COMMUNITY POLICY ON DATA PROCESSING

(Communication of the Commission to the Council)
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COMMUNICATION OF THE COMMISSION TO THE COUNCIL

A Community Policy for Data Processing

Introduction

1. The Summit Conference called for the progressive and effective opening of public sector purchases and for the establishment, in the advanced technology industries, of competitive companies at European level. In few industries are these objectives more relevant than in data-processing. Now the third largest world industry after chemicals and cars, growing at some 15% per year in the U.S.A. and 20% per year in Europe (see Annex point 1 for details), it penetrates increasingly virtually every walk of life, transforming management and administration, education and science. The very structure of society may be determined in the future by the way it uses information systems. As labour-intensive industries move towards developing countries, Europe needs to develop, rapidly, industries requiring concentrated skills of a high level; of these data-processing is a classic case.

2. Yet though European minds conceived many of the basic concepts of the industry and Europe still has a powerful intellectual and technical potential in this field, it has yet to transform it into effective industrial strength. Over 90% of the computers installed in Europe are based on American technology. Some 60% of the world of European market is held by a single dominant firm based outside Europe (IBM). Though this company has made and continues to make a massive contribution to the commercial application of data processing, its position enables it to determine the pattern of prices and standards, to dictate the pace of commercial innovation and the pattern of the market. In no other key industry is a single firm so dominant in both Europe and the world. The Commission, in accordance with its obligations under Article 86 of the Treaty establishing the European Economic Community, will be vigilant to ensure that there is no abuse of such a dominant position.
3. The most effective guarantee of good behaviour is, however, the existence of strong and viable competitors. Competition is at present provided by other international companies based outside Europe and operating within it (see Annex point 2), but there is no certainty that they will remain in the competitive race and the social, political and economic importance of this industry are such that Europe cannot afford to opt out altogether.

4. A flourishing European data processing industry must include strong European-based companies in both hardware and software side by side with the important companies controlled from outside Europe. In an expanding market there is room for both.

5. The leading world position of the American companies owes much to commercial skill and good management, but much, too, to the fact that the United States first provided a rich Continental market for the commercial applications of data processing, while in the last twenty years the Federal Government has provided a huge, sophisticated market for the U.S. industry and stimulated its growth by development contracts (See Annex point 3).

Any support needed in the next few years by the infant industry in Europe must not be seen as a form of permanent protection, but as a mean of redressing this imbalance by providing comparable opportunities to the European-based companies so that they too can acquire continental, indeed world dimensions, and stand competitively on their own feet.

A Community policy for data processing must include two main types of actions: to develop the capacity of the European-based industry and to promote the effective use of data-processing. These main thrusts of activity need to be complemented by a limited number of background measures. This communication will examine the problems in this order concluding with proposals for Community action.
A. Building a strong European-based industry

Central Processors

6. At the strategic heart of computing systems is the central brain or processor (IBM's 370 series, ICL's new range, Unidata's new X series from CII, Philips and Siemens for instance). Europe's most evident industrial problem in computers is to develop a viable structure capable of competing with the dominant producer in the development, production and marketing of such a range.

7. In pursuit of this objective, at least three Governments (the British, French and German) have, in the past ten years, supported national computer companies, by means of financial support for computer development and preferential purchasing policies, details of which are given in the Annex, Point 3. The share of world markets of the four leading European computer companies (ICL, CII, Siemens and Philips) together is, however, approximately 6%, or roughly equal to the smallest of the remaining American competitors with the world leader. Both the losses made by certain European companies in the past and much evidence (See Annex point 4), suggest that separately, European-based firms will have great difficulty in attaining the minimum necessary scale to be economically viable on their own without permanent Government subsidy. The breakneck speed of growth in the market (some 20% per year) means that companies have to work hard to maintain even their existing market shares. A regrouping of the industry which respects the rules of competition under the Treaty is the only route to a major jump in relative size.

8. To be fully successful and competitive, a computer company should penetrate and have access to the major advanced markets of the United States and Japan. Collaborative agreements with non-dominant companies outside Europe offer one mean of acquiring this, and of tapping new technology and capital resources. But such partnerships can only bring their full benefits to Europe if they are based on a real equilibrium between the partners and not on an open or disguised absorption of the European firm. A regrouping of the major European based firms must be seen as a key objective, making it easier not harder to find balanced relationships with firms outside.
9. It is for the companies concerned to seek out and negotiate with compatible industrial partners and, subject always to a more thorough examination of the terms of the agreement, the Commission welcomes the formation of Unidata (by Siemens, CII and Philips) and the discussions going on with a view to further regrouping. Governments and the Community also have an important part to play by ensuring that procurement policy does not obstruct such moves and by pooling the financial resources with which they support the industry. It must be a legitimate concern of the Community and of Member States to rationalize and control public financial support for the data-processing industry in favour of the strongest possible industrial groupings.

10. Even if all the major European based companies grouped into a single entity, there would be no danger of monopoly or market domination given the incomparably greater size and strength of IBM. Such a combination is however unlikely in the immediate future, given the existing plans of the key companies; in the next three years the two major groups of companies may continue to coexist competing with each other in the marketing of separate series of computers.

11. In this situation, Community policy for the support of the industry can usefully be seen in two phases: in the short run, at least a limited collaboration, falling short of a full merger or combination, should be encouraged, both to achieve ends useful in themselves and to prepare the way for a further industrial combination later. Steps by the industry towards such a combination would facilitate the development, in a subsequent phase, of a more coherent and complete Community programme for the support of the data processing industry and its applications. Success in the second phase will largely depend on the effectiveness of collaboration in the first. Here a look at the other sectors of the industry — peripherals, electronic components and software — is necessary, for they too are essential to a strong industry.
Peripherals

12. What has been loosely called "Peripheral equipment" comprises more than half the value of the hardware in new systems, and this share is growing, for computing systems increasingly involve an ever-widening range of terminals for transmitting and receiving information linked by networks to a central brain or brains, as well as a number of functional units (e.g. memories, storage capacity, which are essential to, but detached from, the central processor).

In the production of terminal peripherals and small computers, a number of specialised European firms have already proved successful. Some of these are small; some, like Olivetti, the largest European firm in this field, or Nixdorf, are comparatively large. Yet the "near-in" peripherals which form an essential part of all systems (disc-units, tape decks etc.) are dominated by external producers and the overall picture is of a growing payments deficit and technological dependence in a key sector of the industry.

13. In terminal equipment, there are good commercial opportunities for a variety of European companies to enlarge their market share, and the most appropriate general form of public support at Community level for innovation appears to be the proposed Community Contracts for Industrial Development.* At the same time, if the European based manufacturers of central processors are to become an effective force, they may need to pool research, production and marketing capabilities for certain "near-in peripherals". Further examination at Community level is needed to see whether a specific limited programme of joint support for such development is needed in the form of "programme-oriented" development contracts.**

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* The Commission's current proposal on Community Contracts for Industrial Development [Doc. COM (72)710 final July 1972] is designed to support collaborative innovations of small to medium/size proposed by companies from any sector of industry.

** A different form of development contracts which may be called "programme-oriented development contracts" will be needed to support collaborative developments in the framework of specific sector programmes such as data processing. In such cases the Council, on the basis of proposals from the Commission would decide the objectives of a programme and allocate the appropriate funds.
Electronic components

14. Components form a third major element in the computer industry; this too grew in relative importance as the manufacturers learn to group hundreds of electronic circuits upon a tiny chip (see Annex point 5). Here the first need of the computer manufacturer is to have access to the latest technology at the lowest possible price. In part this need may be met by purchasing from outside companies, including companies based outside Europe. Some internal capability is however needed, both to make use of the latest component technology in system design, and as a guarantee that companies have access to the most advanced technology.

15. The overall problems of Europe's semiconductor industry, now entering the crucial phase of developing Large Scale Integration, will be discussed in a separate paper from the Commission. More special to the computer industry is the need to participate in the latest memory technologies (LSI, Bubble memories, holography and so on) any of which may prove later to have great industrial importance. These fields require an important effort of research and development, if the European based computer industry is not to run the risk of being left behind by radical new developments in the latter years of this decade. Here again a joint development effort involving the main computer companies would be essential and could be started now, using programme-oriented development contracts.

Software Bureaus and Consultancy

16. Buying the "Software" the programmes by which the information and needs of the outside world are translated into computer language - costs as much to the user, in most computer systems, as the hardware; and a strong industry is equally important for Europe (for details, see Annex point 6).

17. The development of the software industry has been led from the United States because of the strength of the American hardware industry and because the market for new applications is both larger and tends to develop there first. But because size of
firm and investments are less important, the European industry is less at a disadvantage than in hardware and in those fields where European firms are active and well managed they can provide programmes and services competitive with those in the United States.

18. Certain weaknesses, however, might be usefully redressed by Community policies. Despite the formal "unbundling" introduced by IBM, which is far the largest software company, a great many user software programmes are in fact tied to particular types of hardware, or adapted, at a cost, from programmes designed for them. There is a need to develop a real "market" in user software in which applications programme packages are easily transferable from one type of machine to another. There will be an incentive to develop such transferable packages if public users jointly commit themselves to use them. There is also a case for using programme-oriented Community development contracts to support the development of "Bridgeware" programmes which make it possible to transfer existing applications from one machine to another. Further study is also needed to define means of protecting property rights of software products.

19. There is also a need to stimulate European capabilities, particularly in the public sector, by joint applications development programmes, which will place the European producers well for serving future public needs. Such programmes, if carried out by consortia or associations of European software and if necessary hardware companies, would act as a spur for the regrouping of an industry parts of which are too fragmented. The great defence and military projects which have been an immense stimulus to the American industry, need a realistic European equivalent designed to serve civilian needs. Here the needs of the industry rejoin those of the user. It is a theme to which we shall return in Section B below.
B. Applications : Serving the needs of the User

20. No less important than building a strong industry is a second Community objective: to promote the effective application of data processing to the needs of the European user, in particular those of the public user and those which have an international or European character. There is much ground to make up, for in all too many organizations the use of computers is in its infancy.

Opening Public Purchases and Coordinating Public Procurement Policy

21. Public users of information systems have an interest, not merely in purchasing from the cheapest and most efficient supplier of systems, but in pooling their requirements, sharing in the solution of their common problems and thereby reducing costs and achieving more efficient answers.

22. The American industry has benefited greatly from the immense and sophisticated demands of the U.S. federal Government (see Annex point 3). State and city Governments and universities also have a number of cooperative arrangements for developing and purchasing systems together and thus saving public funds.

23. The power of procurement is already used today in several member states as a mean of promoting a national industry. That weapon, used nationally, not only infringes the Treaty but may increase costs to users and inhibits the European industry from working on a Continental scale.

24. In response to the need for the progressive and effective opening of public sector purchasing, expressed at the Paris Summit, the Commission has already proposed a series of legal measures concerned with the coordination of tendering procedures in these markets. 

As a complement to these measures, the time has come to move on from national procurement policies to a close collaboration

* See document on industrial and technological policy SEC(73)1090
at Community level in procurement. This must be designed to support rationalisation and standardisation, to achieve greater economies for the user, through joint purchasing and development and the construction of common networks or services. It must also be designed to redress the competitive balance by providing opportunities to European-based industry. A systematic joint analysis of future requirements should make it possible to identify well in advance areas where users can usefully collaborate on applications and benefit from joint procurement.*

Collaboration on Applications

25. European Governments are devoting growing resources to computer applications (see Annex point 3). How can they best collaborate to pool and save scarce public funds, providing a stimulus to the European industry at the same time? Collaboration on three links could bring benefits.

a) Common international projects

26. Certain types of public application have an inherently international character. Environmental monitoring, meteorology, air, sea and land traffic control, customs and trade statistics, international technological information systems are examples. For such applications, international development and management are becoming not merely desirable, but essential. The Commission believes that the best way to fulfil a real public need and stimulate the technological capability of the industry soon is to plan and implement a small number of such projects on a common basis now. It has commissioned the first part of a study designed to help identify priority projects of this nature. It asks the Council to support such projects and will make proposals during 1974 with a view to decision by the Council before the end of the year.

* See document COM/73/459.
b) National needs common to several Member-States

27. Such inherently international projects are not the only applications where benefits could flow from pooled resources. Many national or local public applications are common to different member states and savings could flow from collaboration or even joint development and procurement. Central Government administration, social security systems, health and hospital systems, education are examples.

Two meetings of the data processing sub-committee of the PREST group have already usefully helped the Commission to identify areas where collaboration or joint action would be useful; a continuous further process of coordination and confrontation will be necessary in the future to expose areas for cooperation or common development.

c) Coordination

28. In certain fields, coordination ought to be started now:

Data Banks

29. Large banks of data are now being established for a widening range of public and private users (for details see Annex point 8). A growing proportion of these banks in both the public and private sector will have an international character (banking, technological information systems, health, or police records), while in other cases (local Government, taxation, censuses), the difficult problems of managing the information are being tackled in parallel by many public authorities throughout Europe. Economies and greater efficiency will result if public users can jointly develop new methods of programming and managing this information (Data Base Management Systems), standardise the many features which are necessary to facilitate communication between them, coordinate the planning of their introduction, and identify technical problems where studies and development work might benefit from Community support.
Data Communications

30. The problems of data-communication, which may match the volume of voice telephone traffic in Europe within ten years (See Annex point 9), are increasingly a Community concern. The Commission is preparing wider proposals on telecommunications policy, but these will take some time to implement and in the meantime it is important that new data-communication networks develop as European systems and do not engender new technical divergences harmful to the user. The COST project 11, though a useful pilot research scheme, does not deal with the practical problem of the systems that are actually being installed. A procedure for the joint planning and management of data networks is needed.

31. A further area in which coordination can usefully start now is the field of health and medicine, an area of public spending growing in all member states.

Industrial Applications

32. Outside the public sector a mere effective application of data processing to a range of industries important for Community policy (shipbuilding, aircraft, textiles) could raise productivity and enhance the capability of the European computer industry. As in the public sector, judicious development contracts for applications technology could be a means.

C. Complementary Measures

33. To provide a favourable environment for the twin policies of building a strong European industry and supporting the more effective application of computer systems certain additional measures are needed:
Standardization

34. For both the user and the computer industry the development and effective application of common standards in hardware and software is an urgent priority. At present users are often tied to a particular company by the language and form of the programmes they use. If a real exchange of methods and a genuine market in software which could liberate the user is to develop, users, industry and standardisation organisations need to agree on and put into use common high level languages, for example for real time applications.

35. The manufacturers of peripherals also need standard interfaces which will make it easy to plug independent peripherals into larger systems. Standards are talked about in many international fora. The main need at Community level is to put a few key agreed standards into practice through coordinated procurement.

Support for leasing

36. In addition to the need for support for development, the European based hardware industry faces severe problems in financing the leasing of computers. Small companies lack the immense inward cash-flow enjoyed by companies with a large existing customer base. Moreover, a company attacking a market held by an established firm, with a new range of computers, may run higher commercial risks and find it difficult to lease on terms equivalent to the market leaders.

Detailed proposals may be made by the Commission after discussion with interested parties. One possible form for support might be a European leasing company to back the industry.

Education and Basic Research

37. Neither a strong industry nor effective application of the computer sciences by users can be achieved without a continuing basic research effort and a strong educational effort designed,
in particular, to raise standards, end the shortage of highly qualified people and promote mobility (see Annex point 10). There is also a need to ensure that education in computer sciences is not tied to particular companies. Consultations have already shown that to meet these needs the existing high level courses run by the PREST group on Education in Computer Sciences need to be extended; the Social Fund* could also be used to finance training or re-conversion of manpower in certain sectors. Further initiatives may also be needed to support collaboration in computing theory (where a European association already exists) and to establish a European Software Engineering Institute in the form of an association of national institutions developing, in particular, basic software.

Structure of Employment

38. The expected evolution of the sector in the next few years due to growth, industrial change and alterations in requirements for skilled manpower will inevitably bring appreciable shifts in the structure of employment. The Commission intends to follow this evolution closely, bearing in mind the necessities of regional policy and with a view to ensuring that social considerations have their proper weight in a Community programme for the industry.

Protecting the Citizen

39. The creation of data banks joined increasingly by international links will oblige the Community to establish common measures for protection of the citizen. When police, and tax, and medical records, and the files of hire purchase companies concerning individuals are held in data banks, the rules of access to this information become vital. This is a matter on which a wide debate is needed in the Community**. In view of its basic constitutional importance, the Commission believes that public "hearings" on the matter are desirable. It would be better for the Community to seek a genuine political consensus on this matter now with a view to establishing common ground rules, than to be obliged to harmonise conflicting national legislation later on.

* See document 71/66/CEE
** See document COM(73)1250
D. Community Action

40. In the light of all these needs, the Commission submits the attached draft resolution to the Council. It seeks to do three things — to lay down the broad direction of a data processing policy for the Community, to provide a impetus for coordination of national policies in certain fields, and to pick out selected priority areas for common action.

41. The procedure proposed to give a community orientation to policies for encouraging and promoting data-processing, in particular by collaborating in procurement policies, standards and applications has not so far been mentioned in this report. The range of subjects on which specialised groups may be needed and their composition are so varied, that it seems appropriate to handle this matter pragmatically, bringing together the key national officials responsible for overall policy, or those responsible for procurement, or those responsible for certain types of application, as and where appropriate.

42. The priority for common action would be to undertake in common a small number of major applications development projects of an international character. The Commission will make detailed proposals on these during 1974 with a view to decision by the end of the year. Such projects, while serving identifiable public needs, will also provide a stimulus for collaborative effort by the European industry without being dependent on any particular industrial structures.

43. The draft resolution also asks the Council to consider (though not at present to commit themselves to) possible proposals from the Commission for common support for selective collaborative industrial developments. In the Commission's view these are likely to be initially in key areas of electronic components and peripherals, or software. Here a word of explanation is needed. This report has shown that the crucial strategic area in which Europe should pool resources if its indigenous industry is to be competitive is
that of central processors, but it is also clear that with two major indigenous groups in existence this is not yet completely possible and that in these circumstances common funds are not appropriate for the support of such R & D. There are however certain areas of electronic components and key functional subassemblies such as memories ("near-in peripherals") where common development now may be considered strategically vital and possible and may even include the two major computer groups which are competing together in other fields. Certain areas of Software development may also be tackled at once. Further consultations and technical examination are needed before such proposals are made. Common finance may be appropriate in such cases if a common industrial organisation such as a joint subsidiary is set up to do the job.

44. As far as wider support for the R & D of the companies is concerned, the Commission has accepted in the course of examinations under article 92 of the Treaty that under present circumstances existing aids may continue to be given on a national basis. An effort must however be made to move on from the limited collaboration that is possible in the immediate future to a systematic programme for the development of European data processing which would provide a framework for future financial support. Such a programme would cover not only central processors, but the development of software, electronic components peripherals and applications. In conjunction with Community regional policy it should also ensure a reasonable distribution of this growth industry throughout the Community. In this further phase, there is a case for introducing a larger element of common finance to support the overall programme. Financial support for the European based industry, however, should not be regarded as permanent, but as a temporary help designed to achieve the central objective of a viable European industry capable, by the early 1980s of standing on its own feet.

45. The draft resolution clearly does not cover all the needs raised in the Commission's communication (including for instance leasing, education and research). In such matters, further proposals will be
made when necessary by the Commission, against the background of the growing collaboration which the resolution is designed to initiate by May 1974. This communication moreover is itself designed to provide no more than the essential starting point for an evolving Community policy. The Commission proposes to review progress in a report on the state of data processing in the Community to be completed before the end of 1975.
The Council of the European Communities

Conscious of the importance of data-processing to the development of the Community and its position in the world;

Convinced that because of this importance Europe must contribute by its own efforts to the design development and manufacture of data-processing systems through strong European based companies existing side by side with the important companies controlled from outside Europe both of which can prosper in an expanding market,

Aware that the unbalanced competitive situation in the world computer industry makes necessary special measures to help European-based industry to become competitive on a lasting basis,

Believing that both a stronger industry and a more efficient and economical use of resources can be obtained through collaboration or joint action on procurement, standards and applications,

Acknowledging the necessity to strengthen the European based industry by associations between suppliers, stressing the efforts already made to this end and intending to give every encouragement to further steps by such companies to combine their efforts,
a) agrees in principle that the Community will undertake and finance in common a limited number of major joint development projects of international character in the field of applications, these to be followed by others as needs are identified.

b) intends to give a community orientation to policies for encouraging and promoting data-processing, in particular by collaborating in procurement policy, standards and applications and notes the Commission's intention of arranging progressively the most appropriate procedures for realising these objectives.

c) considers that it is desirable to develop a systematic Community programme for the industrial development and application of data processing, once the evolution of industrial structure permits, with the central aim of establishing, by early 1980s, a strong and viable European based industry.

d) will take decisions in the meantime on selective proposals which the Commission might present for common financial support for key collaborative industrial developments.

e) notes the Commission's intention, after appropriate consultations, of presenting first detailed programme proposals notably on the actions under a), b) and d) during 1974 with a view to decisions by the Council by the end of the year and of preparing a progress report on the data processing sector in the Community by the end of 1975.
ANNEX I

Economic data on the computer market

1. Growth rate.

a) "The growth rate of the computer industry is estimated at about 20% per annum for the coming decade: 15% in the US, 20% in Europe and 30% in Japan.

It appears certain that between 1970 and 1980 it will become the third largest industry in the world, after the oil and motor car industries."

(Source: Fourth Report from the Select Committee on Science and Technology, Session 70-71 (Volume 1)).

b) Estimate of the data-processing market, including software and services (turnover in millions of dollars):

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(Source: DIEBOLD 1972).
c) Forecasts for the computer market in Europe and the world (in millions of dollars):

Central units

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Peripherals

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<td>635.6</td>
<td>1121.6</td>
<td>1758.2</td>
</tr>
<tr>
<td>Other Countries</td>
<td>96.1</td>
<td>157.9</td>
<td>312.4</td>
<td>839.5</td>
<td>1692.1</td>
<td>2857.1</td>
</tr>
</tbody>
</table>

d) according to the figures given above, the estimated growth rates for 5 years are as follows:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Europe</td>
<td>United States</td>
<td>Europe</td>
</tr>
<tr>
<td>Central units</td>
<td>110%</td>
<td>67%</td>
<td>61%</td>
</tr>
<tr>
<td>Peripherals</td>
<td>146%</td>
<td>95%</td>
<td>89%</td>
</tr>
<tr>
<td>Services</td>
<td>219%</td>
<td>191%</td>
<td>207%</td>
</tr>
</tbody>
</table>
2. The main manufacturers.

(a) Breakdown of the value of installed capacity at 1.1.1972 (base 100).

(Source: Délégation à l'Informatique, Paris).

(b) Breakdown of the West European computer market between the manufacturers: expressed as percentages of the value of the installed capacity:

<table>
<thead>
<tr>
<th></th>
<th>IBM</th>
<th>HIS</th>
<th>UNIVAC</th>
<th>SURROUGHS</th>
<th>UCA</th>
<th>ICL</th>
<th>C.I.I./SILKENS PHILIPS</th>
<th>OTHERS</th>
<th>TOTAL %</th>
</tr>
</thead>
<tbody>
<tr>
<td>GERMANY</td>
<td>57</td>
<td>8</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>0.5</td>
<td>16.5</td>
<td>9</td>
<td>100%</td>
</tr>
<tr>
<td>GREAT BRITAIN</td>
<td>38.4</td>
<td>7</td>
<td>3.7</td>
<td>3.9</td>
<td>1.8</td>
<td>34.7</td>
<td>0.9</td>
<td>9.6</td>
<td>100%</td>
</tr>
<tr>
<td>FRANCE</td>
<td>57.5</td>
<td>18</td>
<td>3.5</td>
<td>1.5</td>
<td>3.5</td>
<td>3</td>
<td>12</td>
<td>1</td>
<td>100%</td>
</tr>
<tr>
<td>ITALY</td>
<td>73</td>
<td>11</td>
<td>7</td>
<td>2.5</td>
<td>2.5</td>
<td>-</td>
<td>2.5</td>
<td>1.5</td>
<td>100%</td>
</tr>
<tr>
<td>BENELUX</td>
<td>60</td>
<td>9.5</td>
<td>5</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>8</td>
<td>6.5</td>
<td>100%</td>
</tr>
<tr>
<td>OTHERS</td>
<td>65</td>
<td>6</td>
<td>4</td>
<td>3.5</td>
<td>4.5</td>
<td>5</td>
<td>2</td>
<td>10</td>
<td>100%</td>
</tr>
<tr>
<td>TOTAL %</td>
<td>59.47</td>
<td>10.4</td>
<td>4.4</td>
<td>3.12</td>
<td>3.2</td>
<td>7.8</td>
<td>6.93</td>
<td>4.85</td>
<td>100%</td>
</tr>
</tbody>
</table>

(Source: Délégation à l'Informatique, Paris 1972).
Department of Trade and industry, 1973)
3. National helps and other supports in the Community (in millions of u.a.)

<table>
<thead>
<tr>
<th></th>
<th>Hardware</th>
<th>Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>Progress contracts: max. 25% of public contracts to Phillips max. 25% to Siemens</td>
<td>1971-73: 4</td>
</tr>
<tr>
<td>UK</td>
<td>1968-Sept.1976: Support for ICL ~144</td>
<td></td>
</tr>
</tbody>
</table>

(Source: national delegations).
Estimated IBM expenditure on R&D: about 6% of its total revenue or £400-500 million/annum.

(Source: Fourth Report from the Select Committee on Science and Technology, Session 70-71 (Volume 1)).
In 1965, however, government participation in the USA in R&D on data-processing amounted to 300 million dollars, or 49% of the total R&D in this sector.

(Source: Gaps in technology Electronic computers, Table 24 - OECD, Paris, 1970)
- The marketing threshold (services and technical assistance); this demands a minimum volume of sales if the operations is to be economically justifiable. For Europe, this can be put at 5-8% of the European market.

The European market is, at present, divided up as follows:
(in value - source: Financial Times)

<table>
<thead>
<tr>
<th>Company</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICL</td>
<td>7.5%</td>
</tr>
<tr>
<td>UNIDATA</td>
<td>8%</td>
</tr>
<tr>
<td>IBM</td>
<td>55%</td>
</tr>
<tr>
<td>HONEYWELL-BULL</td>
<td>13%</td>
</tr>
</tbody>
</table>

The threshold for entry into the world market will be higher than that for the European market.

- The "experience curve" indicates that the unit cost of a product is reduced by approximately 15% each time the cumulative volume of products on the market doubles. It can be shown that the unit costs of IBM are about one half of those of European based manufacturers. The present rate of growth (approx. 20%) of the Community market shows that European manufacturers are already struggling to hold their share of the market. Concentration is the only way of doing better.

Source: Towards a European policy on the EDP industry
Y.S. HU, 1973
Study carried out under contract from the Commission.

5. Components

a) The percentage of the turnover of the electronics industry absorbed by data-processing is as follows (1968):

<table>
<thead>
<tr>
<th>Region</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC (without the UK)</td>
<td>19.8%</td>
</tr>
<tr>
<td>USA</td>
<td>23%</td>
</tr>
<tr>
<td>Japan</td>
<td>9.8%</td>
</tr>
</tbody>
</table>
b) It is estimated that in 1972 data processing used 31% of the semi-conductors in the EEC (37% in the United Kingdom).

c) On the integrated circuit market in the EEC (without the UK), the market was shared as follows in 1970:

<table>
<thead>
<tr>
<th>Company</th>
<th>Market Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Texas</td>
<td>24%</td>
</tr>
<tr>
<td>Philips Group</td>
<td>20%</td>
</tr>
<tr>
<td>ITT Group</td>
<td>15%</td>
</tr>
<tr>
<td>Motorola</td>
<td>9%</td>
</tr>
<tr>
<td>Siemens</td>
<td>8%</td>
</tr>
<tr>
<td>SGS</td>
<td>7%</td>
</tr>
<tr>
<td>AEG-Telefunken</td>
<td>5%</td>
</tr>
<tr>
<td>Sesscosem</td>
<td>5%</td>
</tr>
<tr>
<td>Others</td>
<td>7%</td>
</tr>
</tbody>
</table>

(Source: La recherche et le développement en électronique dans les pays de la Communauté et les principaux pays-tiers. BIPS study - October 1970).

6. The software industry.

a) It is estimated that in France and Great Britain in 1971 the share of the service companies in the turnover of the software sector came to 35% and 25% by value respectively. (Presse Informatique No 24 of 4.12.1972).

b) In 1971 there were approximately 1000 service companies in the USA, as against 500 in France and 750 in Great Britain. It is estimated that 3% of the service companies accounted for 57% of the turnover of the sector and that about 40% were running at a loss.

c) Productivity in 1971

<table>
<thead>
<tr>
<th>Productivity</th>
<th>West Germany</th>
<th>USA</th>
<th>France</th>
<th>Great Britain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turnover (in millions of u.a.)</td>
<td>75</td>
<td>300</td>
<td>51</td>
<td>40</td>
</tr>
<tr>
<td>Share of the market held by the 12 main companies</td>
<td>50%</td>
<td>51%</td>
<td>70%</td>
<td>41%</td>
</tr>
<tr>
<td>Data-processing specialists employed</td>
<td>4200</td>
<td>12000</td>
<td>3000</td>
<td>4350</td>
</tr>
<tr>
<td>Turnover per man in u.a.</td>
<td>17850</td>
<td>25000</td>
<td>18500</td>
<td>9100</td>
</tr>
<tr>
<td>Orders passed by the government (in millions of u.a.)</td>
<td>118</td>
<td>4</td>
<td>2.9</td>
<td></td>
</tr>
<tr>
<td>Proportion of software (independent companies) in relation to hardware</td>
<td>5.4%</td>
<td>8.3%</td>
<td>8.3%</td>
<td></td>
</tr>
</tbody>
</table>

7. Share of the data-processing market represented by the public and the ancillary public sector:

a) Capacity held by the central administrations (1971):
   in France: 12% (by number), (Source: annuaire O.1 Informatique)
   in West Germany: 14.6% (by value), (Source: Diebold).
   If the ancillary public sector is included, the proportion for Europe is between 20 and 30%.

b) Service (1971)
   in France: 28% of the turnover of the service companies
   in the United Kingdom 23% of the turnover of the service companies.
   (Source: La Presse Informatique No 24, 4.12.1972
   based on a study by SESAM-LOGICA)

8. Summary of public-sector data-bank projects in the countries of the enlarged Community:

<table>
<thead>
<tr>
<th>Country</th>
<th>Total number of projects enumerated</th>
<th>Operating or under construction</th>
<th>Operating or under construction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Access</td>
<td>Volume</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Random</td>
<td>Sequen-</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>tial</td>
</tr>
<tr>
<td>West Germany</td>
<td>49</td>
<td>23</td>
<td>14</td>
</tr>
<tr>
<td>Belgium</td>
<td>13</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Denmark</td>
<td>15</td>
<td>12</td>
<td>2</td>
</tr>
<tr>
<td>France</td>
<td>Inquiry being carried out by the Délégation à l'Informatique.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ireland</td>
<td>4</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>Italy</td>
<td>7</td>
<td>7</td>
<td>-</td>
</tr>
<tr>
<td>Norway</td>
<td>18</td>
<td>14</td>
<td>5</td>
</tr>
<tr>
<td>Netherlands</td>
<td>4</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>UK</td>
<td>20</td>
<td>13</td>
<td>5</td>
</tr>
</tbody>
</table>

(Source: Document OECD DAS/SPR/71.44 - Annuaire des banques de données dans le secteur public).
9. Planned expenditure on data communication in the United States up to 1980:

a) "... between now and 1980, the United States will spend 250 thousand million dollars on setting up and developing data processing and telecommunications networks...

These networks will be of vital importance if one considers that according to estimates the United States alone will, by 1980, have 2.5 million terminals permitting 250,000 million operations or "calls" per year."

(Source: Doc. SP(71)19 OECD).

b) "... American experts estimate that, by about 1980, $260,000 million will have been invested, $160,000 million in computer systems and $100,000 million in extending and developing telecommunications networks."

(Source: same document, revision 1).

10. Needs for computer specialists:

a) According to the Second West German Data-Processing Programme, the manpower needs at the beginning of 1978 will be 250,000-400,000 (operators, programmers and analysts), including 200,000-300,000 for utilization. These figures are based on an average manpower of 6.9-9.0 per computer.

At the end of 1970, computer specialists totalled about 100,000.

b) A study by the BIPE (April 1970) estimates that in France 100,000 new computer specialists will enter the profession between 1970 and 1975. At the beginning of 1970 their numbers were estimated at 70,000.

c) As regards Italy, an AICA study estimates that in the period 1971-80 the number of graduates or holders of equivalent diplomas to be trained for data-processing purposes will be 38,100-54,400, which probably represents about 20% of the total university degrees during this period.
1. The effective application and industrial development of data processing is crucial to the European economy; it is the third largest world industry, growing at 20 per cent per year in Europe; its applications penetrate almost every walk of life (§ 1) *

2. This industry is, however, dominated by a single firm based outside Europe which has 60 per cent of the world market (§ 2).

3. The Commission has the obligation, under Article 86 of the Treaty, to ensure that there is no abuse of such a dominant position. The best guarantee against abuse is, however, effective competition. A flourishing European data processing industry ought to include a strong European-based element, side by side with the important companies controlled from outside. In an expanding market, there is room for both (§ 2-4).

4. To achieve a strong European-based industry, the key need is to develop an industrial structure capable of competing with the dominant producer in the supply of a range of central processors. In an endeavour to maintain a national capability, three governments have supported indigenous companies with finance and preferential purchasing. Given the small size of the European-based enterprises, (they have only 6 per cent of the world market together) there is much evidence that they will need to combine forces, if they are to achieve long term viability, make the best use of available funds and achieve a genuine European, indeed world dimension (§ 5-8).

* see corresponding paragraph of Document I
5. A first welcome step towards this aim has been taken by the formation of the Unidata group by Siemens, CII and Philips. The separate commercial plans of this group and the other major European enterprise, ICL, mean, however, that a further regrouping between them in the near future may be difficult and that the immediate prospect is for two major European Groups competing with each other (§ 9-10).

6. In this situation, Community policy towards the indigenous industry is best seen in two phases: In a first phase, a limited collaboration should be encouraged both for ends useful in themselves and as a mean of encouraging a convergence of the companies with a view to a further combination later, which respects the rules of competition under the Treaty. In a later phase, a more comprehensive pluriannual programme for the support of European data processing is desirable (§ 11).

7. A policy towards the data processing industry must take account of the needs of the components, peripherals and software industries, which together account for a large and increasing part of the value of computer systems (§ 11).

8. In what is loosely-called "peripherals", though a variety of European companies have been successful, the overall picture is one of a growing payments deficit and technological dependance. Further consideration needs to be given at Community level to the question whether the industry needs to develop and the Community to support an indigenous capability to produce key sub-assemblies of computer systems (for example disc units) (§ 12-13).

9. In electronic components, it is essential for the European industry to be abreast of the latest technologies, notably in the field of memory technology and especially Large Scale Integration. Further consideration should be given to the possibility of joint support for a common development and production capability, even during a period in which the major companies are apart (§ 14-15).
10. In software, there is a need to develop a "market" in transferable software packages and to support the development of programmes which enable users to switch from one type of equipment to another. The best way for the Community to stimulate the growth and strength of the software industry would however be to sponsor one or more major international development projects which stretch its capability ($\S\ 16-19$).

11. Side by side with the objective of strengthening the European based industry, the Community should promote collaboration between users, particularly public ones, with a view to applying data-processing more effectively to society's needs ($\S\ 21$).

12. In the United States, the market provided by Federal Government procurement has not merely served users but spurred and stretched the industry. In Europe, procurement policies need to be combined at Community level with the dual aim of providing analogous opportunities for the European based industry and achieving economies for users by joint purchasing and development ($\S\ 22-24$).

13. In the field of applications, collaboration on three levels can bring benefits:

   a) certain applications have a basic international character (air traffic control, environmental monitoring, meteorology, customs and trade statistics, air, sea and rail freight systems for example). Major development projects in such areas could also provide an impetus to the development of the European-based industry. A small number of such projects should be undertaken, as soon as project selection, planning and organization can be completed, to be followed by others as the need arises ($\S\ 26$).
14. b) in some areas, where common needs exist, further savings may be achieved by specifying requirements together, and jointly developing programmes or systems which can then be used, in whole or in part in several states: medical systems, social security records, urban traffic, control and management are examples (§ 27);

15. c) in many areas coordination of national policies may bring economies and greater efficiency: Data-communication and the management of data banks are priority examples (§ 28-31).

16. International projects as suggested in 13a above would be appropriate subjects for common financing as would common development contracts to industry carried out jointly by common subsidiaries. The Commission when examining national aids under Article 92 of the Treaty has accepted that in the present circumstances, existing aids to the overall R & D efforts of the major national companies should continue. However, in the later context of an overall programme for Europe, providing support on a temporary basis for a regrouped industry, a larger element of common finance would make sense (§ 44).

17. There is a need to develop and apply common standards, notably in the fields of high level languages and electronic interfaces, in the interests of both users and the industry as a whole. A combined public procurement policy at Community level can be an important instrument for getting such standards applied (§ 34-35).

18. Collaboration or joint action will be needed in a number of other fields, including education, training of personnel, fundamental research, protection of software, and support for leasing. The Commission will make appropriate proposals at a later stage (§ 36-37).

* see footnote § 13 Document I
19. The Commission intends to follow closely the evolution of the structures of employment, implied by the implementation of a Community policy, taking special account of the needs of regional policy (§ 38).

20. A wide debate is necessary on the subject of the privacy and protection of the citizen, with a view to the development of a Community policy in this field. Public hearings are recommended (§ 39).

21. In the light of this situation, the Commission proposes that the Council resolve to encourage and support further associations between the companies, to give a Community orientation to policies for encouraging and promoting data-processing, notably by collaborating in procurement policy, standards and applications, and to decide on a limited number of major common development projects in the field of applications before the end of 1974. The Commission will present a progress report on the evolution of the sector before the end of 1975 (§ 40 to 45 and resolution).