

VOORBURG GROUP ON SERVICE STATISTICS

SESSION 3 ICT Supply Issues

A PROPOSAL FOR IMPROVING THE RELEVANCE OF STATISTICS ON THE ICT AND CONTENT INDUSTRIES

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Abstract

Since NACE Rev.1 was devised in the late 1980s the ICT and content industries have experienced rapid growth and change, much of which NACE is failing to measure. At the same time policy makers in Europe are demanding more and better statistics about these sectors. Eurostat's plans for updating NACE in 2002 envisage only minor revisions, with a major update not likely till 2007. The paper proposes the creation of "shadow" NACE 5-digit sub-classes for selected ICT and content industries, which would exist in parallel with the formal NACE structure. Any EU member state which so wished could collect statistics on this more detailed basis. The proposal is aimed at ensuring that such developments in different member states are made on a consistent basis, thus aiding international comparisons and at the same time preserving the integrity of NACE.

I Introduction and Background

1. Industrial classifications such as NACE are revised at relatively infrequent intervals, thus lending a degree of stability to collection of industrial and business statistics and permitting the compilation of time series of comparable data, compatible not only across industries but also in the sense of inter-year and inter-country comparisons. Stability and comparability are important features that have generally stood the test of time and have aided official statisticians in their task of providing relevant figures to those who have the responsibility of formulating policy or providing advice to government ministers. While there has always been some conflict between stability and the wish to reflect technological changes quickly, revision of industrial classifications every ten years or so has until recently proved sufficient.

2. However, although it was implemented by most member states of the EU in the early 1990s NACE Rev.1 was in fact devised in the late 1980s. Since that date the economies of most EU states have changed considerably, nowhere more so than in the areas covered by the Information Society, that is, the information and communication technology (ICT) industries and the content industries. Some of these industries did not exist in the late 1980s; moreover, most of these industries are growing and changing more rapidly than the rest of the economy, partly because of the rapid growth in the power and relative decline in the cost of integrated circuits, which are the key component of ICT products and services and their means of delivery. However, use of integrated circuits and related electronic components is not confined to the ICT industries; as well as being incorporated for example into PCs, consumer electronic equipment, telecommunications equipment, electronic instrumentation and industrial process control equipment, they are also found increasingly in products such as cars and white goods (eg washing machines, toasters etc).

3. Owing to the above developments NACE (and Prodcom) are increasingly becoming outdated in the context of the ICT and content industries. At the same time policy makers in the developed world are demanding more and better statistics on the activities and products of these two sectors. There are (at least) four reasons for this:-

- (i) as indicated above these industries, nearly all of which involve “high technology” are growing and changing rapidly;
- (ii) they are impacting on the distribution of skills required by employers; that is, there is a growing demand for people with particular types of technical qualifications or skills and training, and a reduction in demand for certain less skilled or manual jobs;
- (iii) some governments, the UK’s among them, are pursuing policies designed to encourage the uptake and use of these technologies amongst both business and consumers, and therefore they have a policy need to monitor demand for these products. There is an obvious link between these demand side statistics and the supply side issues on which the present paper focuses.
- (iv) many governments (the UK among them) are concerned with measuring competitiveness and competitive advantage. It is difficult to do this on the basis of inadequate statistics that do not accurately reflect the current activities of these sectors.

4. Another important development has recently occurred in North America. On 9 April 1997 the US Office of Management and Budget announced its decision to adopt the North American Industry Classification System (NAICS) as the industry classification system to be used by all the statistical agencies of the US. To quote from

an official notice dated May 1997 issued by the US Census Bureau: “NAICS responds to increasing and serious criticism about the US SIC. It reflects the structure of today’s economy in the US, Canada and Mexico, including the emergence and growth of the service sector and new and advanced technologies. It is a flexible system that allows each country to recognize important industries below the level at which comparable data will be shown for all three countries.The publication in early 1999 of Economic Census data based on NAICS will provide the first glimpse of data based on the new system.”

5. The same official notice goes on to say that whereas the US SIC that it replaces was a four-digit system, NAICS is a six-digit system that provides for comparability among the three countries at the five-digit level. NAICS allows each country to recognise activities that are important in the respective countries, but may not be large enough or important enough to recognise in all three countries. The sixth digit is reserved for this purpose. NAICS recognises the changing and services-based economy of the United States and its North American neighbours.....For the first time data will be available on the information sector; service industries never before identified in the SIC will be measured.

II Eurostat’s plans for the update of classifications

6. There have been discussions recently within Eurostat about revising or updating a number of linked international classifications, including NACE. Our understanding is that Eurostat is proposing to update NACE (in line with updates of ISIC) in 2002, but that such update will incorporate only minor revisions. On this basis, it is going to be increasingly difficult for subject-specialist statisticians to satisfy the growing demands of their policy colleagues for reliable and meaningful statistics on the ICT and content industries.

III A way forward for Europe?

7. This paper is not proposing that Europe should make the massive revision to the current version of NACE (NACE Rev.1) that would be necessary to move it closer to the NAICS. Our understanding is that the commitment within the EU to maintain the international linked system makes it imperative to undertake a wholesale revision of NACE Rev.1 only in conjunction with with ISIC Rev.3. ISIC Rev.3 was approved by the Statistical Commission of the United Nations in February 1989 and published the following year. Our understanding is that the UN is reviewing the classification, but that a major revision of ISIC is not likely until 2007.

8. However, does it make sense for Europe to organise its industrial statistics on the basis of outdated definitions? If Europe continues purely with NACE Rev.1 as currently structured, this could be a recipe for the development of more detailed but quite incompatible national classifications below NACE, or growth in the development of ad hoc inquiries based on independent registers of mixed quality. In addition, a quantitative and qualitative gap would start to open up between the statistics available to the North Americans on the ICT and content industries and the corresponding statistics available to Europe and other countries.

9. This paper proposes that for a limited range of “problem areas” within the ICT and content industries, national experts should get together and identify meaningful sub-divisions of existing NACE Rev.1 4-digit classes. These new sub-divisions would be

identified by means of a fifth digit, and would facilitate the collection of statistics which would both recognise completely new industries and provide detail, for the first time, on existing industries which up to now have not been separately identified at 4-digit level. They could then be put forward, not as part of NACE Rev.1 itself but as a recommended approach for any member state which wished to collect more detail; that is, the new sub-divisions would be treated as “shadow” sub-classes of NACE 4-digit classes which would exist alongside or parallel with the formal NACE structure. The results could then be aggregated both to NACE Rev.1 4-digit level, and to other combinations more useful to policy and industry.

10. The integrity of NACE Rev.1 would be preserved (because NACE itself would not have undergone revision), but at the same time adoption of the parallel sub-classes by those countries that wished to would improve (a) the ability of those countries to collect and publish more meaningful statistics, and (b) the prospects of consistency in international comparisons independent of NACE. It is hoped that Eurostat would feel able to add its weight to any such development.

11. Some countries, for example the UK, have already adopted for their own national statistics a version of NACE Rev.1 which incorporates where necessary or helpful a fifth digit to form subclasses of selected 4-digit classes. To this extent, the proposal is aimed at ensuring that such developments in different member states are made on a consistent basis, unless there are strong reasons to the contrary. The use of the new “shadow” sub-classes would of course not be mandatory.

12. The introduction of new NACE subdivisions would as usual be dependent on several conditions, including:-

- data on the new sub-divisions should be capable of being collected;
- there must be an Agency in each country which is willing to carry out the data collection;
- each country’s Register of businesses must be able to support the new structure.

It should be noted that not all the proposed parallel sub-classes listed in the next section of this paper have been tested for practicality against the above criteria.

IV UK proposals for “shadow” sub-classes of NACE Rev.1 four-digit classes

13. This section presents an initial proposal for “shadow” sub-divisions of selected NACE 4-digit classes; these subdivisions describe important ICT and content sector activities on which policy makers in the UK require statistics. Members of the Voorburg Group are invited to consider these sub-divisions, including the level of detail, relate them to the requirements of policy-makers in their own country, and to approve or otherwise propose alternative sub-divisions. The UK already has certain of these sub-classes in its SIC (as noted below), which demonstrates that they are practicable.

14. The following paragraphs list the “shadow” sub-classes of NACE which are proposed.

15.1 Publishing of books, 22.11, to be split into:-

22.11/1 publishing of books: electronic format only

22.11/2 publishing of books: printed and electronic format

15.2 Publishing of newspapers, 22.12, to be split into:-

22.12/1 publishing of newspapers: electronic format only

22.12/2 publishing of newspapers: printed and electronic format

15.3 Publishing of journals and periodicals, 22.13, to be split into:-

22.13/1 publishing of journals and periodicals: electronic format only

22.13/2 publishing of journals and periodicals: printed and electronic format

15.4 Other publishing, 22.15, to be split into:-

22.15/1 other publishing: electronic format only

22.15/2 other publishing: printed and electronic format

NOTE: It is not uncommon for a publisher to publish a product in different formats including electronic, eg a newspaper publisher may publish in print, on-line and on CD-ROM. Such businesses would face difficulties in giving separate figures in respect of each format, and therefore the proposed sub-division would not provide an indication of the total size of the electronic publishing industry. However, the number of firms which are engaged wholly or mainly in electronic publishing is growing and of increasing importance, and therefore it is considered useful to be able to identify these separately.

16. Manufacture of computers and other information processing equipment, 30.02, to be split into:-

30.02/1 manufacture of computers

30.02/2 manufacture of peripherals

NOTE: Manufacture of computers includes production of portable computers, desktop PCs, workstations, servers, supercomputers and other computers. Manufacture of peripherals includes production of printers and scanners, input devices (keyboards, mice etc), data storage units (hard disc drives, tape drives, computer optical storage), and other peripherals.

17. Manufacture of electronic valves and tubes and other electronic components, 32.10, to be split into:-

32.10/1 manufacture of semi-conductors

32.10/2 manufacture of cathode ray tubes and other tubes and valves

32.10/3 manufacture of liquid crystal displays and other flat panel displays

32.10/4 manufacture of sensors and actuators

32.10/5 manufacture of printed circuit boards

32.10/6 manufacture of capacitors, resistors and other passive components

32.10/7 manufacture of connectors, switches and relays

32.10/8 manufacture of optoelectronic components including subassemblies

32.10/9 manufacture of other electronic components

NOTE: manufacture of each of these product categories is regarded by the industry itself as a separate sub-sector in its own right.

18. Manufacture of television and radio transmitters and telecommunications equipment, 32.20, to be split into:-

32.20/1 manufacture of telecommunications equipment

32.20/2 manufacture of television and radio transmitters

(Note: the UK SIC already has this split)

19. Manufacture of instruments and appliances for measuring, checking, testing, navigating and other purposes, except industrial process control equipment, 33.20, to be split into:-

- 33.20/1 Manufacture of electronic instruments and appliances for measuring, checking, etc
- 33.20/2 Manufacture of non-electronic instruments and appliances for measuring, checking, etc

(Note: the UK SIC already has this split)

20. Manufacture of industrial process control equipment, 33.30, to be split into:-

- 33.30/1 Manufacture of electronic industrial process control equipment
- 33.30/2 Manufacture of non-electronic industrial process control equipment

(Note: the UK SIC already has this split)

21. Telecommunications, 64.20, to be split into:-

- 64.20/1 Fixed network services
- 64.20/2 Mobile telecommunications services
- 64.20/3 Interconnection services
- 64.20/4 Communications management services
- 64.20/5 Value added network services
- 64.20/6 Information services
- 64.20/7 Broadcast services
- 64.20/8 Other telecommunications/network services

NOTE: The above classification is currently being tested by Eurostat in a pilot survey comprising ten participating member states. In the UK, OFTEL is the agency involved. Note, for example, that eg Internet service providers would be classified to 64.20/6, information services.

22. Software consultancy and supply, 72.20, to be split into:-

- 72.20/1 development, production and supply of custom software products
- 72.20/2 development, production and supply of application software packages
- 72.20/3 development, production and supply of application enabling tools
- 72.20/4 development, production and supply of system level software
- 72.20/5 development, production and supply of internet software
- 72.20/6 computer service activities not elsewhere specified

NOTES:

- (a) The above classification is one that the industry itself would recognise and accept.
- (b) Custom software means software designed/written specifically for a given customer. It includes embedded software. Application software packages are packages which provide pre-written solutions for business customers or consumers, and which are standard and non-modifiable. Such packages can be split into (a) “enterprise solutions”, which provide a service to a specific function across many industries eg human resources, distribution, project management, (b) “vertical applications”, which are developed for a company’s use eg banking, accountancy, telecommunications, broadcasting, and (c) software for the consumer, the professional and the hobbyist. Application enabling tools are packages which assist in the development, enhancement or repair of applications eg computer-aided systems engineering, database management. A common example of such a tool is Microsoft Visual Basic. System level software is that which controls the system resources and processes using these resources on a computer system or which controls basic computer functions eg MSDOS, Unix, Windows NT. Internet software includes web browsers, software for the development of web sites etc.

- (c) Computer service activities not elsewhere specified covers the following:- facilities management, outsourcing, disaster recovery services, contingency planning, software maintenance, IT training and recruitment, general consultancy, other.
- (d) The following computer service activities are already covered by NACE:- hardware consultancy 72.10; processing services 72.30, and hardware maintenance 72.50.

23. Data base activities, 72.40, to be split into:-
72.40/1 aggregation of data/content from a range of sources
72.40/2 other database activities

NOTE: Content aggregators are companies that take source material from a wide range of publishers and compile it logically, often with the addition of a proprietary coding system to aid retrieval, and store on a central database. As the volume of data and content increases, the role of the aggregator is becoming more important, and therefore merits a separate category within NACE. Examples of businesses which engage in this activity include Dialog Corporation, FT Profile, Dow-Jones Interactive, and Reuters Business Briefing.

24. Motion picture production on film or video tape, 92.11, to be split into:-
92.11/1 production of motion pictures in a film or video studio
92.11/2 other motion picture and video production activities (eg post-production services such as computer graphics, animation and special effects)

(Note: the UK SIC already has this split)

V UK proposals for “shadow” PRODCOM/CPA categories

25. This section proposes changes to Prodcom and to the Classification of Products by Activity (CPA), which is the European version of the Central Product Classification (CPC) devised by the UN. These proposed changes focus on telecommunications equipment and software, because equipment is an area where the current categories appear to be particularly outdated, and because telecoms software is not covered at all in the CPA. Analogous with the proposals for NACE, it is proposed that new categories should be devised which describe current products more accurately; these categories would run in parallel with the existing ones, and would enable the production of more meaningful statistics both nationally and internationally.

Telecommunications equipment

26. The main problem with the Prodcom headings for telecommunications equipment is that they use outdated terminology or refer to equipment which is obsolescent. For example, Prodcom refers to teleprinters (PCC 32202030), and to “electrical telegraphic apparatus” (PCC 32202079). There are very few teleprinters or telegraphic equipment still in operation in the developed world, ie this is a small and declining market. A modern classification of current equipment would group it into three major categories, namely, customer equipment, network equipment, and other equipment. The breakdown of these three categories into separate products would be along the following lines:-

CUSTOMER EQUIPMENT

Facsimile machines

Telephone answering machines

Telephone handsets (excluding mobile phone handsets)
 PABX (private automatic branch exchange)
 Video-conferencing equipment
 Mobile terminals (telephone handsets, wireless data terminals etc)
 Pagers
 Mobile location equipment

NETWORK EQUIPMENT

Call routing equipment (both voice and data and circuit switched and packet switched)
 Transmission equipment (eg repeaters, multiplexers, mobile radio transmitters)
 Mobile base station systems
 Cables (metal and optical fibre)
 Modems
 Satellite equipment (both ground and space-based)
 Payphones

OTHER EQUIPMENT

Telecommunications test equipment
 Security and telemetry equipment (includes entry phones)
 Electronic assemblies (may not be needed?)

Telecommunications software

27. Software is an increasingly vital component of all elements of telecoms. Switching, transmission and network management are now dominated by software. The services carried across networks are built by software, eg EDI, 0800, call diversion, virtual networks. The terminal devices attached to networks are controlled by software, eg PABXs, faxes, payphones, videophones. Mobile networks are especially software-dependent. Advanced services such as tele-shopping and video-on-demand, based on intelligent networks, would not be possible without software. Operators require huge and complex software systems for their customer service, sales administration and billing systems.

28. Thus telecommunications software has a wide variety of applications. The following gives an idea of the “shadow” or parallel CPA categories that might be necessary, based on a recent classification of the different types of software currently in use.

Category of software	Examples of applications of the software
Transmission & switching	ISDN, X25, ATM, Satellite, Signalling
Data communications Utilities & services	File transfer, modems, multiplexing, bridgers, routers, servers, network operating systems
Customer equipment software	Handsets, answering machines, pagers, document readers, banking terminals, retail terminals, payphones
Mobile software	Analogue, digital, PCN/PCS, GSM, Trunked Radio, UMTS
Multi-media	Image processing, data compression, video-conferencing, virtual reality
Customer service	Administration, ordering, billing, service management
Network engineering & management	Planning, design, control, traffic logging and analysis, network performance, cable management, test & measurement

Intelligent networks	Number translation, calling circles, cash-less/charge cards
Call processing	Auto-dialling, tele-marketing, answering services, voice mail
Voice processing	Voice recognition, compression & processing, voice synthesis, natural language translation
Directories	Directory & number management services. Yellow pages, talking pages
Messaging	Message switching, Fax, EDI, BACS, electronic mail, internet
Information services	Broadcast, videotext, tele-shopping, tele-banking, entertainment, education
Systems integration	Consultancy, training, project management, research
Other	Security, document management