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ANNUAL REPORT

OF THE DATA PROCESSING DEPARTMENTS OF THE COMMISSION

1983

(Commission Report to the Council and the European Parliament)

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TABLE OF CONTENTS

PART A

DATA PROCESSING IN THE COMMISSION'S DEPARTMENTS

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INTRODUCTION

The Commission's Steering Committee for Data Processing (CDIC) decided last year to change the content of the annual reports by including the short-term and medium-term plans, which also indicate the resources required.

The structure of this report for 1983 is identical with that of the preceding year. The statistical data given in last year's report have been updated and show the actual position for 1983 and the forecasts for the coming years.

The expenditure forecasts in this document are, of course, given merely as a guide and are therefore not binding on the Commission as regards any proposals it may make to the budgetary authorities.

The main subjects dealt with in this report can be summarized as follows:

The budget for 1984 amounts to only 86% of that requested and the aims and objectives for the year have consequently had to be cut back (Chapter 1).

Progress in office automation and distributed data processing will be slower, and gains in productivity smaller.

The first phases of the inter-institutional electronic mail service will become operational only in 1985-1986, rather than in 1984 as originally planned.

The introduction in the Commission of software packages available on the open market will have to be accelerated in order to shorten the development period for applications. This policy will require significant improvements in support activities for software installed on shared and distributed hardware. At the same time a massive training programme will be required.

For the immediate future the waiting time for the development of new projects can be estimated at approximately four years, provided that the budget resources requested are granted. If they are not, the waiting period is likely to be about a year longer.

Increasing use of new technologies in administration will mean that the work of a growing number of officials will change. The Informatics Directorate is the first to be affected and pilot projects are currently under way in direct association with the staff concerned. The lessons drawn from this project will be used to ease the process of change in the Directorates-General; a major training effort will be needed in this area, too.

An agreement has been signed with the Belgian and Luxembourg postal and telecommunications authorities for the use of their public packet-switching data transmission networks.

The computing power of the centres was raised by 60% during 1983. This increase will allow the transfer of applications currently performed by outside organizations, and will lead to substantial savings.

Two invitations to tender were launched in 1983, which should permit a coherent hardware policy to be implemented for the next three years.

The first relates to the renewal of configurations shared by all users, and the new contracts should cover 48 Mips and 205 gigabytes in 1987.

The second relates to distributed hardware to be installed close to the end-user.

A new policy for data bases is being drawn up and is planned to begin in 1984.

Like last year's, this plan shows that the expansion of the Commission's data-processing activities could be managed on stable budgetary resources on condition that a minimum increase of 5 500 000 ECU is allowed. In the light of the present financial difficulties this target could be achieved in two stages. Moreover, the budget appropriations requested could be more than proportionately reduced if the Informatics Directorate was given a large number of budget posts, which would reduce its dependence on external services.

I AIMS AND OBJECTIVES

1983 saw an average increase of 32% in data-processing services [1] to users, at the cost of a budget increase of only 4% in constant ECUs (1982 value). This growth exceeds the initial target rate of 25 - 30% annually, and as a result much of the shortfall of earlier years has been made up.

The specific objectives for 1983, as set out in last year's report, [2] were largely achieved, and this report deals with them in the following chapters:

- Installation of a new data communications network meeting the requirements of the years 1984-1990 (Chapter 6)
- A start made on a large number of applications (Chapter 7)
- Negotiations with staff on the integration of new technologies in the working environment (Chapter 2)
- Improvements in computing performance - quality, security, cost / benefit analysis, productivity of development work (Chapter 9)
- Definition of a new policy for data base management (Chapter 5)

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1 "Data processing" denotes all information handling activities including office equipment (electronic office equipment) and telecommunications (telematics), which are moving progressively towards the integration of data, text, image and voice

2 Document COM (83) 240 final of 30 May 1983

On the other hand, the objectives for 1984 and subsequent years will have to be revised since the budget appropriations of 35 500 000 ECU requested under Chapter 21 for 1984 were not granted in full but cut to 30 500 000 ECU.

This decision will have the following main consequences:

- progress in office automation and distributed data processing will be slower than originally planned, with consequently lower gains in productivity;

- the first phases of the inter-institutional electronic mail service will become operational only in 1985, rather than in 1984 as originally planned.

This year's plan differs from last year's in the accelerated use of commercially available software packages for applications. This should lead to a significant fall in development costs, and in particular should reduce the Commission's excessive and sometimes dangerous dependence on outside staff [1].

This priority effort will mean an increase in support activities for users of these software packages, together with the organization of appropriate training. A massive training programme will also be needed to back up the introduction of the software and to ensure optimum conditions for the changes in jobs and tasks caused by the introduction of the new information technology into the working environment.

In addition, the rapid extension and growth in use of internal and external data bases by Commission departments means that present management of data bases must be modernized.

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1 Ibid., Chapter 2

These new factors have made it necessary to redefine the annual targets for 1984 and 1985-86 as follows:

1984 Creation of a software package library, and implementation of a programme of training and support for the central development teams and for users (Chapters 2, 4, 5, 6 and 7)

Selection of the first hardware installations and software for the integration of office information services and remote processing facilities for users (Chapters 3, 5 and 6)

Support programme for job mutations as new technologies take their place in the working environment (Chapter 2)

Modernization of data base management (Chapter 6)

Gradual installation of the communications infrastructure for the years 1986-1990 (Chapter 8)

1985-86 First phases of the introduction of electronic mail (Chapter 6)

Construction of a large number of new applications with selected software packages (Chapter 7)

Construction of remote processing and applications services in collaboration with the other Institutions and the administrations of Member States (Chapter 8 - INSIS and CADDIA)

Continued installation of the communications infrastructure for the years 1986-1990 (Chapter 8)

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1 Ibid., Table 9

2. ORGANIZATION, STAFF AND TRAINING

ORGANIZATION

The computing services organization described in the 1982 report has not changed. It is presented in Annex I.

STAFF

The following table shows the changes in the Commission's data processing staff from 1982 to 1983:

TABLE 1: Staff 1982 and 1983 [1]		LX	BXL	TOT
DI/IPA/QA	1982	7	21	28
	1983	7	24	31
CC	1982	88	-	88
	1983	81	-	81
SII	1982	27	194	221
	1983	32	195 [2]	227 [2]
II	1982	28	4	32
	1983	29	5	34
DA	1982	41	2	43
	1983	42	2	44
Total for Informatics Directorate	1982	191	221	412
	1983	191	226	417
Directorates-General	1982	60	71	131
	1983	72	86	158
Staff under contract	1982	80	45	125
	1983	108	76	184

1 For abbreviations see Annex IV

2 Does not include 3 local staff and 6 telex and telephone switchboard temporaries whose administrative status was upgraded during 1983

Comparison of the figures for 1982 and 1983 reveals a slight growth in in-house staff in non-technical areas, the result of transfers of officials from user departments, principally DG IX. There was at the same time a marked growth in services supplied by outside staff (+47%). This was mainly due to difficulty in obtaining new posts at a time when services provided by the Informatics Directorate are expanding rapidly as a result of pressure from consumers. This large-scale recourse to outside staff has serious disadvantages. First, is is expensive - 40% on average more than the cost of the equivalent official. It also introduces a dangerous level of dependence and is in addition increasingly at variance with modern trends in employment legislation.

The Directorates-General have increased their in-house computing resources by 20% [1], generally by using posts which have fallen vacant in order to recruit computer staff. This is an indication of their interest in the use of the possibilities offered by the new technologies. It also shows the progress which has been achieved in the Commission's policy of decentralizing data processing.

MOVES TOWARDS A PROFOUND CHANGE IN MANY SPHERES

The increase in computer personnel in the Directorates-General heralds ongoing movement on an altogether grander scale, as well as profound changes in administrative tasks arising from increasing use of computer applications. The changes taking place in the user services will necessitate increased assistance from the central data processing departments.

The Informatics Directorate will therefore have to redeploy its staff to cope with these new needs for user support and training. This will inevitably be at the expense of the resources devoted to infrastructure and applications development work, the aim being gradually to fill the sensitive posts which have hitherto been occupied by outside staff.

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1 This total does not include data or text input staff, since these tasks are progressively becoming routine administrative jobs; nor does it include users who manage the contents of bases, or officials using computers for individual administrative calculations (statistics, econometrics, etc.).

In applications, the uncertain situation with outside staff and the inadequate executive staffing will also necessitate their redeployment; this will result in a fall in the number of outside staff working on development of applications and an increase in their number in:

- the user support teams responsible for user assistance and training in use of software, whether installed on distributed or on central hardware;

- specialized activities for which in-house staff are not sufficiently expert.

While permitting new working methods the technical changes have also influenced certain traditional tasks of centralized data processing. The coding pools are on the way out, and operating staff requirements are diminishing. This process has in fact already begun: the permanent staff of the Computer Centre fell by 7 over 12 months.

Movements in two directions can thus be perceived: the disappearance of certain tasks, and the appearance of new requirements in user support and training. A pilot project aimed at dealing with this problem is currently under way in the Informatics Directorate and should result during 1984 in the implementation of a conversion programme which will include ad hoc training work in particular.

CONSULTATION WITH THE STAFF

Implementing a programme of changes in the operation of the Informatics Directorate could not have been contemplated without consultation with the staff concerned, at various levels, including that of the individual.

The lessons gained from this experience can be used to facilitate changes in the Directorates-General, where computerization of certain tasks will mean changes in the content of many jobs.

In addition, regular meetings are held with staff representatives to deal with the problems of computerization, particularly those of an environmental or social nature. These meetings have resulted in changes to a text on ergonomic aspects of working on screen.

TRAINING

The total figure for training in data processing for 1983 may be estimated at 3 500 trainee-days, an increase of 17% over 1982.

This training was partly made possible by the appropriations provided for the purpose, approximately Bfrs 6 million, from the training budget. Internal resources were also needed, however, particularly for training in data-base interrogation, which totalled 940 trainee-days in 1983.

As regards word-processing, a number of officials selected by their Directorates-General were trained as instructors, in order to pass their knowledge on to colleagues. This policy has proved successful, and it is planned to continue it in 1984.

The use of outside staff in support and training activities will furthermore add greatly to the training potential. The second half of 1984 should see the doubling of computer training activities. This trend should be confirmed in 1985, with the additional resources allocated to training - 15 man-years in 1984; 36 man-years in 1985.

Because of the scale of the training programme which is needed, and in view, moreover, of the success of the INSIS Computer Workshop (see Chapter 6) a training infrastructure is proposed in which sets of hardware (microcomputers, word-processors, etc.) and training material (self-tuition software, video facilities, etc.) will be made available at specific places. This investment in staff and equipment is essential if the computerization of the Commission's activities is to be successful.

3 GENERAL GUIDELINES

In the main the general guidelines set out in last year's report remain valid. Those guidelines have given rise to a document defining the architecture of distributed data processing, which is annexed to this report.[1]

The acquisition policy for computer hardware and services drawn up in 1982 was[2] put into effect in 1983 with the launching of two invitations to tender, which will be processed during 1984

- a standard invitation to tender, intended to select suppliers of distributed equipment for the next three years, including micro- and minicomputers, stand-alone and network word processors, and suppliers of software suited to the specific needs of the various user groups in the Commission.

- one invitation to tender for the renewal of the central configurations in the light of the Commission's computer hardware, software and services requirements during the period 1985-1987 (see Chapter 4).

From the technical point of view these invitations to tender constitute a golden opportunity to introduce the standards available with the newest equipment on the market.

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1 This document follows the lines of Annex I to last year's report

2 See Annex II to last year's report - Document COM (83) 240 final, 30 May 1983

The Commission's policy as regards standards is to respect those agreed internationally. An agreement has been signed with the Belgian and Luxembourg postal and telecommunications administrations for the use of their public packet-switching data transmission networks, which respect the CCITT X.25 standard.[1] The Commission hopes to avoid having to introduce network access points which do not comply with the international standards, and in order to meet the Commission's requirements manufacturers will have to adopt a convergent strategy.

Although it is possible to draw up rules for the architecture of the future it is also true that the infrastructure and the international standards for its implementation will not be available for some years. In the medium term, transitional arrangements will have to be made which reconcile the immediate needs with predicted trends and thus "intercept" future standards.

The Annex presents the guidelines which have been selected for distributed architecture, including organization and services, hosts, work-stations, networks and telecommunications standards.

To deal with the problem of standards, a project is planned under the INSIS programme, with the assistance of DG III (Task Force - New Information Technologies) and the JRC Ispra, which will

- identify requirements for standards;
- lay down interim rules for areas not at present covered by standards;
- introduce means of monitoring and verifying conformity in operational conditions.

Synchronization with the INSIS programme is also a feature of the few infrastructure projects which have been approved, which include the INSEM electronic mail project, a number of experimental projects in electronic archiving for computing purposes, and the Computer Workshop (see Chapter 6). These projects are subject to inter-institutional coordination (see Chapter 8).

An experimental multilingual keyboard covering all the Latin alphabet languages plus Greek has been constructed on a microcomputer. An interface allowing simultaneous access to a number of computer aids to translation (Eurodicautom computer dictionary, documentation data-bases, advanced word-processing, and Systran machine translation) will also be constructed in 1984, likewise experimentally. Finally, Systran will become operational.

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1 See Annex IV

A critical element in the general guidelines, aimed at keeping local conversion costs to a minimum, is the establishment of strict criteria which keep software as independent as possible of the hardware selected (portability). Whereas in the past the basic software was chosen to match the computer, the software must henceforth increasingly be selected on its own merits, and steps taken to ensure that the hardware can accept it.

A particular effort will be made to encourage the use of software packages, particularly by drawing up special specifications aimed at widening the choice available, and by developing a library of software packages available on the various computers.

Proposals have been drawn up for a new policy for the management of data bases, which are the largest application within the Commission (see Chapter 5).

4 COMPUTER CENTRES

1983 saw a large number of changes in equipment and in operations. A steady improvement in the price/performance ratio offered by the equipment has allowed a significant increase in the computing output provided by the computer centres.

The computing output is the sum of the computing power of the computers themselves, the information storage capacity of the peripherals on disk and tape, the availability of programs, direct user support, and various ancillary services - laser printers, microform, etc.

In all, instant power in Mips (millions of instructions per second) increased from 10.5 Mips at the beginning of 1983 to 17 Mips at the end of the year (including power acquired at outside service bureaux) - see Table 2, line 1. Meanwhile, disk storage in gigabytes (thousand million characters stored) increased during the same period from 40 gb to 60 gb (Table 2, line 2).

The details of the changes are as follows:

- The ICL 2976 (1.4 Mips) was replaced by an ICL 2966D (1.8 Mips) which was subsequently uprated on site to 2988 Super Dual (3.8 Mips available from January 1984);

- The Siemens 7551 and 7760 (each of 1.25 Mips) were replaced by one 7571 of 4.5 Mips;

- An IBM-compatible configuration (Amdahl, IBM, ITT) offering 3.8 Mips was installed and started up immediately in November 1983. This will allow significant reductions in expense on outside computers from 1984, following the transfer of applications to Commission computers, which has already begun.

It should be noted that the systems availability target of 97% was not achieved in 1983 (Table 2, line 4). This was partly due to the large number of changes made, but principally to the inadequacy of the air-conditioning system, which had first to be completely shut down (February 1983), and then repaired, uprated and adjusted (air intake). The modifications necessitated the total shutdown of the Luxembourg Computer Centre in late October 1983, although emergency measures had avoided total closure in February.

Users were kept well informed of the problems and the first months of operation since the system was modified indicate that it is now stable.

Despite the significant increase in total computing output provided by the computer centres and the introduction of the additional (IBM-compatible) operating system, the total staff of the Luxembourg Computer Centre, including both officials and outside staff, has fallen steadily, from 138 in December 1982 to as few as 113 in January 1984 (see Table 2, lines 6 and 7) (after introduction of the third shift in "unattended" mode) owing to the considerable reduction in the number of contract staff.

Negotiations with Bull during 1983 led to improved terms for the EURIS service bureau. From now until the end of the contract (31 December 1984) they will yield a saving of 30% on the standing charge. At the same time, 1983 saw a 30% increase in 'on line' use of the data banks under the contract.

Management and coding work, which do not need to be centralized under a distributed system, were reorganized as far as possible with a view to improving direct user service.

The Computer Centre Division can thus now turn its attention to the areas where it can best serve the interests of the majority of users, particularly software support, information and training, technical assistance, monitoring of product operation and performance, allocation and control of resource utilization, installation and maintenance of new software, preparation and publication of manuals and user notes, introduction of data protection equipment and procedures, etc. These guidelines will be broadened and given substance in 1984.

The critical review of information storage and archiving methods began on schedule in late 1983, and the first conclusions will be given effect from 1984. In the medium term (1985-1986) more important changes will probably be made after a review (to be carried out in 1984) of the technology available for the improved management of the increasing number of media - approximately 75 000 volumes of magnetic tape in late 1983. In view of the heterogeneous nature of the Commission's computer hardware, such solutions, which include hyper-channel, mass memory and optical disks, will have to be the subject of a special study.

It is also expected that 1984 will see final decisions and procedures for the replacement of (COM) microfiche production equipment, currently under study, and for additions to the current laser printing equipment, which is rapidly reaching saturation point.

The contracts relating to an ICL computer (2982) and the EURIS service bureau on a Bull computer will expire shortly, and an important feature of 1984 will be the analysis of the replies to the invitations to tender published in January 1984, the specifications for which set out the Commission's hardware, software and service requirements for the period 1985-1987. Since all the current contracts will have expired by 1987, and in view of the additional computing and storage power required by new applications, the new contracts will be for a total of 48 Mips and 205 gb by 1987.

TABLE 2

COMPUTER CENTRES	Unit	82	83	84	85	86	87
1. Computing capacity	MIPS(b)	10.5	17	20	26	36	48
2. Storage volume	Gb (c)	40	60	75	110	150	205
3. Simultaneous users	Number	247	297	352	438	555	700
4. Computer availability	%	97	95	97	97	97.5	98
5. Expenditure on equipment	MECU(d)	10.51	9.96	9.88	10.18	10.18	10.18
6. Commission staff	Number	88	81	81	81	81	81
7. Staff under contract	Number	50	43	33	30	30	30
8. Expenditure on staff under contract	MECU(d)	3.05	2.00	1.60	1.40	1.40	1.40
9. Expenditure on service bureaux	MECU(d)	4.29	4.24	3.38	2.67	2.67	2.67
10. Total expenditure (a)	MECU(d)	17.85	16.20	14.86	14.25	14.25	14.25

(a) Total of lines 5, 8 et 9
(b) MIPS = million instructions per second. For the service bureaux, machine time purchased is expressed in equivalent computing capacity.
(c) Gb = Gigabyte = one thousand million characters
(d) Constant 1984 prices.

TABLE 3

USE OF THE COMPUTER CENTRES	INTERACTIVE LOAD (GINS/yr) (a)					STORAGE VOLUME (Mb-years) (b)				
	83	84	85	86	87	83	84	85	86	87
BY APPLICATION										
1. Administrative systems	1419	1209	2084	1749	1110	4349	4403	8287	9795	11215
2. Financial systems	2192	3090	3782	4472	4363	532	693	786	938	1028
3. Statistical systems	3140	5033	7027	8733	11088	9660	21291	30926	34628	40614
4. Documentation systems	2974	3803	6164	7712	9458	8414	10361	13913	17455	20970
5. Monitoring systems	1447	1931	3077	4236	4943	1137	1740	2390	3132	3620
6. Models	1467	1822	2209	2682	3391	2039	2500	2973	3733	4335
7. Other applications	279	324	367	411	472	324	395	457	521	543
8. Development and maintenance	1671	1722	1577	1688	1940	2686	3214	3462	3731	3947
9. Computer operation (c)	1701	1959	2205	2547	2678	10939	12726	14063	15570	16728
10. Future applications (d)	-	-	1805	9683	20771	-	-	10200	35900	69000
11. Reserve capacity (e)	8860	17117	18003	21187	27986	19920	17677	2543	2597	4000
12. Total net capacity (f)	25150	38010	48300	85100	88200	60000	75000	90000	128000	176000
BY USER (g)										
1. JCIS	595	23	27	33	36	535	648	770	913	972
2. SOEC	3140	5033	7027	8733	11079	9660	21291	30926	34628	40587
3. CUS	44	47	51	54	62	115	122	127	132	143
4. DG II	965	1216	1564	1992	2595	1903	2331	2784	3519	4119
5. DG III	1303	1504	1887	2189	2260	300	409	541	675	743
6. DG IV	19	51	83	145	185	75	110	205	320	379
7. DG VI	245	239	342	482	606	819	1097	1270	1566	1793
8. DG IX	959	1740	4334	4770	5014	4004	4473	9869	12472	14583
9. DG XI	104	119	137	177	205	117	139	160	192	200
10. DG XII	472	566	595	625	712	86	104	104	104	114
11. DG XIII	92	101	111	128	105	80	92	101	116	122
12. DG XIV	7	8	609	1210	1600	27	34	239	344	423
13. DG XVII	9	110	112	163	224	27	134	139	244	301
14. DG XVIII	1388	2188	2620	2959	2380	360	447	459	500	525
15. Other DGs	841	1112	1424	1791	2309	247	402	558	705	838
16. Use by all DGs	2735	3155	3787	4544	5444	8100	9550	11480	13772	16522
17. Development and maintenance	1671	1722	1577	1588	1949	2686	3214	3462	3731	3947
18. Computer operation	1701	1959	2205	2547	2678	10939	12726	14063	15570	16689
19. Future applications (d)	-	-	1805	9683	20771	-	-	10200	35900	69000
20. Reserve capacity (e)	8860	17117	18003	21187	27986	19920	17677	2543	2597	4000
21. Total net capacity (f)	25150	38010	48300	65100	88200	60000	75000	90000	128000	176000

	Batch load (GINS/yr)(h)				
	83	84	85	86	87
Existing applications	52204	61143	65350	66399	72834
Planned new applications	-	6995	25845	36686	46490
Future applications	-	-	6995	32840	69546
Reserve capacity	8996	24172	19110	22175	25330
Total net capacity (i)	61200	92310	117300	158100	214200

(a) Giga instructions per year in interactive operation.
(b) Mb-years = 1 million characters stored for one year.
(c) Public space (general user space for temporary files, e.g. sorting) has been included under this heading, which was not the case last year.
(d) Estimate of the load for applications not yet determined but which will be operating before 1987.
(e) Reserve capacity resulting from batch treatment on certain computers.
(f) The method of calculating gins/year was changed in 1983.
(g) For abbreviations, see Annex IV.
(h) Giga instructions per year in batch operation.
(i) Calculated on the basis of two manned shifts + one unmannned shift (22h00 to 07h00).

5. INTEGRATED INFORMATION SYSTEMS

The wide variety of activities of the Integrated Information Systems Division merits attention: at present the Division is responsible not only for user support, particularly in respect of data bases, but also for the management of the technical infrastructure of telecommunications and distributed data processing. [1]

The statistics given in Chapters 2 and 7 show the continuing effort being made by the Directorates-General to develop their computing organizations. This is no longer true merely of the minority of Directorates-General whose tasks and staff qualifications have long allowed them to computerize their activities (SOEC, DG II, etc.), but also of other DGs, some of which already possess a solid nucleus of computer know-how - DG III, DG VI, DG IX, DG XIV, DG XVI, DG XVII, CUS, Publications Office, shortly the JCIS, etc. Advances in distributed data processing are also reflected in the growth in equipment installed in the Directorates-General, even though the budget resources available have not allowed the programme proposed in 1982 to be implemented in full.

DISTRIBUTED EQUIPMENT

Table 4 shows predicted trends in distributed equipment, including both computing hardware and more conventional equipment.

The demand for hardware was heavy during 1983. Available funds and manufacturers' delivery times meant that not every request for every type of machine could be met. This was particularly the case with word processors, which nevertheless increased in number by 41% (see Table 4, line 5).

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1 Including the telephone switchboards and telex service, which in Brussels and Luxembourg account for just over half the Division's personnel

A number of growth rates are worthy of attention:

- non-intelligent terminals (up 49% - see Table 4, line 3)
- telecopiers (up 71% - see Table 4, line 10)
- office printers (up 84% - see Table 4, line 12)

On the other hand, all the minicomputers planned in 1982 were installed, although additional demand requires further additions in 1984 and beyond.

The 1983 purchasing programme for microcomputers could not be implemented, however, and was deferred for one year. Table 4 shows the effort necessary to catch up with the original target of 120 microcomputers by the end of 1985 (Table 4, line 4).

These changes, which are reflected in strong growth rates in the most modern types of equipment, mean extra work for the central organization, which is faced with serious resource-allocation problems. However, the users' own use of the software available on this hardware should result in productivity gains in the Directorates-General, and improved working facilities for many officials.

Use of the standard invitation to tender for distributed equipment should lead to a coherent policy for equipment within the DGs, and, as has already been stressed, the support service is to be strengthened in order to provide training and assistance for the software installed on the distributed equipment - word processing, graphics displays, tables, electronic message-switching, etc.

TELECOMMUNICATIONS

The primary objective for a data communications network was to a great extent achieved with the signature of an agreement on the use of the Belgian and Luxembourg public packet switching data transmission networks, DCS and LUXPAC, between the Commission (representing the European Institutions) and the Belgian and Luxembourg telecommunications administrations.

It should be stressed that this option avoids the major investment which would have been necessary to provide the Commission with a private data transmission network. Moreover, in economic terms, the concessions made during the negotiations by the host countries justify the choice made by the European Institutions.

TABLE 4

DISTRIBUTED HARDWARE	BUDG. ART.	Quantity				Expenditure 84 (a)				Expenditure 83 (a)			
		83	84	85	86	P	R	M	T	P	R	M	T
1. Typewriter	220	5060	5060	5100	5100	251		180	431	366		172	538
2. Office calculator	220	2290	2350	2410	2460	31		40	71	26		42	68
3. Non-intelligent terminal	211	685	825	930	1100	493	623	460	1576	535	724	475	1734
	222	26	26	28	28			7	7	2		6	8
4. Microcomputer workstation	211	7	40	120	200	218		50	268	72		24	96
5. Word processor workstation	222	281	411	511	600	800	390	300	1490	754	379	244	1377
6. Telex	231	88	88	75	70		210		210		204		204
7. Teletext	211		10	30	40	80		20	100				
8. Coding workstation	211	35	35	28	25		260		260		256		256
9. Microfiche reader	220	174	201	226	230	50		10	60	40		5	45
10. Telecopier	222	96	116	146	160		215		215		185		185
11. Photocopier	222	278	290	300	310		750	120	870	60	720	103	883
12. Desk top printer	211	381	450	520	590	96	42	53	191	95	43	52	190
	222	110	110	120	130			35	35			30	30
13. High speed printer	211	7	9	11	13		63		63		49		49
	222	1	1	1	1		28		28		25		25
14. Teleconference studios	231	2	4	6	8	3	22		25		20		20
15. RJE terminal	211	21	23	25	27	44	322		366		406		406
16. Minicomputer	211	20	23	25	28		2100		2100		1616		1616
	222	8	9	11	13		650	170	820	47	644		691
17. Software	211					600			600	317			317
18. Supplies and removals	211					113			113	220			220
19. Special equipment	222							200	200	300	350	146	796
	211						900		900		566		566
20. Other	220					52		16	68	77		40	117
	211					44		16	60	44		18	62
21. Price indexation	211					150			150	100		100	

	Budg. Art.	Expenditure 83	84	85	86	Expenditure 84 (a) P	R	M	T	Expenditure 83(a) P	R	M	T
Expenditure ('000 ECU)(a) 22	211	5898	6747	8170	8300	4433	1715	599	6747	1453	3847	598	5898
23	220	807	630	790	900	384		246	630	535		272	807
24	222	4198	3665	5380	5450	800	2033	832	3665	1222	2420	556	4198
25	231	235	235	200	170	3	232		235		235		235
1984 programme not completed in the absence of appropriations	222	Word processor workstations				600			600				
	222	Special equipment				300	250		550				

(a) Expenditure in '000 ECU, constant 1984.
P = Purchase
R = Rental, including maintenance.
M = Maintenance
T = Total

TABLE 5

TELECOMMUNICATIONS	Unit	83	84	85	86
TELEPHONE NETWORK					
1. Internal lines	Number	13000	14000	15000	16000
2. External lines	Number	1012	1072	1112	1200
3. Internal telephone calls/year	Million	20	24	30	36
4. incoming calls/year	Million	8	10	14	16
5. outgoing calls/year	Million	13	15	18	20
TELEX NETWORK					
6. Lines	Number	194	207	198	198
DATA NETWORK					
7. External lines	Number	18	20	(a)17	(a)12
8. External traffic (b)	Kb/s	240	288	317	350
9. Internal lines 1 200 b/s	Number	268	350	440	540
10. 2 400 b/s	Number	90	100	110	120
11. 4 800 b/s	Number	70	85	100	115
12. 9 600 b/s	Number	150	180	210	200
13. 48 000 b/s					
14. Internal traffic (b)	Kb/s	2340	2796	3252	3600
15. Total expenditure (c) Art. 211	mECU	1427	1853	2000	2150
16. Art. 222	mECU	352	285	300	315
17. Art. 231	mECU	7225	8158	7890	8930

(a) Mainly Brussels traffic. The planned reduction in the number of lines is a result of the installation of the X25 network which is gradually replacing them.
(b) Expressed in thousands of bits, one bit being equal to the basic unit of information (0 or 1)
(c) Expenditure in '000 ECU, constant 1984.

Technically, the Commission will transmit data using two public network switching centres installed on its own premises, one in Brussels and one in Luxembourg, and connected by the international public network. This choice will be supplemented by the acquisition of concentrators to which the terminals in the various buildings will be linked.

The telephone network continues to expand, as shown in Table 5; this is partially due to the expansion of data-transmission activities (telecopying, etc.). Some 8 million calls were metered in 1983; 10 million are expected in 1984 (Table 5, line 4). The new 20 000-extension PABX in Brussels is proving very satisfactory, and the new facilities it offers are greatly appreciated in the Commission.

The increase in traffic on the telex network (Table 5, line 6) was smaller than in previous years. Improvements provided by the SACHEM system mean that the telex also offers users more and more facilities. In addition, telephone, telex and telecopy have since July 1983 been operating round the clock, including weekends and public holidays.

DATA BASES

There has been a great surge in demand in this area, and as is shown by Table 6 (lines 21 and 23) an increase in volume of 50% is expected between 1983 and 1984. For this reason it was necessary to lay down the principles of data-base administration, [1] and from 1984 onwards the principles will be applied to new bases as they are established and to the reworking of existing bases whose management reveals defects.

A double trend may be noted:

- first, growing interest in Commission data bases amongst Member States
- secondly, an increased level of consultation of external data bases by Commission staff.

These two developments are not contradictory, but simply demonstrate the growing information requirement in public and private organizations in our industrialized society.

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1 See Annex III

For this reason efforts need to be made in two directions:

- first, improving the administration of in-house data-bases with a view to facilitating access to them in Member States

- secondly, within the Commission, developing the activities of the Data Information Service, which was established in early 1983, as announced in the previous report.

Notwithstanding its limited resources the Data Information Service tries to make the information on data bases more accessible by giving systematic demonstrations and training courses covering interrogation techniques and the detailed contents of the bases. A user assistance service has been set up. Requests by departments have led to connection to additional external bases, bringing the total number of external bases available for consultation to approximately 360, spread over 20 hosts.

As regards the management of data bases, significant progress was made in 1983:

- CELEX, the data base on Community legislation, contained almost 60 000 documents for consultation at the end of 1983. The input of the full texts of all legislative acts was begun during the year. There are external subscribers to CELEX in 13 European countries, and in 1983 their number almost doubled. This welcome trend is partly explained by the commercial launching of the English language version of CELEX; the German version also became operational and is shortly to be made available commercially. The initial plan to increase the number of languages offered is, however, subject to some delays, and efforts are being made to make up for lost time and respect the undertakings given.

- ACTU, the current internal news data base, which contains approximately 90 000 documentary units, was regenerated in September and now offers the user higher quality and easier consultation. The base has also been broadened, initially as a pilot project, to include documents of the Council Secretariat.

- ECO 1 is the Commission's largest internal documentation data base with 220 000 documentary units at the end of 1983. The critical reappraisal of ECO 1 begun late in 1982 continued during the year. Significant progress was achieved, but data input is not yet fully centralized, which does present problems in the completeness and quality of the information. In order to deal with these difficulties the management team itself has undertaken the processing of many documents and improved the reliability of checking at the input stage.

A major effort was made in 1983 to consolidate the statistical base, CRONOS. This involved improving systems reliability, and a preliminary rationalization of the data, which reduced the number of series (from 1.4 million to 1.3). Some 30 external 'clients' have access to CRONOS, and to its documentary base CADOS, via the national networks. In addition, the SIENA data base on external trade has developed spectacularly within the Commission, and now meets a large number of needs which were previously satisfied by consulting external bases - COMEXT, etc. The Brussels Data Shop is becoming increasingly valuable in its dual role of assistance to the Directorates-General and rapid provision of data to users.

Other data bases have been established for the Commission's own internal purposes, in personnel (SYSPER, Table 6, line 1), financial and accounting management (CRIMSON, Table 6, line 3) and monitoring (Textiles, Table 6, line 14). These applications are referred to again in Chapter 7, ('Development of applications'), and no further comment is made on them in this Chapter.

TABLE 6

PRINCIPAL INTERNAL DATA BASES	Volume (MB) (b)			
	83	84	85	86
1. Personnel management system (SYSPER)	560	560	560	560
2. Automatic address and publications management system (SAGAP)	230	240	250	260
3. Credit and investments accounting (CRIMSON)	65	95	150	200
4. Chronological statistical series (CRONOS)	2400	2400	2400	2400
5. External trade (SIENA)	1500	2500	3000	3300
6. Access system for the European nomenclatures data bank (SABINE)	940	1100	1420	1700
7. Institutions legal documentation (CELEX)	1180	1300	1450	1650
8. Commission internal documentation (ECO1)	655	750	850	950
9. Terminology data bank (EURODICAUTOM)	200	240	280	330
10. Community financial instruments (IFC)	51	95	105	120
11. Application of directives monitoring (ASMODEE)	50	60	65	70
12. Automatic library catalogue (ECLAS)	70	80	90	95
13. Micro-economic documentation (DOME)	39	51	66	82
14. Textiles monitoring	400	400	450	450
15. Internal current news (ACTU)	100	115	130	145
16. Proposals, Recommendations and Communications to the Council (PERSEE)	70	80	90	100
17. Research contracts management (CERES)	35	54	72	90
18. DG III research contracts management (Persephone)	20	25	30	35
19. Commission documentation service (SCAD)	50	90	120	150
20. Energy research and demonstration project (SESAME)	40	60	80	110
TOTAL :	8.846	10.645	12.068	13.247
22. Data bases under development		3.135	4.260	5.300
GRAND TOTAL :		13.780	16.328	18.547
24. Appropriations for external bases (a)	0.386	0.230	0.450	0.450
25. Appropriations for document analysis (a)	0.767	0.920	0.920	0.920

(a) Appropriations in million ECU, constant 1984.
(b) MB = Megabyte = one million characters.

6 INFRASTRUCTURE DEVELOPMENT

Signature of the agreement on data transmission with the Belgian and Luxembourg postal and telecommunications administrations (see Chapter 5) marks the end of the design and selection stages (Table 7, line 1).

The possibility of using 'local network' technology as an everyday infrastructure for all local data and text transmissions will be tried out in 1984.

With a view to encouraging the transfer of large volumes of data between different makes of computer the Commission is financing the construction and implementation of a common function file transfer software system at a total cost of 1 500 000 ECU. The protocol selected is in accordance with the OSI seven-layer architecture (levels 5, 6 and 7), as an intercept standard until such time as an international standard can be adopted. The Commission has concluded contracts with each manufacturer to develop the software, and a committee on which the manufacturers are represented deals with any problems of interpretation which may arise.

Some work has been done on standardization and certification, particularly as regards connection of terminals in 'teletype' mode, the European alphabet and magnetic tapes. This work will be continued and broadened in 1984, covering in particular the installation of teletex connections and the development of a protocol for terminals in 'screen' mode.

An inter-institutional system of electronic mail is to be developed under INSIS (see Chapter 8). This project will begin in 1984 with pilot projects and feasibility studies for the first operational phase, to be effected in 1985 and 1986. As is shown in Table 7, line 4, a significant investment in staff is called for in 1985. If the necessary budget resources are not forthcoming, the future of the project will be endangered.

Lines 5 and 6 of Table 7 show the resources given over to the drafting, launching, and analysis of the replies to the invitations to tender relating to distributed hardware for local users (see Chapter 3). An invitation to tender, offers for which are currently being examined, will allow the equipment policy for the period up to the end of 1986 to be settled. In 1985, however, a start must be made on preparations for the period 1987 and beyond.

The Computer Workshop (Table 7, line 7) installed in 1983 will serve as a focal point for testing of new distributed hardware, study of the most appropriate interfaces for access to information, and the various experiments carried out under the INSIS programme.

The work on consolidating statistical software begun in 1983 will be completed in 1984, after which a more limited level of maintenance activity will be applied.

In accordance with the new guidelines described in the objectives of the Report (Chapter 1), increased weight will be accorded to software packages as the most promising tool for increasing productivity. The infrastructure works planned for this purpose include the preparation of specifications whose purpose will be to select the packages which are the most efficient on the full range of hardware available, and the preparation of technical directives for the development of applications, including the use of software packages.

New products are now planned which will help improve quality and security management, i.e. the development of data bases on the hardware and software available, a system for the management of applications environments, and a system to control access to computer resources.

TABLE 7

DEVELOPMENT OF INFRASTRUCTURE	MAN/YEARS				
	83	84	85	86	87
1. Data network	2.0	0.2	-	-	-
2. Local networks	-	0.7	0.5	0.5	0.5
3. Equipment compatibility	1.3	4.2	5.0	4.0	4.0
4. Interinstitutional electronic mail, and electronic archiving (a)	2.7	7.6	16.5	15.5	14.5
5. Local configurations 1984	5.8	5.3	5.0	-	-
6. Local configurations 1987	0.7	-	5.0	10.0	10.0
7. Computer Workshop and experimental projects (a)	5.8	3.0	2.0	2.0	2.0
8. Data access interface (a)	-	1.0	1.5	5.5	8.5
9. Consolidation of statistics software	16.3	10.3	7.0	7.0	7.0
10. Operations software	5.8	4.1	5.5	4.5	3.0
11. Development software	4.5	2.7	4.0	3.0	3.0
12. Quality and security management aids	-	1.7	5.0	5.0	3.0
13. INSIS management and coordination studies and plans (a)	7.8	6.2	5.0	5.0	5.5
GRAND TOTAL :	52.7	47.0	62.0	62.0	61.0
15. including in-house staff :	34.0	30.0	30.0	30.0	29.0
16. staff on contract (man/years) :	18.7	17.0	32.0	32.0	32.0

(a) Contributions to INSIS programme

7 APPLICATIONS DEVELOPMENT

In applications development the primary concern should be to satisfy the increasing demand from users, while ensuring that the waiting list for the development of new applications does not become unacceptably long.

To achieve this in the context of the resources described in Chapter 2 requires increased productivity in development. This was the theme of a specific project, and two types of priority action were identified: promoting software packages already on the market, and the methodology of constructing applications programs.

The work of setting up these programs will nonetheless require a heavy investment in training and user support (Table 8, line 1) which must come from the budget funds granted under Article 214 for development of applications. This is why the budget requested must be granted.

This policy will produce tangible results from 1985 onwards, but it was clear even in 1983 that all the projects due for development in the Informatics Directorate would be operationally based on software packages which already existed or were in the process of being acquired.

Item 2 in Table 8, 'Improvement and Maintenance of Applications', describes for each broad field of applications the human resources devoted to the tasks in question.[1] The data in Table 8 of this report now include the contribution of the Directorates-General and cannot therefore be compared with those in the corresponding table of last year's report. This also applies to all the other items in Table 8 except Item No 3 (Productivity).

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1 The planning data were not sufficiently accurate in 1982 to provide full details of the contribution of the Directorates-General, and only a broad estimate (55 man-years) could be given

It can be seen that the resources devoted to maintenance and improvement were very considerable, representing 43% of all staff (see Total 2 in Table 8). Old applications must therefore be brought up to date and into line, particularly by the use of software packages, in order to reduce this part of the budget. This is the intention behind the forecasts in Table 8, where an overall fall of more than 25% is expected by the end of 1986.

It is also important to improve development methods and to supply to the units responsible for development the computer aids they need for their tasks. This is the purpose of Item 3, 'Productivity of Applications Development'; the investments made in 1984 and 1985 should have been largely recovered by 1986. The figures quoted relate only to the Informatics Directorate, but the effect on the Directorates-General should be felt next year.

'Projects under way' (Table 8, Item 4) lists the projects currently under development, i.e. those which have passed the stages of preliminary analysis and feasibility study. It is unnecessary to comment line by line on this item, but it does demonstrate that computing is playing a major role in many areas of activity. It is a means of rationalizing internal administration and financial management, and the size of computers' memories allows vast statistical and documentary data bases to be created.

In addition the computer is becoming essential to the Commission in its role as guardian of the Treaties. Applications of the 'monitoring' type are now essential instruments in the implementation of the Commission's policy in a number of fields: industrial and agricultural policies, detection of contraventions of Community regulations, and commercial relations with third countries.

Item 5, 'Projects ready for development' lists those projects in respect of which the feasibility study has been or is being completed and whose development can start in 1984. These projects will involve 20 man-years in 1984 (total 5). Thereafter there will be virtually no resources (1 man-year) for any new developments. This difficulty arises from the fact that the budget resources requested for 1984 were not granted.

Table 9 is a list of new projects to be developed in the future. Some of these are of great importance either politically or to the functioning of the Commission. They include management of state aids, consolidation of CELEX, the new accounting system SINCOM, CEDIN, standardized payments, management of mail and archiving, etc.

In all, the required manpower totals 257.85 man-years, whereas the resources available up to the end of 1986 total 160.09 man-years. The lost time cannot therefore be made up before the end of 1987, even on the extremely unlikely assumption that no further requests will be added to the list. It is therefore essential that the budget resources requested be granted, failing which the waiting times for users are likely to become intolerably long.

TABLE 8

DEVELOPMENT OF APPLICATIONS	MAN/YEARS			
	83	84	85	86
1. PROGRAM PACKAGE TRAINING AND SUPPORT	**5.00**	**15.00**	**36.00**	**37.00**
2. SUPPORT, IMPROVEMENTS AND MAINTENANCE OF APPLICATIONS				
2.1 Administrative systems	29.69	15.96	9.02	5.17
2.2 Financial systems	13.87	16.44	14.45	14.47
2.3 Statistical systems	25.19	22.51	22.48	23.91
2.4 Documentation systems	10.14	11.24	10.94	10.84
2.5 Monitoring systems	25.89	25.40	22.98	21.19
TOTAL 2	**104.78**	**91.55**	**79.87**	**75.58**
3. PRODUCTIVITY OF DEVELOPMENT OF APPLICATIONS		**1.52**	**1.41**	**-8.16**
4. PROJECTS UNDER DEVELOPMENT				
Parliamentary questions (ROGER) (Interinstitutional)	0.91	1.28		
Directives data base (ASMODEE II) (All DGs)	1.36	0.46		
Publicly available legal documentation (CELEX)	4.90	0.10		
Statistical surveys (SOEC, DG VII, XI, XVIII)	4.55	4.44	0.30	0.30
External trade statistics (OSCE)	6.19	4.76	3.88	2.19
GATT negociations (SOEC, DG I, CUS)		5.74	4.37	2.74
		0.55(a)		
Statistical data bases including SIENA (SOEC)	3.42	3.57	7.65	3.29
Customs tariff management (TARIC II) (CUS, DG VI)	1.43	0.15	0.15	0.20
		2.0(a)		
Interpreters management (SAFIR) (JCIS)	11.04	11.79	4.86	1.27
Steel monitoring (DG III)	7.10	5.35	5.31	
Textile monitoring (DG III)	5.50	0.22		
Social fund (Phase 1) (DG V)	1.29	0.26	0.14	0.14
EAGGF - guidance + FEOPAY (DG VI)	1.52	2.32	0.48	0.21
		0.40(a)		
Third countries development fund management (PICS + FINPICS) (DG VIII)	2.90	2.95	1.37	0.70
Food aid programme management (DG VIII)	1.11	0.72	0.20	0.20
Design offices (DG VIII)		1.08		
Personnel and administration management (SYSPER, MINISYSPER, AFL) (DG IX)	8.98	11.93	4.97	0.49
Contract management (DIODON II, DG XII)	1.15	1.50	0.50	
Regional Development Fund (FEDER)(DG XVI)	2.67	0.30	0.14	
Energy research and documentation (SESAME) (DG XVII)	0.33	0.26		
Credit and investments accounting (CRIMSON) (DG XVIII)	3.81	2.26	1.95	1.95
Budget library (DG XIX)	2.00	1.31	0.50	
Monitoring and detection of irregularities (DG III, VI, XIX, XX, CUS)	0.40	2.07	0.78	
		3.00(a)		
Infringements (SG, DG III, DG VI)	0.84	1.44	0.22	
Periodic instruments (DG VI)		11.66(a)		
Terminology data bank EURODICAUTOM (DG IX)		1.08		
Energy data base SIRENE (DG XVII, SOEC)		2.50	2.50	
Health inspection (DG VI)	0.94			
Interinst. base on information by and about the Institutions (SCAD, CEDIN)	1.18	0.57		
Agricultural accounting (RICA) (DG VI)		5.55		
Other sundry developments all DGs	6.40	8.63	12.32	15.56
		1.90(a)		
TOTAL 4	**81.92**	**84.59**	**52.59**	**29.24**
5. PROJECTS READY FOR DEVELOPMENT(preliminary and feasibility studies completed)				
External trade pre-processing base (SOEC)		5.67	2.10	
Energy data base (SIRENE) (DG XVII, SOEC)		6.11	2.71	
Social fund (Phase 2) (DG V)		0.76	0.76	0.76
EAGGF fisheries (DG XIV)		2.42	2.01	
Bank funds management (CRIMSON-TRESORERIE) (DG XVIII)		1.09		
Steel prices management and publication (DG III, OPOCE)		3.71		
TOTAL 5		**19.76**	**7.58**	**0.76**
6. RESOURCES FOR NEW PROJECTS (cumulative total 84/86 : 160.09)		**1.06**	**45.75**	**113.28**
7. GRAND TOTAL :	**191.70**	**213.48**	**223.20**	**247.70**
incl : 7.1 - Informatics Directorate staff	49.60	50.15	47.70	47.70
7.2 - Directorate-Generals' staff	54.10	58.33	65.00	75.00
7.3 - Outside staff (man-years)	88.00	105.00	110.50	125.00

(a) CADDIA budget.

TABLE 9

NEW PROJECTS	Approximate estimate of development investment required in man-years
Management of state aids (SAMIS) (DG IV, VI, VII, XIV, SG)	11.40
New accounting system SINCOM (DG XIX, XX, All DGs)	8.40
Consolidation of community law data base (CELEX)	1.50
Data base on information published by the Institutions (CEDIN) (Interinst.)	2.00
CEDIN satellites (including EPOS and EURYDICE)	8.80
Integrated planning and administration system (SIPA) (DG IX)	5.50
Standard payments - Pay-Missions-Sickness (DG IX + Interinstitutional)	7.65
Administration of property and equipment (SYSBIEN) (DG IX)	3.50
Staff regulations reference library	2.00
Personnel management (SYSPER) Phase II	3.50
Management of translations	5.00
In-service trainees	1.00
Public availability of bases	1.00
Electronic office equipment for Secretariat-General	3.00
Registry/Notifications (DG IV)	3.00
Budget planning (DG X)	0.50
Infrastructure evaluation system DG VII	5.25
Bases base	5.00
Mail and archiving management	10.00
SOEC : Surveys : Cost of Construction	6.00
Transport	9.50
Steel consumption	5.00
Wine production	3.00
Social	8.00
Data bases : Purchasing Power Parity	3.00
Price levels	3.00
Meta-data	6.00
Thesaurus of statistical nomenclatures	7.00
Analysis and management of statistical tables	5.00
Integrated system of activity and product nomenclature	8.00
User file management	2.00
Ad hoc analysis	5.00
Applications to be developed by the DGs themselves :	
DG I	3.00
DG II	6.00
DG III	3.80
DG VI	22.00
DG VII	2.30
DG VIII	7.90
DG IX	0.95
DG X	7.00
DG XI	2.00
DG XIII	9.30
DG XIV	7.00
DG XVI	4.95
DG XVII	4.00
(DG XX)	6.15
SJ	2.40
JCIS	0.40
CUS	0.20
Other DGs	10.00
TOTAL :	257.85
RESOURCES AVAILABLE UP TO DECEMBER 1986 (see Table 8)	- 160.09
DEFICIT 1984-86	97.76

8 INTER-INSTITUTIONAL COOPERATION AND INSIS

The aim of the INSIS project is to prepare for the introduction of an inter-institutional system of integrated information communication services throughout the Community. The system will facilitate exchanges of information between Community institutions and administrations of Member States, by the use of appropriate new technologies.

The introduction of such new technologies can only be fully effective if timely measures are taken by future INSIS users to ensure that the systems used for the exchange of information are thoroughly compatible. To achieve this is is essential in particular that users draw up and abide by agreements which ensure information exchange irrespective of the computer hardware used, and which respect international standards.

In addition the INSIS programme should have a beneficial effect, through the development of a coherent series of pilot projects, on two of the protagonists in the electronic revolution - the postal and telecommunications administrations, and industry.

The form of the projects has now reached an advanced stage, and is being negotiated in a consultative committee consisting of representatives of the Member States and of the Community Institutions and bodies.

The four projects being developed under INSIS are:

- INSEM,[1] aimed at the gradual implementation of a general electronic mail service within the Institutions, the facilities of which will also be available for exchanges with Member States. Proven message-switching systems should also subsequently be integrated into the system.

- STRADA,[1] aimed at replacing the daily dispatch of hundreds of thousands of pages from the Institutions to the Member States, via the permanent representatives, by an electronic rapid transmission system. In due course (1987) the services offered by STRADA will be integrated into INSEM.

- The video-conference project launched by the Commission in conjunction with the ECPTA [1] 'EVE' [1] project, which in its pilot phase will result in an experimental link between the Community Institutions in Brussels and in Luxembourg. This project should allow investigation of the operational, ergonomic and psychological aspects of video-conferencing.

- The Computer Workshop described in Chapter 6.

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1 See Annex IV

Development of these projects should allow international standards to be used and encouraged by INSIS. In the absence of such standards, intercept standards will be used as described in Chapter 3.

As far as resources are concerned, the main INSIS budget remains fairly modest: approximately 3.25 million ECU in 1984. The balance of its financing comes from users.

The Inter-Institutional Committee for Informatics (CII) is directly involved in the INSIS programme through its responsibility for monitoring the establishment of the system in its inter-institutional dimension. It has set up user sub-committees, chaired by the European Parliament, for the electronic mail and video-conference projects.

The CII has also encouraged the development of other initiatives coordinated inter-institutionally. In particular the Institutions have adopted a common policy for equipment acquisition, in order to guarantee maximum hardware compatibility. The invitation to tender for distributed equipment mentioned in Chapters 3 and 5 is a good example of this cooperation. Similarly, it was on behalf of all the Institutions that the Commission signed the agreement on the use of the public data transmission networks with the Belgian and Luxembourg postal and telecommunications administrations.

This fruitful cooperation in the field of infrastructure must now be extended to cover applications.

With this in mind a committee has been set up to support the CII. It has been decided to coordinate several shared applications in various spheres of activity to ensure their compatibility. These include personnel management, officials' pay, publishing systems, etc.

Other common initiatives have been undertaken and should develop, particularly as regards training.

Lastly, the Commission has this year established an inter-institutional documentation office, which collects all documentation likely to be of interest to all the Institutions. Specific rules have been laid down regarding user categories and rights of access to the information.

Broadly, it can be said that following its start-up year (1982), inter-institutional cooperation has produced its first positive results in 1983. It is clear that such cooperation will henceforth be an essential element in data processing within the Community Institutions.

9 QUALITY AND AUDIT

Improving computing performance was one of the goals set for 1983 in the Commission's data-processing services. Projects begun and successfully completed in 1983 allowed:

- a 'quality plan' to be drawn up defining quality targets (in terms of computer availability, response time on terminal, etc.)

- a diagnostic study of computer security to be carried out, a document to be drawn up setting out the principles of a computer security policy, and a head of security to be nominated

- a document entitled "Computing ergonomics", to be produced in association with the staff representatives, approved by the Safety and Health Committee and published for gradual implementation within the Commission's departments

- one-off audits of specific applications and projects to be carried out.

The framework thus created for quality and audit management will allow rapid development of these activities during the coming years along the following lines:

- implementation of quality plans in the services, and monitoring and follow-up of numerical quality indicators;

- inclusion of ergonomic aspects in the selection of equipment and furniture and in the development of applications;

- responsibility for and development of major projects dealing with control of access to computer resources and with configuration management;

- risk analysis and establishment and testing of contingency plans for the most critical applications;

- appointing of correspondents responsible for computer security, in order to ensure that the computer security policy is properly introduced in the Directorates-General.

Development of the management of quality and security will increasingly involve operational aspects, but should not be allowed to hamper development of 'audit' activities. For the future these activities will include the establishment of a three-year plan, together with one-off activities relating in particular to major projects and data bases.

TABLE 10

DATA PROCESSING EXPENDITURE in million constant 1984 ECU							
Ref. (a)	Art.	DESCRIPTION	83	84	85	86	87
2.5	210	Operation of Computer Centre	9.96	9.88	10.18	10.18	10.18
	211	Data processing networks					
4.22		Distributed equipment	5.90	6.75	8.17	8.30	8.30
5.15		Telecommunications equipment	1.43	1.85	2.00	2.15	2.15
		Total	7.33	8.60	10.17	10.45	10.45
	212	Data processing operating staff costs					
2.8		Staff from outside the computer centre	2.00	1.60	1.40	1.40	1.40
		Operating staff, distributed equipment	0.65	1.08	0.87	0.87	0.87
		Total	2.65	2.68	2.27	2.27	2.27
	213	Data processing effected by outside contractors					
2.9		Service bureaux	4.24	3.38	2.67	2.67	2.67
6.24		External bases	0.38	0.23	0.45	0.45	0.45
		Total	4.62	3.61	3.12	3.12	3.12
	214	Analysis and programming, pre-analysis and special projects effected by outside contractors					
7.16		Infrastructure (e)	1.19	1.10	2.11	2.11	2.11
8.3		Development of applications (e)	5.35	6.78	7.29	8.22	8.22
		Total	6.54	7.88	9.40	10.33	10.33
6.25	215	Document analysis effected by outside contractors	0.77	0.92	0.92	0.92	0.92
	21	Total Chapter 21	31.87	33.57	36.06	37.27	37.27
4.23	220	Office machinery (b)	0.81	0.63	0.79	0.90	0.90
	222	Technical equipment and installations (b+d)					
4.24		Distributed equipment	4.20	3.67	5.38	5.45	5.45
5.16		Telecommunications	0.35	0.28	0.30	0.31	0.31
		Total	4.55	3.95	5.68	5.76	5.76
	231	Services and telecommunications (b+c)					
4.25		Equipment	0.23	0.23	0.20	0.17	0.17
5.17		Telecommunications	7.23	8.16	7.89	8.93	8.93
		Total	7.46	8.39	8.09	9.10	9.10
		Total Chapters 21, 22, 23	44.69	46.54	50.62	53.03	53.03

(a) References relate to previous tables. The first figure indicates the table number and any subsequent figures the line numbers within the table.

(b) Figures do not include non-data processing appropriations included in the same Article.

(c) Figures relate only to telecommunications standing charges.

(d) Ignoring reimbursement from the telephone switchboard in 1983.

(e) These figures correspond to the number of man-years given in Tables 7 and 8; the cost of one man-year is estimated at 66000 ECU for the period 1985-87, 65000 ECU for 1984 (because of the carry-forward from 1983), 61300 ECU for 1983 (true value plus inflation rate to give constant 1984 ECUs).

TABLE 10a

APPROPRIATIONS FOR DATA PROCESSING in million current ECU (f)

Art.	DESCRIPTION (C = Commitments (a), E = Expenditure (a))		83	84	85	86	87
210	Operation of Computer Centre	C	7.93	9.43	10.17	10.72	11.25
		E	9.48	9.88	10.70	11.27	11.83
211	Data processing networks	C	6.77	7.75	10.16	11.01	11.56
		E	6.97	8.60	10.69	11.56	12.14
212	Data processing operating staff costs	C	2.30	2.65	2.38	2.51	2.64
		E	2.52	2.68	2.38	2.51	2.64
213	Data processing operations effected by outside contractors	C	4.22	3.61	3.27	3.45	3.63
		E	4.40	3.61	3.27	3.45	3.63
214	Analysis and programming, pre-analysis and special projects effected by outside contractors	C	6.00	6.22	9.56	11.43	12.00
		E	6.22	7.88	9.88	11.43	12.00
215	Document analysis effected by outside contractors	C	0.78	0.84	0.96	1.02	1.07
		E	0.73	0.92	0.96	1.02	1.07
21	Total Chapter 21 (b)	C	28.00	30.50	36.50	40.14	42.15
		E	30.32	33.57	37.88	41.24	43.31
220	Office machinery (c)	C	0.77	0.63	0.83	1.00	1.05
		E	0.77	0.63	0.83	1.00	1.05
222	Technical equipment and installations (c+e)	C	5.10	3.15	5.97	6.37	6.69
		E	4.33	3.95	5.97	6.37	6.69
231	Services and telecommunications (c+d)	C	7.40	8.09	8.50	10.07	10.57
		E	7.10	8.39	8.50	10.07	10.57
	Total Chapters 21, 22, 23	C	41.27	42.37	51.80	57.58	60.46
		E	42.52	46.54	53.18	58.68	61.62

(a) The difference corresponds to appropriations brought forward and re-used (see text).
For the years 1983 and 1984 appropriations are shown as apportioned after transfer of funds required for the completion of programmes.

(b) Requests for appropriations (commitments) totalled 30.50 MECU for 1982, 32.50 MECU for 1983 and 35.52 MECU for 1984.

(c) These figures do not include the non-data processing appropriations included in the same Article.

(d) Figures relate only to telecommunications standing charges.

(e) Ignoring reimbursement from the telephone switchboard in 1983.

(f) Conversion from constant 1984 ECUs to current ECUs has been effected using the following rates : 1984/83 : + 5,1%, 1985/84 : + 5,1%, 1986/85 : + 5,3%, 1987/86 : + 5 %

10 DATA PROCESSING BUDGET

The planning methods implemented in 1982 have allowed better understanding of the allocation of resources to projects within the Directorates-General, and better forecasting of future needs. The data shown in last year's Table 10 have this year been recast into two tables:

- the first shows total expenditure in constant ECU (1984 value) and in current ECU, article by article and, within each article, heading by heading as they appear in other Tables, to which reference is made;

- the second shows, article by article, the commitments which relate to one financial year only, as opposed to expenditure which takes account of appropriations carried forward and appropriations re-used.

It had been intended to introduce analytical accounting of data-processing activities gradually during 1983. Lack of resources has prevented progress being made as quickly as had been expected, and the first results cannot therefore be included in this report.

A high rate of growth (32%) was achieved in the services rendered to users in 1983. However, it will not be possible to maintain this level in 1984 because of the inadequate level of budget appropriations granted. It should be remembered that the critical threshold for the whole of Chapter 21 was 33 200 000 ECU (1983 value) [1], whereas the budget only made available 30 500 000 ECU.

Overall, expenditure for 1984 will show an increase of only 9.4% over 1983, i.e hardly 2.4% at constant rates. As has been shown, this increase is not sufficient to meet the targets originally set for 1984.

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1 See last year's report, Chapter 10 (Doc COM (83) 240 final)

Table 10 shows that the growth in budget demand from 1984 to 1985 arises from only a few budget headings: Articles 211, 214, 220 and 222. Expenditure on computer operations, on the other hand, (210, 212, 213) remains stable overall.

In order to stabilize expenditure on applications development and acquisition of distributed equipment considerable investments will first be necessary to achieve a threshold beyond which expenditure can remain stable. Table 10 demonstrates this clearly.

The minimum level of increase required in the appropriations under Chapter 21, using the basis of updated figures from last year, is 5 500 000 ECU (1984 value). In view of the difficult financial situation obtaining at the time of drafting the proposals for 1985, it is proposed that the target be achieved in two stages.

If this cannot be done, essential investments will not be possible:

- the waiting time for new applications will reach dangerous proportions, since a further deficit of 50 man/years will be added .

- installation of distributed equipment - electronic office equipment and microcomputers - will be delayed and Commission departments will not show the hoped-for increase in productivity;

- the initial stages of the implantation of the inter-institutional system for electronic mail will again be deferred, and the future of the system endangered.

It should also be stressed that significant savings can be achieved by obtaining a larger number of posts in the budget. Permanent tasks performed by outside staff may be evaluated at 93 man/years, and a saving of 1 700 000 ECU could be achieved if these tasks were performed by officials.

Finally, it is worthwhile recalling that the structure of the budget nomenclature has still not been modified to allow for the integration which has already been achieved in the various sectors of the automatic processing of information. This incompatibility is not conducive to good management, and undoubtedly hampers the administrative departments.

11 CONCLUSIONS AND FUTURE PROSPECTS

A high rate of growth (32%) was maintained in the computer services rendered to users in 1983, while budgetary resources increased by only 4%. This success must be stressed, since the development of computing activities within the Commission results in gains in productivity which enable more to be done with virtually unchanged resources.

This rate of growth is also evidence of the progress which has been achieved. More importantly, though, 1983 and 1984 will be remembered as the years in which decisions were taken which committed us to the network infrastructure and to central and distributed equipment.

These efforts have enabled us to make up some of the time lost in previous years. Nevertheless, if the Commission wishes to achieve the goals which it has set in data-processing, decisive investments must be made in 1985 in distributed hardware (electronic office equipment and micro-computers) and the development of new applications.

It should also be recalled that the operation of the Commission's data-processing services depends to a not insignificant extent on the services of outside staff, evaluated in 1983 at 184 man/years. This situation is all the more worrying since the dependence can be at critical points in the organization. The granting of new budget posts would lead to a more than proportional fall in expenditure and considerable strengthening of our organization at its most sensitive points.

PART B

DATA PROCESSING IN THE JOINT RESEARCH CENTRE

INTRODUCTION

The main requirements of the Ispra Establishment in respect of the processing of scientific, technical and administrative data are met by the the hardware and software of the Computing Centre.

In addition, a number of laboratories possess dedicated minicomputers which are used either in the capture or pre-processing of experimental data or in the processing of highly specialized data such as images, or sometimes, using the Computing Centre data transmission networks for communication amongst themselves, for local processing of data.

The developments in data processing are in line with a plan established during 1979-80 for the JRC's 1980-83 programme.

In addition to its activities relating to data processing projects, the Informatics Division of Department A is responsible for management of the Computing Centre, and the Head of Division is Head of the Computing Centre.

A Users' Committee, whose members are designated by the Director of the Establishment, and which comprises mainly the heads of Departments and Directorates, together with any advisers they consider appropriate, meets from time to time at the request of the Director of Department A and under his chairmanship to draw up general guidelines for the head of the Computing Centre which will ensure that users' requests are optimally met.

Moreover, each Head of Division has appointed a data-processing assistant whose role is to maintain contact between the staff of the division and the head of the Computing Centre.

The budget of the Computing Centre consists of an Appropriation Account (1.30.2) funded from the various programmes in proportion to the services rendered to each programme. This implies invoicing of services to each user.

The activity of the Computing Centre covers:

- operation of the computers, including the internal data transmission network;

- the establishment and maintenance of the basic software;

- the establishment and maintenance of technical and scientific libraries, including very large general utility programs, relating in particular to engineering;

- user support consisting of

  direct oral information;

  organization of courses and seminars;

  written distribution of detailed information (10 annual publications);

  drafting of concise manuals on technical subjects.

The need for data processing hardware and software is determined periodically by user surveys supplementing the information available from Computing Centre development experience and from actual trends in the use of the data processing facilities.

The Computing Centre obtains its equipment by invitation to tender, following approval by the Management Committee for Data Processing in the Commission and the ACPC-JRC (Advisory Committee on Procurement and Contracts).

Supplies to the Computing Centre have to meet the requirements of the Standard Implementation Committee (SIC) recommendations.

1. INSTALLATIONS, DEVELOPMENT, SHORT AND LONG-TERM FORECASTS

The current equipment was selected following invitations to tender in 1979 and 1980.

Installation began in August 1980 and continued during 1981 and 1982 as need arose.

However, the installed computing capacity is becoming inadequate for users' needs, and a long-term development plan for computing facilities at the JRC should be drawn up. The outlines of such a plan are given in Appendix II. Such an undertaking will require financial and staff resources which are not currently available.

Two invitations to tender were authorized by the competent authorities and launched during the final months of 1983.

They relate to a short-term programme aimed only at filling the most urgent requirements of the forthcoming four-year plan, which was approved on 13 December last, whilst remaining within the strict budget limits which have been set.

The programme provides for augmented computing power and diversification of the resources offered to users.

Users have been asking for a diversification of computing facilities to allow them to run their scientific and technical programs on the type of computer for which they were designed, thus avoiding conversion problems which can in certain cases be tricky.

As regards the augmented computing power, it should be noted that the statistics covering a period of more than 10 years show that every year the demand for processing on the CPU has increased by practically 30% over the previous year. An annual increase of 25 to 35% is normal in research centres.

With regard to the need for peripheral memory, the available statistics also give a growth rate of 1.3 per annum.

In view of the time which suppliers must be allowed for submission of their offers, the results of the invitations to tender will not be available until the first quarter of 1984.

2 EQUIPMENT CURRENTLY IN THE COMPUTING CENTRE

The Computing Centre hardware consists principally of one Amdahl 470/V8 mainframe computer supplying 6.5 Mips, a wide range of peripherals and a network of seven Solar 16 computers.

Some 160 VDUs and about 20 minicomputers provide RJE facilities around the Ispra establishment.

Details of the current configuration are given in Table C.

Access to the computer is further facilitated by an internal network of seven French-manufactured Solar 16/65 computers (SEMS) which, in addition to being used in the Teleinformatics project, allow access to the central computer via Euronet.

One of these minicomputers was installed in DG XII at the end of 1982 and has greatly encouraged co-operation between the Commission departments and those of the JRC.

This project was carried out with the aid of DG IX and DG XII Brussels.

No major changes were effected in the Computing Centre hardware in 1983. It was decided that four obsolete disk units, one fixed-head disk unit, one card punch and one punched tape reader were of no further use, and they were taken out of service and returned to their suppliers. The only additions to the facilities related to safety: a new fire detection system and an extinguishing system using the gas Halon were installed and tested.

3. STAFF, BASIC SOFTWARE AND OPERATION

3.1 STAFF

In January 1983 the staff of the Computing Centre was 30 units but fell to 29 units in November 1983. It remained consistently below the envisaged budget complement of 36.

The staff is made up as follows:

	JANUARY	DECEMBER
General management	2	2
Operation	10	10
Data capture	3	3
Basic software	8	7
Networks	2	2
User support	5	5
	30	29

During the course of the year the staff took part in a series of specialization courses and seminars, partly with the aim of preparing for new developments. Internal seminars using audio-visual techniques were also organized for the operating staff, for whom it is difficult to arrange outside courses.

3.2 BASIC SOFTWARE

Until December 1982 the computer was operated using a totally obsolete system (MVT).

It became possible to move up to another system only when a more recent generation of computer was installed in 1980.

The need to prepare carefully for the changeover to the new system when the new computer became available, without inconveniencing users either during the installation or during the changeover itself, required a long period of organization and preparation.

The new operating system (MVS) came into service on 1 January 1983 and the two systems were available to all users for a period of six months so as to allow them to convert their applications gradually and painlessly.

MVT, the old system, was kept available for a further three months for the sole benefit of the administrative departments, in order to provide them with a maximum of continuity and security for their applications.

While MVS was being run in, and until MVT was taken out of service, the two systems were run under the control of a third, VM, which ensured an equitable apportionment of resources between the two operating systems, and enabled the transition to be made economically without recourse to supplementary hardware.

Virtually all installation and maintenance of the operating systems is carried out by Computing Centre staff.

3.3 OPERATION

The computer is operated in three shifts:

- 2 shifts with operator control from 07.00 h to 24.00 h
- 1 unattended shift from 24.00 h to 07.00 h

In addition, Saturday mornings are devoted to the maintenance of files recorded on disk. This work is done in overtime.

Unattended operation (without operators) allows sequences of very long programs to be executed without the need for additional posts which are in any event not available.

4. SERVICES PROVIDED

4.1 DATA PROCESSING

During 1983, use of the Computing Centre was as follows:

CPU hours in problem mode: 2700

including	batch processing:	2272
and	conversational mode (TSO):	428
covering	129 600 batch operations	
and	119 800 time sharing operations.	

The increase in CPU use as compared to 1982 is only some 12%; this can be attributed largely to the greater efficiency of the software products in the new operating system. The number of jobs executed increased as follows:

31%	for batch mode
56%	for time sharing

These services are allocated between the various programmes and Appropriation Accounts (Administration) as shown in Table A.

It can clearly be seen that some 88.5% of the activity of the Computing Centre is directed towards service to research programmes, 10% is support to General Services and a little less than 1.5% results from external contracts, some of which benefit other departments of the Commission.

4.2 USER SUPPORT

Following the installation of the new operating system, user support activities concentrated on assistance in conversion of applications used by Computing Centre users.

With the same aim, a course was held on the principal differences between Fortran IV, the old language, and Fortran 77, the new.

In addition to the 10 numbers of "Computing Centre Newsletter" a special number was published in September 1983, entitled 'Using the IMSL and NAG libraries', as well as an introductory bulletin on the Computing Centre facilities for Commission departments.

A presentation of the Computing Centre and its facilities was made at a meeting attended by representatives of a number of Directorates-General held by DG XII in April.

A 15-day introduction to computing was organized during the school holidays for pupils from the European School.

A seminar on information and computing was specially organized during a working weekend for line administrators - Directors, Heads of Division and Section - and staff administrators (programme and project leaders).

At the end of the year a course on the use of the new facilities available under time sharing was held six times in all, with a total attendance of 72. The course included practical work.

5. THE BUDGET

5.1 COST

In addition to the secondary budget relating to staff salaries, the Computing Centre has a primary budget covering all other expenditure such as hardware rental, software, purchases, maintenance, expendable items, etc.

In 1982, Computing Centre appropriations were as follows (in '000 ECU):

Primary	2 580
Secondary	1 430
TOTAL	4 038

The principal areas of expenditure are broadly analysed in Table B.

5.2 PRICE AND PERFORMANCE

The Computing Centre is attentive to the price/performance ratio of its equipment.

Most contracts are at fixed prices or expressed in Italian Lire. ECU conversion rates for the costs of these contracts are fairly stable, which explains why the figures are largely unchanged or even down from 1982 to 1983.

For 1983 the figures are:

central processing unit performance: 6.5 Mips

annual cost: 810 000 ECU

1 annual Mips = 129 200 ECU

disk capacity: 10.8 Gigabytes

annual cost: 370 000 ECU

1 annual Gigabyte = 34 400 ECU

It should be noted in passing that the installation has approximately 2 Gigabytes of peripheral memory per Mips of central processing unit.

Taking the total cost of the Computing Centre, we can say that:

6.5 Mips + 10.8 Gigabytes cost 4 010 000 ECU in total

The annual cost of 1 Mips + 1.7 Gigabytes is about 617 000 ECU or Bfrs 28 400 000, i.e. 2 370 000 Bfrs/month.

In addition, the total CPU time produced (2 700 hours) cost 4 010 000 ECU, amounting to 0.0635 ECU or approximately Bfrs 2.92 per million instructions produced.

This price represents a slight fall (10%) in comparison with 1982, and is very favourable in comparison with the cost of services offered by service bureaux and others.

6. CONCLUSIONS

For the Computing Centre the year 1983 was marked by a high degree of hardware and software reliability, and a significant increase in the efficiency of the operating software.

An increase of 12% in use of the equipment led to an increase of more than 30% in output.

The central unit and its peripheral memories are reaching saturation point, but planning of augmentation and diversification of facilities has already begun.

TABLE A

DISTRIBUTION OF SERVICES

OVER THE VARIOUS PROGRAMMES AND APPROPRIATION ACCOUNTS

73001	Reactor safety	41.94%	
73003	Safety of nuclear materials	2.21%	
73004	Fissile materials control and management	1.06%	
73005	Super-SARA Test Programme SSTP	18.17%	
Total			63.38%
73011	Solar energy	2.21%	
73012	Hydrogen production, energy storage and transport	0.02%	
73013	Thermonuclear fusion technology	2.75%	
73014	High temperature materials	0.37%	
Total			4.35%
73021	Protection of the environment	5.09%	
73022	Remote sensing from space	1.48%	
Total			6.57%
73041	Informatics	3.04%	
73046	Training and education	0.78%	
Total			3.82%
1.20	General administrative and Technical Services - Ispra	9.40%	
1.40.3	Central workshop - Ispra	0.25%	
1.40.2	ESSOR	0.36%	
1.40.1	Scientific divisions - management of data bases	9.47%	
Total			19.48%
1.94.0	Services to external users		1.40%
			100.00%

TABLE B

APPORTIONMENT OF COSTS

Leasing and maintenance of the main computer	810 000 ECU
Leasing and maintenance of random access peripherals	370 000 ECU
Other hardware leasing and maintenance	570 000 ECU
Leasing of software	255 000 ECU
Electricity	170 000 ECU
Maintenance of premises (fire protection, etc)	20 000 ECU
Expendable items	120 000 ECU
Minor expenditure (modems, racks, etc)	125 000 ECU
Sundry contracts	140 000 ECU
	2 580 000 ECU

TABLE C

COMPUTING CENTRE CONFIGURATION

1	Amdahl 470/V8 providing	6.5 Mips
14	moving arm interchangeable disk units providing	3.2 Gigabytes
24	moving arm fixed disk units providing	7.6 Gigabytes
1	random access peripheral providing	23 Megabytes
6	high-density magnetic tape units (6250/1600 bpi)	
3	medium-density magnetic tape units (1600/800 bpi)	
1	card reader and punch	
3	impact printers with total print capacity of 4000 lines per minute	
2	telecommunication control units each handling 96 communication lines and connecting directly more than 160 conversational terminals and about ten RJE terminals (some RJE terminals can then connect to further conversational terminals or RJEs).	

APPENDIX I

Minicomputers at the JRC, Ispra

The statement of computer hardware as the Ispra Establishment mentions some 250 mini- and microcomputers. Many of them nevertheless form an integral part of heavy laboratory equipment, and are not available or even accessible for data processing as such.

A survey carried out amongst the various Divisions of the Ispra Establishment in 1983 concentrated on existing minicomputers capable of operating as computers, i.e. capable of being programmed and used in the laboratory for the capture and processing of data.

A marked preference could be observed for DEC (Digital Equipment Corporation) PDP11 and various types of VAX computers, though manufacturers such as Bull, Hewlett Packard and Wang were also widely represented.

The survey revealed a total of 51 minicomputers (see Table I-a).

In order to increase the availability of connection facilities between these computers, the Computing Centre has undertaken a systematic network interconnection of the computers, using the internal network (INET) of the seven Solar 16/65s in the Computing Centre and the main Amdahl computer.

INET is, of course, itself connected to Euronet and the minicomputers connected to INET can consequently reach all the computer facilities available throughout the Community.

TABLE I-a

Minicomputer manufacturers represented in the Ispra Establishment

Digital Equipment Corporation

PDP11/03	8
PDP11/05	3
PDP11/23	8
PDP11/34	5
PDP11/34A	1
PDP11/44	1
PDP11/60	1
PDP11/70	1
VAX 11/750	1
	29

IBM

4331	1

Hewlett Packard

HP 1000 F	2
HP 1000 L	1
HP 3000/30	1
HP 85 F	1
HP 9845.B	2
	7

Bull

Solar 16/40	1
Solar 16/65	7
	8

Wang

Wang 2200 VP	3
Wang 2200 MVP	2
Wang 2200 T	1
	6

APPENDIX II

The Data-Processing Environment in 1990

By 1990 computers will be used increasingly in an even wider range of applications; it will no longer be imaginable for a single type of computer to handle all the applications.

For certain types of problem-solving the calculation speeds of the largest computers currently in service are still inadequate, whilst for other applications local processing with the possibility of occasional access to more powerful resources is all that is needed. At the Ispra Establishment computing is founded on the simultaneous existence of the mainframe in the Computing Centre and the minicomputers in the laboratories; in the short term the mainframe computing power is to be doubled and perhaps even trebled, with access being made available to external resources, including the very biggest computers and particularly the latest arrivals, the vector processors developed over the last decade.

Access to hardware of this type is indispensable to successful completion of the programmes entrusted to the JRC, and to continued collaboration with research establishments which already possess these powerful but expensive resources.

Although the need for conventional computing power is increasing very rapidly it is highly likely that use will be made of vector processors and parallel processors, capable of handling problems such as those encountered in the simulation of complex systems.

The need for on-site availability of such computing power will undoubtedly become imperative by about 1987.

A new building will be required to house the new hardware and the conventional computers which will act as front-end processors to the supercomputers.

Provision must be made for the cost of the purchase or leasing of the new hardware, and also for the staff required to run it, including both programming and hardware maintenance.

Some evaluation must also be made of mini- and particularly microcomputer computer requirements, particularly for word processing, pre-processing and local processing facilities meeting the requirements of distributed architecture and of office automation.

APPENDIX III

COMMITTEE OF NORMS AND STANDARDS IN THE FIELD OF INFORMATION TECHNOLOGY

see original English text

A N N E X E S

ANNEX I: Organization

ANNEX II: Architecture of distributed data processing

ANNEX III: Data-base administration

ANNEX IV: List of abbreviations
List of Directorates-General

ANNEX I

ORGANIZATION

Since the restructuring of the data processing organization at the end of 1981, the committee structure for data processing management has been as follows[1]:

- the Commission's Steering Committee for Data Processing (CDIC) chaired by the Director-General for Personnel and Administration (DG IX), and comprising the Directors-General of DG XIII, the SOEC, DG XVII, a representative of the Secretariat-General, the Deputy Director-General of DG III and the Director of Department A of the JRC, Ispra.

  This committee decides, under the authority of the Commission, the strategy, major policy lines, organization, plans and budgets on the basis of proposals submitted to it by the Director for Informatics.

The CDIC is assisted by two main committees chaired by the Director for Informatics:

- the Users' Committee (CU), comprising representatives from Directorates-General which use the services of the Directorate for Informatics, deals with users' problems, in particular plans, priorities, budgets and projects;

- the Informatics Technology Committee (CTI), is a consultative body which reports to the CDIC and to the standing group for industrial innovation and which consists of the Directors of Department A of the JCR in Ispra, DG III/B and DG XIII/B, and is responsible for making recommendations on technological questions affecting distributed data processing policy.

- the CTI is assisted by the Standard Implementation Committee (SIC), chaired by the Director of Department A of the JRC in Ispra, the role of which is to ensure that norms and standards are properly implemented.

- the Staff Committee has set up its own Informatics Sub-committee, which regularly meets the Director for Informatics and his colleagues in order to examine staff problems arising from computerization within the departments.

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1 For the list of abbreviations, see Annex IV

- In addition to these Commission committees mention may be made of the Inter-Institutional Committee for Informatics (CII) chaired by the Commission's Director for Informatics, which includes representatives from each institution. This committee has drawn up an inter-institutional cooperation programme and has extended its field of interest to the INSIS programme (see Chapter 8).

The Directorate for Informatics (DI) is the pivot of the new data processing orgnization. It has the following divisions and departments:

- Informatics Planning and Administration (IPA) is responsible for coordination of plans and budgets, fund management, administrative and contractual aspects of procurement, and secretariat services to the Users' Committee.

- Quality Management and Internal Audit (QA) makes, on the basis of analyses, recommendations aimed at improving the level of data processing services as regards quality, reliability, performance and ergonomics.

- Computer Centre (CC) makes machine time on the central computers available to users and also provides associated services in the field of systems engineering, user support, data management and capture - the latter two activities being gradually decentralized.

- Integrated Information Systems (SII) is responsible for telecommunications, distributed data processing equipment and electronic office equipment, as well as access to internal and external data bases. It also provides user support facilities for users in these areas, including the design and management of projects.

- Informatics Engineering (II): is responsible for the design and implementation of the infrastructure of the data processing services. It plans for the future and ensures that new technical methods and facilities are introduced.

- Applications Development (DA): is responsible for designing, implementing and maintaining applications developed centrally.

Within the Directorates-General local data processing organization structures have been set up. Their size and tasks vary depending on the degree of computerization within the units of a particular Directorate-General. The Directorates-General have each appointed a director responsible for the organization of data processing, in addition to an Information System Manager (ISM) who is responsible for the day-to-day management of data processing activities within the DG.

These officials form the links at management and operational level between the central organization and the users; they are also members of the users' committee, which deals with the Directorate-General's data processing problems. The Directorate for Informatics exercises professional control over staff in the DGs, in particular via directives published in the Informatics Guide.

ANNEX II

ARCHITECTURE OF DISTRIBUTED DATA PROCESSING

The main guidelines of the Commission's policy for distributed data processing have already been outlined; the following is a more technical description of the distributed data processing architecture which is the objective of the policy.

1. GENERAL GUIDELINES

Distributed data processing

In 1980 the Commission decided to install distributed data processing with a view, for economic reasons, to the gradual integration of data processing, text processing, image and voice processing services at the level of user access (multi-function work stations). The decreasing cost (approximately 20% per annum) of mini and microcomputers is making it possible to install them close to users. Large-scale computers serving all users are increasingly being used to manage large data bases. Telecommunications networks linking computers and work-stations and providing remote access to host computers are becoming the essential factor in data processing architecture. An essential condition is the compatibility of all hardware and software irrespective of its origin.

Compatibility of equipment

In order to avoid dependence on a single supplier for all its data processing requirements, the Commission has to insist that hardware from different manufacturers is mutually compatible. Here the Commission faces the same problem as other customers in Europe for whom it wishes to set an example by defining a policy for the acquisition of data processing equipment. This problem will be solved only by means of internationally respected standards.

Technical feasibility

Owing to the lack of standards and to economic difficulties, new products are entering the market more slowly than technological progress would lead one to expect.

For the years 1984 86 efforts should be limited to the integration of texts and data, the setting-up of a digital network in parallel with the analogue telephone network, the implementation of electronic mail (based on Teletex, and on rapid growth and improved quality of telecopying) and the improvement and expansion of present services. Minicomputers will still play an important role, but the advent of microcomputer work stations will reduce their value. In the period 1984-86 these overall trends will particularly favour the development of the electronic office.

The years 1986-90 will see the introduction, following pilot schemes in 1984-86, of local applications occupying a wide bandwidth and permitting the integration of a static image and voice messages, i.e. local networks and optical disc archiving with complete message transfer facilities. It is worth pointing out that the success of new local configurations for 1986 will depend to a large extent on the existence at that date of international standards still under discussion today.

In the meantime teleconference services will be continued - by parallel (telephone, cable, satellite) and modernized (telecopying, fixed image) communications - until such time as it is economically justifiable to introduce video-conference facilities.

The complete integration of communications by an integrated services digital network (ISDN) is not expected in the Commission before 1990.

Multilinguism

The Commission's requirements as regards multilinguism will be met only at the cost of great technical and economic effort, but the resultant benefits are likely to have broad application.

ANNEX III

DATA-BASE ADMINISTRATION

1. INTRODUCTION

Whatever the nature of the information policy pursued, its success depends on sound administration of the data[1]. The following paragraphs set out the essential characteristics of a successful data base. These principles will in future be adapted to the administration of documents and records for filing and for correspondence, with particular account being taken of trends in electronic office equipment.

The principles apply equally to new data bases and to those which already exist and whose - sometimes fairly dated - design is no longer adequate. The principles may be applied with degrees of strictness varying not only with the importance, the size and the complexity of the base, but also with the profile of consumers consulting the base, and the role of the producers who are responsible for data input.

A number of different types of base can therefore be distinguished, which present demands of increasing strictness as regards management:

Local bases
Inter-service bases
Inter-institutional bases
Public bases

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1 Data is taken to mean the characters, numerals, symbols, words, sentences, etc. which contain information

Information is the meaning which can be ascribed to a sequence of data in its context

In the case of local bases the consumers and the producers are members of the same organizational unit. In inter-service bases, operation remains within the confines of the Commission. The characteristic feature of inter-institutional and public bases is the availability of the service to other Community or national institutions, government departments in Member States, other public or private organizations, and even the general public.

2. RESPONSIBILITIES

It is essential that the roles of the various parties be clearly set out.

2.1 The Data Base Owner

While the information belongs to the organization, its management is delegated in accordance with the responsibilities defined in the organigram. Each data base is therefore the responsibility of its owner, who may be an official or a committee chaired by an individual. The owner's responsibilities are:

- to define the purpose and content of the base, and select the consumer population
- to establish the strategies for production and publication, and the levels of security and quality required
- to obtain the necessary resources, by reference to a cost / benefit analysis.

2.2 The Data Base Administrator

His role is that of organizer, viz.

- specifying the contents of the base and its logical structure, with a view to meeting the consumers' requirements and with an eye to rational production
- laying down explicit rules for the base's administration
- acting as project leader for the setting-up of the base
- providing economic management for the base's production and operation, at optimal levels of quality and security.

2.3 **Data producers**

When the base is bulky or complex, it must be subdivided into 'fields' - i.e. sub-sets which are homogeneous from the points of view of both content and input.

The **Field Manager** [1] supervises production, applies the rules laid down by the Data Base Administrator - validating new data, authorising publication, granting rights of access, copying and distribution, deleting stale data.

The **Producers** input data to the base in accordance with the instructions of the Field Manager.

2.4 **Consumers**

Consumers must ensure that their needs are reasonably satisfied by discussing them with the Data Base Administrator. For this purpose they may call upon the services of the Information Officers and the Data Information Services (See para. 2.6).

2.5 **Data Base System Administrator**

Is responsible for managing the software used for the operation of the base. He is a member of the Data Processing department, and provides technical assistance and support to the Data Base Administrator - the physical structure of the data, implementation of management systems, monitoring of performance and use of computer resources, establishment of security measures.

2.6 **Information Officers** and **Data Information Services**

Each Directorate-General has one or more Information Officers to assist consumers in their data research. The Information Officers know which bases are available and how to use them. The Informatics Directorate also has a Data Information Service, which acts as a focal point for all information on data available internally and externally, and provides operational coordination for the activities of the Information Officers.

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1 This task should not be confused with that of the Applications Manager, which is not covered by this report

3. QUALITY AND SECURITY

3.1 Quality of the information system

This covers:

- the suitability and comprehensibility of the contents, including multilingual aspects
- ease of access and research, including ergonomic aspects
- availability of the base

Many bases start life as local bases, conceived to meet the needs of the producers, who are also the first consumers. They then develop by being made available to other classes of consumer outside the oranizational unit to which the producers belong. It is frequently forgotten that such new consumers have a different profile. This is one of the reasons why insufficient account is taken of consumer needs and why they find that access to bases is excessively complicated.

It should also be remembered that consumers prefer a single interface with all the bases they need to consult, which implies standardized command languages.

One such language, the Common Command Language (CCL), has been recommended for the documentary data bases accessible via Euronet-DIANE. It is essential that all the Commission's documentary data bases gradually adopt this language.

In addition, self-explanatory or user-friendly interfaces and simpler languages must be designed, standardized, and supported on suitable software packages, even if they are more restrictive. The Videotex type of data base is a good example.

3.2 Quality of the data

This covers

- correctness and consistency of data
- extent of cover
- up-to-dateness of the information held.

It is all too easy to underestimate the resources, the executive staff, the method and the technical skills needed to provide an adequate standard of input. The production of data for an invisible clientèle outside the producer department is not always given the recognition it deserves, and this is a disincentive to staff, particularly when, in the absence of systematic monitoring, any fall-off in quality only becomes apparent after some delay. The consequence is that customers lose confidence in the base's value and seek their information from other sources. Clearly, twice as much work is needed if parallel information circuits have to be maintained, although, paradoxically, it is usually a lack of resources which is blamed for a shortfall in quality. The duplication involved in producing competing independent sources of information must therefore be eliminated. This can be achieved only by ensuring that the information is so correct, so wide-ranging and so up to date that the consumer cannot hope to obtain better elsewhere.

3.3 Security

Security has to be considered from two main angles, the confidentiality of the information, i.e. its sensitivity to divulgation, and its integrity, i.e. its sensitivity to loss or damage.

The principles to be observed consist essentially in allowing access only to those who need it, being able to tell "who had access to what, and when", and being able to reconstitute the data in their entirety in the event of their being lost or damaged. This will require precise instructions to be given regarding the storage and archiving of the data requiring protection, consonant with their value (classification), and the preparation of emergency plans.

4. METHODS

4.1 Information required to manage the base

A first category covers the description of the content of the base: terms, synonyms, definitions and data format. This means that a prior study must be made of the precise meaning of the data. A new data base cannot be established successfully unless the data have been given stable definitions. Certain data are common to more than one base, and coordination is therefore needed at a higher level if incompatible definitions and diversification of data format are to be avoided.

In the absence of a central authority (which might lead to excessive bureaucracy) such coordination must be provided according to area of competence; e.g. SOEC for statistical bases, DG IX for bases relating to personnel matters, the Secretariat-General for all bases in which it is concerned, the Caddia group for common SOEC, DG VI and Customs Union bases, and so on. Naturally, where worldwide, European or institutional standards exist they should be used, in that order of preference.

A second category of information covers that needed for the management of the data base. The tendency to construct the base's primary functions first (data capture, input, updating, and access) and add the management dimension only once the base is operational should be avoided. No base can be managed without information and the means of handling it, and this aspect, which is dependent on the prior selection of means and methods, must be determined at the same time as the contents of the base.

With a view to harmonization the Data Information Service (see para. 2.6) will be establishing a base of bases, which will give for each base the minimum of information needed by consumers and required for the management of all the bases.

4.2 Separation of working data from official data

So as to avoid all risk of loss or untimely publication, official data must be kept separately and protected by formal procedures. Such data make up the content of bases which are under the direct supervision of the Data Base Administrator or the Field Managers.

Working data, on the other hand, are the sole responsibility of their producers, and no-one may consult or access them independently. They have no official value and may not be published except in very limited fashion as draft data. Some degree of flexibility may be tolerated in their administration, provided that their confidentiality is not jeopardized.

4.3 Division of responsibility for the preparation and publication of data

As is the case with financial transactions, where the authorizing body and the paying body are not one and the same, it is unsound practice for individuals preparing data (the producers) also to authorize their publication (the Field Managers). A formal procedure has to be established for the Field Manager to decide on the various stages in the 'life' of an item of data. These are:

In preparation:	the identification and format have been defined, and the data are undergoing preparation by the producer
In validation:	the data are 'frozen' during the authorization / validation phase carried out under the responsibility of the Field Manager
Released:	the Field Manager has authorized publication of the data, which are available to consumers
Cancelled:	the data still exist but can no longer be accessed by consumers
Deleted:	the data have been physically destroyed.

For practical reasons it is advisable to group the data into successive versions which are identified as such and dated, and in accordance with the rules for preparation and publication.

If may also be advisable to keep a record of any formal act requiring data to be amended.

4.4 The distinction between primary and secondary data

In order to meet the requirements of data consistency (see para. 3.2) a distinction must also be made in respect of official data between primary data and secondary data derived by compilation from the primary data.

Compilation affecting only the form, and not the sense of the data, e.g. copying, reformatting, photocomposition, reprinting, etc., should not introduce any error, and the following does not concern such formal compilation.

Strict precautions must on the other hand be taken to avoid losing the consistency of data in the passage from primary to secondary status. When the compilation is carried out by computer the precautions are a matter of proper professional design of the data base management system. However, such compilation can also depend on the performance of manual operations, and maintaining consistency under such circumstances becomes a matter of the human management of the base and of appropriate organization.

It is particularly advisable to be sure before introducing fresh primary data that the compilation rules being applied maintain the consistency of the two sets of data with respect to each other, and to validate the primary data as strictly as possible before deriving the secondary data.

Inevitably some inconsistency arises during the period between the introduction of the first primary data and the completion of the secondary data derived from them. If it is not possible to prevent consultation of official data during this period, users must be clearly warned of this possible lack of consistency.

Certain ethical principles must be observed when users effect compilations outside the fields managed by the owner of the data:

- sources must be acknowledged and the owner's agreement sought if the meaning of the data remains unchanged
- in other cases, a clear statement must be made of the operations effected and of the value added to the information
- responsibility must be accepted for the risk of error arising as a result of the compilation.

5. THE TOOLS

The key functions which should be included in such computer systems for the benefit of the various individuals involved are described briefly below, without reference to the technical choices to be made.

- The data base administrator must have the means of analysing and modelling his data. He must have access to information for the management of his base.
- The Field Manager must have the means of controlling rights of access, and of automatically recording each access. Analysis facilities are also necessary for subsequent controls and the production of statistical and/or accounting data. The Field Manager must have available the basic functions which allow him to carry out quality controls.
- the Data Base System Administrator is principally concerned with preserving the integrity of the data (i.e. with reliable means of protection, safeguarding and secure reconstitution), with optimization of resources (and consequently with statistical surveying and data compaction facilities) and finally with confidentiality (hence his interest in ciphering techniques).
- The Producer must be able to prepare, document and maximize monitoring of his documents interactively, and therefore have appropriate tools available. In addition, insofar as the production of data is an arduous task, the ergonomic characteristics of the tools, including computer hardware, must receive the greatest attention.

- The Consumer is concerned principally with the consultation of data, particularly with the search for data of interest to him. The same goes for the Information Officer. They must therefore have the means of interactive search by keywords, by menus, by context, etc., using the "fourth generation" languages which allow easy access, via the known data, to the data required.

Such requirements mean choosing a set of standard software packages, generally known as Data Base Management Systems (DBMS) with their associated data dictionaries, interrogation languages and tools.

The choice of this software is discussed in a separate document (ref.).

The onus is on the system supplier working together with the the Data Base Administrator in his role as project leader, to construct the full range of tools required for the management and operation of the base,[1] using the most suitable standard software packages available.

6. NEW PROPOSALS FOR DATA BASES

New proposals for data bases must be managed in the same way as any other project,[1] not only as regards establishing a new base, but also when an existing base is opened to a new category of consumers (see para. 3.1). This is particularly the case for inter-institutional and public bases, where the Commission's public image is at stake. The project feasibility study must confirm that the rules for sound data base administration outlined in this document have been respected.

Selecting proposals for data bases comes down to the management of priorities and of the resources needed for their implementation, viz:

1 The manpower needed for input to the base, and for consumer promotion and support. Obtaining these resources is the responsibility of the data base owner, who must ensure the necessary recruitment.

2 Computer resources, which are managed by the CDIC (Commission Steering Committee for Data Processing) in accordance with the rules it has laid down [2].

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1 See Management of Informatics Projects - Informatics Guide, ref. 003

2 See Priorities and Informatics Resource Management - Informatics Guide, ref. 008

ANNEX IV

LIST OF ABBREVIATIONS

CC	Computer centre
CCITT	International Telegraph and Telephone Consultative Committee
CDIC	Commission Steering Committee for Data Processing
CII	Inter-Institutional Committee for Informatics
CTI	Informatics Technology Committee
CU	Users' Committee
CUS	Customs Union Service
DA	Applications Development service
DI	Informatics Directorate
ECPTA	European Conference of Postal and Telecommunications Administrations
EVE	European Video-Conference Experiment
II	Informatics Engineering Division
INSEM	Inter-Institutional Service for Electronic Mail
INSIS	Inter-Institutional System of Integrated Services
IPA	Informatics Planning and Administration Service
JCIS	Joint Conference and Interpretation Service
JRC	Joint Research Centre
QA	Quality Management and Internal Audit Service
SG	Secretariat-General
SIC	Standard Implementation Committee
SII	Integrated Information Systems Division
SJ	Legal Service
SOEC	Statistical Office of the European Community
STRADA	Système de Transmission Rapide de Documents Administratifs

DG I	External relations
DG II	Economic and Financial Affairs
DG III	Internal Market and Industrial Affairs
DG IV	Competition
DG V	Employment, Social Affairs and Education
DG VI	Agriculture
DG VII	Transport
DG VIII	Development
DG IX	Personnel and Administration
DG X	Information
DG XI	Environment, Consumer Protection and Nuclear Safety
DG XII	Science, Research and Development
DG XIII	Information Market and Innovation
DG XIV	Fisheries
DG XV	Financial Institutions and Taxation
DG XVI	Regional Policy
DG XVII	Energy
DG XVIII	Credit and investments
DG XIX	Budgets
DG XX	Financial control