of oscillations, modulation, demodulation
H03H	Impedance networks, resonators
H03M	Coding, decoding
H04B	Transmission
H04J	Multiplex communication
H04K	Secret communication
H04L	Transmission of digital information
H04M	Telephonic communication
H04Q	Selecting, public switching

LIST OF ICT PATENTS Cont.

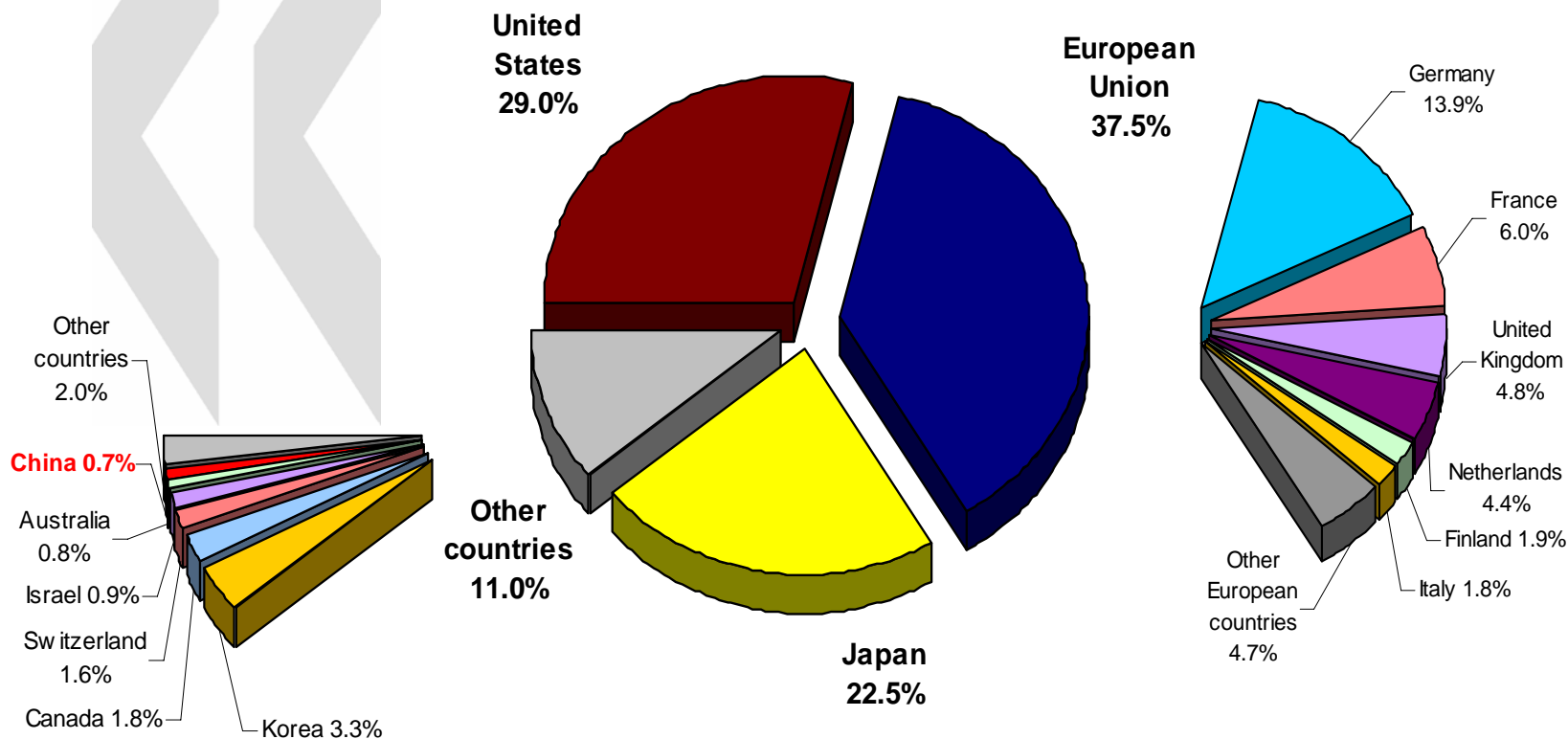
<i>IPC code</i>	<i>Details</i>
Computers, office machinery	
B07C	Postal sorting
B41J	Typewriters
B41K	Stamping apparatus
G02F	Control of light parameters
G03G	Electrography
G05F	Electric regulation
G06	Computing
G07	Checking devices
G09G	Control of variable information devices
G10L	Speech analysis and synthesis
G11C	Static stores
H03K, H03L	Pulse technique, control of electronic oscillations or pulses
Consumer electronics	
G11B	Information storage with relative movement between record carrier and transducer
H03F, H03G	Amplifiers, control of amplification
H03J	Tuning resonant circuits
H04H	Broadcast communication
H04N	Pictorial communication, television
H04R	Electromechanical transducers
H04S	Stereophonic systems

LIST OF ICT PATENTS Cont.

<i>IPC code</i>	<i>Details</i>
Other ICT	
	Measuring, testing: G01B, G01C, G01D, G01F, G01G, G01H, G01J, G01K, G01L, G01M, G01N, G01P, G01R, G01V, G01W
G02B006	Light guides
G05B	Control and regulating systems
G08G	Traffic control systems
G09B	Educational or demonstration appliances
H01B011	Communication cables
	Electric discharge tubes: H01J011, H01J013, H01J015, H01J017, H01J019, H01J021, H01J023, H01J025, H01J027, H01J029, H01J031, H01J033, H01J040, H01J041, H01J043, H01J045
H01L	Semiconductor devices

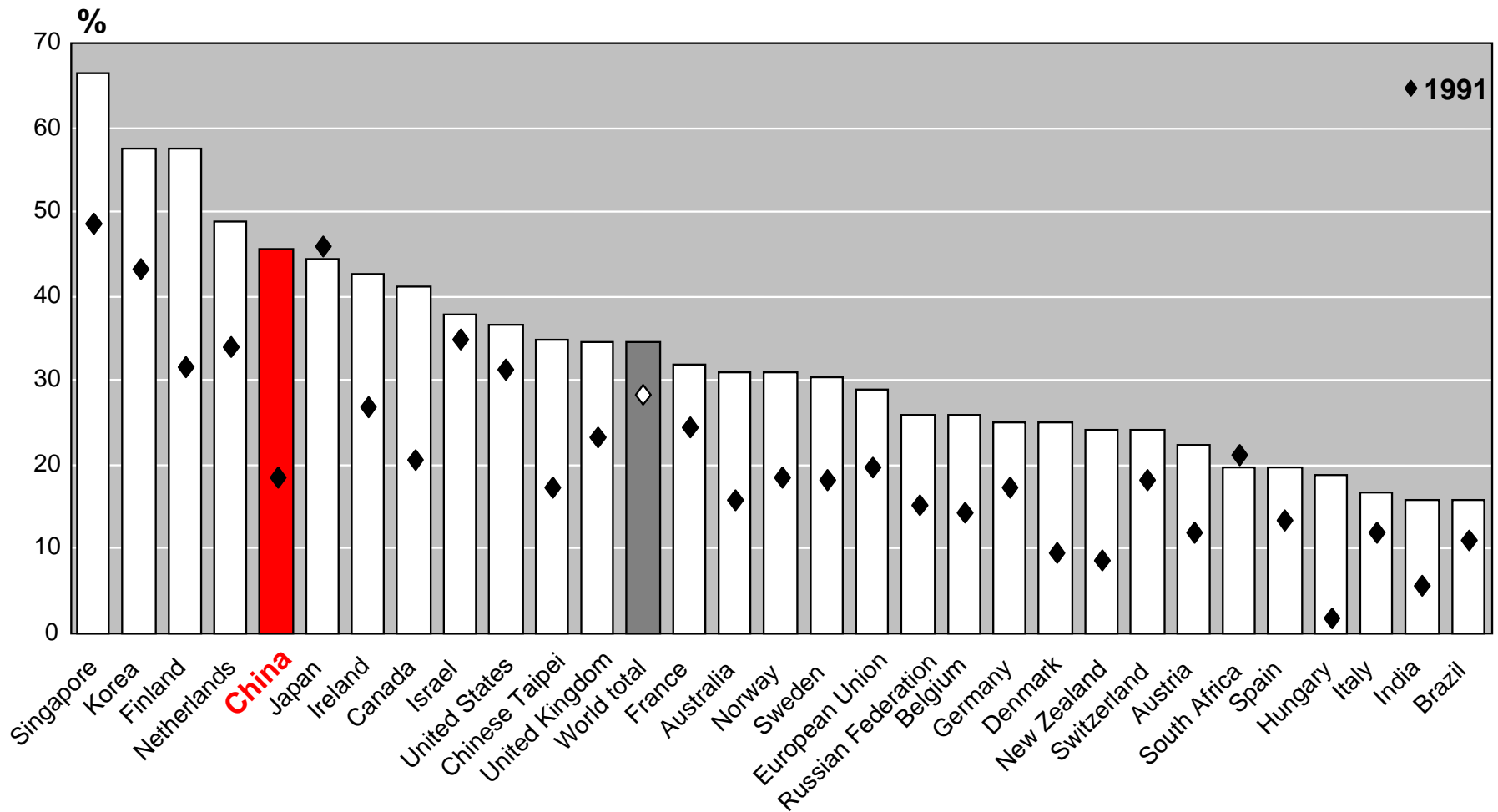
For full details of the IPC codes, see: www.wipo.int/classifications/ipc/en/.

Share of countries in ICT-related patents filed at the European Patent Office (EPO)



Source: OECD, Patent Database, December 2005.

ICT-related patents as a percentage of the national total (EPO), 2002



Note: Patent counts are based on the inventor's country of residence, the priority date and fractional counts. The graph only covers countries/economies with more than 100 EPO applications in 2002.

Source: OECD, Patent Database, December 2005.

This international Field of Science (FOS) standard is used to classify the research and development expenditure and personnel of the government, higher education and private non-profit and business enterprise sectors by field of science and technology (Frascati Manual, 2002)

Proposal for a list of ICT-related fields of science and technology:

Based on the 2006 proposal for a revised Field of Science (FOS) classification (codes and descriptions) in the Frascati Manual [DSTI/EAS/STP/NESTI(2006)19]

1.2 Computer and information sciences

Computer sciences, information science and bioinformatics (hardware development to be 2.2, social aspect to be 5.8);

2.2 Electrical engineering, Electronic engineering, Information engineering

Electrical and electronic engineering; Robotics and automatic control; Automation and control systems; Communication engineering and systems; telecommunications; Computer hardware and architecture;

5.8 Media and communications

Journalism; Information science (social aspects); library science; media and socio-cultural communication;

ICT SKILLS

There is currently no commonly adopted definition of ICT (IT) skills, however there is an effort to characterise the different level of ICT related skills and competencies (OECD; European e-Skills Forum, 2004) to distinguish categories (levels) of ICT skills and competencies:

- **Professional ICT skills (ICT specialists):** ability to use advanced IT tools and/or develop, repair and create them (computer systems analysts, computer programmers, computer software engineers, database administrators, data communication engineers, technical support, systems specialist etc.)
- **Applied ICT skills (ICT advancer users):** ability to apply of advanced, and often sector-specific, software tools.
- **Basic ICT skills (ICT basic users):** ability to use IT for basic tasks and as a generic tool for learning (competent users of generic tools such as Word, Excel, Outlook, PowerPoint).

COMPUTER EXPERTS CLASSIFICATION

Computer experts are defined as persons employed in the national economy whose principal activity comes within the following **occupations** expressed in terms of the International Standard Classification of Occupations, ILO (**ISCO-88 specific groups**) :

1236 Computing services managers

213 COMPUTING PROFESSIONALS

- **2131 Computer systems designers and analysts**
- **2132 Computer programmers**
- **2139 Computing professionals not elsewhere classified**

312 COMPUTER ASSOCIATE PROFESSIONALS

- **3121 Computer assistants**
- **3122 Computer equipment operators**
- **3123 Industrial robot controllers**

**Computer experts are the most important subgroup of the OECD narrow definition of ICT occupations (see next slide).*

Educated in computing field of study:

It includes persons who successfully completed tertiary education (ISCED levels 5B, 5A, 6) in the field of study ISCED code 48 – Computing (computer science: system design, computer programming, data processing, networks, operating systems).

ICT RELATED OCCUPATIONS CLASSIFICATION

So far there is **no internationally agreed list of ICT-related occupations**, however, the following **two definitions** (classifications) of ICT related occupations categories expressed in terms of ISCO-88 classification are **used for OECD analysis**:

Narrow definition of ICT occupations

213 COMPUTING PROFESSIONALS

312 COMPUTER ASSOCIATE PROFESSIONALS

313 OPTICAL AND ELECTRONIC EQUIPMENT OPERATORS

724 ELECTRICAL AND ELECTRONIC EQUIPMENT MECHANICS AND FITTERS

Broad definition of ICT occupations

121: Directors and chief executives

122: Production and operations managers

123: Other specialist managers

211: Physicists, chemists, and related professionals

212: Mathematicians, statisticians and related professionals

213: Computing professionals

214: Architects, engineers, and related professionals

241: Business professionals

242: Legal professionals

243: Archivists, librarians, and related information professionals

312: Computer associate professionals

313: Optical and electronic equipment operators

341: Finance and sales associate professionals

342: Business services agents and trade brokers

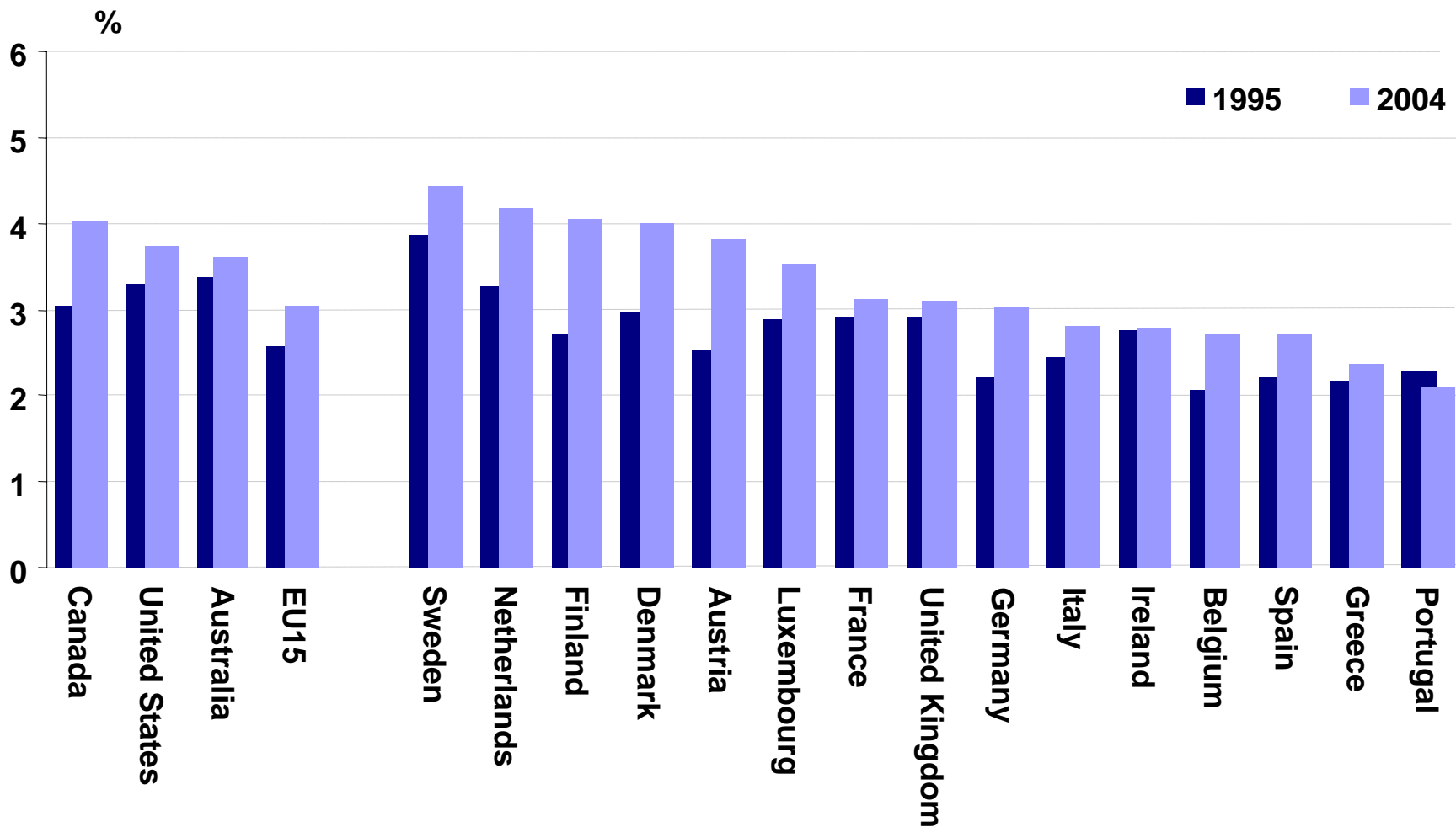
343: Administrative associate professionals

411: Secretaries and keyboard-operating clerks

412: Numerical clerks

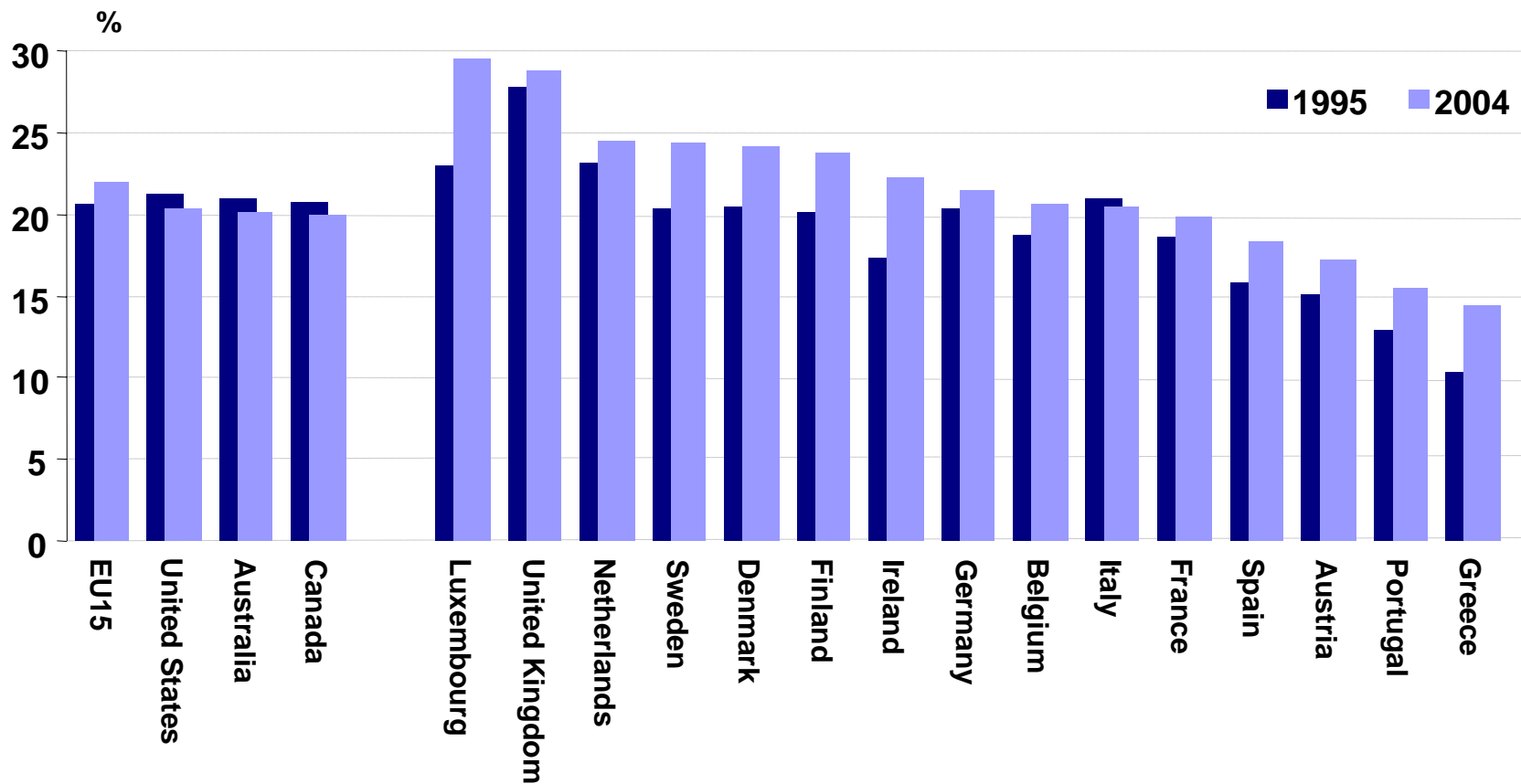
724: Electrical and electronic equipment mechanics and fitters

Share of ICT-related occupations in the total economy, narrow definition; 1995 and 2004



Source: OECD, OECD Key ICT indicators 2006

Share of ICT-related occupations in the total economy, broad definition; 1995 and 2004



Source: OECD, OECD Key ICT indicators 2006

PROPOSED LIST OF ICT OCCUPATIONS IN ISCO-08 (i)

133 Information and communications technology services managers

2356 Information technology trainers

25 INFORMATION AND COMMUNICATION TECHNOLOGY PROFESSIONALS

251 Software and multimedia developers and analysts

2511 Systems analysts

2512 Software developers

2513 Web and multimedia developers

2519 Software and multimedia developers and analysts not elsewhere classified

252 Database specialists and systems administrators

2521 Database designers and administrators

2522 Systems administrators

253 ICT Network and Hardware Professionals

2531 Computer network professionals

2532 Telecommunications engineering professionals

2529 ICT Network and hardware professionals not elsewhere classified

PROPOSED LIST OF ICT OCCUPATIONS IN ISCO-08 (ii)

35 INFORMATION AND COMMUNICATION TECHNICIANS

351 ICT operations and user support technicians

3511 ICT operations technicians

3512 ICT user support technicians

352 Web technicians

3520 Web technicians

353 Applications development and testing technicians

3531 Applications programmers

3532 Systems Testing Technicians

354 Communications Technicians

3541 Broadcasting and recording technicians

3542 Telecommunications engineering technicians

742 Electronics and telecommunications installers and repairers

7421 Electronics fitters

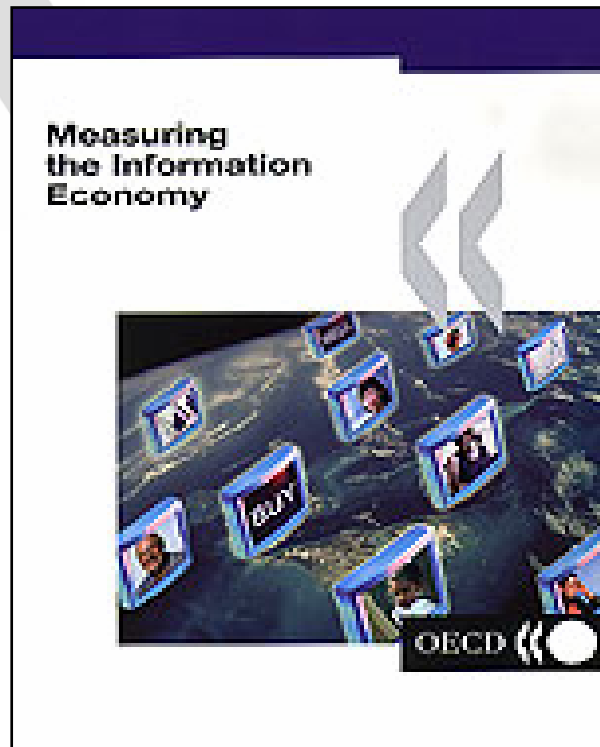
7422 Electronics mechanics and services

7423 Information and communications technology installers and services

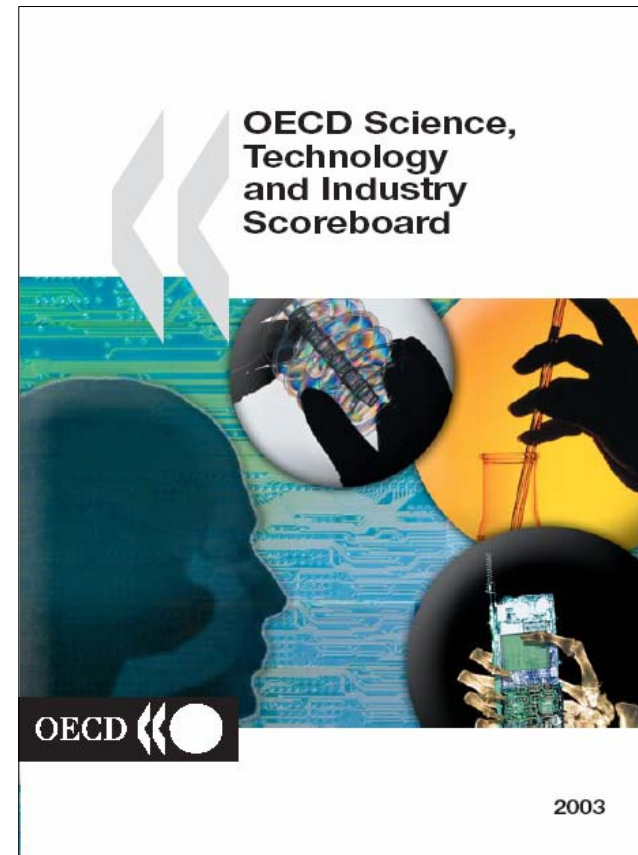
Background papers discussing issues related to health and information and communications technology (ICT) can be downloaded from the following page:

<http://www.ilo.org/public/english/bureau/stat/isco/isco88/aprop.htm>

REFERENCES - Publications



<http://www.oecd.org/sti/measuring-infoeconomy>



<http://www.oecd.org/sti/scoreboard>

REFERENCES - Links to relevant OECD web sites

- <http://www.oecd.org/sti/measuring-infoeconomy>
- The ICT Sector
- OECD Science, Technology and Industry Scoreboard 2005
(<http://www.oecd.org/sti/scoreboard>)
- Guide to Measuring the Information Society
- Resources for the information economy
- OECD Key ICT Indicators

Thank you for your attention



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Please feel free to send me any comments on issues raised in the presentation.