IMPACT II
MID-TERM EVALUATION :
FOR AN INFORMATION STRATEGY

by **René Mayer, Chairman**
Arnoud de Kemp, Roberto Liscia, John Martyn, João Campos Rodrigues, Experts,
Mogens Rasmussen, Rapporteur

Report drawn up at the request of the Commission of the European Communities DG XIII/E

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CONTENTS

First of all, the authors wish to give special thanks to the officials of DG XIII/E who, with a keen sense of their responsibilities, provided intelligent and effective assistance throughout the drafting of the report.

They demonstrated a perfect grasp of the aims of the task in hand, answered all our questions, provided extensive documentation and showed boundless patience.

The authors are also greatly indebted to the work of their predecessors on the panel which, three years previously, was responsible for assessing IMPACT I

This report has been drawn up in accordance with Article 6 of the Council Decision of 12 December 1991, which states that "at mid-term, (.) an evaluation report (shall be) drawn up by independent experts on the results obtained in implementing the action lines" constituting the IMPACT II programme.

The appointed experts considered themselves authorised to adopt a broad interpretation of their task.

Thus they did not confine themselves to evaluating the implementation of the programme in terms of the objectives originally laid down but also assessed the objectives themselves, the size of the programme and the pertinence of its field of application. They also tried to provide a few principles to guide, over the next two years, the completion of the current programme and, more generally, to help to bring about a European information market policy that is, as they feel it should be, more ambitious.

Part I of the report examines the objectives of the IMPACT II programme, the definition of its action lines and the effectiveness of their application.

In order to establish whether these initial guidelines are still valid, Part II sets out the main developments affecting the world market, its products, its customers and its producers or distributors.

Part III then attempts to pinpoint the essentials of any European strategy in the information field.

The report ends with the conclusion that it is now necessary to "move up a gear" and sets out seven proposals to achieve this.

I A MUCH REDUCED PROGRAMME

IMPACT II (Information Market Policy Actions) is a follow-up to IMPACT I (1989-90) and is intended to cover the years 1991-1995.

It has five objectives:

- "to establish an internal information service market"
- "to identify the strengths and weaknesses of existing services" and "to stimulate and reinforce the competitive capability of European suppliers"
- "to promote the use of advanced information services"
- "to reinforce European co-operation, paying particular attention to SMEs" and"the less favoured regions"
- "to make use [to this end] of the results supplied by other European or national programmes" (extracts from the Decision referred to above).

It comprises four action lines:

1) improving the knowledge and understanding of the internal information market;

2) overcoming legal, administrative and technical barriers;

3) increasing user-friendliness and improving information literacy;

4) supporting strategic information initiatives.

In evaluating this programme, the following four questions immediately spring to mind:

- were the initial objectives well-chosen?
- are they being efficiently pursued?
- are the action lines being followed the proper way to involve the persons and organizations concerned in each of the twelve countries?
- do the changes which have occurred or the results obtained since the Decision setting up this programme call for a change in its content?

I 1. FOUR CORRECTLY-CHOSEN ACTION LINES

The initial objectives were pertinent and, in general terms, remain so.

Establishing an internal European information market remains a valid objective, even if it unfortunately still seems relatively distant.

Much of the task of identifying strengths and weaknesses has been achieved, and this is in fact one of the main points of the present report. However, such an objective calls for an ongoing reevaluation.

Promoting the use of "advanced" services requires concerted action which has been taken and must be directed simultaneously at both the supply side, with a view to encouraging it to offer services which make optimum use of all the resources currently available to the technology, and the demand side, with a view to making it aware of the potential advantages of these services. There is still an enormous amount to be done in these two fields.

Strengthening European co-operation may seem something of a euphemism in view of the main operators involved. Such co-operation has still to be established.

Exploiting the results of other European and national programmes is essential if the efforts are not to be fragmented. This calls for good co-operation between Commission departments and between these and the major national bodies. This is another ongoing objective, a sort of labour of love, on which proposals will be made.

The five objectives laid down for the IMPACT II programme in the Decision of 12 December 1991 thus all remain valid.

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Were the four action lines of the programme correctly chosen?

The answer is yes. No doubt a lot of time and effort went into considering them at the time.

This is the opinion not only of the members of the panel. The question was put to various professional circles in several countries. The following page gives the results of a questionnaire sent in France to 68 distinguished persons in the information industry. 53 replies were received, many of them detailed and accompanied by comments and reports.

Almost all the replies received **expressed approval of the objectives and the initial definition of the four action lines**.

REPLIES TO QUESTIONNAIRE (FRANCE)

1. **Were you aware of the IMPACT II programme?**
   YES 39 NO 14

2. **Did you know about its four main "action lines"?**
   YES: 23 A LITTLE: 14 NOT AT ALL: 14
   No reply: 2

3. **Do you find these action lines:**
   WELL-CHOSEN: 26 FAIRLY WELL-CHOSEN: 21 BADLY CHOSEN: 3 No reply: 2

4. **Are these four action lines being properly implemented? Can the measures being taken by DG XIII be regarded as achieving their objectives? Are they:**

L1 (IMO, knowl. of market) EFFECTIVE: 7 - FAIRLY: 13 SCARCELY: 10
Don't know: 18 No reply: 5

L2 (Removal of barriers, LAB) EFFECTIVE: 7 - FAIRLY: 7 SCARCELY: 10
Don't know: 22 No reply: 7

L3 (Awareness, user-friend., training) EFFECTIVE: 3 Fairly: 9
SCARCELY: 17 Don't know: 18 No reply: 6

L4 (Calls for tenders) EFFECTIVE: 4 FAIRLY: 10 SCARCELY: 14
Don't know: 20 No reply: 5

5. **Has DG XIII established the proper contacts for increasing awareness, for promoting its policy and for collecting comments, needs or complaints?**
   YES: 11 MORE OR LESS: 10 NO: 15 Don't know: 12 No reply: 5

   Are you in contact with any persons responsible for the IMPACT II programme?
   YES: 18 NO: 29 No reply: 6

   Have you ever responded to a call for proposals?
   YES: 12 NO: 31 No reply: 10

6. **Have you ever used any of the tools of European information policy (there are more than 53 of them)?**

   NAP: 8 IMO: 8 LAB: 2 ECHO: 24 INF EURO ACCESS (?): 6
   OTHERS: 4 NONE: 19 No reply: 2

I - 2 A REDUCED BUDGET APPLIED TO A FIELD WHICH IS INHERENTLY CONTRACTING

Although there are other programmes concerned with information, IMPACT is the only one concerned with the market.
Limited from the outset, the budgetary resources made available have constantly declined.

No matter how severe the Community's financial difficulties may be, it is impossible not to see in these successive reductions - as well as in the imbalance between the technological programmes and that aimed at opening up the internal market - a sign of Europe's failure to realise how much is at stake.

IMPACT initially had a draft budget of 150 million ecus. The Commission then plumped for the figure of 100 million ecus. After passing through the Parliament and the Council IMPACT II found itself with a multi-annual budget of 64 million ecus spread over four years, i.e. less than two million ecus per country per year on average. The actual budgetary appropriation was 27.3 million ecus up to the end of 1993 and should be 12 million ecus for 1994.

Unless there is a sudden acceleration (a doubling of the appropriations in 1995), it is therefore likely that the budget of 64 million ecus will be far from exhausted.

Despite this, it is particularly modest compared with the budgets for the technological programmes.

For the same period of four years (1988-92), the second phase of the ESPRIT programme of research and development in the field of **information technologies** is 3.2 thousand million ecus, i.e. **fifty times as much**, although only part of this (1.35 thousand million ecus, i.e. **twenty times** the IMPACT budget) comes from the Community budget. ESPRIT II involves 6 000 researchers (cf. "Information and communications technologies in Europe", DG XIII, p. 19).

Another four-year programme, the framework programme for research and development in **information and communications technologies** for 1990-94, has a budget of 2.221 thousand million ecus, i.e. **thirty-five times as much**.

This imbalance poses a problem.

The fact is that Europe's sin is not so much a lack of equipment or modern facilities as the fragmentation of its market and the absence of a strategy to tackle this situation.

We will continue to insist on this point throughout this report: Europe's backwardness is not so much technological as organisational. **Europe's main handicaps** in this sector of activity, which determines the performance of the economies of the three major economic powers, **are not a lack of scientific knowledge, not technological inferiority, nor even a lack of hardware**.

Although there remains a lot to be done in these three respects, the difficulties arising from the corresponding gaps are much less serious than **the fragmentation of the market (supply and demand) and the failure to realise what is at stake**.

It goes without saying that the research effort must continue.

There is a need to expand the existing telecommunications networks in order to make them more homogeneous from one country to the other, to establish transnational European networks (TEN, ISDN), to switch to broad-band networks, etc.

If that is all that is done, however, these new high-performance networks will be used for transporting "products" whose main added value (and the corresponding jobs) will have remained elsewhere. At the moment, Europe is a collection of buying markets which are all oriented towards the United States for the information products, and towards Japan for the hardware.

This is the fragmentation which action lines 2 and 3 of the IMPACT programme aim to reduce, while the creation of an Observatory (action line 1) is aimed at correcting this lack of medium-term vision.

We must avoid bringing the interests of European manufacturers into conflict with those of the information services, i.e. the containers versus the contents.

The fact is that, even from a strictly industrial point of view (manufacture of computers, telecommunications, etc.), the most effective way for these industries to be supported and become internationally competitive would be for them to have on their doorstep an active user market expressing needs, demanding innovative products and offering contents which can be distributed through their networks or be processed in their computers.

It is true that all these difficulties impeding the opening-up of the European market cannot be attributed to budgetary problems, and there

are lots of measures which could be taken, even by the Commission, without large-scale recourse to the Community funds.

Nevertheless, the budgetary imbalance referred to above is a discouraging sign. It leaves the market operators - both large and small - with the impression that the time is not yet ripe for Europe to commit itself to the use of the new technologies.

When Europe finally gets round to deciding, will it not then be too late?

The budgetary penury is accompanied by a definition of the field of application of the programme which includes three restrictions:

- a vague - and economically unjustified - limitation of the scope to "market" services only,
- a definition of the barriers to be overcome as being exclusively legal and administrative in nature (see above, I-4 and I-5),
- an obligation to devote at least half the budget to actions which are described as "concrete" (see I-7) - as if the others were less so.

Overall, therefore, as we shall soon see, the actions which would be most useful are sadly lacking in resources.

3. KNOWING THE MARKET: STATISTICS AND STRATEGIC STUDIES

The reply to the question as to the effectiveness of the actions which have been undertaken varies according to the lines.

For line 1 (improving the knowledge and understanding of the market), nobody disputes the need for both the economic operators and those responsible for information policy to have a better overview of supply and demand and the transactions taking place on the European information market.

Before the Information Market Observatory (IMO) was set up in 1988, very little was known about these transactions and their value. Considerable progress has been made since then (see Annex 2: memo from Mr John Martyn), and particularly subsequent to the recommendations of the evaluation report on IMPACT I.

Dissemination of the reports and working documents has also been improved. Previously done directly by DG XIII, this has now been decentralised to a network of correspondents.

The documents produced no longer restrict themselves to providing the necessary statistical tools. They also deal with **strategy**.

The excellent report entitled "New opportunities open to publishers", published by the German consultants Consulting Trust GmbH, as well as while not prejudging its final results - the study currently under way into "The strengths and weaknesses of the European information industry", entrusted to the British consultants PSI, is the kind of review which should be pursued and developed.
Although there are currently other private studies which are extremely useful, the annual report of the IMO has become a yardstick and provides the best overall view of the European market.

Publication of the documents, according to a procedure which appears rather cumbersome, is not as slow as before. It would benefit from being speeded up still further.

The IMO works together with 37 correspondents with whom it exchanges information, discusses draft reports and comments on them. The published documents are distributed by 13 national distribution agents (Work programme of 2 December 1992 - IMPACT 18/92 final).

For budgetary reasons the Observatory's network thus comprises 37+13=50 support points, which is not excessive for coverage of 12 countries. The IMO's impact is thus still too limited.

The idea has been expressed that this double network, once developed, could become a pillar of European information market policy.

It is undoubtedly necessary for the IMO to maintain close relations with the information research centres, which can supply it with valuable analyses on the different regions or on the different sectors of activity, and this was the subject of a workshop held on 19 November.

The IMO also needs another network of correspondents through whom it can disseminate the information it produces.

However, an information policy concerns a lot more professions than these two. The Observatory's two networks can therefore be only two branches of a more general network for increasing awareness and supporting European policy for the promotion of the information market (see I-8).

The Observatory is the target of various demands: some would like it to involve more private bodies or universities in its studies, while others would like its updates to be more rapid, its sources to be more clearly indicated, its data to take account of differences in inflation rates to make them more consistent, etc.

Others again would like the IMO's studies to be more directly operational. However, is it the purpose of a publicly-funded body to produce marketing studies which would be of use only to very specific groups?

Yet others would like the IMO studies to be provided free of charge, and so on.

The panel proposes the following :

- the two networks (consultation and dissemination) should be enlarged - which will require additional budgetary resources - and incorporated into the general network referred to in I-6 and I-8, as well as in proposal No 4;
- to avoid any controversy, the topics for study and their methodology should be selected following the opinion of a steering committee comprising economists and statisticians, on the one hand, and professionals, experts and market operators on the other.

This could be an appropriate body for the strategic thinking, Europe's need for which will frequently be stressed in this report.

The IMO has now become an indispensable instrument for both improving European statistics on information (market and non-market) and drafting long-term studies aimed at providing the Council, the Commission and the European Parliament with policy evaluation tools.

The panel naturally wishes that it should be maintained and regrets that its resources have been in constant decline ever since the first IMPACT programme, to the extent that they now represent less than 10% of the total budget, i.e. 870 000 ecus in 1993.

4. THE LAB ACHIEVES AN EFFECTIVE RECONCILIATION OF ORGINALLY WIDELY-DIFFERING LEGAL APPROACHES

Under line 2 (lowering of legal, administrative and technical barriers), the most interesting work is undoubtedly that of the Legal Advisory Board (LAB), a consultative body whose origins go back to 1985 and which comprises lawyers of very high calibre. This committee is highly skilled in achieving an effective reconciliation of legal-political approaches which were originally unbelievably divergent!

The "guidelines for improving synergy between the public and private sectors) published by the Commission are an example of this reconciliation of points of view. Originally, they were the outcome of discussions with representatives of the national governments. Their implementation is being studied by the LAB, which is thus henceforth responsible for progress on this important question.

The fields of activity covered by the LAB concern not just DG XIII but also several other DGs, and even (cf. note in Annex 3 from Mr John Martyn) other bodies such as the Council of Europe and the OECD, which raises delicate problems as regards monitoring.

In the corresponding discussions, DG XIII is frequently alone in representing the point of view and the needs of the user, and it is therefore excellent that the LAB should be attached to it.

The LAB's mode of operation, is consultative nature, its very high level of legal competence, its organisation in three concentric circles which ensures that it is well placed in the corresponding national circles, its independence of judgement and the quality of its recommendations and "codes of conduct", could serve as models in several other sectors.

The need for such a body will continue to be felt for years to come, and the only improvement which the panel would like concerns the dissemination of its work, the intensification of its relations with all the information professions (whether or not they are made up of lawyers), and above all **the monitoring of the implementation of its recommendations in the other DGs and even in the other European bodies**.

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However, despite the satisfactory assessment of the LAB, the laborious progress in mutual comprehension which its work has made possible is in fact a clear indication that the real barriers are often not so much legal or regulatory but linguistic or semantic, deriving from frames of reference which are historic and cultural, traditional (usage, ways of life, organisation, working methods), or even sociological or climatic.

The problem involved in action line 2 is thus not correctly formulated, and it would even be short-sighted if we restricted ourselves to what is said. It is in fact barriers **in general** which need to be lowered.

5. BUT WHO IS DEALING WITH THE OTHER BARRIERS?

Of all the barriers hampering the European information market, the most formidable are those between languages (and their semantic content) and those between professions.

Whenever this question - **which is central to the information market** and should be given priority for the maximum possible resources from IMPACT II, the answer is generally one of the following:

1- "Interpreting services and assistance from SYSTRAN are available for overcoming the language barrier";

2- Work on harmonising technical standards is being undertaken by DG III, but it will take a long time";

3- "It will take several generations to approximate ways of life and achieve mutual understanding".

None of these replies is totally wrong, but none of them is really true - nor, above all, totally satisfying.

As regards languages, no effort should be spared to avoid friction arising between the countries of Europe of the kind we see in Belgium and Canada (while it is unknown in Switzerland), but also to avoid deepening the divide separating "white collar" and "blue collar" workers, i.e. between those social categories which have received a secondary or higher education (which has introduced them to foreign languages) and those condemned for life to tasks considered to require only little information.

As regards technology, computers are far from being used to the full extent of their potential.

Not only is not enough use made of them (the Systran system, since it is the one that has been chosen as being best, should be present in all offices, and particularly in all the Commission's offices), but only a very small part of their capacity and abilities is exploited.

An item of information is not just a sign, a word, a symbol or a drawing. It is a hypertext which, on the basis of a central sign, provides a link to a "system" of numerous and complex references. A new item of information is an element which modifies the previously established hypertext.

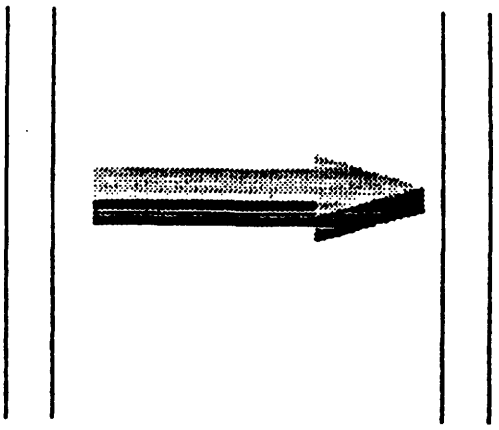
Transmitting an item of information cannot therefore be limited to transmitting a sign without the references to which it is linked.

If an architect writes the word "wall" on a plan, and the translation system replaces "wall" with "Mauer" or "mur", the information, if it is restricted to these few letters, is likely to be of almost no practical use to the technician or machine receiving the message.

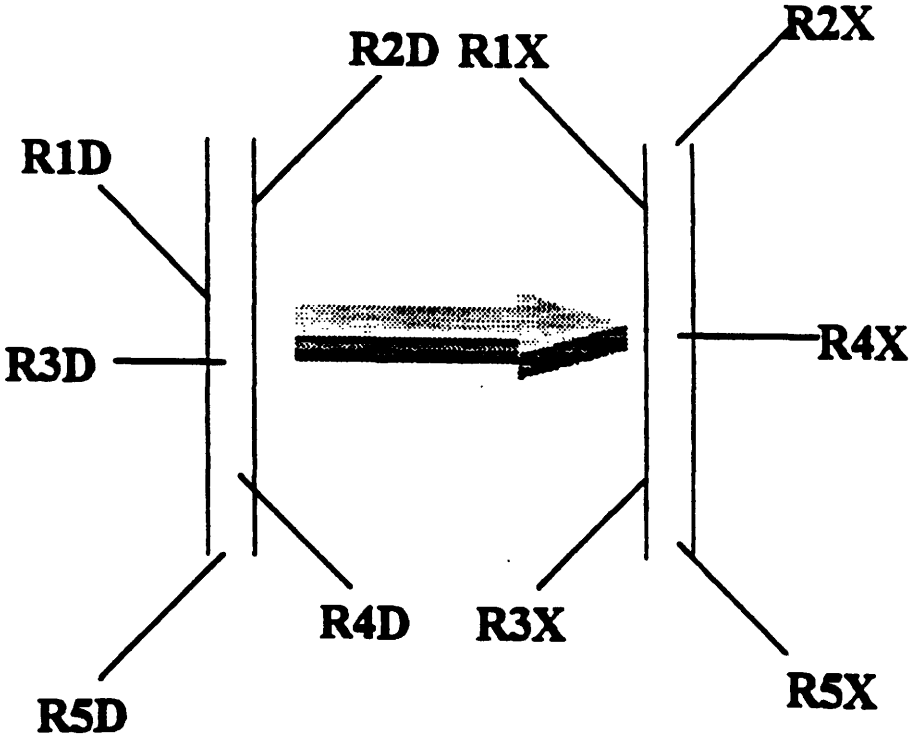
In the same way, if this architect draws two parallel lines, and his computer limits itself to transmitting these two lines to the computer of the company with which he is working, the information received may represent only 0.1% of the information which the architect had originally implicitly wanted to introduce into his drawing.

In fact, what he wanted these two lines to represent is a wall. However, it must be understood that this wall has an outer face and an inner face, that the outer face is exposed to the weather, pollution and ultra-violet radiation, must be frost-resistant, waterproof, self-washing, that the wall is load-bearing and must therefore carry the downward pressure of the upper stories, that it must be resistant to earthquakes of a given scale, that it must resist fire for a given length of time, that it must provide thermal and sound insulation, that its inner face must be smooth so that objects such as pictures can be hung on it, and so on.

The two parallel lines are in fact the vectors for several thousand pages of text, drawings, calculations, all this information being implicitly contained in the regulations (on safety, sound protection, earthquake protection, etc.) in accordance with the current legislation and the "state of the art".



Exchange of information correct but devoid of meaning



Exchange of information which retains the meaning

When several trades are assembled on one and the same building site, or when a frontier is crossed, much of this non-explicit information relating to standards, ways of life or building methods changes. This makes it very difficult to work together.

If computers were taught to take account of these differences, they could do it very well, and this would save hours of explanations, mistakes in building, defects to be repaired, and extra finishing work.

There is an enormous amount at stake.

In the construction of a building, the cost of the time spent by the various people involved in producing, exchanging and comparing their respective information amounts to 60% of the final project (the rest comprising the purchase of materials and equipment and their use as could be carried out by a perfectly programmed robot)!

This figure would rise considerably if you had people working together from different countries in Europe, speaking different languages, with different customs and trained to use different classifications, standards etc.

One cannot, as reply No 2 might suggest, simply wait until standardisation groups everywhere have finished their work, since it is most unlikely - given the differences of all kinds (e.g. climatic) that we will end up with single European standards, and in any case there will remain differences of vocabulary and differences of content between trades. The two parallel lines drawn by the architect could, in the plumbing trade, signify a drain which another tradesman will refer to as a "pipe" and a third will call a "tube".

On the other hand, if the computers belonging to the promoter, the architect, the consultants, the insurance supervisory offices, the lead contractor, the subcontractors, the suppliers of materials and equipment, the town planning departments, the fire services, the municipal services, etc. were informed in advance, they could understand one another without its being necessary to reintroduce the data or explain repeatedly the significance of the words and symbols used in terms of regulations, quality, standards, etc. This could save a part of the extremely hefty consultation costs.

This naturally brings us to electronic data interchange (EDI).

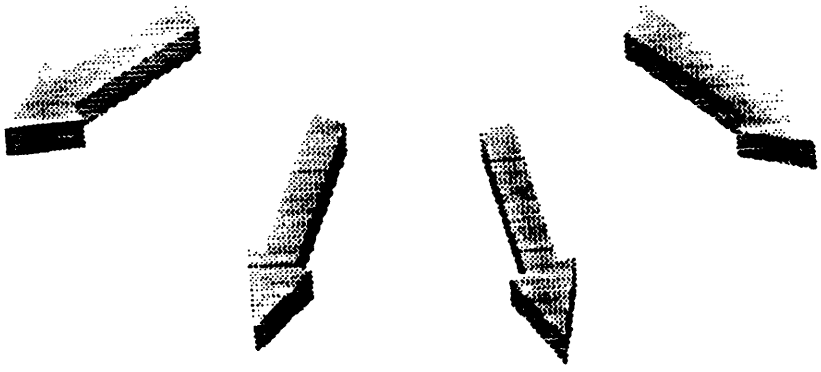
At the moment, EDI is used for transfers of money between banks and businesses. There are also EC Directives on the harmonisation of customs nomenclatures. These problems were - dare I say it - relatively simple, and that is why they were solved. The situation is far from being so far advanced in most technical fields.

This example from the construction industry (although it could have been taken from any other activity) was intended to illustrate the difficulties involved in establishing a European information market.

What is involved, in fact, is the establishment of the European market per se, since **there will be no common European market in goods and services unless a common information market is first established**.

If an awarding authority wishes to have suppliers from different countries in Europe competing against each other, it must first have at its disposal technical nomenclatures, harmonised catalogues, yearbooks, bridges between standards - in other words standardised information tools.

PRE-STANDARDISATION RESEARCH
INTO INFORMATION AND COMMUNICATION
HARMONISATION OF CONTENTS



STANDARDS

DICTIONARIES

LANGUAGE TOOL

EDI

NOMENCLATURES

Research associations and institutions are working on facilitating the exchange of data between computers and on saving the costly reintroduction of data, losses of information and misunderstandings. They are engaged in **pre-standardisation research into the electronic exchange of technical data**.

In each branch of the economy and technology (agriculture, industry, transport, etc.) those involved frequently feel a lack of **moral and material support**. In the absence of such support, which would give them legitimacy, initiatives grow up in a fragmented fashion, sometimes in a single country (or in a small group of countries of which only a few belong to Europe) and sometimes within a closed system such as one formed by a particularly large concern. In other words, the laborious work undertaken in a fragmented and disparate fashion risks having to be recommenced at a later stage.

There are concrete examples:

1) the MEGRIN group, which is a working party close to CERCO (the European grouping of official cartographic bodies) is trying to make objectives independent of the both the countries and the uses made of them, and hence compatible, since the information amounts to a European topographical reference infrastructure (contour lines, hydrography, administrative boundaries, etc.). Such an initiative deserves to be recognised and supported;

2) a harmonisation of the nomenclatures of industrial materials (see "The New ISO Standard for the Exchange of Product Data: STEP" by Dr Norman Ferroday, UK) has been undertaken but appears to be dormant for lack of resources,

3) a harmonisation of the definitions and nomenclatures of the countless elements (several hundred thousand) used in the construction industry is being carried out by a French/Swedish/Swiss group, and so on

The Commission of the European Communities has an essential role to play in:

- acting as a "neutral" meeting place for the many international meetings which this kind of work involves,
- giving moral support to this work and a European legitimacy (a European label) to its results,
- encouraging all countries in Europe, whether or not they have participated in the preparatory work, to accept its conclusions,

- and, of course, providing, if possible, material help for the specialised research required and to cover the costs of the meetings of experts.

This is a role which the Commission sometimes plays very well.

In a field close to the one cited above, an example is the action being undertaken by TG 287 which, under the aegis of CEN and with the help of a group of experts financed by DG III, is harmonising at European level the spatially-referable information (information which can be located) on the environment, statistics, transport, etc.

Other projects of this type are being implemented under SPRINT.

To ensure the modicum of co-operation needed to avoid gaps, contradictions or fragmented implementation followed by protests, the panel proposes that recognition of the "European" nature of a pre-standardisation working party, and its material support, be entrusted to DG XIII/E under the IMPACT II programme, so that that Directorate has an overview of the pre-standardisation actions concerning information. Supervision would be transferred to DG III and the vertical DGs once the work was far enough advanced to have lost its "pre-standardisation" nature and assumed an operational nature: preparation of standards, directories, nomenclatures, language tools, etc.

Naturally, this would require an increase in the resources allocated to action lines 2 and 3.

Those under action line 2 are declining and currently amount only to about 360 000 ecus per year.

Already insufficient to ensure proper dissemination and proper monitoring of the work of the LAB, they are therefore currently not enough to allow the more ambitious actions which are nevertheless indispensable.

I-6. STEERING DEMAND, INCREASING AWARENESS, TRAINING, FACILITATING ACCESS: THE ROLE OF ECHO, THE NAPs AND THE FOCAL POINTS, ETC.

It was the third action line which elicited the most dissatisfaction in the surveys. This is probably because its definition seems vague and its means of action too limited.

The objective must first be clarified.

Information is simultaneously:

- **an essential factor in development and productivity** for all branches of the economy
- **a factor in cultural, scientific, commercial and publicity "dissemination"**
- **the actual material involved in certain services (press, statistics, geography, etc.**

There are different objectives for these different roles played by information in the economy. Four of them can be distinguished. The aim may be to:

- develop a competitive and profitable information industry,

- ensure the dissemination of European information and a European "image" (patents, tourism, marketing, publicity, communication, etc.),

- provide optimum access to information for its economic operators so as to maintain their productivity,

- maintain the availability of information which is of strategic importance.

The means to be used vary according to which of these objectives is being followed. They may even conflict with each other, and it is these unresolved contradictions which explain, in particular, the uproar over several decisions recently taken in Europe.

Action line 3 alternates between trying to achieve one or other of the first three objectives. This is not a criticism - just a call for a strategic review which would make the discussion easier (see III-4 and proposal No 1).

Action line 3 sets out to increase user awareness and make the user's task easier, for example:

a) by reorganising knowledge-holding systems to make the knowledge accessible, easily understood, non-alienating and even user-friendly. In particular, this involves action such as the harmonisation of standards, lowering of the language barrier, approximation of semantic contents, etc. This shows that the objectives of action lines 2 and 3 are linked;

b) by helping the user to navigate the maze of systems; this is the essential justification for the ECHO host; it is also the role of the NAPs and could be the function of the INFO EURO ACCESS points;

c) by providing training, in particular for those living in the less favoured regions of Europe (one of the functions of the focal points.

The European administration's scope for intervention in these various fields is limited.

The user-friendliness of products depends on the manufacturers and the hosts, who are always tempted to make their customers captive, despite the fact that they are nowadays facing strong user pressure for open systems.

Despite this obstacle, the IMPACT programme has four interesting achievements to its credit.

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First of all there is ECHO (European Commission Host Organisation), the European host whose role is not to compete with existing hosts (the biggest of which are in any case American), nor to offer all the European information available, but to increase and guide demand-side awareness and to serve as a temporary nursery for new products.

ECHO thus simultaneously provides aid to both the demand for, and supply of, information.

The temporary support it provides at the birth of systems which are frequently of only private interest might well encounter some opposition. This is why, as for action line 4, the ECHO managers are advised to give preference only to systems whose presence can be justified by the general interest to Europe and which coincide with one of the objectives of European policy. This assumes that the choice of systems supported by ECHO is selective and based on a long-term view and rules of conduct, and is not motivated exclusively by a search for additional resources.

ECHO should be used symbolically by the European Community, at its highest political level, for the dissemination of policy debates, economic and technical programmes, etc., as is done by the White House or the American Library of Congress on INTERNET.

This would show that the top level of political authority in Europe is modern, open to the new information technologies for which young people are so enthusiastic, and aware of the economic stakes involved. It is certainly not a question of establishing a Community propaganda service or of reducing the information covered by IMPACT just to its "media" component, but of knowing how to use modern means of involving the people of Europe in a democratic system.

Another important function of ECHO might be as an essential tool for overcoming the frontiers (linguistic, semantic, etc.) which are Europe's greatest handicap.

There is still so much to be done to make the (electronic) movement of information in Europe genuinely user-friendly and convenient!

ECHO already offers consultation menus in the nine languages and has recently begun accepting the videotex terminals using the different European standards, thereby tackling two major intra-European barriers.

By working in close liaison with brokers, who are the natural helpers of the economy, by showing its teaching skills, and by relying on a vast network of trained correspondents, ECHO could become **a central training and guidance tool** at the service of the potentially enormous European clientele.

The moment they consult ECHO, all those who turn to it - whether they be beginners or experienced professionals - are particularly **motivated** and receptive to training because they are expressing a need. It depends on the welcome they receive during this "window of opportunity" whether they will make progress in using information technologies or give up.

Even now, ECHO is the best known and the most widely used of all the tools created under the two IMPACT programmes. It could, if well managed, be of great **practical use**. In addition, however, it is of **great symbolic value** because it is the focal point for queries from all the countries of Europe and **is a tangible indication of the Commission's resolve to be at the economic and political service of the citizens of the Community**.

Out of a budget of 1.5 million ecus, 700 000 ecus is provided by clients testing their databases. In reality, therefore, ECHO costs only 800 000 ecus from the IMPACT II budget.

It is a modestly-sized host with a rapidly increasing number of customers. It has some 16 000 customers and 5 000 hours of connection time per month (of which 400 via the INTERNET network, of which more later).

If ECHO were only a simple business instrument, just another of the 300 existing European hosts, the principle behind the subsidy granted to it would be debatable and its existence would appear superfluous. If, however, it is regarded as an instrument for guiding demand, increasing awareness and providing initial experience, and as political and symbolic evidence of the Community's interest in information, its costs are very reasonable.

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The second important action undertaken under action line 3 is the network of NAPs (national awareness partners), these being national correspondents responsible for increasing awareness. This measure dates back to 1992 and is thus very recent.

For an administration such as the European administration, which has practically no local representation, it is absolutely essential to have a network of active correspondents to spread the gospel and gather information.

However, there are currently only one or two NAPs per country, which is too few to target a population of any significance. Moreover, **the financial resources made available to the NAPs are far below what is necessary for them to be able to organise awareness and training activities (seminars, courses, etc.)**.

For the moment, and regardless of their goodwill, the NAPs are thus little known to users and have only a limited influence.

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A third action is aimed at the less favoured regions, where "focal points" have been set up whose influence is as yet difficult to measure (see attached note from Mr João Campos Rodrigues).

They are in charge of disseminating information on IMPACT activities, the working parties, the studies undertaken, etc.

Up till now, they have been busy above all with the calls for proposals.

Thanks to them, a significant number of projects involving the participation of undertakings in the less favoured regions were selected in the initial phase, as regards both GIS and multimedia systems.

On reading the contribution of Mr João Campos Rodrigues, which is attached to this report, one is struck by the fact that the weaknesses apparent in the less favoured regions are non-specific in nature. Their weaknesses are not peculiar to them. They are the weaknesses of Europe as a whole. It is just that they are somewhat more marked there than elsewhere.

This remark is not intended to dismiss the idea of a specific programme drawn up in agreement with the national authorities and DG XVI. On the contrary.

To the extent that the situation of the less favoured regions is only a slightly worse manifestation of the situation in Europe in general, these regions will have to serve as a testing ground for awareness and training projects throughout Europe.

The experience gained can and must be put to use outside Europe as well.

Within the framework of the Community's competence in the field of vocational training, IMPACT has launched several experimental actions in co-operation with the programmes of the Task Force for Human Resources (Eurotecnet, COMETT, etc.) directed towards different target groups: trainers, intermediaries, specialists, etc., comprising some 400 persons recruited essentially in the less favoured regions.

Europe still has privileged cultural relations with other parts of the world in which its languages are spoken: the United Kingdom with the Commonwealth, Spain with the Spanish-speaking world, France and Belgium with the French-speaking community, Portugal with Brazil and several African countries, Germany with the countries of Eastern Europe, Italy with its diaspora, etc. The projects in the less favoured regions could thus be used to test methods (of teaching, translation, increasing awareness, etc.) which would then serve to strengthen links with these huge areas, some of which are showing rapid economic and demographic growth.

To sum up, the panel proposes the following with regard to the focal points and training projects:

1) the technical assistance provided by the focal points in the form of advice or training should be stepped up, and a **specific programme** for the information services market in the less favoured regions should be studied, drawn up and implemented by those responsible for IMPACT, **in liaison with the national authorities and DG XVI**.

2) with regard to those European countries which still have privileged relations with other parts of the world, as mentioned above, a study should be made of how to transpose to other regions, inside and outside Europe, the teaching and awareness methods successfully tested by the focal points.

These four initiatives - ECHO, NAPs, focal points and vocational training - to which should be added the IMO's strategic studies, the LAB's measures to harmonise legal rules and the as yet missing measures to **harmonise concepts and technical contents, are the starting point for an effective European policy in favour of the information market**.

The IMPACT programme has devoted 4.5 million ecus per year to them (50% of the budget), mainly for awareness and training actions.

As regards the standardisation action (it would be better to speak of "pre-standardisation research" or "semantic harmonisation"), the resources amount to only 300 000 to 400 000 ecus per year, representing 4% of the total budget, and one person working part-time. This is too little by far.

I - 7. ENSURING CONVERGENCE BETWEEN THE VERTICAL ACTIONS AND THE PRINCIPAL OBJECTIVES

Under the fourth action line, **supporting strategic information initiatives**, DG XIII has already launched two calls for proposals for products which have reached a degree of maturity which means that they are no longer covered by the R&D programmes and can be launched on the market with a chance of success. A third call for proposals is being prepared.

The categories were chosen so as to provide an example: Geographic Information Systems (GIS) and Multi-Media Information Systems (MMIS). The panel wholeheartedly endorses this choice. These two categories of recently developed services are undergoing rapid development and can therefore be regarded as "strategic".

As with all other European invitations to tender, the principal merit of these calls for proposals is that they induce undertakings from different countries to join up during the period in which a project is being drafted and, perhaps, implemented and exploited.

This achieves three things simultaneously:

- the managers in these undertakings are obliged to get in touch with the Community services, and hence to think in terms of European policy,

- they are put in a position to work with other managers of undertakings who do not speak the same language, do not have the same cultural background, etc. and are thus forced to engage in the construction of a Europe of mutual understanding,

- the European officials are forced to consider specific projects, which gives than a chance to establish fruitful contacts with the field.

More specifically, as regards IMPACT, the calls for proposals have the objective of supporting projects which are intended to have a catalytic effect on the market (probably by their exemplary nature) and which involve an element of risk which is too great for them to be undertaken without Community support.

The procedure for calls for proposals has been improved: break-down into two phases - definition and definitive phase; shortening of the evaluation period; granting of an indemnity of 50 000 ecus to projects selected in the first phase but not finally chosen, etc.

In the definitive phase the projects selected receive up to 250 000 ecus for MMIS and up to 400 000 ecus for GIS.

Launched in June 1992, the call for multi-media interactive information systems elicited 317 proposals involving 1158 companies.

The call for proposals for GIS, for its part, elicited 190 proposals from 596 undertakings.

It is undeniable that these calls for proposals have been of interest to a large number of undertakings in the field of technology and have had a positive effect at a given stage in the evolution of information technologies in Europe.

However, the following questions can be asked:

a) The aid granted under action line 4 takes up half the IMPACT II budget; when one notes that many of the projects considered indispensable under action lines 1, 2 and 3 cannot be considered because of a lack of funds, and that selecting just two GIS less would have doubled the budget of the IMO or tripled the resources available for standardisation projects or for aid to the less-favoured regions, one cannot but wonder whether a more equitably distributed budget would not have been more effective.

b) Many of the projects selected, although intelligently thought-out, are of only limited and private interest.

Of the GIS, there are perhaps only two or three proposals - the OMEGA project, for instance - which are of general and European interest.

Should the public money not be reserved for projects which are of general interest, while just giving the others a quality label?

c) There are currently said to be 1200 GIS in Europe. Is there any reason for encouraging others?

Those which prove a commercial success would probably have been undertaken even without the Commission funding (although admittedly perhaps not on the basis of transnational collaboration).

At the moment, those responsible at national level for geographic information are interested not so much in the creation of new systems as in the following:

- establishing standards to ensure that the GIS are compatible with one another,

- ensuring that certain local governments do not get carried away by their enthusiasm and waste public money on projects which have been inadequately prepared or which are unnecessary.

It is therefore actions such as those catered for under action lines 2 and 3 which are felt to be necessary.

d) Many SMEs, frequently with viable technologies, are interested in these calls for proposals. Being selected can ensure that they take off or become well-known. On the other hand, they include **very few major operators**. The procedure is in any case not suitable for such operators, since the aid they might be granted is too little to attract large concerns.

Those absent include, in particular, most of the major European publishers, as well as the major undertakings (telecommunications, data processing, etc.) and the principal public operators (although these frequently hold the largest stocks of information). **These calls for proposals will not therefore produce the international-scale competitive groupings** which Europe so badly needs if it is to play its proper role on the international stage (see II-7).

e) Many European users have progressed beyond the stage at which they lacked of information. At one time, having technological or strategic information before one's competitors used to confer a decisive advantage.

Conditions have changed radically. The quantity of information available instantaneously has become considerable, generally even more than enough. "Our company creates impressive libraries as and when we like...". "This kind of ill-considered positivism is rampant everywhere". On the other hand, **it "is still hardly capable of organising this know-how" so as to improve "its exploitation potential"** writes Wilfried Smitz-Esser of the ISC in Hamburg in "The price and value of information", Annales des Mines, May 1992 issue - an edition which had a foreword by Jacques Delors.

In other words, the general interest today - but not necessarily that of a particular group of undertakings - lies more in organising the deposits of information than in promoting the creation of new systems. This remark, it must be said, is probably particularly valid in the developed regions.

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Action line 4 thus raises a question on which there are bound to be arguments for and against.

To avoid pointless wrangling, the panel proposes a compromise which involves not deleting action line 4, but not pursuing it to the detriment of the general objectives, particularly those under lines 1, 2 and 3 and Chapter III-5 (large comprehensive project).

Under this compromise, the following two rules would thus have to be respected:

- in all future calls for proposals, the public funds would have to be kept for projects which not only met the usual conditions (plurinationality etc.) but whose central objective was also to make a positive contribution to the major objectives of European policy (knowledge of the market, lowering of barriers, training, exploiting advantages and European stocks, and the large project if it is approved),

- the part of the budget allocated to action line 4 should never be such as paralyse the other action lines.

On the other hand, there would be nothing to stop quality labels distinctions accompanied by large and regular publicity events - being awarded to projects which were considered particularly well presented and technically advanced, but which were of only local or private interest and were thus ineligible for European public funds.

Naturally, those undertakings already entered for the next call for proposals would have to be informed of this change of direction.

I - 8 - IMPROVING AWARENESS AMONGST SENIOR NATIONAL LEADERS

The answer to the third question: "In implementing IMPACT II, is DG XIII involving in each country those persons and institutions which are most concerned?" is again not straightforward.

If one takes a close look at the replies to the questionnaire, as summarised on page 8, it can be seen that those aware of IMPACT and its objectives are middle and middle/upper managers (responsible for documentation services, managers of SMEs, intermediaries and consultants, data processing experts, etc.), while those who replied that they did not know about them are the top managers in the information sector (managing directors of publishing houses or electronics firms, former ministers, senior civil servants).

This questionnaire concerns only France, but there have been similar findings by members of the panel in several other countries of Europe.

It is only natural that IMPACT should have aroused expectations amongst middle-level technical managers who are generally disappointed at the inadequacies of national policies.

It is equally understandable that it should have met with indifference on the part of the decision-makers, who are too busy to be interested in such a modest project.

However, the importance of what is at stake is such that this situation cannot be considered satisfactory.

The responsibility for this state of affairs is undoubtedly shared. Has the Commission properly identified the real driving forces in each country? Have those responsible at national level, the major publishers, the information and telecommunications manufacturers not neglected to establish relations with a European administration which cannot (and indeed should not) be everywhere, but which cannot demonstrate its effectiveness without their co-operation?

The Commission undoubtedly faces a difficult problem.

Even if one is a native of a country, it is not so easy to establish who has power, who innovates and who exercises influence.

If one is a foreigner, one is all the more excluded from things, and the real events pass unnoticed. Each country of Europe has its own traditions, its "old boy" networks and its dominant positions.

However, an administration like the Commission of the European Community, which has neither a geographical representation nor a hierarchical power over the national or local governments, is absolutely dependent on correspondents from the networks of power.

If that is lacking, how can any policy whatsoever be conducted?

How can one avoid the risk of infringing - albeit through ignorance the Council Decision stating that "none of these measures (under IMPACT) shall duplicate the work carried out in these areas by national programmes (Article 2 of the Decision of 12 December 1991)?

How can one avoid losing the benefits of certain synergies?

Since the IMPACT programme is not (or is not yet) sufficiently attractive to tempt those in positions of responsibility, **it must take a step towards them**.

In particular, the panel proposes that DG XIII keep an up-to-date file of information personalities in the various countries - a sort of "Who's who" of information.

Since it is obliged to set an example in making full use of the technical means available nowadays, this file would in fact be an interactive multimedia compact disk (CD-ROM - XA) comprising short moving and talking sequences showing the person and his or her context, with hypertext references to the undertaking, town, works or productions, etc.

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* *

It still remains to answer the fourth question, which is the most difficult: what changes have there been since the initial decision to embark upon these four action lines? Are the approaches adopted two years ago for IMPACT II still valid?

II - IN A FAST-MOVING WORLD

While the European Commission is making every effort to ensure the success of the programme that it has adopted, what is happening in the outside world and in the information market?

The members of the panel were somewhat at a loss to answer this question. They were very aware of the contrast between the slow pace of European adaptation and the speed of events outside.

Among these events, they attempted to identify those which, in their opinion, are most likely to have a decisive influence on :

- the products;
- the customers;
- the suppliers.

Many of the following observations will undoubtedly appear obvious to those who are to some extent professionally involved in the emerging information technologies. We must ask them to excuse us for repeating what they already know perfectly well.

However, since it appears that, at least in Europe, not everyone in business and government circles is aware of the effects of these changes, we felt it was important to draw their attention to them.

II - 1: PROLIFERATION OF PRODUCTS

Far from waning, the economic revolution brought about by the introduction of a two-letter electronic alphabet appears to be actually gathering speed.

The figure on the next page illustrates the example of the development of telegraphy, the ancestor of modern applications of open and closed electronic circuits.

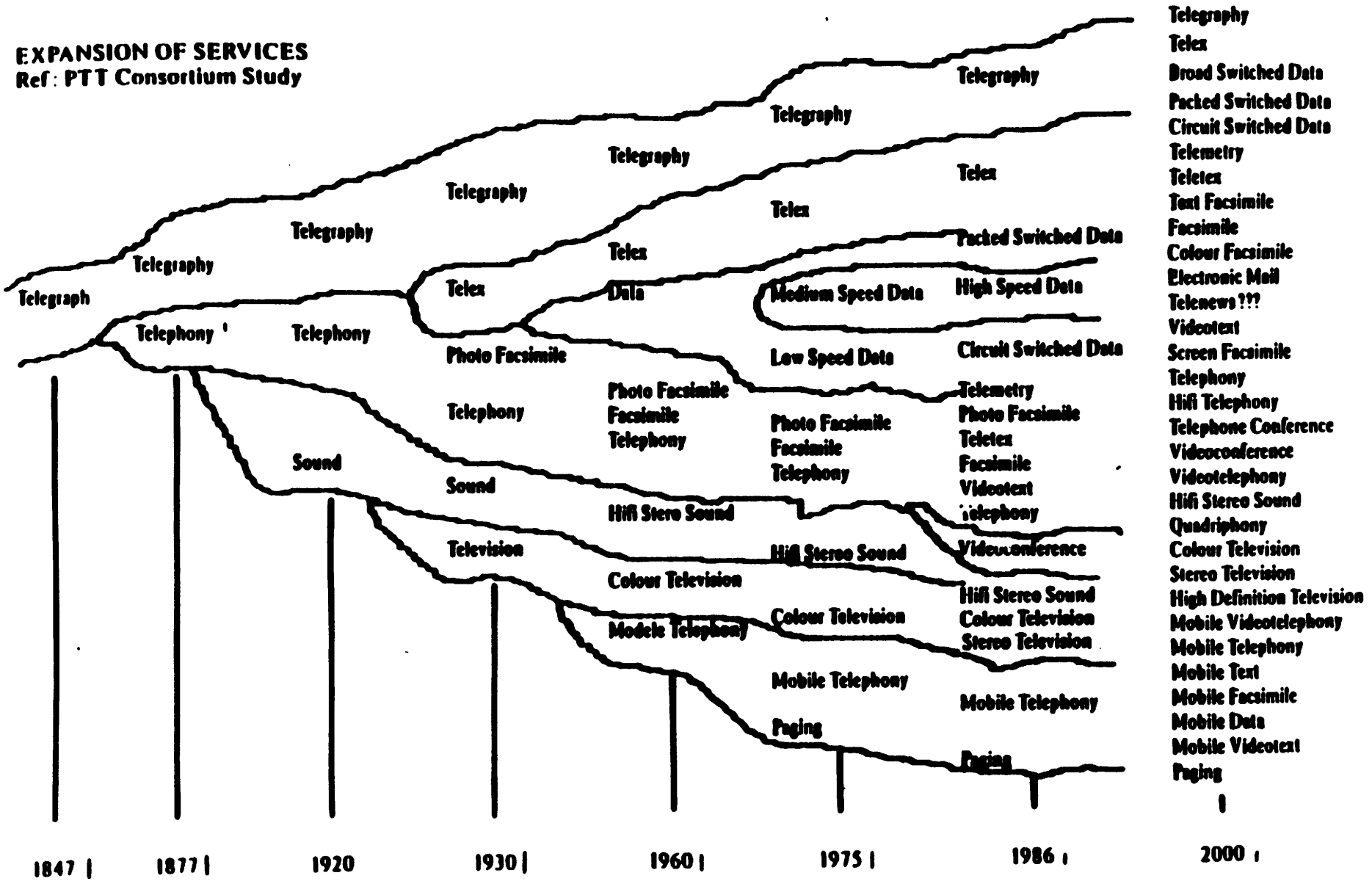
As in demography, each generation has brought new members to the family. Certain parents only had one offspring to take their place, others had large families.

Black and white television gave rise to colour television, initially broadcast via radio waves, which gave rise to cable and satellite television. Now emerging are high-definition television, the conversion from analogue to digital technology, interactive television, etc.

Family trees could be drawn for the telephone (mobile, digital, portable, videophone, fax, etc.), the computer (parallel, massively parallel, connectionist, network linked, sound, voice recognition, etc.) or for software, computer imaging, virtual reality, etc.

Species may merge, others may become extinct. Telex is like throwback to the Mesozoic era.

EXPANSION OF SERVICES
Ref: PTT Consortium Study



Telegraphy
Telex
Broad Switched Data
Packed Switched Data
Circuit Switched Data
Telemetry
Teletex
Text Facsimile
Facsimile
Colour Facsimile
Electronic Mail
Telenews???
Videotext
Screen Facsimile
Telephony
Hifi Telephony
Telephone Conference
Videoconference
Videotelephony
Hifi Stereo Sound
Quadriphony
Colour Television
Stereo Television
High Definition Television
Mobile Videotelephony
Mobile Telephony
Mobile Text
Mobile Facsimile
Mobile Data
Mobile Videotext
Paging

The analogy with living species can be taken even further.

The products that descend from a common ancestor have in common a genetic heritage composed of identical electronic components, cables, etc. They can therefore be mated together to generate further descendants.

II - 2: THE CUSTOMER: A PLANETARY ENTITY

The increase in the power of personal computers has led to an expansion in demand and has transformed the market into a **world-wide market oriented towards private customers** (i.e. no longer national and no longer serving mainly institutions as it was only a few years ago).

It has also established a **new economic, social and cultural frontier** between the people and communities that possess these powerful tools and those - **the illiterates of the future** - who cannot (or occasionally will not) use them.

This transformation is the result of three changes: in price, in capacity and in scope.

a: The fall in the price of equipment

At prices that are now affordable to increasingly large sections of the population of the developed countries, and which continue to fall from day to day, personal computers offer the sort of remote communications facilities, data storage capacity and processing power that only ten or fifteen years ago were the exclusive preserve of large organisations.

For between 6 000 and 10 000 ecus, i.e. for less than the price of a car, anyone can today possess the full range of equipment comprising a very powerful computer with a variety of applications (word processing, compatibility, CAD, games, etc.) a large memory capacity, a printer, a modem-fax (for sending messages over the telephone lines and receiving documents), a scanner (for transferring text and images received in hard copy into digital form) and all the software needed to make use of this equipment.

According to Joël de Rosnay (Cité des Sciences, Paris), the power of such equipment doubles every 18 months and its price falls by half over a similar period.

Such systems become easier to operate and more user-friendly, even if we exclude systems that can read handwriting, identify spoken words or understand a language.

This means that with minimum training anyone can, without the assistance of any kind of organisation (not even a secretary), produce a text, a design, a play, a musical composition, a game, etc. send it instantly to various people with whom he wishes to share this activity, obtain information on a subject that interests him, receive in return under the same conditions the answers or questions of his correspondents, cut up and store what he wishes to keep in practically unlimited quantities without space limits, etc.

The power of such equipment transforms the work organisation of enterprises, where the benefits of low cost and high efficiency do not systematically accrue to large-scale systems. Henceforth, economic logic does not necessarily prompt firms to centralise their internal organisation. It even facilitates home working.

However, the personal computer (and all its peripheral equipment) transforms even more radically the working conditions, access to information and leisure of the individual, be he craftsman, lawyer, medical practitioner, consultant engineer, self-employed worker, or merely head of household or student.

b: Limitless capacity

The memory capacity of such systems is growing as fast as their processing power.

For exchanges between individuals, the customary unit is the floppy disk, which can contain up to 1 300 megabytes, the equivalent of about 500 pages of text. A hard disk, only a little more cumbersome, can hold sixty times more text, though less if the text is illustrated.

The very recent adoption of a single standard for all compact disk readers (whether they are intended to contain music, still or moving pictures, text, voice or all four at the same time) brings the price of such equipment into line with that of audio CD players, i.e. within the region of 20 ecus. At this price, no-one will want to go without. The compact disk will replace the floppy disk for exchanges, storage, saving, etc.

A CD can contain the equivalent of 500 books of 300 pages each. It can hold several hours of text, pictures (if they are stills) and sound. It weighs only a few grammes, will not wear out, takes up no space at all, and allows the user to find in seconds the work, passage, picture, piece of

music or film he is looking for. Unlike a book, or television, which are sequential, it is interactive and therefore much more stimulating.

With a few compact disks, an individual can keep whole libraries of multimedia information on his desktop.

And not necessarily on his desk: like the telephone, an individual can take his computer along with him in his travels.

One now finds on the market portable computers with a hard-disk capacity of 200 to 300 megabytes that can be connected to a one-and-a-half inch CD reader. Such portables thus have sufficient capacity to call up, record and process not only masses of text, drawings and calculations, but even long multimedia sequences, for example more than half a digital film, including sound and text.

The capacity for consultation and exchange of information between individuals is now unlimited. Once again technology has outstripped custom. All that is lacking is the widespread availability of the products and greater awareness among potential users.

c: **Planetary scope**

Another trend affects the **geographical space** in which individual exchanges of information now take place.

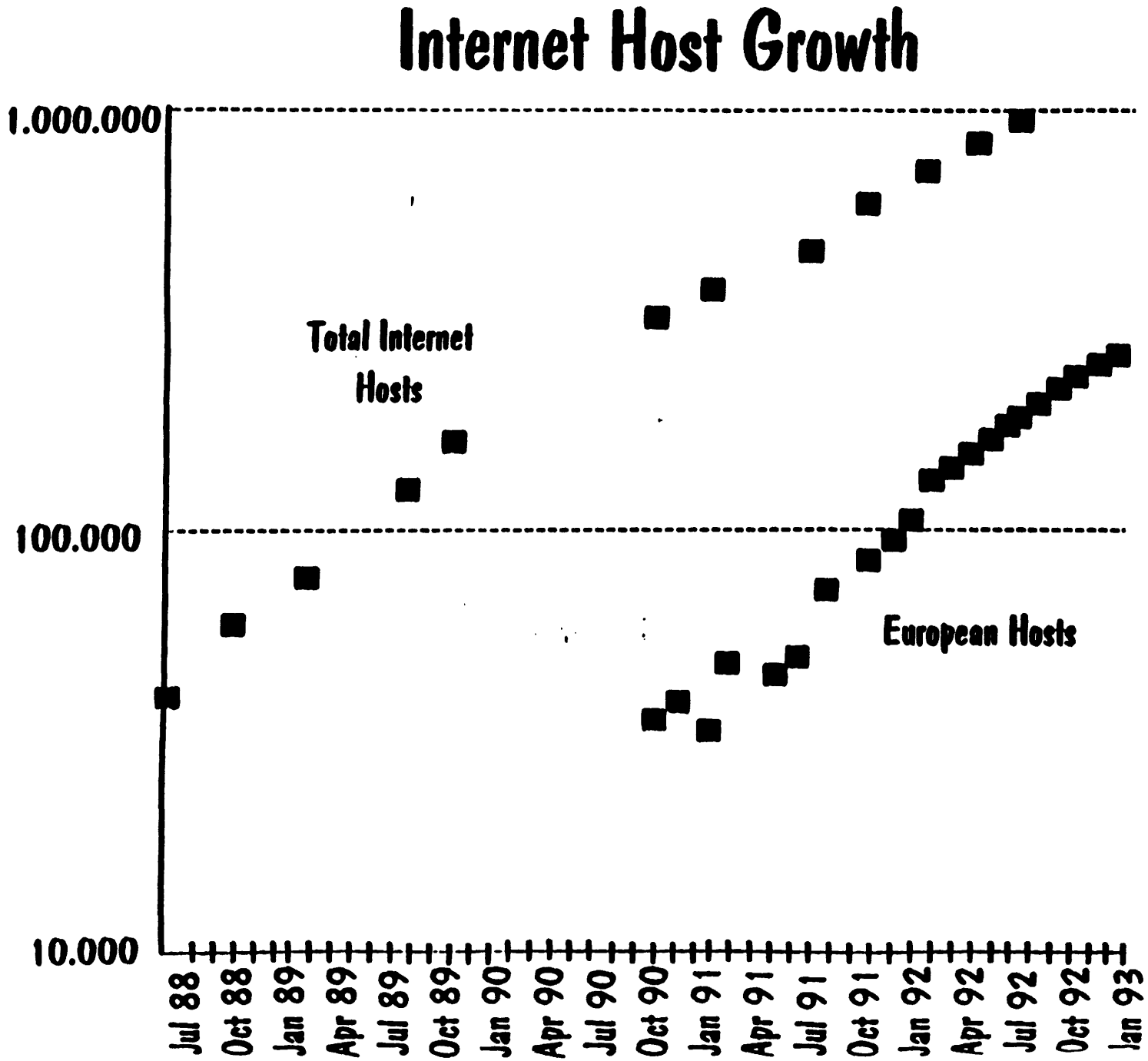
Thirty years ago, information was exchanged by post or through the dissemination of publications, and took days, weeks or months.

Fifteen years ago, it was possible to communicate in real time within the same enterprise, provided it was equipped with a network. For many years, it was possible to communicate with the outside world by sending packets of punched cards and later magnetic tape. Incompatibility between different systems made such communications a matter of chance.

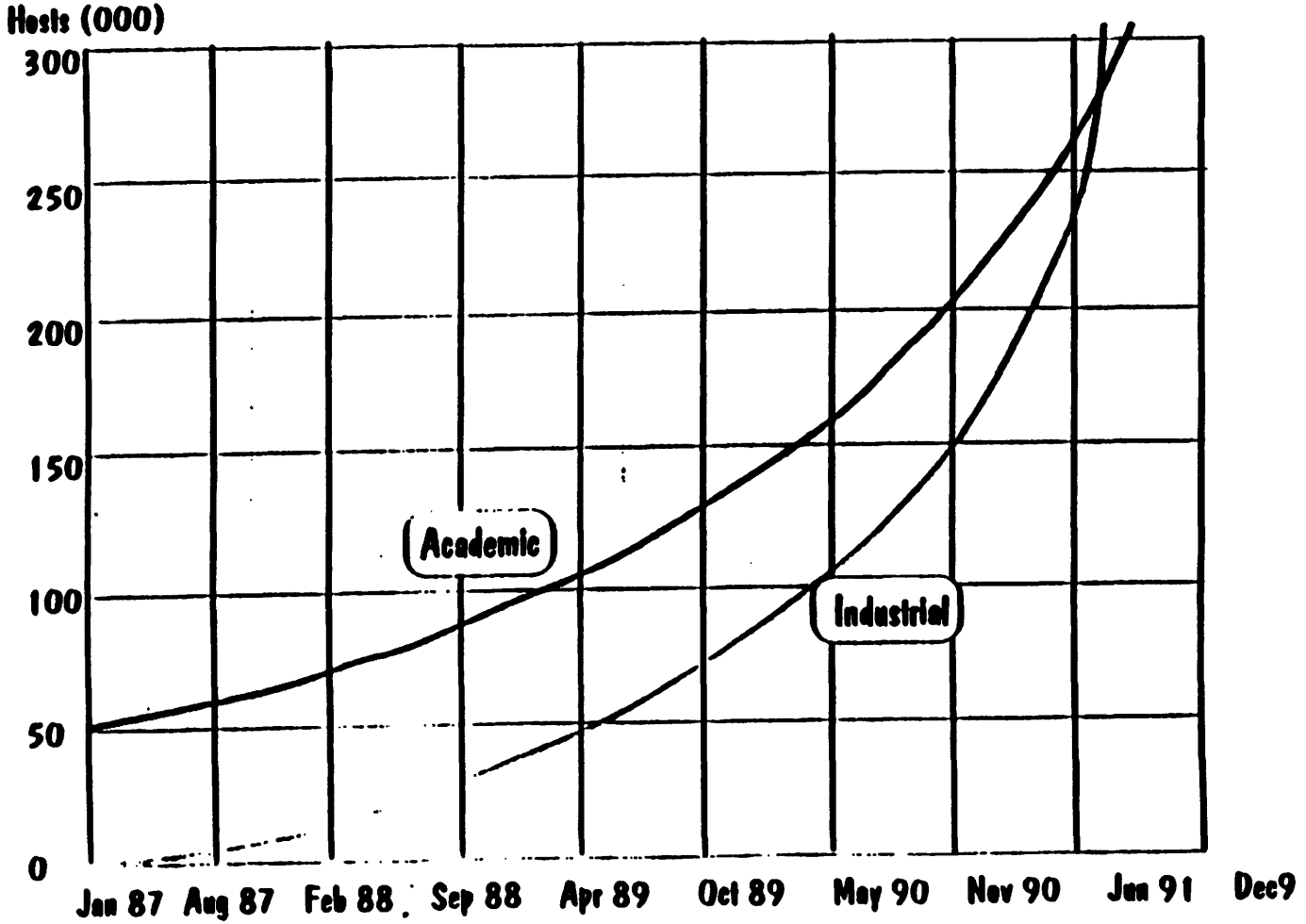
Today, people are in communication (and in competition) in real time **right round the globe**.

A network of networks (in actual fact a standard) such as INTERNET gives users access to over one million servers and is currently used by some ten million people.

The growth in the number of users has been exponential since its creation in 1981. If it continued to do so at the same rate, it would encompass the entire population of the planet by the year 2001.


Internet Host Growth
1.000.000
100.000
10.000
Total Internet Hosts
European Hosts
Jul 88
Oct 88
Jan 89
Apr 89
Jul 89
Oct 89
Jan 90
Apr 90
Jul 90
Oct 90
Jan 91
Apr 91
Jul 91
Oct 91
Jan 92
Apr 92
Jul 92
Oct 92
Jan 93

Growth in Internet Industrial Hosts



Obviously this is pure science fiction: the entire population of the globe will never be in a position to communicate by computer and telecommunications network, just as access to culture through books has never been entirely universal.

However, just as great efforts are made throughout the world to combat illiteracy, we should pay great attention to the computer illiterates. Will they be more or less numerous than illiterates are today? How many will there be in Europe itself?

Among the effects that the above-mentioned changes will have on industrial and commercial strategies, two are worth pointing out:

1 **Producers and distributors** must satisfy a **demand for information** that is increasingy

a- **individual**
b- **transnational**
b- **involves tens of millions of potential consumers, among which market segments and niches must be identified on the basis of consumer tastes, habits and needs, but no longer on the basis of their location or their membership of a network or use of a given medium.**

It will still be necessary for sales and marketing experts to make distinctions and define market segments. However, the criteria are changing: they are no longer technological.

Consumers have demanded and obtained open systems.

Publishing strategies, which have traditionally relied on a more or less captive or compartmentalised customer base - targeting exclusively institutional needs, for example, or exclusively attaches to a given medium (paper, film, telephone, computer memory, etc.) are now out of date.

Demand is generated by individuals with enormous information storage and processing capacity, who have freedom to zap from one side of the world to the other, from one source to another depending on user-friendliness, the appeal of the subject, the balance of price and quality, or mere whim.

2. **For the user the problem is less and less that of procuring the information, but increasingly:**

a- **knowing how to use the equipment relaying it** (just as in the past one needed to know how to read and hold a pen);
b- **being stimulated** to receive it;
c- **identifying among the mass of information available to him the items that are of essential or strategic interest.**

Beyond this, using the information to reach a good decision is something that no equipment, however well designed, can do for him.

Point "a" is a question of training or intermediation, to which IMPACT makes a significant contribution.

Point "b" is a question of awareness, which is one of IMPACT II's essential missions.

Point "c" depends partly of the user's level of "intelligence" or education and partly on how well the information in the product he is consulting is organised. In the organisation of information, IMPACT II should also play a prominent part.

Admittedly, the market will go some way towards spontaneously eliminating poor-quality products that are not sufficiently user-friendly.

However, it is to be hoped that it will not end up by reducing everything to the lowest common denominator, as has happened so far with television.

II - 3: FROM TELEVISION TO THE COMPUTER, EQUIPMENT IS MERGING

In parallel with this transformation in the customer-base, another trend is apparent in the equipment that acts as an interface between the user and the network.

Though, in our more traditional societies, it is still divided between rival industrial branches, agencies that are ignorant of each other's activities and ministries that bury their heads in the sand, this vast field of activity is beginning to emerge as a single entity.

Certain household equipment (radios, television sets, etc.) can be bought in superstores at the "brown" products counter; others (domestic appliances) can be bought at the "white" goods counter; still others (telephone answering machines, telephones) can be purchased from telephone counters or boutiques. Office equipment (computers, printers, fax machines, modems, etc.) are bought from a computer sales firm. Children will find Nintendo games at the toy counter, while buildings security and control systems are obtained from the building industry.

However, in all this equipment designed for different purposes and sold under different brand names, we find the same micro-processors, the same cathode-ray tubes, etc. that are their basic components.

A musical compact disk player, which also comprises a laser beam, is identical to a reader of scientific texts. An audio CD is identical to a CD-ROM.

The cables that link telephones, computers connected to specialised networks and televisions differ only in their transmission capacity, and that only for the time being.

At local level, there is no difference between a telephone exchange and a large computer, except that the former is a "dedicated" machine (i.e. devoted to a specific purpose) and the latter is not.

There is no longer any difference between a computer equipped with a CD reader calling up text, pictures (moving) and sound, and a television set equipped with a CD video player and connected to an interactive network. The only distinction is that the television set is viewed in the sitting room, while the computer is used in the office.

However, this distinction is not as trivial as it may seem.

Certain training products have been commercially unsuccessful merely because they were designed to be shown on a television screen. Conversely, it has proved difficult to sell certain games designed for use on computers. This is because television is associated with leisure, while the computer is felt to be an austere piece of office equipment.

Upstream, the equipment market is becoming increasingly unified and concentrated. Downstream, it is diversifying in order to give the various different types of consumer the feeling that their particular needs and circumstances are being catered for.

This standardisation combined with a new compartmentalisation does not affect the equipment only.

II - 4: FROM GAMES TO STI, FROM TEXT TO IMAGES: THE CONTINUITY OF CONTENT

Text, sound and pictures are digitalized in the same manner, on the same media, following the same logic and can be processed in the same ways.

The same applies to the various types of information: scientific, technical, practical (e.g. timetables, itineraries), financial, media (e.g. news), entertainment (films, opera, etc.), games, etc.

Admittedly, all sectors have not progressed at the same rate.

In Europe, the awareness of the importance of information began with scientific and technical information. As a result, misunderstandings persist as some may not be able to see the wood for the trees.

It was in 1964 that the US government set up the "Committee for Scientific and Technical Information" (COSATI) connected to the Federal Council for Science and Technology.

Europe followed suit.

On 1 April 1965, the United Kingdom set up the "Office for Scientific and Technical Information" (OSTI) responsible for promoting research into information systems for scientific and technical research, a task that was initially carried out by the Department for Scientific and Industrial Research (DSIR) and was taken over, on 1 April 1974, by the British Library Research and Development Department, with responsibilities similar to those of the Research Department of the US National Science Foundation.

In 1972, Germany launched its "Information und Dokumentation" programme, and almost at the same time France set up the "Bureau National de l'Information Scientifique et Technique" (1973), which was to become the DIXIT and later the DIST.

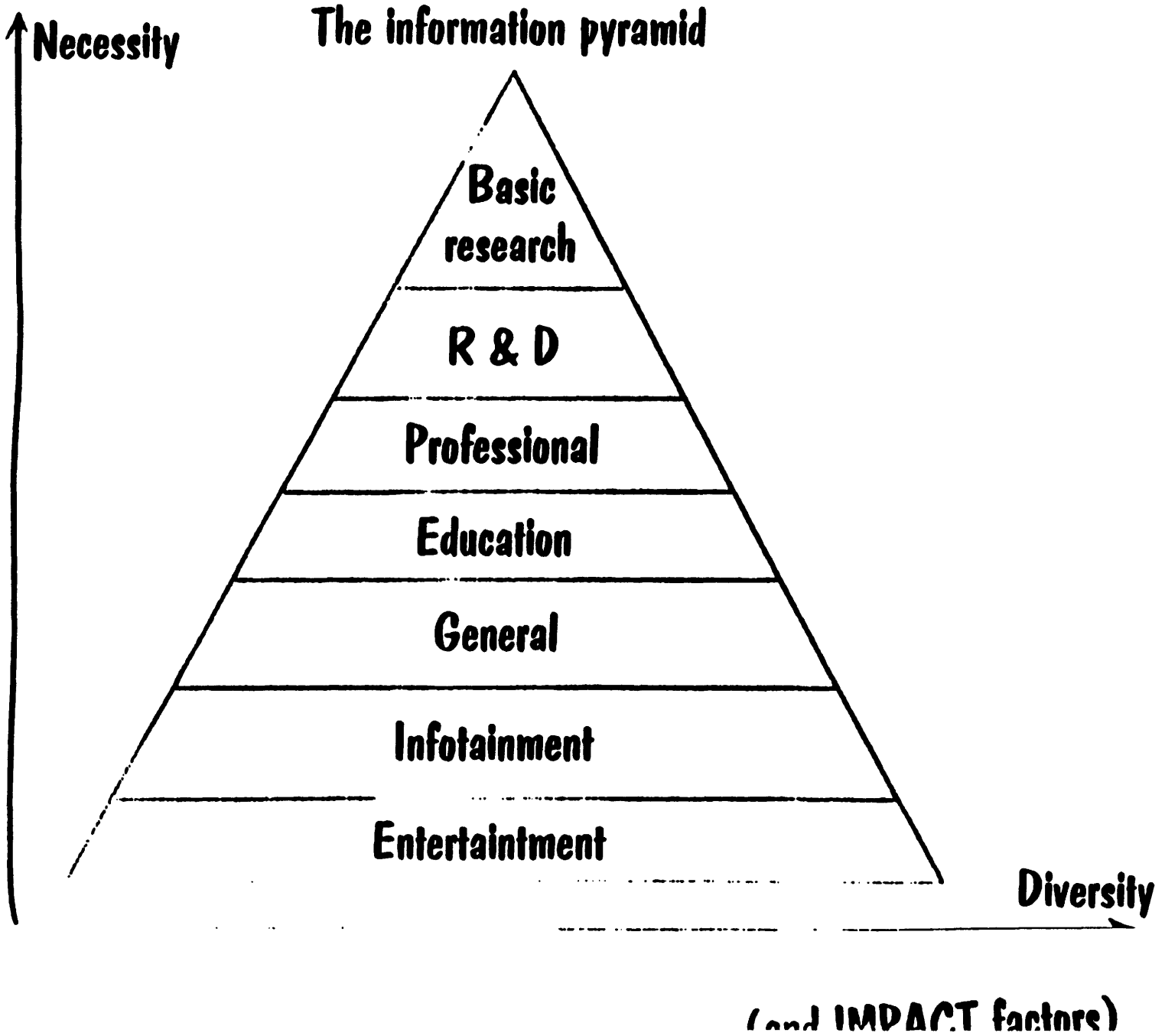
This field was one of the first to be adopted by the European Community as a **subject for co-operation**. As early as 1972, the European "Committee for Scientific and Technical Information and Documentation (CSTID) was set up.

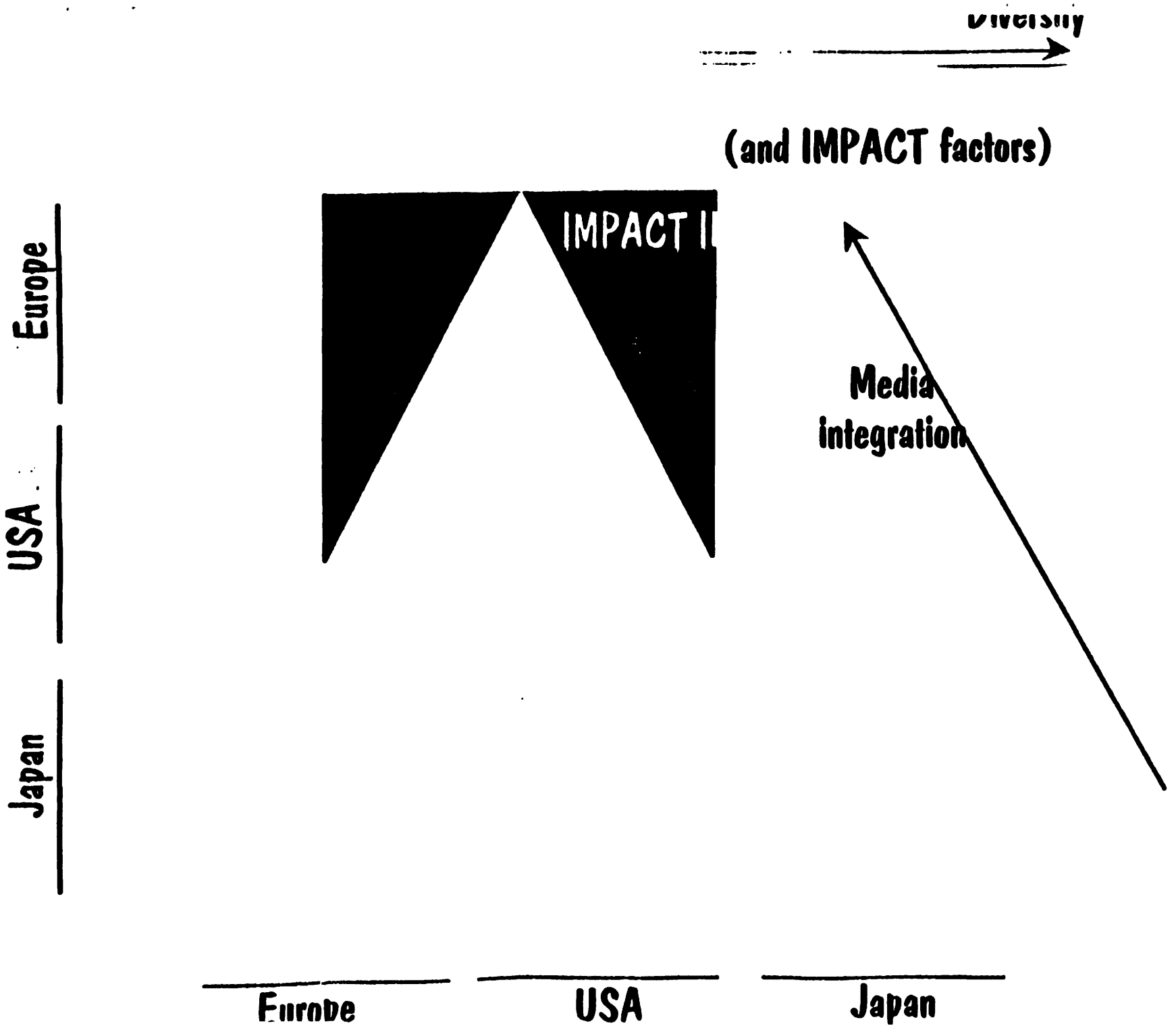
Ten years later, however, the European Community discovered, via the major US advisory organisations (the Big Six) and services such as Dun and Bradstreet, that financial, managerial and commercial information accounted for a far greater volume of exchanges and above all was **more profitable** than STI, and that the profits generated by such activities had led to the growth of powerful information supermarkets.

Few years were to pass before the Japanese demonstrated that pocket calculators, Walkmans and SEGA and NINTENDO video games (40 million units sold in the US) could generate the cash flow necessary for more strategic conquests.

The graphs on the following two pages show the information pyramid. The IMPACT Programme, the embodiment of the European approach to the problem, only concerns the upper third of the pyramid, down to professional level. The United States go one level lower, down to information and cinema. The Japanese have a bottom-up approach.

IMPACT II Midterm Evaluation Panel




Diversity
(and IMPACT factors)
IMPACT I
Media integration
Europe
USA
Japan
Europe
USA
Japan

In Europe, there is one striking example of a non-compartmentalised approach to information: Minitel, which has created 80 000 jobs, gathers information ranging from the most trivial to the most vital from and distributes it to some 6 million users. It can be used as a toy, a means of communication or a working tool. It is a simple mechanism for exchanging the full spectrum of information, which is probably why is it so profitable and popular.

Unfortunately, Minitel has not become pan-European, and perhaps never will. The British published one videotext standard and the French, one year later, produced another that they considered better. The Germans lost no time in adopting a third. There is therefore no European standard for converting without hitches from one videotext system to another. Neither is there a single set of rules for ensuring a return on the heavy investment such systems entail (ECU 6 billion).

Here, European industry missed an opportunity to sell a small light-weight all-purpose terminal throughout the world. The 25 000 information services available on Minitel and the resulting employment are thus limited to France.

The disastrous conflict between the PAL and SECAM systems and the disarray of European information technology firms that have engaged in cut-throat competition with each other have obviously not been lesson enough.

II - 5 LINKS BETWEEN METHODS

The links between the various fields of digital information, the links are not only technical (same components) and financial, but **also methodological**. It is obviously the internal logic of information systems that determines the close relationship between all IT products.

The facilities that have come into widespread use through word processing have also spread to all forms of data processing. It is thus possible, for example, to select from a document only those sections that one wishes to change, or transfer then to another product.

New programs are often devised by assembling sections of existing programs, etc.

Data compression techniques, which are also applicable to most products, make it possible to save up to 99% on data for transmission.

These facilities are combined with speed of transmission and vast storage capacity.

Such capabilities give desk-top publishing a decisive competitive edge over traditional publishing techniques.

This is true right down the information pyramid from top to bottom, and applies every bit as much to the writing of new software as to cinema special effects.

The example of virtual reality shows that data processing techniques developed for film animation can be applied to surgery, nuclear safety, air and space flight simulation, etc, and that progress made in one area is quickly adopted in others.

II - 6: THE CONCEPT OF META-WORK

Before the electronic age, a work - novel, scientific work, musical recording, film, architectural design, etc. - was closed-ended and limited in space and time. It concerned few others than its author and its target audience. When sales of a book petered out, the rest of the print run was remaindered (to save space) and the work reached the end of its life. It was to be found only in a few rare libraries which still had room for it and in copyright libraries responsible for keeping duty copies.

Electronics has changed all that:

- the storage capacity of compact disks, their extremely small size and weight, are such that there is no longer any reason to destroy recordings of previous publications;

- we do not know for certain the life of this form of storage, but in theory it is unlimited;

- a work can be consulted remotely;

- it can be retrieved for reprinting or updating using the full range of word processing facilities;

- it can be used to make further products - anthologies, educational literature, vocational training aids for adults, advertising copy, trailers, jingles, video games, film animation and special effects, etc.

Such facilities are combined with speed of transmission and ease of storage.

- it is possible to extract sections from the work - passages of text, film sequences, scenes from plays, details of works of art, bars of music, data processing sequence, etc.

Such extracts can then be combined with others taken from other works to compose a new work - composition, architectural design, work of art, animated film, technological design, data processing program, etc.;

- all or part of the work or new combination may be transferred to other media and can be used to produce a hard-copy edition, a video or audio cassette, an interactive compact disk, an automatic answer on a remote inquiry server, etc.

The concept of a closed work has given way to that of a system within which, as in the human brain, or rather a group of brains working as a team, there is an infinite number of possible connections. **We shall use the term "meta-works" to describe such open-ended groups of works that can be combined together in a variety of ways**.

A multimedia group that succeeds in acquiring the best quality meta-works early enough, that employs people capable of creating new works using elements borrowed from previous works,[1] and that has a complete command of the distribution networks (servers, cinema studios, film distributors, television stations and cable networks, book and record publishers, cassette and CD retailers, etc.), will be in a position to produce a wider variety of better quality products at lower cost and in a shorter time than its competitors.

It will be in a position to impose its products on the various information markets.

It would be wrong to believe that these combinations are purely mechanical collages that bypass the artist and his creation.

One only has to compare the quality and beauty of various multimedia products, or know that Umberto Eco presides over a collection of cultural CD-ROM XAs to understand that Art loses nothing in this revolution.

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1 For centuries, before the concept of safeguarding cultural heritage arose, architects used to build new palaces using columns and marbles from the palaces of ancient Rome and Cartage.

From earliest times, painters and sculptors have used the materials of their age.

On a more serious note, this interpenetration of works raises a major problem for legal experts. How are copyright laws to adapt to this new and irreversible development?

It appears that the LAB still has a great deal of work on its plate.

II - 7: HYPER-CONCENTRATION OF PRODUCERS

The basic similarity of the equipment, the continuity of the content, the close links between the methods, the gradual accumulation of meta-works and the savings to be made by recycling them interact with the worldwide expansion of the market to generate economies of scale and favour the concentration of the major operators.

The race is on to see who will occupy the commanding heights from which the whole chain of production and distribution can be controlled.

The impressive industrial restructuring that this has given rise to unites companies from sectors of activity that were so far considered, at least in Europe, to be quite distinct.

In this vast field of activity that is emerging as a single entity, embracing text and image and sound, research and leisure, arms and telecommunications, the largest international companies are involved in large-scale manoeuvres of encirclement, take-over, investment and merger.

As shown in the graph on the next page, taken from the "Wall Street Journal" of 14 July 1993, the international industrial and services landscape is undergoing a complete transformation.

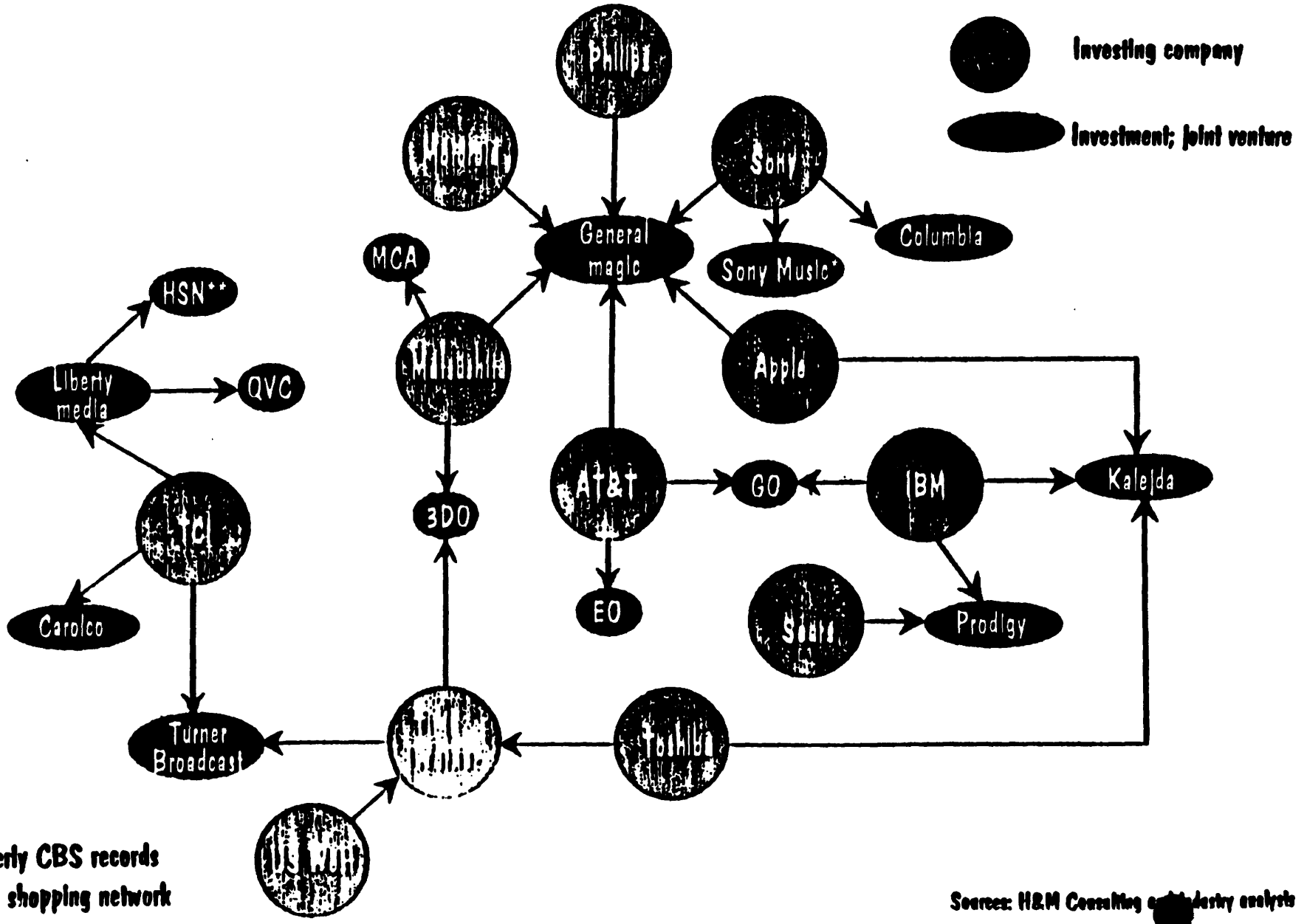
Since this article appeared, the press has continued to announce new alliances. That of Bell Atlantic, for example, the fourth largest telephone company in the United States, with Telecommunications Inc., the biggest cable operator, which, incidentally, launched a take-over bid for the film studios Paramount. The merger of these two groups has created a company said to be worth US$ 60 billion running cable services to some 22 million US homes.

Another group composed of Time Warner (US$ 814 million profit on a turnover of US$ 6 900 million) and the telephone company US West controls tens of thousands of channels and a significant share of the video and consumer electronics market.

The Californian company Pacific Bell, a subsidiary of Pacific Telesis, plans to invest US$ 16 billion over seven years to build a fibre-optic "infoduct" carrying telephone, video and data messages down the same line between San Francisco to San Diego (see "Le Monde" of 9 and 13 November 1993).

IMPACT II Midterm Evaluation Panel

Making the connecrtion: Multimedia's equity alliances



* Formerly CBS records

** Home shopping network

Sources: H&M Consulting and industry analysis

This is obviously a long way from the small European innovation companies financed by risk capital or the groups brought together by the IMPACT calls for proposals.
Some people are starting to say that the trend towards concentration will come to an end some day; that these huge groups are only holding companies and their strategic vision is limited to financial aspects; that the disproportion between the size of their brains and their bodies is similar to that of the dinosaurs.

Europeans should not take too much consolation from such arguments.

It is indeed possible that the great nebulae that are now forming over the Pacific will in the future break down into smaller, more specialised units. But if they do so, it will be all the better to target market niches, not to return to the kind of units formerly determined by the constraints of publishing, the telephone or cinema. It is marketing and not technology that will reign over future compartmentalisation.

And Europe will, as always, go into battle all prepared to fight the previous war.

III - THE ESSENTIALS OF A EUROPEAN STRATEGY

III - 1. THE WAY AHEAD IS NOT MAPPED OUT

Europe has already lost several strategic positions and is likely to lose more.

The authors of this report agreed, not without some misgivings, to write it because they believe that Europe, if it reacts fast enough, can still find in its vast ancestral culture and in its present modernity the resources that will enable it to remain in a position of balanced competition and co-operation with the vast complex that is coming into being across the Pacific.

They also believe that in various parts of the Community people are beginning to be aware of the problem and that the Commission may be able to act to increase this awareness.

On the other hand, they do not think that the European Community can direct its strategy by modelling its methods of development on those adopted by the two great powers which now dominate the market.

They consider that this would be a non-starter, since no individual Member State nor the Community as a whole has the necessary financial resources.

Furthermore, not only does the United States possess majority market shares all along the chain but it even has complete control of some of the links. Thus the last European server of international stature was recently sold in the United States, and the European Patent Office, in order to secure world-wide dissemination of its information, had to conclude agreements with two American servers, STN and DIALOG.

Japan's example is hardly less difficult to imitate. A difficult language and script, which are nevertheless mastered by all educated Japanese, have a unifying effect on this populous nation inhabiting a small territory. Like a valve which allows fluid to pass in the desired direction only, this language serves as a means of communication within the country but also as a means of protection from the outside. When Japan wishes to communicate with the outside world, it does so in English, while the Japanese use their own language to communicate and consult among themselves. This situation has nothing in common, therefore, with the problem posed by the complex combination of European languages.

In the absence of a model to follow for devising a European strategy, we had better start by pinpointing Europe's weaknesses and strengths to see first of all if we can reduce the former and take advantage of the latter.

So what forces come into play on the information market?

III - 2. THE FOUNDATIONS OF AMERICAN SUPREMACY

Not only financial reasons are responsible for American domination, since the following factors are also of fundamental importance:

- early awareness;
- a single language;
- compatibility of communication and information standards;
- a vast internal market with a high standard of living and education;
- four time zones, a fact which increases the daily working time of equipment and increases a server's period of heavy use from eight to twelve hours[2];
- the presence of the most powerful fiction industry in the world, which supplies content for electronic products;
- control of the entire chain: this control has recently been reinforced by an alliance with Japanese industry, thus ranging from the design of a product to its final distribution by cable or satellite, on-line or off-line, on the consumer's home terminal.

Within this vast homogeneous complex there is no linguistic barrier nor any barrier created by standards or trade bodies to perpetuate acquired positions or to hamper the free play of internal competition.

It is important to stress how early the Americans became aware of the problem. The first economic researcher to deal with the relations between information and employment was M.U. Porat, who worked for the Department of Commerce. When analysing US gross national product for 1967, he demonstrated that 46% of it was linked with information and that in that year almost half the workforce was engaged in information-related work.

Since the end of the 1960s, almost all the Presidents of the United States, including the present incumbent, have made statements stressing in no uncertain terms the economic role of information, the need to take maximum advantage of public information, the need for American products to enjoy free circulation in the world, etc.

Japanese design offices take even greater advantage of different longitudes, since they triple the eight-hour period by having a team in Japan, another in Europe and a third in the United States work successively on the same project, each team passing on the work to the next as the earth rotates

The entire system underlying American information strategy goes back to Vice-President Al Gore.
It is no coincidence that, in the GATT negotiations, the current Presidency attaches so much importance to the provisions on films. It is well aware that their effects go far beyond jobs in film studios.

III - 3. EUROPE - A JIGSAW OF COUNTRIES AND PROFESSIONS

Europe's weaknesses are the opposite of the main causes of American supremacy:

- late awareness of the problem on the part of both academics and politicians;
- compartmentalisation of the market as a result of linguistic and cultural barriers and barriers created by standards and legal provisions;

- compartmentalisation - this time within each country - between professions, trade associations and business circles, accustomed to ignoring each other.

a) Accepting the information age

The first handicap is an idealogical one. Deeply marked by the industrial revolution on which it rose to the summit of its power, Europe remains attached to a very materialistic conception of economics.

Historically, the first European institution was the Coal and Steel Community (ECSC). Coal and steel can be touched, measured, weighed and quantified.

Information, on the other hand, is an abstract good whose value economists have not yet learned to appreciate

Compared with their American counterparts, far fewer European economists have dealt with the type of economy that is now ours, that of the information age which the developed world has entered. Some leading European economists even maintain that the economic does not need to bother with information except for those branches for which information is the main raw material (the press, geographical and statistical work etc.).

To think in this way is to forget one of the two characteristics of information described in I.6 on p. 22 above, the factor of competitiveness and development for all branches of the economy.

There are nevertheless some European research centres thick study the relationship between the economy and information and between which close links should be established. DG XIII has an important part to play in giving such institutes material and moral support and in encouraging them to work together.

When economic thought is sufficiently consolidated, it will move out into the streets and will then appear in politics.
For the moment, unless our information is incomplete, no European Head of State or

Government ever made a single declaration on the subject before that of Jacques Delors at the 1993 Copenhagen Summit.

b) A jigsaw of languages and cultures

Translating each official language into all the others involves 72 combinations. If the number of official languages increased to N following the accession of new member countries from Eastern Europe, the number of language combinations would be N x (N-1). It thus increases as the square of the number of languages.
Whenever necessary, such a quantity of translation can and must be computer-assisted.

Then there will still be areas where there are problems of understanding that no dictionary, electronic or otherwise, can overcome: areas involving semantic differences which themselves are rooted in different histories, in different literary references, and in living habits connected with climate, geography, traditions and everything that comes under the heading of culture.

Although it would be criminal to want to eliminate these differences, it is just as important to try to achieve mutual understanding.

Today it is technologically possible to go far beyond simple computer-assisted translation which should be available in all offices.

But the power and appeal of subtitled television (e.g. "Arte"), video cassettes, interactive CDs etc., all these multimedia resources already widely used for adult vocational training, should be applied to overcome what is today Europe's main handicap but could become its main asset.

Spreading European information intended for work (scientific, technical, commercial, financial etc.) or for leisure (sport, theatrical and musical entertainment, games, tourism) is an effective means of improving at the same time the productivity of physical intra-European trade and Europeans' knowledge of each other.

This would increase both supply and demand not only on the European information market but also on the European market as a whole.

c) The traditional compartmentalisation of professions

A third obstacle, just as difficult to overcome as national borders, is that which, through centuries-old traditions, has separated the professions, trade associations and businesses that the technological revolution today throws together in the same boat.

A new country like the USA hardly has to contend with this problem of compartmentalisation.

But in Europe, where since the Middle Ages trade associations have enjoyed a position of great power, it will be very difficult to explain to the book trades that they have to work and perhaps even merge with computer scientists; or telecommunications operators, who are rightly quite proud of their technological level, that they should invest their profits in film studios, which they regard as being populated by second-class actors.

European trade associations have produced separate organisations, trade unions, sporting associations etc. Collective agreements laying down working conditions tend to confine each trade in its own ghetto, and there is rivalry between employers' professional organisations.

In order to protect themselves and to preserve their supervisory rights, these trade associations have led to the creation of civil service departments and ministries which regulate them and thus perpetuate their divisions.

Even the European Commission, despite being a completely new administrative body, bares the imprint of this historical compartmentalisation.

Of all these barriers, the wall of incomprehension that traditionally exists in Europe between the public and the private sectors will not be the easiest to overcome. But it must be overcome, since the bulk of information is in the public sector.

III - 4. A BODY WITHOUT A BRAIN

Was 16th century Europe, which succeeded in developing the major inventions and in "discovering" America, less compartmentalised? Were its internal rivalries less acute? Was it richer than China or India? Was it more scientifically developed than the Judeo-Arab world?

All these questions must be answered in the negative.

European diversity in the face of the monolithism or uniformity of other regions of the world is therefore not a handicap unless Europe proves incapable of overcoming these barriers or of adopting a strategy adapted to the specific features of its situation.

This variety that is such an obstacle to its internal communication may become an asset: each European country has privileged links with parts of the world which complement each other: the United Kingdom with the Commonwealth, Spain with Latin America, France with the French-speaking world, Portugal with Brazil, Italy with its emigrant communities in other parts of the world, etc.

Europe's museums, monuments, libraries, research centres, technological achievements etc. represent vast cultural wealth that has a considerably higher value for information industries and services than the stocks of Hollywood films bought by Sony and Matsushita.

A very large part of the world's raw material is on European soil, and instead of selling it off cheap (which is unfortunately already happening), we must give it the added value which will turn it into "meta-works" with which new creative talents will breathe life into art and technology, the economy and employment.

The vast European body lacks the means to devise a strategy and put it into practice.

It chiefly lacks think tanks, reservoirs of ideas into which leaders can dip.

It also lacks the delicate and flexible coordination that is needed if its variety is to be preserved. Not a Gosplan or a central computer, but an architecture similar to that of a parallel computer, where the main functions of the centre, which lets the various sections get on with their work, are to ensure that there are no delays or omissions in the exchanges at all levels and subsequently to monitor the application of results.

Lastly, it lacks **a strategy Council**, composed of top-level European personalities belonging to the various circles concerned and to the three groups constituted by heads of companies (decision-makers), experts or other people qualified by their personal skills, and members of the Commission.

The members of this Council should be high-level decision-makers or "trend-setters", such as the chairmen of Bertelsman, Olivetti, Philipps or Matra, or the chairmen of bodies such as associations of documentalists or SMEs.

The participation of independent and competent experts is essential for bringing in new ideas and ensuring that such meetings do not turn into sterile confrontations between powerful people of the moment.

It is important for members of the Commission to participate because of their own competence but also to serve as a memory and to ensure follow up the policies or decision adopted

There should be rotation and a certain balance so that the Community strategy that is the outcome of this work is not subject to dispute and is adopted by businesses in all the countries. To ensure that the appointed members do not delegate their responsibilities to their subordinates, they would not be permitted to appoint deputies to stand in for them at meetings.

This Council would be responsible for summarising and selecting ideas from among those submitted to it by bodies such as the IMO Steering Committee, the LAB, the IMPACT Committee and the Commission. It would have the right to deal with any matter it regards as important.

It would present proposals to the Commission, the Parliament and the Council, which would be responsible for the final decision.

III - 5. BEING REALISTIC TO BE EFFECTIVE

Budgetary measures, however costly, cannot change to Europe's advantage the developments described in Part II: as the globalization of trade, and the hyper-concentration of producers etc.

Public measures, whether national or European, cannot measure up to the economic problems referred to.

Under the effect of market laws, these developments will therefore continue independently of public policies. Any European policy thus has no option but to take its lead from the rules of judo: instead of trying to counter opponents' movements, turn their kinetic energy to your own advantage.

This appeal for realism must not be interpreted as fatalism.

It is not because it lacks the means to influence certain major developments that Europe must remain passive.

On the contrary, it has a duty to concentrate its resources on the areas where it can achieve something, since if it can do nothing to prevent, assuming it wanted to, the major developments on the world market, there are other areas in which it is certain that, if it does nothing, nothing will happen.

At least nothing to its advantage.

The following, then, are the steps it can take:

1) gather information on which to base its strategic planning and then actually plan its strategy;

2) gradually overcome its language barriers and the differences in information and communication standards;

3) take maximum advantage of the high-profile manifestations of its cultural and scientific wealth on its territory: this wealth is the raw material needed to produce the mega-works that the world powers in the information field will always need in order to thrive;

4) in Europe and the regions historically associated with it, stimulate both trans-national and transversal co-operation between these countries and between the information professions, which are destined for a common future.

III - 6. TOWARDS A MAJOR COMPREHENSIVE PROJECT

Seeking to achieve these various goals simultaneously might in practical terms mean implementing a major European mobilisation project.

a) The project

In order to mobilise the major European protagonists, in whose wake a multitude of sub-contractors would follow, a project of this kind must be sufficiently broad in scope and be of genuine economic and commercial interest. The aim must therefore be to produce something for which there is a large and profitable market.

A public project mainly financed from Community funds is not possible.

Not only would this be an added drain on the Community budget, but also a project drawn up by civil servants is not sure to be the one which would ultimately be the most commercially successful.

A project of this kind must be mainly financed by the market. Its launch would be boosted by orders resulting from negotiations between producers and major European clients.

For example, a decision might be taken by all the governments, or a majority of them, to purchase or have purchased a "product" (in fact the beginning of a "meta-work" - see II-6) to meet their requirements in the fields of, for example, education, vocational training, public health etc.

The selected project could, for example, have an educational objective and involve equipping European universities or secondary schools with a modern educational tool. It would be interactive and multimedia.

It would contain film or animated cartoon sequences, games, sporting exploits, scenes from European classical drama, tours of monuments, historical reconstitutions or analyses of prestigious technological projects.

Its interactive, hypertext and multimedia functions would give each user the freedom to choose what interests him, to decide how deeply to delve into a given subject and to proceed at his own pace.

The product would be multilingual and would offer the user the possibility of dubbing (oral) or subtitling (written).

This educational tool would provide an opportunity to make use of the scientific, technological and artistic wealth of Europe's heritage, literary texts, pictures borrowed from museums, modern and classical music, and advanced technologies borrowed from industrial research centres. It would thus launch the creation of a "meta-work" that could subsequently be used for many other purposes.

Since it must be useful in the various countries, this "product" would at the same time help to boost the language industry, since each object presented in digitised film sequences would be defined orally and in writing in the various languages.

The consortium of producers that is selected and carries out the investments would be contractually guaranteed a minimum number of sales, after which it would have the right to continue marketing the product as it wishes.

Although highly ambitious in its subsequent developments, the project should not, however, be elitist since, in order to be attractive in terms of turnover and profitability, it will have to target, at least via merchandising spin-off (games, publicity material etc.), a wide and popular market.

At this stage, everything is still wide open and there are no limits to what can be envisaged.

The above pointers are not strict guidelines but are intended simply to show that the objectives to be pursued (education, making use of the European heritage, overcoming barriers and boosting information industries) are not only not contradictory but, with a little imagination, can even be mutually supportive.

There is no shortage of objectives for a project intended to bring European skills together.

b - Method and procedure

It was not easy to persuade the European aerospace industries, which had previously been in keen competition with each other, to combine to produce the Airbus.

It was no easier to set up the European Space Agency, which currently produces "Ariane", which successfully competes with American space launchers. And what is more, in order to achieve success it had to overcome a monumental failure in the shape of the "Europa" rocket, which never managed to get off the ground.

"Europa" was not the product of genuine intra-European co-operation. Each country wanted to retain control of the part of the project it regarded as its due according to the principle of "a fair return" on the sum invested, so the rocket was split up into parts to be designed and produced separately and then assembled. The result was a disaster.

Ariane, on the other hand, was the product of a project completely designed and planned by a single main contractor prior to the appointment of the companies with the most appropriate expertise to be involved in its construction. The "slices of the cake" were then adjusted a posteriori and not a priori to comply with the "fair return" principle.

The lessons this teaches us must not be forgotten, since it will not be any easier to persuade businesses to work together that have two reasons rather than one for regarding each other as competitors:

a) they speak different languages and belong to different cultures, both of which are particularly dissuasive obstacles when it comes to information;

b) within their own countries they are engaged in areas which are currently considered as competing with each other, e.g. paper publishing and electronic publishing, cable and cinema, text and image etc.

Taking an economic risk in such circumstances is a particularly risky business.

Companies are supposed to be more familiar than anyone with the various European markets. Company heads will only agree to take risks if they have fixed the terms themselves. This is why it is proposed to leave it up to the consortium or consortia that are set up to **define the nature of the object themselves** and to propose the economic terms for its production

Major public and protagonists belonging to different European countries and to different professions would in this way, during the preparation and convergence phase, which would have to be fairly long, get to know each other and become better acquainted with the profession , "culture" and interests of the others.

To be eligible, a consortium would have to include:

- private companies (and public services, which are usually the ones that keep information) based in a minimum number of different European countries, as in the present calls for proposals under line of action 4;

  representatives of different professions such as:

- one or more publishers;
- one or more software houses;
- telecommunications firms or servers;
- higher educational establishments (universities, institutes etc.);
- public administrations or establishments that keep information (statistical institutes, geographical institutes, government departments etc.);
- national libraries, film libraries, music archives, museums etc.;
- advanced technology companies or centres operating in areas in which Europe is internationally well placed (mechanical engineering, automobile, aircraft and space technology, transport, town planning, agriculture etc.);
- major audiovisual resources;
- etc.

Consortia would have to specify what kind of commitments each member would have towards the others. Public bodies have their own codes of fair practice and cannot assume all the financial risks, but those among them that keep large bodies of information must be involved. One of the objectives that the Commission can set itself is to use this particular opportunity to teach the public and private sectors to work better together.

These consortia would have to appoint a supervisor, obtain financial resources, draw up a schedule and organise themselves along strict lines. Their organisers might well turn for consultancy expertise to the heads of the two European projects that have been successful: Ariane and Airbus.

The successful project would be the one that, for a reasonable budgetary cost and for a minimum order regarded as attainable by the various countries and the Commission, would create a multilingual and a multi-media information "product" that:

- meets the needs of the customers placing the initial minimum order (the Member States or public or private institutions based in them);

- includes the largest number of companies of different European nationalities;

- combines hitherto unconnected professions that are nevertheless prepared to enter into long-term co-operation;

- as far as the jury can judge, posesses genuine commercial viability beyond the initial order;
- launches the development of one of these bodies of easily recombinable intermediate products referred to above as "meta-works" and derived from the European cultural and technological heritage.

Just as the Cannes Festival and the Venice "Mostra" support European cinema, a competition of this kind, with adequate communications and publicity backing, could be held every two years.
The projects not selected for a minimum order but deemed to be intrinsically interesting could be given various awards providing publicity and cash (Jury Award, British Library Award, Award of the Hellenic Republic, Award of the Confederation of European Publishers etc.).

The ideas set out in this document are intended as a guide only. What must be borne in mind above all is that, since the products involved are to be marketed but require considerable initial investment that is not without risk:

- their specifications must not be laid down by an administrative body, nor should an administrative body, on the grounds that it is partly subsidising their cost, impose on them a particular vision of the market;

- rather, the conditions must be created in which these investments (which are of benefit to Europe as a whole) have a reasonable chance of being recouped and becoming profitable.

A name has already been found for a major project of this kind: "European Literacy in Information Technology": ELITE.

Why not?

As long as it is not only for the happy few

IV - CONCLUSION AND PROPOSALS

By creating means essential for the development of a European information market and enhancing those already in place (IMO, LAB, NAPs, ECHO, etc.), the IMPACT I and IMPACT II programmes have attained most of their initial objectives.

However, the pace of change in the world at large is so rapid that Europe cannot be content with such modest programmes, which necessarily aim too low.

In the vast domain of information, which is undergoing an impressive worldwide industrial and financial transformation, new professions and new job opportunities are emerging. On the other hand, whole spheres of activity are disappearing.

At present, Europe is suffering the losses, without benefiting particularly from the new opportunities.

The remaining duration of IMPACT II must be used to step up the pace. The means are in place (IMO, LAB, ECHO, NAP, Networks) and can now be put to use.

We must avoid swimming against the tide of market forces or struggling vainly, as the time is not yet ripe, to win back lost ground. As it is, public resources, whether of national or Community origin, are far from equal to the task.

Instead, the Community's efforts must be concentrated in areas where they can reasonably be expected to bear fruit and where no other forces can be expected to act in its place, at least not to Europe's advantage.
It can engage in pre-competitive action with a strategic scope with the aim of making Europe's cultural diversity, which is at present a weakness, a source of strength and wealth for the future.

*

The authors of this report therefore recommend that the Commission of the European Communities (DG XIII) should implement the following **seven proposals**:

1 : The Commission should **acquire a strategic planning capacity** in the information field, a field that is essential for innovation and exports, and to guarantee future employment and safeguard Europe's age-old, present and future intellectual wealth.

The IMO can supply statistics and supervise strategic research. An IMO Steering Committee could exchange ideas with the IMPACT Committee, LAB and other bodies.

Networks at a sufficiently high level (members of the IMPACT Committee, decision-makers, experts, correspondents, NAPs, etc.) would act as a channel for spreading ideas and allowing them to take root so that the various countries and spheres of activity concerned could be involved in this exchange of ideas on strategic issues.

- The Commission should **set up a Strategic Council** composed of high-ranking European figures from the various spheres of activity concerned: chief executives of companies, top-flight experts, members of the Commission of the European Communities, etc. This Council would consider all questions affecting the information market, the information industry and information services, choose from and amalgamate the ideas advanced by the IMPACT Committee, the IMO Steering Committee, LAB, experts commissioned by it, etc. and submit proposals to the Commission, the Parliament and the Council, who are the ultimate decision-makers.

2 : The Commission should **foster the demand for information**

- It should convince the governments of the Member States of the importance of what is at stake and persuade them to set up, with its assistance, large-scale national awareness and training campaigns.

- It should give its backing to "focal points" responsible for bringing certain less favoured regions up to the same level as the more developed regions in this field and should establish a special programme for such regions.

- It should use the educational experience acquired in these regions for the benefit of the other regions of Europe and the regions of the world that have cultural links with Europe.

- It should provide the NAPs with sufficient means to fulfil their mission.

- It should make use of its correspondents and the means at its disposal (such as ECHO or the EURO INFO ACCESS centres, if this concept is developed) to make potential customers aware of existing products and services, to guide users and familiarise them with the various European sources, where these are reliable and competitive, and thus foster exchanges, co-operation, and competition throughout Europe.

- It should encourage people to call upon the services of information intermediaries, consultants and advisors operating in the various European countries.

- It should provide aid for the training of trainers in both technical and educational matters.

- It should provide moral and, where possible, material support for European associations and organisations that are engaged in heightening awareness of information in their sphere of activity.

- It should exercise strong pressure (particularly by means of a European quality label that could be widely publicised) on information holders (including public holders), producers and distributors to ensure that their products are not only accurate and reliable but also easier to access and operate - more user-friendly - standardised, compatible and easy to consult across national borders (kiosk system) and in more than one European language.

3 : In pursuit with the objectives set out above, the Commission should **foster cross-border interdisciplinary networks** of people in positions of senior responsibility in the various information fields.

- It should work with persistence and energy to **bring them together** despite the barriers between countries and sectors of activity that are traditionally separate.

- It should maintain and update, on a state-of-the-art medium (multimedia CD-ROM XA-type compact disk), an **international interdisciplinary database** of people and institutions involved in the information industry (a sort of "Who's Who" of information).

4 The Commission should **combat Europe's main handicap: the barriers that create misunderstanding between countries and between professions** (the barriers of language, different regulations, traditions, working habits, ways of life, cultures, which are each worthy of respect, but are different) and **transform Europe's variety of cultures and languages into an asset for international competition**.

- It should step up significantly its **material and moral support** for a wide range of organisations, associations and working parties, whose work often goes unrecognised, in order to harmonise, make compatible and bring into communication **the rules and standards** (pre-standardisation research) **and the semantic content** of information, communications and technology in particular (see pages 10 to 12).

- It should **lend support to the language industry** to promote the use of modern methods (computer-assisted translation, multimedia tools, etc.) in order to facilitate understanding within and outside Europe.

5 : The Commission should lose no time in engaging in **concertation** with the ministries and institutions of the various European countries, particularly the holders of information, on research and technology (including town planning, construction, the environment, transport, industry, agriculture, space, information technology, etc.) and cultural heritage (painting, music, literature, architecture, etc.) and with publishers, **with a view to working out, field by field, how these information holdings may be put to use for the benefit of all**.

- In co-operation with the national partners, it should **look into ways of gradually transferring the past, present and future intellectual wealth of Europe onto standardised digital media** (i.e. starting work on a new European Encyclopedia).

- It should **consider what would be**, for the European economy, **the most efficient way of putting these collective riches to good use**.[3]

- It should aim to achieve, in particular, the following three objectives:

- setting up "meta-works" (see II-2-d), the raw material with which the new information technologies work and a source of new jobs;
- safeguarding and putting to good use Europe's cultural, technological and scientific heritage;
- ensure that Europe continues to have a publishing industry (books, films, cassettes, compact disks, etc.), which nowadays must necessarily be **multimedia**.

6 : The Commission should **bring European operators together to work on one (or more than one) major profit-oriented project based on multiple block orders negotiated in advance, in pursuit of the above-mentioned objectives** (see III-5).

7 : In order to take up where IMPACT II leaves off in 1995, the Commission should start developing a new and more ambitious project aimed at taking advantage of Europe's assets and creating a genuine internal market in information in order to:

- develop a competitive and profitable European information industry that will be in the forefront of job-creation;

- ensure that Europe continues to have a cultural impact and project a positive image of Europe (promoting its culture, technology, patents, science, literature, cinema and television arts, tourism, etc.);

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[1] This proposal is in line with proposals 3, 5 and 11 of Report No 14925 mentioned above.

- give Europeans the best access to information in order to promote training, stimulate innovation, boost productivity and facilitate the expansion of exports on the basis of a thorough knowledge of the world environment.

20 November 1993

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ANNEXES

ANNEX 1

THE EUROPEAN INFORMATION RESOURCE

by J. MARTYN

The European Information Resource.

Europe has an immense richness of sources of information. These sources include not only online databases and other computer-held data collections, but also national and other major libraries, specialised libraries in universities, industrial organisations and Government departments, and archives of all kinds from national down to local level. As well as printed resources, specialised organisations such as research institutes, hospitals, museums, Government laboratories, consultancies and manufacturers can also be sources of information. The major obstacle to the full exploitation of this wealth of resources is the difficulty of knowing where to look for relevant information when it is needed.

An inventory of its own information resources would clearly be of value to any individual Member State. If inventory records were produced to an agreed common format, integration of the national inventories would produce a guide to the information resources of the European Union, which could be used by any information seeker to identify the most likely sources, anywhere in Europe, of the required information. As with any collection of data, the inventory file could be made available in printed form, as a CD-ROM or, preferably, as a service hosted by ECHO. Entries relating to institutions could carry annotations giving their scope, telephone, fax and network numbers, hours of opening, availability of resources to enquirers, language capability and the name of a contact person. If made available over ECHO, a later stage of development might permit the addition of a switch service, by which a searcher, having identified the most likely source of relevant information, could be put into networked contact with that source, whether it were a database to be searched, a document store from which to request material or an organisation to be appealed to via electronic mail.

The development of a European Referral Service of this kind (which might equally be described as the Guide to the European Information Space), need not be particularly costly, either for the Member States themselves or for the Commission. The compilation of national inventories could be undertaken in stages, dealing with each type of information resource in turn. A list of online and other databases could be followed by a list of specialised libraries and document collections, followed by a list of critical data files and collections, and so on; in a number of cases, Member States will already have appropriate listings, which would require little more than updating, formatting and indexing to an agreed common standard. The Commission component would include support for meetings to develop and agree common formats and indexing terms, and the installation and management of the resulting service on ECHO. The whole cost-effective, cooperative exercise would consist of each Member State organising its own information resource inventory in its own interest and at its own expense, and then pooling the results in the common European interest.

John Martyn

ANNEX 2

ACTION LINES 1, 2 and 4

by J. MARTYN

Action Line 1 - Improving the understanding of the market.

The IMO was established in 1988 in order to improve the availability and quality of data on the information market, for the benefit of market players and policy makers. Although expansion of its network of correspondents as recommended by the evaluation of IMPACT 1 has been handicapped by a substantial reduction in budget (which has also enforced suspension of the core database IP86), some progress has been made and a number of useful exercises carried out. In particular, dissemination of reports and working papers, including the annual report on main events and developments in the electronic information services market, has been considerably improved by the identification of a number of national dissemination agents. These agents promote and distribute IMO materials at a nominal cost to users, which has had the effect of considerably increasing the uptake of IMO products. (Copies should also be deposited in the European Documentation Centres and Depository Libraries which exist in the Member States. This also applies to LAB materials.) Improvement in the quality of the content of IMO reports is also reported, although the comment that the reports are not helpful in taking marketing decisions, which was a criticism made by some users during IMPACT, has been repeated. This point is discussed below. In September EUSIDIC and EIIA are holding a joint Workshop on Market Statistics, which is expected to be highly relevant to the work of the IMO.

Under IMPACT 2, the surveys of Electronic Information Services and Products which were begun under the earlier programme have been continued, and the results disseminated in a variety of ways, including the IMO Annual Report. In 1993, overview reports have been produced on the Audiotex Premium Rate Service market 1987-1992, and on the CD-based media market 1987-1992. A study to evaluate the commercial market for Info Euro Access Points (allowing customers to access all the information services they require from a single point or source) has been carried out and will be reported on in October 1993. The network of IMO correspondents now comprises 37 members, but has not been developed because of budget restrictions, noted above. A strategic study on new opportunities for publishers in the information services market, initiated in January 1992, has been completed and a report produced and made available. A market study on chemical information users was carried out in 1992, and a report delivered. A study on the strengths and weaknesses of the electronic information services market is ongoing and a report is expected by the end of September. A study assessing the present situation of the markets for electronic information services in the Member States will begin in mid-October, on a basis of national studies using a common methodology, and results will be available in November.

Following a preparatory study in 1991 on priority information policy issues, an inventory of information science research centres in the Community was made, and a Workshop on the role of information held in November 1992. Five case studies analysing the effects of information use on the competitiveness of enterprises are ongoing, in various sectors, and results will be discussed at a Workshop in November, which will also discuss a

number of other issues. At the same workshop, the intention is to create a European information policy support network, consisting of a number of research centres, with a view to encouraging research in support of debate and discussion of information policy issues.

The foregoing represents a very high and commendable level of activity, carried out with reduced resources. The individual reports produced by the IMO provide the best available view of the information market, given the very uneven quality and inadequacies of national and industry-produced statistics in this area. In particular, the annual "Report on main events and developments in the electronic information services market" brings together a mass of statistical information and comment which is not readily available elsewhere. In view of the criticism, noted above, that the IMO work does not provide the level of detail required by the information industry for taking marketing decisions, it should be made clear that it is not intended to be a complete substitute for market research in depth. Its major purpose is to provide a general overview of market developments in order to inform policy-making at the strategic level by the Commission itself, national governments and information industry entrepreneurs. Information at the tactical level, to decide for example what specific products to develop and what specific pricing policies to adopt, could only be collected by targeted in-depth studies which would not be cost-effective for the IMO to pursue with its limited resources, and which should more properly be supported by the industry itself.

A more serious criticism would be that most of its focus is on the European-based <u>supply</u> side of the market. This means that it is hard to see how the European industry is performing in comparison with competitors based outside the Community, and to calculate the balance of trade in information goods and services. In fairness to the IMO, demand-side studies, particularly if designed to allow measurement of trends over time, are considerably more difficult and costly to carry out than supply-side studies, and are beset with methodological problems.

There are some other ways in which the IMO products could be improved. Most of its work concentrates on the dimensions of the market for individual classes of product, in terms of turnover, market share and numbers of units sold. As the 1992 annual report says, "Network publishing is emerging as a threat to the conventional model of online database distribution from a central host and a potential opportunity for information providers. The rise of electronic document delivery through networks, of customised publishing, and recently of electronic journals is also likely to have an impact on the market for conventional print-on-paper publishing". Some attention should be directed towards bringing together from time to time the results of studies of particular product classes to shed some light on the extent to which classes of product compete with and possibly replace each other. To what extent, for example, are CD-ROM versions of databases competing with or complementing both the online versions, and the printed versions which still represent in many cases the major source of income for their producers?

Study should also be made of aspects of the industry such as tarification, and the terms and conditions of use of products, which can affect their market take-up and long-term viability. CD-ROM databases, again, are often marketed on a subscription basis which while allowing subscribers' use (often hedged with conditions) retains ownership of the product for the supplier, so that when a subscription lapses, the subscriber must return all copies of the CD-ROMs concerned. This could be a disincentive for librarians, who hitherto have been able to retain the printed versions which they have bought, ensuring a degree of continuity of service for their clients. Issues relating to ownership, conditions of use, permitted levels of service, purchaser's rights and obligations and so on could be studied and discussed in cooperation with the Legal Advisory Board.

Some of the information collected by the IMO is derived from surveys, conducted across the Community by contractors using self-administered questionnaires. In national questionnaire-based surveys, a response rate approaching 40% can usually be obtained, if the questionnaires themselves are well-designed, short and accompanied by a reply-paid envelope. In the cases of the Chemical Information Users survey (which was worldwide) and the postal survey used in the Info Euro Access Point study, the response was of the order of 5%, a not very satisfactory result because from a statistical viewpoint less confidence attaches to the interpretation of the findings. If a mechanism for paying the return costs of postage which was valid across the whole Community were available - a Community postage stamp, for example - the response to Community-wide surveys might be improved.

John Martyn

Action Line 2 - Overcoming legal and administrative barriers.

The activities undertaken under Action Line 2 of the IMPACT 2 programme continue and develop a number of themes which have been pursued by DG XIII since before the initiation of IMPACT 1. The Legal Advisory Board (LAB), which is one activity conducted under Action Line 2, was first set up as a Legal Observatory after a Workshop held in 1985, and became the Legal Advisory Board in 1987. The topics which were identified as being of interest and concern then continue to be relevant. Some further areas for consideration and possible action have been added recently. The areas of current concern include the principles for a legal framework for electronic information services; protection of personal data; the legal protection of databases as intellectual property; synergy between the public and private sectors in the information market; computer-related crime ("hacking"); the proof value of electronic documents; improving transparency of bodies licensing use of materials protected by copyright; awareness of legal problems affecting the information market; and strengthening the work of the LAB.

Activity in areas of concern may be shared with, and is frequently led by, other DGs of the Commission. For example, intellectual property issues fall primarily within the remit of DG III (now DG XV). The Commission also collaborates with the Council of Europe and the OECD in all areas affecting the information market, many of which have legal aspects. The role of DG XIII in a number of areas of legal concern is therefore to cooperate with other DGs and outside agencies in the development of the regulatory environment. In such cases, DG XIII is often providing the only representation of information user and information intermediary interests. It is in effect acting as the voice of the user, and although this is a relatively low-profile activity in terms of visibility to the outside world, its importance and its effectiveness should not be underrated.

Following the recommendations of the mid-term evaluation of IMPACT 1 and of the representatives of Member States, the LAB has been re-structured. Among other changes, it is now chaired by an independent expert, and it has been organised in three "circles", which comprise a bureau, in charge of the work programme etc., a core of members who attend all meetings, and a circle of correspondents, who receive LAB reports and may be invited to participate in workshops and meetings as appropriate. Representatives of the information industry without specific legal background now take part in meetings of the LAB. Its reports and discussion documents have been made more widely available, and a presentation brochure describing its work and functions is in preparation. It should be noted that the membership of the LAB does not consist of delegates nominated by the Member States, and individual members are neither briefed by nor necessarily report back to their national governments, aalthough reports of the deliberations of the LAB are received by the official delegates to the IMPACT Programme Committee.

It is in the nature of legal and regulatory concerns that their resolution takes a long time. It is not therefore surprising if some activities require effort over a long period. The

relationship between the public and private sectors has been an object of study since 1985; the Commission's *Guidelines* were produced before the initiation of IMPACT 1, and the recent PUBLAW 2 study of their effect indicates that there is still a long way to go before the situation is completely satisfactory. The major success in this context is that the Commission has initiated a change in the climate of opinion which will ultimately benefit both the developing information industry and the information users. Further actions are envisaged, and it is suggested that one option would be the production by the Commission of a "Handbook of Best Practice" as a do-it-yourself guide for public servants holding potentially exploitable official datasets. More generally, the production of guides to good practice would be appropriate to a number of Commission interests in aspects of the information market.

There can be no doubt at all of the need for any programme for market development to include a component concerned with the legal and regulatory framework. The volatile nature of the market and the frequent introduction and development of new technologiocal means of information supply wwill ensure that the need persists, as new problems arise. The mechanisms for becoming aware of legal problems in the information market functions adequately, but it might be helpful to establish a facility for receiving statements of particular problems from information users and providers; it is not the role of the Commission to provide free legal advice, but it could be good public relations, and contributory to work under Action Line 2 if the willingness of the LAB or of those responsible for Action Line 2 to receive and consider statements of specific legal problems were widely publicised.

In general terms, the work under Action Line 2 is a steady development from that under IMPACT 1, and apart from repeating the encouragement constantly to review the procedures for disseminating awareness of the activities and their results, no recommendations for improvement are made. It should, however, be noted that, as with other parts of the IMPACT 2 programme, the reduction in available budget has had a harmful effect, specifically in reducing the effort available to address particular problem areas and in delaying the launch of some studies. Failure to provide adequate support to this Action Line would imply that the legal problems of the information industry and market are not considered to be of importance; such a view would be at best ill-informed, and at worst irresponsible.

John Martyn

ACTION LINE 4 ACTIVITIES.

1. Within the framework of Action Line 4 of the IMPACT 2 programme, which is concerned with the support of strategic information initiatives, the Commission selected the two areas of Interactive Multimedia Information (IMM) and Geographic Information Services (GIS) as main themes for launching calls for proposals for innovative information service developments. A Call for the former was published in the Official Journal on 2 June 1992, with a closing date of 14th August. A Call for proposals based on GIS technology was published on 26th November 1992, with a closing date of 1st March 1993. In both cases, initial support of a six months definition phase for selected projects was envisaged. A further selection based on the results of the development phases will lead to support of the implementation phase of a more limited number of projects.

2. In addition to publication in the Official Journal, the Calls, supplemented by Information Packages giving technical background, guides on how to make proposals with the necessary forms, and a proposal editor on diskette to facilitate proposal compilation, were distributed to a large number of addressees known to the Commission to be active in the relevant areas, and National Focal Points for IMPACT in five of the Member States also distributed Information Packages on the basis of their own distribution lists.

3. The results of these Calls were that in the multimedia area, 317 proposals were received, involving 1158 cited participant organisations, and in the GIS area, 190 proposals were received, involving 596 cited organisations. It should be noted that the number of cited organisations is greater than the actual number of organisations involved, because some organisations appear in more than one proposal. For example, in the Interactive Multimedia Call, the United Kingdom is listed as having 167 participants, but in fact this means that the 167 responses received from the UK came from a total of 136 separate organisations; similarly, the 61 proposal involvements from Ireland were submitted by 44 individual organisations. The total number of separate organisations involved in submissions responding to the Multimedia call was therefore of the order of 1,000.

4. All the Member States were represented in the IMM call, and all except Luxembourg in the GIS call. Public sector, private sector, non-profit and academic organisations are all represented, as are organisations of all sizes from less than ten employees to those with more than 100. In terms of size, the distribution is U-shaped (a statistical rarity), with about 60% of organisations having less than 20 employees, so that SMEs are heavily represented: however, nearly all organisations in the information industry are SMEs, so this is not a surprising result. It is of course not possible to say with any accuracy whether or not the

responses from individual Member States, or specific categories or sizes of organisation are proportionate to the total populations of each in the Community because the total populations that might conceivably be involved in any Call are essentially indeterminate, but at least it can be said that the distributions of responses do not give any obvious reason for concern.

5. The proposals received in response to the Calls were submitted to a standard evaluation procedure which is described in detail in the Evaluation reports subsequently prepared by the Commission. Briefly, proposals are first screened for formal verification of eligibility, to check submission before the closing date, appropriate signatures to the proposal documents, presence of sufficient information for an evaluation to be made, and whether the submissions are within the scope of the call. Following this stage, proposals are examined by teams, one per theme, comprising evaluators, a rapporteur and a coordinator. Evaluators and rapporteurs are independent experts specially recruited for the purpose by the Commission, while coordinators are members of Commission staff. Each proposal is examined by at least two evaluators, by a third if opinions diverge, and by other evaluation teams if this is considered necessary. Standard reporting forms are used to guide and record evaluators' judgments, panel discussions on the merits of each proposal assessed take place, and the final recommendations on acceptance, acceptance subject to recommended modification or rejection reflect a consensus view of the evaluating teams. No evaluation procedure (including the procedures used for evaluating programmes such as IMPACT 2) is ever perfected, and some fine tuning of evaluators' report forms will always be possible, but the procedure adopted for evaluating the proposals submitted in response to Calls for Proposals has been evolved as a result of years of experience, and fully meets all the requirements for fairness, impartiality and objectivity. The integrity of the process is beyond challenge.

6. As a result of the evaluation processes, 59 proposals were selected for the definition phase of the IMM call, involving 209 participants, or 178 separate organisations, given that some organisations figure in more than one proposal. 28 proposals were selected for the definition phase of the GIS call, involving 135 participants or 116 separate organisations. The distribution of success is not uniform - some countries are more successful than others - but no significance attaches to this fact, which is partly a mathematical artefact, inasmuch as if, for example, a country figures in only one proposal, its success rate will be either 100% or zero. As it happens, Denmark at one end of the scale enjoyed 45% success in the IMM call, and Greece 9%; public sector, private sector and non-profit bodies enjoyed an average success rate of 21%, as against 12% for academics. Larger organisations tend to be more successful, which is not surprising, since this is how they became

larger organisations. Success rates reflect relative quality of proposals, and inevitably the more experienced or more competent organisations tend to have better ideas, and to be able to work out the financial and managerial aspects of proposals more convincingly.

7. During the evaluation, proposals are graded S, C+, C- or R. S means, in effect, recommended without significant qualifications, C+ means recommended subject to certain conditions or modifications which should be negotiated, C- means the same as C+ but weaker and therefore of lower priority, while R means not retained. In the IMM call, of the 268 proposals passing the formal evaluation stage, 7 were graded S, 50 C+, 72 C- and 139 R. The distribution of gradings for the GIS call was not known at the time of writing this note, so all comments henceforth are based on the results of the IMM call.

8. The evaluators of the Call have made a number of comments in their reports, which are presented *in extenso* in the Executive Report, Vol 1 of the report on the Multimedia Call, dated September 1992. They cover the sources of proposals, the quality of response, and the evaluation process. These comments, being the considered views of informed and involved experts, have been taken into account by the present writer, and are recommended to the attention of those planning future calls of a similar nature.

9. The volume of response to the Call is satisfactory, inasmuch as it was possible to identify sufficient proposals with prospects of successful implementation to absorb all the available budget. However, it was noted that "many companies who are significant players in the developing IMM area did not participate". It is unlikely that this is because they were not aware of the Call, although on that particular point it should be noted that one too easily assumes that an organisation is aware if one of its senior members of staff is aware. Past experience has made it all too clear that very often, one particular member of an organisation has made it his business to be aware of Commission activities, or at least to receive and collect Commission information materials, and when that staff member retires, moves or takes a vacation, the parent organisation ceases to be "aware". The fault, if there be any, in distributing awareness materials often lies not so much with the Commission, which broadcasts its information products very widely, as with the defective information mechanisms in the recipient organisations.

10. If a major company in a particular area has a good idea for a marketable product, and has or can secure sufficient risk capital to finance its development, then it will usually prefer to go ahead on its own resources, without sharing the possible profit with partners in other countries, and without enduring the inevitable delays and uncertainties surrounding the effort of getting partial

support from Commission sources. The bigger and more successful organisations in the information industry tend to have better access to venture capital, better knowledge of their market and wider access to necessary in-house expertise, and are therefore less likely to participate in calls than the smaller companies, even if an appropriate call is being launched at the time they wish to develop a product or service. There is therefore an inevitable tendency for the Commission to attract second-rate proposals. This does not mean that all proposals are second-rate, merely that it is not surprising that a substantial number are.

11. It was also noted by the evaluators that there was a tendency for proposals to be technology-driven; many of them had the flavour of a solution looking for a problem to address, and too few reflected a genuine market demand. Again, this is inevitable. If an organisation is asked to make proposals for a multimedia product using advanced technology, then the natural response is to look for a problem which can perhaps be solved by manufacturing a multimedia CD ROM. Ideally, an organisation should be aware of a specific information problem which it wishes to address, and should arrive at the multimedia CD ROM solution as the preferred choice from a range of possible alternatives. If, however, a funding body such as the Commission wishes to encourage the uptake of new technology, it is difficult to find a viable alternative to the present Call procedures, which at least have the merit of stimulating thought about the possible uses of the technology. The adoption of a more directive strategy which would operate by studying market demand and then seeking tenders for specific strategic services or products postulates skills which at present the Commission does not have and requires actions which are more properly the role of the private sector.

12. At the time of writing (September), only the IMM definition phase proposals had reached an interim report stage. 3 recommended proposals were withdrawn, and of the remaining 56, 45 have submitted interim reports, in the form of brief statements of their project-related activities to date.

13. When assessing the potential for market success of projects such as those supported under Action Line 4, it should be remembered that in other industrial sectors which are engaged in developing and marketing new products, every market success is accompanied by a large number of market failures; in the pharmaceutical sector, a particularly risky area, the success rate is less than five per cent. If only forty or fifty per cent of the Commission-supported ventures results in a successful product, this should be considered as a very satisfactory outcome.

14. The effectiveness of the final products themselves, when they are realised, in further stimulating the market is unclear. It is intended that the production of a sound, marketable product or service will act as a stimulus to other potential manufacturers or suppliers, who would in some way emulate the achievement of the producers, but this aspiration remains very much an act of faith and has not so far been justified by hard evidence from previous experiences. The "multiplier effect" has not been convincingly demonstrated in practice, and any market stimulation that has taken place as a result of earlier comparable initiatives has been attributable more to the alerting effects of launching a Call than to the end products delivered. The success in the marketplace of previously supported products has often been unexciting. It is unfortunate that the process of product development support should inevitably require large budget allocations, and in this respect clearly the present system of giving small amounts in support of project definition, and strictly limited amounts to the development phase, is preferable to the IMPACT 1 allocation of larger sums in support.

15. It is obviously impossible to say at this stage how many of the proposals which are at present in the early stages of development are likely to achieve market success, but it is worth noting that success or failure in the market place depends on a number of factors unrelated to the quality of the products being marketed. Infrastructural changes, such as the progress of fibre-optic cabling in a region, the availability of competing products from other countries, political and social change, and, more particularly, the economic situation which affects employment levels, the net disposable income available to the potential market, and the individual willingness to incur debt, are all powerful conditioners of the market over which neither the industry nor the managers of the IMPACT 2 programme have any control.

16. On the positive side, the two Calls for Proposals so far launched under IMPACT 2 have succeeded in sensitising a significant number of organisations to the importance and potential of multimedia and geographic information systems, and in encouraging working partnerships between different types of organisation in different Member States. Whatever the final effect on the market, these are positive achievements, and we may therefore say that the programme is doing at least some of the right things, in the right way. A substantial number of the right people have been reached, and the nature and extent of effort which the Commission exerts in distributing information about the Calls suggests that little more could be done, other than perhaps encouraging more activity on the part of the National Focal Points and Awareness Points. Every Call is to some extent an educational process for the potential proposers, and the fact that it has been possible to select a number of proposals worthy of support in the Definition Phase suggests

ANNEX 3

THE IMPACT II AND LFR's

by C. RODRIGUES

THE IMPACT II AND LFR's

Table of Contents

THE IMPACT II AND LFR'S

1 - A GLOBAL OVERVIEW

1.1 - MAIN ACHIEVEMENTS

The Impact II guide lines particular focus the need for a larger participation of LFR's (considering the previous experience of Impact I), suggesting the launch of adequate initiatives at the Regional / National level with a multiplier effect that could be replicated in the other geographic areas.

Based on interviews and the execution reports, one can consider that this concern related with LFR's has been translated in to the following initiatives and guide lines:

- Creation of the National Focal Points in each one of the LFR's;
- A larger representation of LFR's in the training activities;
- Additional incentives to LFR's organisations participating in the IMM and GIS call for proposals;
- A specific concern to reach a significant representation of LFR in the financed projects under IMM and GIS, either in definition phase or in the implementation one;

The creation of the National Focal Points represented the axis of this specific oriented policy targeting LFR's participation, assigning to them specific responsibilities in order to dynamise the national / regional organisations and to benefit of the Impact II initiatives.

Basic data

Out of the total budget (expenditure and commitments) for 1991/93 of Impact II Program, estimated in 27 MECUs, the amounts allocated to LFRs are 4.2 MECUs, representing around 16% out of the total. Table 1 presents the breakdown of the above value by actions:

Budget allocation to LFR (Values in KECUs)

ACTION	Amount	% on EC allocation
NFP	797	100%
NAP	120 (Est'd)	50%
IMM-Def. phase	1018	37%
IMM-Imp. phase	964	21%
GIS-Def. phase	688	49%
Training	620	30%
Total	4200	16%

Table 1

SOURCE - Estimated figures from DG XIII - E

Notes

1) LFR definition under Impact II embraces besides Ireland, Greece and Portugal, (which countries are considered Objective 1 Regions), Italy and Spain (without identification of Objective 1 and 2 regions) and the new Objective 1 regions - North of Ireland and the 5 new Lands of Germany

2) Amounts related to the participation in IMM and GIS projects are refered to main contractors, allocating to them the total value of the financing. On one hand doesn't include the participation of LFR's as a partner in other projects.

1.2 - THE NATIONAL FOCAL POINTS

The creation of NFP in LFR was recommended by a specific study ordered by EC; this study aimed the identification of the main difficulties faced by LFR in order to achieve a more significant participation in the Impact Programme*. The basis for the study was the low level of participation of LFR's in the pilot projects promoted by Impact I.

The creation of the NFP envisaged the development of:

- awareness activities related to the benefits of the electronic information;
- stimulation of the launching of new products and services of electronic information.

* Consolidated joint report: LFR Investigation on participation in pilot demonstration projects in the information servives market - Harkin M)

In generic terms NFP were intended to develop their activities in order to achieve a more significant participation of the LFR organisations in the Impact II initiatives, namely the Action Line 4. Within the Impact II Programme the support to the NFP has been considered under this Action Line.

The NFP have been implemented in Portugal, Ireland, Spain, Italy and Greece, through a negotiation procedure between EC and the National Governments in order to select National organisation which would act has NFP, trough a contract to be established with EC. The basic criteria for the selection was to reinforce existing organisations already acting in the areas of the information market.

Selected organisations has been:

- Greece - National Documentation Centre
- Ireland - EOLAS - The Irish Science
- Italy - ENEA
- Portugal - INETI - CITI

  Center of Technical Information for Industry of the National Institute for Industrial Engineering and Technology

- Spain - IMPI - Institute for Small and Medium Industries.

The extension of the NFP to North Ireland and to the 5 new Lands of Germany has been meanwhile decided and contracts are expected to be signed in September and October 1993.

The budget allocated to these support activities have been:

1991 - 236 352 ECUSs

1992 - 540 000 ECUs

1993 - 500 000 ECUs (indicative budget)

The main activities developed by these NFP / NAP have been:

- Dissemination of Impact call for proposals and call for tenders, embracing the build up of Data bases of targeted organisations and partnerships, in order to perform the basic activities:
  - Announcement mailings

- Support to Partners identification
- Support to the elaboration of proposals

- Other dissemination and awareness activities related to the Impact II programme and objectives, through articles published in specialised press;

- General Awareness Services regarding Electronic Information Services in Europe;

- Organisation of specialised Workshops related to the Information Market and the new electronic facilities;

- Participation in Exhibitions and Conferences promoting the NFP / NAP and the Impact II Programs.

1.3 - THE LFR'S PARTICIPATION IN GIS AND IMM CALL FOR TENDERS

a) IMM projects

LFR had a significant participation in the first phase of IMM. Out of the 56 contracted projects LFR were presented in 38 projects, 19 out of them as main contractor. Table 2 presents the break down of the participation by country.

IMM LFR's Participation - Definition Phase

	Main Contractor	Partner	Total funding KECUs
ES	3	15	197
GR	1	6	97
IR	4	4	130
IT	10	17	549
PT	1	3	45
Total	19	38	1018

Table 2

Notes:

1) In several projects there is the participation of more than one LFR country, which justifies that the sum of partners be greater that the total.

2) The funding is refereed only to the prime contractor.

The total funding allocated to the projects with a LFR prime contractor represented about 37% of the funding of the first phase of the IMM call proposals.

The main conclusion of these figures is the large participation of the LFR in this phase of the Program, with special relevance for Italy and Spain. However, it shall be noticed that most of participant organisations of these countries doesn't belong to Objectives 1 and 2 Regions, in the accepted definition of the Regional Funds.

Considering the second phase these figures are still positive. Out of total 22 projects recommended for support, 5 have a LFR organisation as a coordinator partner (Table 3).

IMM LFR's participation - Implementation Phase

	Coordinator	Total projects	Funding KECUs
ES	1	6	320
GR	1	1	102
IR	1	1	100
IT	1	5	292
PT	1	2	150
Total	5	15	964

Table 3

Considering these figures the conclusion is that the participation of LFR has been reduced from the first to the second phase. (Table 4), but still reach a significant rate of participation.

IMM LFR's participation - 1st and 2nd phase

IMM LFR's participation	% of projects as coordinator	% of participating projects	% of funding
1st phase	33%	66%	37%
2nd phase	24%	58%	21%

Table 4

The country that performed better has been Spain, with all the other countries seeing its participation reduced to a lower level.

b) GIS projects

The definition phase of GIS projects also presents a relative high participation of LFR organisations. Out of the 28 projects recommended for Community support, LFR participate in 25, acting as coordinator partner in 11, which represent 49% of the total funding. Table 5 presents the participation of each LFR country in this phase of the GIS projects.

GIS LFR's Participation - Definition Phase

	Coordinator	Partner	Funding KECUs
ES	5	5	266
GR	2	8	135
IR	1	5	72
IT	3	3	149
PT	-	7	66
Total	11	25	688

Table 5

Deserves to be mentioned that only 3 out of the total 28 projects recommended doesn't have any LFR participating organisation, either as coordinator or partner.

Again, and however the reserves made about Spain and Italy participation in IMM projects are still valid to GIS projects, in the sense that most of their organisations didn't belong either to Objectives 1 or 2 regions.

2 - EVALUATION AND COMMENTS

2.1 - ABOUT NFP / NAP*

The most relevant activity of the NFP / NAP has been the dissemination of the Call for Proposals and the Call for Tenders launched under Impact II.

The role of the NFP in this dissemination activity was positive evaluated by the different organisations we had interviewed. The mailings have been quite large and should reached all the potential actors.

* Evaluation based on local interviews in Portugal, Irish report and interviews with EC officers.

However NFP should be prepared to offer a more professional support to the proposal preparation and presentation, in order to meet the evaluation criterias. (It has been considered that the poor presentation of some Portuguese proposals justified their non approval).

A second point to be highlighted was the absence of the follow-up of the dissemination activity, with no knowledge of the proposals effectively presented or the partnerships with national organisations. This lack of information limits a more effective evaluation of the impact of the dissemination activity.

A suggestion presented that deserves to be considered by EC officers it was to invite NFP to review and to discuss with them the proposals presented, namely those not approved, in order to identify the main difficulties faced by the promoters, and be prepared to provide a more oriented support in future initiatives.

Regarding the other activities our opinion is that the NFP / NAP has not been too much dynamic.

A more intense and innovative approach on the awareness activities, putting people familiar with the benefits and advantages of the electronic information and improving the demand market should be considered in the next action plans for 1994 and 1995. Demonstration and pilot initiatives on the use of on-line information by target groups or the promotion of the national hosts and data basis are examples of initiatives that could have an impact on the enlargement of the market.

2.2 - LFR'S PARTICIPATION IN IMM AND GIS PROJECTS

The evaluation of participation of LFR's in the projects financing through Action Line 4 deserves a specific concern, considering the incidence of these call for proposals for the development of the offer of the electronic information products. LFR's had a relevant success in their participation in the first phase either in IMM or GIS call for proposals, and in this frame can be considered that the settled objectives have been reached.

A positive evaluation shall be made regarding the NFP actions, which were particular responsible for the dissemination of the call for proposals and although in a less extended way, for the support for the proposals preparation and partners identification.

However this success was not kept in the second phase of the IMM projects; selection criteria affected particular the LFR's, with their participation reduced to a lower level (with exceptions of Spain in the number of participating projects and Italy in what regards the allocated funding). It shall be mentioned

that Italy and Spain absorbed 68% of the funds allocated to LFR's organisations.This unbalanced share reinforce our reserves relate to the criteria used by IMPACT in LFR's definition, considering Italy and Spain as a all, and not only objectives 1 and 2 regions. If the Regional Funds criteria was used (assigning LFR's to Objective 1 Regions) global results will be much less favourable.

2.3 - THE NEED FOR SPECIFIC ACTIONS

The main issue of the evaluation made is the need for a special focus on the way to deal with LFR's regarding the development of the information market, and our conclusion is that the standard mechanisms used by Impact will be not the best solutions, even with the positive action developed by the NFP. LFR's face specific constraints to the development of the Information market, and unless specific actions were defined, the contribution of Impact will not reach the pretended cohesion objectives.

The appendage 1 translates the evaluation made in 1991, at the time of the preparatory studies of IMPACT II, regarding the Portuguese environment related to the Information Market and the constraints that its development faces. Our opinion is that the situation didn't have a significant evolution, and that these comments are still valid, and also, although in broad terms, can be generalised to the other LFR's.

3 - FINAL CONCLUSIONS AND RECOMMENDATIONS CONCERNING LFR'S AND IMPACT

- The electronic information market is an emerging activity sector with an high growth rate. Nevertheless EC is not reaching a competing position in this area, and there is no evidence that Community is shorting the existing lag regarding the leading position of the U.S..

- The European market is a fragmented one, focused on national or regional markets; despite the potential opportunities of the single European Market few pan European services have been brought to the market phase.

- The European market faces specific constraints to its development mainly regarding infrastructures and technical barriers.

- The Impact mission shall be to support and to strength the competitive position of the European Electronic Information Industry, mainly through the development of the Single European Market, taking advantage of the new opportunities offered by the emerging technologies.

- LFR's shall be encouraged to participate and to get advantages of the IMPACT initiatives; nevertheless LFR's participation can't be a constraint to the global targets envisaged by the Program. This is a generic problem of the EC in order to reach the cohesion among the several regions, which is being solved by specific tailored Programmes adequated to Objective 1 an 2 regions development conditions (STAR, STRIDE, CIENCIA, PEDIP, TELEMATIQUE, are examples of these initiatives).

- This policy should be also applied to the development of the Electronic Information Market in LFR's. The specific objectives and targets would be the global development of the market, either of the supply and the demand side, creating a sound basis that will able them to a progressive and more relevant participation in IMPACT initiatives.

IMPACT managers should launch negotiations with National authorities and DG XVI in order to define a specific LFR's Information Program, adequated to its development status and needs, taking advantage of the present negotiation phase of the CSP under the Regional Funds. This should be a parallel initiative to Impact itself, which should keep its larger ambitions and visibility in what regards the competitiveness of the European industry, without constraints to be particular focused in LFR's.

The appendage II reports the Program elements that could be the basis of such Program, adapted from the proposal presented in the study "Mercado Português dos Serviços de Informação", which has been performed by CHALLENGE to DG XIII and JNICT, in the frame of the preparatory studies of Impact II.

APPENDAGES

APPENDAGE I

PORTUGUESE ENVIRONMENT RELATED TO INFORMATION MARKET

APPENDAGE II

A PLAN PROPOSAL FOR THE DEVELOPMENT OF INFORMATION MARKET IN LFR'S

APPENDAGE I

PORTUGUESE ENVIRONMENT RELATED TO THE INFORMATION MARKET*

The definition of a industrial policy as well as the achievement of an action plan and its implementation strategies, will have to take into account the existent constraints that limit the development of the Information services Market, which can be classify as:

- Political constraints
- Infrastructure constraints
- Supply constraints
- Demand constraints

The existent limitations in each of these areas limit the development and growth of this market, as well as, the continuous penetration of the information means in the Portuguese society.

1. POLITICAL CONSTRAINTS

- sector transversally
- diversify interests
- sector unique features

The lack of a political benchmark is one of the most important limitations to the development of this Industry since it does not allow to have an integrated and global vision of the characteristics and the trends of this market. Additionally, it does not allow to define plans of actions that will contribute to its development and growth.

The affirmation of a political competence responsible for the definition of policies to support the development of the Information Services Market, will not be pacific, due to the actual strength of the Public sector in this market, the sector transversely that characterises this market and the unique features of each sector.

The transversely of this market results in a diversity of interests from sector to sector, concerning the information, and the specific nature of the way and style to respond to the unique solicitations made by each sector.

* Adapted from the CHALLENGE study "MERCADO PORTUGUÊS DOS SERVIÇOS DE INFORMAÇÃO" performed to JNICT and DG XIII, 1991

This diversity and specialisation comprehend not only the nature and the information domains, but also the information processing, its organisation, ways of accessing the information, technologic means to be applied, potential partnerships and the nature of its projects, and last but not least, the role and strength of the public sector.

2. INFRASTRUCTURE CONSTRAINTS

- Communications
- Human Resources

The present limitations in terms of telecommunications infrastructures focus on the availability of telephone lines (cables) and the quality of such service. On the other hand, the development of the market will involve that Transdata be able continuing to forestall the facilities needed for the launch of new initiatives.

The reduced number, and quality, of experts related with the information Industries points out other limitation to the development of this market, leading to the short range of expertise needed for the development of new initiatives and to evaluate and give support to the existent ones.

Each of these situations will probably lead to the establishment of a pace that will limit the development of the market making the process slow.

3. SUPPLY CONSTRAINTS

- the lack of sector identity
- the lack of communication
    - about initiatives taking place
    - about new technologies
- the project framework
    - the strength of the public sector
    - the lack of marketing vision
    - the lack of knowledge of its users
    - the self-sufficiency

The definition of an Action plan faces, also, the constraints related with the search of an identity for the sector and the inexistent communication among the major actual performers in the market. The inconsistency of this market

and the early phase in which it is (concerning the product cycle live), not allow the market to be considered an "Industry".

The definition of an action plan and a political performance with consistency, implies the existence of groups with well defined interests.

These groups will be the component that will assume an active role on the negotiation with the Official Institutions, in order to establish the interaction between the political Institutions and the actors of this sector for the feasibility and dissemination of a consistency definition of policies so urgently needed for this activity.

4. DEMAND CONSTRAINTS

- Getting used with new technologies
- Technological Culture
- Training
- The lack of an intermediate structure

Generally, the analyses undertaken, specially the one related with the sector studies have point out a reality, the interest and advantages of the new Information products, is not well disseminated among the different sectors.

The lack of a awareness is a very important constraint to new entrepreneurs, since it demands from the firms big efforts on Marketing and Publicity for its products.

On the other hand, the constraints resulting from the low level of training of the majority of the users of the new information services must be considered, being limitations to the users access to the information.

Finally, the information intermediate activities do not have yet a big role with the majority of the industrial Associations also not aware of the potential represented by the new means of information.

APPENDAGE II

A PLAN PROPOSAL FOR THE DEVELOPMENT OF THE INFORMATION MARKET IN LFR'S

1. EXECUTIVE SUMMARY

1. The national situation of the Information Services Market is charactized for its early stage of development, where the strength of the Public sector is quite heavy denoting a trend to increase in the short run. Also, the majority of the sectorial activities either economic or social, are not yet aware of the interest and the advantages proportionate by the new electronic means of information. Some others relevant characteristics of the actual situation are the lack of the sector identity as a new market, the non-existence of instruments for the information dissemination within the sector and the lack of definition of a political framework for this activity.

2. Concerning the major problems to face, they can be summarised as: the lack of synergies between the public and the private sector; the reduced number of projects developed by companies excepting in areas as Tourism and Videotex applications; the non-availability of Human Resources; and, the limitations due to the availability of telephonic terminals.

3. The present proposal for the dissemination of the Information Services Market, is based on the following assumptions: the objectives must be related with the role of the information Market in order to develop the Portuguese society; the strategic relevance on the affirmation of a national identity due to the internationalisation process of the economies; the defence of national culture and language aspects; and, the economic importance that the establishment of a Portuguese information industry will probably have with high margins of aided value.

4. In the framework proposed six strategic objectives are defined, in order to be part of the action plan to be developed: **i)** creation of a sector's identity; **ii)** training of human resources (experts and users); **iii)** increasing the international co-operation; **iv)** supporting the existent initiatives; **v)** awareness of the technological developments; **vi)** support to the market development.

5. It is proposed, as well, a strategy based on the investment in some systems with a potential structuring role of the market, which can be the base of the development process leading to a growth of the demand and offering conditions for the birth and nourishment of new initiatives. The selection criteria for such systems should attend to the present and future

dimension of the supply, to the projects dimension and its technical performances and to the existent political engagement.

6. This framework proposes a plan of action that includes four basic elements: **i)** horizontal actions that contribute for the sectorial identity and allow the availability of resources: **ii)** establishment of national systems that perform the structuring role on the markets development: **iii)** support pilot projects with the objective of introducing new technologies and exploit new areas of application for the information services: **iv)** supporting the market in order to proportionate access conditions on new information products to the users.

7. The implementation of this project assumes a political and administrative framework for this action to assure the co-ordination and dissemination of the several initiatives. This entity should perform, simultaneously, a normative role concerning the establishment of synergies between the public and the private sector, as well as the definition of standards to allow the compatibility among the different bases.

8. This plan should be articulated with the programme IMPACT 2, being oriented for funding the national plans proposed by the correspondent entities of each country or region, and without the demands of transnacional co-operation that characterise the community programmes.

2. LINES OF ACTION

Based on the upon identification of the strategic objectives. The following table presents the lines of action that shall be developed:

Strategic Objectives	Lines of Action
Proportionate a sector's identity	* Definition of a political competence * Establishment of communication channels * Definition of a Plan of Action
Human resources	* Training of experts * Training of users

International co-operation	* Strength of the Community cohesion *Co-operation with other Portuguese language countries: *Technical support * Training * Access to databases * Participation in multinational projects in areas like biotechnology, Materials, Tourism, Standards
Dynamize initiatives	* Synergies between the Public and the Private sector * Support to private "Hosts" * Access to information * Development of joint-ventures * Definition of standards * Compatibility among bases * Communication among bases * Co-operation promotion between projects * Synergies establishment * Cross fertilisation * Diffusion/Dissemination of initiatives * Support to the services Sector
Be aware of the technological trends	* Technologies acquisition * Pilot projects * Co-operation with investigation Centres
Markets development	* Information to Intermediaries * Access to terminals

3. ACTION PLAN

The Plan's proposal presented has the objective to identify measures and actions in order to develop the Information Services Market. The Plan is structured in 4 principal programmes corresponding to an integrated vision of the existent market problems:

- Horizontal Actions

- National Systems

- Pilot projects

- Support to the market

The table presented underneath summarises each of these programmes and its most important initiatives/projects to be implemented:

a) The horizontal actions include the initiatives under the surveillance of the following areas: training, studies' support, infrastructure reinforcement, establishment of an intermediate information network (including Associations and private entities), and the dynamization of action concerning the dissemination of initiatives taking place in the domain of information.

b) Concerning the National Systems in the short run, a special effort should be put on the tourists information systems, the juridical and the geographic ones and the establishment of a national catalogue. In the medium run, it has to be considered the progressive development of sectorial systems and the systems of information for statistics and economics.

c) The area of pilot projects contemplates the launch of projects in some sectors (Local Information, Education and Textiles), and the introduction of new technologies (Image banks, Hypermedia's, D.B.Full-Text and CD-ROM).

d) Concerning the markets' support, it is proposed the development of interfaces with the user, a distribution policy of terminals with low access costs and the support to the commercialisation costs of the bases.

Programmes	Actions	
1.Horizontal Actions	Training	Experts Users
	Studies' support	Of conception Of preparation Of market
	Infrastructure reinforcement	VTX Telephonic lines "Hosts"
	Information intermediate network	Support to associations Private intermediates
	Diffusion/dissemination actions	Seminars Technical information Projects diffusion Study tours
2.National Systems * Short run	Tourist information Juridical information Geographic information National catalogue	
* Medium run	Statistic information Sectorial systems Economic information	
3.Pilot Projects * Sectors	Local information Education Textiles	
* Technologies	Image banks Hypermedia's Databases Full-Text CD-ROM	
4.Market support	Interfaces	Gateways KIOSK Intelligent Interfaces
	Terminal distribution Commercialisation costs	

ANNEX 4

THE IMPACT OF IMPACT 2

by A. DE KEMP

Some Observations and Thoughts in the Information Technology Context

We are living in exiting times with hyper, macro, super and universal developments. Whatever you mention in information technology, it is being drastically changed, enlarged, improved, enhanced, broadened, comprimated and so on.

There are: SuperJANET, Digital Highways, Electronic Libraries, Virtual Reality Offices, Intelligent Offices. The future is multi-media and there seems only place for large and superlarge organisations if we follow recent mergers and take-overs particularly in North America. Telephone companies, cable companies, broadcasting and television companies, electronics companies and software producers build strategic alliances and other forms of cooperation to such an extent, that the Ministry of International Trade and Industry (MITI) has already been calling for greater co-ordination in Japan between the relevant ministries and industries and is now sponsoring an "information-network study group".

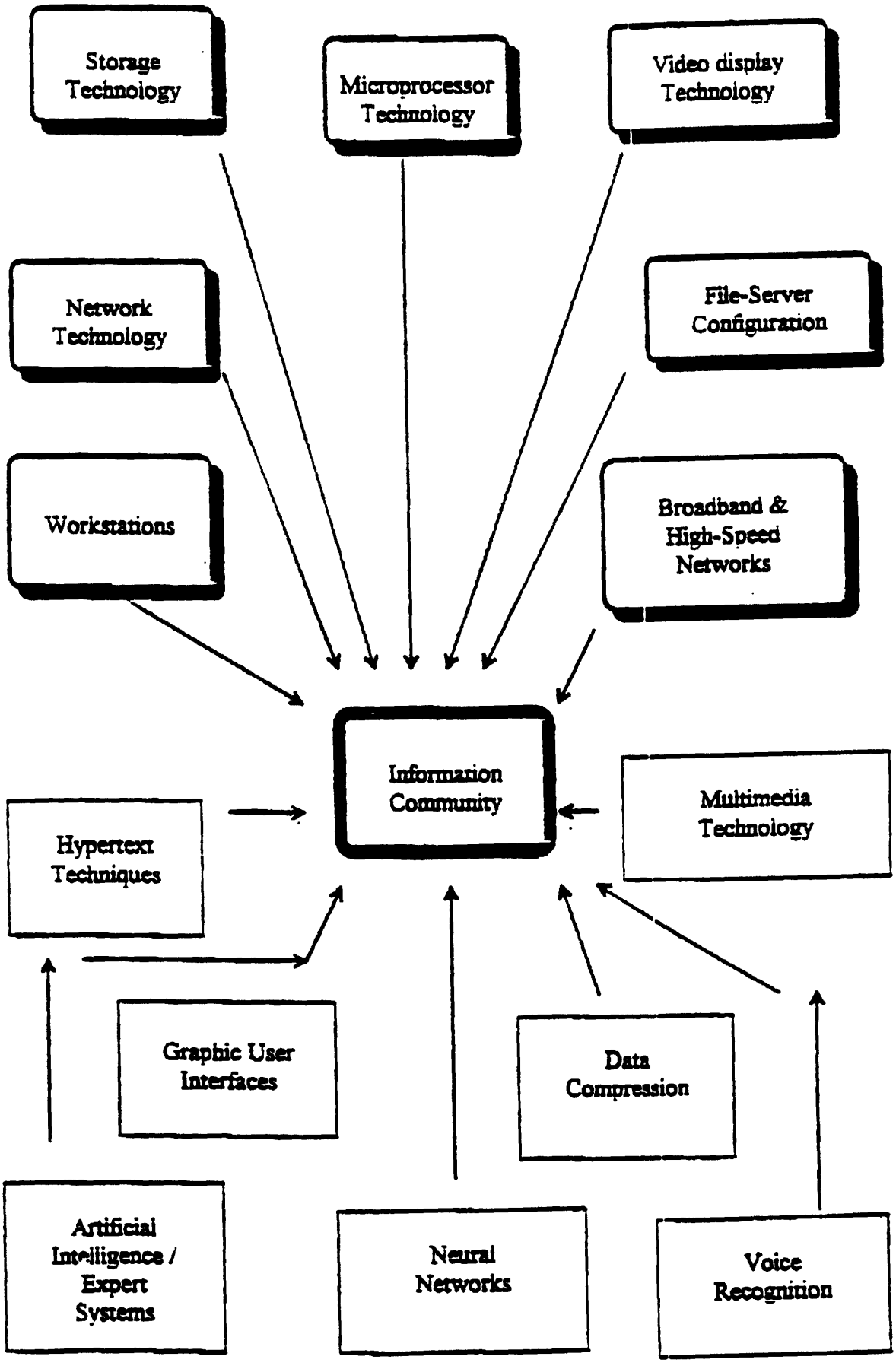
The digital evolution, which more and more resembles a digital communications revolution, is now full in place in North America and the Asia Pacific region and Europe may risk staying behind "because of poor foresight and coordination" according to Eric Benhamon, President of 3Com, in the London Business School's Annual Governors' Lecture recently.

Programs such as Impact II, which aim to improve the information market by developing policies, demonstrating projects and facilitating products, should therefore be on a more continuing basis and defined for shorter periods in order to be more adaptable to actual market developments.

Day-to-day professional reading provides an overabundance of information on new workstations, microprocessors (the Pentium chip and its competitors), storage technology (watch for instance the Photo-CD for photographers, advertising agencies and publishers), network technology, video display technology, the client-server configurations, broadband and high speed networks, data compression, multimedia technology and so on. They all will have a heavy impact on the information community as shown in Figure 1. (From: "Strategies in the Electronic Information Industry. A Guide for the 1990s." Second Edition. By Harry Collier.)

Technologies that impact electronic information in the 1990s

(Figure 1)



The Invention of Printing: The First Cultural Revolution

In 1448 Johannes Gutenberg discovered the art of printing applying movable type. His invention was unnecessary at the time as there were enough writers. Gutenberg called his invention "Artificial Writing" and he tried to keep it a secret. But soon it was known and imitated.
The art of writing and the art of printing had different supporters and the writers in their scriptoria (the oldest document delivery services!) feared for their existence as print took over very rapidly. By 1480 already 8,000 titles were available.

Soon it became apparent that the invention of printing was to start a cultural revolution that has lasted until our times. Books and somewhat later journals became the first mass media. Paper is still one of the best and most efficient media for the storage and distribution of information.

Libraries represent the collective knowledge of societies. Library catalogues offer information on the collection. Books, journals and other printed materials can normally be used for free. This is a very important socioeconomic aspect which seems to be in conflict with a lot of the so-called new or electronic media, which are only available for a fee. Another major difference is that printed information does not require any machines, computers or other devices.

This world seemed to be well under control, however recent times show too many indications that important changes are on the way. The growth of information seems uncontrollable, information technology shows new dimensions for storage and availability. Communication goes faster and faster and we must conclude that publishing and distribution has become a very costly business.

The Beginning of the Electronic Age

Electronic Data Processing (EDP) was introduced in the sixties and seventies, apart from scientific applications mostly in larger administrations. Since 1980 personal computers have started to make their way and within a few years doing your job without computers will be almost unthinkable. The evolution of hard- and software goes fast and will change every workflow.

The same computer can be used for the production and distribution of all kinds and forms of information. The introduction of DTP, Photo-CD, CD-ROM, LANs and WANs has already changed a lot and I suspect that this is only the very beginning of the electronic age.

The art of writing has changed. Here I should say scientific writing. Nowadays almost all scientists write with computers, with computers in mind or even for computers.
As we know, the volume of knowledge doubles every five years. Everybody active in science and humanities will want or will have to document his or her research results, preferably in printed form in a journal, in conference proceedings or in a book. There will be more books, more journals, more articles and you and I will be unable to stop this development. After all, it has been going on for far too long as Figure 2 clearly demonstrates.

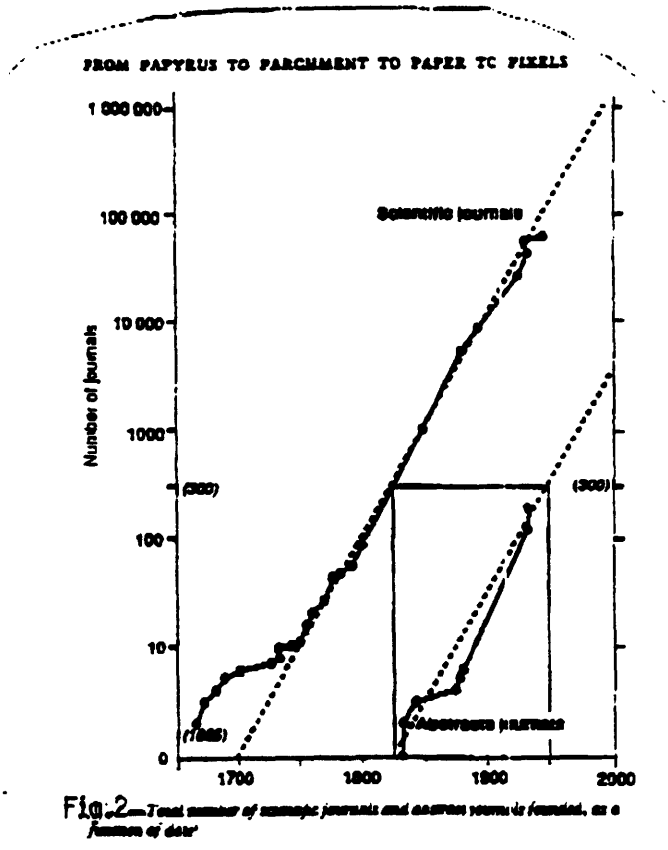


Fig. 2—

(Reprinted with kind permission from Stephen Lock (Ed.): The Future of Medical Journals. London, British Medical Journal 1991. ISBN 0 7279 0312 8)

We are confronted with an information paradox or with an intelligence bottleneck: too much information is being supplied and we seem to lose control. On the other hand, we need to know more and faster and we can no longer find and get what we want in an easy way. The first communication of information has shifted from books to journal articles, to abstracts and indexes and now to electronic tables of contents. Improved information and resource management might or should help. The fact is that we need to improve communication by developing new tools and methods for the accessibility and retrievability of information. At the same time, we have to change education and make students aware of the many different resources. In Germany, several billion Deutschmarks are lost every year because of incomplete or insufficient research in the area of patent documentation.

Electronic Publishing: A New cultural Revolution?
Since the foundation of the first two journals in 1665 this type of publication has become more and more important. Nobody knows exactly, but there must be between 150 and 200,000 scientific journals in all colours including many shades of grey. No library has a full collection. Perhaps the British Library has the largest collection, closely followed by the National Diet Library in Japan. In the meantime, the National Diet Library might be even larger. The growth in the total number of periodicals seems to be slowing down due to a larger number of titles dying or because of mergers. The high quality, most cited journals grow in volume and henceforth in price. From a worldwide perspective, the number of subscriptions decreases, which means that the average number of copies per title will be lower. We call this erosion. Some titles are not hurt, others suffer and they may first become very pricy and then disappear for economic reasons.

The purchase of Monographs shows, with the exception of student books, even more negative trends.

In this context more and more people (scientists, publishers and librarians) think that electronic publishing might solve all or at least most of these problems. If you put together all of the different elements of existing information technology and telecommunication, a new, better controllable transparent digital world will bring us what we need when we need it. Time and distance are no longer a problem.

We see a steady growth of electronic publications:
1. according to Cuadra 5.300 online databases (August 1992)
2. according to TFPL 3.600 CD-ROM and multimedia titles
3. according to ARL 45 electronic periodicals, 195 electronic newsletters and 1.152 electronic discussion lists. The ARL Directory of April 1993 shows an increase of 60 % in 10 months.

Approximately 95 % of the world's scientific information and documentation appears in print, on paper. Already in 1996 this will go down to 86 %. 8 % will be optical, 2 % will be digital and microforms will keep 4 % according to a survey by the Fraunhofer Gesellschaft in Germany. That is a tremendous increase if we take into account the total growth of information per year.

Probably the best known electronic journal is "The Online Journal of Current Clinical Trials", a joint effort of OCLC and AAAS. There was a lot of interest at the beginning, but it seems that we are waiting for more contents. Additional titles have been announced: "The Online Journal of Knowledge Synthesis for Nursing and Electronic Letters Online", published by the Institution of Electric Engineers. Most electronic publications will be in the hard or natural sciences: Physics, Chemistry, Mathematics and in Medicine. Here facts are more important than discussions and research results are being peer reviewed. The international journal "Science" reported in February 1993, that the Bulletin Board Project of the American Physical Society attracted 8,000 regular users in 12 months time and physicists already exchanged 600 preprints per month electronically. Goodbye to Gutenberg?

Networks: Information or Communication?

Give everybody a free telephone and the whole world will be on the phone. At least theoretically. Give every academic free access to academic networks and he or she will go online. That is what happened with Internet, the protocol, that connects all academic networks. Communication goes, unlike the telephone where you normally connect two persons, in a dialogue from one person to however many via electronic mail, bulletin boards and electronic conferences. Until now, the universities or national science foundations have paid for it. In the USA now first plans are being made to privatise Internet.

The number of users is growing exponentially. At the moment approximately over 1 Million computers are connected and the number of users is probably more than 20 Million. The Online Bookstore in the USA now offers electronic books on Internet. The first book "The Internet Companion" with an introduction by Vice-President Al Gore sold 6,000 copies in the first weeks.

Internet shows how communication might work in the future, but it offers, in its present state, more stardust than stars and regular users, after early excitement, find that they get lots of characters and little information. Apart from that, information is not yet knowledge.

But the direction for the future has been shown. The faster the networks the broader the capacities, more and more information will be transported at low cost and high speed. Time and distance are no longer an issue. Information will become faster and cheaper. The road will become a motorway or highway.

The first retrieval and navigation systems are now available: Archie, Gopher and WAIS (Wide Area Information Server). WWW (WorldWideWeb) is a hypertext system developed by CERN in Geneva. Its idea is very ambitious: to create a network of hypertext links and webs. First standards are being tested: HTTP (Hypertext Transfer Protocol), HTML (Hypertext Markup Language), Hytime (Hypermedia Time-based Structuring Language). Experts are discussing the role of Knowbots (Knowledge Robots), which work like automated information specialists that go from source to source and present the required information.

If you travel to the USA, you will have discovered that your colleagues now ask for your Internet address. The USA is building the National Research Educational Network (NREN), at the moment the largest ISDN. In Europe we can expect a EURO-ISDN by the end of the year and the new research, technology and development (RTD) programme of the European Commission for the period 1994-1998 foresees a European Information Infrastructure. The name was phrased by Jacques Delors at the Copenhagen Summit in June 1993.

The worlds of computers, printing, publishing, photography, film, television, entertainment and telecommunication will merge in a variety of ways and nobody knows what will come next. Learning will become Infotainment, knowledge will be knoware and we will all use telecommunication: copper wired, with fibre optics or wireless. Hardware and software companies may add professional contents to their programs, as Microsoft is doing with textbooks. Photography enterprises may offer encyclopaedias on photo CDs. Nintendo will go into the CD-ROM business.

Software for image editing is available (Photoedge, Shoebox, Renaissance) and there are excellent packages for storage (PhotoShop). Library networks (e.g. Meridian's CD Net) can already handle Photo CDs.

On the whole we see that information is becoming platform independent and is more document oriented. The new software Acrobat (announced as Carousel) from Adobe, the inventors of PostScript allows for the handling and transportation of documents on and between different platforms.

What remains is quality. We will rediscover quality in the selection and presentation of information as we were used to with books and journals. The development of SGML (Standard Generalized Markup Language) for the first time allows for document type definitions and a systematic structuring (tagging) of the information content. Having done that, we can apply new methods for accessibility and retrievability by introducing automatic indexing and the construction of meta files. With these new tools we arrive at the information we are looking for, and what we would like to receive is a well-presented, well-documented (authentic, integer) document. This may be found around the corner in the library or can be ordered online.

Finally we may discover that information is far more valuable than the applications used to capture it and deliver it. This knowledge will change our perception of information.

Future programs should be even more concentrated on:

* information-transfer and related information-services
* information resource and document management
* the transition from paper-based to electronic media
* the development of integrated information systems (its Directorates and Offices and through one or more European electronic media laboratories)
* the use of networks for data communication, discussion lists and electronic publishing
* the development of standards
* quality management

The information market will much benefit from enhanced and improved products and services that have a wider appeal and will help to stimulate European competitiveness.

The information chain is still far too much focussed on production and distribution. More attention and development support is needed for

- authoring and editing systems
- retrieval/navigation methods and systems
- filtering systems that deal with the information overload
- accessibility of information
- language and translation systems

A very - if not the most - important aspect is the influence on curricula in library and other schools that educate modern information professionals.

A permanent R&D-Panel is recommended to provide the European Commission with comprehensive and up to date information.

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ANNEX 5

NEXT STEPS FOR IMPACT II

by R. LISCIA

NEXT STEPS FOR IMPACT II

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THE INFORMATION BUSINESS

- With the new media some area of publishing will have a higher development: reference books, STM, catalogues, products for training...

- New means of advertising will have to be developped and they will necessary have to take into account the interectavity.For that reason those means will have the advertising content strictly related with the publishing content.

- The combination of on/line and off/line technology will provide new means to the direct marketing business that in Europe is increasing faster than the traditional advertising business.This imply that the designing of the new products will have to integrate the advertising as part of the editorial content.

- The on/line and off/line technology will shorten the distance between the authors and the users shortening the timing between creation and consumption compared to the traditional publishing process and overcoming the phisical barriers.This will enable authors far away each others to partecipate to the same project at the same time and the users will have the opportunity to react in real time partecipating to the creation process.The opportunities related with this new way of production is already well known in the software business.

- The electronic publishing will accelerate the separation between the publishers and the printers.Printing and publishing were up to-day, in Europe, strictly related but more and more the two businesses are becoming independent due to the greater differences in skills and technologies between the two areas in the electronic business.

- New players are entering in that business: hardware and software producers, television,...Among them we have to remind the telecom companies who are very active in trying to bring new value added services to their original business.

- The technological progress is creating the premises for a "multipublishing " means which will change completely the concept of "publisher".In other words, the traditional publisher's role to propagate culture and ideas will be enriched with the task of choosing the right distribution means.It is possible to understand the economic importance of this trend and the reason of the recent joint ventures

occurred among non publishers and traditional publishers.In this context the publishers have the opportunity to play an important role on condition that they leverage on the advantage of having the know-how that is the main entrance barrier more important than the technological capabilities.

- The distribution will be affected by the new products. Old channels, not necessarily and only the bookstors, will distribute the electronic products/services. Among them some are already starting: consumer electronic shops, kiosks, hardware and software outlets, direct marketing....; as in the video rental business new specialized channel and chain will grow up.

- The electronic products will be by far more complex with regards the acquisition of rights.The great capacity of storage of the new means and the necessity to merge text, audio, fiction..,involve the need to acquire and deal with different sources of information; and often the content to be acquired is limited.

- In this fast changing environment that market can be roughly divided in two major segments:
  - business information
  - consumer/home

- The purchase process in the business information sector is driven by the value added content supplied and perceived by the end-user .The development of that sector is driven by the market.

- The home market is driven by innovation and new products: the walkman is an example of what I mean .This is a market mainly driven by the offer/supply.

- In the last years there has been a large increase of the business information sector. Most of that development occurred in the United States for many reasons:
  - the large diffusion of PC in the offices
  - the decrease in the cost of electronics
  - the large availability of public dominion business information
  - the strong competition among companies
  - the wideness of the market
  - the awareness of the companies that good and timely information increase the competitive edge

- Because of that the companies have been willing in recognizing in the price the value added brought by the information providers

- The United States have reached ,in that sector, a leading position which has allowed them to export in Europe their know-how and services.

- The European market is still very fragmented :national boundaries ,linguistic barriers, low cross-border competition, technological barriers in the European networking; those are some of the reason for the difficulties in the creation of a European business information industry competitive in the international arena.

- Particularly the language differences in Europe will be a constrain to the development of new products being the markets fragmented. That imply longer term to recover the investments compared with the american market.On the other hand that will force the publishers to design the products with multilingual features .

- It would be a mistake to follow in Europe the same pattern of development followed by the United States .A direct confrontation would lead to a waste of resources. New ways and opportunities have to be investigated leveraging on the European specific strengths.

- The huge US market has turned out being a great opportunity also in the home business for the US and Japanese companies:
  - the one language market facilitates the quick recover of the investments in the electronic publishing industry.
  - the presence of the largest fiction industry of the world provides great part of the content for the new electronic products.
  - the new alliances between Japanese and US companies are, further on, moving away Europe .
  - the great number of cabled TV , game electronic drives and PC installed in the US homes (40 million of Nintendo) will foster the growth of that industry.

- In that sector the major key success factors are:
  - the ownership of the publishing/information content.
  - the capability/know-how in designing the new products taking into account the opportunities offered by the new electronic media.

- new marketing approach and distribution channels.

- What of that is available in Europe ?:
  - most of the arts and literature are present in Europe and that represents an incredible advantage that needs to be exploited leveraging on the new technologies
  - there is a wide range of private and public bodies which control those properties (publishers, TV/Film industries,States,etc..)
  - all the skills useful are present: the electronic industries (Olivetti,Bull, Siemens, Philips, etc.), the software industries , telecom, cable/TV, publishing/printing
  - new distribution channels are coming along:minitel and FNAC in France are an example

- What are the key success factors?
  The main problems are not technologies, which are largely available, but ideas and the organization to put them in practice.The ability of nowadays publishers, often in collaboration with hardware and software producers, is to catch a need, evident or not, to find out the fit technology to satisfy it and to offer, at the right moment, the fittest publishing product by a suitable distribution means.

- What are the constrains?:
  - the research for the development of new products is low in comparison with the US and Japan
  - the different players are unable to do common investments exploiting their complementary capabilities
  - each entrepreneur is sticking with the industry in which he is in
  - no investments are made in training the new experts

- An important role can be played by EEC :
  - to facilitate the cooperation among the key players
  - to determine and finance major projects which can drive the key changes necessary to accelerate the development of that industry
  - to create a "platform" as a reference point with state of the art skills and competence to help the cooperation among players and the development of new products (EUROMEDIALAB)
  - to set-up an "information bank" for the transfer of information and technology from the US and Japan to Europe.

EUROMEDIALAB

PUBLISHING AND RESEARCH

Europe has a strong publishing industry and several internationally respected research and development organisations working in areas directly relevant to the publishing and information industries.European, national and CEC programmes have supported numerous projects concerned with improving publication processes, standardization, and developing new technologies that should bear fruit in new media products.

In spite of these positive conditions, available expertise in new media publishing takes a long time and route, often via Japan and/or the US, before it is reflected in electronic publishing processes or new media products. Technology transfer is not optimal under present arrangements.

Researchers sometimes perceive publishers to be over cautious and slow to take up novel ideas; publishers often perceive researchers interested in topics too far removed from the market.This is not because researchers fail to understand that publishers need to run profitable businesses, nor because publishers fail to see the need for research. With the exception of isolated successful collaborations, there is no focussing mechanism for interaction between publishers and research organisations to identify problems whose solutions are both commercially useful and technically feasible.

Faced with opportunities arising from new technologies, publishers, like other industries, are confronted with a "chicken-and-egg" problem. Unsure of the duration and cost of the learning curve, many have only limited resources for judging new market or product opportunities. The pace of innovation makes "keeping up" a significant consumer of time and effort. Moreover publishers traditionally have not had research departments of they own.

Similarly, research establishments do not have production facilities. Typically, a publisher working with a research centre must expect to receive a prototype, not a product. This would be acceptable if there were a structure and mechanism

whereby the results could be transferred with minimum of cost and delay to an organization that could carry out production trials and actual production.

Publishers are willing to work together on pre-competitive issues, but it must be recognized that publishers will often want to see the solutions applied to their own publication processes or products. Thus, while publishers have common problems, the solutions may well have to be demonstrated in separate applications that are no longer pre-competitive. Any structure seeking to further development of new media solutions must take the publishers' need for independent publication development into account.

Publishing is a distributed cooperative activity, but the key role of communications, both in the processes and as part of distribution, is rarely reflected in joint projects. The awareness of the need for interchange standards and the use of special communication facilities in some areas of prepress and printing have not led yet to the establishment of communications structures that can become an integrated part of publishing experiments.

THE EUROMEDIALAB APPROACH

The key aspects of the approach to above problems are as follows:

- The interests of the partners involved - publishers, hardware and software suppliers, researchers etc. - are diverse and must be recognised as such.
- Euromedialab will fail unless it caters to the interests of all partners to promote a framework in which the common goal can be met. This will require change in the relationship between publishers and existing research centres and the exploration of new centres.
- New media publishing prototyping and production demand expensive equipment and resources. Where expertise, and research capability exists, rersources need to be shared to overcome the cost barrier to addressing budget containment.
- Having centres of expertise work on distributed applications is the best way to share cost, expertise and resources.
- Technological research and development must be complemented by other expertise, such as design, editorial, production and marketing.

- Mechanisms for moving from prototype to product must be made accessible and new facilities are required for developing editorial skills and structures.

- A boost in the form of innovative projects is required to avoid the risk of European publishers staying focussed on their traditional products and processes and thus failing to take advantage of technological developments (and markets for these applications of new technologies), allowing the - sometimes more technologically advanced - competition to fulfil a growing market demand.

To fulfill these requirements, Euromedialab will be a network of centres working on new media publishing. The network will consist of both existing and new centres of expertise. They will work with their clients (principally publishers, but also communication service providers, computer hardware and software companies, and other owners of intellectual Property Rights - IPR, etc.) to facilitate growth of the European new media publishing industries.

This will provide the environment of basic facilities and technologies upon which Eurolab applications can be installed, integrated and developed.Examples of such centres are Pira, GMD-IPSI, INRIA.

More than simply a resource, the Eurolab concept is one of shared skills and resources to enable the development of a broader European new media publishing industry. The existing client/service provider relationship will develop into one of joint participation in development of new media products and processes to serve the expanding and changing user needs for information (business, news, education, entertainment, libreries, etc..).

The centres will provide research resources, technology, product knowledge, market and business expertise, while the publishers will provide content material, editorial and business direction, and problem definition to guide and test the product and process research. The publishers whose markets these new products and processes will serve, will provide a lead by specifying the commercial criteria which new market-serving solutions must meet.

By working on pilot applications with publishers, eurolab will reduce the problem that confronts publishers when they are faced with opportunities arising from new technologies but are unsure of the market development costs. By sharing resources and building on the results of multi-client, pre-competitive projects, Eurolab will provide a platform suitable for use in initiating and managing projects in the

publishing area, in conjunction with the very publishers who will be able to capitalise on the markets for the resulting products.

To implement this approach, the following general steps are foreseen:

- existing centres to set up Euromedialab cooperation and define, in conjunction with publishers, a number of initial research projects;
- identify work areas not fulfilled by existing facilities (in particular a market/editorial oriented research facility) and encourage the development of the needed resources within existing centres and at new sites;
- pursue cooperation of computer (hardware & software) suppliers, telecom providers, consumer electronics (and others where appropriate) manufacturers in the development of the new media products and processes;
- establish mechanisms to test results through market, industry and peer feedback, to gauge usefulness and effectiveness of the Eurolab, and thereby set up a feedback loop for the development of the concept;
- with continuous contact between Eurolab and its markets, build on shared experience to create both a knowledge base and a system for coordinated research and development;
- put proposals for the implementation of Eurolab to CEC and other funding agencies.

EXTENDING THE SCOPE TO A NEW CENTRE

Purely technological R&D research does not meet all the needs seen in the aims of publishers. Publishers are aware of opportunities offered by the various new media technologies, but are unsure whether the cost/return ratio of investment in new processes and media balances out in favour of investment of energy and resources now. Such opportunity must be editorial and market driven. It is suggested a new Centre may be needed for this work.

A feasibility study is needed to define a new research centre offering a means of sharing development cost with either publishers at a pre-competitive stage or with other (non-publisher) industry players that have an interest in parallel. A typical, and current, example of the latter would be the various computer hardware and consumer electronics companies who are developing platforms for new

media/multi-media published product for which there is, as yet, little content product to use the hardware nor indeed clearly identified demand for the product.

In concert with technologically oriented media centres there should be a new media centre where product ideas are worked out; where authoring systems can be developed and tried, and where prototype products can be displayed and demonstrated for testing by potential customers.

This is a place where a publishing company can send an editor, who has some sense that there is a market opportunity that could be fulfilled by a new media product, to brainstorm with hardware and software specialists from the platform producers, in tandem with interface personnel ("facilitators") who would be on the Eurolab to develop marketable ideas.

Such a centre, with the right sort of staff and environment accessible, could stimulate the early stage process of market identification and product design. This is obviously an iterative process that combines knowing where existing products are not fulfilling market demand and knowing the possibilities of the new technologies.

Other roles that such a centre should play are:

- A New Media Arcade:
  - for publishers to try out hardware
  - for potential customers to try out prototype published product
  - a paperless library: where a sample of every new media product could be stored for trial or testing
- A Multi Industry Forum: for hosting events where early adopters from various backgrounds could discuss trends, new ideas, or form relationships which may spawn businesses; such a forum might act as an interface for all these players.
- A Business Development Centre: where small publishers with good ideas but a shortage of resourcescan be guided to money or other appropriate resources to help them get into business.
- A Training Centre: where new production, process skills can be learnt.
- An Education Centre: where information managers, editors and communication managers can catch up on the latest methods of accessing, collating, distributing or using information for competitive advantage.

- An essential point is that the facility described here should not feel like a technical R&D facility, but should be a centre with which publishers and their editorial personnel can identify.

- For this new facility to be created an initiative would be required for funding by publishers, manufacturers and public funds. For this to happen a feasibility study is required.

Roberta Lizza