

Unclassified

DSTI/ICCP/AH/RD(98)11



Organisation de Coopération et de Développement Économiques
Organisation for Economic Co-operation and Development

OLIS: 11-Jun-1998
Dist.: 12-Jun-1998

PARIS

English text only

DIRECTORATE FOR SCIENCE, TECHNOLOGY AND INDUSTRY
COMMITTEE FOR INFORMATION, COMPUTER AND COMMUNICATIONS POLICY

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**THE PROPOSED ICT SECTOR DEFINITION:
COMMENTS BY THE AUSTRALIAN BUREAU OF STATISTICS**

OECD, Paris, 18-19 June 1998

This room document is submitted for information by the Australian Bureau of Statistics (Australia) under Item 4 of the draft agenda.

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THE PROPOSED ICT SECTOR DEFINITION: COMMENTS BY THE AUSTRALIAN BUREAU OF STATISTICS

1. At its meeting held in June 1997, the Statistical Panel of the ICCP decided on a strategy which would lead to the definition of the ICT sector. That strategy was for the development of a discussion paper aimed at encouraging discussion around the world during the year leading up to the 1998 Statistical Panel meeting. The discussion paper has served that purpose - it has been presented at a meeting of the Voorburg Group (on Services statistics) in September 1997, two meetings at Eurostat, the most recent being at the Task Force on Information Society in February 1998 and at a Statistics New Zealand/Australian Bureau of Statistics conference on the development of information technology and telecommunications statistics held in April 1998.

2. With the degree of debate and discussion that the paper has generated, it is proposed that the Statistical Panel further discuss the issue at its 1998 meeting with a view to reaching consensus on the definition to be used.

3. The June 1997 meeting recognised that it also needed to define a set of ICT goods and services before its definitional work could be completed. This matter is the subject of discussion at the June 1998 meeting. While it would be generally desirable to undertake the definition of ICT goods and services first, the June 1997 meeting decided on the strategy adopted as it was thought that this would lead more quickly to a set of data which would meet user requirements.

4. This paper aims to consider the issues which are under contention and presents the ABS view on them.

Issues To be Considered

5. The issues which we need to consider in reaching a consensus are:

- a) What do we mean by the ICT sector,
- b) What is the rationale for the definition that we have chosen,
- c) Should the definition be aimed at measuring industries or activities,
- d) Should the definition be based on the International Standard Industrial classification,
- e) Should all activities relating to ICT goods and services be treated in the same way,
- f) Should we allow for the use of "part classes" within the definition,
- g) Special case of Information Content, and
- h) Special case of ICT goods used as components in other goods and services.

6. These issues are discussed below.

What Do We Mean by the ICT Sector

7. The ICT sector is a concept used to describe the creation and provision of information technology and telecommunications goods and services to other parts of the economy. It is thus very much a concept about the grouping of a set of businesses ie an industry concept. While the ICT sector is an industry concept, this does not mean that it has to be an "industry" in the narrow sense of industry classes which are found in national or international standard industrial classifications. It could be a much broader notion, similar to the notion of tourism in the so-called "tourism" industry.

What is The Rationale For Describing the ICT Sector

8. When defining an industrial classification, the objective is to identify groupings of businesses which carry out similar economic activities. These activities are in turn defined in terms of inputs, skills, production processes and technologies used in the production process and in terms of outputs (Nijhowne, Statistics Canada, 1997). Each business so defined is then classified in its entirety to an industry based on these activities.

9. As described above, it would therefore seem to be feasible to define the ICT sector by bringing together a number of activities associated with the specific set of goods and services that we have defined as being ICT goods and services. This is consistent with the notion being adopted in a number of countries in other situations such as the definition of the Information sector within NAICS.

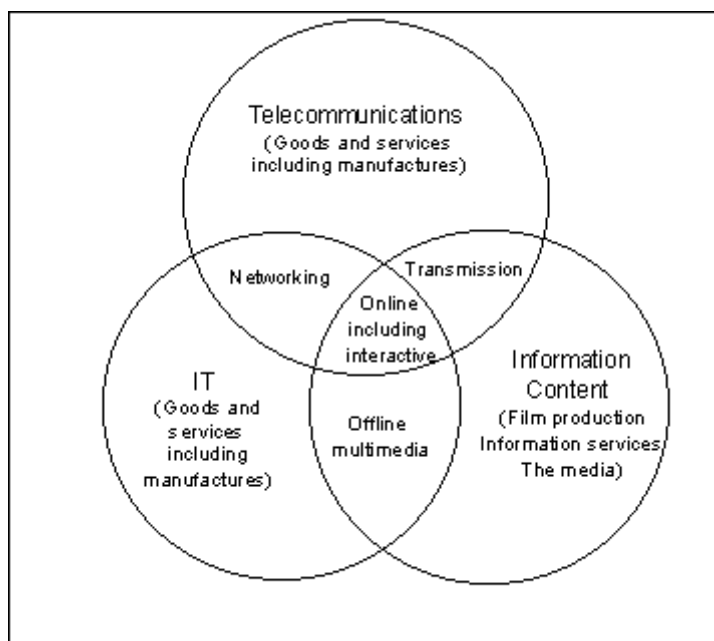
10. All of this begs the question, "what are information and communication technology statistics goods and services?".

11. While people have a good broad general agreement of what is information technology or communication technology, there are considerable difficulties at the border relating to specific goods and services. What this implies is the need for a rationale for the delineation of ICT goods and services. This is properly the outcome of the work to be started at the 1998 meeting of the Panel on the definition of the goods and services.

12. In the interim, however, it is reasonable to start with the notion that what is being referred to is all forms of information technology and telecommunications technology. By taking technology in its wider sense, it therefore incorporates services, knowledge and training and not just pieces of equipment.

13. It is worthwhile saying at this stage that one needs to bear in mind the purpose of making a definition of the ICT sector and ICT goods and services. This purpose is so that users can be provided with a set of reliable statistics upon which they can make rational decisions about economic or social issues or undertake research into such issues.

14. In this context, the experience in Australia is that the key requirement is for statistics about computers and telecommunications, their convergence and the areas where information is converging with computing and telecommunication goods and services. Diagrammatically this can be represented as shown below, which is repeated from the discussion paper referred to earlier. The key demand is for activities within the circles entitled information technology and telecommunications with particular emphasis on the intersecting parts of those two circles and those from the Information Content circle. While there is interest in the remainder of the Information Content activities, this is a separate interest and they are not seen as being part of the ICT sector.



15. It is not considered appropriate in this paper to proceed further than this with a definition of ICT goods and services as this is properly the work to be started at this year's meeting. Suffice it to say that there has been considerable work over the past 30 or so years on the measurement of the Information economy, without yet coming to an agreed solution. A useful summary of this work can be found in the Green Paper "Mapping and Measuring the ITEC Sector in the United Kingdom" (Hawkins, Mansell, Steinmueller-1997).

16. The position adopted by ABS in its previous survey work in this field, and reported on at the 1997 meeting has been to adopt a definition reached in a pragmatic way based on the needs of policy users in this field. Adopting such an approach seems to be workable in the short term, at least.

The Distinction Between Industry and Activity Statistics

17. Users of statistics justifiably have requirements for statistics about both industries and about activities and goods and services. The different types of statistic are sometimes confused and have led to considerable misunderstanding both in Australia, and elsewhere.

18. The two types of statistics explain different issues. Industry statistics generally describe the set of businesses that mainly undertake an activity or range of activities; statistics are normally produced about the employment of the businesses, their income, their expenses, their profits and may include the income generated from the creation of the particular goods and services. Activity statistics, on the other hand, describe the totality of a particular activity or commodity output, irrespective of the industry of the producer (ie the producer's main activity). They do not generally measure other variables such as employment, total income and related economic variables.

19. Another way of explaining the difference between industry statistics and activity statistics is by way of a simple example.

20. Suppose an economy with only 2 goods and services, ICT and other (O). These two classes of goods and services can be created by businesses which can be grouped into four different categories. These are:

B1- which create only ICT

B2- which create only O

B3- which mainly create ICT, but also some O

B4- which mainly create O, but also some ICT

21. We can then define industries and industry statistics as follows:

I (ICT)- the sum of business groups B1 and B3, and

I (O)- the sum of business groups B2 and B4

22. If one, on the other hand wanted to provide activity statistics, or statistics about the total production of particular goods and services, we would define these as follows:

A (ICT)- the sum of B1, part of B3 and part of B4

A (O)- the sum of B2, part of B3 and part of B4

23. This is a rather simplistic representation of the real world. It is possible to complicate it by increasing the number of businesses and activities, but that seems to be an unnecessary complication here.

24. Turning to the issue at hand, it is argued that ICT sector statistics would relate to those businesses which we have classified to the sector on the basis of their primary production of ICT goods and services; these statistics would include results about the ICT activities, or goods and services of those businesses, as well as other activities that those businesses undertake. The ICT sector would not measure the total activity of all businesses which undertake ICT activities. If one wished to derive such statistics it would be necessary to supplement ICT sector surveys with additional data collection.

25. In the case of Australia, it is not considered essential to undertake this additional data collection as the results of the 1992-93 surveys conducted by ABS showed that the ICT activity of non ICT sector businesses to be negligible, as shown in the Table below. In 1992-93, secondary IT producers contributed less than 1% of revenue by IT specialists

ANZSIC	IT Specialists (\$'000)	Secondary IT Producers (\$'000)	Total
2841	n.p...	n.p	n.p
2842	1,752,395	n.p	n.p.
2849	229,808	n.p	n.p
2852	404,650	n.p	n.p
4613	4,820,212	n.p	n.p
4614	n.p	n.p	n.p
4615	699,204	49636	748,840
7120(a)	12,437,000	0	12,437,000
7743	n.p	n.p	n.p
7831	144,203	0	144,203
7832	102,625	0	102,625
7833	1,082,297	0	1,082,297
7834	2,701,669	0	2,701,669
TOTAL	26,888,815	290,165	27,178,980

Source: ABS catalogue 8126.0

Should the Definition of the ICT Sector Be Based on ISIC

26. The aim of the Statistical Panel is to set up international statistical standards for the compilation and presentation of ICT statistics. Hence if one is to do this, it is necessary to use an international classification on which to base these definitions. The International Standard Industrial Classification (ISIC) would therefore seem to be the appropriate starting point. ISIC is the basis for most other national industrial classifications, although it is recognised that NACE is used throughout many countries within Europe and that NAICS is shortly to be used in North America.

27. This is not to say that individual countries should not use their own national industrial classifications for their industry statistics. For years, countries have modified international standards to meet the conditions applying in their own countries, and it is considered that the definition of the ICT sector should not be treated any differently. However, for international reporting, countries would be asked to provide data as closely as possible to the international standards.

28. It needs to be recognised that what is being said here is that ISIC is the starting point for defining the ICT sector. It should not be taken to infer that ISIC as it stands is sufficiently good to be used without significant restructuring. Most national SICs in current use are based around a restructuring of ISIC.

Should All Activities of ICT Goods and Services Be Treated Consistently

29. It is the Australian view that there ought not be any distinction between different activities associated with ICT goods and services. While there has been some arguments put to treat wholesaling activity, in particular, in a different way to manufacturing activity, this is not seen to be justifiable.

30. Firstly wholesaling activity these days is not just an onselling activity; it includes the provision of computer and telecommunications services in a very similar manner to the way in which computer or telecommunications service businesses would provide. Some of the results from the 1995-96 ABS survey (ABS catalogue 8126.0) clearly indicate the importance of wholesale businesses to total IT activity in Australia. For example:

- there were about 2,980 IT wholesale businesses, 22% of the total number of IT specialist businesses in the IT related industries;
- employment in specialist IT wholesale businesses was 39,600 or almost 20% of the total employment in specialist businesses across;
- IT related industries; Turnover for specialist IT wholesalers was \$17,155 million or almost 36% of total IT specialist turnover across IT related industries;
- of the total income for specialist IT wholesalers of \$17,325.8 million, 23% or \$4,044.5 million was generated through non-wholesale activities such as computer services, communications services, packaged software developed by wholesale businesses, and the sale of computer hardware manufactured by businesses classified as wholesalers; Total R&D spending by IT specialist businesses in all IT related industries amounted to \$410.5 million. Of this, specialist IT wholesalers accounted for \$184.5 million or 45%;
- of the total royalties paid by IT related industries (\$560 million) almost half (\$312 million) is attributable to specialist IT wholesalers.

31. A second argument in favour of the inclusion of wholesaling businesses within the ICT sector is that, in a lot of countries, the branches of the largely globalised large computer companies are mainly classified to that sector. For example, IBM would be considered to be a wholesale computer company in many countries because its major activity in those countries would be the importation of computer equipment from its Manufacturing plants somewhere else in the world. To exclude such companies from the ICT sector would not be appropriate, and would not represent the "industry" as perceived by the users of our statistics.

32. There are also businesses which would be classified to the retail sector which sell ICT goods and services. For example specialist computer retailers provide not only a retailing service but also provide training and other computer services. The ABS view is that these businesses also ought to be included in the ICT sector, at least conceptually. We would not, however, include retailers which sell computers as a secondary activity to their other operations. Most retail sales of computing equipment in Australia is made by the larger retailing chain stores, which sell a wide variety of goods; however IT sales are only a minor part of the turnover of such stores.

33. The ABS views computer training in the same way. A specialist computer training business also ought to be included in the ICT sector. However, a training business which provides computer training as a secondary activity to other training activities (e.g. a University) would be excluded.

34. In conducting statistical collections one often has to temper conceptual purity with some pragmatism. Statistical Agencies generally conduct collections on the basis of their Business Registers. Hence the availability of data on Business Registers can make a difference as to how one might, practically, treat the wholesaling, retailing and training types of business. In the case of Australia, we have adopted the convention of excluding both computer retailing and training from our ICT sector surveys as it is not

possible to uniquely distinguish them from other types of retailer or training business without some other form of advice. As they represent only a small part of the overall retail and/or training industries, they have been excluded on practical grounds.

The Splitting of ISIC Industry Classes

35. The discussion paper (now released as DSTI/ICCP/M(97)1) pointed out that there were various existing ISIC industry classes which, as part of their list of primary products, contained some ICT goods and services and some which were not ICT goods and services. There are sufficient of these to suggest that it is necessary for the definition to accommodate the use of part classes. Not to do so would render the resulting statistics less appropriate for the purpose for which the standards are being prepared.

36. It is important to note that splitting of ISIC industry classes is not a new phenomenon; in fact many countries do it when they translate from ISIC to their own national industrial classification.

37. The use of part classes is, however, not without its costs for Statistical Agencies. To include only part of a class within the scope of a survey often means that it is necessary to survey (mostly on a sampling basis) the whole of a class to measure only the activity of part of it. In some cases, the creation of ICT goods and services in a given class may be very small, and it may be very inefficient to survey the class. Thus Statistical Agencies may have to take pragmatic decisions to ensure the overall effectiveness of their surveying work.

38. The ABS therefore believes that it is necessary for some part ISIC classes to be included in the ICT sector definition and these are shown in the Conclusion to this paper.

Special Case of Information Content

39. As described earlier, users are vitally interested in all aspects of the information superhighway, including the impact on other industries, especially those industries which provide information which can be digitised and made to form part of ICT goods and services such as CDROMs and other interactive multimedia products. Thus it is necessary to include the creation of such products in the definition of ICT goods and services, at least conceptually. The difficulty with such an outcome is how to measure the phenomenon. Businesses which make such products can be classified to many different industry classes and so are difficult for Statistical Agencies to be able to target effectively.

40. Notwithstanding the difficulty, the importance of these new products is such that it is imperative that data about them be included in ICT sector surveys and hence within the definition.

Special Case of Electronic Components

41. Integrated circuits and the like are very important ICT sector products and so must be covered in ICT sector surveys. However it needs to be understood that their use as a minor (albeit important) component in other goods, eg white goods, motor cars, does not mean that these other goods themselves become ICT sector goods. The other product will only become an ICT sector good if it itself meets the definition of such a good.

Conclusion

42. The ABS believes that the ICT sector can be described without having settled on a detailed rationale for the derivation of a final list of goods and services. It believes that the ICT sector is an industry concept and should be described as those businesses which specialise in the production and distribution of information technology and telecommunications goods and services. There ought to be no differentiation between the type of activities that a business undertakes in respect of the goods and services and specifically that selling activities ought to be included in the definition.

43. Further the ABS believes that the definition ought to be based on ISIC, but should be made up of a set of classes and part classes as shown below. The ABS recognises that there will be a deal of pragmatism involved in the final decision about which industry classes (or part classes) will finally be surveyed by Statistical Agencies.

44. The ABS recommends that the following classes and part classes should be included in the ICT sector definition.

ISIC	Comment
2213 Publishing of recorded media	Partly relevant to ICT - CDROM titles and the like
2230 Reproduction of recorded media	Partly relevant to ICT CDROM
3000 Manufacture of office, accounting and computing machinery	Partly relevant to ICT - eg computing equipment relevant but photocopiers not
3130 Manufacture of insulated wire and cable	Partly relevant to ICT twisted pair and other communication cables are relevant but wire and cable for other uses are not.
3210 Manufacture of electronic valves and tubes and other electronic components	Relevant to ICT - though some outputs are for non-ICT application
3220 Manufacture of television and radio transmitters and apparatus for line telephony and line telegraphy	Relevant to ICT
3230 Manufacture of television and radio receivers, sound or video recording or reproducing apparatus and associated goods	Partly relevant to ICT - sound recording equipment may not be completely relevant
5150 Wholesale of machinery, equipment and supplies	Partly relevant to ICT - contains machinery etc which is not ICT
6420 Telecommunications	Relevant to ICT
7210 Hardware consultancy	Relevant to ICT
7220 Software consultancy and supply	Relevant to ICT
7230 Data processing	Relevant to ICT
7240 Database activities	Relevant to ICT
7250 Maintenance and repair of office, accounting and computing machinery	Relevant to ICT
7290 Other computer related activities	Relevant to ICT
9213 Radio and television activities transmission activities are relevant but film production is not.	Partly relevant to ICT

45. The ABS further recommends that the industries listed below which are partly ICT should be excluded on the grounds that there are only a relatively small number of firms which would be considered to be mainly involved with ICT goods and services.

5233 Retail sale of household appliances, articles and equipment

7123 Renting of office machinery and equipment

73 Research and development

9213 Radio and television activities

46. Radio and television activities are a special case because of the mix of broadcasting and content creation activities occurring within the same business. While these businesses are generally viewed as being broadcasters (and therefore in the ICT sector) they generally earn the majority of their income from advertising and incur most of their expenses in film production and similar activities. On balance, ABS would include these businesses in the ICT.

47. It should be noted that ABS does not consider ISIC 33 to be part of the ICT sector. While many of the inputs to this industry are ICT, the products being output are not considered to be ICT.

Australian Bureau of Statistics

June 1998

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