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Study on Assessing
the Present Situation of the Markets
for Electronic Information Services
in Greece

MSSTUDY

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It is the Greek contribution to the Study for assessing the situation of the markets of electronic information services for professional purposes in the member states of the European Economic Area.

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1. Executive summary

As Greece was one of the participating members in the pilot phase of MSSTUDY, all three levels in the MSSTUDY 2 were selected to be covered.

The research was based on the following methods:

1. Questionnaires

The Quantitative research for the supply and demand side was based on questionnaires according to each target group.

2. Interviews

Interviews played a significant role in order to elaborate the results of questionnaires. Key-Persons as well as competitors in every sector of suppliers interviewed, offered significant progress to the study.

3. Studies or Articles, Inventories, Statistics

Desk-research was the third technique used in order to get closer to the market.

Things to-be-done was **cross-checking** of the results of the three methods as well as between data gathered from each one separately.

Summary results, figures and indicators of the MSSTUDY are presented bellow regarding Supply and Demand side and Qualitative indicators in a manner similar to the MSSTUDY report presentation.

Quantitative Analysis of the Supply side

Categories of suppliers

Suppliers were categorized according to their main activity. This was a difficult procedure due to the fact that suppliers in Greece are dealing with more than one activities mainly whenever their legal status is SMEs. For example a supplier offering online access to a database may as well produce CD-ROM titles. The main activity of a supplier was taken to mean this activity that has the major percentage of revenues. The categories of suppliers in the study are:

- **Suppliers of Online Electronic Information Services**
 1. Suppliers of *Real-time* Information Services which means
 - Suppliers of Financial information
 - Newswire agencies
 2. Suppliers of *Retrospective databases* offering
 - Credit information
 - Other economic information
 - Scientific / Technical / Medical Information
 - Videotex Services
 - Others
- **Suppliers of Offline Electronic Information Services**
 3. CD-ROM Producers/Distributors
 4. Distributors of Other offline media

Respond rates and representativity of total specific market - category

Among the sixty four (64) suppliers identified, thirty (30) are offering online electronic information services and the rest thirty four (34) are offering offline electronic information services in form of CD-ROM activities (production or distribution) or S/W development and diskette distribution. The main part of the respondents (70%) are employing up to 30 full-time employees. The rest 30% employ more than 50 and up to 500 employees in all departments, including those that are not related to electronic information services, even though their relevant to electronic information services departments are occupying up to 30 full-time employees. Respondents are representing 33% of the total population for the supply side.

Categorizing respondents by type of services they offer, we get:

- 13% of the total population of CD-ROM producers-distributors representing 70% of the CD-ROM market shares.
- 50% of Videotex providers representing 40%-50% of Videotex market shares.
- 33% of Retrospective database suppliers providing electronic information services representing 80% of the market shares.
- 33% of Suppliers of real time services, representing 70% of the market shares.
- All other parts of the suppliers' side (e.g. AUDIOTEX) should not estimate a percentage of the market shares.

Total Revenues of Electronic Information Services Market

As a first result of the data gathered we have the total Electronic Information Market revenues in Greece, a market that grows in a fast rate, which can be estimated in **64,85 MECU** for 1994. In this figure are included **both** *Revenues of Domestic Suppliers from Domestic Use*, plus *Revenues of Domestic Suppliers from external Use* (that is revenues from services offered abroad from Greece).

Revenues according to each supplier category

The major part of revenues **50,33 MECU** for 1994, is concentrated to companies or organisations classified (according to their major activity and the above mentioned categorisation) as Hosts retrospective Suppliers. Much lower seems to be the total revenues of all the other suppliers. Internet Providers and E-mail services providers are the second most important type of suppliers, showing revenues for 1994 **8,33 MECU**. News wire agencies, credit information etc., denoted as Hosts real-time, present **4,76 MECU** for 1994. Videotex services presented **0,33 MECU** revenues for 1994. The CD-ROM market revenues are estimated in **3,12 MECU**, although the sector of CD-ROM oriented suppliers presents **1,09 MECU** of which only **0,6 MECU** is originated from CD-ROM products. Hosts retrospective sector has a significant presence in this market with **2,52 MECU** revenues from CD-ROM activities.

No relevant data were available for Audiotex services for 1994 as these services are currently under development or restricted to Entertainment, Astrology etc.

Revenues according to subject area

Scientific / Technical / Medical information services collect 35,56% of total revenues, that is **23,06** MECU. A large part of revenues, 23,62% concerns legal information that raises up to **15,32** MECU. Government information and political news concentrate 16,23% of total revenues, and **10,52** MECU. Finance/Stock exchange/Banking collects 7,76% of total revenues, and **5,03** MECU. All other subject areas concern under 2 MECU each.

Overall figures

Although data collected during the study presented total revenues in Greece from Electronic Information Services to be 64,85 MECU, some other factors have to be defined. This figure shows, as explained, total revenues from EIS of Domestic Suppliers from **both** domestic and abroad use. That means that in this figure are included Exports of Electronic Information Services / Products. Exports have to be defined separately as a factor, as well as revenues of domestic suppliers from domestic use. Therefore we define **A** to be **the Total Market Revenues**, a factor that must be calculated according to:

- **B** defined as **Total Revenues of Domestic Suppliers from Domestic Use** a factor that is **51,88** MECU
- **C** defined as **Total Revenues of Domestic Suppliers from Exported Services / Products** and raises up to **12,97** MECU
- And **D** defined as **Cost of Use for Services / Products of Foreign Suppliers** and is estimated to **11,77** MECU

The previous analysis leads to a result that *Total Market Revenues in Greece* are *Revenues of Domestic Suppliers excluding Revenues of Domestic Suppliers from abroad use plus Cost of Use for Services / Products of Foreign Suppliers*, that is

$$A = B - C + D \quad (1)$$

Hence, according to (1) we have that

Total Electronic Information Services Market Revenues in Greece for 1994 are 50,68 MECU.

Ratios

According to the factors defined in the previous paragraph, we can induce some ratios that characterize the Greek Electronic Information Services Market.

- **Export Ratios (C/A)** showing revenues from Exported Services or Products with respect to Total Market Revenues is **25,6 %**
- **Import Ratios (D/A)** showing cost from use of Foreign Services or Products with respect to Total Market Revenues is **23,2 %**
- **Export Ratios of Domestic Suppliers (C/B)** showing Revenues from Exported Services or Products with respect to Revenues from Domestic Use of Services or Products, is **25%**

COST analysis

Total Expenditures of Greek Suppliers of Electronic Information Services are estimated up to **58 MECU**. According to the type of Suppliers, we have that the major core **63,22%** of this amount is concerning Hosts Retrospective and is estimated in **36,67 MECU**. Following type is Electronic Mail Services and Internet Providers with **7 MECU** expenditures that is **12,7%** of Total Costs. Hosts for real-time Services presented **6,67 MECU** Costs, that is **11,49%** of Total Costs. CD-ROM distributors are showing **6 MECU** costs that is **10,34%** of Total Cost.

Categorizing Costs, we have as a result that the major part **50,52%** of Total Costs, that is **29,3 MECU**, concerns Staff Costs. The next costly category is Technical Operations, showing **10,11 MECU** that is **17,43 %** of total costs. Investment Expenditures are **6,87 MECU**, that is **11,84%** of total costs. Costs of Data Gathering/processing and of Sales/Marketing Activities are of the same height **4,92** and **4,93 MECU** each, that is **8,49%** and **8,51%** of total costs respectively. Costs for user service/training and other costs are remaining bellow **2 MECU**, about **3,2%** of total.

Human resources

The estimated number of Full - Time Employees in companies / organizations offering Electronic Information Services, is **1500**. Among them, **350** are working in **46** companies occupying 1 to 15 employees. In companies occupying 16 to 50 employees are working **310** employees and **707** are working in **2** companies / organizations with more than 100 employees.

According to Type of Suppliers, **956** employees are working for Hosts Retrospective, **90** for Host Real - Time, **36** for Videotex Services about **100** in Electronic Mail Services, **105** for CD-ROM producers/distributors and **80** for Other Suppliers.

The major part of them, **911** employees, are Technical Staff, **165** are employed for Data Gathering / Editorial, **147** are in the Management / Administration sector, and **136** are in the Sales / Marketing sector.

Geographical Analysis

The major part of suppliers 92% are concentrated in Athens and the wider territory of the Capital. About 5% are located in Thessaloniki, and 3% including several branches, are located in the rest of Greece. The main part of revenues, 80%, comes from the domestic market and only 20% come from abroad, that is 10% from other EU countries, and 10% from EFTA countries and are concerning mostly Hosts retrospective suppliers. The CD-ROM market could be expanded in the rest of the world with multilingual titles concerning Greek culture. This is the main focus point of Greek multimedia developers.

Qualitative Issues for the Supply side

In terms of revenues and turnover, a concentration of the EIS Market in 2-3 companies holding 80% of the total market shares, is observed. Nevertheless more than sixty SMEs, currently activated in less related markets, are entering the EIS market, covering special sectors e.g. multimedia, training s/w, INTERNET services.

Eastern Europe infrastructure on the other, tempting Greek suppliers to focus their interest in its area. The reasons are neighborhood, lower labor cost, appropriate know-how from Greek side for the confrontation of problems and troubles arising from the economic situation, the level of development and infrastructure of these countries.

Content concerning fields, like Culture and Tourism, is considered the most potential sector in the Greek EIS Market. It is not by chance that the first multimedia CD-ROMs are concentrated in these two fields.

The shortage of computerised data, the small market size in combination with the restricted usage of Greek language to more or less 11 million inhabitants plus 7 millions Greek speaking population, spread in all five continents, are the main weak points of the Greek EIM. The translation of the content to one more language (e.g. English, French, German) for products addressing to external markets raises the cost of products/services development (databases, CD-ROMs) and the risk of cost non recovery.

Quantitative Analysis of the Demand Side

Information Brokers

Electronic Information Brokering in Greece can not be characterised as expanded activity by no means. Although there are nine (9) entries in the I'M GUIDE Catalogue, from those nine brokers only the half part has a somehow active role in the Information Market and only one responded the relevant questionnaire,

Greek Brokers had revenues for 1994 coming from Electronic Information Services brokering, matching less than 50% of their total revenues.

Nevertheless if one can include in what an information broker means, representatives of foreign or International Hosts and non profit organizations then some figures can be obtained.

The main part of these companies, 90%, are in the private sector, and the rest 10% are public or non-profit organizations with respect to their legal status.

An estimation of total revenues/turnover of information brokers in Greece is **2 MECU** from which **1,8 MECU** are expenditures. General expenditures of these companies/organizations rise up to **10 MECU**, something that reflects that Electronic Information Services Brokering is not their main activity.

The following table should make this clearer:

| | <i>% of total companies/organizations</i> | <i>Revenues from EIS</i> | <i>Expenditures for EIS</i> | <i>General Expenditures</i> |
|--------------------------|---|--------------------------|-----------------------------|-----------------------------|
| Private | 90% | 1,3 MECU | 1,2 MECU | 7 MECU |
| Public/non-profit | 10% | 0,7 MECU | 0,6 MECU | 3 MECU |

Bank Sector

Thirty eight (38) departments related more or less to electronic information services were contacted. Responses achieved a percentage of 58%. Full useable responses had a percentage of 34%.

The total estimated budget for electronic information services in the bank sector, is rising up to **20 MECU** with an estimation of total expenditures for electronic information services up to **1,5 MECU**. This fact is showing an inballance, resulting from the overcoming technical/technological development of the relevant departments' infrastructure, regarding mashines and mechanisms as well as human resources.

Information sources / media channels used

Potential users indicated printed media as the most common channel for information as **47%** use them more than 50% as a source of information. Furthermore **47%** of the respondents use printed media more than 10% but less than 50% and only **18%** use them less than 10%. No one indicated that printed media was never used as a source of information.

Second most important source of information seems to be internal or external online information services as **41%** of the respondents use them more than 50%. A high percentage of respondents **47%**, use external online information services less than 50% but more than 10% and there is a part of **6%** that never used internal or external electronic information services.

Significant use of CD-ROM as information source was indicated too, as **47%** of the respondents use CD-ROM less than 50% but more than 10%, eventhough that **12%** have never used such a source. A small portion, **6%** use CD-ROMs more than 50% as an information source.

Personal contacts are used more than 50% by **29%** of the respondents, less than 50% but more than 10% by **35%** and less than 10% by **30%** of the respondents. No one answered that have never used personal contacts as an formation source.

Information needs according to subject area

The highest percentage of respondents, 41%, indicated their need in STM information more than **50%**. More than **10%**, less than **50%** of information needs was indicated for Company profiles and credit ratings by **36%** of the respondents. For bussiness and economic

information and for Patent information, the percentage of respondents was more than 30%. Information needs for Company profiles and credit ratings more than **50%** but less than **75%** was indicated by 12% of the respondents.

Barriers of use

Budget reasons are indicated as the most important barrier of using EIS by **50%** of the respondents. The second most important one is seems to be Lack of experienced staff, indicated by **47%** of the respondents. Technical barriers or Lack of user friendliness do not consist important barriers. **53%** of the respondents find the information they are looking for in most of the cases and **60%** of them have no Language problems. Prices for host services is not a barrier for **47%**. **53%** does not encounter in their barriers Network deficiencies. The majority characterised Staff costs as not a significant barrier.

Qualitative Issues for the Demand Side

The Low level of usage, forces the Greek suppliers (and sometimes the foreign suppliers) to decrease prices of products or services in order to enter themselves in the Greek EIS market. These kind of product/services seems to be of high supply elasticity. This happens because suppliers expect that generous decrease of price will cause increase of total revenues due to large scale of sales.

Risk of Copyright law violation, leads suppliers to adapt reasonable prices (e.g. OTE) in order to make customers to prefer legal titles than illegal copies. Furthermore, suppliers differentiate prices for special target groups (lawyers, engineers, academicians etc.)

On the other side, prices of network services are lower than other EU countries, especially for Internet connection, permitting Greek users to access EIS more easily and cheaper (in terms of telecommunication costs) than other EU users. Indicative prices for Internet access are 40 ECU per month for two hours connection daily.

The main barriers for using EIS are depicted to be budget reasons as well as Lack of awareness from the user side of view. The last one proves the need for Training in EIS as an important tool for the promotion of the usage and the incorporation of these services in every day operation in a company.

2. Introduction

As Greece was a participating member in the pilot phase of MSSTUDY, all three levels in the MSSTUDY 2 were selected to be covered. As a consequence, Greece had to perform Quantitative research for the supply and demand side of the national target markets as well as Qualitative research of all other parts of the national information services markets and of the institutional, technological infrastructure and economic political environment

The research was based on the following methods:

1. Questionnaires

The Quantitative research for the supply and demand side was based on questionnaires according to each target group, namely *The Suppliers*, *The Information Intermediaries in Banks*, *The Information Brokers* and *The End or Potential Users*. The questionnaire for End-Potential users was translated in order to make it more efficient for response.

2. Interviews

Interviews played a significant role in order to elaborate the results of questionnaires. Key-Persons as well as competitors in every sector of suppliers interviewed, offered significant progress to the study. On the other hand, several points of view about the Electronic Information Market were detected, presenting in some cases differentiation regarding figures such as revenues and other Quantifiers. Furthermore, interviews offered the opportunity to suppliers to remark points of the market with respect to User Side. In the Bank sector, things were easier as there was no essential variation between different opinions of different Experts.

3. Studies or Articles, Inventories, Statistics

Desk-research was the third technique used in order to get closer to the market. As no relevant study existed before in Greece there were many sources of different type but with a close (or not) relation to the objectives of MSSTUDY, that had to be analyzed and cross-checked. This technique provided data about quality (and in some cases quantity) indicators that would be very complicated, if not impossible, to have with only the previous techniques.

Things to-be-done was **cross-checking** of the results of the three methods as well as between data gathered from each one separately. This action really prevented the study's results to be far away from the reality, functioning as an error correction technique.

In the following sections all the figures gathered following the methods described above, are analyzed according to the three levels of MSSTUDY. The corresponding tables concentrating figures and absolute values for the supply and demand side can be found in the Appendix. Figures and absolute values of these tables use as primary source data from questionnaires and have been projected with respect to the results of interviews and desk research in order to cover the estimated Total Market. Regarding the Banks Sector, projected data are referred in the text of the present study, while the tables contain the primary data gathered through questionnaires before the projection.

3. The Supply Side Survey

Although the percentage of replied questionnaires for the Supply side achieved during the pilot phase was not very promising (25%), contacts by phone as a first try showed that the

things were rather optimistic. Several suppliers expressed their interest about the study and its result and welcome it.

Data collection for the supply side was possible mainly by personal contacts, something that was combined with personal interviews for qualitative issues.

3.1 Response rates

| | Total | Response rate |
|--------------------------|--------------|----------------------|
| Online | 30 | 33 % |
| <i>Real-time</i> | 3 | 33 % |
| Financial information | 1 | 0 % |
| Newswire agencies | 2 | 50 % |
| <i>Retrospective db.</i> | 27 | 33 % |
| Credit information | 1 | 0 % |
| Other economic info. | 3 | 33 % |
| STM | 9 | 44 % |
| Videotex | 4 | 50 % |
| Others | 10 | 20 % |
| Offline | 34 | 12 % |
| CD-ROM | 30 | 13 % |
| Others | 4 | 0% |

Table 1. Response rates of National Suppliers of Electronic Information Services

Sixty Four (64) suppliers of electronic information services were identified. They all received the relevant questionnaire. The response rates according to services/products offered is illustrated in table 1.

3.2 Characterisation of respondents

Among the sixty four suppliers identified, thirty are offering online electronic information services and the rest (thirty four) are offering offline electronic information services in form of CD-ROM activities (production or distribution) or S/W development and diskette distribution. The main part of the respondents (70%) are employing up to 30 full-time employees. The rest 30% employ more than 50 and up to 500 employees in all departments including those that are not related to electronic information services, even though their relevant to electronic information services departments are occupying up to 30 full-time employees. Respondents are representing 33% of the total population for the supply side.

Categorizing respondents by type of services they offer, we get:

- 13% CD-ROM producers - distributors representing 70% of the market shares.
- 50% Videotex providers representing 40%-50% of Videotex market.
- 33% Retrospective database suppliers providing electronic information services representing 80% of the market share.
- 33% Suppliers of real time services, representing 70% of the market shares.
- All other parts of the suppliers' side should not estimate a percentage of the market share.

3.3 Non respondents and estimates of totals

Suppliers that did not responded, could be characterized as small companies related to I.M. such as Small/Medium Software houses, CD-ROM sellers, etc., employing under 10 persons, and having revenues for 1994 under 200.000 ECU. Companies and organizations with over 700.000 ECU were totally covered (See Tab. 3.2 and Tab. 3.3). For each of the eight different types of suppliers a representative ratio is given implying totals (See Tab 3.1). Using such an estimation for the percentage of total market revenues on each category of eight different types of suppliers, could possibly result to an overestimation for totals. Although this deviation was strictly bounded after several interviews with key persons of those categories.

3.4 Revenues

As a first result of the data gathered we have the total Electronic Information Market revenues in Greece, a market that grows in a fast rate, wich can be estimated in **64,85 MECU** for 1994 (See Tab. 5.1). In this figure are included **both Revenues of Domestic Suppliers from Domestic Use**, plus *Revenues of Domestic Suppliers from external Use* (that is revenues from services offered abroad from Greece). Although data collected during the study presented total revenues in Greece from Electronic Information Services to be 64,85 MECU, some other factors have to be defined. This figure shows, as explained, total revenues from EIS of Domestic Suppliers from **both** domestic and abroad use. That means that in this figure are included Exports of Electronic Information Services / Products. Exports have to be defined separately as a factor, as well as revenues of domestic suppliers from domestic use. Therefore we define **A** to be **the Total Market Revenues**, a factor that must be calculated according to:

- **B** defined as **Total Revenues of Domestic Suppliers from Domestic Use** a factor that is **51,88 MECU**
- **C** defined as **Total Revenues of Domestic Suppliers from Exported Services / Products** and raises up to **12,97 MECU**
- And **D** defined as **Cost of Use for Services / Products of Foreign Suppliers** and is estimated to **11,77 MECU**

The previous analysis leads to a result that *Total Market Revenues in Greece* are *Revenues of Domestic Suppliers excluding Revenues of Domestic Suppliers from abroad use plus Cost of Use for Services / Products of Foreign Suppliers*, that is

$$A = B - C + D \quad (1)$$

Hence, according to (1) we have that

Total Electronic Information Services Market Revenues in Greece for 1994 are 50,68 MECU.

3.4.1 Overall figures

The major part of revenues are concentrated to Hosts retrospective Suppliers (50,33 MECU for 1994). Much lower seems to be the total revenues of all the other suppliers. Internet Providers and E-mail services providers are the second most important type denoted as Electronic-Mail services in Tab. 5.1., showing revenues for 1994 **8,33** MECU. News wire agencies, credit information etc., denoted as Hosts real-time, present **4,76** MECU for 1994. Videotex services presented **0,33** MECU revenues for 1994. The CD-ROM market revenues are estimated in **3,12** MECU, although the sector of CD-ROM oriented suppliers presents **1,09** MECU, of which only **0,6** MECU is originated from CD-ROM products. Hosts retrospective sector has a significant presence in this market with **2,52** MECU revenues from CD-ROM activities (See Tab. 5.1.). CD-ROM sector presents huge **losses** (estimated about **1,5** MECU per month !!!) due to the fact that about 400 illegal copying systems exist in Greece.

No relevant data were available for Audiotex services for 1994 as these services are currently under development or restricted to Entertainment, Astrology etc.

3.4.2 Analysis for different service/product categories

Overall revenues can be sectorized by type of services/products as illustrated in Tab.5.1 and Tab 5.2. Database production, Retrospective online database services, real-time information services and e-mail services are these that collect the main part of revenues in about equal basis. Database production represents the 16,6% of total revenues, 10,78 MECU, retrospective. On-line database services represent 19,4% of total revenues, 12,58 MECU and Real time information services represent 19,56% of total revenues, 12,69 MECU. Other services or products such as Training, Electronic Conferencing, Consultancy etc. collect a large percentage (24%) of total revenues, up to 15,78 MECU.

3.4.3 Geographical analysis

As indicated in Tab 6, the major part of suppliers 92% are concentrated in Athens and the wider territory of the Capital. About 5% are located in Thessaloniki, and 3% including several branches, are located in the rest of Greece. The main part of revenues, 80%, comes from the domestic market and only 20% come from other EU countries, 10%, and EFTA countries, 10% and are concerning Hosts retrospective suppliers. The CD-ROM market could be expanded in the rest of the world with multilingual titles concerning Greek culture. This is the main focus point of Greek multimedia developers.

3.4.4 Analysis by subject area

The analysis of revenues by subject area is illustrated in details in Tab. 7.1 and Tab 7.2. Scientific/Technical/Medical information services collect 35,56% of total revenues, 23,06 MECU. A large part of revenues concerns legal information, 23,62%, 15,32 MECU as well as Government information and political news, 16,23%, 10,52 MECU. Finance/Stock exchange/Banking collects 7,76% of total revenues, 5,03 MECU. All other subject areas concern under 2 MECU each.

3.5 Volumes of business

The number of users according to each type of Services/Products is a factor that can characterise the Volume of Business for each type of Suppliers. In absolute values, there are 37.000 users of all services/products of EIS market. Hosts Retrospective concentrate the major core of users estimated to 15.000, a percentage of 40,54% of the Total. Following, are Internet and e-mail Services Providers handling 13.000 users, a percentage of 35,14% of the total. Significant is the number of users of Videotex Services, estimated to 7.000, that is 18,92% of the total. These data are presented in Tab 8.3 and Tab 8.4.

3.6 Human resources

Tab 3.2 and Tab 4 provide data on human resources. The estimated number of Full - Time Employees in companies/organizations offering Electronic Information Services, is **1500**. Among them, **350** are working in **46** companies occupying 1 to 15 employees. In companies occupying 16 to 50 employees are working **310** employees and **707** are working in **2** companies / organizations with more than 100 employees.

According to Type of Suppliers, **956** employees are working for Hosts Retrospective, **90** for Host Real - Time, **36** for Videotex Services about **100** in Electronic Mail Services, **105** for CD-ROM producers/distributors and **80** for Other Suppliers.

The major part of them, **911** employees, are Technical Staff, **165** are employed for Data Gathering / Editorial, **147** are in the Management / Administration sector, and **136** are in the Sales / Marketing sector.

The above figures do not include staff employed in libraries or in the publishing sector which are referred later. For comparison purposes 1.496 people are employed in Greek Libraries

(see 7.6) of which 209 are Graduate staff, 548 are non graduate staff and 712 are support staff.

At least 11.000 people are employed in 200 Publishing Companies (see 8.1)

3.7 Cost analysis

Data on cost analysis are presented in tab 12.1, Tab 12.2. Total Expenditures of Greek Suppliers of Electronic Information Services are estimated up to **58 MECU**. According to the type of Suppliers, we have that the major core **63,22%** of this amount is concerning Hosts Retrospective and is estimated in **36,67 MECU**. Following type is Electronic Mail Services, and Internet Providers with **7 MECU** expenditures that is **12,7%** of Total Costs. Hosts for Real-Time Services presented **6,67 MECU** Costs, that is **11,49%** of Total Costs. CD-ROM distributors are showing **6 MECU** costs that is **10,34%** of Total Cost.

Categorizing Costs we have as a result that the major part **50,52%** of Total Costs, that is **29,3 MECU** concern Staff Costs. The next costly category is Technical Operations, showing **10,11 MECU** that is **17,43 %** of total costs. Investment Expenditures are **6,87 MECU**, that is **11,84%** of total costs. Costs of Data Gathering/processing and of Sales/Marketing Activities are of the same height **4,92** and **4,93 MECU** each, that is **8,49%** and **8,51%** of total costs respectively. Costs for user service/ training and other costs are remaining bellow **2 MECU**, about **3,2%** of total.

Cost Recovery is based mainly in market income, although Public Subsidies are playing a significant role for some types of suppliers. Tab. 10 presents for each type of supplier the main source for cost recovery. Hosts retrospective are based by 95% in market income and by 5% in Public subsidies. Hosts real time are based by 80% in Market income, by 5% in Public subsidies and by 15% in Further sources. Videotex services suppliers are based 100% in Market income, Internet and e-mail services providers are based by 85% in Market income and by 15% in public subsidies and CD-ROM producers-distributors are based by 70% in market income and by 30% in Public Subsidies.

3.8 Outsourcing activities

The main tasks or activities are carried out internally by the suppliers and only in some cases there are some tasks that are outsourced. Furthermore there are tasks that suppliers are carrying out both internally and externally that means that in some part these are outsourced. In Tab 13. Tasks that are carried out internally, externally or both are presented with respect to absolute number of answers in the relevant questionnaires. As a result, Data gathering/processing editorial in most cases is carried out internally by the suppliers, except in Hosts retrospective case where some part of this activity is outsourced. Software development and maintenance is balanced regarding outsourcing, although Host real time, Internet and e-mail providers and CD-ROM producers/distributors are carrying out this task internally. Technical operations in most cases, are carried out internally for all types of suppliers. Marketing as well as Public Relations for CD-ROM and Videotex suppliers is in some parts outsourced while for the other types of suppliers is carried out internally.

3.9 Ratios

According to the factors **A, B, C, D** (1) we can induce some ratios that characterize the Greek Electronic Information Services Market.

- **Export Ratios (C/A)** showing revenues from Exported Services / Products with respect to Total Market Revenues is **25,6 %**
- **Import Ratios (D/A)** showing cost from use of Foreign Services / Products with respect to Total Market Revenues is **23,2 %**
- **Export Ratios of Domestic Suppliers (C/B)** showing Revenues from Exported Services / Products with respect to Revenues from Domestic Use of Services / Products, is **25%**

4. The Demand Side Surveys

4.1 Information Brokers

The Information Brokers' sector in Greece is very small. There are nine (9) entries in the I'M GUIDE Catalogue and two more that were contacted. The real situation is that the revenues they get from Electronic Information Services brokering is less than 50% of their total revenues. Thus if Information broker means that his revenues from Electronic Information Services is more of 50% of his total, then Greek Information broker Market has zero revenues. From those nine brokers only the half part has a somehow active role in the Information Market and only one responded the relevant questionnaire, something that restrict our effort to provide the corresponding tables for Information Brokers.

Nevertheless if one can include in what an information broker means, representatives of foreign or International Hosts and non profit organizations then some figures can be obtained.

4.1.1 Characterisation of respondents

The main part of these companies, 90% are in the private sector, and the rest 10% are public or non-profit organizations with respect to their legal status.

4.1.2 Non respondents and estimates of totals

As only two out of eleven (11) identified information brokers replied the questionnaires, NDC's knowledge of the particular sector and Interviews, were the main sources of information for this category. Tables of this categories are not provided because of lack of meaningful data. This is due to the low percentage that EIS cover in their total business activities. However, data concerning revenues from EIS, Expenditures for EIS and Expenditures in General are following

4.1.3 Revenues

An estimation of total revenues/turnover of information brokers in Greece is **2 MECU** from which **1,8 MECU** are expenditures. General expenditures of these companies/organizations rise up to **10 MECU**, something that reflects that Electronic Information Services Brokering is not their main activity.

The following table should make this clearer:

| | <i>% of total companies/organizations</i> | <i>Revenues from EIS</i> | <i>Expenditures for EIS</i> | <i>General Expenditures</i> |
|--------------------------|---|--------------------------|-----------------------------|-----------------------------|
| Private | 90% | 1,3 MECU | 1,2 MECU | 7 MECU |
| Public/non-profit | 10% | 0,7 MECU | 0,6 MECU | 3 MECU |

4.2 Intermediaries in Banks

NDC contacted 38 departments of 31 Banks in Greece that have more or less relation to Electronic Information Services, although that ICAP provides general economical data for 28 Banks in Greece. As Information intermediaries in Banks are not existing in every Bank for Greece, the restriction of the role of an information intermediary in a Bank was relaxed. Information is flowing internally in the Bank or between departments of the same bank in most cases, and there are existing very few cases where information is provided costly or not to external clients. As a consequence, revenues of intermediaries in Banks are not provided through questionnaires, as information providing is a non-profit procedure internally for a Bank. Nevertheless the relevant departments provided data concerning budget and expenditures for EIS.

As mentioned in the Introduction, the following paragraphs 4.2.2 - 4.2.7, present projected data in order to cover the estimated Total Market of the Information Intermediaries in Banks. However, as the replied questionnaires cover a high percentage of this particular market, the figures contained in the corresponding tables Tab.32 - Tab.47., are primary data originated from questionnaires with no projection.

4.2.1 Response rates

The received questionnaires achieved the expected rate. Thirty eight (38) departments related more or less to electronic information services were contacted. Responses achieved a percentage of 58%. Full useable responses had a percentage of 34% due to negative answers, that is departments that had no electronic information services or rejected the questionnaire (see Tab. 32).

4.2.2 Characteristics of respondents

Representativity in percent of respondents according to the total market shares is presented in Tab. 33.

Among "Full Usable" Respondents, 61% employ 1 to 30 employees, and the rest up to 70. Responce rates achieved, can be categorized as follows:

- Online electronic information services has a responce rate of 63% of full usable responces, representing more than 80% of the market share.

- Database production/input has a 26% of fullusable responses, representing about 70% of the market share.
- The market share of Offline electronic info. services and Offline library services/archive should not be discussed as the response rates are very low.

The whole picture of the respondents, represents about 70% of the market share for electronic information services in the bank sector.

Non-respondents are representing about 30% of the market share. Work load, no-relevance, confidentiality and beaurocratic procedures, form the main reasons for not having answer the questionnaires. An estimation of total revenues could be driven in concern of this percentage.

4.2.3 Revenues

Most recent data about banking sector's revenues comes from *ICAP Directory 1995*. The banking sector shows a dramatic decline in the net income. It's pre-tax profits declined from 250 MECU in 1992 to 84 MECU in 1993. Total assets rose satisfactorily by 21%. The increase was mainly due to a change in current assets. In contrast, net fixed assets grew only by 6,1%. Net income per employee also dropped to 1,7 KECU per employee. The ten largest banks had 94,9% of total assets and shared 75,9% of pre-tax profits.

4.2.4 Human resources

The banking sector in 1994 according to *ICAP Directory*, employed about 49.683 persons in all departments in a total number of 28 Banks. The analysis of questionnaires, gives an estimation of the distribution of Human resources in information departments (see Tab 38). As a first result, each information department in a bank employs a number of full-time employees that ranges from 1 to 60. The estimated total staff in Banks that have an Information department is 10000, although the estimated total staff in the Information Departments raise up to 400. An estimation of human resources according to the type of banks can be as follows:

- Departments offering Online electronic information services are occupying up to 130 employees as a total.
- Departments offering offline electronic information services are occupying up to 15 employees as a total.
- Departments offering offline library services/archiving, are employing about 35 employees.
- Departments that produce inhouse databases or input in databases are employing up to 225 employees as a total.

For departments of training or consulting or software distribution, no such relevant data obtained so as to have an estimation representing the real situation.

4.2.5 Analysis of budget/expenditures

The total estimated budget for electronic information services in the bank sector, is rising up to **20 MECU** with an estimation of total expenditures for electronic information services up to **1,5 MECU** (see Tab 40). This fact is showing an imbalance, resulting from the overcoming technical/technological development of the relevant departments' infrastructure, regarding machines and mechanisms as well as human resources.

Categorizing the banks according to type of services offered, we have the following image for the allocation of Budget/Expenditures (see Tables Tab. 39 - Tab. 41):

- Online electronic information services are presented to be the major field for investment as well as the major part of expenditures holding 66% of the total budget and 51% of total expenditures.
- The second most important sector regarding electronic information services in banks is database production/input, holding 20% of total budget and 31% of total expenditures.
- An allocation of 6% of the total budget and 9% of total expenditures, regards offline electronic information services.
- At last, offline library services archiving represents the 5% of total budget and 2% of total expenditures.

Analysing total expenditures of intermediaries in banks by subject area (see Tab. 42), we can obtain that the most important (in means of expenditures) is finance/stock exchange/banking area, where an estimation of 400 KECU as a total is presented to be spent. 30% of intermediaries in banks allocate in this area more than 50% of their expenditures.

Further economic and business information is presented to be the second most important area of expenditures where, as an estimation, 300 KECU is spent by 46% of intermediaries in banks, although the allocation of expenditures in this area is kept below 50% of the total.

Expenditures up to 130 KECU for government information, political news is presented by 23% of intermediaries in banks allocating their expenditures in this area less than 30%.

A total of 100 KECU expenditure regards Scientific Technical Medical information for 31% of intermediaries in banks. The allocation of this expenditures is in the range of 0% - 30%.

In all the other subject areas such as Company profiles, Legal - Patent - Travel information, intermediaries in banks allocate less than 10% of their expenditures giving an amount of 100 KECU as a total. Even in this range (0-10%), intermediaries in banks showing an increasing interest in company profiles (31%) and legal information (21%). Patent and travel information areas are kept under 15% of interest.

Expenditures by type of product in MECU are presented in Tables Tab. 41 and Tab. 41(b).

4.2.6 *Barriers of Use*

Intermediaries in banks estimated in a five scale rating the barriers of using electronic information services (see Tab. 46). In accordance, a characterisation of important - medimportant - not important could be driven from the responses. A barrier is important if the majority of respondents rate it in the two higher scales. It is medimportant if the percentages of respondents rate it in the three higher scales and those rate it in the three lower scales are balanced. It is not important if the majority of respondents rate it in the three lower scales.

Network deficiencies characterized as important barrier as 38% of the respondents rate it in the three higher scales, although 23% characterized it as not significant or no barrier at all.

Lack of experienced staff has a characterisation of medimportant barrier as 38% of the respondents rate it in the three higher scales and 46% rate it in the three lower scales.

Lack of awareness from user's point of view seems to be medimportant barrier as only 23% of the respondents find it strong or very significant barrier. 39% of the respondents rate this barrier in the last three scales.

Cost-benefit relation inadequate characterized as medimportant as 30% of respondents rate it in the two lowest scales but 23% rate it as a significant barrier.

High prices for host services, characterised as medimportant barrier as 46% rate it in the three lower scales, but 16% of the respondents found it significant barrier.

Technical barriers characterised as not important as 54% of the respondents rate it in the three lower scales and none rate it in the three higher scales.

Lack of user-friendliness has a characterization of not important barrier as 38% rate it in the three lower scales although 8% rate it in the higher scale as a very significant barrier.

Availability of information required, characterized as not important barrier as 46% of respondents rate it in the lower scales, although 15% rate it as a significant barrier. Language problems characterized as not important as 31% of the respondents rate it in the lowest scale (no barrier).

Staff costs too expensive characterized as not important barrier as 54% rate it in the three lower scales.

Resistance from management characterized as not important as 46% of the respondents rate it in the two lower scales although 15% estimated it as significant barrier.

Budget reasons has a characterization of not important barrier as all respondents rate it in the three lower scales.

4.2.7 *Marketing Activities*

Respondents rate Marketing activities by a 5 scale importance rating (see Tab. 47). As a result, we have that 46% of the respondents found most important type of marketing activity

the improvement of customer service. The second most important activity is Public Relations depicted by 30% of the respondents. 23% of the respondents found Presentation of services and Active participation in exhibitions as important marketing activity. Participation in Information broker Associations is indicated as not important marketing activity by 31% of the respondents and furthermore no one rate this activity in the first two degrees.

5. Possibilities for Further Market Development: The Potential User

The potential users was the most difficult group to be identified. One could say that every one that does not use electronic information services is a potential user. In this context it is more sane to identify groups that more or less are in the industry domain. Those groups could probably have used electronic information services in the past, but either they are not well informed about the capabilities and the facilities they could take advantage of, or they can't find what they are looking for and after a try they quit. The reason for this particular choice was that Xanthi is a Less Favored Region in Greece, geographically isolated and the perspectives for a study like this in Xanthi would be expected to cover the whole or a high percentage of the population. Furthermore, the study could be supported by the Documentation Focal Point of Xanthi.

5.1 Response rates

The relevant questionnaire was sent out to 233 end users by direct mail and to over 3.500 by e-mail through two main Internet providers in Greece COMPULINK and Hellas Online (see Tab. U1). Among them, there were Pharmaceutical Industries, Active Users of NDC, and users allocated in four regional areas of Greece. The Overall Response rate achieved a percentage of 11%. Users of Hosts retrospective responded by 10%, users of Hosts real-time by 29%, and users of other suppliers by 16%.

5.2 Structure of respondents

The main part of respondents came from online user groups of Hosts real-time and retrospective services. Videotex users were approached relatively late, and there are no available data at this time period. Internet users were approached through the two main commercial internet providers in Greece, namely COMPULINK and HELLAS ONLINE, covering about 6.000 subscribers as a total. As a result, only one (1) answer was received.

5.3 Information sources / media channels used

Respondents indicated in ranges the use of sources and channels of information as presented in Tab. U2.

Potential users indicated printed media as the most common channel for information as 47% use them more than 50% as a source of information. Furthermore 47% of the respondents use printed media more than 10% but less than 50% and only 18% use them less than 10%. No one indicated that printed media was never used as a source of information.

Second most important source of information seems to be internal or external online information services as 41% of the respondents use them more than 50%. A high percentage of respondents 47%, use external online information services less than 50% but more than 10% and there is a part of 6% that never used internal or external electronic information services.

Significant use of CD-ROM as information source was indicated too, as 47% of the respondents use CD-ROM less than 50% but more than 10%, even though that 12% have

never used such a source. A small portion, 6% use CD-ROM more than 50% as an information source.

Personal contacts are used more than 50% by 29% of the respondents, less than 50% but more than 10% by 35% and less than 10% by 30% of the respondents. No one answered that have never used personal contacts as information source.

5.4 Information needs according to subject area

The highest percentage of respondents, 41%, indicated their need in STM information more than 50%. More than 10%, less than 50% of information needs was indicated for Company profiles and credit ratings, Further business and economic information and for Patent information were the percentage of respondents was more than 30%. Information needs for Company profiles and credit ratings more than 50% but less than 75% was indicated by 12% of the respondents (see Tab. U4).

5.5 Barriers of use

Respondents indicated in a five scale rating the barriers of use of Electronic Information Services as presented in Tab. U5.

Budget reasons are indicated as the most important barrier of using EIS by 50% of the respondents. This is quite different to what happens in other sectors, such as Banks, where the budget restriction do not form the most important barrier (see 4.2.7).

The second most important one is seems to be *Lack of experienced staff*, indicated by 47% of the respondents.

Overcoming of this barrier has to do with two parameters:

- i. Training.
- ii. User friendliness of the interfaces.

As for the first parameter NAP seminars addressed to more than 1.000 attendees, carried out by NDC in the frame of IMPACT 2 during the last four years, are the main, if not the only, sources of awareness on EIS in the country. A minor exception in the previous statement is the training sessions provided by three host representatives concerning the hosts they represent. The continuation of NAP seminars under IMPACT-2 or INFO-2000 is with no doubt of very importance to the direction of overcoming this barrier.

On the other hand the appearance and the expansion of more user-friendly interfaces facilitate permits the user to concentrate in the content and not the mean (query language).

Lack of awareness from user's point of view seems to be medium barrier as only 23% of the respondents find it strong or very significant barrier. 39% of the respondents rate this barrier in the last three scales. The rating of this barrier as it comes from the questionnaires, should be considered as biased, as the responses are referred to what the respondents consider as the universe of EIS, which is only a small percentage of what actually is available. It is obvious that the more one is aware on EIS the more recognise what is missing from the every day operation of a company.

A side effect of the awareness seminars is to change the general view of the potential users and finally the cost benefit relation turns to one of the advantages for the use of EIS.

Technical barriers or Lack of user friendliness do not consist important barriers for more than 50% of the respondents, eventhough the first is important for 13% of them and the second one is important for 10%.

53% of the respondents find the information they are looking for in most of the cases and 60% of them have no Language problems.

Prices for host services as a barrier has a dual approach. 40% of the respondents found the prices high wich does not consist a barrier of use for 47% of them.

The same holds for network deficiencies as it consisted a barrier for 43% of the respondents, eventhough 53% of them does not encounter it in their barriers.

The development of the telecommunication infrastructure by the Hellenic Telecommunications Organisation (OTE) with HELLASPAC (PSDN) and HELLASCOM, as well as the general development of INTERNET in combination with the establishment of several INTERNET services providers, contribute to the decrease of this barrier as access is more and more reliable, faster and expanded in further locations in the country.

Only 10% of the respondents characterised Staff costs as a very significant barrier. The majority indicated it in a low rate.

No one found resistance from management as a significant barrier.

5.6 Potential users and their knowledge about electronic information services

All respondents were, more or less, informed about electronic information services, either from seminars, conferences, etc., or from other media. The majority, have used in the past electronic information services.

5.7 Potential users and their main reasons for not having used electronic information services

The main reason for not having used EIS, was that there were never existed such a need for them individually or for their company. This should also be considered as biased, because of lack of awareness on EIS which could possibly be used even in an every day operation basis for information needed by the company.

5.8 Intended use

Use of electronic information services for those who had never used is planned in the next or in two or three years. Only one answer with no plans for use of EIS was received.

5.9 Use of external electronic information services

End users of external electronic information services, looking for information for their own purposes consisted 35% of the respondents. The majority 53%, is using EIS via an intermediary in their organisation and there is a part of 29% of respondents that have used EIS via an external information intermediary. 24% of the respondents gave no answer about the forms of using electronic information services. The further development of user-friendly interfaces and the expansion of INTERNET services is foreseen to increase the percentage of the direct use of EIS and to stabilize the intervention of intermediaries in lower levels.

5.10 Main reasons for using external electronic information services

End users presented the main reasons for using external EIS in the questionnaires. Some of them were presented more than two times and is worthing mention them. The main reasons are Access to Large volume of information, Fast way of localization and retrieval of information, Unique source of information, Reliable information, Up-to-date information, Needs of users for specialized information, Easy to combine and crosscheck issues, Bibliography seeking, Information for European R&D projects, Partnerships, Training/consulting purposes

5.11 Further use or improvement of offer

Requirements for improvement of offer from the Users point of view are as indicated by them in the questionnaires, more Full text databases, easier access to original documents, better network connections, more information on Greek subjects, user friendly interfaces, reduction of cost for Host services and some more, focused on individual's point of view that could not be expanded in general.

6. The Markets for Printed Information

There are two main markets for printed information, newspaper-magazines sector and printing-publishing sector.

Newspapers sector, shows a decrease in the average daily distribution in the area of capital for the time period of June 1995 versus June 1994.

The Association of Owners of Daily Newspapers of Athens (EIHEA) provides the following situation of the sector for this time period.

Total average distribution of morning newspapers for June 1995 is 34.500, a value that did not presented variation in accordance with June 1994.

Total average distribution of afternoon newspapers decreased by 16% to 261.000. The average distribution of daily newspapers as a whole (morning - afternoon) decreased by 14%, to 295.470.

Average distribution of Sunday newspapers shows a smooth decrease of 6%, to 369.894 in accordance with June 1994.

Total average distribution of weekly newspapers presents a decrease of 1%, to 134.879

Most recent data about the activities of these sectors comes from two sources, namely ICAP Directory and ICHNEFTIS (1995).

6.1 Overall revenues

Basic data of printed information markets for the year 1993 are the most recent available and comes from ICAP Directory 1995.

Total revenues for the markets of printed information are estimated 160 MECU, of which:

109 MECU consist the total revenues of 47 companies of newspapers-magazine sector.

51 MECU consist the total revenues of the 132 companies of the printing-publishing sector

6.2 Analysis by service/product categories

The *newspaper-magazines sector* revealed signs of dualism. The number of loss-making companies increased and losses widened. In contrast, profit-makers reported increased net income. Total and net fixed assets of the whole sector increased substantially. The former by 22% to 210 MECU and the later by 24%. to 84 MECU. Asset growth was mainly financed by debt, despite the fact that net worth increased quite satisfactorily by 18,6%. In contrast sales growth was weak, 10,4% to 333 MECU and pre-tax profits were trimmed 10,5%. Depreciation for this sector was 62 MECU and debts were 150 MECU.

The *printing-publishing sector* continued to suffer from the recession. Total revenues of the 132 companies are estimated about 51 MECU. Sales increased by 4,5% to 190 MECU, while gross profits were flat at 47 MECU. Net income dropped slightly to 11 MECU. Total assets increased slower than inflation, by 9,2% to 183 MECU. Some investment activity was evident, however, as net fixed assets grew by 16,4% to 85 MECU. The industry's net worth reached 80 MECU, an increase of 10,4% while total debt rose by 8,4% to 105 MECU. Depreciation for this sector was 61 MECU.

6.3 Geographical analysis

A characteristic point of Greek production of book titles is the concentration of publishing companies in Athens. Every year the major part of publishing companies about 85% to 90% is based in Athens. Analogous is the percentage of book titles' production in the area of Athens. Thus, for 1994, 88,1% of publishing companies are based in Athens 9,5% are based in the Thessaloniki and the rest 2,4% is based in the rest of Greece. According to book titles, 90,2% are produced in Athens, 8,9% are produced in Thessaloniki and 0,9 are produced in the rest of Greece.

6.4 Analysis by subject area

A categorization of book production regarding 1994, yields 1.200 titles about social sciences,/History, 1.100 titles about Literature, 500 titles with childhood context, 400 titles about Physical and applied sciences, 200 titles about Philosophy/ Psychology/ Religion/ Mysticism and 700 titles for other subject areas (see also 8.3).

6.5 Volumes of business

The Greek production of book titles is showing an increase by 8,43% for 1994, overcoming for the first time the boundary of 4.000 titles, without counting in this result republished titles or no commercial titles .

The major part of book titles, about 75,6%, is produced by 110 to 120 companies representing 24% of the total number of companies. These are companies produced more than 10 titles in 1994. About 105 companies, that is 21% of the total, produced 4 to 9 titles in 1994, representing 14,5% of the total production. The rest 9,9% of the titles are produced by 273 companies, released in 1994 less than 4 titles.

6.6 Human resources

There are 200 publishing companies employing about 11.000 persons. Furthermore, there are 273 more small enterprises published 1 to 3 book titles in 1994, representing 9,9 of the total production even though they are 55% of the total publishing community. There are no relevant to human resources data about these companies.

7. Information Services Institutional Infrastructure

7.1 Library services

In addition to the corresponding interviews, two main sources were used for the assessment of the situation in Greek Libraries. The first one was the issue of "*Cultural Statistics*", an annual publication of the "National Statistical Agency", (ESYE), containing between others, detailed statistics on Greek Libraries and services provided by them. As described below, the data concern mainly traditional services of libraries. The issue of June 1993, used for this study, was only contained data for the year 1990. As no more recent data were available, figures are to be considered as indicative and not precise measures for 1994. The second source concerns data derived from NDC and covers the electronic information services, provided by the major RTD libraries.

For the accuracy of data of ESYE, an evaluation has to be done by cross checking, as data are collected through questionnaires every year. The following classifications of libraries are presented in this issue:

| | |
|------------------------------------|------|
| Total number of Public libraries | 682. |
| · per geographic location, | |
| Athens area | 138 |
| rest of Greece | 544 |
| · per thematic category, | |
| · General | 557 |
| · Special in | |
| · Archaeology, History, Ethnology | 48 |
| · Philosophy, Literature, Art | 8 |
| · Economics, Legal, Social Science | 30 |
| · Science | 35 |
| · other | 4 |
| · per legal status | |
| · Public | 64 |
| · Private | *** |
| · Municipal | 406 |
| · Legal entities of Public Law | 89 |
| · Legal entities of Private Law | 103 |
| · Other | 20 |

*** Although the survey of ESYE does not include any private library, a number of at least 5 well organised libraries were identified in (private) industrial companies.

· Per employed personnel where the following figures are provided:

| | | |
|--|-------|-----|
| total | 1.496 | |
| · Graduate staff | 209 | |
| · non graduate staff | 548 | |
| · support staff | 712 | |
| · staff with special studies in Librarianship | | 314 |
| · staff without special studies in Librarianship | 443 | |
| · Dedicated exclusively to library operation | 634 | |
| · Parallel tasks | | 123 |

Figures are also provided for grouped libraries on:

| | | |
|-------------------------|-----------------------------|--|
| · Book collection | 6.334.658 titles | |
| | 9.035.768 volumes | |
| · Periodical collection | 122.257 titles (not unique) | |
| | 996.809 volumes | |

Manuscripts

| | | |
|--|-----------|--|
| | 1.516.849 | |
|--|-----------|--|

| | | |
|---|---------------------------|--|
| · New acquisition of books and serials (1990) | | |
| Books | 166.599 titles | |
| | 212.425 volumes | |
| Periodicals | 3.967 titles (not unique) | |
| | 28.491 volumes | |

Although no indication exist for the serials (periodicals) cuts, it is estimated that during 1994 the number of serials cut was higher than the number of new periodical acquisitions.

| | |
|-------------------------------------|-------------------|
| · Readers or visitors | 1.396.565 |
| · Books Lending to visitors | 1.239.308 |
| · Photocopies produced for visitors | 5.688.783 (pages) |

| | |
|--|--------------------------|
| Books and periodicals borrowed between libraries | 6.555 (orders requested) |
| of which | 5.315 (orders executed) |

These figures prove the very low level of traditional type of cooperation between libraries in Greece. On the other hand the number of online document orders (3.000 in 1994), executed by the members of the National Network of Scientific Libraries, even in its starting phase, compared with the above figures, prove the very fast adoption and development of the "electronic" type of cooperation between the Greek Libraries.

420 orders were originated from other countries while 411 of them were executed.

Only 47 out of the 682 libraries declared that interlibrary loan is included between their services. This low percentage that represent the 6% of the survey population, combined with the low absolute figures concerning interlibrary loan, shows the low level of development of this function in Greece.

Classification systems used:

| | |
|-------|-----|
| DEWEY | 144 |
|-------|-----|

| | |
|------------------|---------|
| UDC | 27 |
| LC | 9 |
| Other | 353 |
| No Class. System | 149 |
| | |
| Library branches | 1.387 |
| | |
| Mobile units | 23 |
| with Titles | 308.091 |
| Volumes | 360.492 |

Suggestions to and cooperation with ESYE could take place, so that in next inventories, data on Computer and Software equipment availability to be included.

A wide research, carried out by the "Association of Greek Librarians" (EEB) in 1982, provides data concerning the level of organisation and the status of Greek libraries. No data are provided about EIS offered or computerised operations. This research covered 569 libraries located all over the country.

A paper presented in 1990 provides data on computerisation procedures of 50 special and Public libraries, 33 municipal, and 109 special university ones. The research was split in two years 1988 and 1989. A remarkable output of the comparison between the two years was the increase of libraries that was computerised in the reference period namely 14% in General and Special libraries and 25% in Special-University ones had started computerisation procedures. The current rate of computerisation is incomparable higher, as, for example, only 8 libraries used ABEKT (the library automation software developed and distributed by NDC) were mentioned in the research, while more than 300 libraries were identified using ABEKT during 1994.

No more recent research have been undertaken in such a wide range but more specific or regional ones were identified. The conclusions of these researches are mainly the high rate of computerisation and use of EIS in Greek libraries. In terms of number of libraries it is estimated that more than half half of them have at least a PC for their functions. Twenty (20) of them offer (or are to offer in the near future) OPAC services via Internet (WWW, Gopher, Telnet). However the percentage of computerised data for their book collections is estimated as less than 25%. Usage of MARC records is about to be adopted by more than 10 libraries which already make use of these facilities. After UNIMARC was adopted by the National Library in 1992, standardisation seems to solve problems of efforts duplication.

7.1.1 Interlibrary lending and photocopying/document delivery.

Interlibrary loan concerning books, practically is at a low level and it is carried out in a non systematic way. Only a number of 5.315 borrowed books and periodicals are referred in ESYE inventory on "Cultural statistics 1993".

On the other hand, document delivery in photocopy format is a more spread operation. A number of 5.688.783 photocopied pages is referred in the same publication of ESYE. It is assumed that the majority of these photocopies covered need of the users of every individual library and not users of other libraries.

On 1993 NDC undertook the creation of the computerised National Network of Scientific Libraries, based on HERMES the host computer of NDC and the online database SERI ("Union Catalogue of Periodicals in the Greek Research and Scientific Libraries" also developed and updated by NDC. The first operation, that the network covers, is online document ordering. Data of online document orders are produced automatically by the system with details about the origin and the destination of every one of the orders. A number of 52 libraries are currently participating in the network, covering 13.000 unique titles out of 19.000 (that all 150 libraries included in SERI database cover). Subject categories of these titles are also available.

During 1994 a number of 3.000 online document orders were carried out between the participating libraries, corresponding to 33.000 photocopied pages with an average of 250 online orders per month. In the middle 1995 the average raised on 1.000 online orders per month. Two to three new libraries are joining the network every month.

In 1995, a study took place by NDC concerning the composition of the "Total National Collection of Periodicals", and the external economies which are expected from the development of the library network. Data for this study were derived from the online database SERI "Union Catalog of Periodicals in the Hellenic Scientific Libraries". The printed version of the catalogue has already 4 editions since 1985. Among the results of the study the following are worth to be mentioned here:

- The **150** libraries of SERI are the major Greek libraries in the RTD field. Their collections represent the 75% of the Total National Collection of R&D libraries, covering **19.162** unique titles of periodicals which correspond to **45.370** subscriptions
- The overlapping coefficient is **2,36** (=subscriptions per unique title).
- The annual cost of the Total National Collection is estimated to **22,3 MECU** (1 ECU=300 drachmas).
- In case of a coordinated restructure of the existing collections in the libraries of the network, a minimum of **9 MECU** will be saved per year.
- **1.826** of these titles correspond to unique (=different) titles of Greek periodicals. No distinguish was made between "dead" and current titles.

7.2 Archives, documentation centres, news agencies, etc.

Archives

Public organisations keep their own archives mainly in paper form. Between them National Statistical Agency (ESYE), produces a vast quantity of data (census, surveys, etc.). All data provided in paper form are also provided in the same low price in magnetic form. Use for commercial purposes is permitted for all data published in the regular issues of ESYE, with no extra fees.

Organisation of State Archives is also one of the most important organisations of this category. A project of computerising state documents started on 1992.

Documentation centres

A number of documentation centres are operating in the country, belonging to various organisations, focusing in their special (mainly scientific) fields and offering services internally. However no data are collected by ESYE for this category. Data collected via questionnaires were included in the quantitative research. Between them the most important and far away from the second one is the National Documentation Centre which offers Host services, production of databases, networking of libraries, supply of online information, user support and training. A second one is the Documentation unit of the Chamber of Greece (TEE) which produces a bibliographic database on Engineering Technology.

7.3 Publishers, booksellers, etc.

7.3.1 Books

Three main sources were used for this study concerning Greek publishing production:

- I. The National Bibliography produced by the National Library of Greece.
 - II. The online database "*Bibliography 2000*" produced by ELEA Ltd,
 - III. The periodical "*ICHNEFTIS*",
-
- I. Data provided by National Library of Greece concern books deposit during the last 5 years. As a matter of fact, National Library of Greece, started recording the Greek book production only since 1989!. This means that the whole production is rather bigger than the quantities provided by the National Bibliography.
 - II. "*Bibliography 2000*" includes **76.000** Greek book titles published during the last 5 years. "*ICHNEFTIS*" presents **4.100** new book titles published during 1994. No data are available about the quantities per title.

The following table presents the Greek book publishing production by year and by source of data.

| Year of reference | Source of data | | |
|-------------------|----------------------------|------|-----------|
| | NATIONAL LIBRARY OF GREECE | ELEA | ICHNEFTIS |
| 1989 | 3408 | | |
| 1990 | 3255 | | |
| 1991 | 4075 | | |
| 1992 | 4136 | | |
| 1993 | 5050 | | |
| 1994 | 4784 | 4000 | 4100 |
| | | | |

Book distribution is covered by a number of **5.000** booksellers, located mainly in Athens and Thessaloniki. Quite a big number of publishers are acting not only as producers but also as distributors. A slight trend of co-operation (company merges) between publishers and booksellers has started. A small number of traditional publishers is entering in the field of electronic publishing mainly by producing interactive multimedia products in CD-ROM or CD-I format. A small number of them (5-7) by establishing their own companies for this purpose. Co-operation of traditional publishers with multimedia developers for the production of such products is more spread.

7.4 Professional associations

A large number of special periodicals covering their own scientific fields is published in more or less regular periodicity by Professional Associations. However documentation is not a common activity for most of Greek professional associations. The only professional associations involving in this field are these of Engineers (Technical Chamber of Greece: TEE), Lawyers (Legal database) and Physicians (Biomedical database). These two databases, addressed to the corresponding professionals, are produced by those two associations either by collaboration with companies or non profit institutions.

7.5 Education and training

There are over ten (10) departments of Greek Universities offering undergraduate studies on Computer science. The duration of the studies is rating from four (4) to five (5) years.

Fifty percent of them are departments of Informatics offering over seven (7) courses on Systems Analysis, Software Engineer Data Bases and Management Information Systems. The rest of them are Polytechnic Schools offering courses on Computer Engineering and Information Engineering, divided to sectors offering, except the above, courses on telecommunications and Signal Processing.

All the Departments are showing great interest on documentation of every single homework. Most of them offer postgraduate studies in Computer Science. The objects are again Databases, Computer Networks, Signal Processing, Systems Automation, Medical Informatics, Economical and Statistical Informatics, MBA and a variety of other courses, depending upon the objectives and functionality of each University. The duration rates from two (2) years, leading to Ms. Degree, up to four (4) years, leading to Ph.D. Degree.

In addition to official education as described above, special training seminars on EIS, are carried out by NDC, offering awareness to more than 1000 individuals (University Professors, SMEs Managers, Librarians and Public administrators).

7.6 Research and development

Greek Gross Domestic Expenses for Research and Technology (GDERT) as percentage of Gross National Product is the lowest between the EU member states as presented in the following table. Greek GDERT for 1991 was 0,46% of GNP.

| Percentage of GDERT on GNP | | | | |
|----------------------------|------|------|------|------|
| | Year | | | |
| Country | 1986 | 1988 | 1989 | 1991 |
| Greece | 0,33 | 0,37 | 0,46 | 0,46 |
| Portugal | 0,45 | 0,50 | | 0,61 |
| Spain | 0,61 | 0,72 | 0,75 | 0,87 |
| Ireland | 0,90 | 0,87 | 0,81 | 0,90 |
| Italy | 1,14 | 1,23 | 1,25 | 1,38 |
| French | 2,23 | 2,28 | 2,34 | 2,42 |
| Germany | | 2,83 | 2,88 | 2,58 |
| USA | 2,91 | 2,83 | 2,82 | 2,78 |
| Japan | 2,75 | 2,86 | 2,98 | 3,04 |

Furthermore the proportion between state and private funds for Research and development is quite unlike to the proportion of more developed countries such as USA and Japan.

Percentage distribution of GDERT according to financing source 1991

(Comparison with other countries)

| Country | State | Companies | Abroad | Others |
|------------|-------|-----------|--------|--------|
| Greece | 59,0 | 21,7 | 19,3 | 0,0 |
| Portugal * | 61,8 | 27,0 | 4,6 | 6,5 |
| Spain | 45,1 | 47,4 | 6,8 | 0,6 |
| Ireland | 29,0 | 60,0 | 8,9 | 2,1 |
| Italy | 52,0 | 44,7 | 3,2 | 0,0 |
| French | 48,8 | 42,8 | 8,0 | 0,4 |
| Germany | 37,2 | 59,9 | 2,4 | 0,5 |
| USA | 46,8 | 50,7 | 0,0 | 2,5 |
| Japan | 18,5 | 72,7 | 0,1 | 8,8 |

*data for 1990

Distribution of GDERT by financing source category (1991)

| FUNDING BY | MECU | % |
|---------------------|------|--------|
| STATE | 117 | 59,0% |
| PUBLIC ENTERPRISES | 10 | 5,1% |
| PRIVATE ENTERPRISES | 33 | 16,6% |
| ABROAD | 38 | 19,3% |
| TOTAL | 198 | 100,0% |

General Secretariat for Research and Technology is the main state organisation (belonging to the Ministry of Industry, Energy and Technology) which is in charge for RTD policy. Financing and covering the national contribution of EU programmes is the main tool of policy functioning. Not only Research Centres supervised by GSRT but also Universities and the private sector companies are partially subsidied by GSRT in this frame. The majority of researchers and experts are originated from the Universities, Research Centres, Technological Educational Institutions.

8. Economic and Political Infrastructure

8.1 General economic situation

The total area of Greece is 131.957 km². 106.791 km² (80,9%) consists the mainland while 25.166 km² (19,1%) are islands. 39.275 km² are the total agricultural land and the length of coastes raises to 15.021 km.

According to 1991 cencus the population are 10.264.156 with 77,8 inhabitants per km². The increase of the population between 1981 and 1991 is 5,39%.

The population in the area of Athens raises to 3.096.775 which is more than 30% of the total popolation.

The per capita Gross Domestic Product of 1993 was 1.400.000 drachmas (=4,6 Kecu). 2,2 tons of oil equivalent was the per capita energy consupction. There were also 189 passengers cars per 1000 inhabitants, 454 telephones (main connections) per 1000 inhabitants. In 1994 the 97% of the households had a radio set, the 31% had a black and white TV, the 87% had a colour TV, the 33% had a video set.

The population aged 14 years and over raised to 7.985.900 while the labour force was 3.966.900 of which 2.500.100 males and 1.466.800 females, unemployed 296.000 of which 114.600 males and 181.300 females.

From the 3.670.900 employed 929.900 are occupied in the agricultural sector, 714.900 in the industrial sector.

21.700 are holders of doctorates or master while 1.012.000 have not gone to school.

Imports of 1993 raised to 17.615 mio US \$ and exports to 5.034. The Trade balance was 13.893 mio US \$.

The Gross National Income in market prices was 14.516.777 mio Drachmas in 1993, while Net National Income was 13.070.211 mio Drachmas and Gross Domestic Product was 14.422.533 in 1993.

8.2 National information policy

Although all ministries and various governmental organisations have undertaken activities, aiming in the further development of the Hellenic Electronic Information Market, a single concrete document, describing in detail and in a clear way the priorities in the EIM does not yet exist. A document concerning the Greek policy in the frame of Global Information Society was approved by the Greek parliament in 1994.

National policy on Hellenic Electronic Information Services Market could be characterised rather as a sectoral than a global one. Even viewed in this way, national policy is more expressed through supporting, stimulating and financing activities than expressed through a concrete Policy Document.

Among other supporting activities, the following actions can be enumerated: the creation of databases, the set up and operation of data networks (ARIADNE, FORTHNET, EDET see 12.1.2), new Multimedia products, development of Library automation S/W and free dissemination to public libraries, extension of Interlibrary Document delivery, ensuring intellectual property rights, data protection and copyright, etc.

The Ministry of Education has introduced the learning of basic computer skills in the secondary education schools. The use of NIT for educational purposes is rather in the beginning as Greek multimedia products are used in isolated schools areas (islands) to support teachers and students in their tasks.

8.3 Handling of relevant legal and regulatory issues

The Law 2121/4.3.1993, concerning Intellectual rights and copyright, covers between other, works in Arts and Science as Databases and Computer software (source code including).

Furthermore an additional bill was approved by the Hellenic Parliament, covering copyright and royalties issues in Magnetic and Optical media (Multimedia, CD-ROMs etc.). The bill is under the responsibility of the Ministry of Culture.

During 1994 OPI (Organisation for Intellectual Property) was founded by law. During the same year the National Book Centre was also founded and started its active presentation in the market of the country. The Organisation of Industrial Properties, which is in charge for Greek patents has already more than ten years of full operation.

9. Qualitative Assessments

9.1 General trends and developments in the target markets

Speaking in terms of revenues and turnover, a concentration of the EIS Market in 2-3 companies holding 80% of the total market shares, is observed.

Nevertheless more than sixty SMEs are currently activated, and entering the EIS market, covering special sectors e.g. multimedia, training s/w, INTERNET services.

Another issue is the commercialization of services of Research centres, financed by private companies, leading to a competitive environment (FORTHnet S.A.).

Furthermore Eastern Europe infrastructure, attracts Greek suppliers to focus their interest in this area.

9.2 Competitive strength of national suppliers in these markets

Greek suppliers proved their competitiveness by relatively high participation rates in IT EU projects like ESPRIT 3%, TELEMATICS, IMPACT 2 3,6%, RACE I 3,1%, RACE II 3,6%, ENS 4,6%, DRIVE 6,1%, AIM 4,7%, DELTA 3,1%, ORA 19,6%, LIBRARIES 0,3% and LRE 12%.

As mentioned in the previous paragraph, the interest of Greek Suppliers for Eastern Europe markets is rising. The reasons are neighborhood, lower labor cost, appropriate know-how from Greek side for the confrontation of problems and troubles arising from the economic situation, the level of development and infrastructure of these countries.

Content concerning fields, like Culture and Tourism, is considered the most potential sector in the Greek EIS Market. It is not by chance that the first multimedia CD-ROMs are concentrated in these two fields.

The common feature of some of the markets where the competitive strength of National Suppliers is relatively high has to do with particularities of country characteristics e.g.

Greek Language, Greek History and Culture:

It is worth mentioning that when the Image database of Greek Culture first appeared in Internet by ARIADNET covering exhibits from 200 Greek museums, concentrated the interest of users from all over the world. The number of connections of users from outside Greece to this database was much higher than the total accesses to all Greek sites.

There are already 5 CD-ROMs produced by Greek Suppliers with Historical, Archaeological and Cultural issues

Legislation:

The development of two (2) Greek legal databases and 1 CD-ROM from Greek suppliers is due to the relatively high number (7000 Greek Lawyers) of potential users in comparison with other sectoral markets.

Training s/w in multimedia environment have also been developed addressing to special Greek user groups (children, bank employees etc.).

Another range of products/services is addressed to the Research, Academic and Scientific community (Greek Dissertation Abstracts, Ongoing research projects, Union Catalogue of Periodicals, Engineering databases etc.).

9.3 Competitive weakness of national suppliers in these markets

The shortage of computerised data, the small market size in combination with the restricted usage of Greek language to more or less 11 million inhabitants plus 7 millions Greek speaking population, spread in all five continents, are the main weak points of the Greek EIM. The translation of the content to one more language (e.g. English, French, German) for products addressing to external markets raises the cost of database production and the risk of cost non recovery.

9.4 Competitive strength of the demand side of these markets

The Low level of usage, forces the Greek suppliers (and sometimes the foreign suppliers) to decrease prices of products or services in order to enter themselves in the Greek EIS market. These kind of product/services seems to be of high supply elasticity. This happens because suppliers expect that generous decrease of price will cause increase of total revenues due to large scale of sales.

Risk of Copyright law violation, leads suppliers to adapt reasonable prices (e.g. OTE) in order to make customers to prefer legal titles than illegal copies. Furthermore, suppliers differentiate prices for special target groups (lawyers, engineers, academicians etc.)

On the other side, prices of network services are lower than other EU countries, especially for Internet connection, permitting Greek users to access EIS more easily and cheaper (in terms of telecommunication costs) than other EU users. Indicative prices for Internet access are 40 ECU per month for two hours connection daily.

9.5 Competitive weakness of the demand side of these markets

Although the infrastructure used to be, in the past, the most important technical (and economic) barrier for the extension of the EIS in Greece, the recent development and operation of several INTERNET services providers made the situation quite different from the past years.

The main barriers for using EIS are depicted to be budget reasons as well as Lack of awareness from the user side of view. The last one proves the need for Training in EIS as an important tool for the promotion of the usage and the incorporation of these services in every day operation in a company.

9.6 Assessments of future prospects

Formation of national Policy in IT will help the faster development and usage of EIS. A helping hand will be the marketing and development policy of data network suppliers, as OTE, Internet Providers, FORTHnet, EDET, etc.

Products and services such as the legal databases for Lawyers, multimedia, specialized databases, etc., form the main corpus for the Greek products/services and cause faster rates of development of this particular market.

Training awareness is depicted to be one of the most necessary variable for this direction.

10. Technological Infrastructure

10.1 Telecommunications Infrastructure

OTE is, for the moment, the state monopoly in the field of telecommunications. However OTE has assigned to several private enterprises, the right to offer some services (e.g mobiles).

The situation in the telecommunication infrastructure is very clear. There are seven different data networks in Greece. Four of them are directly under OTE responsibility:

HELLASPAC, The PSDN
 HELLASCOM
 HELLASTEL
 ISDN

OTE also provides leased lines for the operation of the rest three data networks.

ARIADNE
 FORTHNET
 NORTHSTAR

HELLASPAC is the Hellenic Packet Switching Data Network connected to all international PSDNs. HELLASPAC follows X.25 protocol, OSI standard using 64 Kbps. Permanent connections are offered for Synchronous Terminals (X.25) in 2400 - 9600 bps and 1200 - 2400 bps for asynchronous terminals (X.28). Dial up connections are also offered mainly for asynchronous terminals (X.28) in 300 - 2400 bps, and synchronous communication X.32 in 2400 bps.

Data concerning subscribers-users were provided to NAP as follows:

| | | |
|---------------------|------|------------------|
| X.25 | 1300 | leased lines |
| X.28 | 300 | leased lines (!) |
| SDLC (IBM protocol) | 30 | leased lines |
| X.28 dial-up | 1500 | NUIs |

Indicative figures concerning the volume of international usage (national usage is not included) for January 1994 were also provided as follows:

1.000.000 online connection minutes
 32.000.000 segments transmitted (bidirectionally)

According to NAP communications with key persons in OTE, Hellenic NAP could be supplied with this kind of data in regular intervals (e.g in a monthly basis), if DG XIII/E arranged officially to request these data by all data networks providers in the Member States.

HELLASCOM is the digital network of leased lines. There are 200 subscribers. The line capacity raises up to 2Mbps. The network comprise, initially, 8 Digital Cross Connect (DXC)

switches interconnected by 2Mbps circuits and located in Athens (5), Thessaloniki (1), Patras (1) and Heracleion (1). Services offered via this network are:

- Videoconference
- Digital Voice Transmission
- High Speed Digital Circuits (64 Kbps, 128 Kbps, 1,984 Mbps)
- Low Speed Digital Circuits (2,4 Kbps - 19,2 Kbps)

VIDEOTEX

HELLASTEL is the Hellenic Videotex Service. The Hellenic Telecommunication Organisation (OTE) has recently (1993) set up the Hellenic VIDEOTEX service HELLASTEL. HELLASTEL commercialisation started on March, 15 1994.

The network is consisted of 10 nodes located in various cities covering all the country.

For the moment at least 12 different organisations/companies offer 46 different services via HELLASTEL. Different subjects are covered namely among other: databases, infotainment, news, weather reports, flights, ship and train departures, stock exchange, astrology (!), tenders and procurements, telephone subscribers catalogue, tourism, etc. International connection has also been established with the French VIDEOTEX system MINITEL of France Telecom, permitting access to Greek users.

Access is permitted under the Presentation Standard 1 (in Germany known as CEPT1), Presentation Standard 2 (in France known as CEPT2/MINITEL), Presentation Standard 3 (in United Kingdom known as CEPT3/PRESTEL) and Presentation of Information in ASCII format.

Communications with the head of the services ensured us that data concerning the total use of the services offered, will be available from next year in a regular base. For the provision of those data official procedures must be followed between NAP/NDC and OTE. It is mentioned that a similar attitude on publicising data from the side of other European VIDEOTEX services, would be welcome and would facilitate the bureaucratic difficulties.

10.1.1 Academic and Research Data Networks

ARIADNE

Ariadne is one out of three Academic and Research data networks developed and operating in Greece. The network provides characteristic facilities like access to National and International Data Banks, access to University Libraries, access to Host Computers and Super Computers, and all the typical services as electronic mail, file transfer, X.400 MHS, X.500. etc..

Furthermore, Ariadne offers international interconnection. The network is open to the international networks INTERNET, BITNET, EuropaNET - EBONE, DECNET.

The User community includes among others, Universities, Technical Institutions, Research Institutions, Industrial R&D communities and since last year, companies dealing with R&D.

The access to the network is made by three kind of links.

Twenty four (24) leased lines Panhellenic network
Ten (10) dial-up lines
Interconnection with HELLASPAC

Data concerning the traffic volume per month, are expected to be provided to NAP next month.

FORTHNET

FORTHNET (ITENET) is a network developed by the University of Creta. The network offers the following services:

International Interconnection with INTERNET, BITNET, EBONE, EARN, EUnet, CLNS.

All the typical services for information exchange, like electronic mail, file transfer, information services (WWW, Gopher, etc.), news, X.400 - X.500.

Multiple Protocole interconnection (IP, AppleTalk, IPX/Novell, NJE/IP, SNA/SDLC)
Host - to -Host
Host - to -Lan
Lan - to - Lan

The access to the network is obtained by three kind of links, again like ARIADNE:

Via dial-up lines
Via leased lines
Via Public data switching networks (e.g. HELLASPAC)

The user community includes among others, Universities, Research institutions, VPN Networks, Companies and private organisations.

Data were provided to NAP indicating the traffic volume In Country and Abroad. In country traffic volume for Jun. 1994 was stated to be 10.500.000 Kbytes. The Average Outgoing traffic for the period Jul. 93 to May 94, raised from 6.0 Kbps up to 16.0 Kbps.

EDET

EDET is the most recently scheduled data network by GSRT and is currently in the procurement evaluation procedure. EDET will establish a 2 Mbps line to DANTE Netherlands and direct lines to Bulgaria and Cyprus. Internally EDET will cover all the academic and research "sites", that is universities and research institutes offering full academic and R&D interconnection. The overall budget for this project is rising up to **733 KEUCU** and among the four competitors for the offer, FORTHnet SA, that partially is funded by GSRT, is present. The operational cost will overcome **2 MECU** per year and the Telecommunication costs for the first year will be covered by GSRT. The main objection is coming from FORTHnet stating that the new data network should lie upon FORTHnet's backbone, as the per year cost is very high to be covered by the academic and research community.

NORTHSTAR

NORTHSTAR is a data network covering mainly northern Greek Universities and Research Institutions. Among other services, Northstar provides the typical ones like electronic mail, file transfer, International interconnection with INTERNET , etc..

A new line of 2 Mbps, used for international internetworking, connecting all Greek Academic and Research data networks with abroad, is planned to be established covered by GSRT funds.

10.2 National computer industry

The computers-office machines experienced significant growth in 1993. There are 366 companies which had 8.116 employees. Gross profits reached 300 MECU, an increase of 21.1%. Sales increased by 29,3% to 700 MECU and companies registered net income of 36 MECU, 31,4% higher than 1992. Total assets grew by 26.7% to 423 MECU and debt by 25,2% to 310 MECU. The increase in net worth was 31,2% to 113 MECU. Return on equity remained to a high 31,5%, while the debt to assets ratio was slightly trimmed to 17,4%. Net income per employee was 450 KECU.

10.3 State of IT-applications

Topics of applications are software houses, consultancy for S/W and H/W selection, data entry services, EDP application support, EDP systems, planning and installation, S/W for special use, telecommunication S/W, training, and others.

11. Conclusions

Currently, the EIS market shares are concentrated in 2-3 companies, but niche is left for a larger number of SMEs to enter the market with specialized products/services, or to form their own markets.

The need for the development of a **National IT policy** is obvious, and will play a key role so as to explode in a wide range the size of the Electronic Information Services market in the next years.

Due to the special characteristics of the Greek situation, the small size of the market and the spatial distribution of the users all over the country (both the mainland and the islands), a higher level of co-ordination between Greek **network services suppliers** would be considered necessary and sufficient condition for avoidance of effort duplication and for further development, expansion and better quality of network services. Otherwise the cost of further development and/or maintenance of similar or relevant services will be unbearable and fatal.

Furthermore, co-ordination and strategic planning of the public and private sector will prevent overlapping actions and will ensure saving of resources for the development of **multilingual products** (e.g. production of databases, CD-ROMs etc.) instead of monolingual (=Greek language) product. The existence of higher quality products with "Greek contents" in more languages will increase the competitiveness of the Greek actors in the European and the global EIS market.

The **expansion of Internet** to business world and individuals as well, (beyond the academic and research community), will reduce the need of intermediaries in low levels and increase the direct use of EIS by the end-users themselves. Although teleworking is not yet widely spread, it is already met in some fields and professions (journalists, software developers, stock-exchange etc.)

On the other side, **Training and Awareness** are necessary for the End User, so as to be able to follow up the overcoming changes and to have an up to date information at least, in his/her field of operation.

Although financing resources are coming mainly from EU structural funds or competitive programs, Greek IT companies and organizations are of high level potential and presented to be capable to cover the needs of the market. Furthermore the Academic and Research community with high level educated stuff and state of the art experience in IT fields, is making steps towards the forthcoming Global Information Society.

12. Appendixes

12.1 Interviews with key players of the Hellenic information market

Interviews were submitted by the following (24) key persons in their field:

12.1.1 Telecommunications

- Arvilias A, ARIADNE Project leader
- Korovessis Yannis, ARIADNE, project manager
- Tsoukalas George, Professor of Aristotelian University of Thessaloniki, NORTHSTAR Project manager
- Fotiadis Dimitris, NORTHSTAR Network Administrator
- Binietoglou Stavros, OTE. Head of HELLASPAC Technical Department,
- Tsoganis Stavros, OTE, VIDEOTEX Service
- Fragiadakis Yiannis, University of Crete, Head of Computer department FORTHNET
- Tzortzakis Pantelis, FORTHNET, Network Administrator
- Manioudakis Emmanuel, OTE, Department of Tele-information and New Services

12.1.2 Libraries

- Bocos George, National Library of Greece, Head of Cataloguing Department, Ionian University, Librarianship Department
- Solomou Anna, Technical Chamber of Greece, former President of the Association of Greek Librarians
- Sfakakis Michael, NDC, project manager of ABEKT library automation software
- Farmaki Dora, NDC, Library Network for Online Document Ordering

12.1.3 Education

- Skrettas George, professor, Technological Educational Institution of Athens, Librarianship Department
- Tsafou Stamatina, professor, Technological Educational Institution of Athens, Librarianship Department, former Head of the Library of the National Statistical Agency
- Kakouri Myrsini, professor, Technological Educational Institution of Thessaloniki, Librarianship Department
- Skourlas Christos, professor, Technological Educational Institution of Athens, Informatics Department

12.1.4 CD-ROM Supply and Production

- Georgakopoulos Yiannis, OPTICAL SYSTEMS

12.1.5 Printed Publications Market

- Alabanos , ELEA LTD.

12.1.6 Institutional Infrastructure

- Bouboukas Evangelos, NDC Director
- Polydorides Nikos, NDC chairman, professor of University of Patras, former advisor of the Ministry of Industry, Research and Technology

12.1.7 Online Information Services

- Chardouveli Despoina, NDC, Head of online Information Retrieval Department
- Toraki Caterina, Technical Chamber of Greece, Documentation Unit

12.1.8 Legal Issues

- Moschou Leda, Ministry of Culture, Archaeological Receipts Fund

**13. Annex to the Greek MSSTUDY:
Qualitative Issues of the Supply Side**

ELECTRONIC INFORMATION SERVICES MARKET

14. QUICK REVIEW

The first indications on the existence of Hellenic Electronic Information Services Market were presented in 1980 when online information services from medical bibliographic databases (MEDLINE, EXCERPTA MEDICA, CANCERLIT etc.) started to be offered. These databases were hosted in Host DIMDI. The service was offered by NDC (that was in this period, the documentation unit of National Hellenic Research Foundation) via direct international call to Cologne of (former) West Germany through a modem with an acoustic coupler and in a rate of 300 baud.

Later on, the initial efforts for the development of databases with Hellenic content were started from several Hellenic actors. Indicatively are mentioned: 1983 Union List of Periodicals, 1985 Hellenic Dissertations Index, 1989 NDC's recording of Hellenic research projects, 1986 Technological database by TEE (Technical Chamber of Greece), 1986 Biomedical Bibliography by IATROTEK etc.. The ICAP company had already started to gather material with data concerning published turnovers of companies operating in Greece.

As a follow up the development of pilot services on the Host computer of NDC were started (1986) by utilising the already existed computer (super mini Perkin Elmer). On the existed operating system, a Data Base Management System and a pilot application of a query language (CCL like) were developed.

With a relevant delay, the pilot network of the Hellenic Telecommunication Organisation (OTE) HELPAC started to operate in 1984. Essentially it was consisted of a concentrator and a direct line to the site in Paris of the French TRANSPAC network and through it to other networks abroad. In 1988 the full operation of the HELLASPAC network was started, a network that implies the X.25 protocol and it is connected with almost all data switching networks of the rest world.

In 1993 the Host Computer HERMES was installed in NDC, consisting of full computing equipment Siemens/Nixdorff, Database Management System GRIPS on BS2000 Operating System and Query Language CCL identical the same with DIMDI's and ECHO's systems.

Meanwhile, several databases were developed by other organisations mentioned in the following. Some individual efforts on the establishment of information brokerage services proved to be unfortunately inefficient. Reasons behind this fact is the lack of awareness on Electronic Information Services from the potential customers point of view, the experts' inadequate experience on the Information market.

It is worthwhile to point out some phenomena that characterise the Hellenic Electronic Information Market and the Economy of the country in general:

1. As it concerns the Information Market, computers advent found the country unprepared due to its lack of disposal on information material, recorded with the already existing traditional gathering and indexing techniques, the lack of help tools for classification (thesaurus, authority files, etc.). The problem did not located in the availability or not of hardware, software and network systems. As opposite it was located on the lack of indexing material, (i.e. on the content of information systems),

on the consolidated procedures (e.g. lack of systematic co-operation of libraries) and on the tailored perceptions and concepts.

2. The education system is in a part responsible for not preparing the future executives (students) as potential users to be familiar with the concept of exploitation of the existing libraries, and the process of locating information. The system was, and in a wide range is, rather based on the memorisation than on the way of critical thought which demands synthesis of information and thus searching and locating of information sources. Fears and agonies of the experts in this field were fully confirmed with INTERNET exploitation, the impressive reduction of the cost for installation and maintenance of computational equipment, and the relevant simple, from the technical point of view, development of information products. What is still missing (in a smaller scale) is what exactly was missing in the state B.C. (Before Computers): Gathered and structured content, help tools, procedures, perceptions and concepts.
3. On one hand, the development of a national electronic information services market depends on the orientation of the national Economy, and on the other, depends on the level of research activity and development projects. Greece, as mentioned in the other paragraphs, expends on R&D programs significantly smaller amounts and percentages than other EU countries. This fact preserves in low levels the need for use and development of Electronic Information Services.
4. Due to the first mentioned phenomenon, the natural development of the Electronic Information Services on the time chain was to start by using already existing foreign information sources and then developing national sources and exploiting national resources.

15. Presentation of Electronic Information Services in Greece

In the following sections the main Electronic Information services active in Greece are presented. Services are grouped in the following categories:

- 1. Host computers**
- 2. Database Producers**
- 3. Network Services**
- 4. Information Centres**
- 5. Information Consultant Services**
- 6. Libraries Networks**

15.1 HOST COMPUTERS

Currently in Greece, only the host of NDC is operating with the formal definition of the term "Host Computer", that is an organisation which as its main activity has the operation of a specialised computer system, installation of a significant number of databases produced mainly by third parties, and the distribution of them through networks to end users.

Extending the term's definition, several organisations having a part of the basic features of a Host, are included and presented.

15.1.1 NDC: National Documentation Centre

National Documentation Centre, as of Presidential Act 226/89, is a National use Establishment of National Hellenic Research Foundation, directed by specialised Scientific Council in which its users are represented. NDC is supervised by the General Secretariat of Research and Technology (GRST) of the Ministry of Development (Industry, Energy and Technology).

The objectives of National Documentation Centre are the development of the National Information System for Research and Technology, and the ensuring of R&D information flow in Scientific and Business Community of Greece.

NDC is the main provider and distributor of scientific and technological information in Greece. It produces and maintains National databases, supports Hellenic businesses and organisations participation in EU Projects, promotes and supports the use of electronic information services, develops tools and co-ordinates human networks for the automation of libraries procedures.

On the early 1993, the Host Computer HERMES, was installed and is operating with the following technical features: mainframe SIEMENS/NIXDORF with operating system BS2000, Information Retrieval System GRIPS and query language CCL (Common Command Language). Retrieval is also achieved through the Graphical User Interface (GUI) EATIS-HERMES (Easy Access to Information Systems).

Access to Hermes is possible via the data switch networks HELLASPAC, FORTHNET, ARIADNE and in general through INTERNET. In this respect HERMES is accessible from any network location in Greece and abroad.

The following 23 databases are provided on HERMES:

1. HEPR: Hellenic R&D Projects
2. HEDI: Hellenic PhD Dissertation Index
3. SERI: Union List of Periodicals in Greek Scientific Libraries
4. LIBR: Libraries included in SERI
5. HEIM: Hellenic Electronic Information Market
6. GISB: International Bibliography on Geographic Information Systems.
7. TEE0: Technical Bibliography
8. MEDI: IPOCRATES, Biomedical Bibliography
9. GLAYKA: Social Sciences
10. HEBI: Bibliography 2000, New Publications
11. BIEG: Index of Biomedical Equipment
12. BIAN: Index of Biomedical Equipment Correspondents
13. URSA-DIS Bibliography on Land and Urban planning
14. NEWG: News and announcements for NDC's activities and European Projects
15. TEDG: European member states Procurements
16. SWET: Bibliographic database of current updating
17. ACRO CORDIS, Acronyms
18. RESULTS Research results
19. COMDOC European Commission Internal documents
20. PROG European Research Programmes
21. PROJ European Research Projects
22. PARTNER Partners for European Projects
23. NEWS News for activities, programmes, call for proposals

Furthermore for the purpose of covering scientific information of international interest, the installation of EU databases (CORDIS, TED) on HERMES and the connection of HERMES

through **GATEWAY** with other international Hosts (ECHO, DIMDI) is complementary ensured.

In this way Hellenic users take advantage of massive use hours and information volume purchase from NDC while the most economic and efficient information flow from the international information market to the country is ensured.

HERMES hardware and software installation cost was raised up to 650 million drachmas, while the annual maintenance is reaching approximately 60 million drachmas.

Exploitation of the system is multiple as, except of the use of databases developed by NDC, 14 national databases, 8 EU databases and 1 international database are hosted and provided on and through HERMES and access as a **GATEWAY** to other foreign hosts is provided as well. Furthermore the operation of the National Network of Libraries for on-line ordering of photocopies is supported by the system.

The system keeps detailed statistical data of usage. Invoices for databases that are provided on charge, are produced automatically and are based on the connection time and the number of retrieved documents.

15.1.2 DATA BANK

Data Bank is essentially the first host of online database in the private sector (after the Legal Information System HELLAS LEX). In present, it is solely offering the legal information database NOMOS (producer INTRASOFT). Charging is made on annual subscription. The database is addressed to lawyers, judges and jurists. It is operating since 1993 and has a target user group of at least 17.000 potential users. Connection is made via HELLASPAC and the telephone network. Searching is possible with a special menu developed specially for the purposes of the specific database.

15.1.3 Athens Lawyers Association (ALA)

It is operating since 1994 and is offering the Legal Information Database of ALA. It is addressed to lawyers, judges, jurists. The computer system is connected through **GATEWAY** with the computer OPOCE of the Office for Official Publications of European Union and specifically with the database CELEX. It has a target user group of more than 17.000 potential users. Charging is made by annual subscription. Members of the Bars, judges and notaries receive special treatment of particular low charging in order the market of the aforementioned database to be fast developed.

15.1.4 ELOT: Hellenic Standardisation Organisation

ELOT is offering online the Hellenic Standards Database. It uses the information retrieval system BRS (Bibliographic Retrieval System). Online use is rather narrow even though the content is significant. Mainly information is offered in form of photocopies.

15.1.5 COMPULINK

Operating on annual subscription, Compulink provides access to its users through dial-up lines and Internet to a collection of Databases namely:

- **CompuBank**, gives information about the software and hardware companies in Greece and their products.
- **TourismBank**, with information of the Hellenic tourism industry. It gives detailed information on hotel companies and companies offering tourism services.
- **Science Pro**, a full text database with information on various Hi-Tech products and technology updates.

- **EEC Education**, gives information about EU member states Educational Institutions.
- **Business Services**, information on service provider companies operating in Greece.
- **TeleAthens**, database covering cinemas, theatres, TV and cultural events in Athens.

Another service of Compulink is **Electronic Library**, a collection of full text databases where material of Journal publications in Greece is registered and is accessible through a flexible search program.

Recently Compulink offers two additional services:

- Stock-Market and
- Electronic newspaper World News.

Stock-Market includes a new database where holdings prices of Athens Stock Exchange are registered in a daily base, while statistical data and previous prices for each holding are also included since 2nd of January 1995. Additionally, columns with daily, weekly, monthly, and annual comments and analyses about trends and holdings draw.

World News is an electronic newspaper that contains in hourly updating, all correspondences of newswire agencies Reuters and Associated Press, as well as a core of news reports and correspondences of foreign services.

15.1.6 ELEA

ELEA is offering online the bibliographic database BIBLIOGRAPHY 2000 containing the Hellenic publications book production. It provides capabilities for online ordering. The searching is made by menus. The charging for services is annual.

15.1.7 KAPATEL

Offers access through dial-up lines to VIDEOTEX system. It is also functioning as an Internet provider.

15.2 DATABASE PRODUSERS

In the following paragraphs, titles and acronyms of databases produced in Greece are presented with respect to their producers. A comprehensive presentation of most of these databases is given in the Appendix "HELLENIC DATABASES".

15.2.1 NDC

| | |
|-------|--|
| HEPR: | Hellenic on going Research Projects |
| HEDI: | Hellenic Dissertation Index |
| SERI: | Union List of Periodicals in Hellenic Scientific and Technological Libraries |
| LIBR: | Libraries included in SERI |
| HEIM: | Hellenic Electronic Information Market |
| GISB: | International Bibliography on Geographic Information Systems. |

Also developed:

ARGOS: Archaeological Greek Online System in co-operation with KERA/NHRF and the 18 libraries of Schools of Archaeology and archaeology companies in Greece.

It is offered free of charge, online by host HERMES of NDC.

15.2.2 TEE: Technical Chamber of Greece

TEEB: Technical bibliography containing announcements of conferences organised by TEE together with the articles of the TEE information Bulletin.



It is offered free of charge, online by host HERMES of NDC and locally by the bibliographic system of TEE. The bibliographic material of the library is anticipated to be provided through OPAC.

15.2.3 ICAP

ICAP produces a collection of statistical data concerning macro-economic and industrial sectors data, as well as balance sheets of companies operating in Greece. Data are provided in printed form and also in diskette at request.

15.2.4 IATROTEK

HIPPOKRATES: Hellenic Biomedical Bibliography. It is hosted on host HERMES of NDC. The company also produces the Hellenic Thesaurus of Biomedical terms following the MESH (Medical Subject Headings) standards of NLM (National Library of Medicine) in US.

15.2.5 KEKMOKOP

GLAYKA: Bibliographic information on [Sociological, Social Anthropology and Social Politics](#) issues. It is offered free of charge from host HERMES of NDC.

15.2.6 ELEA

BIBLIOGRAPHY 2000: New Hellenic book publications. It is offered on charge from the company's server, from the host HERMES of NDC, through VIDEOTEX and in CD-ROMs with six-month updates.

15.2.7 INSTITUTE OF BIOMEDICAL TECHNOLOGY

BIEX: Index of Biomedical Equipment

BIAN: Index of biomedical equipment representatives

It is offered free of charge from host HERMES of NDC.

15.2.8 ALA (Athens Lawyers Association)

ALA database: Hellenic Legislation and jurisprudence

It is provided on charge online from ALA's host.

15.2.9 INTRASOFT

NOMOS: Hellenic Legislation and jurisprudence

It is provided online, by DATA BANK's host against annual subscription.

15.2.10 SENA

NOMOLOGIA: Hellenic legislation. It is offered on CD-ROM.

15.2.11 NSSG National Statistical Service of Greece

The main statistical data producer in Greece. Large volume of demographic, economic, cultural energy etc. data. Data are distributed in printed form and in diskettes in ASCII format against low price with respect to printed form prices.

15.2.12 DOMIKI

Laws and regulations for Civil Engineers and Architects. It is distributed in printed and electronic form (diskettes).

15.2.13 URSA NET

URSA-DIS: Hellenic Bibliography concerning Urban and regional planning. It is distributed free of charge from host HERMES of NDC.

15.2.14 IGME: Institute of Geological Studies

Bibliographic data of IGME studies and reports. It is installed on a local system. The database will soon be available from host HERMES of NDC.

15.2.15 EKTHE: National Marine Research Centre

International bibliography of publications of Greek researchers on marine sciences. Printed periodical publication. The database will soon be available from host HERMES of NDC.

15.2.16 ITHABIK: Institute for Marine Biology of Crete

International bibliography of publications on marine biology issues. It is distributed free of charge on the INTERNET through the WWW server of IMBC. The database will soon be available also from host HERMES of NDC.

15.2.17 OBI: Industrial Property Organisation OBI

HELLENIC PATENTS: Basic features of patents stored in a local system. The organisation aims to distribute the first pages of each patent in CD-ROM.

15.2.18 ELOT: Hellenic Standardisation Organisation

HELLENIC STANDARDS: It is distributed in CD-ROM and in a local database system.

15.2.19 KAPATEL

Stock exchange information through VIDEOTEX.

15.3 DATA NETWORKS

15.3.1 HELLASPAC

HELLASPAC is the Hellenic Packet Switching Data Network connected to all international PSDNs. HELLASPAC follows X.25 protocol, OSI standard using 64 Kbps. Permanent connections are offered for Synchronous Terminals (X.25) in 2400 - 9600 bps and 1200 - 2400 bps for asynchronous terminals (X.28). Dial up connections are also offered mainly for asynchronous terminals (X.28) in 300 - 2400 bps, and synchronous communication X.32 in 2400 bps.

Number of subscribers-users is as follows:

| | | |
|---------------------|------|------------------|
| X.25 | 1300 | leased lines |
| X.28 | 300 | leased lines (!) |
| SDLC (IBM protocol) | 30 | leased lines |
| X.28 dial-up | 1500 | NUIs |

All commercial foreign hosts are accessible through HELLASPAC.

15.3.2 HELLASCOM

HELLASCOM is the digital network of leased lines. There are more than 200 subscribers. The line capacity raises up to 2Mbps. The network comprise, initially, 8 Digital Cross Connect (DXC) switches interconnected by 2Mbps circuits and located in Athens (5), Thessaloniki (1), Patras (1) and Heracleion (1). Services offered via this network are:

- Videoconference
- Digital Voice Transmission
- High Speed Digital Circuits (64 Kbps, 128 Kbps, 1,984 Mbps)
- Low Speed Digital Circuits (2,4 Kbps - 19,2 Kbps)

15.3.3 ISDN

ISDN (Integrated Services Digital Network) services are under development by Hellenic Telecommunications Organization (OTE) and currently are in the pilot phase of operation. The network is offering rates up to 64 Kbps and services such as videophone, videoconferencing, etc..

15.3.4 INTERNET

There are three networks in Greece interconnected with INTERNET:

1. FORTHNET
2. ARIADNE
3. HELLAS ON LINE

Even though all of them are consisting the Hellenic part of Internet, they are not interconnected with each other (!), but through other countries' networks. This fact yields sometimes in time delays to the end user, but this is considered rather a temporary situation.

In addition, one more network (EDET), is currently in its implementation phase, while the development of another one (OTENET) is already announced.

Except of their services to end users, the above mentioned networks are offering their infrastructure to companies providing network services. More than 10 companies of this kind are currently operating in Greece. In the following paragraphs these networks are presented together with some of the Internet providers. At the end of the section, the official NIR list in Greece, the list of all the Greek Web Servers is presented.

15.3.5 FORTHNET

FORTHNET is a network developed by the University of Crete, Computer Technology Institute (CTI) and financed by GSRT. Recently, FORTHNET S.A. was established with shareholders the CTI and the company ANEK, for further commercial exploitation of the network. The network offers the following services:

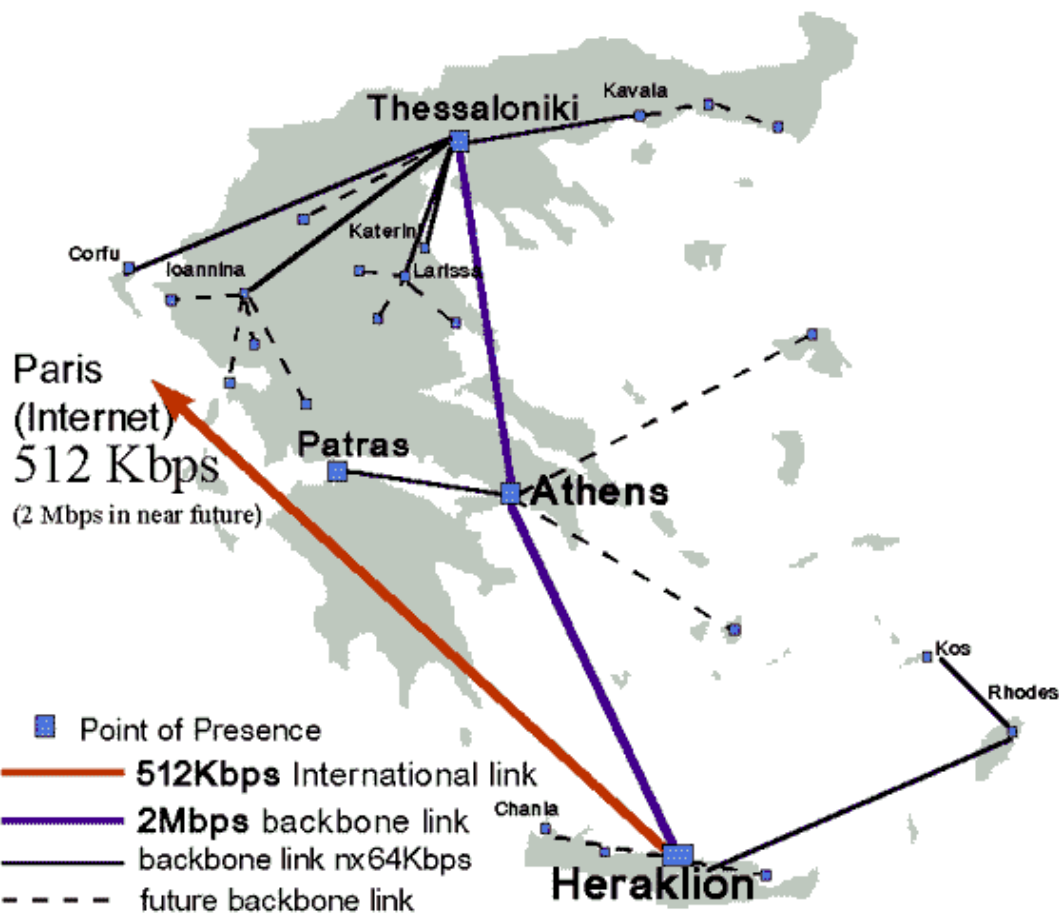
- International Interconnection with INTERNET, BITNET, EBONE, EARN, EUnet, CLNS.
- All the typical services for information exchange, like electronic mail, file transfer, information services (WWW, Gopher, etc.), news, X.400 - X.500.
- Multiple Protocol interconnection (IP, AppleTalk, IPX/Novell, NJE/IP, SNA/SDLC) Host - to -Host, Host - to -Lan, Lan - to - Lan

The access to the network is obtained by three kinds of links:

- Via dial-up lines
- Via leased lines

- Via Public data switching networks (e.g. HELLASPAC)
- The user community includes among others, Universities, Research institutions, VPN Networks, Companies and private organisations.

Diagram 2. FORTHNET Topology



Source: FORTHNET WWW server

15.3.6 ARIADNE-T Academic and Research Data Network

ARIADNE (ARIADNE-T) is the second academic and research network in Greece. It was developed by the research institution Dimokritos with GSRT funds. The typical services offered include access to National and foreign databases, University libraries, hosts and Super Computers, as well as electronic mail services, file transfer, X.400 MHS, X.500, etc. Through the ARIADNE network are additionally offered international interconnections with INTERNET, BITNET, EuropaNET - EBONE, DECNET.

Universities, Technological Institutions, Research and Development departments of Industrial units and since 1994 companies with research activities, are present among the users of the network.

Access to ARIADNE network is possible via three different ways.

- 24 PanHellenic network leased lines
- 10 dial up lines
- Connection with HELLASPAC

Currently, ARIADNE is aiming at the recording of Greek INTERNET users independent on which service provider they have access.

In the following some indicative prices of ARIADNE are presented. Prices of other network providers are of the same level. (Source: ARIADNE WWW Server)

A) Leased Line or Hellascom line

Fixed connection cost: 500.000** GR drachmas

Fixed cost is covering the value of network port in ARIADNE network

Annual Fees (in Drachmas)

| Speed | Cost |
|----------|-----------|
| 9,6 Kbps | 2.000.000 |
| 64 Kbps | 3.500.000 |
| 128 Kbps | 5.000.000 |

B) Access Through Private Network

Annual fees (in Drachmas)

| | | |
|--|---------------|----------|
| Individuals of R&D organisations | 1 access code | 50.000** |
| Available connection time 8 hours/week | | |

| | | |
|--|----------------|-----------|
| R&D Organisations | 2 access codes | 150.000** |
| Available connection time 8 hours/week | | |

C) Access through Public Network

Three months subscription through XXX (PAD) (in Drachmas)

| | | |
|--|---------------|----------|
| Individuals of R&D organisations | 1 access code | 11.800** |
| Available connection time 8 hours/week | | |

| | | |
|--|----------------|----------|
| R&D Organisations | 2 access codes | 35.000** |
| Available connection time 8 hours/week | | |

** Plus VAT 18%

15.3.7 HOL: HELLAS ON LINE

Established in 1993 as an Informatics and Telecommunication company, it has developed an extended network of INTERNET sites interconnecting the main cities of Greece and Cyprus. Hellas On Line is the Greek partner of Pipex International. The company offers Dial-Up connections (Dynamic and Static PPP connections and Internet e-mail), ISDN and leased lines (28.8K V.34 and 19.2K asynchronous as well as connections with Hellascom in 64•, 128• and 256•) with rates from 19.2K up to 2Mb (Pipex Connection).

The basic Internet services include access to World Wide Web, e-mail, FTP, Telnet, Gopher, Wais, Archie, IRC etc.

15.3.8 EDET

The National Network of Research and Technology is consisting the most recently designed data network by GSRT. Its operation is foreseen to start on 1996 (;). EDET will establish a direct 2 Mbps connection with DANTE of Holland and direct lines with Bulgaria and Cyprus. In country, EDET will cover all Academic and Research Institutions offering full interconnection between them. The main objection is raised by FORTHNET which argues

that the design of EDET does not exploits the already installed backbone of the network that GSRT itself has funded.

15.3.9 OTENET

Its implementation is announced by Hellenic Telecommunication Organisation but it has not yet been implemented.

15.3.10 Network Services Providers

Among private companies offering network services the following ones are included:

1. COMPULINK
2. NETOR,
3. EEXINET (Hellenic INTERNET Users Association)
4. ALPHAnet
5. EXPERT-NET
6. HIGHWAY network
7. ISTOS net
8. Acropolis net
9. etc.

15.3.11 COMPULINK

The development of on-line services system CompuLink was started in 1991. It is an integrated application of this type as it provides a wide range of on-line services.

CompuLink provides access to a teleconferencing system, the main part of which was developed in Greece based on international standards, and which administrates conferences with a large variety of topics. The former system is framed additionally by an electronic mail system through which messages and binary files are exchanged. Furthermore real time voice conferencing between two or more users is also offered.

Through CompuLink, the user has access to a large number of software libraries in the disk as well as in on-line CD-ROMs.

Except Athens, Compulink maintains sites to other Greek cities namely in Thessaloniki (since 1994), Patra, Heraklion, Volos, Ioannina, Larissa, Rhodes.

Subscribers of Compulink have daily access to the Internet with unlimited time and volume of transferred data. Connection to the Internet is achieved through Helalscom 128 Kbps lines, with the prospective to upgrade them to 2Mbps.

CompuLink is the first private company that installed a Web Server on December 1994.

15.3.12 NETOR

NETOR is a network service and Internet access provider operating with 5 sites in the wider area of the Capital. It the only Internet provider with its own site abroad - London. The company offers SLIP connections with rates up to 128Kbps. It is operating the first iphone server (voice chat) in Greece and the first CU-SeeMe (network video) reflector. NETOR is also operating the first Web to Fax Gateway in Greece which can send a fax with Greek text in the area of Athens and with English text international. This service is offered free of charge to all Internet users in and out of Greece. Furthermore, NETOR develops Internet based services with Greek content. Already available are a news paper and a basketball index and a complete exchange service. It will soon host the pages of a TV channel.

15.3.13 EEXI

Hellenic Internet Users Association is an effort to join all Greek Internet users in Greece and abroad. It is a non-profit organisation with main objective the creation of new information channels and ways of co-operation, as well as full exploitation of the revolutionary capabilities that new technologies of computer communications are offering.

Since 1993, EEXI has exploited the energy of its members on its official recognition, on the establishment of its offices, on the installation and operation of its host and on holding more than 10 seminar courses on structure and use of Internet, addressed to whom it may concerns. EEXI offers services to its members so as to secure their access to Internet, to aware them on network issues, to promote co-operation for the solution of problems, to support them and to develop personal contacts between members for the purpose of promoting the concept of human communication through networks. Meanwhile, the company organises training seminars taking care of prices so as to be logical for students and undergraduates. It maintains its host with permanent Internet connection and is providing access codes to its members.

15.3.14 ALPHAnet

"ALPHANET" is covering Business companies in the frame of INTERNET. Integrated services are offered ranging from Software that may be needed for an Internet connection, to WEB authoring and to regular seminars on Internet Technology.

Besides the main company's objectives, the framework is concerning Cultural, Political, and Social events of Greece.

"ALPHANET" is covering all INTERNET services (Telnet, Ftp, UseNet, WWW, etc.) and is offering to its subscribers all kinds of Internet connections (SLIP-CSLIP-PPP-UNIX SHELL) with V34/28.800bps lines.

15.3.15 EXPERT-NET

EXPERT.SYS was established in 1994 in Thessaloniki. Its main objectives are provision of high level consultative and technical services concerning development and maintenance of Wide Area Networks (WAN).

Concurrently, the company went towards the development and maintenance of INTERNET sites in the area of Thessaloniki, Kozani, Edessa, Gianitsa and soon Veria. It has also developed flexible tools permitting presentation of business companies through WWW, as well as easy modification of WWW pages' content. The company is also operating as Internet service provider focusing on Internet applications that it may have on Greek business.

Services offered are:

Consultancy on Economic and Technical issues for the presence on Internet.

Network and System administration

User training and Technology transfer.

15.3.16 Highway Network

HIWAY network is the first commercial network services provider in the area of Achaia. Its objective is to provide integrated network services in Achaia and other Greek cities in

relevant low cost. Access to its site is possible through lines and modems V.34 for a connection speed 28800 bps.

It offers real PPP connection and the UNIX user account is on SparcStations running solaris V2.4.

It is offering e-mail services, Usenet News, IRC, World-Wide Web, FTP, Archie, Gopher. Furthermore Highway has already started the development of services:

- Server with emphasis on sports and special interest issues.
- News of Patras
- Cultural and Entertainment information
- Classified advertisements

15.3.17 Others

Among private companies offering Internet services, are included and companies offering BBS services like Optibase BBS, Knossos BBS, etc.

15.3.18 Index of Hellenic WEB SERVERS (NIR LIST)

The official catalogue of Greek WWW servers as it is distributed in *W3 Consortium* updated on 21 March, 1996.

(Source: Web Server Forthnet).

1. FORTHnet S.A. - Hellenic Telecommunications and Telematics Applications Company <http://www.forthnet.gr/>
2. FOundation for Research and Technology Hellas - Institute of Computer Science <http://www.ics.forth.gr/>
3. FOundation for Research and Technology Hellas - Institute of Applied Computational Mathematics (Division of Specialization and training) <http://euclid.iacm.forth.gr>
4. FOundation for Research and Technology Hellas - Institute of Applied Computational Mathematics <http://www.iacm.forth.gr>
5. FOundation for Research and Technology Hellas - Chemical Process Engineering Research Institute
6. FOundation for Research and Technology Hellas - Institute of Electronic Structure and Laser , Ultraviolet Laser Facility
7. FOundation for Research and Technology Hellas - Institute of Molecular Biology & Biotechnology
8. Science and Technology Park of Crete
9. University Of Crete
10. University Of Crete Computer Science Department, Heraclion
11. University Of Crete Computer Center Education Team
12. University Of Crete, Medical School
13. University Of Crete, Medical School, Preventative Medicine & Nutrition Clinic
14. University Of Crete Library Automation Team
15. University Of Crete - Physics Campus
16. ARIADNE - NRCPS
17. ARIADNE - Hellenic News Database
18. ARIADNE - Hellenic Civilization Database
19. Institute of Nuclear Technology - Radiation Protection of NCSR "Demokritos"
20. Institute of Microelectronics of NCSR "Demokritos"
21. Institute of Informatics & Telecommunications of NCSR "Demokritos"
22. Aristotle University Of Thessaloniki
23. Aristotle University Of Thessaloniki - School of Engineering
24. Aristotle University Of Thessaloniki - Faculty of Electrical Engineering
25. Aristotle University Of Thessaloniki - Electrical Engineering Dept. - Egnatia WWW Server
26. Aristotle University Of Thessaloniki - Electrical Engineering Dept. - Telecommunications Div.
27. Aristotle University Of Thessaloniki - Department of Civil Engineering
28. Aristotle University Of Thessaloniki - Department of Civil Engineering, Hydraulics & Environmental Engineering Division
29. Aristotle University Of Thessaloniki - Department of Civil Engineering, Transportation Engineering Lab.
30. Aristotle University Of Thessaloniki - Highway Laboratory
31. Aristotle University Of Thessaloniki - Faculty of Chemical Engineering

32. Aristotle University Of Thessaloniki - Project Aristoteles
33. Aristotle University Of Thessaloniki - Department of Mathematics
34. Aristotle University Of Thessaloniki - Department of Informatics
35. Aristotle University Of Thessaloniki - Computer Vision & Image Processing Group
36. Aristotle University Of Thessaloniki - 1995 IEEE Workshop on Nonlinear Signal and Image Processing
37. Aristotle University Of Thessaloniki - Transport Properties Laboratory
38. Aristotle University Of Thessaloniki - Central Library of Aristotle University
39. Aristotle University Of Thessaloniki - Department of Physics
40. Aristotle University Of Thessaloniki - Astronomical Observatory, Department of Physics
41. Aristotle University Of Thessaloniki - Medical School
42. Aristotle University Of Thessaloniki - Medical Faculty, Department of Pharmacology & Narcotics Reference Center
43. Aristotle University Of Thessaloniki - School of Biology
44. Aristotle University Of Thessaloniki - School of Rural & Surveying Eng.
45. University of Macedonia, Applied Informatics Dept.
46. National Technical University of Athens
47. National Technical University of Athens - Software Engineering Laboratory (SoftLab)
48. National Technical University of Athens - Telecommunications Laboratory
49. National Technical University of Athens - Network Management & Optimal Design Laboratory
50. National Technical University of Athens - Knowledge & Database Systems Laboratory
51. National Technical University of Athens - Media & Communication Laboratory
52. National Technical University of Athens - Digital Systems & Computers Laboratory
53. National Technical University of Athens - Computer Center of the Electrical and Computer Engineering Department
54. National Technical University of Athens - ElectroScience Division
55. National Technical University of Athens - High Performance Computing Unit
56. Computer Technology Institute
57. Athens High Performance Computing Laboratory
58. PATREUS: High Performance Computing Laboratory - University of Patras, Computer Engineering and Informatics Department (CEID)
59. Applied Electronics Laboratory - Department of Electrical and Computer Engineering, University of Patras
60. PHAROS: Computer Laboratory - Department of Electrical and Computer Engineering, University of Patras
61. Computer Engineering & Informatics Department, University of Patras
62. Department of Chemical Engineering, University of Patras
63. Laboratory of Plasma Chemistry - Department of Chemical Engineering, University of Patras
64. Liquid Crystal Group, Department of Physics, University of Patras
65. Electronics Lab., Department of Physics, University of Patras
66. Democritus University of Thrace
67. Democritus University of Thrace - Automatic Control Systems Laboratory
68. Department of Informatics - University of Athens
69. Athens University of Economics and Business
70. Technological Educational Institution of Thessaloniki - Department of Information Technology
71. Institute for Language and Speech Processing, ILSP

72. Multimedia Systems Institute of Crete
73. Technical University of Crete - Applied Mathematics and Computers Laboratory (A.M.C.L.)
74. Technical University of Crete - Decision Support Systems Lab.
75. Technical University of Crete - Library
76. Hellenic Ministry of Culture
77. Hellenic Ministry of Foreign Affairs
78. Hellenic Ministry of Education & Religious Affairs
79. Association of Hellenic Internet Users (EEXI)
80. Compulink On Line Information Services
81. Hellas On Line
82. The Aegean Web Server
83. Diavlos Informatics, Samos
84. Diavlos Informatics, Thessaloniki
85. University of the Aegean
86. Hypernet
87. Open Newsletter Ltd
88. Plus Tourism Services
89. ONNED Internet Access Provider
90. Ermis On Line
91. BIZ*NET Information Services
92. Ellinogermaniki Agogi
93. Pouliadis and Associates (Athens)
94. Pouliadis and Associates (Thessaloniki)
95. Telecommunication Systems Institute, Crete
96. Foundation of the Hellenic World
97. Knossos Technologies S.A.
98. Optibase BBS
99. Technological Educational Institute of Patras
100. Expert-net
101. Knossos BBS
102. "ELEFTHEROTYPIA" Newspaper
103. ETBA S.A.
104. Integrated Information Systems
105. Singular Software
106. Technical Press S.A. - TechLink
107. Intracom S.A.
108. Eurolink
109. HELIOS: Tourism & Commercial Services in the Aegean Islands
110. "TA NEA" Newspaper (Labrakis Press S.A.)
111. ATHENS NEWS - Electronic Edition
112. Research Centre for Equal Opportunities - KETHI
113. OPENet
114. SparkNet S.A.
115. Netor S.A.
116. I-COM Internet Communications
117. AlphaNet
118. Archimedes Ltd.
119. Athens Remote Systems
120. Adel/Saatchi & Saatchi Advertising
121. Technological Educational Institute of Heraklion
122. Institute of Marine Biology of Crete

123. University of Ioannina
124. Performance Technologies
125. Macedonian Press Agency
126. ELEA Ltd.
127. Link S.A. Consultants - Internet Services
128. Hellenic General Insurance Company S.A.
129. ALPHA Systems S.A.
130. Delta Schools of Bussiness & Technology
131. French Embassy
132. Hiway Network
133. Global Technology Company
134. Kapatel - Matrix
135. Manuscript Library of the Mytilene Gymnasium (Experimental Lyceum)
136. ISTOS Network
137. Radio Thessaloniki
138. Northfin Ltd.
139. Heletel Ltd.
140. 1st TEL Pilaia
141. The Corfu Island Home Page: Regional and Tourism Information
142. Mediterranean Business Network S.A.
143. National Documentation Center
144. BCG Corp. Training & Support
145. Animbase On-Line Studio
146. Acropolis Net
147. Planet Interservices
148. PC Systems S.A.
149. New Europe Newspaper
150. Antenna Radio
151. Alpha Media Services S.A.
152. C.D.Glavopoulos Associates Inc - Insurance Loss Adjusters
153. Amnesty International in Greece
154. ANT1 FM Radio Station (Macedonia)
155. MEGA Systems
156. Exostis Magazine
157. Star FM Radio Station
158. World Council of Hellenes Abroad
159. Zachariadou Bookstore
160. ZEUS European Economic Interest Group & ZEUSnet

Gopher Servers

1. FORTHnet, FOundation for Research and Technology Hellas - Institute of Computer Science
2. University Of Crete Computer Science Department, Heraclion
3. University Of Crete Computer Center
4. ARIADNE - NRCPS
5. ARIADNE - Hellenic News Database
6. ARIADNE - Hellenic Civilization Database
7. University of the Aegean, Central Library, Mytilene
8. CIHEAM - International Centre of Advanced Mediterranean Agronomic Studies
9. FORTH IMBB
10. Technical University of Crete - Library
11. Integrated Information Systems

On line Library Servers

1. Ptolemeos II Library System (Triton): University Of Crete Computer Center, Heraclion and FOundation for Research and Technology Hellas Library Server.
2. Ptolemeos II Library System (Amaltheia): University Of Crete Computer Center, Rethymnon
3. University of the Aegean Library, Mytilene
4. University of the Aegean Library, Chios
5. University of the Aegean Library, Samos
6. Mediterranean Agronomic Institute, Chania
7. Technical Univ. of Crete, Chania
8. Aristotle University of Thessaloniki
9. University of Macedonia
10. Panteion University, Athens

15.3.19 VIDEOTEX

HELLASTEL is the Hellenic Videotex Service. The Hellenic Telecommunication Organisation (OTE) has recently (1993) set up the Hellenic VIDEOTEX service HELLASTEL. HELLASTEL commercialisation started on March, 15 1994.

The network is consisted of 10 nodes located in various cities covering all the country.

For the moment at least 12 different organisations/companies offer 46 different services via HELLASTEL. Different subjects are covered namely among other: databases, infotainment, news, weather reports, flights, ship and train departures, stock exchange, astrology (!), tenders and procurements, telephone subscribers catalogue, tourism, etc. International connection has also been established with the French VIDEOTEX system MINITEL of France Telecom, permitting access to Greek users.

Although VIDEOTEX technology appeared in the 80's, did not managed to be exploited in Europe except France where it is widely spread. Its future is rather unpromising regarding the exploitation of Internet services and facilities especially with the fast development of World Wide Web.

15.4 INFORMATION CENTRES

In the following paragraphs, information centres and their services are presented comprehensively in addition with the Hosts that they have access and the databases that they mostly use. Information centres are differentiated with respect to information brokers as the former ones are, or operating as, non-profit organisations (perhaps they cover operational cost or “pure” information cost, at most) while the second ones are aiming at obtaining profit.

15.4.1 NDC

The Information Retrieval department of NDC is the main information centre in Greece. Established in 1980, its main action line is to provide scientific and technological information to the Hellenic scientific community with direct online access. During 1994, 5.600 queries were answered, stated by Universities, Technological Institutions, Public Organisations, and Individuals. Distribution of its users is shown in Table 4.

Table 1. NDC’s Information retrieval Department’s User distribution

| ORGANISATIONS | QUERIES | % |
|---------------------------------------|--------------|-------------|
| Universities - Techn. Inst. | 2128 | 38% |
| National Health System (Hospitals) | 2464 | 44% |
| Research Inst. | 336 | 6% |
| Other ministries | 112 | 2% |
| Individuals | 560 | 10% |
| Total | 5.600 | 100% |

Total cost of the services offered, is covered almost 100% by Ministries of Health and Education funds and individual returnees. Its staff is consisting of 7 specialised scientists (4 biologists, 1 chemist engineer, 1 physicist, 1 economist). The department has access to about 1.400 international commercial databases, available on several Hosts (DIMDI, ECHO, DIALOG, ESA-IRS, QUESTEL, DATASTAR, STN, ORBIT, EUROBASES etc.) covering almost all knowledge issues of science and technology.

15.4.2 DOCUMENTATION FOCAL POINTS

NDC in co-operation with regional universities, established and developed since 1993 the following Documentation Focal Points (DFP).

DFPs are functioning also as Information Centres in order to cover information needs of the corresponding Universities and local Industry. The number of online searches carried out in 1995 on hosts DIMDI and DIALOG, is presented in the following table.

| DOCUMENTATION FOCAL POINT | NUMBER OF SEARCHES |
|---|--------------------|
| Aristotelian University of Thessaloniki | 390 |
| University of Patras | 220 |
| University of Ioannina | 498 |
| Demokritian University of Thrake | 175 |
| University of Crete | 347 |

Source: Documentation Focal Points

15.4.3 Technical Chamber of Greece: TCG

The Information System of Technical Chamber of Greece, addressed to all its members and departments is currently under development and will soon be available online under subscription.

It contains the TCG's members record, the prices of products engineers are interested of, descriptive price lists for electrollogical, mechanical and other constructions, index of TCG's activities, National and International competitions, projects and procurements, electronic mail, while it is interconnected with TCG's Library system and with database NOMOS.

The **Library Documentation Unit** of TCG is operating as information centre since 1985. It is covering mainly engineering topics and as access to Hosts ESA/IRS, DATA STAR, DIALOG, ECHO, HERMES. It is also providing in local use the databases COMPENDEX and WILSON on CD-ROM. Library account for 1995 shows that 38 searches were carried out online and 144 on COMPENDEX CD-ROM. TCG's Library is participating in the National Network of Scientific Libraries (NNSL).

15.4.4 ELOT: Hellenic Standardisation Organisation

It is operating as an information centre for topics of national and international standards. It is exploiting mainly the corresponding databases on CD-ROM.

15.4.5 OBI: Industrial Property Organisation

It uses online databases for patents of the European Patent Office as well as databases on CD-ROM during the examine procedure and composition of the corresponding report. The bibliographic data for patents valid in Greece are kept in an in-house database. OBI in co-operation with the European Patent Office produces the first CD-ROM with patents registered in Greece in 1988.

15.4.6 EOMMEH

It covers information needs of small and medium enterprises, mainly in topics of suppliers and potential customers in Greece and abroad. It uses mostly printed form and less online information sources.

European Business Information Centre - Euro Info Centre

Founded by EOMMEH in co-operation with DG XIII in the frame of the EC Action Program for Small and Medium enterprises, it is operating in Athens, and in EOMMEH branches in Mytilene, Patra, Larisa, and Alexandroupoli.

It provides enterprises with information and consults about EU programmes as well as for programmes financed by European Funds for Regional Development, European Social Funds, European Investment Bank etc. Information resources used are from EC databases, relevant to the sectors of state procurements, free transfer of employees, capitals and services, legislation of competition, technical specifications for products and industrial materials, publications, etc.

15.4.7 NATIONAL INFORMATION NETWORK ON PUBLIC PROCUREMENTS

The National Information Network for Public Procurements is currently in its pilot phase. It is being developed by EOMMEH with financial contribution of EU programme PRISMA. It is consisting an electronic information system for SME's and a system for awareness, organisation and observation of SME's partnerships in public procurements.

It will contain gathered and processed data and information on:

- all State procurements per kind of product, region and market sector
- requirements, procedures, cost and type of contracts under which an SME should search for partners for a Joint venture, commercial representation, technology transfer, subcontractor co-operation etc..
- National and European Organisations offering support services to SME's for their participation in Public procurements
- Commission's framework for Public procurements
- Current calls for declaration of interest as well as invitations for public procurements competitions

15.4.8 EIC: EURO-INFO CENTRES

They are established in EOMEH's and Chambers' offices in several regions of the country. Their objective is to strengthen the European dimension of SMEs, through co-operation with other European partners. They cover a part of the information needs of local enterprises in topics such as searching for customers and suppliers. Most of the EIC's have access to ECHO.

While the basic technical infrastructure in terms of computers, and network connections is existing and in some cases is rather remarkable (e.g. Heraklion), the lack of expert staff is consisting a barrier in their operation as significant electronic information services providers.

15.5 ELECTRONIC INFORMATION BROKERS

Information brokerage by private organisations / companies is not consisting currently an extended and well developed activity in Greece.

15.5.1 EL.KE.TEK.: Hellenic Centre for European Documentation

ELKETEK is the official representative of EUROBASES, the databases produced and distributed by OPOCE (Office of Official Publications of European Commission). It offers GATEWAY connection to OPOCE host in Brussels. ELKETEK is co-operating also with ALA (Athens Lawyers Association) for the promotion of the corresponding database. It is also posses OOSA (Economic Co-operation and Development Organisation) CD-ROM. In the company's activities are also included training seminars for the represented databases.

15.5.2 PROTOGENIA

PROTOGENIA is the representative of KNIGHT RIDER (US), owner of hosts DIALOG (US) and DATA STAR (Switzerland). DIALOG is the world's "largest" host. It is hosting more than 400 databases in all knowledge topics. The company is organising training seminars for the represented hosts and databases.

15.6 LIBRARY NETWORKS

NDC took under its responsibility in 1993, the development of the National Network of Scientific Libraries (NNSL). The network was based on the operation of host HERMES and on the Union List of Periodicals on-line database SERI which is developed and updated also by NDC. The first function of NNSL concerns the on-line ordering of Journal articles from those included in the collections of NnSL member Libraries. The system automatically detects and observes actions of orderings and produces detailed reports about the origin and destination of orders from one library to another. Currently 64 libraries spread all over the country are participating actively in the network. The total collection of these libraries covers more than 13.000 unique journal titles. Approximately, two new libraries are becoming members of NNSL every month.

From a relevant announcement¹ and from corresponding recent data it follows that:

- The **172** libraries of database SERI² are the most significant in the area of Research and Technology in Greece. Their collections represent the **80%** of Total National Collection of R&T Journals,
- They cover **19.162** unique journal titles representing **45.370** subscriptions,
- The overlapping coefficient is **2,36** (= subscriptions per title).
- Aprox. **12.000** of these journals are active (their collection is still going on in at least one library of the network)
- The annual cost for the Total National Collection is estimated in **6,6 billion drachmas**.
- With co-ordinated restructuring of parts of libraries' collections, the total amount of **2,5 billion** drachmas is saved every year.

15.6.1 Legal Aspects of Electronic Information Services

The most significant legal aspects normally foreseen in the development and operation of Electronic Information Services can be summarised as follows:

1. Protection of Intellectual Property Rights
2. Protection of Personal Data
3. Co-operation of Public and Private sectors.

In the commission and the EU, these aspects are treated by the Legal Advisory Board (LAB) under DG XIII/E in the frame of IMPACT programme. Reports and result announcements of LAB activities are offered free of charge by NDC.

Protection of Intellectual Property Rights

Intellectual Property Rights aspects in Greece are covered mainly by Law 2121/4.3.1993. Between others this law adjust relevant project issues concerning Fine Arts and science such as databases and computer software.

In 1994 Intellectual Property Organisation (IPO), a non for profit legal entity, was established in purpose of processing and solution distribution of relevant issues.

¹ F. Tsimpoglou "National Network for co-operation of R&T Libraries. Economic assessment of further exploitation" "Infolibraries- Automatisation of Greek Libraries" Conference, GRAPHIS, Thessaloniki 1994

² Most Recent data, 1996. Source: National Documentation Centre.

Co-operation of Public and Private sectors

All over the world, public sector is consisting significant producer and owner of information. A huge volume of information is continuously produced in all sectors of human knowledge by each public organisation. Statistical and demographic data of population, regional and business Economic data, Commercial data, Industrial inventories, Technical and Economic studies, maps, results of Geological researches etc., are only few of the categories of information produced by the public sector.

The main feature of these types of information is that they can be processed so as to obtain added value. The matter of access (free of charge, on-charge or completely prohibited) and further commercial exploitation by taxpayers of the information produced by the public sector has raised several years ago. Does State have the right to sell information for which the corresponding cost of gathering or production is already paid-up by taxpayers? If this is the case, what should be the price? Additionally, Do individuals have the right to sell information that they obtained by the government free of charge? These are only three indicative questions characterising the matter of co-operation.

Several approaches have been proposed and followed, analogue to the Historical and Cultural orientation of each state. Characteristic is the case of Sweden where on one hand the access is free and on the other hand the public sector on its own is undertaking against a low price the delivery of the information content to the interested parties in a form suitable for use and exploitation.

The discussions in the European Commission are oriented to three directions:

- Citizens' free access to the public sector's information.
- Protection of Personal data
- Companies' right to sell after processing, information coming from the public sector in prices corresponding to the cost required so as the information to obtain added value.

In Greece, concerning the matter of co-operation between public and private sectors, there is not a relevant total legal adjustment but short of partial adjustments or practices. The practice followed by the (NSSG) National Statistic Service of Greece is mentioned, where the printed publications are offered in low prices either concerning commercial exploitation or not, while electronic publications (ASCII files in diskettes) are provided after negotiation and special agreements in the case of commercial exploitation and in the same prices with printed in the case of non-commercial exploitation. Furthermore, NSSG does not assign primary data, the publication or exploitation of which may transgress the law for the Protection of Personal data.

Opposite to the "loose" pricing policy of NSSG, the Archaeological Receipts Fund (ARF) disposes of information material are based on a rather accurate price list according to a relevant Act, proposed by the Ministry of Culture concerning the pay-up of usage rights in projects like multimedia and CD-ROM containing images, maps and in general material that the Ministry of Culture owns.

16. Statistical Annexes

Tab. 1: Response Rates

| No. of | TYPES OF SUPPLIERS | | | | | | | |
|------------------------|--------------------|-----------------|-------------------|-------------------|--------------------------|-----------------|------------------------|-----------------|
| | Hosts retrospec. | Hosts real-time | Videotex Services | Audiotex Services | Electronic-mail services | CD-ROM distrib. | Other offline distrib. | Other suppliers |
| Relevant Organizations | 13 | 3 | 4 | 2 | 8 | 30 | 4 | 15 |
| Responses | 5 | 1 | 2 | | 3 | 4 | | 1 |
| Full usable Responses | 5 | 1 | 2 | | 2 | 4 | | |
| Response rate | 38,46% | 33,33% | 50,00% | | 25,00% | 13,33% | | |

Tab. 2: Representativity of Survey Results

| No. of | TYPES OF SUPPLIERS | | | | | | | |
|---|--------------------|-----------------|-------------------|-------------------|--------------------------|-----------------|------------------------|-----------------|
| | Hosts retrospec. | Hosts real-time | Videotex Services | Audiotex Services | Electronic-mail services | CD-ROM distrib. | Other offline distrib. | Other suppliers |
| Information (revenues etc.) from responses in % | 100,00% | 100,00% | 100,00% | | 66,67% | 100,00% | | |
| Representativity for the total population (est.) in % | 80% | 70% | 50% | | 40% | 70% | | |

Tab. 3.1: Characterization of Full Usable Respondents

| No. of | TYPES OF SUPPLIERS | | | | | | | |
|-------------------------------------|--------------------|-----------------|-------------------|-------------------|--------------------------|-----------------|------------------------|-----------------|
| | Hosts retrospec. | Hosts real-time | Videotex Services | Audiotex Services | Electronic-mail services | CD-ROM distrib. | Other offline distrib. | Other suppliers |
| No. of employees (full time equiv.) | 860 | 45 | 18 | | 80 | 35 | | 8 |
| % (est.) of total employees | 90% | 50% | 50% | | 80,0% | 33,3% | | 10% |
| Revenue | 40,5 | 3,5 | 0,2 | | 3,5 | 1,0 | | |
| % (est.) of total revenue | 80% | 70% | 50% | | 40% | 70% | | |

Tab. 3.2: Characterization of Full Usable Respondents for the Eight Different Types of Suppliers (see Tab. 3.1) (By No. of Employees)

| No. of employees | Usable Respondents | Total Population (Companies - Organizations) | Total Population (Employees) |
|------------------|--------------------|--|------------------------------|
| 1 - 5 | 2 | 46 | 160 |
| 6 - 10 | 6 | 18 | 150 |
| 11 - 15 | | 3 | 40 |
| 16 - 21 | | 2 | 40 |
| 21 - 30 | 3 | 4 | 120 |
| 31 - 50 | 3 | 4 | 150 |
| 51 - 100 | | | |
| more than 100 | 2 | 2 | 707 |

Tab. 3.3: Characterization of Full Usable Respondents for the Eight Different Types of Suppliers (see Tab. 3.1) (By Revenue Class)

| Revenues 1994 in ECU | Usable Respondents | Total Population (Companies - Organizations) | Total Population (Revenues in MECU) |
|----------------------|--------------------|--|-------------------------------------|
| Under 100.000 | 2 | 60 | 5 |
| 100 to 200.000 | 3 | 6 | 1 |
| 200 to 300.000 | | 2 | 0,5 |
| 300 to 400.000 | 1 | 2 | 0,7 |
| 400 to 500.000 | | | |
| 500 to 600.000 | | | |
| 600 to 700.000 | | 1 | 0,65 |
| 700 to 800.000 | 2 | 2 | 2 |
| 800 to 1 Mio | 1 | 1 | 1 |
| More than 1 Mio | 5 | 5 | 54 |

Tab. 4: Human Resources (in Full-time Equivalents)

| Categories | TYPES OF SUPPLIERS | | | | | | | | TOTAL |
|---------------------------|--------------------|-----------------|-------------------|-------------------|--------------------------|-----------------|------------------------|-----------------|-------------|
| | Hosts retrospec. | Hosts real-time | Videotex Services | Audiotex Services | Electronic-mail services | CD-ROM distrib. | Other offline distrib. | Other suppliers | |
| Management/administration | 47 | 5 | 9 | | 19 | 27 | | 40 | 147 |
| Sales/marketing | 96 | 9 | 2 | | 14 | 15 | | | 136 |
| Data gathering/Editorial | 48 | 14 | 14 | | 42 | 27 | | 20 | 165 |
| Technical | 765 | 62 | 11 | | 25 | 36 | | 12 | 911 |
| Other | | | | | | | | 8 | 8 |
| TOTAL | 956 | 90 | 36 | | 100 | 105 | | 80 | 1367 |

**Tab. 5.1: Overall Revenues (MECU)
by Type of Suppliers and Type of Sevrvices/Products**

| Type of services/products | TYPES OF SUPPLIERS | | | | | | | | TOTAL |
|-------------------------------------|--------------------|-----------------|-------------------|-------------------|--------------------------|-----------------|------------------------|-----------------|--------------|
| | Hosts retrospec. | Hosts real-time | Videotex Services | Audiotex Services | Electronic-mail services | CD-ROM distrib. | Other offline distrib. | Other suppliers | |
| Database Production | 10,07 | 0,48 | 0,02 | | | 0,22 | | | 10,78 |
| Retrospec. online database services | 12,58 | | | | | | | | 12,58 |
| Real-time info services | 10,07 | 0,95 | | | 1,67 | | | | 12,69 |
| Videotex Services | | | 0,27 | | | | | | 0,27 |
| Audiotex Services | | | | | | | | | |
| Electronic-mail Services | 5,03 | 0,71 | 0,03 | | 3,75 | | | | 9,53 |
| Fax-based info services | | | | | | | | | |
| CD-ROM | 2,52 | | | | | 0,60 | | | 3,12 |
| Other offline info products | | | | | | 0,11 | | | 0,11 |
| Printed products | | | | | | | | | |
| Other services/products | 10,07 | 2,62 | 0,02 | | 2,92 | 0,16 | | | 15,78 |
| TOTAL | 50,33 | 4,76 | 0,33 | | 8,33 | 1,09 | | | 64,85 |

**Tab. 5.2: Overall Revenues
by Type of Suppliers and Type of Services/Products (in %)**

| Type of services/products | TYPES OF SUPPLIERS | | | | | | | | TOTAL |
|-------------------------------------|--------------------|-----------------|-------------------|-------------------|--------------------------|-----------------|------------------------|-----------------|---------|
| | Hosts retrospec. | Hosts real-time | Videotex Services | Audiotex Services | Electronic-mail services | CD-ROM distrib. | Other offline distrib. | Other suppliers | |
| Database Production | 15,52% | 0,73% | 0,03% | | | 0,34% | | | 16,62% |
| Retrospec. online database services | 19,40% | | | | | | | | 19,40% |
| Real-time info services | 15,52% | 1,47% | | | 2,57% | | | | 19,56% |
| Videotex Services | | | 0,41% | | | | | | 0,41% |
| Audiotex Services | | | | | | | | | |
| Electronic-mail Services | 7,76% | 1,10% | 0,05% | | 5,78% | | | | 14,70% |
| Fax-based info services | | | | | | | | | |
| CD-ROM | 3,88% | | | | | 0,92% | | | 4,81% |
| Other offline info products | | | | | | 0,17% | | | 0,17% |
| Printed products | | | | | | | | | |
| Other services/products | 15,52% | 4,04% | 0,03% | | 4,50% | 0,25% | | | 24,34% |
| % of TOTAL market revenues | 77,61% | 7,34% | 0,51% | | 12,85% | 1,68% | | | 100,00% |

Tab. 6: Geographical Analysis of Total Revenues (in %)

| Country | TYPES OF SUPPLIERS | | | | | | | |
|--------------------|--------------------|-----------------|-------------------|-------------------|--------------------------|-----------------|------------------------|-----------------|
| | Hosts retrospec. | Hosts real-time | Videotex Services | Audiotex Services | Electronic-mail services | CD-ROM distrib. | Other offline distrib. | Other suppliers |
| Home country | 80% | 100% | 100% | | 100% | 100% | | |
| Other EU countries | 10% | | | | | | | |
| EFTA countries | 10% | | | | | | | |
| North America | | | | | | | | |
| Rest of the world | | | | | | | | |

Tab. 7.1: Analysis of Revenues by Subject Area (in MECU)

| | TYPES OF SUPPLIERS | | | | | | | | TOTAL |
|------------------------------------|--------------------|-----------------|-------------------|-------------------|--------------------------|-----------------|------------------------|-----------------|--------------|
| | Hosts retrospec. | Hosts real-time | Videotex Services | Audiotex Services | Electronic-mail services | CD-ROM distrib. | Other offline distrib. | Other suppliers | |
| Finance/stock exchange/banking | 5,03 | | | | | | | | 5,03 |
| Company profiles credit ratings | | 0,48 | | | | | | | 0,48 |
| Further business and economic info | | 1,43 | 0,27 | | | | | | 1,70 |
| Legal information | 15,10 | | | | | 0,22 | | | 15,32 |
| Patent information | | | | | | | | | |
| Scientific/technical medical info | 20,13 | 2,38 | | | | 0,55 | | | 23,06 |
| Government info/ political news | 10,07 | 0,24 | | | | 0,22 | | | 10,52 |
| Travel Information | | 0,24 | 0,03 | | | | | | 0,27 |
| Other information | | | 0,03 | | 8,33 | 0,11 | | | 8,48 |
| TOTAL | 50,33 | 4,76 | 0,33 | | 8,33 | 1,09 | | | 64,85 |

Tab. 7.2: Analysis of Revenues by Subject Area (in %)

| | TYPES OF SUPPLIERS | | | | | | | | |
|------------------------------------|--------------------|-----------------|-------------------|-------------------|--------------------------|-----------------|------------------------|-----------------|-----------------|
| | Hosts retrospec. | Hosts real-time | Videotex Services | Audiotex Services | Electronic-mail services | CD-ROM distrib. | Other offline distrib. | Other suppliers | TOTAL (Average) |
| Finance/stock exchange/banking | 7,76% | | | | | | | | 7,76% |
| Company profiles credit ratings | | 0,73% | | | | | | | 0,73% |
| Further business and economic info | | 2,20% | 0,41% | | | | | | 2,61% |
| Legal information | 23,28% | | | | | 0,34% | | | 23,62% |
| Patent information | | | | | | | | | |
| Scientific/technical medical info | 31,04% | 3,67% | | | | 0,84% | | | 35,56% |
| Government info/ political news | 15,52% | 0,37% | | | | 0,34% | | | 16,23% |
| Travel Information | | 0,37% | 0,05% | | | | | | 0,42% |
| Other information | | | 0,05% | | 12,85% | 0,17% | | | 13,07% |
| % of TOTAL market revenues | 77,61% | 7,34% | 0,51% | | 12,85% | 1,68% | | | 100,00% |

Tab. 8.1: Analysis of revenues by user groups (in MECU)

| User Groups | TYPES OF SUPPLIERS | | | | | | | | |
|---------------------------------------|--------------------|-----------------|-------------------|-------------------|--------------------------|-----------------|------------------------|-----------------|--------------|
| | Hosts retrospec. | Hosts real-time | Videotex Services | Audiotex Services | Electronic-mail services | CD-ROM distrib. | Other offline distrib. | Other suppliers | TOTAL |
| Manufacturing Industry | 2,52 | 0,29 | 0,20 | | 0,83 | 0,11 | | | 3,94 |
| Service sector | 5,03 | 1,67 | 0,03 | | 2,08 | 0,22 | | | 9,03 |
| Government and public administrations | 27,68 | 0,14 | | | 0,42 | 0,27 | | | 28,52 |
| Universities, polytechniques etc. | 2,52 | 0,14 | | | 0,42 | 0,22 | | | 3,29 |
| R&D | 5,03 | | | | 1,25 | 0,07 | | | 6,35 |
| Primary and Secondary schools | | | | | | | | | |
| Private households | | 2,43 | 0,02 | | 3,33 | 0,09 | | | 5,87 |
| Others | 7,55 | 0,10 | 0,08 | | | 0,12 | | | 7,85 |
| TOTAL | 50,33 | 4,76 | 0,33 | | 8,33 | 1,09 | | | 64,85 |

Tab. 8.2: Analysis of revenues by user groups (in %)

| User Groups | TYPES OF SUPPLIERS | | | | | | | | |
|---------------------------------------|--------------------|-----------------|-------------------|-------------------|--------------------------|-----------------|------------------------|-----------------|----------------|
| | Hosts retrospec. | Hosts real-time | Videotex Services | Audiotex Services | Electronic-mail services | CD-ROM distrib. | Other offline distrib. | Other suppliers | TOTAL |
| Manufacturing Industry | 3,88% | 0,44% | 0,31% | | 1,28% | 0,17% | | | 6,08% |
| Service sector | 7,76% | 2,57% | 0,05% | | 3,21% | 0,34% | | | 13,93% |
| Government and public administrations | 42,69% | 0,22% | | | 0,64% | 0,42% | | | 43,97% |
| Universities, polytechniques etc. | 3,88% | 0,22% | | | 0,64% | 0,34% | | | 5,08% |
| R&D | 7,76% | | | | 1,93% | 0,10% | | | 9,79% |
| Primary and Secondary schools | | | | | | | | | |
| Private households | | 3,74% | 0,03% | | 5,14% | 0,13% | | | 9,04% |
| Others | 11,64% | 0,15% | 0,13% | | | 0,18% | | | 12,10% |
| TOTAL | 77,61% | 7,34% | 0,51% | | 12,85% | 1,68% | | | 100,00% |

Tab. 8.3: Number of Users by Type of Services/Products (in Absolute Values)

| Type of services/products | TYPES OF SUPPLIERS | | | | | | TOTAL |
|-------------------------------------|--------------------|-----------------|-------------------|-------------------|--------------------------|-----------------|--------------|
| | Hosts retrospec. | Hosts real-time | Videotex Services | Audiotex Services | Electronic-mail services | Other suppliers | |
| Retrospec. online database services | 15000 | | | | | | 15000 |
| real-time info services | | | | | | | |
| Videotex Services | | | 7000 | | | | 7000 |
| Audiotex Services | | | | 1000 | | | 1000 |
| Other Online Services | | | | | 13000 | 1000 | 14000 |
| TOTAL | 15000 | | 7000 | 1000 | 13000 | 1000 | 37000 |

Tab. 8.4: Number of Users by Type of Services/Products (in %)

| Type of services/products | TYPES OF SUPPLIERS | | | | | |
|-------------------------------------|--------------------|-----------------|-------------------|-------------------|--------------------------|-----------------|
| | Hosts retrospec. | Hosts real-time | Videotex Services | Audiotex Services | Electronic-mail services | Other suppliers |
| Retrospec. online database services | 40,54% | | | | | |
| real-time info services | | | | | | |
| Videotex Services | | | 18,92% | | | |
| Audiotex Services | | | | 2,70% | | |
| Other Online Services | | | | | 35,14% | 2,70% |

Tab. 9: Number of CD-ROM's sold

| | 1994 | 1995 |
|------------------------|--------|--------|
| Number of titles* | 2000 | 3000 |
| Number of units | 100000 | 210000 |
| – Stand alone CD-ROM's | 25000 | 35000 |
| – Network applications | 50 | 150 |
| TOTAL | | |

*Number of titles: 20 out of 2000 are of national production

Tab. 10: Cost Recovery (in %)

| | TYPES OF SUPPLIERS | | | | | | | |
|------------------|--------------------|-----------------|-------------------|-------------------|--------------------------|-----------------|------------------------|-----------------|
| | Hosts retrospec. | Hosts real-time | Videotex Services | Audiotex Services | Electronic-mail services | CD-ROM distrib. | Other offline distrib. | Other suppliers |
| Market income | 95% | 80% | 100% | | 85% | 70% | | |
| Public subsidies | 5% | 5% | | | 15% | 30% | | |
| Further sources | | 15% | | | | | | |

Tab. 11.1: Profitability (No. of Answers) - in Terms of Operating Costs

| Type of suppliers | TYPES OF SUPPLIERS | | | | | | | | TOTAL |
|-------------------|--------------------|-----------------|-------------------|-------------------|--------------------------|-----------------|------------------------|-----------------|-------|
| | Hosts retrospec. | Hosts real-time | Videotex Services | Audiotex Services | Electronic-mail services | CD-ROM distrib. | Other offline distrib. | Other suppliers | |
| Total answers | 2 | 1 | 2 | | 1 | 2 | | 1 | 9 |
| Yes | 2 | 1 | 1 | | | 2 | | 1 | 7 |
| No | | | 1 | | | | | | 1 |
| 1994 | | | | | 1 | | | | 1 |
| 1995 | | | | | | | | | |
| 1996 | | | | | | | | | |
| 1997 | | | | | | | | | |
| Later or Never | | | 1 | | | | | | 1 |
| TOTAL | 2 | 1 | 2 | | 1 | 2 | | 1 | 9 |

Tab. 11.2: Profitability (No. of Answers) - in Terms of Full Costs

| Type of suppliers | TYPES OF SUPPLIERS | | | | | | | | TOTAL |
|-------------------|--------------------|-----------------|-------------------|-------------------|--------------------------|-----------------|------------------------|-----------------|-------|
| | Hosts retrospec. | Hosts real-time | Videotex Services | Audiotex Services | Electronic-mail services | CD-ROM distrib. | Other offline distrib. | Other suppliers | |
| Total answers | 2 | 1 | 2 | | 1 | 2 | | 1 | 9 |
| Yes | 2 | 1 | 1 | | | 1 | | | 5 |
| No | | | 1 | | 1 | 1 | | 1 | 4 |
| 1994 | | | | | | | | | |
| 1995 | | | | | | | | | |
| 1996 | | | | | | | | | |
| 1997 | | | | | 1 | | | | 1 |
| Later or Never | | | 1 | | | 1 | | 1 | 3 |
| TOTAL | 2 | 1 | 2 | | 1 | 2 | | 1 | 9 |

Tab. 12.1: Analysis of Costs (MECU)

| Cost Categories | TYPES OF SUPPLIERS | | | | | | | | TOTAL |
|--|--------------------|-----------------|-------------------|-------------------|--------------------------|-----------------|------------------------|-----------------|--------------|
| | Hosts retrospec. | Hosts real-time | Videotex Services | Audiotex Services | Electronic-mail services | CD-ROM distrib. | Other offline distrib. | Other suppliers | |
| Staff costs | 23,83 | 1,33 | 0,33 | | 1,40 | 2,40 | | | 29,30 |
| Investment expenditure | 5,50 | 0,67 | | | 0,70 | | | | 6,87 |
| Costs of data gathering/processing editorial | 0,73 | 1,13 | 0,67 | | 1,19 | 1,20 | | | 4,92 |
| Costs of Technical operations | 4,40 | 1,87 | 0,08 | | 1,96 | 1,80 | | | 10,11 |
| Costs of sales/marketing | 1,10 | 1,33 | 0,50 | | 1,40 | 0,60 | | | 4,93 |
| Costs of user service/training | 0,73 | 0,33 | 0,08 | | 0,35 | | | | 1,50 |
| Other Costs | 0,37 | | | | | | | | 0,37 |
| TOTAL | 36,67 | 6,67 | 1,67 | | 7,00 | 6,00 | | | 58,00 |

Tab. 12.2: Analysis of Costs (in %)

| Cost Categories | TYPES OF SUPPLIERS | | | | | | | | TOTAL |
|--|--------------------|-----------------|-------------------|-------------------|--------------------------|-----------------|------------------------|-----------------|---------|
| | Hosts retrospec. | Hosts real-time | Videotex Services | Audiotex Services | Electronic-mail services | CD-ROM distrib. | Other offline distrib. | Other suppliers | |
| Staff costs | 41,09% | 2,30% | 0,57% | | 2,41% | 4,14% | | | 50,52% |
| Investment expenditure | 9,48% | 1,15% | | | 1,21% | | | | 11,84% |
| Costs of data gathering/processing editorial | 1,26% | 1,95% | 1,15% | | 2,05% | 2,07% | | | 8,49% |
| Costs of Technical operations | 7,59% | 3,22% | 0,14% | | 3,38% | 3,10% | | | 17,43% |
| Costs of sales/marketing | 1,90% | 2,30% | 0,86% | | 2,41% | 1,03% | | | 8,51% |
| Costs of user service/training | 1,26% | 0,57% | 0,14% | | 0,60% | | | | 2,59% |
| Other Costs | 0,63% | | | | | | | | 0,63% |
| TOTAL | 63,22% | 11,49% | 2,87% | | 12,07% | 10,34% | | | 100,00% |

Tab. 13: Outsourcing Activities (No. of Answers)

| Tasks | TYPES OF SUPPLIERS | | | | | | | | TOTAL No. of Answers |
|--|--------------------|-----------------|-------------------|-------------------|--------------------------|-----------------|------------------------|-----------------|----------------------|
| | Hosts retrospec. | Hosts real-time | Videotex Services | Audiotex Services | Electronic-mail services | CD-ROM distrib. | Other offline distrib. | Other suppliers | |
| Data gathering/ processing editorial | 1 B | 1 I | 2 I | | 1 I | 1 I | | | 1 B 5 I |
| Software development and maintenance | 1 B | 1 I | 1 I 1 B | | 1 B | 1 I | | | 3 B 3 I |
| Technical operations (e.g. host service) | 1 B | 1 I | 2 I | | 1 I | 1 I | | | 1 B 5 I |
| Public relations | 1 I | 1 I | 2 I | | 1 I | 1 B | | | 1 B 5 I |
| Marketing | 1 I | 1 I | 1 I 1 B | | 1 I | 1 B | | | 2 B 4 I |
| Other | | | 1 E | | 1 B | | | | 1 E 1 B |

Tab. 32: Overall Response Rates

| No. of | TYPE OF SERVICES OFFERED | | | | | | | | |
|------------------------|------------------------------|-------------------------------|-------------------------------|----------------------------|------------|-------------------------|-------------------------------|---------------------|-------|
| | Online electr. info services | Offline electr. info services | Offline library serv./archiv. | Training/further education | Consulting | Database product./input | Distr. of softw. progr./pack. | Other info services | TOTAL |
| Relevant organizations | 8 | 4 | 5 | | 2 | 19 | | | 38 |
| Responses | 6 | 3 | 4 | | 2 | 7 | | | 22 |
| Full usable responses | 5 | 1 | 2 | | 0 | 5 | | | 13 |
| Response rate | 63% | 25% | 40% | | 0% | 26% | | | 34% |

Tab. 33: Representativity (in %)

| | TYPE OF SERVICES OFFERED | | | | | | | | |
|--|---------------------------------|----------------------------------|----------------------------------|-------------------------------|------------|----------------------------|----------------------------------|------------------------|-------|
| | Online electr. info services | Offline electr. info services | Offline library serv./archiv. | Training/further education | Consulting | Database product./input | Distr. of softw. progr./pack. | Other info services | TOTAL |
| Information (revenues etc.) from responses in % | 83,33% | 33,33% | 50% | | | 71,43% | | | 60% |
| Representativity for the total population (est.) in % | 80% | 60% | 50% | | | 70% | | | 70% |

Tab. 35: Kind of Sources Used

| Usage | MEDIA | | | | | |
|-------------------|---------------|-------------------|-----------------|-----------------|------------------|--------|
| | Printed media | Personal contacts | Internal online | External online | External offline | Others |
| in more than 50 % | 46% | 15% | 38% | 15% | | |
| 10 % - 50 % | 8% | 15% | 8% | | | |
| less than 10 % | 23% | 31% | 23% | 31% | 23% | |
| never | 8% | 8% | 8% | 38% | 46% | |

Tab. 38: Human Resources (in Full-Time Equivalents)

| Full-time equivalents | TYPE OF BANKS | | | | | | | |
|--------------------------|------------------------------|-------------------------------|-------------------------------|----------------------------|------------|-------------------------|-------------------------------|---------------------|
| | Online electr. info services | Offline electr. info services | Offline library serv./archiv. | Training/further education | Consulting | Database product./input | Distr. of softw. progr./pack. | Other info services |
| Total staff in bank | 5524 | 110 | 1206 | | | 2373 | | |
| Staff in Info Department | 88 | 10 | 24 | | | 156 | | |

**Tab. 39: Allocation of Total Budget of Indermediaries in Banks in 1994
to Different Functions (in %)**

| % | FUNCTIONS | | | | | | | | |
|--------------|---------------------------------|--------------------------------|----------------------------------|------------------|-----------------------------|-------------|-------------------------------|--------------------------------|-------------------|
| | Online electr. info services | Offline datab. prod./maint. | Offline electr. info services | Printed media | Managing/ administration | Outsourcing | Administration of archives | Educ./train. seminars/conf. | Other services |
| 0 to 10 | 31% | 31% | 23% | 62% | 54% | 31% | 31% | 69% | |
| 11 to 50 | 23% | 23% | 15% | | 8% | 8% | | | |
| 51 to 75 | | | | | | | | | |
| 76 to 100 | 8% | 8% | | 15% | | | | | |

Tab. 40: Budget/Expenditure in 1994 of Indermediaries in Banks (in MECU)

| National currency | TYPE OF SERVICES OFFERED | | | | | | | | |
|--|------------------------------|-------------------------------|-------------------------------|----------------------------|------------|-------------------------|-------------------------------|---------------------|-------|
| | Online electr. info services | Offline electr. info services | Offline library serv./archiv. | Training/further education | Consulting | Database product./input | Distr. of softw. progr./pack. | Other info services | TOTAL |
| Total budget of information dep. | 9,20 | 0,89 | 1,21 | | | 2,77 | | | 14,08 |
| Expenditure for electronic info services | 0,54 | 0,09 | 0,01 | | | 0,34 | | | 0,97 |

Tab. 41: Expenditures of Information Brokers for Electronic Information Services by Type of Product in 1994 (est. in MECU)

| Ranges in % | TYPE OF SERVICES USED | | | | | | | | | |
|-------------|----------------------------|--------------------|-------------------|------------------|--------------------------|-----------------------|-----------------|------------------------|----------------|-------|
| | Retrospec. online services | Real-time services | Videotex services | Auditex services | Electronic-mail services | Other online services | CD-ROM distrib. | Other offline distrib. | Other products | TOTAL |
| 0 to 10 | 0,05 | 0,03 | 0,02 | 0,03 | 0,06 | | 0,04 | | 0,02 | 0,26 |
| 11 to 50 | 0,05 | 0,12 | 0,05 | | | 0,05 | | | 0,05 | 0,33 |
| 51 to 75 | 0,08 | 0,06 | | | | 0,07 | 0,08 | | | 0,28 |
| 76 to 100 | | 0,09 | | | | | | | | 0,09 |

Tab. 41(b): Expenditures of Information Brokers for Electronic Information Services by Type of Product in 1994 (est. in Ranges)

| Ranges in % | TYPE OF SERVICES USED | | | | | | | | | |
|-------------|----------------------------|--------------------|-------------------|-------------------|--------------------------|-----------------------|-----------------|------------------------|----------------|-------|
| | Retrospec. online services | Real-time services | Videotex services | Audiotex services | Electronic-mail services | Other online services | CD-ROM distrib. | Other offline distrib. | Other products | TOTAL |
| 0 to 10 | 38%* | 23% | 15% | 23% | 54% | | 31% | | 15% | |
| 11 to 50 | 8% | 23% | 8% | | | 8% | | | 8% | |
| 51 to 75 | 8% | 8% | | | | 8% | 8% | | | |
| 76 to 100 | | 8% | | | | | | | | |

* 38%= 5 respondents out of 13 are using Retrospective online services in the range 0 to 10%

Tab. 42: Expenditures of Intermediaries in Banks for Electronic Information Services by Subject Areas in 1994 (est. in KECU)

| Ranges in % | SUBJECT AREA | | | | | | | | |
|-------------|--|--|---------------------------------------|----------------------|-----------------------|---|--|-----------------------|----------------------|
| | Finance/ stock exchange/ banking | Company profiles/ credit ratings | Further business/ economic info | Legal information | Patent information | Scientific/ technical/ medical info | Government information/ political news | Travel information | Other information |
| 0 to 10 | 31 | 42 | 52 | 31 | 10 | 31 | 21 | 21 | |
| 11 to 50 | 105 | | 262 | | | 52 | 105 | | |
| 51 to 75 | 157 | | | | | | | | |
| 76 to 100 | 210 | | | | | | | | |

Tab. 44: Customers of Indermediaries in Banks in 1994

| | TYPE OF BANKS | | | | | | | | |
|------------------------------|---------------------------------|----------------------------------|----------------------------------|-------------------------------|------------|----------------------------|----------------------------------|------------------------|-------|
| | Online electr. info services | Offline electr. info services | Offline library serv./archiv. | Training/further education | Consulting | Database product./input | Distr. of softw. progr./pack. | Other info services | TOTAL |
| Internal Customers | 63% | 53% | | | | 75% | | | 64% |
| % coverage of total costs | 25% | 0% | | | | 25% | | | 17% |
| External customers | 25% | 13% | | | | 25% | | | 21% |
| % coverage of total costs | 5% | 0,001 | | | | 25% | | | 10% |

Tab. 45: Analysis of External Customers of Intermediaries in Banks by Sectors of the Economy

| Ranges | SECTORS | | | | |
|-----------|--------------------------|--------------------|---------------|--------|-------|
| | Manufacturing industries | Service industries | Public sector | Others | TOTAL |
| 0 to 10 | 15% | 8% | 23% | | 46% |
| 11 to 50 | 15% | 8% | 15% | 15% | 54% |
| 51 to 75 | 8% | 23% | | | 31% |
| 76 to 100 | | | | 8% | 8% |

**Tab. 46: Barriers of Using Electronic Information Services in 1994
(est. by Intermediaries in Banks)**

| Barriers | IMPORTANCE RATING | | | | |
|-----------------------------------|-------------------|-----|-----|-----|-----|
| | 5 | 4 | 3 | 2 | 1 |
| Lack of awareness | 8% | 15% | 8% | 31% | |
| Lack of experienced staff | 8% | 8% | 23% | 15% | 8% |
| Technical barriers | | | 23% | 15% | 15% |
| Lack of user-friendliness | 8% | | 8% | 15% | 15% |
| Info required is not available | | 15% | 8% | 8% | 31% |
| Language problems | | 8% | 8% | | 31% |
| Cost-benefit relation inadequate | | 15% | 8% | 15% | 15% |
| Prices for host services too high | 8% | 8% | 23% | 8% | 15% |
| Staff costs too expensive | | | 23% | 15% | 15% |
| Resistance from management | | 15% | | 23% | 23% |
| Budget reasons | | | 31% | 8% | 15% |
| Network deficiencies | 8% | 15% | 15% | 15% | 8% |
| Further reasons | 8% | | | | |

Tab. 47: Marketing Activities Planned by Intermediaries for 1995

| Type of Activities | IMPORTANCE RATING | | | | |
|---|-------------------|-----|-----|-----|-----|
| | 5 | 4 | 3 | 2 | 1 |
| Visiting customers | 8% | | 8% | 8% | 8% |
| Active participation in congresses | 8% | 8% | 8% | 8% | 8% |
| Active participation in exhibitions | 8% | 15% | | | 8% |
| Presentation of services | 8% | 15% | 15% | 8% | 8% |
| Mailings, direct mail | | 8% | | 8% | 15% |
| Better presentation of research results | | 8% | 8% | | 15% |
| Publication of brochures etc. | 8% | | 15% | 15% | 8% |
| Improvement of customer service | 46% | 8% | | | |
| Participation in info broker associations | | | 8% | 8% | 15% |
| Public Relations | 15% | 15% | 8% | 8% | 8% |
| Others | | | | | |

Tab. U1:Response Rate

| No. of | TYPE OF POTENTIAL USER OF SPECIFIC SERVICES | | | | | | | | TOTAL |
|------------------------|---|-----------------|-------------------|-------------------|--------------------------|-----------------|------------------------|-----------------|-------|
| | Hosts retrospec. | Hosts real-time | Videotex Services | Audiotex Services | Electronic-mail services | CD-ROM distrib. | Other offline distrib. | Other suppliers | |
| Relevant organizations | 52 | 34 | 100 | | 3500 | 2 | | 45 | 233 |
| Responses | 6 | 16 | 0 | | 1 | | | 8 | 31 |
| Full usable Responses | 5 | 10 | 0 | | 1 | 2 | | 7 | 25 |
| Response rate | 10% | 29% | 0% | | | 100% | | 16% | 11% |

Tab. U2: Sources used in 1994 (est. by respondents)

| Sources | more than 50 % | less than 50 % more than 10 % | less than 10 % | never used |
|-------------------------------------|-------------------|----------------------------------|----------------|---------------|
| Printed media | 47% | 35% | 18% | |
| Personal contacts | 29% | 35% | 29% | |
| Internal online electronic info | 41% | 18% | 29% | 6% |
| External online electronic info | 41% | 47% | 12% | 6% |
| External offline electronic info | 6% | 47% | 29% | 12% |
| Other | | | | |

Tab. U3: Structure of Companies in 1994

| Structure | Yes in % | No in % | No answer in % |
|--|-------------|------------|-------------------|
| Internal library | 88% | 0% | 0% |
| Production of inhouse databases | 71% | 24% | 0% |
| Use of external electr. info services | 76% | 18% | 0% |

Tab. U4: Information Needs According to Subject Area in 1994

| Subject Area | 0 - 10 % | 11 - 30 % | 31 - 50 % | 51 - 75 % | 76 - 100 % |
|-------------------------------------|----------|-----------|-----------|-----------|------------|
| Finance/stock exchange/banking | 35% | 24% | 0% | 0% | 6% |
| Company profiles and credit ratings | 12% | 18% | 18% | 12% | 0% |
| Further business/economic info | 18% | 24% | 18% | 0% | 6% |
| Legal information | 35% | 12% | 0% | 6% | 0% |
| Patent information | 47% | 18% | 18% | 0% | 0% |
| Scientific/technical/medical info | 12% | 18% | 12% | 6% | 35% |
| Government info/political news | 41% | 12% | 6% | 6% | 0% |
| Travel information | 41% | 6% | 6% | 0% | 0% |
| Other | 0% | 6% | 12% | 6% | 0% |

Tab. U5: Barriers of Using Electronic Information Services in 1994

| Barriers | IMPORTANCE RATING | | | | |
|-----------------------------------|-------------------|-----|-----|-----|-----|
| | 5 | 4 | 3 | 2 | 1 |
| Lack of awareness | 20% | 10% | 7% | 27% | 13% |
| Lack of experienced staff | 10% | 23% | 13% | 13% | 17% |
| Technical barriers | 3% | 10% | 23% | 17% | 20% |
| Lack of user-friendliness | 7% | 3% | 7% | 20% | 27% |
| Info required is not available | 3% | 10% | 10% | 20% | 23% |
| Language problems | 3% | 3% | 17% | 17% | 27% |
| Cost-benefit relation inadequate | 3% | 13% | 10% | 20% | 10% |
| Prices for host services too high | 7% | 13% | 20% | 17% | 10% |
| Staff costs too expensive | 10% | 0% | 13% | 17% | 23% |
| Resistance from management | 0% | 10% | 7% | 17% | 23% |
| Budget reasons | 13% | 10% | 27% | 13% | 7% |
| Network deficiencies | 3% | 13% | 27% | 13% | 13% |
| Further reasons | 3% | 0% | 0% | 0% | 0% |

Tab. U6: **Potential Users and their Knowledge about External electronic Services in 1994**

| Use | Yes in % | No in % | No answer in % |
|--|----------|---------|----------------|
| Use of electronic information services is planned | 2 | 1 | |
| User was already informed about external electronic info services | 3 | | |
| User visited seminars, conferences about external electronic info services | 3 | | |

Tab. U7: Intended Use in 1994

| Use | Yes in % | No in % | No answer in % |
|---|-------------|------------|-------------------|
| Use of external electr. info services is planned within the next year | 1 | | |
| _ is planned in 2-3 years | | | |
| _ don't know | 1 | | |

Tab. U8: Use of External Electronic Information Services

| Forms of use | in % | |
|---|------|--|
| As an end user, for own purposes | 35% | |
| Via information intermediary within organization | 53% | |
| Via information intermediary outside organization | 29% | |
| No answer | 24% | |

INTERNATIONAL SUPPLIERS

| | MECU |
|-------------------|---------------|
| MEAD DATA | 0,1 |
| QUESTEL/ORBIT | 0,003 |
| RUETERS | 10 |
| TELERATE | |
| TELEKURS | |
| FT PROFILE | 0,017 |
| SILVERPLATTER | 0,624 |
| ESA/IRS | 0,047 |
| KNIGHT RIDER | 0,113 |
| BLOOMBERG | |
| STN INTERNATIONAL | 0,003 |
| DIMDI | 0,137 |
| D&B | 0,250 |
| EUR PATEND OFF | 0,050 |
| DATAWARE | |
| CHADWICK-HEALEY | |
| AP | 0,321 |
| AFP | |
| DPA/VWD | |
| BUREAU VAN DIJK | |
| CREDITREFORM | |
| OTHER | 0,100 |
| TOTAL | 11,765 |