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COMPUTER SERVICES
IN THE CENTRAL PRODUCT CLASSIFICATION (CPC)

Commission on Service Accounts

The present note takes advantage of the various studies monitored by the French Commission on service accounts and, in particular, from the work undertaken in its working group on communication and information, chaired by Mr. José BOURBOULON, Director at CAP-GEMINI SOGETI. The rapporteur of this group, Vincent MAILLARD wishes to thank all those who participated in the development and the comprehension of various classifications; the contribution of Mr. TAILHADES, from the Ministry of Industry, has been especially useful for the redaction of the explanatory notes of the CPC.

This paper is a critical examination of the current classifications relating to computer services and, in particular, of the Central Product Classification (CPC). The latter nomenclature is fixed provisionally as to its headings in English but, so far, no written explanation has been issued officially. A tentative explanation of the headings is provided in an annex, in order to illustrate the points which are criticised.

A presentation of available French statistics on computer services is made and some quantitative data are provided within the framework of the NACE and of the CPC.

PART 1: THE VARIOUS CLASSIFICATIONS

THE CPC (CENTRAL PRODUCT CLASSIFICATION) considers six types of computer services at the 3-digit level:

- 8410 Consultancy services related to the installation of computer hardware
- 8420 Software consulting and supply services
 - 8421 Systems and software consulting services
 - 8422 Systems analysis services
 - 8423 Systems design services
 - 8424 Programming services
 - 8425 Systems maintenance services
- 8430 Data processing services
 - 8431 Input preparation services
 - 8432 Data processing and tabulation services
 - 8433 Time sharing services
 - 8439 Other data processing services
- 8440 Data base services
- 8450 Maintenance and repair services of office, accounting and computing machinery
- 8490 Other computer services
 - 8491 Data preparation services
 - 8499 Other computing services

Thus, the CPC makes a distinction between hardware and software, as well as between programming and data processing.

This classification overlooks some items, it is sometimes vague and somewhat "old fashioned".

First of all, it does not make a separation between packaged software products and other software development services, while this separation is agreed upon by all professionals involved in the computer service industry. Furthermore, at the four-digit level, a separation is made among the various phases of the development of software, namely systems analysis, systems design and programming services. Unfortunately, in the majority of cases, it is impossible to make such separation: it would be as an automobile maker who makes a distinction among the sale of vehicle development and analysis, the sale of development of assembly lines and the sale of automobile production.

It would therefore be more relevant to split the software services largo sensu into the customized software services and the packaged software products: this is no new approach, but it is the one presently agreed upon.

Some computer services are not included in the current CPC; this is the case of the computer facilities management services, which consist in the complete management by a company of its client's computer facilities. One could ~~argue that the product is to be decomposed into its various components~~, but this operation, though it may appear to be

logical, cannot be performed because the economic agents from whom it would be requested are either unable to make it or will do it unaccurately; furthermore, in so doing, one overlooks the fact that the provision of a service may not be the sum of its components. The problem would remain marginal if only computer facilities management services were the sole services concerned. However, many computer services are, in fact, a blend of provisions which include hardware and packaged software re-sales, various consulting services, maintenance and repair and also training. Almost all packaged software companies include a training element in their sales and, sometimes, offer at least a telephonic assistance through a hot line; no one would ask the price of these services since they are included in the packaged software sale price. A perhaps better example is that of residing system softwares which are provided with micro-computers (MS-DOS, for example) and the price of which is included in the micro-computer price (some companies even advertise that the system software is provided free of charges). The computer producing company could be asked about the cost of the software but this would not represent its sale price.

These examples illustrate the dilemma faced by the classification makers who, in the same manner than chemists, try to decompose economic activities into few elementary provisions-products and thus take the risk to look for elements which do not exist as natural elements, or, also, who limit their ambition to the description of existing elements but then take the risk of overlooking the links between elements close to one another by their components and, over all, to be obliged to create infinite nomenclatures.

Manufacturing industry classifiers have solved the dilemma since a long time. This can be explained by the fact that manufacturing products are material, tangible and anybody can describe them even if their use is not understood. But similar problems as for services could have been raised. Assume, for example, that an enterprise produces at the same time automobiles and tractors; assume also that the same enterprise produces motors to be used for making the cars and the tractors but also to be sold to third parties. No one would request from this firm to put apart from the total vehicle price, the part corresponding to a (self-)sale of the motor. and even, if asked to provide such information, the constructor would give the cost and not the sale price; as to the vehicle's purchaser, his only concern is the total vehicle price. In this case, it is clearly the transacted product which is recorded and not its components.

What about service classifications? It is necessary to go back to what is the basic element in a transaction dealing with service provision in general, with computer service provision in particular. These provisions can sometimes be described rather accurately because they are produced in an industrial, repetitive manner; this the case, in particular, of packaged softwares. As to most other computer services (customized software development, studies and consulting, ..., even data entry services), the elementary

provision is defined through a contract which may include various types of services (programming, system consulting, maintenance, other consulting, purchase of softwares, ...). From the provider as well as from the client's standpoint, the payment is linked to the completion of the contract. The contracts are therefore the "things" to classify and not the elementary acts which they include.

It can of course be objected that in the case of services, elementary acts can be sold very often separately, which is not the case in other production processes: a motor is rarely sold to its final user. This is true and explains why the only solution will be to set apart elementary acts when they are often sold alone and composite acts when they are treated under a different type of contract.

The CPC is sometimes imprecise; some headings are difficult to understand: one does not clearly know what is meant by the heading "input preparation" (CPC 8431): does this include data entry, with an extensive meaning, or does it cover more precisely the preparation of data, which would correspond to operations prior to data entry like the preliminary codification? The latter explanation seems to be the most likely but, then, the corresponding product is a very detailed one, which is in fact obsolete.

Similarly, as to heading "data base services", does this include the management of data bases and banks or is it limited to the provision of the sole computer facilities necessary to publish the electronic data? In the latter case, where are to be classified services of the EDI type which stand at the boundary of telecommunication services (these activities are classified among telecommunication activities in Ms. Shaila NIJHOWNE's paper on telecommunication activities provided to the Voorburg Group at its Ottawa meeting)?

THE CLASSIFICATION OF THE EUROPEAN COMPUTING SERVICES ORGANISATION (ECSA, an association of which sixteen countries are members). This association federates professional associations. The classification which it issues "sticks" to the existing activities but it does not take the future into accounts since, contrarily to official classifications, the association classification can be changed rapidly according to changes in the market.

In a version modified after scrutinisation by the French Commission on service accounts, the classification stands as follows:

- I. Computer products
 - I.1 Packaged software products
- II. Computer services
 - II.1 Professional services
 - Consulting services: audit, director diagram, management, security
 - Computer training services
 - Computer operation management services
 - Application software development, maintenance and modification services
 - II.2 Material related services
 - Provision of computer material and network
 - Custom-made computer services
 - Data entry services
 - II.3 Computer assistance services
 - Computer facilities management services
 - Hardware and systems software maintenance services

INSEE classification used in the annual survey on enterprises in the service industry is rather close to the ECSA classification, as to its details; it differs in the presentation of the headings; it is presented here, after having taken into accounts the modifications proposed by the Commission on service accounts.

- I. Computer services
 - Custom software development and maintenance services
 - Sale and renting of packaged software products
 - Computer study and consulting services
 - Systems engineering services
 - Computer training services
 - Sales of hardware and computer stations
- II. Custom-made computer services
 - Provision of network and material
 - Computer operation management services
 - Data entry services
- III. Computer assistance services
 - Computer facilities management services
 - Hardware and systems software maintenance services

PART 2: A PROPOSAL FOR A MODIFIED CPC

The following proposals are voluntarily minimum; they deal only with three- and four-digit levels; in annex 2, some elements are provided as to the 4-digit headings

1. Delete all 4-digit levels in CPC 8420 and replace them by:

- 842a Computer consulting services (including security consulting services)
- 842b Sale and renting of packaged software products (including maintenance and training if it is an own account sale)
- 842c Sale or renting of custom software (including maintenance, training and modification services)
- 842d Other services related to software products

2. Modify some 4-digit headings in CPC 8430, include some items which are in CPC 8490 and delete some obsolete items:

- 843a Data preparation and entry services
- 843b Custom-made services (including data processing services)
- 843c Provision of network and material (including time-sharing services)
- 843d Hardware and systems software maintenance services
- 843d Computer facilities management services
- 843e Computer operation management services

3. Further separate data base services (CPC 8440):

- 844a on line electronic data editing services (inter-active services might be separated from other services)
- 844b numerical disk data editing services
- 844c other data editing services (in particular magnetical)

PART 3: THE ANNUAL SURVEY ON ENTERPRISES IN THE SERVICE
INDUSTRY: RESULTS FOR COMPUTER SERVICE INDUSTRY

Computer service industry is surveyed since 1981.

3600 computer service enterprises have been included in the 1989 survey which referred to the accounting year 1988. All enterprises with 10 wage-earners and over were surveyed. Smaller enterprises were selected on a random sample basis with sampling ratios ranging from 1/2 to 1/20. Questions asked concern especially labour force structure (wage-earners, non wage-earners, part time employees, number of hours worked), accounting data referring to detailed product breakdowns (according to the classification provided in the first part of this paper) and breakdown of expenditures; the profit and loss account is requested from enterprises having 20 or more wage-earners.

Turnover repartition permits to classify the enterprises according to a five-digit (non official) activity classification.

Using the 1989 survey, it is possible to provide some figures on the products which have been defined here, cross-classified with the ISIC-NACE computer service industries.

Year 1988

	Nace 4 digits									
	Hardware consultancy		Software consultancy and supply		Data processing		Other computer related activities		All industries	
	%	Amount	%	Amount	%	Amount	%	Amount	%	Amount
8410 Hardware consultancy services	20,1	3 163,8	2,6	381,2	.	.	n.s.	3,9	6,8	3 549,0
842a Computer consulting services	41,1	6 457,9	3,8	560,5	4,7	872,8	2,5	87,2	15,3	7 978,5
842b Sales of packaged softwares	2,2	360,9	17,6	2 592,0	2,5	459,6	0,8	29,6	6,6	3 442,3
842c Sales of customized softwares	1,5	239,0	45,9	6 734,0	3,1	582,4	0,9	31,7	14,5	7 587,2
842d Other software related services	7,1	1 129,0	1,2	187,3	1,9	360,4	26,0	899,2	4,9	2 576,0
8420 Software services	52,1	8 186,9	68,7	10 074,0	12,4	2 275,3	30,3	1 047,8	41,4	21 584,2
843a Data entry & preparation services					10,1	1 854,2	n.s.	0,8	3,5	1 855,0
843b Custom-made data processing	1,3	209,6	2,3	338,5	57,3	10 475,7	2,0	71,5	21,3	11 095,4
843c Hardware & network provision	0,6	97,8	2,4	358,1	8,8	1 618,0	4,7	162,9	4,2	2 236,9
843f Computer operation management	0,3	52,6	2,8	425,0	0,4	73,7	24,4	844,5	2,6	1 395,9
8430 Data processing services	2,4	382,9	7,7	1 139,1	78,2	14 288,8	33,0	1 141,9	32,5	16 952,9
849a Computer related education	0,8	132,7	1,6	239,7	.	.	6,2	215,8	1,1	588,3
Sales	100,0	15 698,1	100,0	14 657,5	100,0	18 256,2	100,0	3 450,9	100,0	52 062,8

Data: INSEE - Enquête annuelle services
Unit: million of francs

ANNEX 1 PROPOSALS FOR EXPLANATORY NOTES FOR THE CURRENT CPC

In this annex, it is attempted to provide explanatory notes for the current CPC. They are only provided as indications, since the position in the paper is that the current CPC should be modified rather substantially.

8410

- 8410: Consultancy services related to the installation of computer hardware.

Development and/or provision of a turnkey specific set including all or part of hardware, custom and packaged softwares and related services (study, training, ...), which include management responsibilities.

Sale of standard systems:

Turnkey set (packaged software + hardware) sold in a repetitive manner.
Work stations.

Network engeneering

Local networks (private)
Metropolitan networks:

8420

- 8421 Systems and software consulting services

Director diagram

Computer management consulting services

Computer audit services

Computer security services

Computer processing consulting services

- 8422 and 8423

These headings deal with the various phases of the development of softwares. The separation has no significance. It would be better to define the softwares on one hand and the breakdown criterium according to the phase on the other hand.

- Softwares include:

Sale and renting of packaged and standard softwares. These softwares are own account productions of the enterprise, which implies a commercial risk.

..Sale of customized softwares.

The sale includes related services such as documentation, maintenance and follow up, training and adaptation services.

It concerns also the systems softwares, as well as compilers, performance measure softwares, transaction management monitors, network supervisors and hypervisors.

It includes also tools for programming aide such as programming engeneering packaged softwares as well as the tools CASE.

Furthermore, it includes application softwares, whether general or specific, such as spreadsheet, packaged softwares for data base management, for statistics, for publication,...or for personnal management, for accounting,

for expert systems, for creation, for drawing, for production monitoring, for logistic management, for maintenance, for teaching.

It also includes related services such as programme conversion and migration.

- Stratification criteria concern the following phases:

Analysis (CPC 8422): this is the first phase during which the theoretical algorithms are determined, the hardware and software environment is selected, after having analysed the demand and determined the various constraints (inter-face man machinery, for example).

Design (CPC 8423): during this phase, the algorithms are written and the various articulations of the programmes are determined.

Programming services (CPC 8424): during this phase, the codes are entered; it includes the eventual corrections and the verifications.

- 8425 Systems maintenance services

This corresponds to hardware and software maintenance services either by a "third party" or by the provider. The maintenance may be complete (systems maintenance services) or specialised (systems software maintenance services).

8430

- 8431 Input preparation services

This product covers operations for a client prior to data processing. It may be data entry, precodification, program transcription (if it is not important) and program compilation services.

- 8432 Data processing and tabulation services

Sale of "computer energy" in the format of data processing or tele-processing, tabulation and outcome verification services. This heading does not include sale of "computer energy" in the format of hardware space and time allocation.

- Time-sharing services

This heading includes sale of "computer energy" in the format of hardware space and time allocation.

- 8439 Other data processing services

8440

- 8440 Data base services

Electronic information services whether provided on- or off-line, interactively or not. They cover dissemination and publication services in a numerical or, more generally, electronical format of various data (financial, economical,

statistical or technical). The data can be provided in a physical medium (digital disk or magnetic tape) or on line, i.e. through a telecommunication network. In the latter case, basic data can be transmitted to the client, or these data can be processed and tabulated, and only the final results are transmitted to the user.

8490

- 8491 Other preparation services

This heading include data codification services.

- 8499 Other computer services

This should include computer related education and training services not included in software provision contracts. Training may concern methods, languages and systems, and can be provided in seminars. It does not include computer assisted training which is included in another heading, even if it is a software training.

The heading should also include computer facilities management services as it is likely that it can not be broken down into the various headings of the classification.

ANNEX 2 PROPOSALS FOR A NEW CLASSIFICATION AND EXPLANATORY
NOTES

8410 - CONSULTANCY SERVICES RELATED TO THE INSTALLATION OF
COMPUTER HARDWARE

No change

8420 - SOFTWARE SERVICES

842a Computer consulting services

Development of director diagram, computer management consulting, computer audit and computer processing consulting services.

842b Sale or renting of packaged softwares

This heading covers sale/renting/licencing of packaged software products, as well as related services (maintenance, training, follow up, documentation services provided by the editing company).

Package software products are developed by a company on own account (without any contract with a purchaser), which implies a commercial risk.

Package software products comprise all basic softwares: processing systems, languages, compilers, transaction management monitors, network super- and hyper-visors.

They comprise also software engeneering package software products, application softwares whether universal (such as spreadsheet, database, assistance to publication -desktop publishing- softwares) or specialised (personnal management, accounting, etc. softwares).

842c Sale or renting of custom softwares

This heading, as the previous one, includes also related services such as training, documentation, maintenance and follow up services.

Custom softwares are developed by a company within the framework of a contract which stipulates all or part of articles and conditions of sales (which set in particular the product specifications, its performances, the conditions of its development).

Custom softwares may include or make use of existing packaged software or other software products.

Custom software comprise in particular such application softwares as computer assisted conception, computer assisted conception and fabrication, computer assisted production management, computer assisted logistic management, computer assisted maintenance, computer assisted education.

842d Other software related services

8430 - DATA PROCESSING SERVICES

843a Data entry and preparation services

This heading includes also data codification and verification services as well as document preparation services.

843b Custom-made data processing services

This heading includes also tele-processing services.

843c Computer hardware and network provision

In contrast with the preceding heading which assumes an obligation for results, the contracts of computer hardware and network provision include only an obligation for human and computer resources.

This heading does not include computer hardware rental. It includes the sale of "computer energy" by computer centers and the time-sharing centers.

843d Hardware and systems software maintenance services

Maintenance services of hardware or systems software by a third party which did not produce or develop them (includes global system maintenance).

843e Computer facilities management services

These activities consist in the management by an outside company of all or part of the central computer facilities of a society.

843f Computer operation management services

These services consist in the operation of computer resources of a computer center

8440 - DATA BASE SERVICES

No change

8490 - OTHER COMPUTER SERVICES

849a Computer training services

These services are provided by a third party (not by the producer or the developer)

849b Other computer services