

## Chapter 2

# ICT Products

*This chapter describes definitions and classifications relating to ICT goods and services, measurement of international trade in ICT goods, and the price and quality of ICT products.*

## Introduction

Product statistics and associated classifications play an important role in basic economic analysis. In relation to ICT, the measurement of consumption, domestic production, market size, investments and trade all potentially make use of ICT product<sup>1</sup> data, which includes statistics on:

- international trade in ICT goods and services;
- household expenditure on ICT goods and services;
- business and government current and capital expenditure on ICT goods and services; and
- domestic production of ICT goods and services.

In order to compile statistics on ICT products, statisticians require definitions and classifications. The guiding principles for defining ICT products are based on those for the ICT sector (see Chapter 4). This is reasonable since the latter concept is based on characteristics of products rather than industries. The ICT sector definition was revised in 2006-07, leading to a definition of its products as follows (OECD, 2008):

“ICT products must primarily be intended to fulfil or enable the function of information processing and communication by electronic means, including transmission and display.”

The difficulties in establishing a classification of ICT products had been recognised by the WPIIS since 1998. These difficulties are related to the rapidly changing character of ICT goods and services, challenges in relating the definition to available classifications and the dated nature of product classifications such as the United Nations *Central Product Classification* (CPC).<sup>2</sup>

An ICT goods classification based on the *Harmonized System* used for trade statistics was first agreed by OECD member countries in 2003. It was revised by WPIIS in 2008 and was based on subclasses of the 2008 Central Product Classification, Version 2 (UNSD, 2008). A proposal for a classification of ICT services, based on an earlier draft of the CPC Ver. 2, had been agreed by WPIIS in 2006 (OECD, 2006). During preparation of the ICT goods classification based on the CPC Ver. 2, the ICT services classification was reviewed and amended, resulting in a single ICT product classification. Details of the changes made can be found in Annex 2.A1.

This chapter was revised in 2007, 2009 and 2010, with the main changes reflecting the finalisation of an ICT product classification based on the United Nations Central Product Classification Version 2 (2008) and a correspondence between the goods component of the 2008 ICT product classification and the 2007 Harmonized System (HS), necessary in order to apply the classification to trade statistics, declassified in 2010. Note that the Section, *The price and quality of ICT products* has not been revised.

## The ICT product classification

A history of WPIIS work on developing ICT product classifications can be found in Annex 2.A1. In respect of goods, the main changes between the ICT goods classification of 2003 and the goods component of the ICT product classification of 2008 were:

- the change in the underlying classification (from the HS to the CPC); and
- a narrowing of scope, consistent with the changes to the definition of the ICT sector, to remove from the definition goods that “... use electronic processing to detect, measure and/or record physical phenomena or to control a physical process” (see Chapter 4 and Annex 7.A1 for more information).

The main features of the 2008 ICT product classification, and its relationship with both the ICT sector definition and the Content and media product classification, can be summarised as follows (OECD, 2008):

- One product of the ICT manufacturing industry<sup>3</sup> was excluded from the classification. Four products that are linked to an ICT and a non-ICT manufacturing industry, and two products with one link (of several) to an ICT manufacturing industry, were also excluded.
- Two goods that are not products of an ICT industry were included in the classification based on strong majority support and for consistency with other inclusions. They are *Digital cameras* and *Other recording media, including matrices and masters for the production of disks*.
- All of the products of ICT service industries are in either the ICT or the Content and media product classification.
- Four ICT services were included in the Content and media product classification because the expert group considered that they are more similar to content than ICT. They are the three games software products and *Web search portal content*.
- A small number of services that are not products of ICT industries were included in the ICT product classification for consistency. They are: three leasing or rental services, *Business process management services*, *Engineering services for telecommunications and broadcasting projects* and two ICT installation services.
- The ICT product classification does not have a specific goods/services split (though, for trade statistics purposes, it is clear which products are goods).

In respect of ICT services, a classification based on an early draft of the CPC Ver. 2 was released in early 2007 and later revised when a complete ICT products classification was developed. The changes are explained in some detail in Annex 2.A1.

Annex 2.A1 contains the full list of ICT products and groups them into the broad categories shown in Table 2.1 below.

This broad structure plays an important role in the usefulness of the classification. It is hoped that the structure will allow grouping of product data into broad categories that will be publishable by member countries.

Table 2.1. **Broad level categories for ICT products**

Broad level categories	Number of CPC subclasses (products)
Computers and peripheral equipment	19
Communication equipment	8
Consumer electronic equipment	11
Miscellaneous ICT components and goods	14
Manufacturing services for ICT equipment	5
Business and productivity software and licensing services	11
Information technology consultancy and services	10
Telecommunications services	12
Leasing or rental services for ICT equipment	3
Other ICT services	6
<b>Total</b>	<b>99</b>

### International trade in ICT products

The 2003 classification of ICT goods was based on the international Harmonized System classification of traded goods (HS). It was therefore relatively easy to measure trade in ICT goods using available trade statistics (for example, from the OECD's International Trade in Commodity Statistics Database or the UN's Comtrade Database (UNSD, 2009)).

With the revision of ICT products, this simple link no longer exists. A correspondence between the goods component of the 2008 ICT product classification and the 2007 Harmonized System (HS) is necessary in order to apply the classification to trade statistics. This correspondence was prepared by WPIIS in 2010 and declassified by the Committee for Information, Computer and Communications Policy (ICCP) in October 2010. This provides countries with a revised classification for measuring trade in ICT goods.

Annex 2.A1 contains the correspondence table between the CPC Ver. 2, HS 2007 and HS 2002 classifications for ICT goods.

Because the scope of ICT goods has narrowed compared with 2003 (see discussion above), there will be a break in the time series of ICT trade data.

Data on trade in ICT services are currently limited in their detail compared with data on trade in ICT goods. A revised *Manual on Statistics of International Trade in Services* is due to be released in 2010 and is expected to include a slightly more detailed classification of ICT services. The current services classification used by UNSD in its UN Service Trade Database is the Extended Balance of Payments Services classification (EBOPS), which includes *Computer services* and *Telecommunications services*.

### The price and quality of ICT products

The report of the meeting of the 2002 IAOS Conference *Official Statistics and the New Economy* (ONS, 2002) identified measurement methodologies relating to the price and quality of ICT products as among the most pressing issues in the field of new economy measurement.

While this is an area not directly examined by the WPIIS, it is a topic that concerns OECD, NSOs and other groups such as the Voorburg Group on Services Statistics.

For a brief overview of the conceptual issues relating to the price and quality of ICT products, readers are referred to work by Ahmad, Schreyer and Wölfl (2004) and Pilat,

Ahmad and Schreyer (2004). These papers summarise the challenges involved in constructing price indices for ICT products, which include:

- incorporating the rapid price fall and quality increase of ICT components since about the mid-1990s;
- the use of hedonic functions that link the price of ICT equipment and software to quality characteristics (such as speed and memory); and
- differences between price indices of the three types of software – own account, customised and pre-packaged.

A more detailed OECD study on hedonic indexes, *Handbook on Hedonic Indexes and Quality Adjustments in Price Indexes: Special Application to Information Technology Products*, was published in late 2004 (Triplett, 2004). The *Handbook* was the result of work undertaken by Jack Triplett of the Brookings Institution for the OECD. For the benefit of readers, extracts of relevant parts of the paper have been included as a short article below.

### ***Hedonic indexes and quality adjustments in price indexes for IT products***

#### ***Introduction***

The objective of the *Handbook on Hedonic Indexes and Quality Adjustments in Price Indexes: Special Application to information Technology Products* is to “contribute to a better understanding of the merits and shortcomings of conventional and hedonic methods, and to provide an analytic basis for choosing among them”. It compares and contrasts the logic and statistical properties of hedonic methods and conventional methods and the results of employing them in different circumstances. In Chapter IV, it reviews empirical evidence on the difference that alternative methods make in practice, and offers an evaluation framework for determining which is better. In Chapters III, V, and VI, the handbook sets out principles for “best practice” hedonic indexes. These principles are drawn from experience with hedonic studies on a wide variety of products. Although most of the examples in the handbook are drawn from ICT products, the principles in it are very general and apply as well to price indexes for non-ICT products that experience rapid quality change, and also to price indexes for services, which are affected by quality changes fully as much as price indexes for goods. Some objections that have been raised to hedonic indexes are presented and analysed in Chapter VII. An appendix discusses issues of price index theory that apply to quality change, and presents the economic theory of hedonic functions and hedonic price indexes.

The *Handbook* project was initiated by the Statistical Working Party of the OECD’s Industry Committee.<sup>4</sup> Its objectives are to:

- provide an accessible guide to the different approaches towards constructing ICT deflators, to permit officials involved in producing and using them to make informed choices;
- discuss, in particular, some of the arguments that have surrounded the construction and use of hedonic methods in deriving price indices and compare them with more traditional practices; and
- improve international harmonisation by increasing transparency about different country practices in this field and by providing methodological guidance for new work.

Deflators for output, input, and investment – for producing productivity measures or value added in national accounts – are derived primarily from price indexes estimated by

statistical agencies. Whether the deflators are consumer (retail) price indexes (CPI or RPI) or producer (wholesale) price indexes (PPI or WPI), quality change has long been recognised as perhaps the most serious measurement problem in estimating price indexes.

In national accounts, any error in the deflators creates an exactly equivalent error of opposite sign in the real output, real input, real investment and real consumption measures (which are referred to in the *Handbook* as “quantity indexes”). For this reason, discussing the problems posed by quality change in price indexes is the same thing as discussing the problems of quality change in quantity indexes, and therefore in measures of productivity change as well.

Different quality adjustment methodologies are employed for ICT products across OECD countries, and they seemingly make large differences in the trends of price movements for these products. A Eurostat Task Force (Eurostat, 1999), reviewing ICT indexes for the early 1990s, found a smaller dispersion among European countries’ ICT deflators. But still, price declines recorded by national computer deflators in Europe ranged from 10% to 47%, and again, the largest price decline was based on a hedonic price index (France). The Task Force calculated that price variation in this range could affect GDP growth rates by as much as 0.2%-0.3% per year, depending on the size of a country’s ICT sector. International comparisons of productivity growth would be affected by approximately the same magnitude.

If different quality adjustment procedures among OECD countries make the data non-comparable, then the measured growth of ICT investment and of ICT capital stocks will not be comparable either. Data non-comparability for ICT deflators, investment and capital stocks therefore creates serious limitations to making international comparisons of economic growth and understanding international differences in productivity trends and levels and sources of growth. When ICT data are not internationally comparable, estimates of the impact of ICT on economic growth in different OECD countries have limited, if any, meaningfulness.

The *Handbook* reviews the methods employed in price indexes to adjust for quality change. A natural division is between “conventional” methods typically employed by the statistical agencies of many OECD countries (discussed in Chapter II), and hedonic methods for adjusting for quality change (alternatively known as hedonic price indexes). The latter have a prominent place in price indexes for ICT products in several OECD countries. Hedonic methods for producing quality-adjusted price indexes are reviewed in Chapter III. The *Handbook* also sets out principles for “best practice” hedonic indexes (in Chapters III, V, and VI). These principles are drawn from experience with hedonic studies on a wide variety of products.

### **Conventional price index methodology**

Agencies that estimate price indexes employ, nearly universally, one fundamental methodological principle. The agency chooses a sample of sellers (retail outlets in the case of consumer price indexes, or CPIs, producers for producer price indexes, or PPIs) and of products. It collects a price in the initial period for each of the products selected. Then, at some second period, it collects the price for exactly the same product, from the same seller, that was selected in the initial period. The price index is computed by matching the price for the second period with the initial price, observation by observation, or “model by model”.

The full rationale for this “matched model” methodology is seldom explicitly stated, and its advantages are not always fully appreciated. Matching, it is well known, is a device

for holding constant the quality of the goods and services priced for the index. Indeed, one significant source of price index error occurs when the matching methodology breaks down for some reason – some undetected change in the product makes the match inexact or the product observed in the initial period disappears and cannot be matched in the second. These situations impart quality change errors into the ostensibly matched price comparisons. Analysis of quality change errors is a major topic of the *Handbook*.

Another aspect of the matched model methodology is less commonly perceived. Matching also holds constant many other price determining factors that are usually not directly observable. For example, matching on sellers holds constant, approximately, retailer characteristics such as customer service, location, or in-store amenities for CPI price quotations. For the PPI, matching holds constant, again approximately, unobserved reliability of the product, the reputation of the manufacturer for after-market service, willingness to put defects right or to respond to implicit warranties, and so forth. Although controlling for quality change is one of its objectives, matching the price quotes model by model is not just a methodology for holding quality constant in the *items selected for pricing*. It is also a methodology for holding constant non-observable aspects of the *transactions* that might otherwise bias the measure of price change.

The problem of quality change potentially arises in price indexes whenever transactions are not homogeneous. It thus affects all price indexes, not just price indexes for high technology products, or price indexes for goods and services that are thought, by some measure, to experience rapid quality change. Even if the product is homogeneous, *transactions* are not homogeneous and it is transactions that matter in a price index. The matched model method is a device that is intended to hold constant the characteristics of transactions.

Moreover, buyers switch from one seller to another in search of a more favourable price/service combination. For example, personal computers (PCs) are increasingly sold over the Internet, rather than in retail computer stores. Consumers on average evidently value the retailing services provided by “brick and mortar” stores by less than the price differential between them and online sellers. When buyers switch between distribution outlets, they may experience true price changes that are more favourable than the ones that the matched model, matched-outlet method measures.

Some methods that have been proposed for computing quality-adjusted price indexes imply modifying or replacing the matched model methodology. Price index agencies have been reluctant to adopt alternatives that require abandoning the matched model methodology.

### **Hedonic price index methodology**

According to the *Handbook* “A *hedonic price index* is **any** price index that makes use of a *hedonic function*. A *hedonic function* is a relation between the prices of different varieties of a product, such as the various models of personal computers, and the quantities of *characteristics* in them.” As implied by this definition, hedonic indexes may be computed in a number of ways. For example, a hedonic function for computer equipment is typically estimated using an ordinary least squares regression and describes a relationship between, at a minimum, price, speed and memory.

Four major methods of calculating hedonic price indexes have been developed for estimating ICT price indexes. Each of these methods uses a different kind of information

from the hedonic function. The first two described in the *Handbook* (the “time dummy variable method” and the “characteristics price index method”) are sometimes referred to as “direct” methods, because all their price information comes from the hedonic function; no prices come from an alternative source. Direct methods require that a hedonic function be estimated for each period for which a price index is needed.

The second two hedonic price index methods (the “hedonic price imputation method” and the “hedonic quality adjustment method”) have been described as “indirect” or “composite” methods. They are often called “imputation” methods, because the hedonic function is used only to impute prices or to adjust for quality changes in the sample of computers in cases where matched comparisons break down. The rest of the index is computed according to conventional matched model methods, using the prices that are collected in the statistical agency’s usual sample.

The *Handbook* describes the four methods in detail and compares them with each other and with conventional methods. In practice, statistical agencies that have implemented hedonic indexes have mostly used the hedonic quality adjustment method, partly because of the necessity for producing a timely index. The hedonic quality adjustment method can be estimated using a hedonic function from a prior period, where the dummy variable method (and other methods) requires the current period’s hedonic function as well. But there is no reason why the dummy variable method should not be employed when it is feasible. Its major liability is the difficulty in introducing weights into the dummy variable index.

For more information, readers are referred to the *Handbook*, available on line at: [www.oecd.org/dataoecd/37/31/33789552.pdf](http://www.oecd.org/dataoecd/37/31/33789552.pdf).

## Notes

1. “Product” refers to both goods and services. An alternative term for “product” which is sometimes used is “commodity”.
2. This is less of an issue for the 2008 version of the ICT product classification as it is based on the CPC Version 2, completed in 2008.
3. A product is taken to be a product of an industry if its CPC code (subclass) is linked (in the CPC) to the ISIC class representing that industry.
4. Now the Committee on Industry, Innovation and Entrepreneurship (CIIE).

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## ANNEX 2.A1

## OECD Classifications of Information Economy Products

### Introduction

The OECD information economy product classifications have been developed in stages, commencing with an ICT goods classification in 2003. In 2006, the first ICT services classification was released and in late 2008, a complete set of information economy products, based on the Central Product Classification Ver. 2 was agreed (OECD, 2008). It was revised slightly in January 2009 because of a number of small changes made to the underlying classification (the CPC Ver. 2) in late 2008. In 2010, a correspondence table between the CPC Ver. 2, HS 2007 (World Customs Organization, 2007) and HS 2002 classifications for ICT goods was agreed.

This annex includes the ICT and Content and media product classifications agreed in 2008 and finalised in early 2009. They are based on the final version of the United Nations Central Product Classification Ver. 2. Also included is a correspondence table between the CPC Ver. 2, HS 2007 and HS 2002 classifications for ICT goods finalised in 2010.

The 2008 CPC list includes both *ICT* products and *Content and media* products. Both lists include goods as well as services.

As Figure 2.A1.1 illustrates, the information economy classifications were developed separately – and at different times. The main reasons for this were:

- the lack of appropriate international standard classifications; in particular an ICT services classification only became possible once the CPC Ver. 2 was developed; and
- the lack of an agreed definition of the Content and media sector and associated guiding principles effectively prevented development of a classification of content and media products until 2006; in addition, the underlying product classification, the CPC, was not sufficiently detailed to support the classification until Ver. 2 was developed.

Figure 2.A1.1 provides a diagrammatic representation of the sector and product information economy definitions and classifications produced by WPIIS over time. Note, a split between ICT goods and services is shown in this diagram for comparative purposes. However, there is no actual split in the ICT product definition.

Figure 2.A1.1. **OECD information economy sectoral and product definitions**

Year	Sectoral definitions	Product definitions
1998	First ICT sector definition (based on ISIC Rev. 3)	
2002	Revised ICT sector definition (based on ISIC Rev. 3.1)	First ICT goods classification (based on HS 1996/2002)
2003		
2007	Second ICT sector definition (based on a late draft of ISIC Rev. 4)	First content and media sector def. (based on a late draft of ISIC Rev. 4)
2007		First ICT services classification (based on an early draft of CPC Ver. 2)
2008		First content and media product class. (based on a late draft of CPC Ver. 2)
2008		Revisions to 2007 ICT services (based on a late draft of CPC Ver. 2)
2008		Second ICT good classification (based on a late draft of CPC Ver. 2)
2010		ICT product classification
2010		Information economy product classifications
2010		Information economy product classifications (Correspondence: CPC Ver.2 HS 2007 – HS 2002)

Source : OECD, DSTI/EAS.

## ICT product classifications

The words “list” and “definition” have also been used to describe the information economy product classifications. They are generally equivalent. In this *Guide*, “definition” in the context of product classifications has been used to describe the guiding principle, rather than the set of categories (which is described as a “classification”).

### ICT goods

The main reason to have a classification of ICT goods is to facilitate the construction of internationally comparable indicators on ICT consumption, investment, trade and production. The first OECD classification of ICT goods was finalised in December 2003 (OECD, 2003). It was limited to goods because, the only available international standard at that time, the UN’s Central Product Classification (Ver. 1.1), made no mention of core ICT services such as web hosting and application provisioning. It may be found in the 2005 edition of the *Guide* along with information on its development.

WPIIS work on an ICT goods classification started in 1998. Several papers were written on this topic by Eurostat and discussed over the 1998-2000 period at meetings of the WPIIS. At its meeting in May 2003, the WPIIS discussed a revised list of ICT goods – presented by Canada. Comments made during and after the meeting were taken into consideration in drafting the final list. The draft list discussed at the May 2003 WPIIS meeting was expressed in terms of the Harmonized System (HS) 1996 classification. The final 2003 list was also expressed in terms of HS 2002. Only a small number of categories were affected by the change. The proposal was declassified by ICCP on 15 December 2003 (OECD, 2003).

The guiding principles used to develop the 1998 ICT sector definition (and its revision of 2002) were applied to the 2003 ICT goods classification. This was appropriate given that

these principles emphasised the intended use or functionality of products. The guiding principle for the delineation of the ICT sector led 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 was the widely used Harmonized System (HS) used for trade statistics. Table 2.A1.3. at the end of this annex shows a correspondence table between the CPC Ver. 2, HS 2007 and HS 2002 classifications for ICT goods finalised in 2010.

The new list of ICT goods for trade analysis takes into account the new OECD definition of ICT products (2008) and the changes in the international classification of trade in goods (HS 2007). The list, developed by a WPIIS expert group was derestricted in 2010.

After consultations an agreement on a common correspondence table and a common way to disaggregate the ICT goods groups was reached. The consensus was based on the following principles:

- To use the 2008 definition of ICT products (*Guide to Measuring the Information Society 2009*) to analyse ICT goods trade for the period 1996-2008 and not to use the old 2003 definition anymore.
- To use the HS 2007 and HS 2002 items lists to fit the CPC rev. 2 definition. To include the item “Video game consoles” [950410] to the HS 2007 and HS 2002 lists. It was agreed, following a discussion among the WPIIS Delegates, to include the item “Video game consoles” [950410] to the HS 2007 and HS 2002 ICT goods list. There were good arguments either to leave the item out of the ICT goods list or to include it. The argument to leave the item out of the ICT goods list was that Video game consoles have hardware and a software component. As the software component value will be greater than the hardware component it should be excluded from the ICT goods list and be classified only in the software list. The argument to include it in the ICT goods list was that Video game consoles are valuable goods which have complex connectivity functions which allow some models to connect to the Internet, access emails and read DVD in addition to play video games. These goods can be considered as converging media access devices.
- To use the “block of items time series” concept as a solution to bridge the HS 2007 and HS 2002 classifications. This procedure entails grouping items in the smallest group possible and concerns items where “one to one” correspondence is not possible because of “one to many”, or “many to many” correspondences.
- To split the former Group D – Miscellaneous into two groups: D – Electronic components and E-Miscellaneous.
- To provide an estimate of the value of “old” ICT goods over the 1996-2008 period in order to reconcile the time series based on the old and the new definitions.

### **ICT services**

Complementing the 2003 ICT goods classification, there was an obvious need for an ICT services classification. In the case of service products, the most obvious international standard is the UN's Central Product Classification (CPC).

At the WPIIS meeting of April 2004, Statistics Canada presented a proposal for an ICT services classification based on the North American Product Classification System (NAPCS) (OECD, 2004). The concept underlying the list of ICT industries was used to develop the list of ICT services. As for ICT goods, this is considered reasonable since the industry concept is based on characteristics of products.

The 2004 WPIIS meeting agreed to forward the Canadian proposal to the United Nations Technical Subgroup (of the Expert Group on International Economic and Social Classifications), subject to minor changes, so that it could be taken into account for the 2007 revision of the CPC. Most of the WPIIS proposed changes were adopted and included in a draft of the revised CPC that was circulated for comment in July 2005. The UN Statistical Commission adopted an amended structure at its March 2006 meeting, with the essence of the WPIIS proposal retained – except for software, which appears in different areas of the CPC, depending on its nature and mode of delivery.

An ICT services classification based on an early draft version of the CPC Ver. 2 was developed in 2006 and released in 2007. It was subsequently amended in the course of development of a complete ICT products classification (which was based on a later version of the CPC Ver. 2).

### **A complete set of information economy products**

The ICT sector definition was revised in 2006 (and released in 2007), when ISIC Rev. 4 became available. A definition of a Content and media sector was developed in conjunction with the ICT sector, also based on ISIC Rev. 4. The information economy sectoral definitions can be found in Annex 7.A1. Agreement on the information economy sectors led the way to development of a set of information economy products.

The same expert group that worked on the information economy sectoral definitions developed the product classifications, with some changes in membership. In respect of the principles used to determine the product lists, the assumption was made that products of the information economy sector should be included, and that products that are not output of the sector should be excluded, unless there is a compelling case for their exclusion/inclusion respectively. A product is taken to be a product of an industry if its CPC Ver. 2 code (subclass) is linked (in the CPC) to the ISIC class representing that industry.

Members of the expert group were amenable to taking a majority approach to reach agreement. A product was included where a strong majority view prevailed, irrespective of the corresponding industry. Where the majority was not so clear, other considerations were taken into account.

### **The ICT product classification**

The following guiding principle was used to identify ICT products (it is adapted from the agreed guiding principle for the ICT sector):

“ICT products must primarily be intended to fulfil or enable the function of information processing and communication by electronic means, including transmission and display.”

The main features of the ICT product classification can be summarised as follows (OECD, 2008a):

- One product of the ICT manufacturing industry was excluded from the ICT products list. It is *Connectors for optical fibres, optical fibre bundles or cables* and is linked to the ISIC class 2610 (Manufacture of electronic components and boards). The exclusion followed agreement by the expert group to exclude the related product *Optical fibres and optical fibre bundles; optical fibre cables (except those made up of individually sheathed fibres)*, etc.
- Four products that are linked to an ICT and a non-ICT manufacturing industry were excluded with the strong majority support of the expert group, and two products with one link (of several) to an ICT industry were also excluded.
- Two goods that are not products of an ICT industry were included, based on strong majority support and for consistency with other inclusions. They are *Digital cameras* and *Other recording media, including matrices and masters for the production of disks*.
- All of the products of ICT services industries are in either the ICT or the Content and media products list.
- Several ICT services were included in the Content and media products list because the expert group considered that they are more similar to content than ICT. They are the three games software products (38582, 47822 and 84391) of ISIC class 5820 (Software publishing) and the web portals industry product, *Web search portal content*.
- A small number of services that are not products of ICT industries were included in the ICT products list. They are: three ICT leasing or rental services, *Business process management services*, *Engineering services for telecommunications and broadcasting projects* and two ICT installation services.
- The ICT product classification does not have a specific goods/services split (though for trade statistics purposes, it is clear which products are goods).

The specific issues that arose during the expert group's deliberations on the ICT products list and their resolution were as follows:

- ICT manufacturing services (where physical inputs are owned by others). These are shown as products of the relevant ICT manufacturing industries. The question of whether such services are ICT goods or services was debated but the issue was effectively resolved by including the five ICT manufacturing services subclasses in a broad category (Manufacturing services for ICT equipment) within the ICT product definition (that is, not splitting the ICT products list into ICT goods and ICT services).
- *Burglar or fire alarms and similar apparatus*. There was some debate on the inclusion or exclusion of this product. It was ultimately included because it is a product of the ICT sector.
- Exclusion of products with links to both ICT and a non-ICT industries. It was considered that such products should be included or excluded based on their nature rather than a link to an ICT industry. As a consequence, four products that are linked to an ICT and a non-ICT manufacturing industry were excluded, with strong majority support of the expert group. They are electrical capacitors, resistors and their parts. Two products with one link (of several) to an ICT industry have also been excluded. They are: *Parts and accessories for the goods of subclasses 45141, 45142 and 45160 (except covers, carrying cases and the like)* and *Parts for the goods of subclasses 46910, 46921 and 46929; electrical parts n.e.c. of*

*machinery or apparatus* (for both these subclasses, only one of the three cited products is an ICT product).

- Inclusion of products without a link to ICT industries. Several goods were proposed as ICT products even though they are not products of the ICT sector. These products were debated by the expert group and most were ultimately excluded. The excluded products are the electrical apparatus product, 46212, and co-axial and optical fibre cables (46320 and 46360 respectively). Two out-of-industry products were included in the list based on strong majority support. They are *Digital cameras* and *Other recording media, including matrices and masters for the production of disks*.
- ICT installation services. *Installation services of personal computers and peripheral equipment* is a product of the ICT sector but was not included in the original ICT services definition. The expert group agreed to include it in the ICT product definition, along with two other installation services (covering installation of mainframe computers and radio, television and communications equipment) for consistency, even though these are not products of the ICT sector.
- *Maintenance and repair services of computers and peripheral equipment* (87130) was included in the original ICT services definition but the related product *Maintenance and repair services of telecommunication equipment and apparatus* (87153) was not. Both are products of the ICT sector and the expert group agreed that they should both be in the ICT products list. The group was divided on whether to include 87155 *Maintenance and repair services of consumer electronics*, a product of ISIC class 9521 that was excluded from the ICT sector for largely pragmatic reasons. It was ultimately agreed to exclude it from the product classification given that it is an out-of-industry product and there was not strong support for its inclusion.
- ICT leasing or rental services (subclasses 73123, 73124, 73125 and 73210). There are no corresponding industries in the ICT sector definition. However, 73123 and 73124 were included in the original ICT services classification. The inclusion of 73123 (*Leasing or rental services concerning office machinery and equipment (excl. computers) without operator*) was reviewed by the expert group and excluded because it was considered too broad. However, two other leasing or rental services were included (*Leasing or rental services concerning telecommunications equipment without operator* – 73125, and *Leasing or rental services concerning televisions, radios, video cassette recorders and related equipment and accessories* – 73210).
- The expert group agreed to include *Engineering services for telecommunications and broadcasting projects* (83325) in the ICT product list (it is not a product of the ICT sector, nor included in the original ICT services classification). The group agreed to retain the subclass *Business process management services* (83117), which was in the original ICT services classification but is not a product of the ICT sector.
- There are several wholesale trade services subclasses in the CPC that relate to ICT and Content and media products. None of these is included in the IE product classifications for the following reasons: the value of wholesale trade services will generally be included in the value of goods transactions; and it is likely that, statistically, wholesale trade services are not distinguishable by type. Retail trade services are excluded as well, in this case because retail trade industries are specifically excluded from the sectoral definitions.

The ICT product classification has 10 broad categories and 99 products. Table 2.A1.1 below shows the complete classification as revised in January 2009.

Table 2.A1.1. ICT products

CPC Ver. 2 subclass	ISIC Rev. 4 class	Product description (CPC subclass title)
<b>Computers and peripheral equipment</b>		
45142	2620	Point-of-sale terminals, ATMs and similar machines
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
45289	2620	Other units of automatic data processing machines
45290	2620	Parts and accessories of computing machines
47315	2620	Monitors and projectors, principally used in an automatic data processing system
47550	2620	Solid-state non-volatile storage devices
<b>Communication equipment</b>		
46921	2630	Burglar or fire alarms and similar apparatus
47211	2630	Transmission apparatus incorporating reception apparatus
47212	2630	Transmission apparatus not incorporating reception apparatus
47213	2630	Television cameras
47221	2630	Line telephone sets with cordless handsets
47222	2630	Telephones for cellular networks or for other wireless networks
47223	2610, 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 (such as a local or wide area network)
47401	2630	Parts for the goods of subclasses 47221 to 47223
<b>Consumer electronic equipment</b>		
38581	2640	Video game consoles
47214	2640	Video camera recorders
47215	2670	Digital cameras
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
47314	2640	Monitors and projectors, not incorporating television reception apparatus and not principally used in an automatic data processing system
47321	2640	Sound recording or reproducing apparatus
47323	2640	Video recording or reproducing apparatus
47330	2640	Microphones and stands therefor; loudspeakers; headphones, earphones and combined microphone/speaker sets; audio-frequency electric amplifiers; electric sound amplifier sets
47402	2640	Parts for the goods of subclasses 47321, 47323 and 47330
<b>Miscellaneous ICT components and goods</b>		
45281	2610	Sound, video, network and similar cards for automatic data processing machines
47130	2610	Printed circuits
47140	2610	Thermionic, cold cathode or photo-cathode valves and tubes (including cathode ray tubes)



Table 2.A1.1. ICT products (cont.)

CPC Ver. 2 subclass	ISIC Rev. 4 class	Product description (CPC subclass title)
47150	2610	Diodes, transistors and similar semi-conductor devices; photosensitive semi-conductor devices; light emitting diodes; mounted piezo-electric crystals
47160	2610	Electronic integrated circuits
47173	2610	Parts for the goods of subclasses 47140 to 47160
47403	2630, 2640, 2651	Parts for the goods of subclasses 47211 to 47213, 47311 to 47315 and 48220
47530	2680	Magnetic media, not recorded, except cards with a magnetic stripe
47540	2680	Optical media, not recorded
47590	3290	Other recording media, including matrices and masters for the production of disks
47910	2680	Cards with a magnetic stripe
47920	2610	"Smart cards"
48315	2610, 2670	Liquid crystal devices n.e.c.; lasers, except laser diodes; other optical appliances and instruments n.e.c.
48354	2610, 2670	Parts and accessories for the goods of subclass 48315
<b>Manufacturing services for ICT equipment</b>		
88741	2610	Electronic component and board manufacturing services
88742	2620	Computer and peripheral equipment manufacturing services
88743	2630	Communication equipment manufacturing services
88744	2640	Consumer electronics manufacturing services
88749	2680	Magnetic and optical media manufacturing services
<b>Business and productivity software and licensing services</b>		
47811	5820	Operating systems, packaged
47812	5820	Network software, packaged
47813	5820	Database management software, packaged
47814	5820	Development tools and programming languages software, packaged
47821	5820	General business productivity and home use applications, packaged
47829	5820	Other application software, packaged
73311	5820	Licensing services for the right to use computer software
83143	5820	Software originals
84341	5820	System software downloads
84342	5820	Application software downloads
84392	5820	On-line software
<b>Information technology consultancy and services</b>		
83117	7020	Business process management services
83131	6202	IT consulting services
83132	6202	IT support services
83141	6201	IT design and development services for applications
83142	6202	IT design and development services for networks and systems
83151	6311	Website hosting services
83152	6311	Application service provisioning
83159	6311	Other hosting and IT infrastructure provisioning services
83161	6202	Network management services
83162	6202	Computer systems management services
<b>Telecommunications services</b>		
84110	6110, 6120	Carrier services
84121	6110	Fixed telephony services – access and use
84122	6110	Fixed telephony services – calling features
84131	6120, 6130	Mobile telecommunications services – access and use
84132	6120, 6130	Mobile telecommunications services – calling features
84140	6110, 6120, 6130, 6190	Private network services
84150	6110, 6120, 6130, 6190	Data transmission services
84190	6110, 6120, 6130, 6190	Other telecommunications services
84210	6110	Internet backbone services

Table 2.A1.1. **ICT products** (cont.)

CPC Ver. 2 subclass	ISIC Rev. 4 class	Product description (CPC subclass title)
84221	6110, 6120, 6130, 6190	Narrowband Internet access services
84222	6110, 6120, 6130, 6190	Broadband Internet access services
84290	6110, 6120, 6130, 6190	Other Internet telecommunications services
<b>Leasing or rental services for ICT equipment</b>		
73124	7730	Leasing or rental services concerning computers without operator
73125	7730	Leasing or rental services concerning telecommunications equipment without operator
73210	7729	Leasing or rental services concerning televisions, radios, video cassette recorders and related equipment and accessories
<b>Other ICT services</b>		
83325	7110	Engineering services for telecommunications and broadcasting projects
87130	9511	Maintenance and repair services of computers and peripheral equipment
87153	9512	Maintenance and repair services of telecommunication equipment and apparatus
87331	3320	Installation services of mainframe computers
87332	6209	Installation services of personal computers and peripheral equipment
87340	3320	Installation services of radio, television and communications equipment and apparatus

Note: The CPC codes, titles and ISIC links presented above are from the 31 December 2008 version of the Central Product Classification (Ver. 2). In the unlikely case of further changes to the CPC, the final official codes, titles and ISIC links will prevail.

### **The Content and media product classification**

The following guiding principle was used to identify Content and media products (adapted from the definition used to determine the Content and media sector):

Content corresponds to an organised message intended for human beings published in mass communication media and related media activities. The value of such a product to the consumer does not lie in its tangible qualities but in its information, educational, cultural or entertainment content.

The main features of the Content and media products classification can be summarised as follows (OECD, 2008):

- All of the products of the Content and media sector were included in the list.
- Four products of the ICT sector were included in the Content and media products list. They are the three games software products and, the product, *Web search portal content* (see ICT products for details).
- Four products that are not from the Content and media (nor ICT) sector were included in the Content and media products list based on majority support and consistency arguments.

The specific issues that arose during the expert group's deliberations on the Content and media products list and their resolution were as follows:

- The inclusion of ICT sector products in the Content and media products list. Four products of the ICT sector were included in the Content and media products list, with the strong agreement of expert group members. The three games software products (38582, 47822 and 84391) are products of ISIC class 5820 (Software publishing). The expert group agreed that such software is more similar to content than ICT. The ICT sector product, *Web search portal content* was included in the Content and media product list as it is considered to be a content, rather than an ICT, product.

- The interpretation of the term “related media activity” in the guiding principle. This covered products such as “sale of advertising space” and “licensing services”. Most are products of the Content and media sector and were included in the classification. Three products that are not from the Content and media (nor ICT) sector were included, for consistency. They are: *Full service advertising* and *Purchase or sale of advertising space or time, on commission* (both products of 7310, Advertising), and *Advertising and related photography services*, which is a product of 7420 (Photographic activities).
- Whether some of the products of 5819 *Other publishing activities* complied with the guiding principle, that is whether they are an “... organised message intended for human beings published in mass communication media ...”. Ultimately, all of these products were included.
- *Leasing or rental services concerning video tapes and disks* (subclass 73220). There is no corresponding industry in the Content and media sector and the group thought that the product is equivalent to a retail service so excluded it from the Content and media products list.
- Originals. There are several products in the CPC that can be described as “content originals”. These constitute the original source of “content” and most have been included. Those excluded were not products of the Content and media sector and were considered marginal by the expert group (the products: *Photographic plates, film, paper, paperboard and textiles, exposed but not developed*, *Photographic plates and film, exposed and developed, other than cinematographic film*; and *Paintings, drawings and pastels; original engravings, prints and lithographs; original sculptures and statuary, in any material*). One original product that is not a product of the Content and media sector has been included – *Original works of authors, composers and other artists except performing artists, painters and sculptors*, a product of ISIC class 9000.
- Wholesale and retail trade services relating to Content and media products were excluded. See the discussion under ICT products above.

The Content and media product classification has six broad level categories and 74 products. Table 2.A1.2. below shows the complete classification as revised in January 2009.

Table 2.A1.2. **Content and media products**

CPC Ver. 2 subclass	ISIC Rev. 4 class	Product description (CPC subclass title)
<b>Printed and other text-based content on physical media, and related services</b>		
32210	5811	Educational textbooks, in print
32220	5811	General reference books, in print
32230	5812	Directories, in print
32291	5811	Professional, technical and scholarly books, in print
32292	5811	Children's books, in print
32299	5811	Other books n.e.c., in print
32300	5813	Newspapers and periodicals, daily, in print
32410	5813	General interest newspapers and periodicals, other than daily, in print
32420	5813	Business, professional or academic newspapers and periodicals, other than daily, in print
32490	5813	Other newspapers and periodicals, other than daily, in print
32511	5811	Maps and hydrographic or similar charts (including wall maps, topographical plans and maps for globes), printed, other than in book-form
32530	5819	Printed or illustrated postcards; printed cards bearing personal greetings or messages, with or without envelopes or trimmings
32540	5819	Printed pictures, designs and photographs
32620	5819	Trade advertising material, commercial catalogues and the like

Table 2.A1.2. **Content and media products** (cont.)

CPC Ver. 2 subclass	ISIC Rev. 4 class	Product description (CPC subclass title)
32630	5819	Transfers (decalcomanias) and printed calendars
47691	5811	Audio books on disk, tape or other physical media
47692	5811, 5812, 5813	Text-based disks, tapes or other physical media
83631	5812, 5813	Sale of advertising space in print media (except on commission)
<b>Motion picture, video, television and radio content, and related services</b>		
38950	5911	Motion picture film, exposed and developed, whether or not incorporating sound track or consisting only of sound track
47620	5911	Films and other video content on disks, tape or other physical media
83632	6010, 6020	Sale of TV/radio advertising time (except on commission)
84611	6010	Radio broadcast originals
84612	6020	Television broadcast originals
84621	6010	Radio channel programmes
84622	6020	Television channel programmes
84631	6010, 6020	Broadcasting services
84632	6010, 6020	Home programme distribution services, basic programming package
84633	6010, 6020	Home programme distribution services, discretionary programming package
84634	6010, 6020	Home programme distribution services, pay-per-view
96121	5911, 6020	Motion picture, videotape and television programme production services
96122	5920, 6010	Radio programme production services
96123	5911, 5920	Motion picture, videotape, television and radio programme originals
96131	5912	Audiovisual editing services
96132	5912	Transfers and duplication of masters services
96133	5912	Colour correction and digital restoration services
96134	5912	Visual effects services
96135	5912	Animation services
96136	5912	Captioning, titling and subtitling services
96137	5920	Sound editing and design services
96139	5912	Other post-production services
96140	5913	Motion picture, videotape and television programme distribution services
96150	5914	Motion picture projection services
<b>Music content and related services</b>		
32520	5920	Music, printed or in manuscript
47610	5920	Musical audio disks, tapes or other physical media
96111	5920	Sound recording services
96112	5920	Live recording services
96113	5920	Sound recording originals
<b>Games software</b>		
38582	5820	Software cartridges for video game consoles
47822	5820	Computer game software, packaged
84391	5820	On-line games
<b>On-line content and related services</b>		
73312	5812	Licensing services for the right to use databases
83633	5813, 5819, 6311, 6312	Sale of Internet advertising space (except on commission)
84311	5811	On-line books
84312	5813	On-line newspapers and periodicals
84313	5812	On-line directories and mailing lists
84321	5920	Musical audio downloads
84322	5920	Streamed audio content
84331	5911	Films and other video downloads
84332	5911	Streamed video content

Table 2.A1.2. **Content and media products** (cont.)

CPC Ver. 2 subclass	ISIC Rev. 4 class	Product description (CPC subclass title)
84393	5819	On-line adult content
84394	6312	Web search portal content
84399	5819	Other on-line content n.e.c.
<b>Other content and related services</b>		
47699	5920	Other non-musical audio disks and tapes
73320	5811, 5813, 5911, 5912, 5920, 9000	Licensing services for the right to use entertainment, literary or artistic originals
83611	7310	Full service advertising
83620	7310	Purchase or sale of advertising space or time, on commission
83639	5811, 5812, 7310	Sale of other advertising space or time (except on commission)
83812	7420	Advertising and related photography services
83940	5812	Original compilations of facts/information
84410	6391	News agency services to newspapers and periodicals
84420	6391	News agency services to audiovisual media
85991	6399	Other information services
89110	5811, 5812, 5813, 5819, 5820, 5920	Publishing, on a fee or contract basis
96330	9000	Original works of authors, composers and other artists except performing artists, painters and sculptors

Note: The CPC codes, titles and ISIC links presented above are from the December 2008 version of the *Central Product Classification, Version 2* (UNSD, 2008). In the unlikely case of further changes to the CPC, the final official codes, titles and ISIC links will prevail.

Table 2.A1.3. Correspondence between CPC Rev. 2, HS 2007, HS 2002 and HS 1996 classification for ICT<sup>1</sup> goods

CPC Rev. 2		HS 2007	HS 2002	HS 1996
Time series [(items/blocks) numbers]				
<b>A. Computers and peripheral equipment</b>				
45142 Point-of-sale terminals, ATMs and similar machines capable of being connected to a data processing machine or network	1	847050 Cash registers	847050	847050
	2	Other office machines (e.g. hectograph/stencil duplicating machines, addressing machines, automatic banknote dispensers, coin-sorting machines, coin-counting/wrapping machines, pencil-sharpening machines, perforating/stapling machines), exclud. 8472.10 and 8	847290	847290
45221 Portable automatic data processing machines weighing not more than 10 kg	3	847130 Portable automatic data processing machines, weighing not more than 10 kg, consisting of at least a central processing unit, a keyboard and a display	847130	847130
45222 Personal digital assistants and similar computers such as laptop and notebook computers	4	847141 Other automatic data processing machines : Comprising in the same housing at least a central processing unit and an input and output unit, whether/not combined	847141	847141
45230 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	5	847149 Other automatic data processing machines, presented in the form of systems	847149	847149
45240 Automatic data processing machines presented in the form of systems	6	847150 Processing units other than those of sub-heading 8471.41/8471.49, whether/not containing in the same housing one or two of the following types of units: storage units, input units, output units	847110 847150	847110 847150
45261 Input peripherals (keyboard, joystick, mouse, etc.)		847160 Input/output units, whether/not containing storage units in the same housing	847160	847160
45262 Scanners (except combination of printer, scanner, copier and/or fax)		847180 Other units of automatic data processing machines, exclud. 8471.50, 8471.60, 8471.70	847180	847180
45289 Other units of automatic data processing machines		847190 Magnetic/optical readers, machines for transcribing data onto data media in coded form and machines for processing such data, n.e.s.	847190	847190
45269 Other input or output peripheral devices	7	852841 Cathode-ray tube monitors, of a kind solely/principally used in an automatic data processing system of heading 84.71		
47315 Monitors and projectors principally used in an automatic data processing system		852851 Other monitors, of a kind solely/principally used in an automatic data processing system of heading 84.71		
		852861 Projectors, Of a kind solely/principally used in an automatic data processing system of heading 84.71		

Table 2.A1.3. Correspondence between CPC Rev. 2, HS 2007, HS 2002 and HS 1996 classification for ICT<sup>1</sup> goods (cont.)

CPC Rev. 2		HS 2007	HS 2002	HS 1996
		Time series [items/blocks] numbers		
45263 Inkjet printers used with data processing machines		844331	844351	844351
			Machines which perform two/more of the functions of printing, copying/facsimile transmission, capable of connecting to an automatic data processing machine/to a network	
45264 Laser printers used with data processing machines	8	844332	851722	851722
45265 Other printers used with data processing machines			851721	851721
45266 Units performing two or more of the following functions: printing, scanning, copying, faxing			900911	900911
			900912	900912
45271 Fixed media storage units		847170	847170	847170
45272 Removable media storage units	9			
47550 Solid-state non-volatile storage devices*				
45290 Parts and accessories of computing machines	10	847330	847330	847330
		847350	847350	847350
			Parts and accessories equally suitable for use with machines of two/more of the headings 84.69 to 84.72	
<b>B. Communication equipment</b>				
46921 Burglar or fire alarms and similar apparatus	11	853110	853110	853110
47211 Transmission apparatus incorporating reception apparatus		852560	852520	852520
			Transmission apparatus for radio-broadcasting/television incorporating reception apparatus	
47212 Transmission apparatus not incorporating reception apparatus		852550	852510	852510
47222 Telephones for cellular networks or for other wireless networks		851712	851750	851750
			Telephones for cellular networks/for other wireless networks, other than Line telephone sets with cordless handsets	
47223 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 (such as a local or wide area network)	12	851761	851730	851730
			Base stations for transmission/reception of voice, images/other data, incl. apparatus for communication in a wired/wireless network (such as a local/wide area network)	
		851762		
			Machines for the reception, conversion and transmission/regeneration of voice, images/other data, incl. switching and routing apparatus	
		851718	851719	851719
			Other telephone sets, incl. telephones for cellular networks/for other wireless networks, other than 8517.11 and 8517.12	
		851769	851780	851780
			Other apparatus for transmission/reception of voice, images/other data, incl. apparatus for communication in a wired/wireless network (such as a local/wide area network), other than 8517.61 and 8517.62	
47221 Line telephone sets with cordless handsets	13	851711	852790	852790
			851711	851711
			Line telephone sets with cordless handsets	

Table 2.A1.3. Correspondence between CPC Rev. 2, HS 2007, HS 2002 and HS 1996 classification for ICT<sup>1</sup> goods (cont.)

CPC Rev. 2	HS 2007	HS 2002	HS 1996
Time series [items/blocks] numbers			
47401 Parts for the goods of subclass 47221 to 47223 47213 Television cameras**	851770	851790	851790
	14		
	Parts for 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), other than transmission or reception apparatus of heading 84.43, 85.25, 85.27 or 85.28		
<b>C. Consumer electronic equipment</b>			
47311 Radio broadcast receivers (except of a kind used in motor vehicles) whether or not combined with sound recording or reproducing apparatus or a clock	852712	852712	852712
	15		
	Pocket-size radio cassette-players		
	852713	852713	852713
	16		
	Radio-broadcast receivers capable of operating without an external source of power, combined with sound recording/repr. apparatus (excl. of 8527.12)		
	852719	852719	852719
	17		
	Radio-broadcast receivers capable of operating without an external source of power (excl. of 8527.12 and 8527.13)		
	852791	852731	852731
	18		
	Other reception apparatus for radio-broadcasting, combined with sound recording/reproducing apparatus		
	852792	852732	852732
	19		
	Other reception apparatus for radio-broadcasting, not combined with sound recording/reproducing apparatus but combined with a clock		
	852799	852739	852739
	20		
	Other reception apparatus for radio-broadcasting, excl. 8527.91 and 8527.92		
47312 Radio broadcast receivers not capable of operating without an external source of power, of a kind used in motor vehicles	852721	852721	852721
	21		
	Radio-broadcast receivers not capable of operating without an external source of power, of a kind used in motor vehicles: combined with sound recording/reproducing apparatus		
	852729	852729	852729
	22		
	Radio-broadcast receivers not capable of operating without an external source of power, of a kind used in motor vehicles, incl. apparatus capable of receiving also radio-telephony/radio-teleggraphy, other(excl. of 8527.21)		
47313 Television receivers, whether or not combined with radio-broadcast receivers or sound or video recording or reproducing apparatus	852871	852812	852812
	23		
	Reception apparatus for television. Not designed to incorporate a video display/screen		
	852872	852813	852813
	23		
	Other colour reception apparatus for television, whether/not incorporating radio-broadcast receivers/sound/video recording/reproducing apparatus		
	852873		
	23		
	Other reception apparatus for television, whether/not incorporating radio-broadcast receivers/sound/video recording/reproducing apparatus, black and white/other monochrome		



Table 2.A1.3. Correspondence between CPC Rev. 2, HS 2007, HS 2002 and HS 1996 classification for ICT<sup>1</sup> goods (cont.)

CPC Rev. 2		HS 2007	HS 2002	HS 1996
		Time series [Items/blocks] numbers		
47314 Monitors and projectors, not incorporating television reception apparatus and not principally used in an automatic data processing system		852849	Other cathode-ray tube monitors, not of a kind solely/principally used in an automatic data processing system of heading 84.71	852821
	24	852859	Other monitors, not of a kind solely/principally used in an automatic data processing system of heading 84.71	852822
	25	852869	Projectors, not of a kind solely/principally used in an automatic data processing system of heading 84.71	852830
	26	851930	Turntables (record-decks)	851931
	27	851950	Telephone answering machines	851939
47321 Sound recording or reproducing apparatus		851981	Other sound recording/reproducing apparatus, using magnetic, optical/semiconductor media, other than 8519.20, 8519.30, 8519.50	852020
		851989	Other sound recording/reproducing apparatus, other n.e.s. in Ch. 85.19	851940
	28			851992
				851993
47323 Video recording or reproducing apparatus		851999		851999
				852010
				852032
				852033
				852039
				852090
				851921
	29	851920	Apparatus operated by coins, banknotes, bank cards, tokens/by other means of payment	851929
				851910
				852110
47330 Microphones and stands therefor; loudspeakers; headphones, earphones and combined microphone/speaker sets; audio-frequency electric amplifiers; electric sound amplifier sets	30	852110	Video recording/repr. apparatus, whether/not incorporating a video tuner, magnetic tape-type	852190
	31	852190	Video recording/repr. apparatus other than magnetic tape-type, whether/not incorporating a video tuner	852190
47330 Microphones and stands therefor; loudspeakers; headphones, earphones and combined microphone/speaker sets; audio-frequency electric amplifiers; electric sound amplifier sets	32	851810	Microphones and stands therefor	851810
	33	851821	Single loudspeakers, mounted in their enclosures	851821
	34	851822	Multiple loudspeakers, mounted in the same enclosure	851822
	35	851829	Loudspeakers n.e.s. in 85.18, whether/not mounted in their enclosures	851829
	36	851830	Headphones and earphones, whether/not combined with a microphone, and sets consisting of a microphone and one/more loudspeakers	851830
	37	851840	Audio-frequency electric amplifiers	851840
	38	851850	Electric sound amplifier sets	851850

Table 2.A1.3. Correspondence between CPC Rev. 2, HS 2007, HS 2002 and HS 1996 classification for ICT<sup>1</sup> goods (cont.)

CPC Rev. 2		HS 2007	HS 2002	HS 1996		
		Time series [items/blocks] numbers				
47402	Parts for the goods of subclasses 47321, 47323 and 47330	39	851890	Parts of the apparatus and equip. of 85.18	851890	851890
		40	852210	Pick-up cartridges for use solely/principally with the apparatus of 85.19-85.21	852210	852210
		41	852290	Parts (excl. pick-up cartridges) and accessories suit. for use solely/principally with the apparatus of 85.19-85.21	852290	852290
38581	Video game consoles <sup>2</sup>	42	950410	Video games of a kind used with a television receiver	950410	950410
47214	Video camera recorders	43	852580	Television cameras; digital cameras and video camera recorders	852530	852530
47215	Digital cameras				852540	852540
<b>D. Electronic components</b>						
47140	Thermionic, cold cathode or photo-cathode valves and tubes (including cathode ray tubes)	44	854011	Cathode-ray television picture tubes, incl. video monitor cathode-ray tubes, colour	854011	854011
		45	854012	Cathode-ray television picture tubes, incl. video monitor cathode-ray tubes, black and white/other monochrome	854012	854012
		46	854020	Television camera tubes; image converters and intensifiers; other photo-cathode tubes	854020	854020
		47	854040	Data/graphic display tubes, colour, with a phosphor dot screen pitch smaller than 0.4 mm	854040	854040
		48	854050	Data/graphic display tubes, black and white/other monochrome	854050	854050
		49	854060	Cathode-ray tubes n.e.s. in 85.40	854060	854060
		50	854071	Magnetrons	854071	854071
		51	854072	Klystrons	854072	854072
		52	854079	Microwave tubes n.e.s. in 85.40	854079	854079
		53	854081	Receiver/amplifier valves and tubes	854081	854081
		54	854089	Valves and tubes n.e.s. in 85.40	854089	854089
47150	Diodes, transistors and similar semi-conductor devices; photosensitive semi-conductor devices; light emitting diodes; mounted piezo-electric crystals	55	854110	Diodes (excl. photosensitive/light emitting diodes)	854110	854110
		56	854121	Transistors (excl. photosensitive transistors), with a dissipation rate of < 1 W	854121	854121
		57	854129	Transistors (excl. photosensitive transistors), other than those with a dissipation rate of < 1 W	854129	854129
		58	854130	Thyristors, diacs and triacs (excl. photosensitive devices)	854130	854130
		59	854140	Photosensitive semiconductor devices, incl. photovoltaic cells whether/not assembled in modules/made up into panels; light emitting diodes	854140	854140
		60	854150	Semiconductor devices n.e.s. in 85.41	854150	854150
		61	854160	Mounted piezo-electric crystals	854160	854160

Table 2.A1.3. Correspondence between CPC Rev. 2, HS 2007, HS 2002 and HS 1996 classification for ICT<sup>1</sup> goods (cont.)

CPC Rev. 2		HS 2007	HS 2002	HS 1996
Time series [items/blocks] numbers				
47160 Electronic integrated circuits		854231	Electronic integrated circuits, processors and controllers, whether/not combined with memories, converters, logic circuits, amplifiers, clock and timing circuits,/other circuits	854221 854213
	62	854232	Electronic integrated circuits, memories	854229 854230
		854233	Electronic integrated circuits, amplifiers	854260 854240
		854239	Other Electronic integrated circuits, other than Amplifiers/Memories/Processors and controllers	854890 854890 854214 854219
47173 Parts for the goods of subclasses 47140 to 47160	63	854091	Parts of cathode-ray tubes	854091 854091
	64	854099	Parts of the tubes of 85.40 other than cathode-ray tubes	854099 854099
	65	854190	Parts of the devices of 85.41	854190 854190
		854290	Parts of electronic integrated circuits	854290 854290
47920 "Smart cards"	66	852352	Semi-conductor media, "Smart cards" for the recording of sound/of other phenomena, but excl. products of Ch. 37	854210 854212
47910 Cards with a magnetic stripe	67	852321	Magnetic media for the recording of sound/of other phenomena, but excl. products of Ch. 37, cards incorporating a magnetic stripe	852330 852330
47130 Printed circuits	68	853400	Printed circuits	852460 852460 853400 853400
<b>E. Miscellaneous</b>				
45281 Sound, video, network and similar cards for automatic data processing machines***				
47530 Magnetic media, not recorded, except cards with a magnetic stripe		852351	Semi-conductor media, solid-state non-volatile storage devices, for the recording of sound/of other phenomena, but excl. products of Ch. 37	852390 852390 852410 852410
47540 Optical media not recorded		852359	Other semi-conductor media, for the recording of sound/of other phenomena, but excl. products of Ch. 37, other than "Smart Cards" and Solid-state non-volatile storage devices	852491 852491
47590 Other recording media, including matrices and masters for the production of disks	69	852380	Discs, tapes, solid-state non-volatile storage devices, "smart cards" and other media for the recording of sound/of other phenomena, whether/not recorded, incl. matrices and masters for the production of discs, but excl. products of Ch. 37, other n.e.s.	852499 852499
47403 Parts for the goods of subclasses 47211 to 47213, 47311 to 47315 and 48220				854381 854381
48315 Liquid crystal devices n.e.c.; lasers except laser diodes; other optical appliances and instruments	70	852910	Aerials and aerial reflectors of all kinds suit. for use solely/principally with the apparatus of 85.25-85.28; parts suit. for use therewith	852910 852910
48354 Parts and accessories for the goods of subclass 48315	71	852990	Other parts suitable for use solely/principally with the apparatus of headings 85.25 to 85.28, other than aerials and aerial reflectors of all kinds	852990 852990
	72	901320	Lasers (excl. laser diodes)	901320 901320

Table 2.A1.3. Correspondence between CPC Rev. 2, HS 2007, HS 2002 and HS 1996 classification for ICT<sup>1</sup> goods (cont.)

CPC Rev. 2	HS 2007	HS 2002	HS 1996
Time series [items/blocks] numbers			

\* CPC Rev. 2: 47550 corresponding item HS2007: 852351 is classified in Group E.

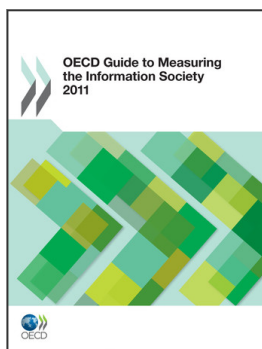
\*\* Group B CPC Rev. 2: 47213 corresponding item HS2007: 852580 is classified in Group C.

\*\*\* Group E CPC Rev. 2: 45281 corresponding items HS2007: 847180 and 851769 are classified in Groups A and B.

1. The ICT product definition was first published in the OECD *Guide to Measuring the Information Society 2009* (OECD, 2009). The list of ICT goods (in CPC Rev. 2 and HS2007) was also published (as provisional) in the Partnership on Measuring ICT for Development (2010) *Core ICT Indicators, 2010*.
2. HS 2007: 950410 "Video games of a kind used with a television receiver" was added to this list in order to correspond to the CPC rev. 2 : 38581 "Video game consoles" which is included in the latest ICT Products definition (see note 1).
3. Three CPC Rev. 2 items (codes) in this list do not have their HS 2007 corresponding items in the same group. Their HS 2007 corresponding item was classified in another group in order to keep the consistency of the HS 2007 to HS 2002 correspondence's logic.

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