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MARKET FORECAST

European Software and Services Market Forecast: 1995-2000

Market Analysis Programme–Europe

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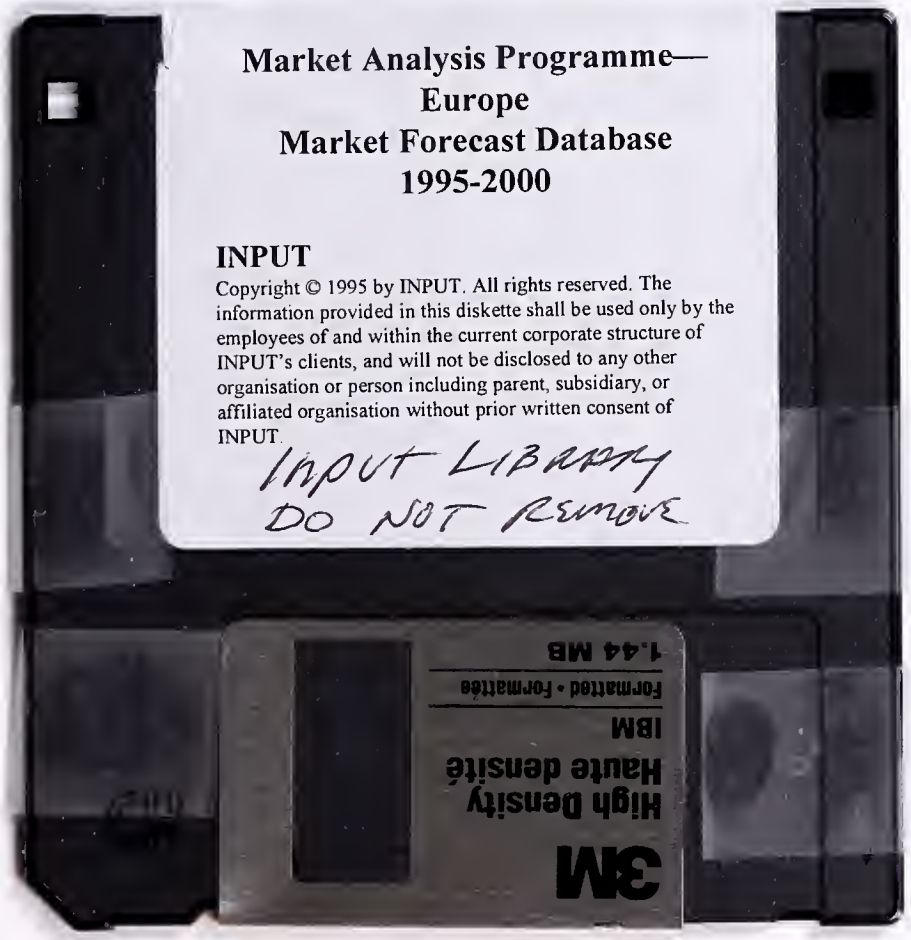
European Software and Services Market Forecast: 1995–2000



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Abstract

This report is a summary of the research and analysis carried out by INPUT into the Computer Software and Services market.

The report examines the performance, status and growth potential of the computer software and services market. Forecasts are included for each individual European country market, with the exception of the former communist central and eastern European countries which are treated as a group.

The computer software and services market is defined by INPUT as comprising eight major sectors, processing services, turnkey systems, applications software products, system software products, professional services, network services, systems operations and systems integration.

The addition of the equipment services sector defines a market referred to as information services.

These different sectors, or delivery modes are further sub-divided into 24 subsectors for forecasting and analysing by country within the report.

Estimates of sector and country market growths are given for the years 1994 and 1995 together with annual size estimates for each year up to 2000.

There is an analysis of the country markets of France, Germany, the United Kingdom and Italy by vertical industry and cross industry sector.

Major market sectors are examined more fully and with more detailed commentary in separately published INPUT reports.

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European Software and Services Market Forecast: 1995-2000

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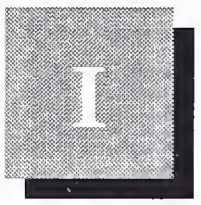


Introduction

This forecast is produced as part of INPUT's European *IT Intelligence Service* for the computer software and services industry.

The forecast is an overview of the whole European market designed to assist vendors in identifying growing and declining markets.

Software and services markets continue to attract widespread vendor attention. This report is designed to assist vendors in achieving a consolidated view of each market in Europe.

This report can be read in conjunction with other INPUT reports in order to identify key market and product trends, vendor strategies and opportunities.

The report provides market sizes for 1994 and 1995 with forecasts for each year through to 2000.

A
Scope of the Report

These forecasts represent an on-going analysis of software and services markets in European countries.

For each European country there is an analysis and forecast of the total IT budget, including both internal and external IT-related spending. This is split into:

- Equipment sales — expenditure on hardware products
- Equipment services — expenditure on equipment maintenance and environmental services
- Software products — all expenditure on systems software products and applications software product licences

- Other information services — all expenditure on other services such as professional services, systems integration, systems operations, processing services, network services, turnkey systems and systems software products and applications software product support services

- Communications — all expenditure on IT-related telecommunications equipment or services

- Facilities — IT budget expenditure on overheads such as space, heating, lighting, furniture, vehicles etc

- Staff — direct in-house staff costs including any temporary contract labour.

1. Information Services Delivery Modes

INPUT originally defined eight delivery modes within the *software and services market*. An additional delivery mode, *equipment services*, together with the original eight are collectively described in this report as the *information services market*. The complete list is as follows:

- Professional services
- Systems integration
- Systems operations
- Processing services
- Network services
- Systems software products
- Applications software products
- Turnkey systems
- Equipment services.

Spending on software and services is assessed and forecasted in relation to anticipated changes in the level of overall IT budgets.

The market is additionally analysed by industry sectors, cross-industry sectors and by generic product sectors for France, Germany, the United Kingdom and Italy.

2. Industry sectors

The industry sectors forecast for each of these major country economies include:

- Discrete Manufacturing
- Process Manufacturing
- Transportation
- Utilities
- Telecommuniations
- Retail Distribution
- Wholesale Distribution
- Banking and Finance
- Insurance
- Healthcare
- Education
- Local Government
- National Government
- Business Services
- Other Industries.

3. Cross-Industry Sectors

INPUT has identified seven cross-industry market sectors. These sectors or markets involve multi-industry applications:

- Accounting
- Education & Training
- Engineering & Scientific
- Human Resources
- Office Systems

- Planning & Analysis
- Other Cross-Industry.

4. Generic Sectors

Certain sectors or sub-sectors are considered independent of any industry or cross-industry influence. These are:

- Equipment services
- Systems software products
- General utility processing services
- General electronic information services.

The full description of each sector is given in INPUT's Definition of Terms which is included as Appendix V of this report.

B
Methodology

INPUT's methodology for market analysis and forecasting remains consistent with that used in past years.

Vendors and users are surveyed to determine what is being spent on software and services and to anticipate the likely trends in both the short and long term.

1. Sources

This report is based principally on research activities conducted by INPUT during 1994:

- A vendor research programme of interviews with over five hundred software and services vendors across Europe
- Further vendor and user interviews across European markets to determine trends and opinions within specific market sectors
- INPUT's continuous analysis of the delivery modes and vertical industry sectors comprising the information services market.

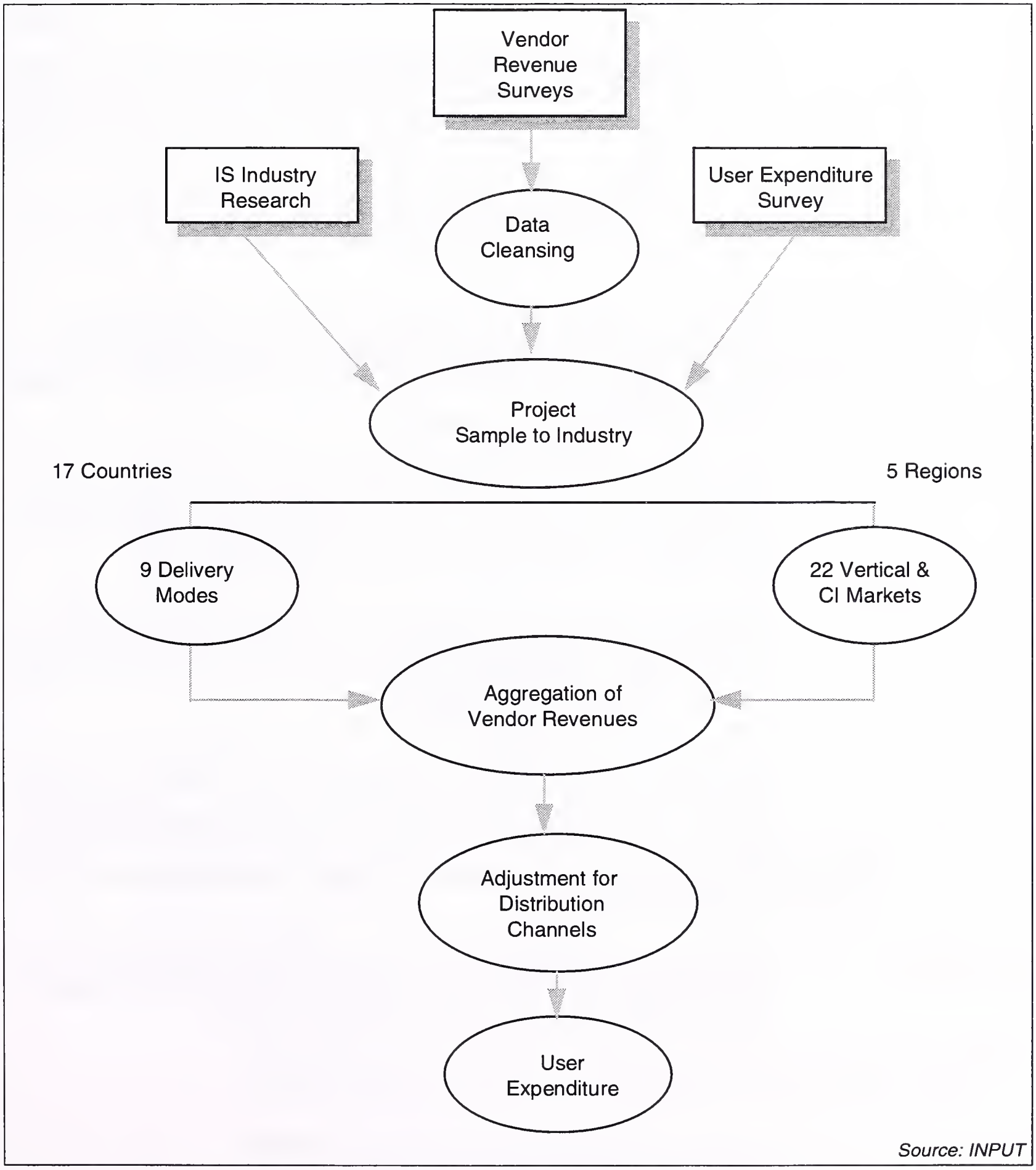
Additionally, INPUT's extensive library and data-base of information relating to the software and services industry was used.

2. Market Sizing

The process used to establish the base year market size (total user spending within that year) is shown in Exhibit I-1.

Exhibit I-1

Base Year Market Sizing



Source: INPUT

INPUT determines 'previous-year' software and services revenues for each country in 9 delivery modes and 22 vertical and cross-industry sectors for hundreds of vendors operating in European markets.

This research process is accomplished through interviews, use of public data such as press articles and annual company reports and estimates by INPUT consultants.

The country, industry sector, delivery mode and sub-sector revenues of each vendor are recombined to ensure that there is no double counting or overlap, for example between countries. Only revenues derived from within a country are included in the vendor revenues for that country.

Many vendors publish accounts which do not coincide with the end of the calendar-year. INPUT adjusts business generated by these firms to the calendar year for consistency.

The initial local currency data from the vendors is analysed and projected to represent the revenues of the entire country market based on INPUT's view of the contribution to be expected from the remaining minor vendors.

Adjustments are made to eliminate errors due to distribution channel overlap or mark-up and to ensure that captive market information is excluded. Captive markets are those revenues which a vendor receives from within the vendor's parent group of companies.

Demographic data have also been used to validate the market sizes. INPUT uses such sources as the *panorama of EC Industry* published by the European Commission, to check trends in sector expenditures and employee levels in different industries.

Across the different countries of Europe there is little consistency of methodology between different secondary sources. Different countries measure things differently. So INPUT has in most cases modified the resulting market assessments to provide a consistent view which better reflects the market understanding obtained from INPUT's continuous user and vendor research.

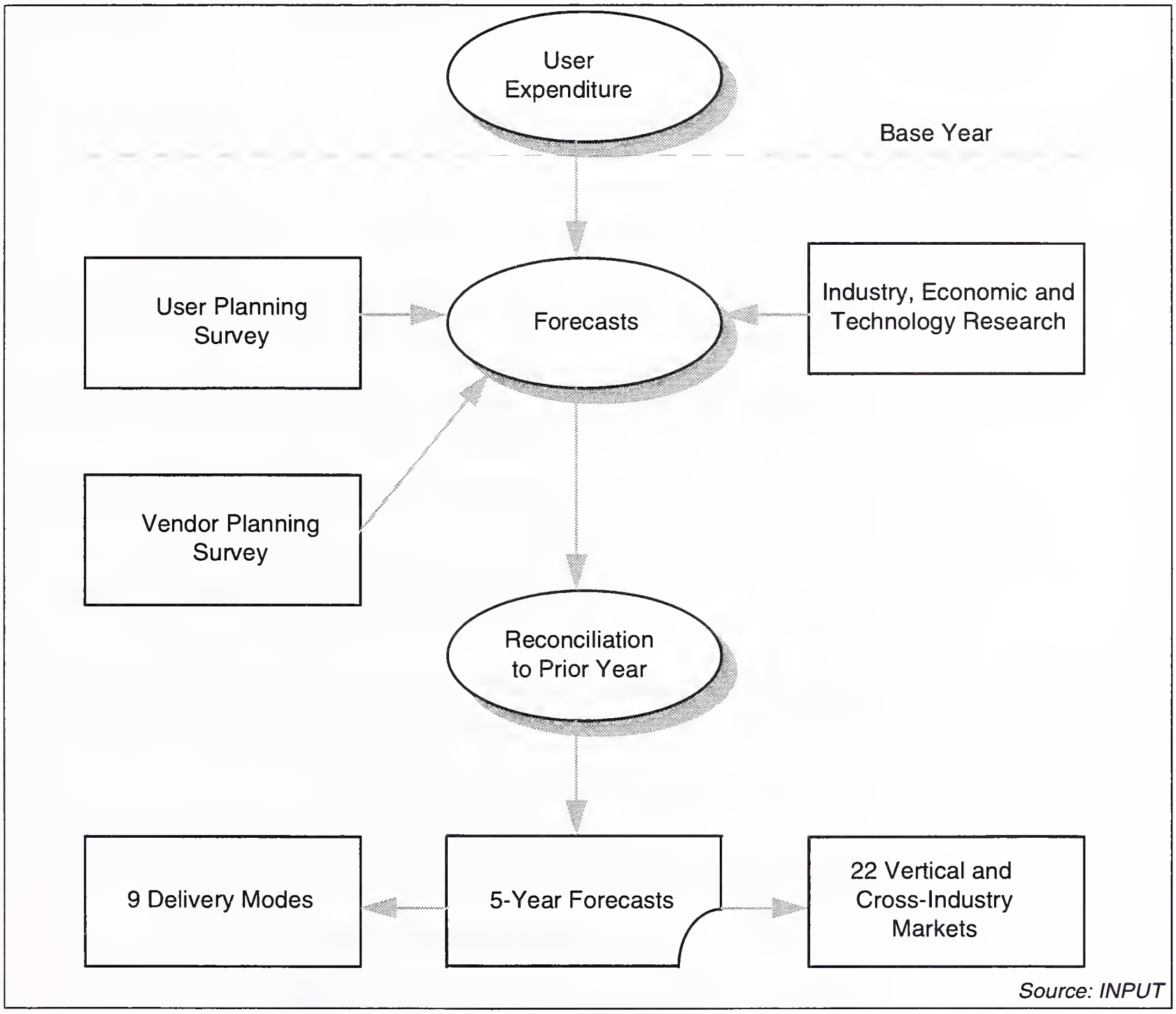
The end result is a base year (in this case 1994) software and services market figure representing user expenditure for each of the market sectors or delivery modes analysed for each country.

3. Market Forecasts

In the forecasting step, shown in Exhibit I-2, INPUT surveys IS (Information Systems) executives and finance directors to determine their projected expenditure levels on IT in general and software and services in particular.

Exhibit I-2

Country Market Forecasts



Source: INPUT

The market model which forms the basis for the forecasts includes GDP deflators (adjustments for predicted inflation rates) for each country.

Economic growth assumptions for each country and for each major industry sector are also factored into the forecasts.

In addition, vendor interviews are conducted to establish opinions of the market and views of the key opportunities.

INPUT consultants add their judgement to the resulting projects, testing the results to ensure they are reasonable.

In particular, this phase produces consolidated forecasts for the whole of each country by consolidating industry forecasts.

These are then combined into an overall forecast for each segment for Europe as a region.

C
Report Structure

The remainder of this report is structured in the follow way:

Chapter II is an executive perspective offering a summary of key points from the report.

Chapter III examines the economic and market conditions affecting the IT services industry across Europe.

Chapter IV provides a commentary on the future development of the information services industry.

Chapter V presents the market assessments and forecasts for each country.

Appendices A through R contain detailed tables of market data and forecasts for each country corresponding to the sections of Chapter V.

Appendices S through V contain respectively:

Economic assumptions, inflation, exchange rate and GDP assumptions used to compile the report (Appendix S)

Forecast reconciliation summary (Appendix T)

Analysis of vendor research sample (Appendix U)

Definition of terms (Appendix V).

D
Related INPUT Research Programme and Reports

The following reports contain detailed analysis of each market sector, offering commentary and recommendations for vendors. Further commentary and analysis of market sectors indentified in this report may be found in the reports listed below:

1. European Market Sector Reports

Systems Integration Market Analysis and Forecast, 1995-2000

Outsourcing Market Analysis and Forecast, 1995-2000

Software Product Support — European Market Futures 1995-2000

Customer Services Market Analysis and Forecast, 1995-2000

2. US Reports

US Information Services Annual Report

Forecast Compendium

US Professional Services Market

US Systems Software Product Market

US Processing Services Market

US Information Systems Outsourcing Market

US Applications Solutions Market

US Network Services Market

US Equipment Services Market

US Industry Market Reports

US Cross Industry Market Reports

3. Worldwide Report

Worldwide Market Forecast, 1994-1999

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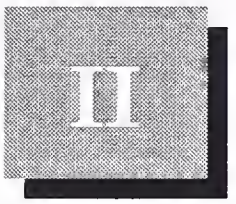


Executive Overview

A
European Economy Moving into Growth Phase

In many European countries where recoveries have only recently become well-established the general mood has improved sharply during the past year. This appears to have contributed to buoyant household spending patterns in some countries. It is estimated that household spending will strengthen steadily as savings ratios fall, despite the fact that they are in some cases already low by historical comparison.

Recovery has been somewhat stronger than that predicted by the Organisation for Economic Co-operation and Development (OECD). Confidence has risen sharply in the second half of 1994 in both household and business sectors and employment has already started to recover.

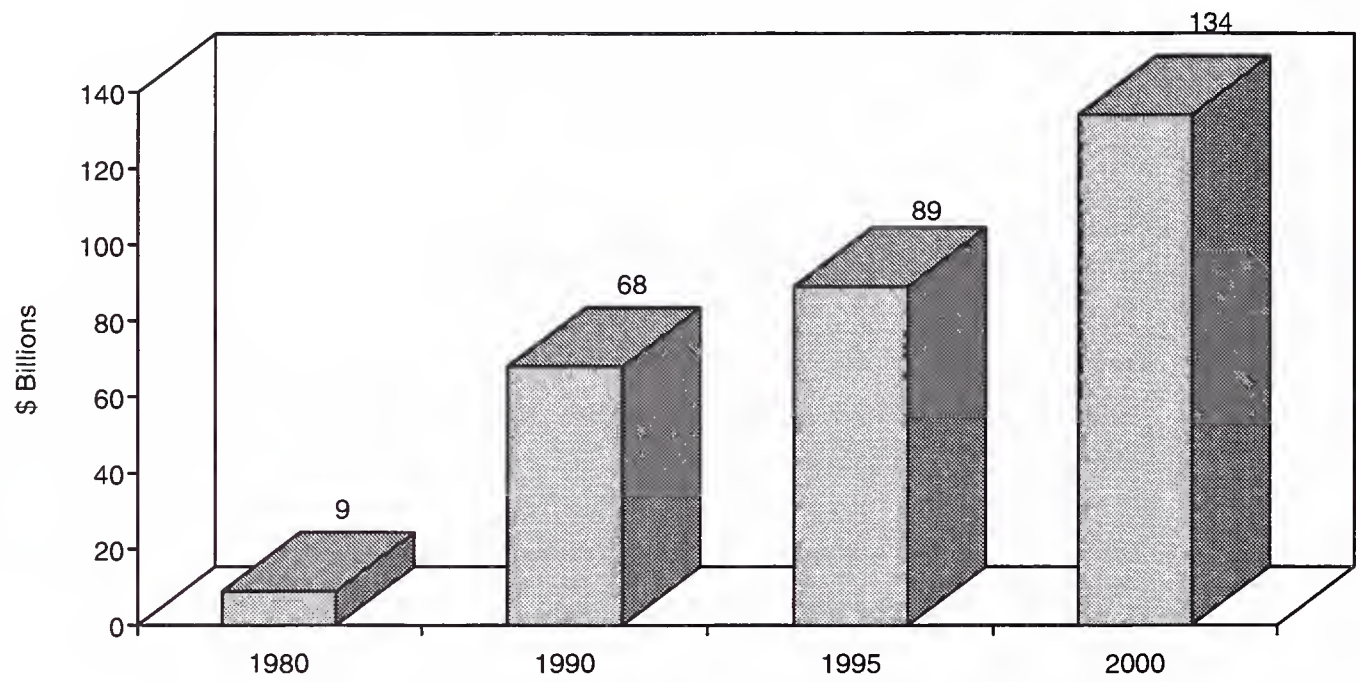
A strong rise in business investment is projected, largely as a response to an improving economic environment. It is thought that long-term interest rates will not adversely affect business investment to a significant degree in Europe where investment intentions are improving and profitability is good.

In Germany, France and other continental European countries solid economic growth has resumed. However, current *disinflationary* pressures may yet cause recovery to stall. The extent of disinflation in the past two years has been much stronger than had been expected by forecasters due to low wage settlements, high productivity gains and intense competition. Of the four major economies Germany has grown fastest (by an average of 2.8% a year) as unification gave a massive boost to domestic demand.

Exhibit II-1 illustrates the overall growth rate of the market over the last twenty years. This still offers significant growth opportunities, particularly when compared with growth expectations for user's total IT expenditure (estimated at 2% per annum through to the end of the century).

Exhibit II-1

European Information Services 1980-2000



Source: INPUT

This is an increase on growth rates for 1993 and 1994 which were 6% and 7% respectively, 1993 being the lowest growth rate recorded for the industry since its inception in the early 1970s.

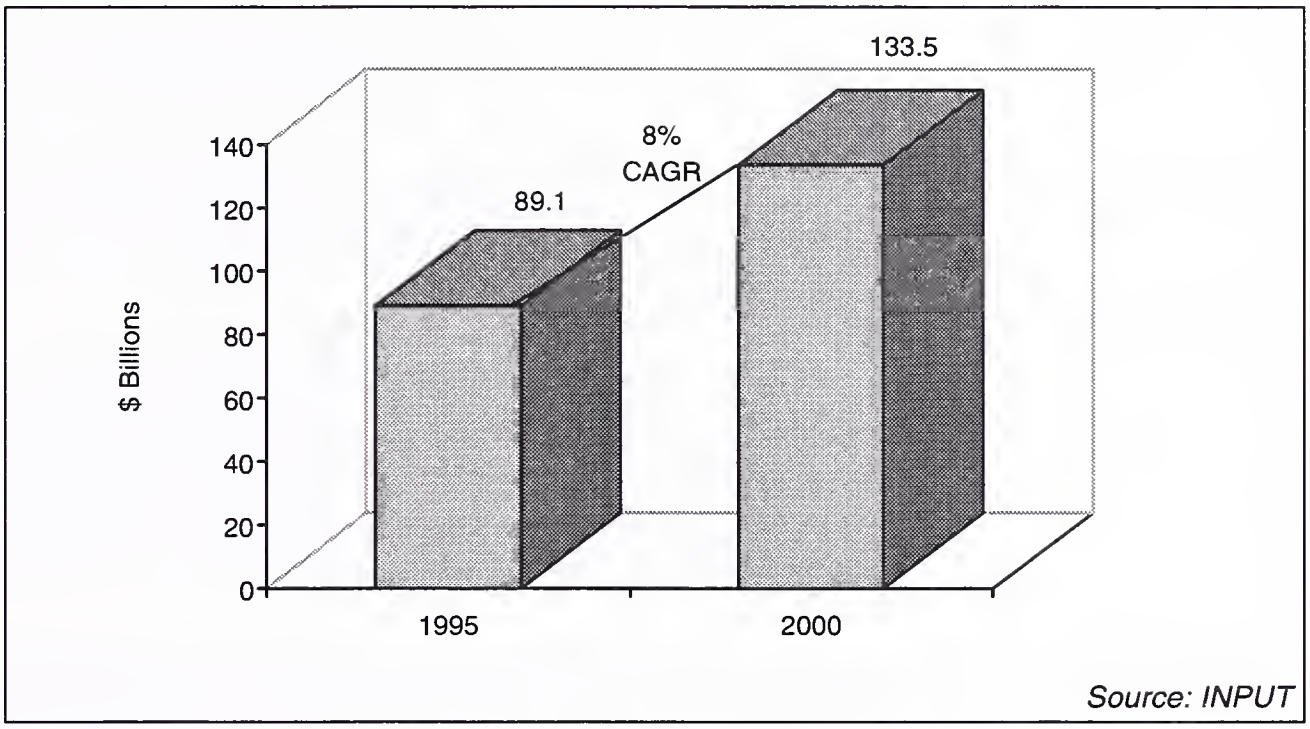
B

Market Will Grow to $130 Billion Market By 2000

Given this context of a potential growth environment INPUT forecasts that the IT software and services market will grow at an average of 8% per annum for the next five years, giving a total market size of just over $130 billion in the year 2000 (see Exhibit II-2).

Exhibit II-2

Growth of European Market for Software and Services, 1995-2000 ($ Billion)



Source: INPUT

The European market, which is worth $89 billion in 1995, accounts for 28% of the world IT services market, which, according to INPUT is valued at $323 billion. This puts it firmly behind the USA market, valued at $169 billion, which has a 52% share of the market. Europe is twice the size of Japan in terms of value - its market size is $46 billion with a market share of 14%.

The four major economies of France, Germany, UK and Italy dominate the European market, accounting for 70% of all revenues. The next nine medium-sized countries account for 28%: these include Benelux (2 countries), the Nordic region (4 countries) and Spain, Switzerland and Austria.

The highest growth opportunity lies in the areas of systems operations. Extremely high growth rates for desktop outsourcing are causing this market segment to expand rapidly, although admittedly from a small base, in fact, the smallest of all delivery modes analysed. The debate

here is whether outsourcing will continue to exhibit higher growth rates once it is used as strategic tool rather than as a tactical instrument for cutting IT costs, as it has historically been used.

The internal network and the network outside of the enterprise is set to become one of the key competitive areas over the next five years. "Network-centricity" will become a major source of competitive advantage for utilising information across organisations, particularly those with international structures. Related to this development is the growth in Internet services and LAN/WAN *internetworking*.

Low growth areas include equipment services, systems software and professional services. Equipment services is experiencing "commoditisation" of the maintenance market, which fell by 4% during the last year. Maintenance contract costs are expected to continue declining as organisations either take out fewer contracts or force down the cost of existing contracts. Also, there is little opportunity for PC maintenance sales due to rapid technological advances in PC performance.

Systems software is a low growth area as enterprise systems' volumes are continuing to decline and competition is becoming much more intense as this segment of the market reaches maturity. Growth in PCs and workstations over the next five years (13%) is masked by mainframe volume declines (-6%).

Despite the growth of IS consulting and outsourcing of applications management (10% and 24% respectively) professional services growth is dampened by low demand for custom software development (1%) due to the increased reliance on "packaged" application products, such as SAP R/3, which is becoming ubiquitous in France, Germany and the UK.

The systems integration market will continue to grow as vendors adopt a business-based approach to projects, adding value rather than containing cost. International organisations are increasingly demanding international service provision, a trend which is playing to the strengths of American vendors such as EDS, Andersen Consulting, ISSC and CSC.

As packaged application software increases in use the key to growth will be to develop offerings around applications such as SAP R/3 as custom software development skills decline rapidly. The turnkey sector will also benefit from standardised hardware and software packages which reduce the level of project complexity.

C
Key Business Drivers for the Future

Information Services markets are experiencing profound change. No longer are they able to rely on double-digit growth, as was the case through the 1980s. It is not possible simply to rely on easy market conditions for continued year on year growth. User organisations are more critical than ever. They expect value for money and visible returns on investment rather than simple cost containment. Paradoxically, information technology is now being perceived to be of increasing significance to enterprises throughout Europe.

The major trends and drivers within the information services market can be summarised as follows:

- Consolidation and internationalisation of vendors with new market entrants from the telecommunications sector

- Increased emphasis on networks ("network-centricity") linked with a drive towards distributed systems

- Greater use of knowledge-based systems

- An increasingly business-based vendor perspective

- New markets and technologies: electronic commerce and multimedia.

1. Vendor Consolidation and Internationalisation

Multinational corporations are becoming increasingly international in outlook and operation. Their suppliers, therefore, are expected to support them regardless of the territories or time zones in which such companies choose to operate. As a result two competitive segments are emerging:

- International service vendors who can support multinational client operations

- Local players with strengths in one or two national markets.

Vendors of localised, bespoke offerings are finding it increasingly hard to compete with international players. International players, such as EDS, CSC and Andersen Consulting, have leveraged their European operations in providing support to multinational clients and attracted business within Europe by "tracking" their US client base to the European market. It is this global capability combined with 'thought

leadership' and extensive in-depth market coverage which has led to increased market share within Europe at the expense of local vendors. The exception to this is SAP.

European vendors are reacting by forming alliances or partnerships to increase critical mass and leverage their core competencies into new markets.

Vendors in the software and services market are increasingly working with telecommunications companies. This phenomenon is also linked to the growth in network services and the acceptance by many organisations that the *network-centric* model is the accepted business model for future development (see next section).

These huge international organisations have the potential to become major players over the next five years, particularly in the area of network services. They have global reach and are extremely experienced in handling a multinational client base.

2. Network Integration is a "Must"

There has been a renewed emphasis on distributed computing architectures, primarily in the form of networks. The internal network and the network interface outside of the organisation is set to become one of the key competitive areas over the next five years. INPUT forecasts that network services will grow at 16% over the next five years to a market size of $15 billion by the year 2000.

The convergence of information technology and communications is finally becoming a reality. It will no longer be possible to think about these technologies in isolation. Rather, in these areas of convergence vendors will gain *smaller* shares of *larger* markets. In the next five years inter-connectivity, whether it be in the form of EDI, surfing the Internet or value added network services, will be a "must".

A clear message for vendors is that the *integration* of existing enterprise systems and their "islands" of information is a key focus for IT operations. Many businesses, faced with mounting costs and increasing network complexity, are seeking to consolidate their networks into one seamless and manageable system.

One of the fastest-growing segments in the outsourcing market is among distributed desktop and client/server networks. No one supplier yet has a dominant position so there is everything to play for. The fundamental trend affecting the development of the outsourcing industry is that of downsizing, coupled with client/server computing.

Closely linked to this drive towards distributed systems is the effectiveness of what is termed 'flexible working' or 'tele-commuting'. An informal yet effective communications infrastructure enabled by networked IT and telecommunications services can create looser structures for team working, increase empowerment and reduce management hierarchy.

The other growth area within network services is the Internet. INPUT estimates that the number of Internet users is more than 25 million world-wide. The World Wide Web is the most frequently used part of the Internet and already contains over 50,000 sites. It is estimated that this population is doubling every two months and is regarded as the backbone for electronic commerce (see section 5).

3. A Greater Emphasis on 'Corporate Learning'

As alluded to earlier, a key focus for many organisations is how to link their "islands" of information given that data is held at different places and in different formats. It is this *indexation* of knowledge within an organisation which increases the possibilities for corporate learning. Although INPUT forecasts that on-line information services will grow by 9% over the next five years from $3.7 billion to $6.3 billion the real opportunities lie in the development of new kinds of databases which offer more than just hard facts.

Services on the Internet, particularly the Web, are beginning to realise this potential by using HTML (Hypertext Mark-up Language) when displaying information. This allows a user access to any part of a document simply by highlighting one particular aspect of the text. It will become a useful future tool for training and education along with other advanced multimedia techniques.

Data mining - or 'information prospecting', a more helpful term - is an example where in-house systems are providing added-value information and greater in-depth knowledge of the customer. Using massively parallel processing power within a relational database customers are able to launch complex queries against mountains of data either directly from a database screen or by using a business intelligence tool.

Although nowhere near as powerful as the parallel computers used for data mining, simple PC systems have been used to good effect to create a 'learning organisation' culture where information is shared and discussed. Groupware such as Lotus Notes has provided many companies with a networked database which can be added to and shared by all members of the organisation. Such systems actively enhance knowledge creation and knowledge transfer.

However, employees feel uncomfortable about putting their intellectual capital on to any form of database. In doing so they feel they are being "robbed" of their individual contribution to the business. Consequently, their services may no longer be required if anyone can quickly and easily inherit their personal knowledge base.

4. Vendors Are Adopting A Much More Business-Based Perspective

Large IT users are demanding that IT systems deliver real value *as defined by the enterprise.* For too long customers have been sold systems which are justified simply on classic investment criteria, such as rate of return.

Two markets which have seen an increase in emphasis by vendors on *value creation* (as oppose to cost containment) are the systems integration and professional services markets.

In effect, services within these markets have been positioned as *business solutions,* as oppose to IT solutions. There is a much greater focus on the needs of the business. Value-based pricing includes the ability to directly measure any business benefits accruing from the project and to link such changes in performance with payment to the vendor. It is more than coincidence that those vendors who are offering 'value for money contracts' are among the key players in the industry.

But there is still work to be done by vendors in this area. Genuine process expertise is kept in-house while technology-intensive projects are put out to systems integrators.

Both in the UK and increasingly within the rest of Europe, the most common form of outsourcing is where operations and support tasks - not process or application-specific tasks - are given to a vendor and where development activity based on expertise of a specific industry or application is retained within the corporation.

5. New Markets and Technologies — Electronic Commerce and Multimedia

a. Electronic Commerce

By developing key electronic commerce application skills vendors can exploit specific opportunities such as electronic commerce on the Internet, electronic purse and smart card applications and the emergence of 'virtual' banking

Security is paramount to any commercial system and many institutions have serious concerns regarding electronic transactions . But there are encouraging signs that this will not stall potential buyers and sellers from operating within *cyberspace*.

However, there are still problems in navigating around a "cybermall". Shops need to be easy to find and customers need to be able to compare prices without too much effort. Also, the cost of setting up business is not simply an investment of $40,000 in computer hardware. Customers expect high quality product presentations and customer service, not cheap computer graphics. The issues (and the costs) are akin to opening up a new store or restaurant.

Electronic cash is part of a wider drive to encourage customers to deal directly with their bank accounts, rather than via the costly branch network. However, the emergence of various payment systems such as Internet shopping centres, interactive cable television, smart cards and electronic purses, could cause problems for banks. Internal mainframe computers need to adapt to the multitude of payment systems, some of which have still to be put on trial.

"Virtual banking" involves customers accessing bank services via multiple delivery channels including automated teller machines (ATM), telephones, multimedia kiosks, interactive TVs and home PCs. The traditional brick-and-mortar branch is slowly giving way to an organisation which is reaching out to its customers in non-traditional ways. In the USA banks plan to increase the number of ATMs to 135,000 — a growth of 50% — by 1997.

Barclays Bank announced plans in July 1995 to introduce a home computer banking service in the UK. The pilot package is aimed at 2,000 Barclays customers with plans to make the service nationwide in a year's time. Using a modem to link their personal computer to the telephone customers will be able to pay bills, transfer funds, set up standing orders and check the balance of their accounts from home.

b. Multimedia

There has been a great deal of hype and confusion over what exactly multimedia means and what it will deliver. In reality, the revenues generated by multimedia applications are relatively small and the adoption of video-on-demand or PC-based video is still in the medium to long term. Multimedia still remains a stand-alone, non-interactive software tool, primarily in the format of CD-ROM.

Now that the initial hype is over, as evidenced by a growing media disillusionment concerning its impact, the real revenue opportunities for information services vendors are becoming apparent. The next major development is the entry of new players from backgrounds of *content* production and distribution.

Vendors should evaluate the opportunities inherent in making alliances with such organisations. Service opportunities will centre around the delivery of new forms of content. However, although alliances are key to gaining market share, the way forward is extremely complex. As the number of opportunities declines so the cost of acquisition increases, as evidenced by the recent $19 billion Disney/Capital Cities-ABC merger, America's second largest ever.

Multimedia is a concept, not a market or a product. Consequently, it is difficult to predict how the various markets will work together. Because of the drivers mentioned above firms are diversifying into markets where they have little real business understanding. AT&T's 1991 acquisition of NCR for $7.5 billion in order to enter into the computer business is still struggling to show returns, as evidenced by the recent AT&T demerger announcement.

Firms making money from the distribution of their products (publishers, software, studios) will find it much harder to retain control once products are turned into digits. It is hard to enforce copyright laws in cyberspace.

D
Country Market Analysis

1. The Four Major Economies

The four major countries (France, Germany, UK and Italy) account for 70% of European revenues and will continue to do so for the next five years. The French market, worth FF 112 billion ($ 21 billion) in 1995, is still the largest market for software and services in Europe, growing at 6% per annum until the year 2000. However, by 1999 Germany will become the largest information services market (excluding equipment services), with a market size of DM 42 billion ($27.1 billion).

There is a relative lack of growth across the French information services market when compared to other European countries. There is a high reliance on custom software development which, although a large segment of professional services, is a declining element of the overall market due to intense price pressure.

Increased IT consultancy skills, to deal with more complex user requirements, are needed in the banking and finance, health, insurance and government sectors.

The German economy is moving out of a recessionary environment, spurred on by demand in eastern Europe and strong growth within the services sector generally.

Demand for client/server migration and open systems is strong. UNIX-based packaged solutions are particularly resilient in the banking and manufacturing sectors. Also, the application tools segment, particularly database management systems, are expanding at high rates.

Germany's aversion to outsourcing operations has begun to change rapidly and it will exhibit the highest growth rate across Europe over the next five years. This has been aided by the growth in SAP outsourcing which is gradually changing from a mainframe-based processing service to a form of client/server systems management.

The UK market is the third largest in Europe, worth £9.6 billion ($15 billion) in 1995. It has the highest growth rate (10%) of the four countries due to upward trends in systems integration, outsourcing and network services.

The UK systems integration, outsourcing and network services markets are the largest in Europe. The systems integration market has the highest growth rate (14%) across Europe for the next five years and will be worth $3 billion at the end of the decade. Likewise, the UK shows a

high propensity to outsource operations compared to the rest of Europe. The UK market accounts for 35% of the total European outsourcing market.

The Italian market is valued at Lira 12.6 trillion ($7.8 billion) in 1995 and will grow at 8% per annum reaching a market size of Lira 18.7 trillion ($11.5 billion) by the year 2000. Key areas for growth are outsourcing, network services and application software, with rates above the European average.

Italian information services vendors, with the exception of Olivetti, are characterised by their dependence on the national market for the majority of their business. Finsiel, the largest Italian vendor, generates over 90% of its business from within Italy. The Italian market is composed of many small and medium-sized companies who are served on a local basis by software vendors. Consequently, the threat from US vendors entering the Italian market is growing rapidly.

2. The Nordic Region

The Nordic region's share of the total European market will decline from 10.0% to 9.6% over the next five years.

The major areas for growth within the Nordic region are professional services and application software. Apart from Norway, all other countries experienced above average growth rates in professional services. The Nordic region as a whole will increase its share of the professional services market from 11.3% in 1995 to 13.2% in the year 2000. This is due to strong Swedish growth.

Professional services in Sweden accounted for 42% of the software and services market in 1994 as compared to the European average of 28%. Custom software development is the driving force in this sector growing at 7% in Sweden over the next five years, compared with a European average of 1%.

The outlook is similar for outsourcing in Sweden. It has the highest compound growth rate of all the Nordic countries (19%) and outsourcing accounts for 9% of the total Swedish software and services market compared to a European average of 4%.

Denmark, which is forecast to grow at 6%, will experience an increasing adoption of standardised software packages, particularly within mid-range systems. This is because Open systems based on UNIX are already accepted in the Danish market. Downsizing is not a major issue in Denmark as there are few installations of large systems.

The major growth opportunities for Norway include outsourcing, systems integration, network services and application software.

Because of falling software prices there is an increasing separation between companies who develop software and those who market it. Few companies can afford to own every operation in-house from production to distribution. This new requirement has led users and vendors to search for cheaper labour sources.

Off-shore programming is becoming more common, particularly in Scandanavia, as well as some Baltic and eastern European countries. Even though the market is still in embryonic form it will become a credible alternative as pan-European data networks emerge and user organisations continue to integrate on an international scale.

3. Eastern and Central Europe

This market is valued at $720 million but will increase to $2 billion by the end of the decade with an annual average growth rate of 19%. One source of potential growth stems from the small size of the average IT hardware market in eastern Europe.

But this does not necessarily imply a major growth market for hardware vendors desperately seeking new sources of revenue. At the start of the nineties hardware vendors predicted major service and support contracts on the back of mainframe deals. However, 50% of mainframes in centrally planned economies have been taken out as operations downsized or split up.

Other sources of vendor activity include IT consulting for large scale projects, particularly in the areas of banking and finance, government and education and training.

Improvements in communications are being obtained through the installation of cellular-based mobile networks either in place of or in existence with fixed network projects. Network services will expand once a telecommunications infrastructure is established.

Although customers in this region used to prefer hardware and systems tools then develop their own application, now the emphasis is on buying a working application from the vendor, despite its potential complexity.

The region is the fourth largest in Europe for systems integration, valued in 1994 at $410 million. It will grow at 17% per annum to become a one billion dollar market by the year 2000. Major hardware vendors, such as Digital, ICL, Bull and IBM have been setting up new

infrastructures to support banking and central government over the last three to four years.

Joint ventures are seen as technical alliances which are not legally binding (partly due to the lack of enforcement with an immature legal system) rather than formal business arrangements. There is also an increasing trend to work with local, post-communist entrepreneurs.

There is a strong intellectual base which means the labour force is often as good as the West (if not better) but not as expensive. Historically, eastern European labour has excelled at working with statistical software and solving technical problems, as compared with creating applications and solutions to business problems. However, the situation is changing dramatically as a Western 'corporate culture' mentality begins to pervade the workforce.

4. The Mediterranean Economies (Spain, Portugal, Greece), Ireland, Benelux, Austria and Switzerland

These four countries accounted for 14.6% of the total European software and services market in 1994. This will hardly move over the next five years (14.7% by 2000).

The Netherlands market for software and services is the fifth largest in Europe. INPUT forecasts that the market will grow by 8% annually over the next five years from $5.3 billion to $7.9 billion.

In 1995 professional services accounted for 35% of business within the Netherlands, compared to the European average of 28%. By 1998 the Netherlands will have overtaken Italy to become the fourth largest professional services market within Europe and will be worth $2.75 billion by the end of the decade. The key areas of growth in this market are outsourcing (21% over the next five years), network services (18%) and systems integration (13%).

Belgium is characterized by a high proportion of business within the application software market, accounting for 16% in 1994 — the second highest after Italy — and rising to 22% by the year 2000. Its primary high growth opportunities lie in the area of application solutions, especially network services, outsourcing and systems integration. Custom software development continues to decline as a proportion of the software and services market.

Austria has similar characteristics to the German market with systems software and turnkey being the dominant delivery modes. Turnkey systems in Austria accounted for 25% of business within the software and services market in 1995, the highest proportion in Europe and

equivalent to Germany. In 1995 the Austrian market was worth $1.7 billion; this will grow at 7% to $2.3 billion by the end of the decade

The Swiss market for information services will grow at 10% per annum reaching $5.2 billion by the end of the decade from a 1995 base of $3.2 billion. With the exception of systems integration and network services, all of its delivery modes are growing at above average European rates.

Spain, Greece, Portugal and Ireland's market share will increase from 4.2% in 1995 to 4.5% by the year 2000, primarily due to a strong Spanish performance.

Government and banking and finance are the two most dynamic sectors in Spain. Public institutions are facing restructuring as the authorities reorganise their assets and seek to exploit their technological potential.

The Spanish market will grow from $2.6 billion in 1995 to $4.1 billion by the end of the decade — a 10% growth rate. IS consulting, application software, outsourcing and network services will continue to provide good growth opportunities. Network applications will grow strongly over the next five years (22%) as the major Spanish telecoms operator, Telefonica SA, which has a significant presence in the information services market, continues to invest in infrastructure development.

The Irish market is characterised by strong growth in professional services (7%), the only area where growth is above the European average rate. In 1994 this was the largest segment of the Irish market. Overall, the Irish market will see significant movement in the outsourcing and network services markets, growing at 18% and 16% respectively. The Irish market will grow at 8% reaching $0.9 billion by the year 2000.

Greece and Portugal are both working from a small base and therefore exhibit high rates of growth in virtually all areas. Again, as in Ireland, the largest segment in the Greek market is professional services due to the domination of custom software development. This market will be worth $0.6 billion by the end of the decade.

Portugal is a slightly smaller market than Greece, valued at $0.4 billion by the year 2000, but has a higher growth rate (14%) over the next five years. Network services (25%) and outsourcing (20%) provide the major sources of growth.

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III

Economic and Market Growth Prospects Within the IT Services Industry

This chapter examines the improving economic prospects for the majority of European markets, how this will interact with the persistent disinflationary forces and how specific countries have performed. It provides analysis of how the European IT services market will grow over the next five years and which segments will experience significantly high growth rates.

A
Economic Environment — Growth Prospects Are Good

1. Cautious Growth For European Economy

In many European countries where recoveries have only recently become well-established the general mood has improved sharply during the past year. This appears to have contributed to buoyant household spending patterns in some countries. It is estimated that household spending will strengthen steadily as savings ratios fall, despite the fact that they are in some cases already low by historical comparison. The exceptions are Belgium and Denmark, where in 1995 personal savings will account for 22% and 16.2% of household income respectively.

A strong rise in business investment is projected, largely as a response to an improving economic environment. It is thought that long-term interest rates will not adversely affect business investment to a significant degree in Europe where investment intentions are improving and profitability is good. It could be put in question if other demand components, notably household spending, weakened. Consequently, projected European expansion is vulnerable to any deterioration of confidence that makes households' attitudes toward spending more cautious.

However, recovery has been somewhat stronger than that predicted by the Organisation for Economic Co-operation and Development (OECD). Confidence has risen sharply in the second half of 1994 in both household and business sectors and employment has already started to recover. This recovery has been faster than in previous cycles, perhaps, in some countries, due to labour market reforms that have occurred since the last recession in the early 1980s:

- UK labour market reforms in the early eighties included a number of measures to reduce union power: closed shops were banned, secondary picketing was made illegal, hiring and firing rules were relaxed, wages councils were abolished and employment flexibility increased substantially, with very strong growth in part-time employment.

- Amendments to employment law in Spain in 1984 included increased flexibility of working hours, a weakening of job demarcation rules and liberalisation of conditions justifying redundancy. This has resulted in a rapid and sustained rise in employment.

- In 1991 Italy introduced a national scheme tying wage growth to company productivity, abolished formal wage indexation and initiated tax measures to stimulate youth employment.

If employment growth were to strengthen more rapidly than that projected by the OECD this would obviously strengthen consumption and domestic demand during the next two years.

2. Disinflationary Forces Persist

In the UK, where the recovery is relatively well advanced, there has been no significant increase in wage or price inflation plus a 3.5% growth rate which shows little sign of slowing. However, with a growth rate of this size there is a risk of lack of spare capacity which could contribute to inflation pressures next year.

In Germany, France and other continental European countries solid economic growth has resumed. However, current disinflationary pressures may yet cause recovery to fall. The extent of disinflation in the past two years has been much stronger than had been expected by forecasters due to low wage settlements, high productivity gains and intense competition. This trend, highlighted last year in INPUT's report *'The European Market for Software and Services, 1994-1999'*, has forced the software and services market to adjust to an environment of downward price pressure and intense competition in areas of operational costs.

However, services markets are inherently less cyclical than industries. This is because they are less subject to big swings in inventories (it is difficult to build stocks of haircuts) and because government services rarely decline during recessions. The difference between the two sectors was particularly stark during the most recent recession, according to a recent Bank of England study. During the downturn, industrial output fell by substantially more than services output in the USA, France, Germany, Italy and the UK. Although output of goods fell significantly in Italy (5.0%) and America (3.4%) output of services did not move at all.

3. Specific Country Performance

Of the four major economies Germany has grown fastest (by an average of 2.8% a year) as unification gave a massive boost to domestic demand. However, national statistics have recently been re-classified due to EC regulations and reliable data has not yet been produced. The German Institute for Economic Research estimates 2% growth for the whole of 1995.

The UK economy has been growing for the last three years but there has been a slowdown in the first half of 1995. Although there are fears of a return to recession, a resumption of growth is more likely. Consumers are likely to have increased disposable income next year through windfalls as building societies turn into banks and as tax-free savings accounts (TESSAs) mature. There may even be tax cuts.

Italy should experience growth of around 3% next year given this year's budgetary objective to reduce the ratio of Italy's debt to GDP from 7.4% to 5.8% in 1996. This is in addition to tax increases in the Spring of this year and major pensions reform (the latter alone will save four trillion lira next year). Other cuts are planned in health and transport.

France is in a similar position to Italy. It has to cut its near-record deficit of 5.7% of GDP to the 3% required for the Maastricht criteria on European economic and monetary union. In July 1995 a supplementary budget was presented to Parliament which will raise an extra FF 30 billion by the end of the year. There are planned cuts of FF 22 billion in this year's budget alone, of which over a third will come from defence.

Two economies have contracted. In 1994 Finland's GDP was 9% smaller than in 1989: it's exports were affected by the collapse of the Russian economy. Sweden's GDP also shrank, by an average of 0.3% a year. The 20% devaluation of the krona in 1993 has created an export boom but feeble growth in domestic demand is expected to restrain recovery as Sweden attempts to tackle its rampant fiscal deficit.

After suffering a nasty recession in 1993, the Belgian economy has staged an equally strong recovery. Belgium's GDP grew 2.3% in 1994 after a 1.7% drop the previous year. The recovery is being led by sharp increases in exports and business investment, though consumer spending is still lacklustre. Despite the improving economy, however, Belgium's labour market problems still seem intractable. Unemployment is forecast to be 12.4% in 1995, well above the OECD average of 7.9%.

In Norway the booming oil and gas sectors continue to fuel the country's economic recovery. Oil and gas production grew by 12.0% in 1994. The recovery of Norway's mainland economy, which began in 1992, gained momentum, bringing overall GDP growth to 3.6% in 1994. The continuing recovery has cut Norway's unemployment rate, which was already two percentage points lower than the OECD average. In 1994, unemployment fell to 5.4% from 6.0% in the previous year.

After a deep recession in 1993, Portugal's economy began to recover modestly last year. Its GDP grew by 1.0%, well below the OECD average of 2.8%. However, its prospects look good: OECD estimates include 2.6% growth in 1995 and 2.9% a year later, the latter equal to the OECD average for 1996. Portugal's unemployment rate of 6.8% remains below the OECD average of 8.2%, mainly because its labour market is extremely flexible. But the proportion of unemployed who have been out of work for over a year has risen from 27% in 1992 to over 34% in 1994.

With slow growth, a large fiscal deficit and high inflation, Greece's economic situation remains fraught. Like Portugal, output grew by only 1% in 1994. This year's forecast growth rate is 1.5%, half of what other OECD countries are expected to produce. In preparation for European monetary union Greece has a medium-term "convergence" programme to reduce the deficit to 1% by 1999. To reach that target the government plans to severely cut expenditure. Reducing inflation will also be crucial. Consumer prices rose by 11% last year.

Being the fastest growing economy in the European Union with GDP rising at more than 5% in 1994, Ireland is forecast to continue at 5% for the next two years, fuelled by rises in personal consumption and business investment. The devaluation of the Irish pound by 10% in early 1993 removed pressure on interest rates but did not increase inflation. Despite brisk growth Ireland has made few inroads into its high level of unemployment. Almost 15% of the labour force is out of work. Among OECD countries only Spain and Finland have higher rates of unemployment.

The Finnish economy has rebounded strongly from a deep recession caused by the combined effects of the collapse of its trade with the former Soviet Union, a banking crisis and world recession. Between 1990 and mid-1993 GDP fell by almost 15% and unemployment jumped from 3.5% to 19%. Recovery has been led by an export boom, assisted by a 30% devaluation between 1991 and 1993. GDP grew by 3.5% in 1994 and is forecast to be around 4.5% up to the end of 1996. Inflation remains low at 2%.

In line with these positive economic forecasts for many countries the IT services sector continues to grow, having proved one of the most recession-proof segments of the industry, albeit at lower rates than that of the early 1980s where double-digit rates were experienced. As many countries' economies slowly move out of a recession the IT services markets will benefit from increased business confidence and greater levels of investment.

B

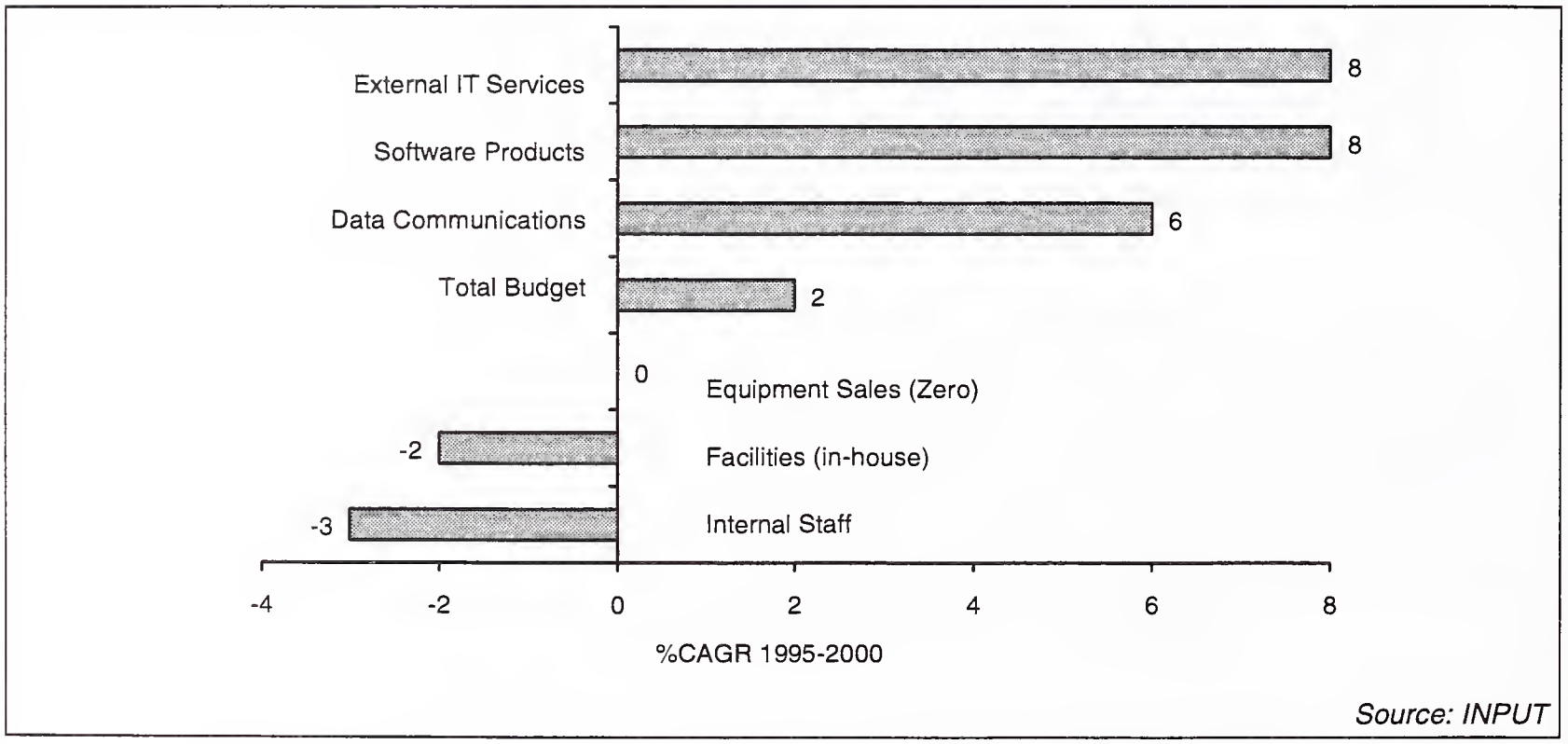
Market Environment — $130 Billion Forecast by 2000

1. Information Services Market Continues To Grow

INPUT forecasts that the IT software and services market will grow at an average of 8% per annum for the next five years, giving a total market size of just over $130 billion in the year 2000. This is an increase on growth rates for 1993 and 1994 which were 6% and 7% respectively, 1993 being the lowest growth rate recorded for the industry since its inception in the early 1970s. This still offers significant growth opportunities, particularly when compared with growth expectations for user's total IT expenditure (estimated at 2% per annum through to the end of the century). Exhibit III-1 breaks out the elements of estimated IT expenditure in Europe and compares their growth rates with that of the IT services market.

Exhibit III-1

Total IT Spending — Europe 1995-2000 Forecast Growth Rates by Budget Category

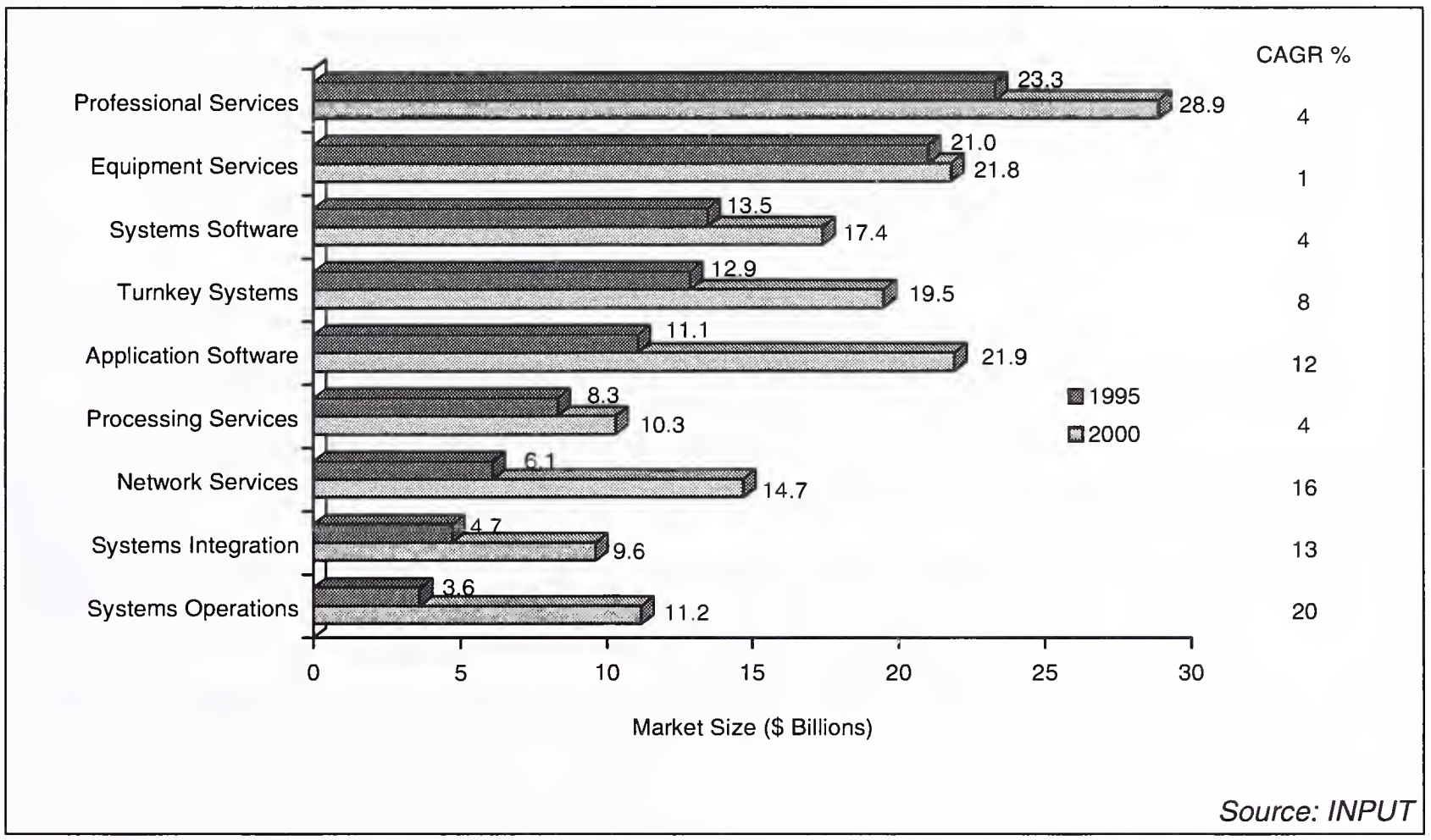


Source: INPUT

High and low growth segments are obviously disguised by the overall market growth rate. These are shown explicitly in Exhibit III-2.

Exhibit III-2

Delivery Mode Analysis: European Information Services Market



Source: INPUT

2. Market Sector Dynamics

The highest growth opportunities lie in the areas of:

- **Systems Operations**: extremely high growth rates for desktop outsourcing are causing this market segment to expand rapidly, although admittedly from a small base, in fact, the smallest of all delivery modes analysed. The debate here is whether outsourcing will continue to exhibit higher growth rates once it is used as strategic tool rather than as a tactical instrument for cutting IT costs, as it has historically been used.

- **Network Services**: the internal network and the network outside of the enterprise is set to become one of the key competitive areas over the next five years. "Network-centricity" will become a major source of competitive advantage for utilising information across organisations, particularly those with international structures. Related to this development is the growth in Internet services and LAN/WAN *internetworking*.

Lowest growth areas include :

- **Equipment Services**: this is due to commoditisation of the maintenance market which fell by 4% during the last year. Maintenance contract costs are expected to continue declining as organisations either take out fewer contracts or force down the cost of existing contracts. Also, there is little opportunity for PC maintenance sales due to rapid technological advances in PC performance.

- **Systems Software**: enterprise systems' volumes are continuing to decline and competition is becoming much more intense as this segment of the market reaches maturity. Growth in PCs and workstations over the next five years (13%) is masked by mainframe volume declines (-6%).

- **Professional Services**: the growth of IS consulting and outsourcing of applications management (10% and 24% respectively) is dampened by low demand for custom software development (1%) due to the increased reliance on "packaged" application products, such as SAP R/3, which is becoming ubiquitous in France, Germany and the UK.

- **Processing Services**: traditional services in this segment are either outsourced or under intense price pressure. The growth segment here is that of business continuity services, where in recent years there has been a shift in emphasis by leading vendors from IT disaster planning to general business protection and recovery. INPUT forecasts that this market will grow to $1.3 billion by the year 2000, a growth rate of 15%.

Other sectors of importance include:

- **Systems Integration**: this market will continue to grow as vendors adopt a business-based approach to projects, adding value rather than containing cost. International organisations are increasingly demanding international service provision, a trend which is playing to the strengths of American vendors such as EDS, Andersen Consulting, ISSC and CSC.

- **Application Software**: as packaged application software increases in use the key to growth will be to develop offerings around applications such as SAP R/3 as custom software development skills decline rapidly.

- **Turnkey Systems**: this sector will also benefit from standardised hardware and software packages which reduce the level of project complexity.

Exhibit III-3 illustrates the fact that major commercial opportunities are not necessarily restricted to "growth" sectors, particularly as such markets have a small base. Areas such as professional services and application software represent valuable revenue opportunities over the five year forecast period.

Exhibit III-3

Major Revenue Opportunities—Europe, 1995-2000: Not Limited to "Growth" Sectors

	CAGR (%)	Revenue Increase ($ bn)
High Growth		
Systems Operations	20	6.6
Network Services	16	7.8
Systems Integration	13	4.3
Low Growth		
Professional Services	4	5.0
Application Software	12	9.7
Turnkey Systems	8	6.0

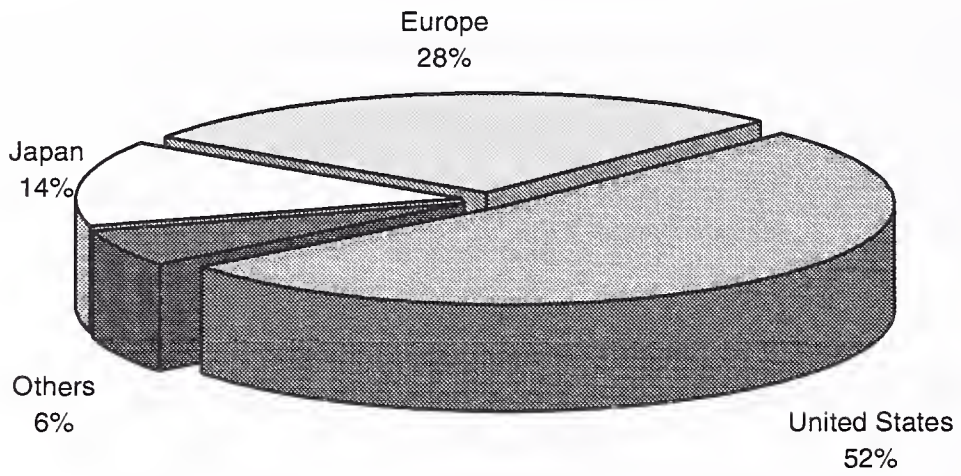
Source: INPUT

3. The World Context

The European market, which is worth $89 billion, accounts for 28% of the 1995 world information services market, which, according to INPUT is valued at $323 billion. This puts it firmly behind the USA market, valued at $169 billion, which has a 52% share of the market. Europe is twice the size of Japan in terms of value — its market size is $46 billion with a market share of 14%. Exhibit III-4 illustrates this global distribution of market share.

Exhibit III-4

Global Distribution of Information Services Markets



Total Market 1995 $ 323 billion

Source: INPUT

The four major economies of France, Germany, UK and Italy dominate the European market, accounting for 70% of all revenues. The next nine medium-sized countries account for 28%: these include Benelux (2 countries), the Nordic region (4 countries) and Spain, Switzerland and Austria. Exhibits III-5 shows the relative strengths of these countries when compared with the USA and Japan. Exhibit III-6 gives individual growth projections for the four major European economies.

Exhibit III-5

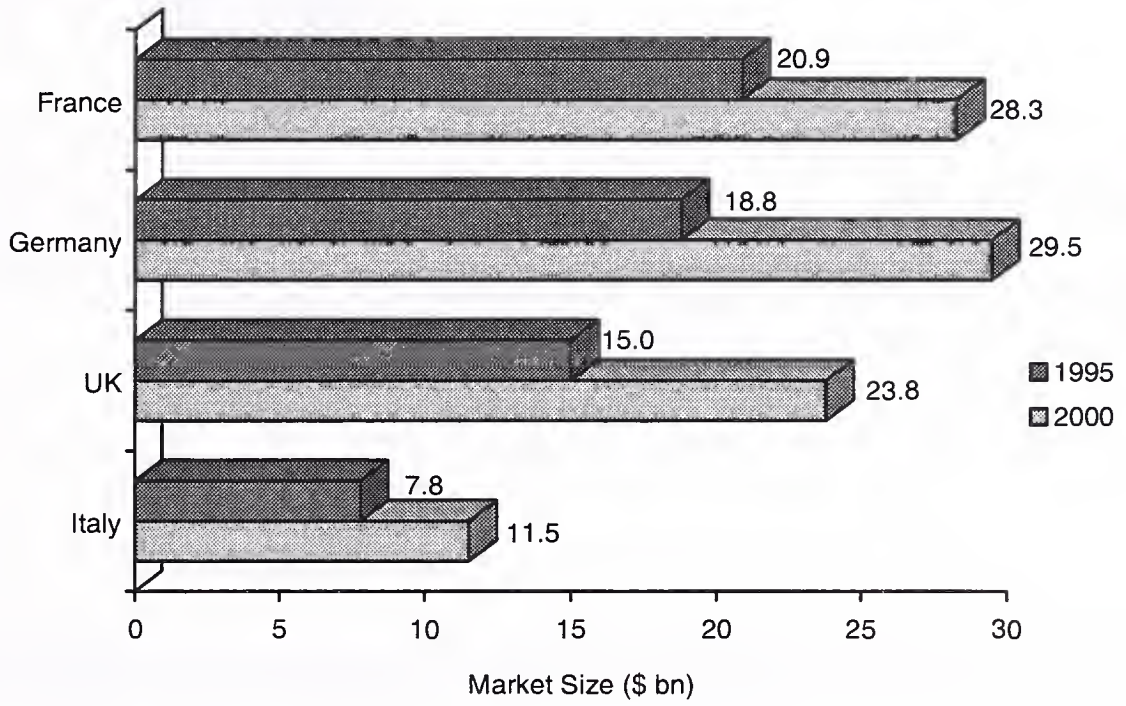
Largest Information Services Country Markets, 1995-2000

	Market Size 1995 ($ bn)	CAGR 1995-2000 (%)
USA	169	12
Japan	45.5	9
France	20.9	6
Germany	18.8	9
United Kingdom	15.0	10
Italy	7.8	8
Europe	89.0	8
World	323.0	11

Source: INPUT

Exhibit III-6

European Countries Comparative Market Size — 1995-2000



Source: INPUT

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IV

Future Development of the Information Services Industry: Key Business Drivers

A

Information Services Market Trends: Change Is The Only Constant

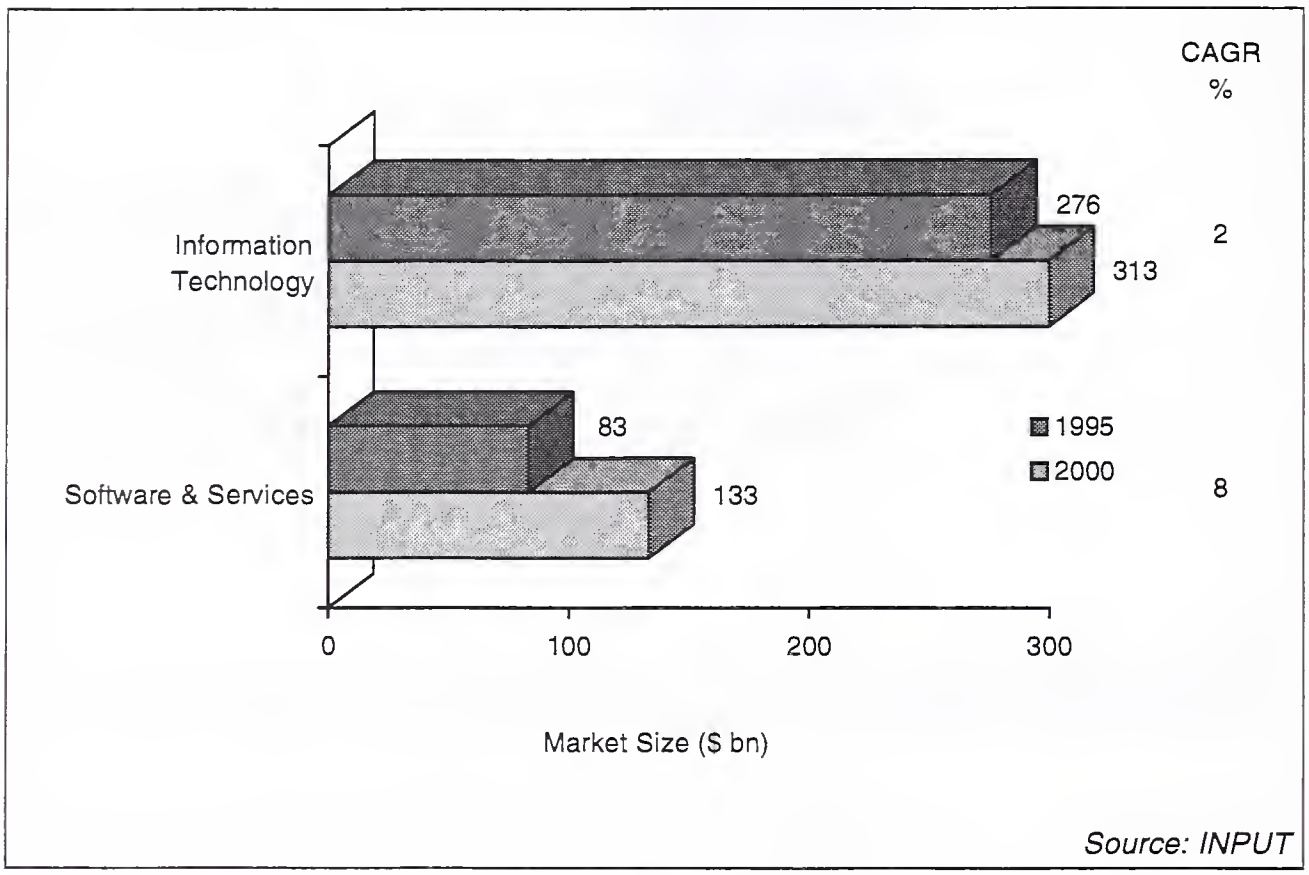
Information Services markets are experiencing profound change. No longer are they able to rely on double-digit growth, as was the case through the 1980s. It is not possible simply to rely on easy market conditions for continued year on year growth. User organisations are more critical than ever. They expect value for money and visible returns on investment rather than simple cost containment. It is no longer possible to argue that the benefits of IT infrastructure are intangible and therefore not open to commercial investment evaluation.

However, information technology is being perceived to be of increasing significance to enterprises throughout Europe. Though the promise of gaining real competitive advantage through the use of IT has faded somewhat, few organisations believe they can compete internationally without a strong technology base. This is reflected in many user organisations' choice of *international* service companies (usually American) to provide them with global support. This, in turn, puts pressure on companies which are strong only in one country and have little capability outside their home market. This process has forced vendors to focus on specific delivery modes or vertical markets where growth opportunities are evident.

In this context, the information services market still represents an overall higher growth opportunity than other IT markets. This is shown in Exhibit IV-1 which contrasts forecast growth in the information services arena with that of the total expected growth for other IT sectors.

Exhibit IV-1

European IT Vs IS Expenditures



Source: INPUT

The major trends and drivers within the information services market can be summarised as follows:

- Consolidation and internationalisation of vendors with new market entrants from the telecommunications sector
- Increased emphasis on networks ("network-centricity") linked with a drive towards distributed systems
- Greater use of knowledge-based systems
- An increasingly business-based vendor perspective
- New markets and technologies: electronic commerce and multimedia.

B

Information Services Market Trends: Vendor Consolidation and Internationalisation

1. Think International, Act Local

Multinational corporations are becoming increasingly international in outlook and operation. Their suppliers, therefore, are expected to support them regardless of the territories or time zones in which such companies choose to operate. This is particularly the case in the markets for systems integration and outsourcing. As a result two competitive segments are emerging:

- International service vendors who can support multinational client operations

- Local players with strengths in one or two national markets.

Vendors of localised, bespoke offerings are finding it increasingly hard to compete with international players. A single country market focus is no longer a sustainable niche. Global competition demands a global response. European vendors have been slow to capitalise on the globalisation process. This is a result of vendors operating within 'protected' markets (due either to legislation or cultural practice) and, in many cases (such as Olivetti, Bull and SNI), having to focus on returning to profitability.

International players, such as EDS, CSC and Andersen Consulting, have leveraged their European operations in providing support to multinational clients and attracted business within Europe by "tracking" their US client base to the European market. It is this global capability combined with 'thought leadership' and extensive in-depth market coverage which has led to increased market share within Europe at the expense of local vendors.

The exception to this is SAP. However, even SAP are experiencing lower growth rates in Europe (19% in Germany for the latest financial year) compared to the USA (157%) as users absorb their current software and become more critical of SAP R/3's ability to deliver cost-effective solutions.

In parallel to this strategy of growing market share through globalisation, international players are also acquiring companies at breakneck speed. ISSC has acquired 14 companies in six countries over the last three years alone. Across all European countries the top 30

vendors are accounting for a greater proportion of market share, leading to higher barriers to market entry.

European vendors are reacting by forming alliances or partnerships to increase critical mass and leverage their core competencies into new markets. ICL has placed greater emphasis on partnerships by creating alliances with EDS (in the area of information security) and IBM (tailoring its Search Accelerator for use by the RS/6000). Olivetti launched Telemedia in September 1994. This is essentially an alliance with two American firms, Redgate Communications and Hughes Network Systems (part of GM), as well as a consolidation of their multimedia interests. Through Omnitel Pronto Italia Olivetti has also won Italy's second digital mobile phone license, again by forging links with Bell Atlantic and Air Touch, both US organisations. Collaboration, rather than competition, seems to be a powerful strategy for maintaining market share growth in the face of American near-virtual domination of the European market place.

2. The Rise of the Telecommunications Vendors

Vendors in the software and services market are increasingly working with telecommunications companies. This is due to three inter-related forces. Increasing deregulation of European telecoms markets has, in turn, lead to increased competition from new entrants which, as a result, has forced telecoms carriers to find new markets for their services in addition to offering improved customer support for their traditional offerings. This phenomenon is also linked to the growth in network services and the acceptance by many organisations that the *network-centric* model is the accepted business model for future development (see next section).

In August 1995 IBM announced an agreement with Stet, a privately-owned Italian telecommunications company with revenues of $21 billion, 140,000 employees and 3 million subscribers in Europe. The intention is for the alliance to sell a variety of "value added network-centric services" which includes network outsourcing, systems outsourcing (Stet is number two in this area), EDI (electronic data interchange) and LAN (local area networks) services, Internet access, e-mail, electronic commerce, video on demand, videoconferencing services and interactive multimedia. The claim is that they are the *first* organisation to offer voice, data and network outsourcing in one package to multinational clients. The exercise will start off in Italy then roll out to other regions of the world.

AT&T's new unit, AT&T Solutions, is a recognition of the potential in offering high value-added network management services. AT&T have also announced their corporate Internet strategy. By way of contrast, BT, through Syntegra and Syncordia, has been offering systems integration and network outsourcing services respectively for many years. These huge international organisations have the potential to become major players over the next five years, particularly in the area of network services. They have global reach and are extremely experienced in handling a multinational client base. Interestingly, vendors that have experience in developing large, complex integrated systems are finding a ready market for their service offering as telecoms carriers and cable television companies develop comprehensive new systems capabilities, such as electronic imaging systems, new information services and network switching devices.

Because of the increasing complexity of user requirements there has been an increase in the number of management consulting firms entering the European market. This has taken two forms:

- There has been a surfeit of general management consulting firms specialising in the area of IT consulting or introducing change management techniques, such as business process re-engineering.
- Many vendors have strengthened their consulting capabilities, predominantly through acquisition. This is a segment of the market which will continue to grow over the next five years but with a greater emphasis on partnering clients through implementation services, rather than 'pure' consulting.

C

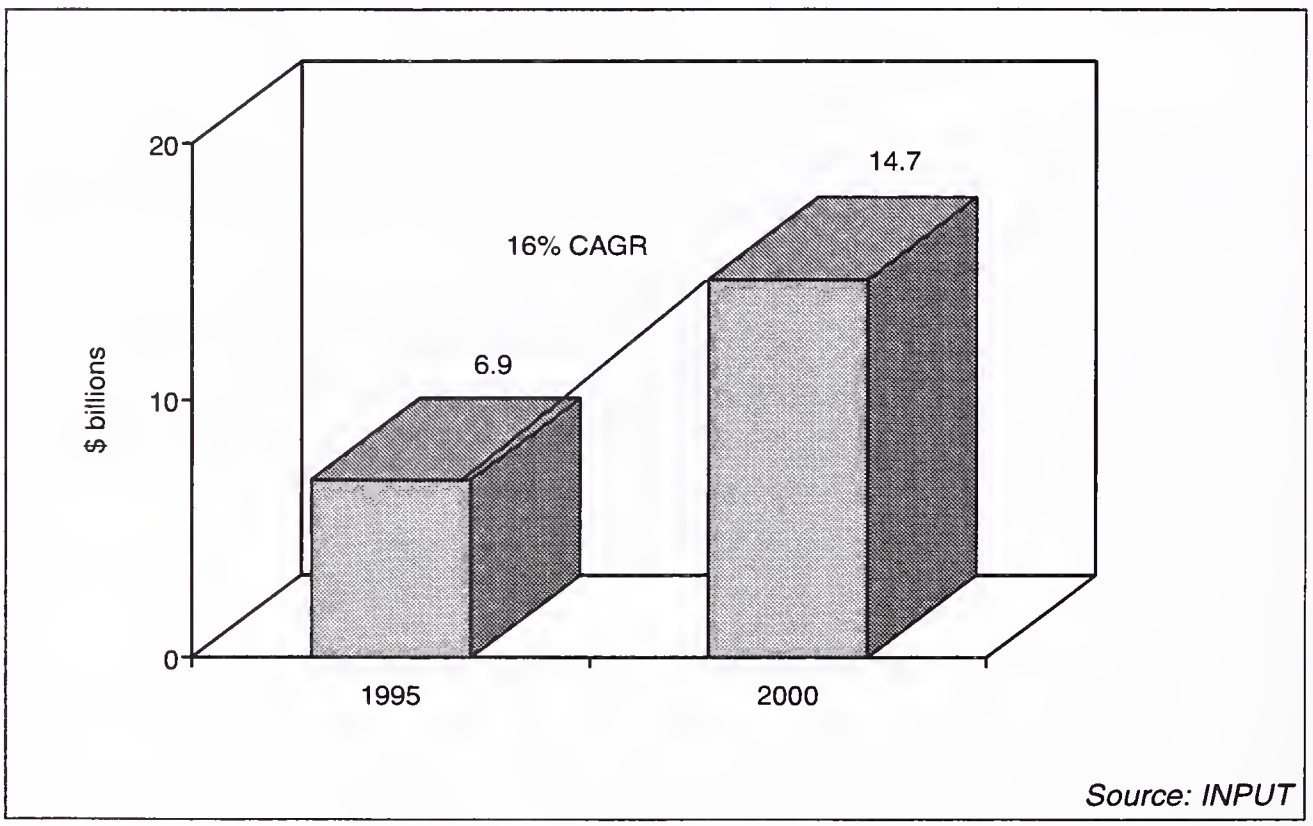
Information Services Market Trends: "Network-Centricity" and the Drive to Distributed Systems

1. Network Integration is a "Must"

With the emergence of new technologies such as client/server there has been a renewed emphasis on distributed computing architectures, primarily in the form of networks. The internal network and the network interface outside of the organisation is set to become one of the key competitive areas over the next five years. INPUT forecasts that network services will grow at 16% over the next five years to a market size of $15 billion by the year 2000 (see Exhibit IV-2).

Exhibit IV-2

Network Services: 16% Growth up to the Year 2000



Source: INPUT

The combination of information technology and communications is becoming pervasive. It will no longer be possible to think about these technologies in isolation. Rather, in these areas vendors will tend to gain *smaller* shares of *larger* markets. In the next five years interconnectivity, whether it be in the form of EDI, surfing the Internet or value added network services, will be a "must".

A clear message for vendors is that the *integration* of existing enterprise systems and their "islands" of information is a key focus for IT operations. Many businesses, faced with mounting costs and increasing network complexity, are seeking to consolidate their networks into one seamless and manageable system. This has the advantage of bringing staff closer to the customer as decision-making is taken at the customer contact level, rather than by senior management. This has also increased staff productivity and allowed greater access to company information for a wider audience. Organisations are now realising that utilising in-house intellectual capital is the next major challenge. Far from needing *more* information companies need to manage, access and utilise information that already exists. The problem historically has been that such information exists in different systems, in different departments and in different formats (as well as in people's heads) and in some cases is simply unobtainable. Integration of cross-functional information systems is a major priority as it avoids writing off huge financial investments and starting again.

Related to the growth in internetworking (LAN and WAN (wide area networks) integration services) is the desire for organisations to increase the bandwidth capacity of their network to handle the ever-growing volume of traffic generated by client/server applications. This has been prompted by the increasing interest in multimedia. The issue appears to be a technological one: whether to use asynchronous transfer mode (ATM), frame relay or switched multi-megabit data services (SMDS) to replace X.25 services. However, the slow availability of ATM-based services is partly a result of telecoms carriers viewing ATM voice and data capabilities as a threat to their service-based revenues. Much larger amounts of voice and data can be pushed through the network with relatively little management overheads. The list of competitors wanting to expand their data communications business into areas previously the domain of international carriers is increasing rapidly. It ranges from systems integrators (such as EDS, CSC, Sema and CGS) through WAN technology providers (Bay Networks, Cisco) to hardware vendors (IBM, ICL, DEC and Unisys). Fierce competition is driving prices down but the ensuing confusion over service packages, technologies and market directions will not be resolved quickly.

2. Distributed Systems Management: A Growing Outsourcing Segment

One of the fastest-growing segments in the outsourcing market is among distributed desktop and client/server networks. No one supplier yet has a dominant position so there is everything to play for. The fundamental trend affecting the development of the outsourcing industry is that of downsizing, coupled with client/server computing.

Changes in technology, such as networked computing devices and the Internet, will strengthen this trend. We are entering a highly distributed, globally networked and fully mobile working environment where investment in networking infrastructure has reached that level of critical mass which is leading to a new type of outsourcing: distributed systems management (DSM).

However, users are beginning to realise that client/server is more costly than first imagined and significantly more complex to manage. While PC networks are cheap to install, the operating costs are similar to those of a centralised system, and can even be more expensive. As investment in client/server reaches maturity over the next few years and users struggle to achieve some of the benefits they hoped for, they will turn for help from the specialists. The market for DSM will grow in inverse proportion to the decline in traditional data centre outsourcing.

The DSM market will be characterised by *remote management diagnostics* as opposed to traditional mainframe management skills. Unlike data systems where personnel costs have been driven down hard distributed systems have commodity-based pricing but people-intensive support requirements. Thus, it will be difficult to achieve cost savings for both supplier and customer. The way forward is to achieve economies of scale through remote management using modems and a variety of monitoring and control tools to carry out all the routine systems management tasks from a single site. This permits a reduction in on-site support staff and the ability to secure significant cost benefits.

There will be room for two types of organisations:

- Small, flexible, low cost companies with a 'no-frills' infrastructure, with access to readily available skills and technologies; these types of organisation will succeed in winning LAN and PC management contracts

- Large organisations focusing on the management of highly complex systems for international firms, where price is not the dominant factor; they are more likely to win contracts managing UNIX and mid-range installations and WANs.

Despite low barriers to entry we have seen in the more mature data centre outsourcing industry that large firms with a track record and strong industry position are hard to budge. This will continue to be the case.

One of the issues fundamental to the growth of distributed systems management is the lack of systems management tools. Although software development tools have matured to the point where they are capable of creating highly functional, highly distributed client/server applications, these applications are still not supported by powerful systems management tools. In many cases, the emerging tools lack the ability to scale to large numbers of servers and clients, are functionally incomplete and only cover single points in the systems management cycle. Moreover they offer little or no integration with the traditional mainframe or minicomputer systems management software that is still in use in most companies. Also, as the dividing line between systems and networks becomes more fuzzy, there is also a need to bring the disciplines of systems management and network management closer together. Consequently, database vendors will become more important in this sector. Oracle, Sybase and Informix have all launched ambitious systems centered around data management, although it would appear that such efforts are still closely linked to their own database platforms.

3. The Drive to Flexible Working

Closely linked to this drive towards distributed systems is the effectiveness of what is termed 'flexible working' or 'tele-commuting'. Flexible organisations allow workers the opportunity to spread their working hours between home and work and can, in some circumstances, re-define what is meant by the term 'working hours' itself. An informal yet effective communications infrastructure enabled by networked IT and telecommunications services can create looser structures for team working, increase empowerment and reduce management hierarchy. Apart from cost savings due to better utilisation of desk space (through 'hot desking') where people are free to organise their work and work patterns to suit them as individuals and the nature of the work they do, almost without exception they return higher quality work, they work more hours and are better motivated. It is estimated that by the year 2010 between 10% to 25% of tomorrow's work force will be telecommuting.

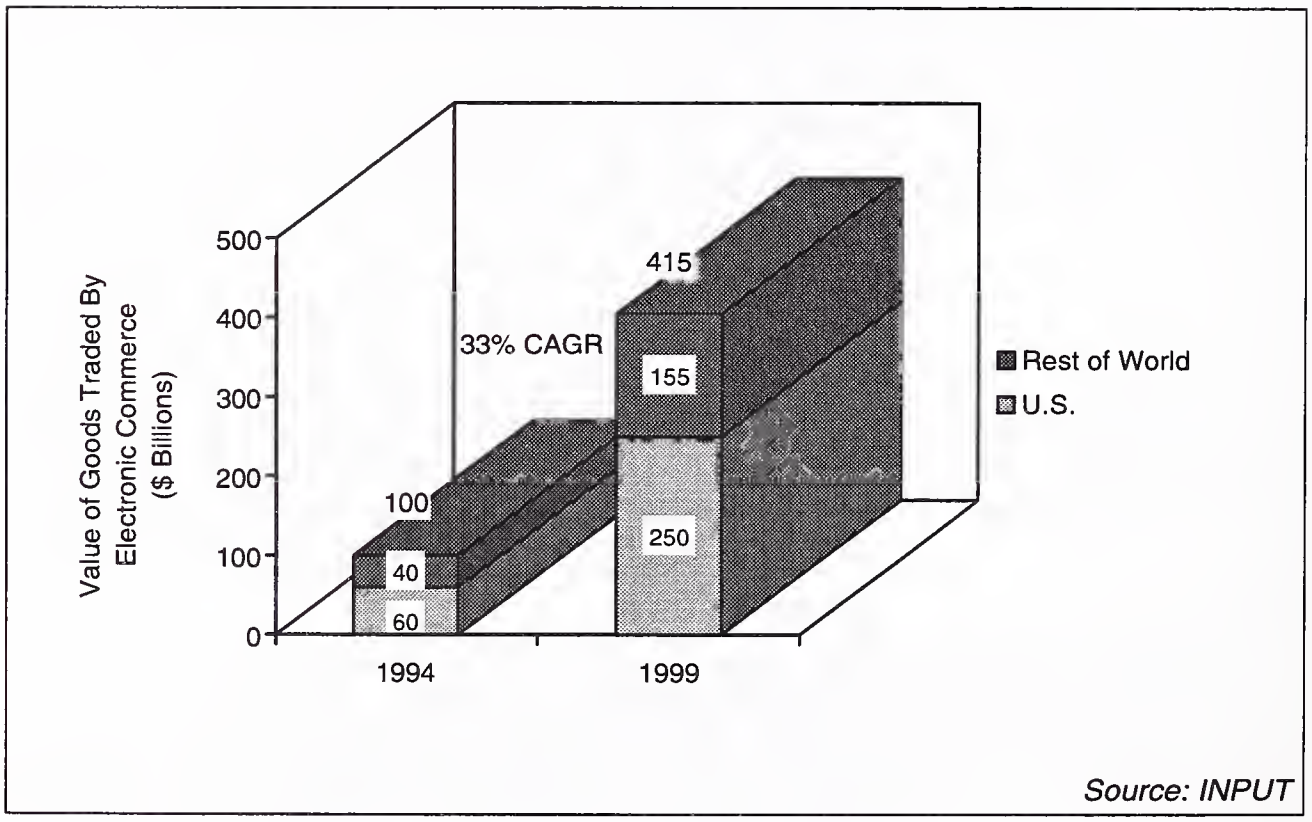
Digital's Stockholm office, where computer terminals drop down from the ceiling, has led to 50 per cent space savings, 60 per cent cuts in energy costs, nearly zero sickness rates, negligible staff turnover and a team performance which is beating targets by over 60 per cent. There are significant cultural obstacles to this approach including middle manager resistance (seeing their structures fade away), avoiding feelings of isolation and the problem of measuring staff on their output. However, it is clear that flexible working does offer a real alternative with major benefits. Using IT as an enabler to promote this as a viable option will certainly drive its use among businesses in the near future.

4. The Rise and Rise of the Internet

The other growth area within network services is the Internet. INPUT estimates that the number of Internet users is more than 25 million world-wide. The World Wide Web is the most frequently used part of the Internet and already contains over 50,000 sites. It is estimated that this population is doubling every two months and is regarded as the backbone for electronic commerce. The Internet is creating a market for goods and services which moves easily across geographies and time zones. It provides a wealth of information at the fingertips of the purchaser and reduces transaction speed significantly. It is now possible to browse through 'virtual' shopping centres within a truly global market place. Many organisations are using innovative ways to market their products over the Internet either through samples of free software or the instantaneous distribution of electronic catalogues to selected mailing lists. INPUT estimates that the worldwide market for electronic commerce, worth $100 million in 1994, will grow at a compound annual rate of 33% to reach a market size of $415 billion by the year 1999 (see Exhibit IV-3).

Exhibit IV-3

Worldwide Electronic Commerce Expenditures

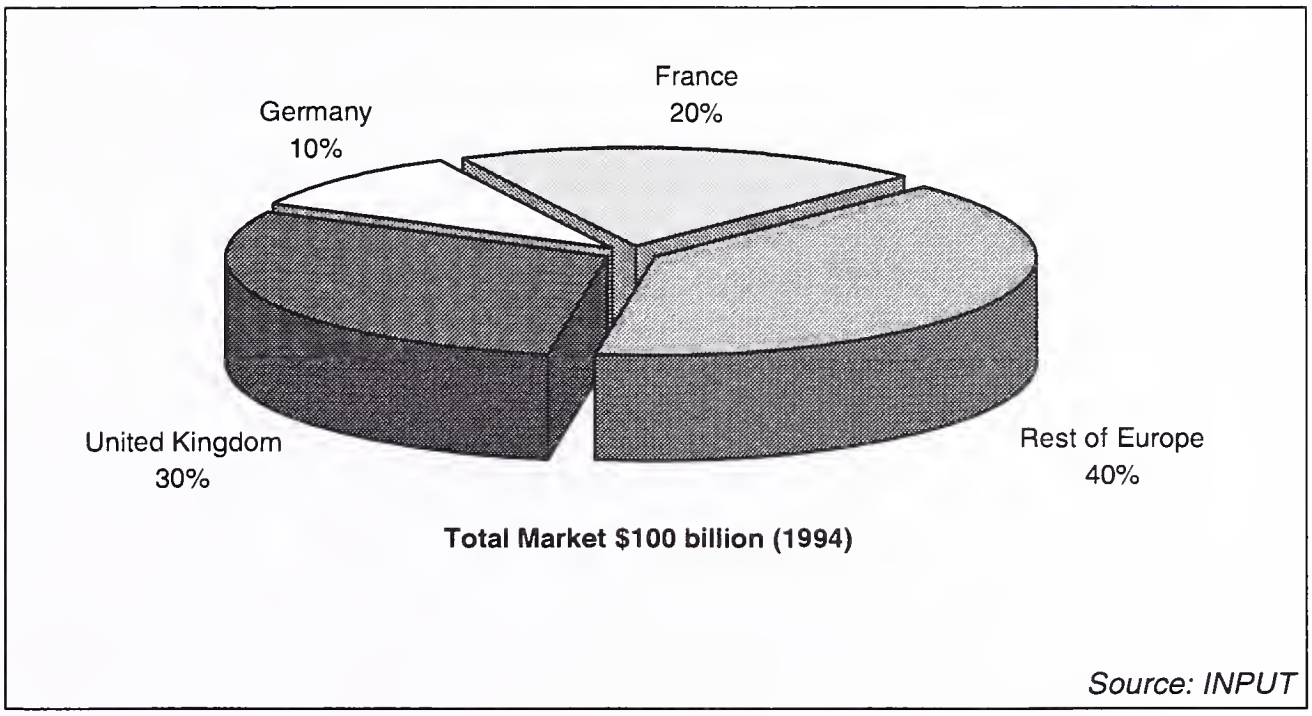


Source: INPUT

Exhibit IV-4 shows the relative proportions the major country markets represent of the overall European Internet market in terms of revenues generated from services related to building or supporting the Internet. The total European market is estimated to be worth $100 billion.

Exhibit IV-4

European Internet Market Shares for Major Countries, 1995



Source: INPUT

D

Information Services Market Trends: Knowledge-Based Systems Will Increasingly Utilise Intellectual Capital

Knowledge-based strategies are likely to become a key competitive differentiator in the future. There are three aspects to this development:

- The creation of *external* digital knowledge bases
- The generation of *internal* company databases, such as data warehouses
- The development of simple *corporate learning* systems using PC-based systems.

As alluded to earlier, a key focus for many organisations is how to link their "islands" of information given that data is held at different places and in different formats. It is this *indexation* of knowledge within an organisation which increases the possibilities for corporate learning. Although INPUT forecasts that on-line information services will grow by 9% over the next five years from $3.7 billion to $6.3 billion the real opportunities lie in the development of new kinds of databases which offer more than just hard facts. Services on the Internet, particularly the Web, are beginning to realise this potential by using HTML (Hypertext Mark-up Language) when displaying information. This allows a user access to any part of a document simply by highlighting one particular aspect of the text. It will become a useful future tool for training and education along with other advanced multimedia techniques.

1. The Digital Library Starts Here

A good example of a recent initiative in this area is that of IBM, which has set up an alliance with a multimedia storage and retrieval company, MARS, to develop a system whereby programme, commercial or event producers can access music on-line for inclusion in productions. The system allows producers to select music for film, TV or other use, electronically gain clearance and obtain a license within minutes. The strength of this offering is shown by the variety of the customer base:

- Dreamworks SKG, a new entertainment company set up by Stephen Spielberg in October 1994;
- The Vatican Library, where rare manuscripts are distributed to scholars globally;

- Institute for Scientific Information, which provides scientific information electronically to researchers around the world;

- Indiana University School of Music, one of the first large-scale multimedia projects providing students with easy access to musical scores and recordings.

By providing advanced technologies for authentication, royalties management, encryption and watermarking, the IBM library offers effective rights management functions to content creators, content hosts and users. It also allows search management facilities for information based on image content, based on colours, shapes and textures: "search for images like this" is now a real query. Thus, while providing protection against unauthorised copying, its search capabilities allow users to find precise information amidst the wealth of material easily and quickly.

2. Data Warehousing: Making Information Work For You

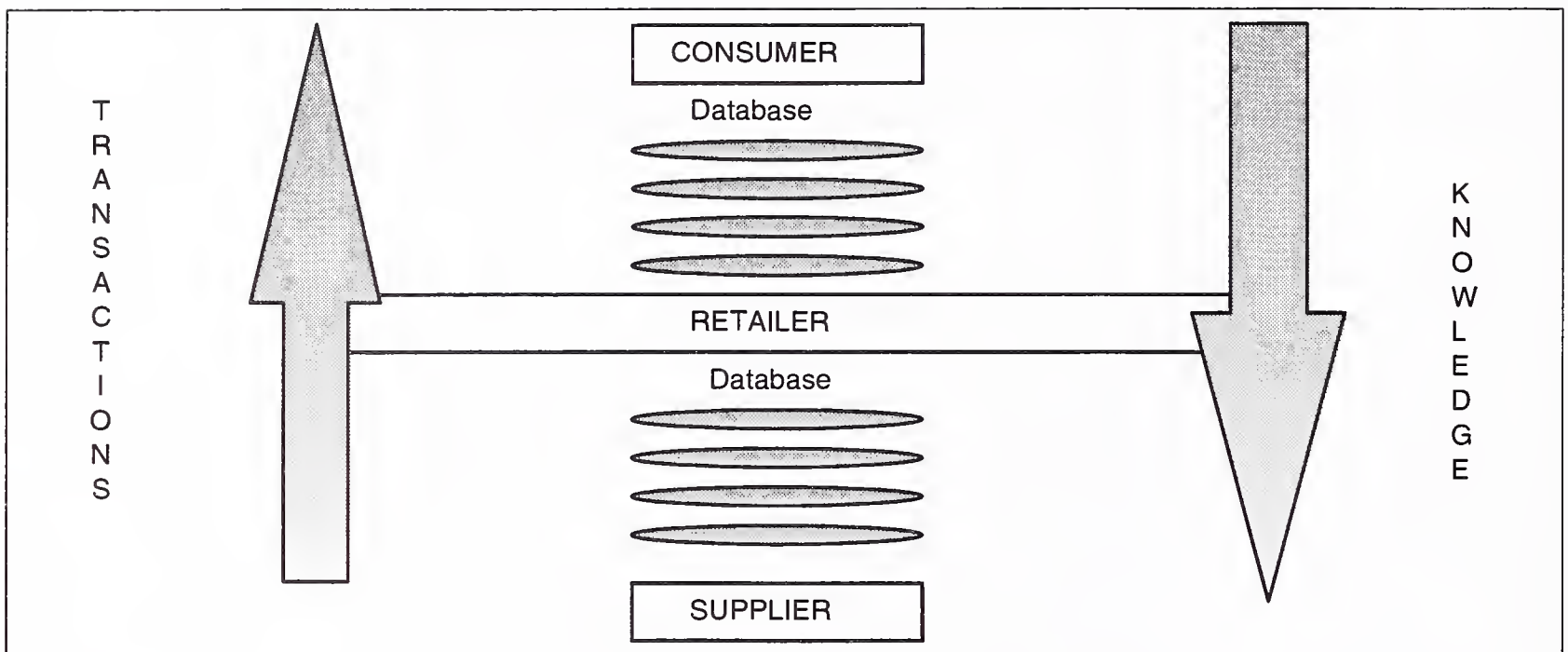
Data mining — or *'information prospecting'*, a more helpful term — is an example where in-house systems are providing added-value information and greater in-depth knowledge of the customer. The growth of interest in data warehousing stems from the Teredata database search engine which was launched in 1985. Until 1993 Teredata *was* the data warehousing market. Using massively parallel processing power within a relational database customers are able to launch complex queries against mountains of data either directly from a database screen or by using a business intelligence tool.

A good example is EPOS data from supermarkets. Traditionally, EPOS data has been used for basic purposes such as stock control and, at best, monitoring local or national promotions. A more creative use would be to analyse customer purchasing patterns linked to their charge card or smart card. Most supermarket customers are creatures of habit. Some studies suggest that shoppers buy 80% of the same products as they bought on previous visits. If this is true then information systems can form the basis on which a long-term relationship with the customer can be structured. For instance, all customers have to do is advise their local supermarket in advance of their expected time of arrival and their 80% habitual purchase will be ready for them, pre-packed, waiting to be picked up. This would give customers more time to browse around and possibly buy more items. Giant databases of historical data are of little use unless connections between the data can be highlighted and lessons learned regarding customers' behaviour. Data mining does exactly that.

Data mining can provide the same advantages to suppliers of retail chains. Some retailers are already differentiating themselves by providing suppliers with sales information on specific lines within a region or even a sub-set of retail outlets. Suppliers are thus able to monitor the effects of a local promotion while it is taking place and can evaluate its success within hours of it having finished. Exhibit IV-5 illustrates the way data warehouse concepts can be utilised within a supply chain environment.

Exhibit IV-5

Knowledge Creation Within A Supply Chain Environment



Source: INPUT

There are many benefits associated with this approach:

- Such systems make effective use of mountains of raw data which could not otherwise be analysed;
- Meaningful links between the data are highlighted;
- Information is distributed to those people who need it most
- Such systems provide access to information in a form which is easily accessible and usable, even if it is image or voice;
- It assists the sales and marketing effort in generating additional revenue and establishing closer customer relationships.

The limitations of this approach are shown when analysing data which has more than three dimensions, although executive information services and on-line analytical processing vendors are already producing increasingly sophisticated graphics packages. By far the most important aspect is ensuring uniformity in the way data is brought in and packaged within the warehouse. This includes data cleansing and definitions of consistent business terminology. Without consistency of data and data types access times are greatly increased and implementation much less successful.

3. Corporate Learning: Simple But Effective

Although nowhere near as powerful as the parallel computers used for data mining, simple PC systems have been used to good effect to create a 'learning organisation' culture where information is shared and discussed. Groupware such as Lotus Notes has provided many companies with a networked database which can be added to and shared by all members of the organisation. Such systems actively enhance knowledge creation and knowledge transfer. After only two years in the market groupware has become such a major application that Microsoft plans to launch its own version, Exchange, in 1995. The advantages of using such a network are numerous:

- Competitive intelligence can be supplied by the sales force
- Sales leads can be tracked
- New products can be developed by marketing and R&D
- Account management can access customer details, possibly at the customer's site
- Access can be gained to a corporate 'memory bank'
- On-line databases can be searched and downloaded onto the database and re-used at a later date.

Such systems are particularly powerful when used across multi-national corporations. It allows for one region to work on a particular issue during their working day and then for another task force in a different time zone to continue the project within a twenty four hour cycle. The explosion of multimedia has helped to make relationships within such a database easier to monitor as text is embedded and links can be forged with other parts of the database. Research has shown that groupware enhances productivity and gives returns on investment of around 40 per cent.

However, employees feel uncomfortable about putting their intellectual capital on to any form of database. In doing so they feel they are being "robbed" of their individual contribution to the business. Consequently, their services may no longer be required if anyone can quickly and easily inherit their personal knowledge base. Also, there are cultural variations. In North America groupware is driven by workgroups in an ad hoc manner. In Europe it tends to be driven centrally by IT departments and is allied to strategy, even sometimes being used as part of a re-engineering project. However, in Japan there is little interest in groupware as Japanese culture depends heavily on face-to-face meetings and great reliance is placed on facial expressions and body language. Hence, electronic communication is inappropriate.

Paradoxically groupware will probably disappear as a separate category of software within about five years. As computing becomes more of a primary communications medium and object technology becomes more established users will come to expect to share information objects.

E

Information Services Market Trends: Vendors Are Adopting A Much More Business-Based Perspective

1. The Continual Search for Value-For-Money

Large IT users are demanding that IT systems deliver real value *as defined by the enterprise*. For too long customers have been sold systems which are justified simply on classic investment criteria, such as rate of return. Justifying IT infrastructure has become a political game involving the careful choice of discount rates in order to persuade the board that this particular IT investment is necessary and will add benefit to the organisation. Two markets which have seen an increase in emphasis by vendors on *value creation* (as oppose to cost containment) are the systems integration and professional services markets . In effect, services within these markets have been positioned as *business solutions,* as oppose to IT solutions. There is a much greater focus on the needs of the business. Value-based pricing includes the ability to directly measure any business benefits accruing from the project and to link such changes in performance with payment to the vendor. The fact that IT has been part of the implementation process and has enabled these solutions to be delivered is, in one sense, incidental. But this new style of project delivery is in embryonic form. However, it is more than coincidence that those vendors who are offering 'value for money contracts' are among the key players in the industry.

This re-assessment of the role of IT has led vendors to offer more consultancy services as part of an overall service offering, particularly in the realm of business process re-structuring or re-engineering. Such vendors wish to be perceived as offering genuinely business-oriented services. Re-engineering has been recognised as being important in this context as most, if not all, re-engineering projects require significant change in IT platforms, applications and solutions. This has led to the increasing complexity of systems integration projects and the desire by organisations to therefore outsource such projects as the skill sets do not exist in-house.

However, IT departments do see re-engineering projects as a means of changing their role in the organisation and so are very supportive of their company's initiatives. They are conscious of the need to re-position (and re-invent) themselves, especially given the rise in outsourcing and the widespread perception that IT departments do not really understand the business agenda.

But there is still work to be done by vendors in this area. The major focus for systems integration projects is still in non-process contexts, not that of translating business aims into technical solutions. Genuine process expertise is kept in-house while technology-intensive projects are put out to systems integrators. This is also the case in the outsourcing market. Both in the UK and increasingly within the rest of Europe, the most common form of outsourcing is where operations and support tasks - not process or application-specific tasks - are given to a vendor and where development activity based on expertise of a specific industry or application is retained within the corporation.

2. Flexible Contract Pricing

Long term partnerships and payments by results systems are particularly appropriate to systems projects which last five to ten years. As an organisation changes over time, so a contract needs to be flexible in terms of delivering to a *changing business need* as well as providing a specifically contracted service. Over-specification of tenders is the greatest handicap to this process. EDS' agreement with the UK Inland Revenue in 1994 and Koperativa Forbundet of Sweden in 1993 are good examples of this kind of flexible arrangement. But in order to enter into this kind of long-term commitment large resources and financial strength are required. This ultimately limits the number and type of vendors operating within this market. The advantage is that it ties the supplier very closely to the customers' business and provides the opportunity and the incentive to show how the supplier can contribute to the customer's continuing prosperity.

3. Flexible IT Infrastructure

This increasingly business-based approach by vendors is not to be confused with the current fad of aligning IT strategy with business strategy. Business and IT strategies are fundamentally mismatched. To update old, rigid, inflexible systems takes up most of an IT department's time and financial resources. Businesses, on the other hand, are highly dynamic and constantly changing. The way forward is to develop a flexible IT infrastructure that can change in accordance with the needs of the business - and within a timescale set by the organisation. This would include various elements:

- The ability to store information in a way that can be easily *accessed* via groupware through in-house knowledge bases

- The ability to *convert* information into a customer-oriented format which the internal customer can utilise

- The ability to move information around the business and to customers, suppliers and partners using advanced network services

- The ability to decide who can use which pieces of information.

This fluid approach to infrastructure development offers the enterprise the possibility of responding flexibly to dynamic changes in the current business environment and allows IT to play a more business-related role.

F

Information Services Market Trends: New Markets and Technologies — Electronic Commerce and Multimedia

1. Electronic Commerce

Electronic data interchange (EDI) has traditionally been the medium for any direct transmission of data between corporations' information systems. However, this is becoming increasingly complicated by the possibility of business on the Internet, smart card technology and developments in home banking.

Such phenomena are causing companies to radically re-think the ways in which they carry out their business. By developing key electronic commerce application skills vendors can exploit specific opportunities such as :

- Electronic commerce on the Internet
- Electronic purse and smart card applications
- The emergence of 'virtual' banking.

a. Cyberspace Trading: Security is Paramount

Security is paramount to any commercial system and many institutions have serious concerns regarding electronic transactions . But there are encouraging signs that this will not stall potential buyers and sellers from operating within *cyberspace*.

Netscape Communications, publisher of the Navigator programme for the World Wide Web and recently launched on the US stock market to tremendous acclaim, has introduced a new version of its browser programme. This prevents others from entering the network by creating a secure channel through the use of an encryption system. Navigator also authenticates the identity of parties involved in electronic transactions and ensures that messages cannot be altered en route. An alternative approach has been developed by Terisa Systems, a joint venture between Enterprise Integration Technologies and RSA Data Security, developers of electronic commerce and data encryption systems respectively. To avoid conflict over standards, Netscape, in addition to IBM, Compuserve, America On-line and Prodigy, have taken equity stakes within Terisa Systems and by combining the two security standards aim to create a unified approach acceptable to all major players. Commercial products based on the standard should be available by the fourth quarter of 1995.

However, there are still problems in navigating around a "cybermall". Shops need to be easy to find and customers need to be able to compare prices without too much effort. Also, the cost of setting up business is not simply an investment of $40,000 in computer hardware. Customers expect high quality product presentations and customer service, not cheap computer graphics. The issues (and the costs) are akin to opening up a new store or restaurant.

b. Electronic Purses: Phone Me Some Money

Smart cards — plastic cards which store information on a microchip — have been used by retailers and, more recently, mobile phone companies, as a method of generating customer loyalty, understanding buying patterns and segmenting the customer base on the basis of attitude and lifestyle. Such cards have been used by petrol companies in conjunction with retailers to allow customers to accumulate points for each purchase. These points can then be converted into cash at a store as part payment towards the total cost of the product. It is only a small step from this position to accepting plastic as if it were cash in hand, which is essentially the principle behind the 'electronic purse'.

The two main systems for delivering the electronic purse concept are either re-chargeable cards which do not need to be linked to a central computer or a much faster debit card which adds up small transactions throughout the shopping day. Portugal launched one of the most sophisticated versions of the electronic purse in February 1995. It is the first card that can be issued by any bank and used to pay for any service anywhere. Denmark and Finland have also developed electronic purses.

In the UK, National Westminster and Midland banks launched Mondex in July 1995, an electronic purse initially being tested in the town of Swindon with a target of 40,000 residents and 1,000 retailers. Unlike a debit card, Mondex never looks at a bank account. The cash is on the card. The amount can be increased via telephones (BT is also a partner in the project) or at cash point machines. The card can be used to shop from home on the Internet or cable television, to pay fares on public transport and to send cash to relatives abroad. Smart card technology has the potential to carry further information, such as travel season tickets and even medical records.

There are plans in place to test Mondex in Canada next year and through the Hong Kong Shanghai Bank (Midland Bank's parent company) in China, India, Singapore, Thailand and the Philippines.

The sub-plot for the banks is to reduce the costs of handling cash. At present this costs the financial services industry in the UK $3.2 billion

a year. Electronic cash is also part of a wider drive to encourage customers to deal directly with their bank accounts, rather than via the costly branch network. Mastercard, Visa and Europay are developing their own cards for similar trials as well as collaborating on the development of global standards for chip cards.

However, the emergence of various payment systems such as Internet shopping centres, interactive cable television, smart cards and electronic purses, could cause problems for banks. Internal mainframe computers need to adapt to the multitude of payment systems, some of which have still to be put on trial.

c. Virtual Banking: What Does It Mean?

Virtual banking involves customers accessing bank services via multiple delivery channels including automated teller machines (ATM), telephones, multimedia kiosks, interactive TVs and home PCs. A virtual bank is the contact point through which these services are provided, often by third parties. Pressure for cost reduction and improved customer service levels are helping shape a new banking environment, which will be characterised by a wider range of delivery channels, complex organisational relationships and greater use of technology. The traditional brick-and-mortar branch is slowly giving way to an organisation which is reaching out to its customers in non-traditional ways.

Among the new delivery mechanisms are ATMs and telephones. In the USA banks plan to increase the number of ATMs to 135,000 - a growth of 50% - by 1997. Home banking, using interactive set-top television boxes or PCs, appears to be finally taking root in the USA due to advances in high performance telecom technologies such as asynchronous transfer mode and integrated digital services network connections and the growth of home computing and on-line service subscriptions. In the UK telephone banking is becoming more and more accepted as an alternative delivery channel. This is evidenced by the growth of First Direct, a subsidiary of Midland Bank, which recently announced it had reached a base of 500,000 customers since it launched its UK telephone banking service five years ago. Over the next five years, telephone banking in the UK is expected to increase ten-fold with the total number of calls per month rising from 2 million to 20 million.

Barclays Bank announced plans in July to introduce a home computer banking service in the UK. The pilot package is aimed at 2,000 Barclays customers with plans to make the service nationwide in a year's time. Using a modem to link their personal computer to the telephone customers will be able to pay bills, transfer funds, set up standing orders and check the balance of their accounts from home.

The recent INPUT study into worldwide banking analysed the potential impact of electronic commerce. Among the key findings were:

- Banks are very interested in electronic banking since it can expand their ability to serve clients through home banking, electronic commerce on public networks and the Internet, rapid information on corporate activity (cash management, in effect), expanded ATM services and on-line input or receipt of instructions and information

- Electronic services can also improve a bank's ability to provide customer services and this may be the best method banks have of competing with non-banks

- Banks are anxious to reduce costs in existing work and systems and will consider dropping, changing or simply not upgrading services that cannot be delivered at a profit

- In terms of key technology issues electronic banking was perceived as the second most important issue on a global scale (see Exhibit IV-6) after client-server computing.

Exhibit IV-6

Top 5 Worldwide Technology Issues—Banking and Finance Sector

	Relative Importance to Bank Respondents
How fast to pursue client-server use	4.0
Importance of Electronic Banking	3.8
Need for BPR prior to projects	3.7
Need for Open Systems	3.5
Whether imaging saves money and personnel	3.3

5 = High and 1 = Low *Source: INPUT*

- Electronic banking was regarded as the second most important trend within Europe (see Exhibit IV-7) after the need to expand retail banking requirements (this included improvement of branch operations, integration of accounts and on-line operations)

- Within France the development and use of Minitel by the general population has provided a stimulus for electronic banking to provide capabilities via home networks.

Exhibit IV-7

Top 5 European Banking Trends

	Relative Ranking by Bank Users and Vendors
Expanding Retail banking Requirements	4.1
Use of Electronic Banking	3.8
Increased processing and outsourcing work from banks	3.5
Cost reduction pressures	3.4
BPR and other engineering activies	3.4

5 = High and 1 = Low *Source: INPUT*

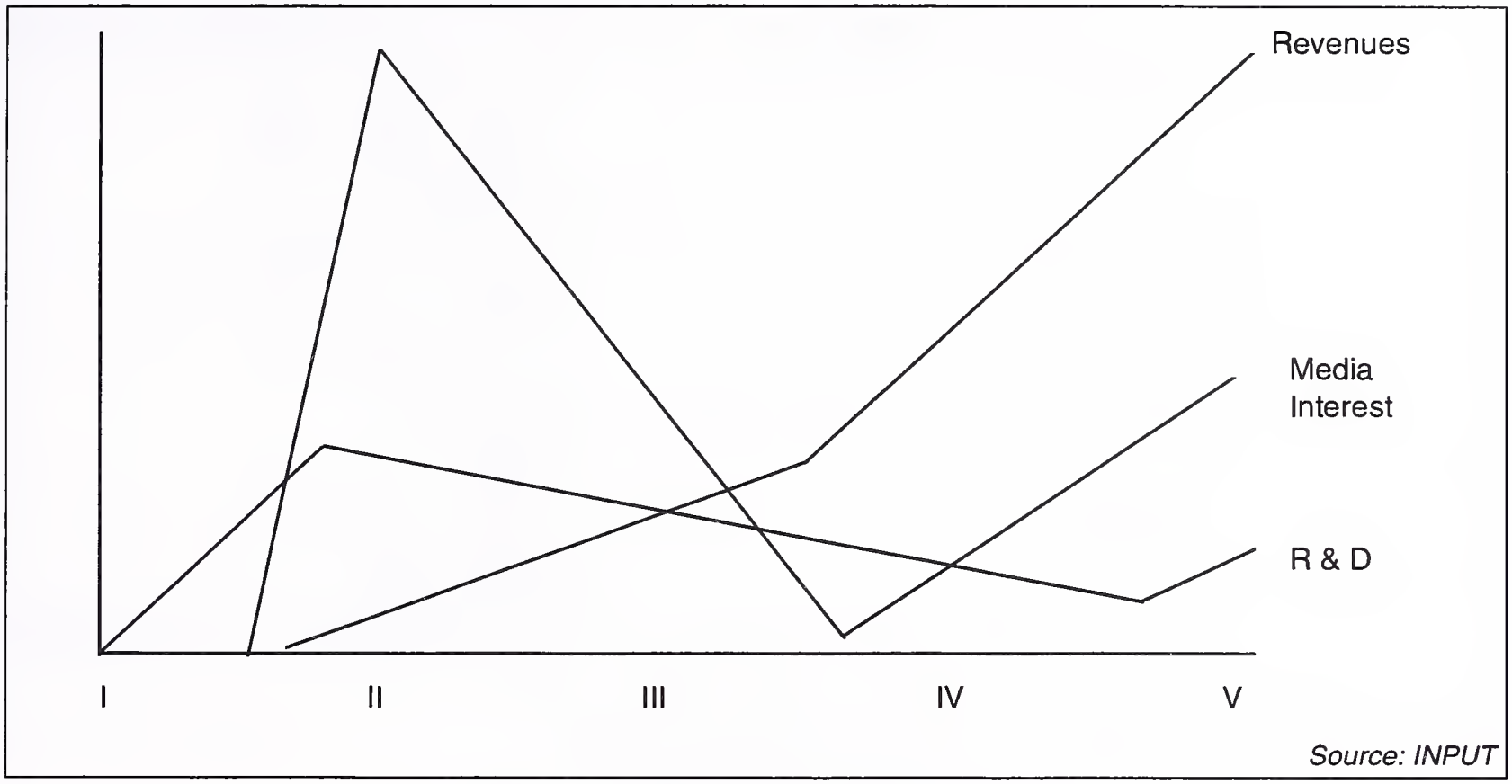
As technology reaches into the home and new interactive services are developed so the concept of banking as a nine-to-five service will become redundant. This reflects the growing trend towards 24 hour retailing whereby customers demand greater choice, better value, excellent customer service and speedy delivery - even if the order is taken at three o'clock in the morning.

2. Multimedia

There has been a great deal of hype and confusion over what exactly multimedia means and what it will deliver. During 1993 and 1994 the media generated a huge amount of excitement and argued for dramatic changes in the way people work and live as a result of the introduction of multimedia technology. In reality, the revenues generated by multimedia applications are relatively small and the adoption of video-on-demand or PC-based video is still in the medium to long term. Exhibit IV-8 is a generic model which shows the relationship between research, media attention and subsequent revenue generation for new technologies. Multimedia still remains a stand-alone, non-interactive software tool, primarily in the format of CD-ROM.

Exhibit IV-8

Phases in Research and Technology Development, Industry Attention and Revenue



a. Big Brands Are Watching You

Now that the initial hype is over, as evidenced by a growing media disillusionment concerning its impact, the real revenue opportunities for information services vendors are becoming apparent. The next major development is the entry of new players from backgrounds of *content* production and distribution. These companies have significant brand strength and will be extremely influential in guiding customers through the maze of information which interactive multimedia technology will produce. It is significant that Microsoft has recently begun to aggressively market itself through advertising in order to become a brand name of the future with its "Where Do You Want To Go Today?" strap-line. Exhibit IV-9 shows some of the major brands who are already heavily involved in this market.

Exhibit IV-9

New Players Possess Powerful Brands

Sector	Company
Publishing	Reed Elsevier Daily Telegraph Group Bertlesmann Associated Newspapers
Broadcasting	British Broadcasting Corporation Canal + News International
Retail	Thomas Cook WH Smith Argyll
Airlines	Virgin United Airlines British Airways

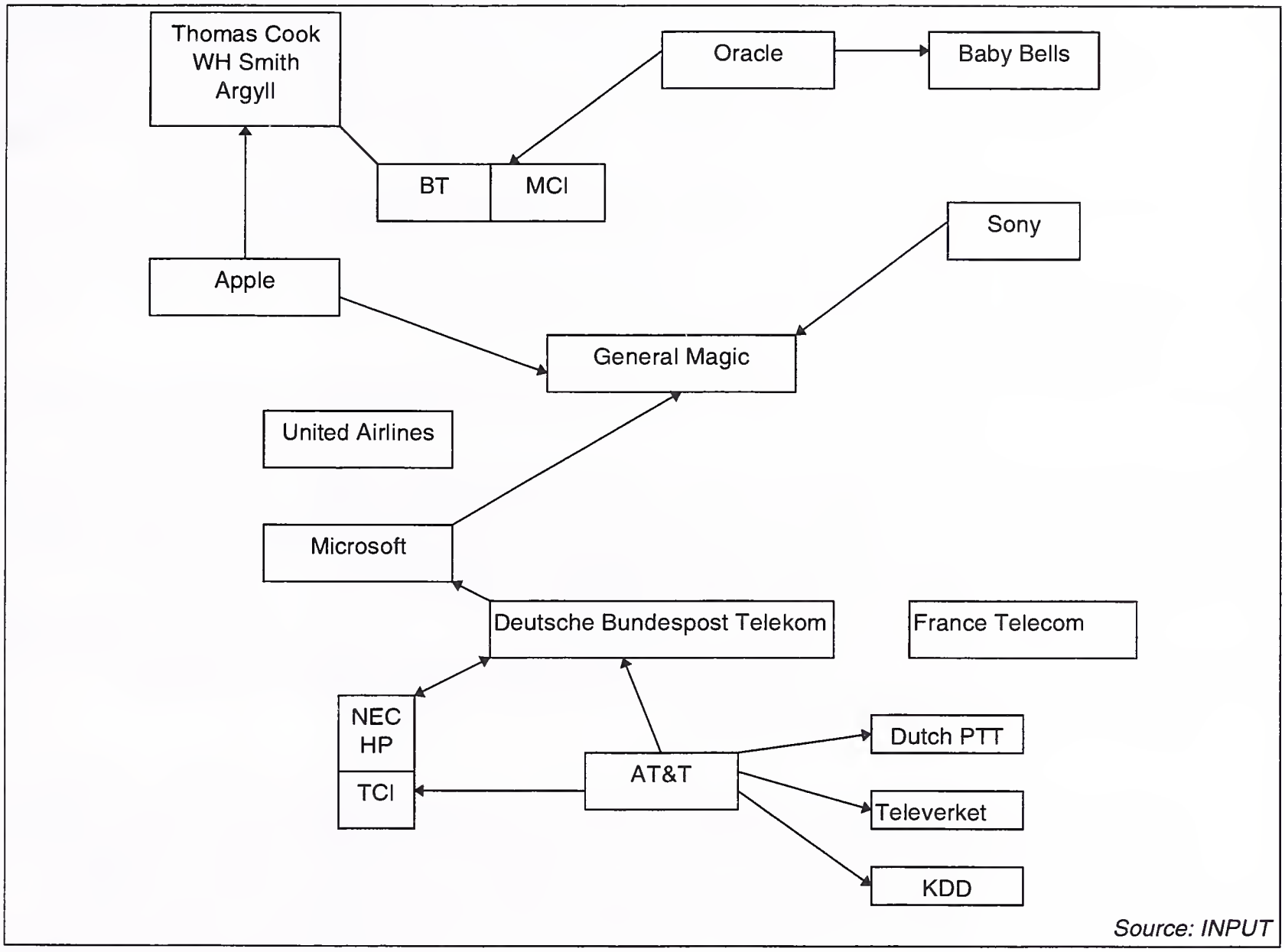
Source: INPUT

b. Merger-Mania Continues

Vendors should evaluate the opportunities inherent in making alliances with such organisations. Service opportunities will centre around the delivery of new forms of content. However, although alliances are key to gaining market share, the way forward is extremely complex. Exhibit IV-10 illustrates alliances between the current players. Merger and acquisition activity between media and content organisations also continues at an amazing rate with major agreements being announced almost on a weekly basis. As the number of opportunities declines so the cost of acquisition increases, as evidenced by the recent $19 billion Disney/Capital Cities-ABC merger, America's second largest ever. Because of the way in which companies from different sectors are working with each other new value chains are emerging which reflect this process. This has caused vendors to re-evaluate their approach to such markets and demands careful analysis in order to ensure service offerings reflect current business needs.

Exhibit IV-10

Multimedia Alliance Map



Source: INPUT

c. Diversify or Die?

There are three business drivers prompting the rapid take-up of multimedia technology:

- The fear of standing by and watching competitors gain market share (Smith Corona, the inventor of the typewriter, missed the computer age altogether and filed for bankruptcy in July 1995)
- Deregulation of telephony and cable TV markets
- The potential size of a newly converged market which includes telecoms operators, TV and cable networks, publishers, software companies and film studios.

Multimedia is a concept, not a market or a product. Consequently, it is difficult to predict how the various markets will work together. Because of the drivers mentioned above firms are diversifying into markets where they have little real business understanding. AT&T's 1991 acquisition of NCR for $7.5 billion in order to enter into the computer business is still struggling to show returns, as evidenced by the recent AT&T demerger announcement. Today's emerging standards may become tomorrow's wasted technology. If cheap wireless transmission can be made to work cable companies may have wasted millions digging up roads to lay fibre-optics. For every multimedia success (such as CD-ROM) there are spectacular failures (such as video phones or personal digital assistants).

Some of the boldest diversification strategies have come from network providers who also want to control what travels along them. Many of the alliances over the last two years have involved media (telecoms, cable, software) and messages (TV and film studios, publishers, banks). The rationale is that there may be many ways of delivering films (say) into a home but there will never be more than one 'Citizen Kane'. However, there is little evidence that technology companies are good at managing content. The retreat of Sony and Matsushita from Hollywood during 1995 illustrates the difficulty of the "hardware /software synergy" argument.

Likewise, firms making money from the distribution of their products (publishers, software, studios) will find it much harder to retain control once products are turned into digits. It is hard to enforce copyright laws in cyberspace. Microsoft and NBC's recent agreement to make broadcast material available on-line will be seriously undermined by the fact that much of the same material will be available for free on the Internet. Banks who have agreements with Microsoft or Intuit to provide on-line services will have even less influence over the quality and security of their services. As such services move to a common interface (such as Intuit's software) customers will come to care less and less about which bank is at the other end of the line. However, Microsoft faces the same issue as it moves into the content business. Nobody looks for a brand name on a film or CD-ROM, even if it is on-line. A study by Harvard Business School led by Michael Porter found that firms abandoned more than half of all acquisitions made in new industries and as many as 75% of those made in wholly unrelated fields.

d. Watch Your Step

The key lesson appears to be that in order to effectively partner with "big brand" organisations two criteria need to be met:

- The company must have the financial muscle to be able to afford to take risks (and ultimately make losses on some projects)

- Any multimedia alliance must focus on sectors or products where the vendor has considerable strength and expertise.

The sectors where adoption of multimedia technology has been quickest include financial services (banking booths), travel (multimedia workstations) and retail fashion (tailoring/ordering booths). Examples of vendor initiatives in these sectors include:

- Banking: in conjunction with a consortium of UK and overseas banks BT and Oracle have developed banking "booths" where customers can generate transactions through video and on-line access to accounts at supermarkets and railway stations, as well as in banks themselves.

- Travel: CGS has been working with the travel industry to develop a workstation which presents details of holiday and travel locations using video and voice recognition techniques.

- Retail: European retailers have been using interactive in-store terminals for some time. Multimedia booths allow customers the opportunity to order and purchase clothing, watch fashion show videos and access home shopping TV channels.

Recent INPUT research shows that the key areas of multimedia technology for vendors are videoconferencing, the use of video within a desktop environment and whiteboards. Videoconferencing is still very expensive, uses extremely complicated technology and is still of unproved business benefit. The integration of full motion video onto the desktop is seen as the primary technology of the multimedia age. Television feeds are widely available within the financial services sector, as seen on dealing room floors. However, although networked systems integration is a major market already well served by vendors, full PC/TV integration is still at an early stage of development and at present has a low installed base. Whiteboard technology, essentially a workflow application, allows ideas and decisions to be shared in real time across networked workstations using a shared whiteboard or notepad facility. It is particularly useful within global manufacturing for processes such as the design of new models.

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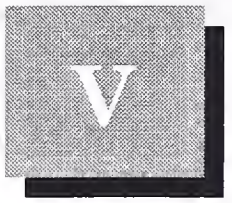


The European Information Services Market: Country Analysis

This chapter contains key highlights of the analysis and forecasts for each country market in Europe. The countries have been segmented into four groups:

- The four major economies: France, Germany, UK and Italy
- The Nordic region: Sweden, Norway, Finland and Denmark
- Eastern and Central Europe
- The Mediterranean economies (Spain, Portugal, Greece) Ireland, Benelux, Austria and Switzerland.

A
The Four Major Economies

France, Germany, the UK and Italy together account for 70% of European revenues and will continue to do so for the next five years. The French market, worth FF 112 billion ($ 21 billion) in 1995, is still the largest market for software and services in Europe, growing at 6% per annum until the year 2000. However, by 1999 Germany will become the largest information services market (excluding equipment services), with a market size of DM 42 billion ($27.1 billion); France will be worth FF 142 billion ($26.6 billion). The German market, worth DM 29.2 billion ($18.8 billion) in 1995 will grow at a compound rate of 9% to DM 45.8 billion ($29.5 billion) in 2000.

The reason for this movement is due to specific growth opportunities within Germany in the outsourcing, processing services, network services and application software markets. These will all grow at above

the average European rate for each of these sectors. By way of contrast, France has no segments which are growing faster than the average European rate. Exhibit V-1 analyses where the growth opportunities lie for the four major economies when compared on this basis.

Exhibit V-1

Growth Opportunties for France, Germany, United Kingdom and Italy 1995-2000

Segment	Average European Growth Rate %		France	Germany	UK	Italy
Professional Services	4		B	B	B	B
Systems Integration	13		B	B	A	B
Systems Operations	20		B	A	C	A
Processing Services	4		B	A	A	B
Network Services	16		B	A	B	A
Systems Software	4		B	C	A	C
Application Software	12		B	A	C	A
Turnkey Systems	8		B	C	B	B
Equipment Services	1		B	B	B	C
A = Above Average	Total	A	0	4	3	3
B = Below Average		B	9	3	4	4
C = Average		C	0	2	2	2

Source: INPUT

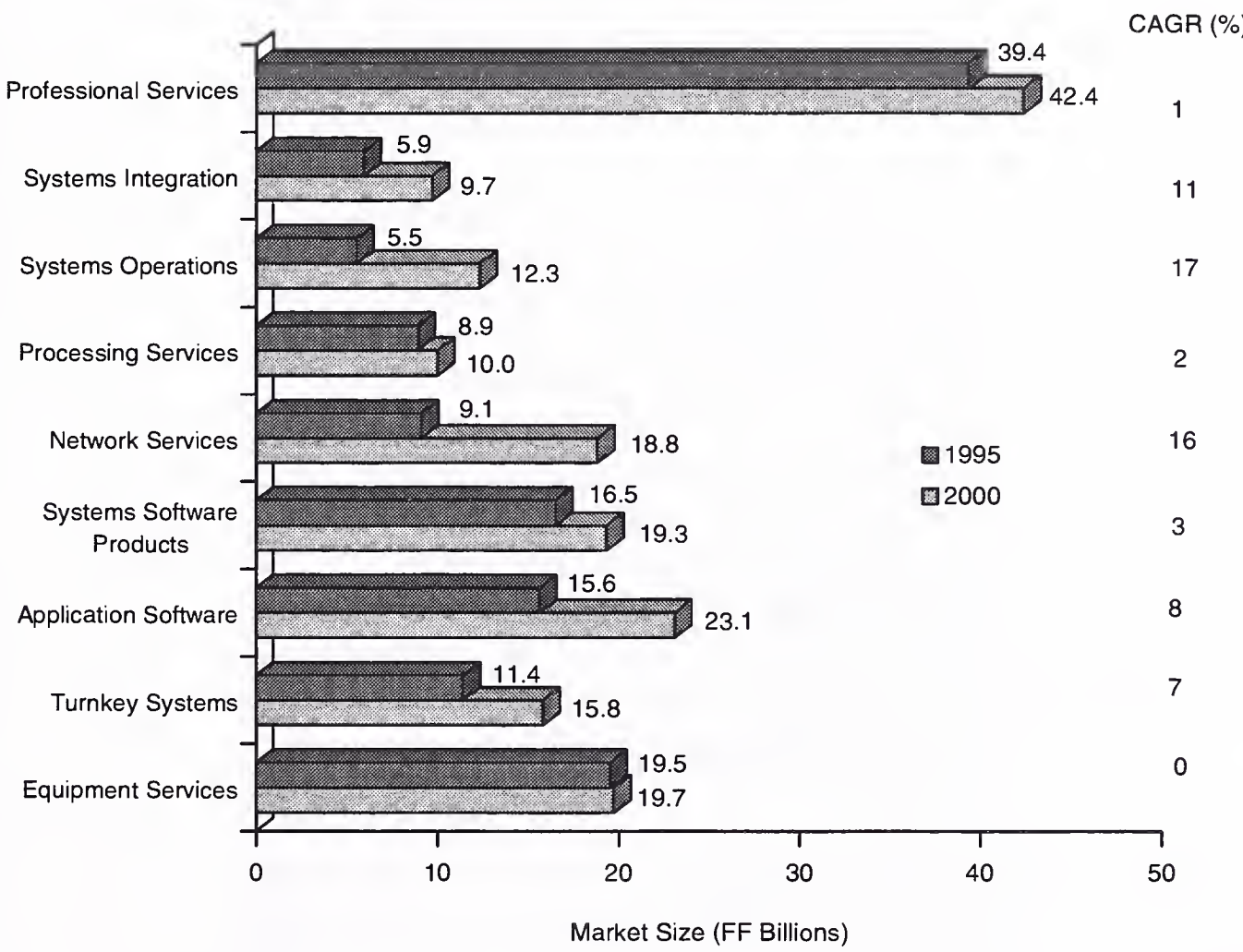
1. France

INPUT forecasts that the French market will grow over the next five years by 6% per annum. As mentioned above, there is a relative lack of growth across the French information services market when compared to other European countries. There is a high reliance on custom software development which, although a large segment of professional services, is a declining element of the overall market due to intense price pressure. Professional services accounts for 37% of the French information services market in 1995; this compares to a European average of 28% (only Sweden is higher at 42%). Also, France is the only European country to maintain a strong national presence in its home market. This may raise problems in the future given the trend towards organisations working with vendors who possess international, as oppose to national, capability (see previous chapter). In 1995 France represented just under 24% of the European market; this will decline to 21% by the year 2000.

Exhibit V-2 provides an analysis of the French Market divided into the nine separate delivery modes identified by INPUT. Full details of the year by year forecasts are given in Appendix G.

Exhibit V-2

Software and Services Market — France, 1995-2000



Source: INPUT

Exhibit V-3 gives a breakdown of the French market by industry, cross industry and generic sectors, the latter being equipment services, software products and other processing services sectors. Increased IT consultancy skills, to deal with more complex user requirements, are needed in the banking and finance, health, insurance and government sectors. As a result of this approach there is also increased demand for education and training. Traditionally, systems vendors controlled hardware and (to some extent) software, especially system software. Training was therefore linked to the vendor. Now, independent service vendors and IT consultants are entering this area, particularly within manufacturing, health and government sectors. The drive to open systems has meant that there is now no reason to be linked to a specific vendor.

Exhibit V-3

Information Services Industry Analysis France, 1994

Market Sector	Market Size (FF Millions)	Per cent of Total
Total Information Services	128,000	100
Industry Sector Total	79,000	62
Discrete Manufacturing	9,900	8
Process Manufacturing	6,300	5
Transportation	5,550	4
Utilities	3,750	3
Telecommunications	4,000	3
Retail Distribution	2,750	2
Wholesale Distribution	3,550	3
Banking & Finance	14,500	11
Insurance	5,250	4
Healthcare	3,650	3
Education	1,420	1
Local Government	6,150	5
Central Government	6,050	5
Business Services	4,150	3
Other Industries	2,250	2
Cross-Industry Sectors Total	9,300	7
Accounting	2,150	2
Education & Training	315	0
Engineering & Scientific	670	1
Human Resources	1,350	1
Office Systems	2,050	2
Planning & Analysis	1,750	1
Other Cross-Industry	1,000	1
Generic Sectors Total	39,300	31
Equipment Services	19,900	16
System Software Products	15,800	12
Utility and Other Processing	1,230	1
Other Electronic Info Services	2,350	2

**Software and Services excludes equipment services* *Source: INPUT*

2. Germany

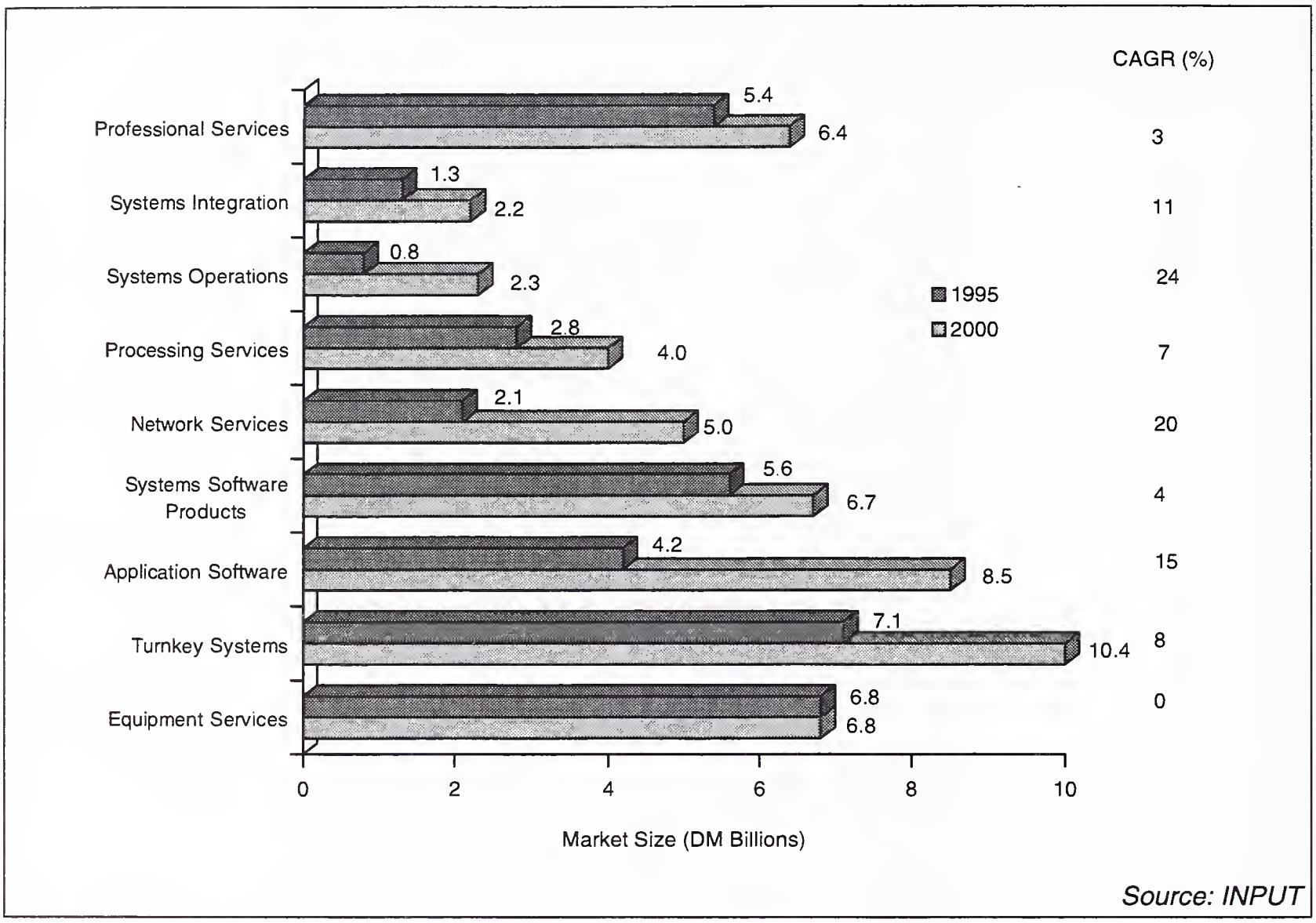
The German economy is moving out of a recessionary environment, spurred on by demand in eastern Europe and strong growth within the services sector generally. It is estimated by the Institut der Deutschen Wirtschaft (IWD) that in 1994 employees in all service industries, except retailing, generated more added value per head than manufacturing's overall DM 90,000 a year. The IWD also discovered that two-thirds of all new jobs created in the 1980s emerged in the services category. Eastern Germany is still missing higher value-added service businesses, such as software houses. One forecast for the next 15 years predicts the creation of 2.5 million new German service jobs.

Within the information services market Germany is expecting strong compound growth of 9% up to the year 2000. Germany will account for 22% of the European market by the end of the decade, a whole percentage point up on its current market share position. This increase is worth just under $1.3 billion in absolute terms by the end of the decade. Demand for client/server migration and open systems is strong. UNIX-based packaged solutions are particularly resilient in the banking and manufacturing sectors. Also, the application tools segment, particularly database management systems, are expanding at high rates. There is a new generation of managers emerging who are less sensitive to the traditional data processing perspective, have no fear over losing their installed hardware base and emphasis the strategic value of information rather than the infrastructure.

Exhibit V-4 analyses the German market by major delivery mode. By way of contrast with France, the professional services market in Germany has a much lower profile, accounting for only 18% of the German information services market in 1995. The custom software sub-sector continues to decline due to the severe curtailment of the use of contract labour.

Exhibit V-4

Software and Services Market, Germany 1995-2000



Source: INPUT

Another area where Germany has historically lagged behind other European countries is outsourcing. In 1995 outsourcing accounted for just 2% of the total German market; this is forecast to grow to 5% by the year 2000. INPUT forecasts that this sector of the market will increase by 24% per annum over the next five years, a 4% increase from last year's estimate. Germany's aversion to outsourcing operations has begun to change rapidly and it will exhibit the highest growth rate across Europe over the next five years.

This has been aided by the growth in SAP outsourcing which is gradually changing from a mainframe-based processing service to a form of client/server systems management. The first contracts for SAP R/3 outsourcing began to appear towards the end of 1994. These contracts will be increasingly characterised by remote management of a distributed systems environment and have much in common with other client/server management contracts. INPUT forecasts that growth in this area will be 10% per annum producing a market worth just under

DM 1 billion by the year 2000. The key sectors for growth will be manufacturing and financial services. IBM has already won a contract with the insurance organisation Gothaer Versicherungen AG valued at $700 million over ten years.

The German market has always had a strong reliance on turnkey systems, accounting for 34% of the European turnkey market in 1995, twice the share of the UK, its nearest rival. INPUT forecasts that the German turnkey market will grow by 8% to $6.7 billion in the year 2000.

The conservative German market remains a difficult market for foreign software companies to penetrate. The industry is composed of a large number of smaller developers often dependent on a small number of clients. The industry will concentrate as users increasingly demand lower-priced packaged solutions and become more familiar with powerful, but user-friendly, programming tools. Pressure on prices will continue as fixed costs contracts tend to be preferred to traditional time and materials-based arrangements.

IT consulting is also becoming a growth market in Germany as systems integration projects become more and more sophisticated. The sectors where demand is greatest are discrete manufacturing, retail and government. Exhibit V-5 gives a breakdown of the German market by industry, cross industry and generic sectors. Detailed forecasts of the components of each delivery mode are shown in Appendix H.

Exhibit V-5

Information Services Industry Analysis Germany, 1994

Market Sector	Market Size (DM Millions)	Per cent of Total
Total Information Services	34,000	100
Industry Sector Total	19,100	56
Discrete Manufacturing	3,400	10
Process Manufacturing	1,600	5
Transportation	890	3
Utilities	460	1
Telecommunications	450	1
Retail Distribution	660	2
Wholesale Distribution	830	2
Banking & Finance	4,350	13
Insurance	1,550	5
Healthcare	1,040	3
Education	250	1
Local Government	730	2
Central Government	1,050	3
Business Services	950	3
Other Industries	900	3
Cross-Industry Sectors Total	1,750	5
Accounting	400	1
Education & Training	105	0
Engineering & Scientific	115	0
Human Resources	290	1
Office Systems	290	1
Planning & Analysis	215	1
Other Cross-Industry	325	1
Generic Sectors Total	13,200	39
Equipment Services	6,950	20
System Software Products	5,300	16
Utility and Other Processing	470	1
Other Electronic Info Services	480	1

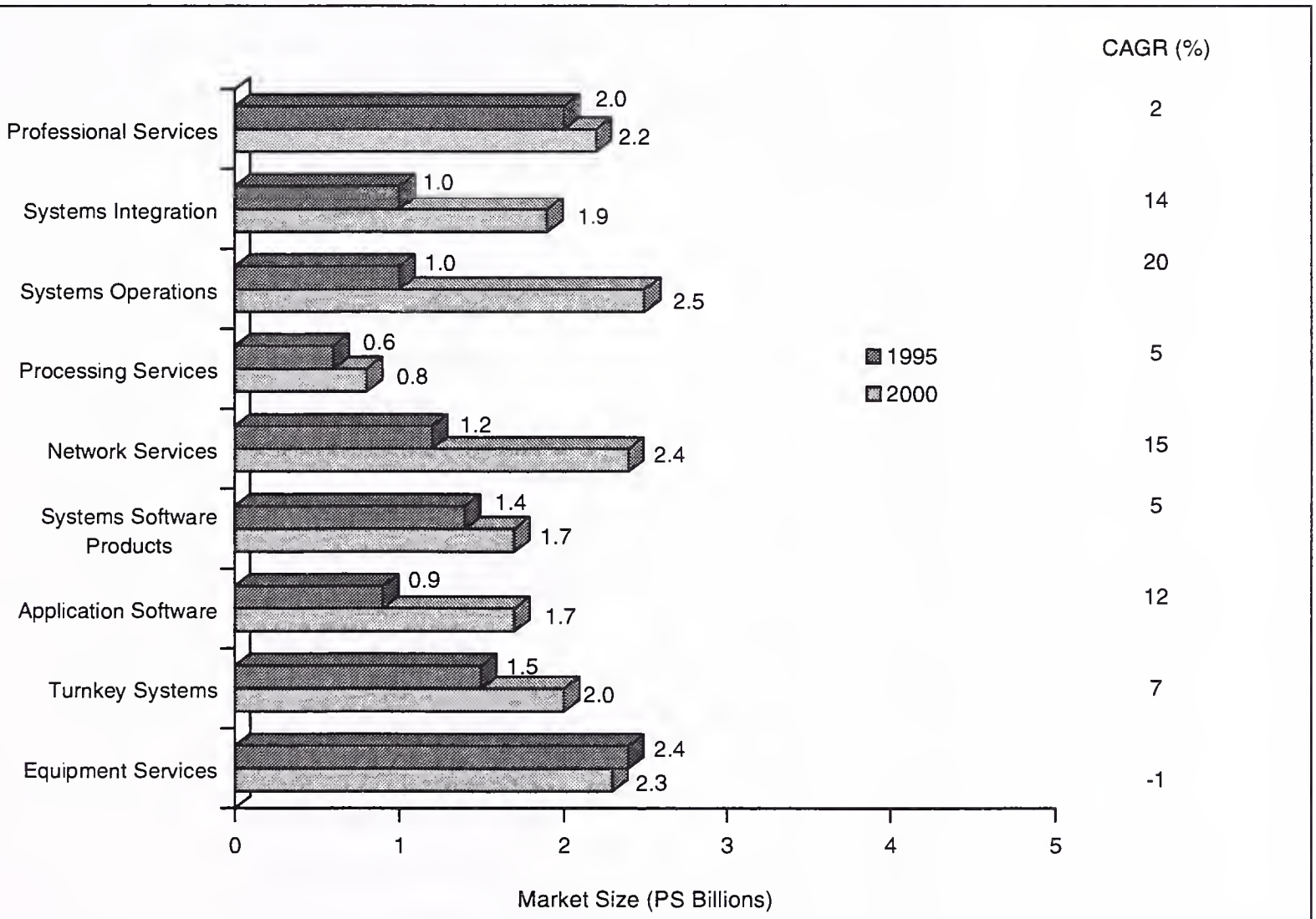
** Software and Services excludes equipment services* *Source: INPUT*

3. United Kingdom

The UK market is the third largest in Europe, worth £9.6 billion ($15 billion) in 1995. It has the highest growth rate (10%) of the four countries due to upward trends in systems integration, outsourcing and network services. This is partly due to the maturity of the outsourcing market in the UK, enhanced by the government's Public Finance Initiative which has boosted local and central government markets, plus a higher proportion of larger-sized systems integration contracts in the UK as compared with the rest of Europe. Exhibit V-6 illustrates the differential growth rates of the various UK delivery modes.

Exhibit V-6

Software and Services Market — United Kingdom, 1995-2000



Source: INPUT

The UK systems integration, outsourcing and network services markets are the largest in Europe. The systems integration market has the highest growth rate (14%) across Europe for the next five years and will be worth $3 billion at the end of the decade.

Likewise, the UK shows a high propensity to outsource operations compared to the rest of Europe. The UK market accounts for 35% of the total European outsourcing market. The slowing of growth in local government outsourcing in 1994, probably a short-term phenomenon due to the more relaxed timetable for Compulsory Competitive Tendering (CCT), will increase in 1996, with all authorities undergoing CCT by early 1999. Central government activity has compensated for this lull. Following the decision by the Inland Revenue to outsource using EDS, a number of other government departments have now outsourced IT functions, including the Department of Trade & Industry, the Home Office and, in 1995, the Department of Social Security.

Network Services will grow by 15% to $3.7 billion by the end of the decade. The UK market is particularly advanced due to the deregulation of the telecommunications and cable TV industries and the influence of the City of London's demands for global financial services. Exhibit V-7 gives a breakdown of the UK market by sector. Detailed forecasts of the components of each delivery mode are shown in Appendix R.

Exhibit V-7

Information Services Industry Analysis, United Kingdom, 1994

Market Sector	Market Size (£ Millions)	Per cent of Total
Total Information Services	11,000	100
Industry Sector Total	6,400	58
Discrete Manufacturing	680	6
Process Manufacturing	590	5
Transportation	450	4
Utilities	275	3
Telecommunications	145	1
Retail Distribution	325	3
Wholesale Distribution	185	2
Banking & Finance	1,560	14
Insurance	465	4
Healthcare	350	3
Education	80	1
Local Government	395	4
Central Government	585	5
Business Services	240	2
Other Industries	70	1
Cross-Industry Sectors Total	505	5
Accounting	125	1
Education & Training	25	0
Engineering & Scientific	40	0
Human Resources	55	1
Office Systems	120	1
Planning & Analysis	65	1
Other Cross-Industry	70	1
Generic Sectors Total	4,085	37
Equipment Services	2,370	22
System Software Products	1,250	11
Utility and Other Processing	140	1
Other Electronic Info Services	325	3

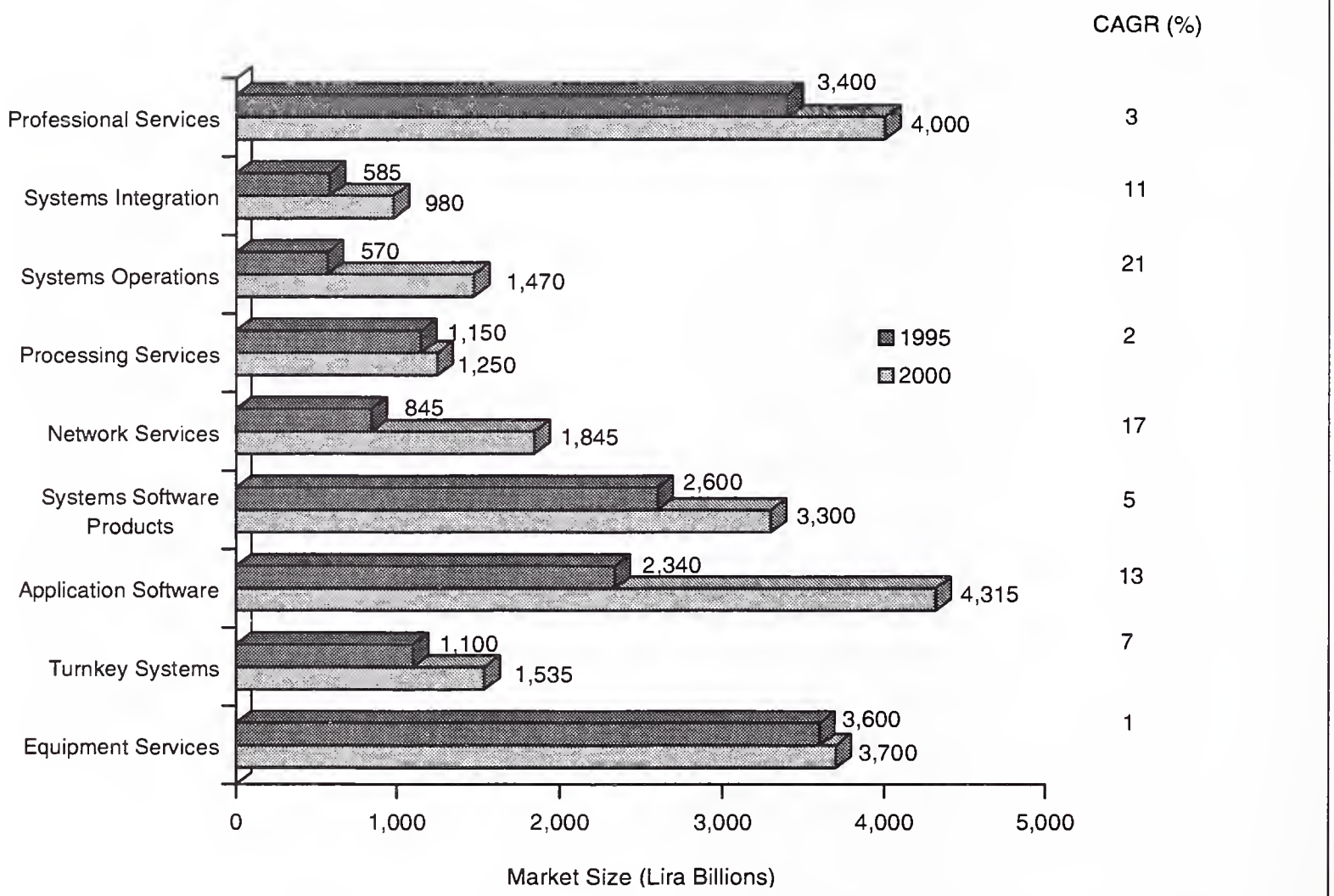
** Software and Services excludes equipment services* *Source: INPUT*

4. Italy

The Italian market is valued at Lira 12.6 trillion ($7.8 billion) in 1995 and will grow at 8% per annum reaching a market size of Lira 18.7 trillion ($11.5 billion) by the year 2000. The Italian market is approximately half that of the UK and around 40% of France and Germany. The market forecast for the nine information services delivery modes is shown in Exhibit V-8. Key areas for growth are outsourcing, network services and application software, with rates above the European average.

Exhibit V-8

Software and Services Market — Italy, 1995-2000



Source: INPUT

Italian information services vendors, with the exception of Olivetti, are characterised by their dependence on the national market for the majority of their business. Finsiel, the largest Italian vendor, generates over 90% of its business from within Italy. The Italian market is composed of many small and medium-sized companies who are served on a local basis by software vendors. Systems software and application software account for 21% and 18% respectively of the Italian market; this is well above the European average (16% and 13% respectively). Such vendors have limited resources to address larger markets or to boost research and development activity. However, there is an increasing adoption of vertical market sectors and matrix-based structures which recognises that a *niche* approach is more pertinent, given the limited resources available to such vendors. Exhibit V-9 gives the breakdown by sector for the Italian market.

Exhibit V-9

Information Services Industry Analysis, Italy, 1994

Market Sector	Market Size (Lira Millions)	Per cent of Total
Total Information Services	15,500	100
Industry Sector Total	8,250	53
Discrete Manufacturing	1,115	7
Process Manufacturing	695	4
Transportation	510	3
Utilities	360	2
Telecommunications	260	2
Retail Distribution	240	2
Wholesale Distribution	305	2
Banking & Finance	1,400	9
Insurance	505	3
Healthcare	520	3
Education	115	1
Local Government	610	4
Central Government	875	6
Business Services	430	3
Other Industries	295	2
Cross-Industry Sectors Total	880	6
Accounting	215	1
Education & Training	25	0
Engineering & Scientific	60	0
Human Resources	135	1
Office Systems	195	1
Planning & Analysis	175	1
Other Cross-Industry	75	0
Generic Sectors Total	6,300	41
Equipment Services	3,560	23
System Software Products	2,400	15
Utility and Other Processing	130	1
Other Electronic Info Services	210	1

** Software and Services excludes equipment services* *Source: INPUT*

Another approach is to leverage access to capital and markets through strategic partnerships. Again, Olivetti has been the most active in this area through its multimedia alliance with two American firms, Redgate Communications and Hughes Network Systems (part of GM), as well as consolidating their in-house multimedia interests. Through Omnitel Pronto Italia Olivetti has also won Italy's second digital mobile phone license, again by forging links with Bell Atlantic and Air Touch, both US organisations.

The threat from US vendors entering the Italian market is growing rapidly. In 1993 EDS acquired the S&M Group, a local vendor focusing on the financial services sector. EDS has subsequently increased its share of the outsourcing market through acquiring a major deal in 1994 with INA, an insurance company. This contract is for ten years and is valued at $400 million. CSC and IBM ISSC are also adopting similar sector-specific strategies by concentrating on the manufacturing sector, which is often one of the early adopters of outsourcing in a country.

Detailed forecasts of the components of each delivery mode are shown in Appendix K.

B
The Nordic Region

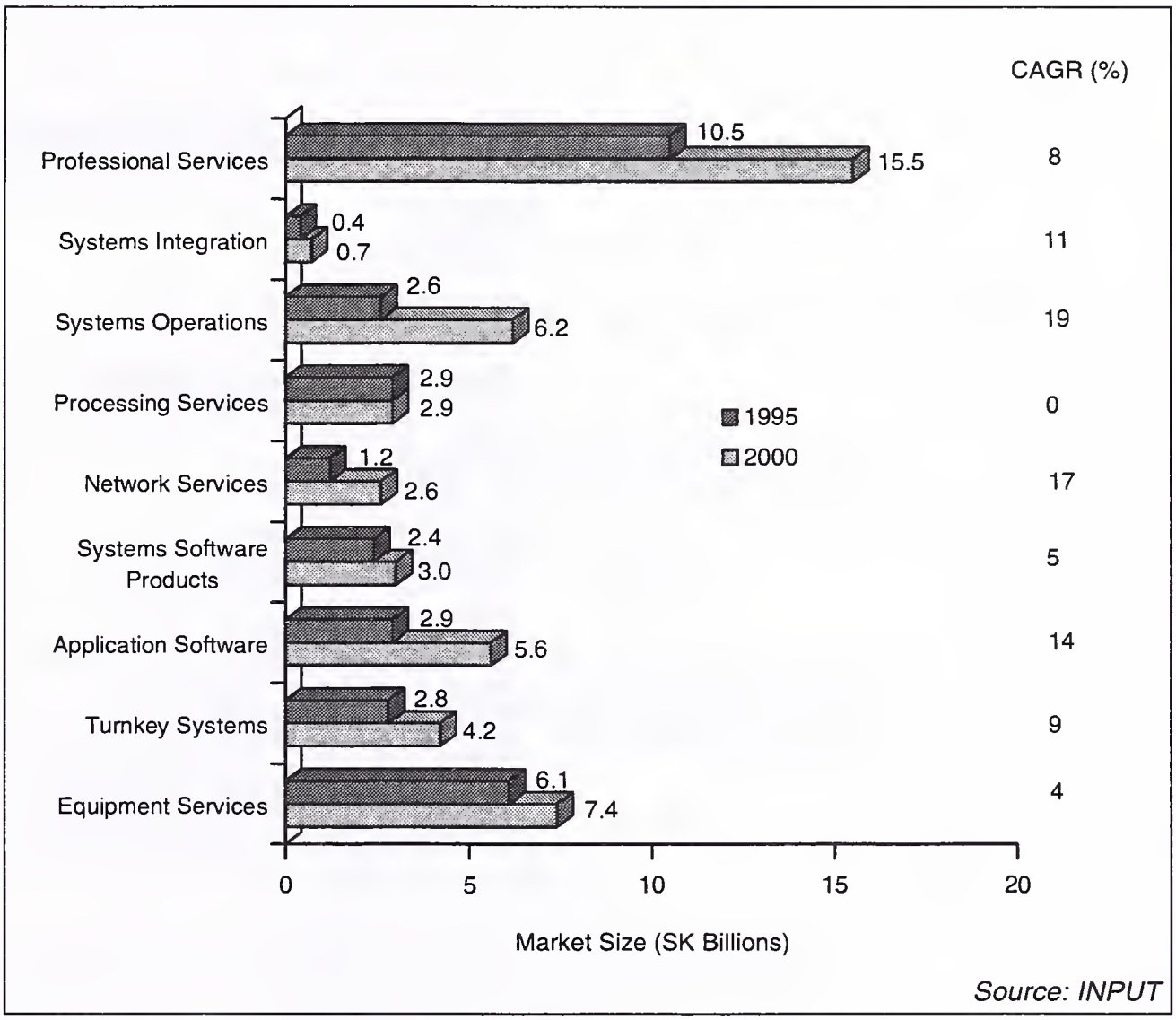
The Nordic region's share of the total European market will decline from 10.0% to 9.6% over the next five years. This is due to increased share on the part of eastern Europe (an increase of 0.6% between 1995 and 2000) and growth in Spain, Portugal, Greece and Ireland (a 0.3% increase for these four countries in total over the next five years). By way of comparison, the top four countries' share will also decline slightly from 70.3% in 1994 to 69.7% by the year 2000.

The major areas for growth within the Nordic region are professional services and application software. Apart from Norway, all other countries experienced above average growth rates in professional services. The Nordic region as a whole will increase its share of the professional services market from 11.3% in 1995 to 13.2% in the year 2000. This is due to strong Swedish growth.

Professional services in Sweden accounted for 42% of the software and services market in 1994 as compared to the European average of 28%. Custom software development is the driving force in this sector growing at 7% in Sweden over the next five years, compared with a European average of 1%. The outlook is similar for outsourcing in Sweden. It has the highest compound growth rate of all the Nordic countries (19%) and outsourcing accounts for 9% of the total Swedish software and services market compared to a European average of 4%. Outsourcing will increase to a 15% share of the Swedish market by the year 2000 which is almost on a par with the UK (outsourcing will account for 16% of the UK software and services market in the year 2000). Outsourcing in Sweden is characterised by a considerable focus on the public sector, in particular local government and health. The health sector is, at present, a better established opportunity in Sweden than in the UK. Sweden is the largest of the Nordic markets and is also the fastest growing. INPUT forecasts 10% growth over the next five years. Exhibit V-10 shows the Swedish market forecast for the nine information services delivery modes. A detailed forecast of the components of each delivery mode are shown in Appendix P.

Exhibit V-10

Software and Services Market — Sweden, 1995-2000

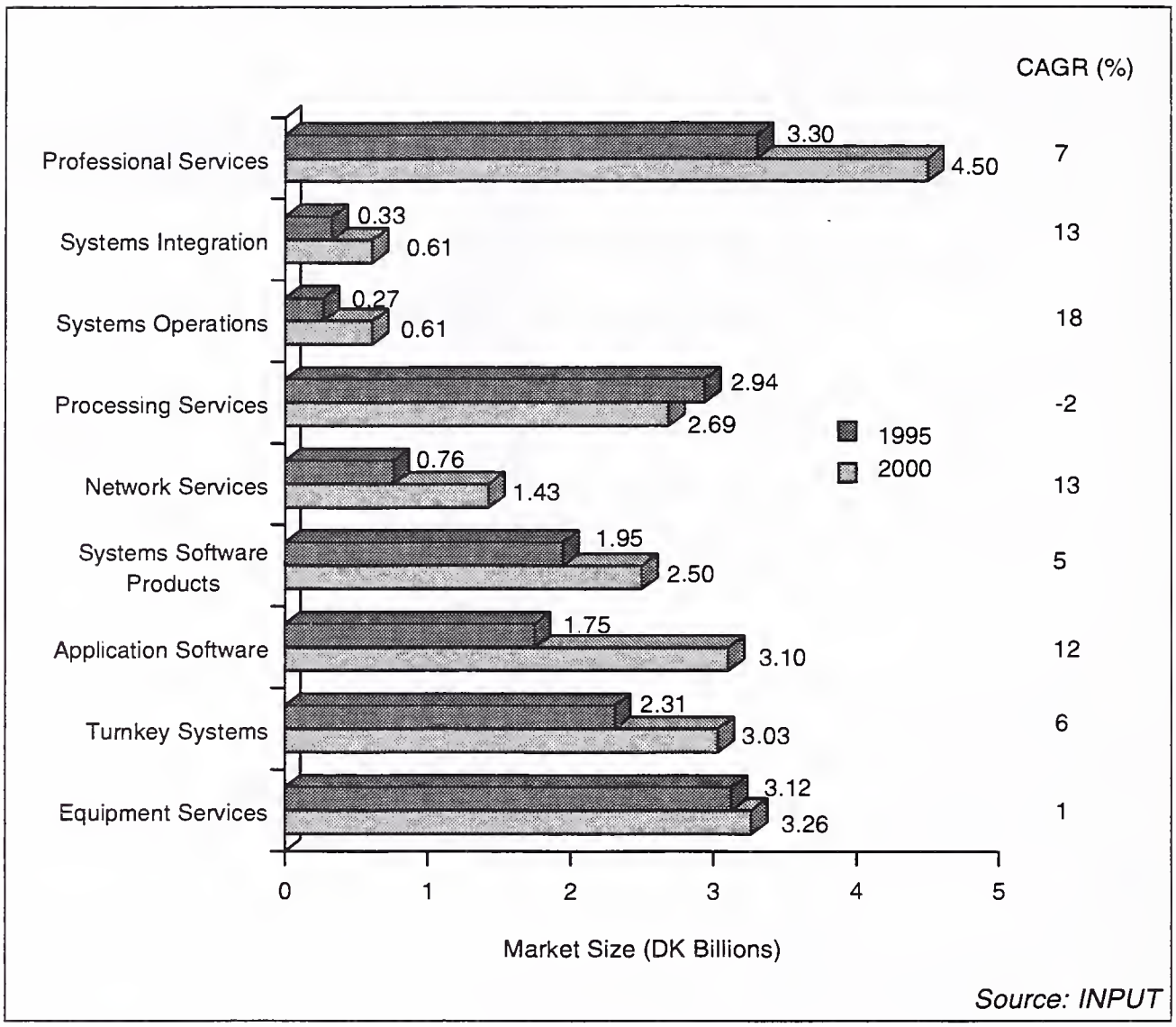


Source: INPUT

The application software market is growing at above the European average rate (12%) for all Nordic countries over the next five years, with the exception of Denmark. Denmark, which is forecast to grow at 12%, will, however, experience an increasing adoption of standardised software packages, particularly within mid-range systems. This is because Open systems based on UNIX are already accepted in the Danish market. Downsizing is not a major issue in Denmark as there are few installations of large systems. Exhibit V-11 shows the differential growth rates for the Danish market within the various delivery modes. Appendix D gives a detailed forecast of the components of each delivery mode.

Exhibit V-11

Software and Services Market — Denmark, 1995-2000



Source: INPUT

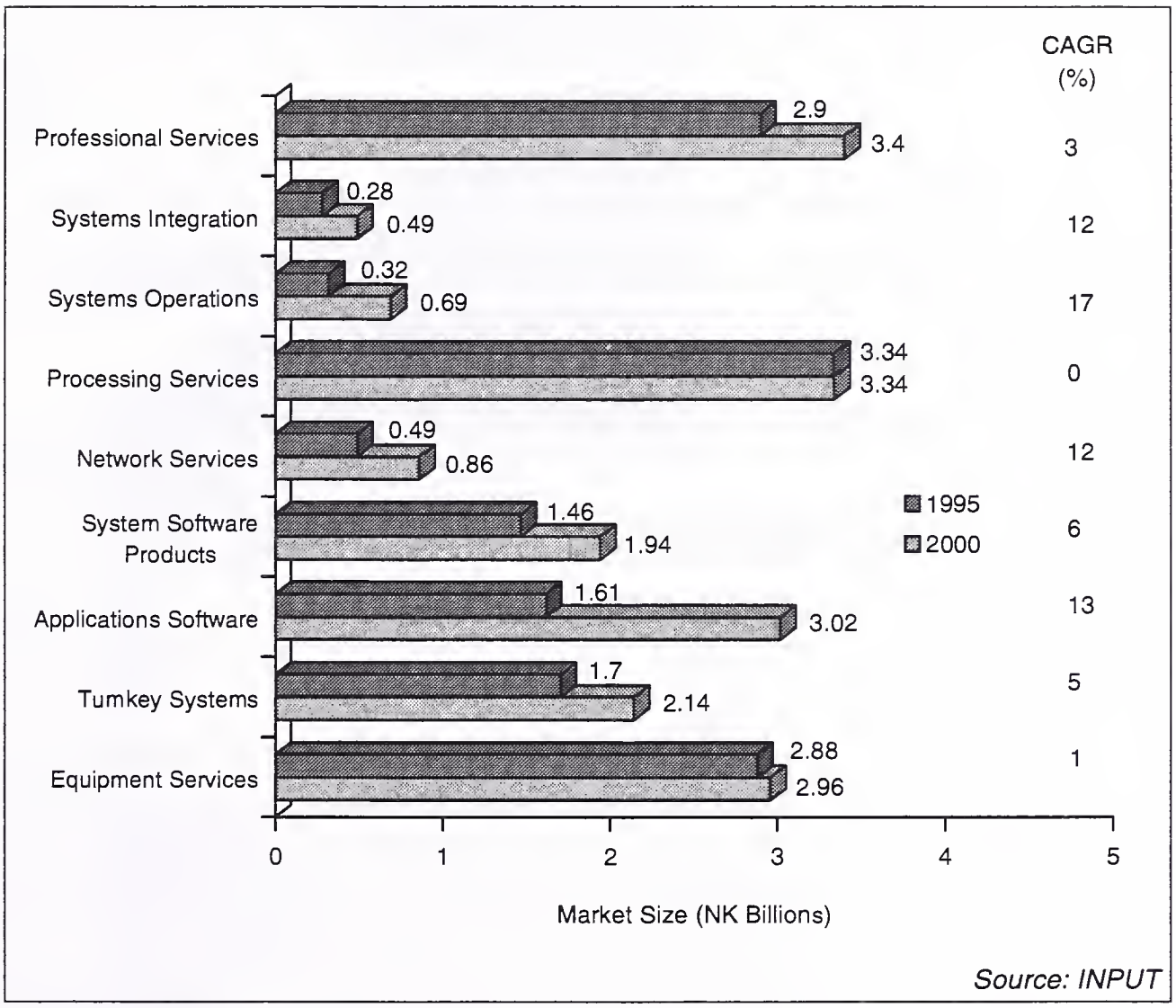
Systems software within the Nordic region is also growing at above average European rates in all countries except Finland. However, this element of the software and services market accounted for a relatively low proportion of the Nordic region's revenues in 1994, approximately 10% to 14% (the average across Europe is 16%). Similarly, systems integration accounts for only 2% to 4% of each country's total software and services revenues compared to an average of 6% for Europe. Within Europe the Nordic region has the lowest level of penetration for systems integration services, primarily due to the lack of major project opportunities at present. INPUT believes that this segment of the market will offer opportunities in the future.

By way of contrast, processing services are particularly important in the Norwegian (28% of the total Norwegian market), Danish (23%) and Finnish (15%) markets - these are the top three countries within Europe for these services in terms of market share of the segment - but growth is limited. Agriculture and financial services are the sectors where

most activity occurs. Within Denmark, for example, the market for processing services will decline 2% over the next five years. Likewise, Norway will stay flat over the same time period. The major growth opportunities for Norway include outsourcing, systems integration, network services and application software. The growth rates for these segments, along with other Norwegian delivery modes, are shown in Exhibit V-12. Appendix M gives a more detailed forecast.

Exhibit V-12

Software and Services Market — Norway, 1995-2000

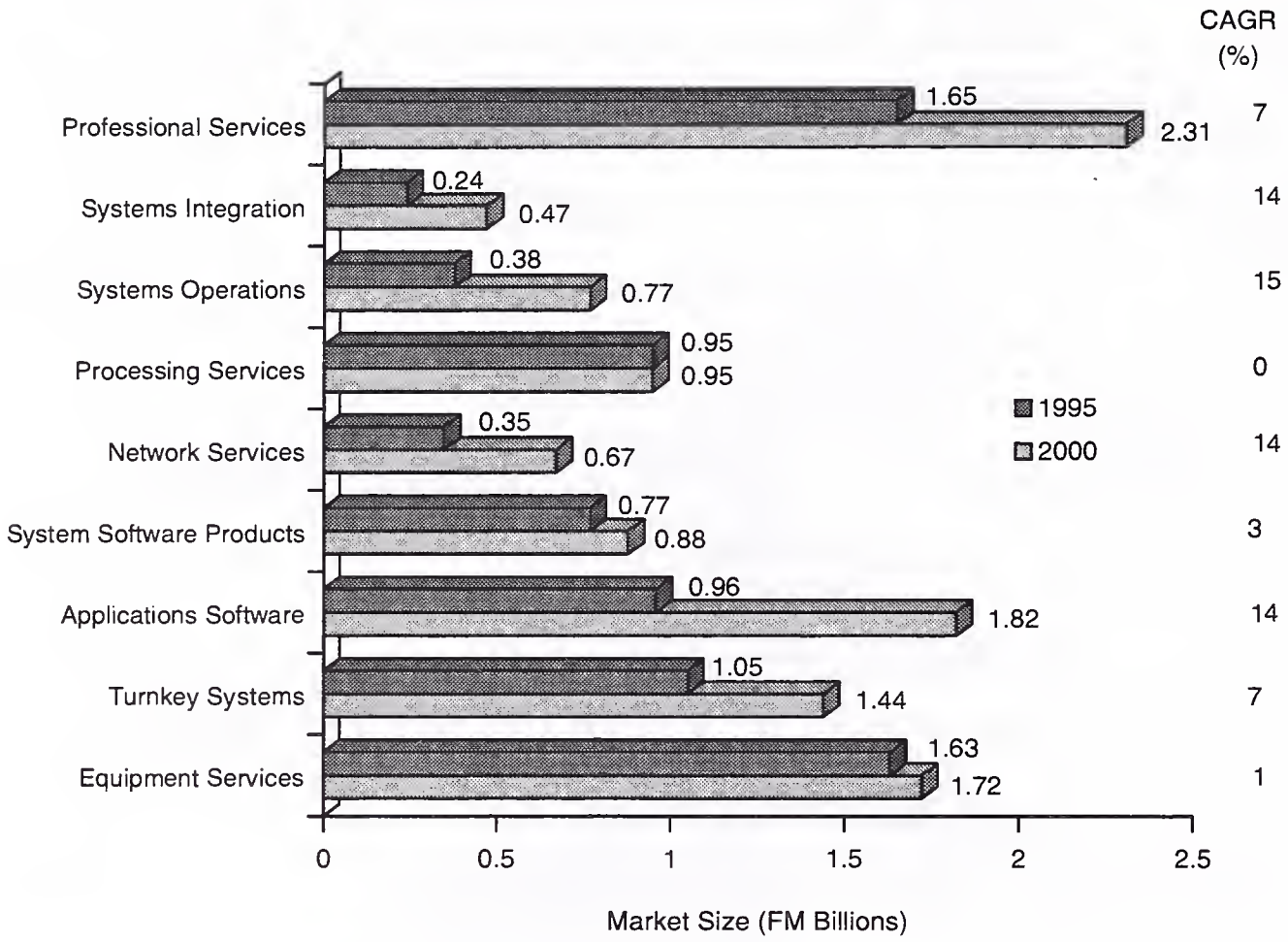


Source: INPUT

Exhibit V-13 gives the INPUT forecast for Finland. There are similar opportunities for growth up to the year 2000 to that of Norway, namely in the areas of outsourcing (15%), systems integration (14%) and network services (14%). A detailed forecast of the components of each delivery mode is shown in Appendix F.

Exhibit V-13

Software and Services Market — Finland, 1995-2000



Source: INPUT

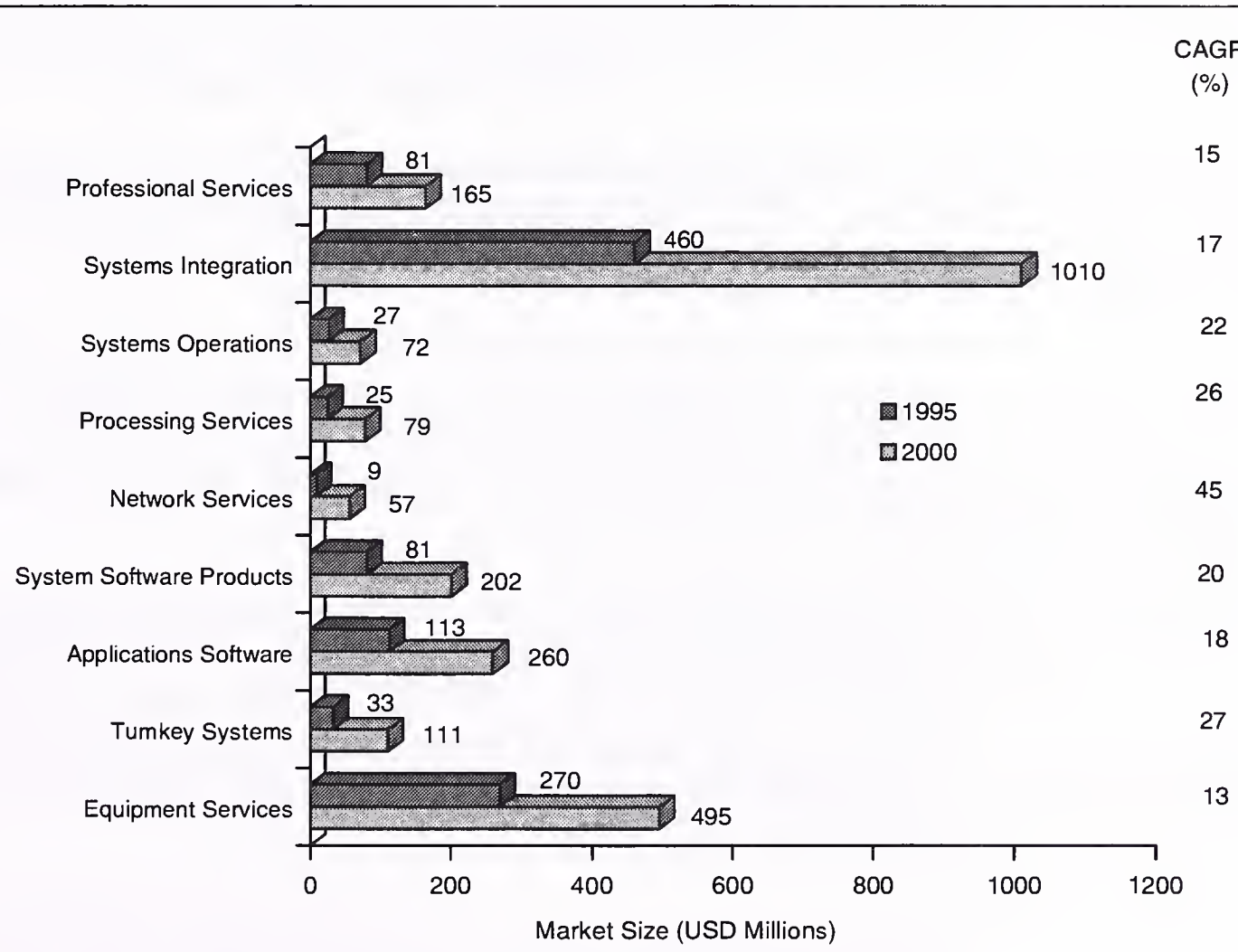
Because of falling software prices there is an increasing separation between companies who develop software and those who market it. Few companies can afford to own every operation in-house from production to distribution. This new requirement has led users and vendors to search for cheaper labour sources. Off-shore programming is becoming more common, particularly in Scandanavia, as well as some Baltic and eastern European countries. In Europe this trend is aided by the gradual dismantling of trade barriers within Europe. Even though the market is still in embryonic form it will become a credible alternative as pan-European data networks emerge and user organisations continue to integrate on an international scale.

C
Eastern and Central Europe

For the purposes of this forecast eastern Europe is defined as comprising Poland, Hungary, the Czech Republic and Slovakia, Bulgaria, Romania, Estonia, Latvia, Lithuania, the independent states emerging from former Yugoslavia, Albania and the new Commonwealth of former states of the Soviet Union (Byelorussia, Ukraine, the Russian Federation *et al*). This market is valued at $720 million but will increase to $2 billion by the end of the decade with an annual average growth rate of 19%. Exhibit V-14 provides a forecast of this market analysed by the major software and services delivery modes.

Exhibit V-14

Software and Services Market, Central and Eastern Europe, 1995-2000



Source: INPUT

One source of potential growth stems from the small size of the average IT hardware market in eastern Europe. An analysis of IT expenditure (see Appendix E for more details) shows that hardware spending in the region is much lower than that of the average country market in

western Europe, despite programmes for expanding IT infrastructures. But this does not necessarily imply a major growth market for hardware vendors desperately seeking new sources of revenue. At the start of the nineties hardware vendors predicted major service and support contracts on the back of mainframe deals. However, 50% of mainframes in centrally planned economies have been taken out as operations downsized or split up.

As much of the region's IT activity is limited to PCs and related technologies most growth in this sector is due to sales of packaged software (such as application tools for database development and management), networking and software support services. Other sources of vendor activity include IT consulting for large scale projects, particularly in the areas of banking and finance, government and education and training.

Improvements in communications are being obtained through the installation of cellular-based mobile networks either in place of or in existence with fixed network projects. Network services will expand once a telecommunications infrastructure is established.

Other recurring problems when working in this region include an immature legal system, poor security, political instability and currency and exchange issues. However, some trends are emerging:

- Market segments are forming, providing opportunities for niche players. For example, Sun Microsystems opened a Moscow subsidiary to target applications not covered by its software partners. Advanced network management tools are perceived as a possible niche.

- Different market segments are emerging in different countries. The Russian market is experiencing significant growth in PC sales (IBM shipped 100,000 units in 1994) while the more mature central European markets - such as Poland, Hungary and the Czech republic - are finding mid-range systems more popular, particularly with client/server configurations.

- Although customers in this region used to prefer hardware and systems tools then develop their own application, now the emphasis is on buying a working application from the vendor, despite its potential complexity.

- The region is the fourth largest in Europe for systems integration, valued in 1994 at $410 million. It will grow at 17% per annum to become a one billion dollar market by the year 2000. Major hardware vendors, such as Digital, ICL, Bull and IBM have been setting up new infrastructures to support banking and central government over the last three to four years.

- Joint ventures are seen as technical alliances which are not legally binding (partly due to the lack of enforcement with an immature legal system) rather than formal business arrangements. There is also an increasing trend to work with local, post-communist entrepreneurs. Oracle has set up informal partnerships with a view to corporate integration in the medium-term future (usually 18 months). ICL has two joint ventures in Russia. One is with Moscow-based KMECS (one of the country's largest mainframe manufacturers) to produce mid-range systems and PCs; the other is with Marine Computer Systems, a St. Petersburg-based software developer. ICL plan to invest $5 million in the former project, which is valued at $8 million.

- Due to the lack of budget and planning disciplines vendor investment strategy tends to be understandably conservative and focuses on two criteria: whether the country has an existing democratic political structure and if the World Bank has made any commitment to the national economy.

- There is a strong intellectual base which means the labour force is often as good as the West (if not better) but not as expensive. Historically, eastern European labour has excelled at working with statistical software and solving technical problems, as compared with creating applications and solutions to business problems. However, the situation is changing dramatically as a Western 'corporate culture' mentality begins to pervade the workforce.

Overall, prospects are encouraging given that IT demand for systems is increasing and doing business is much easier than in the EC, where there are constraints such as value added taxation.

D

The Mediterranean Economies (Spain, Portugal, Greece), Ireland, Benelux, Austria and Switzerland

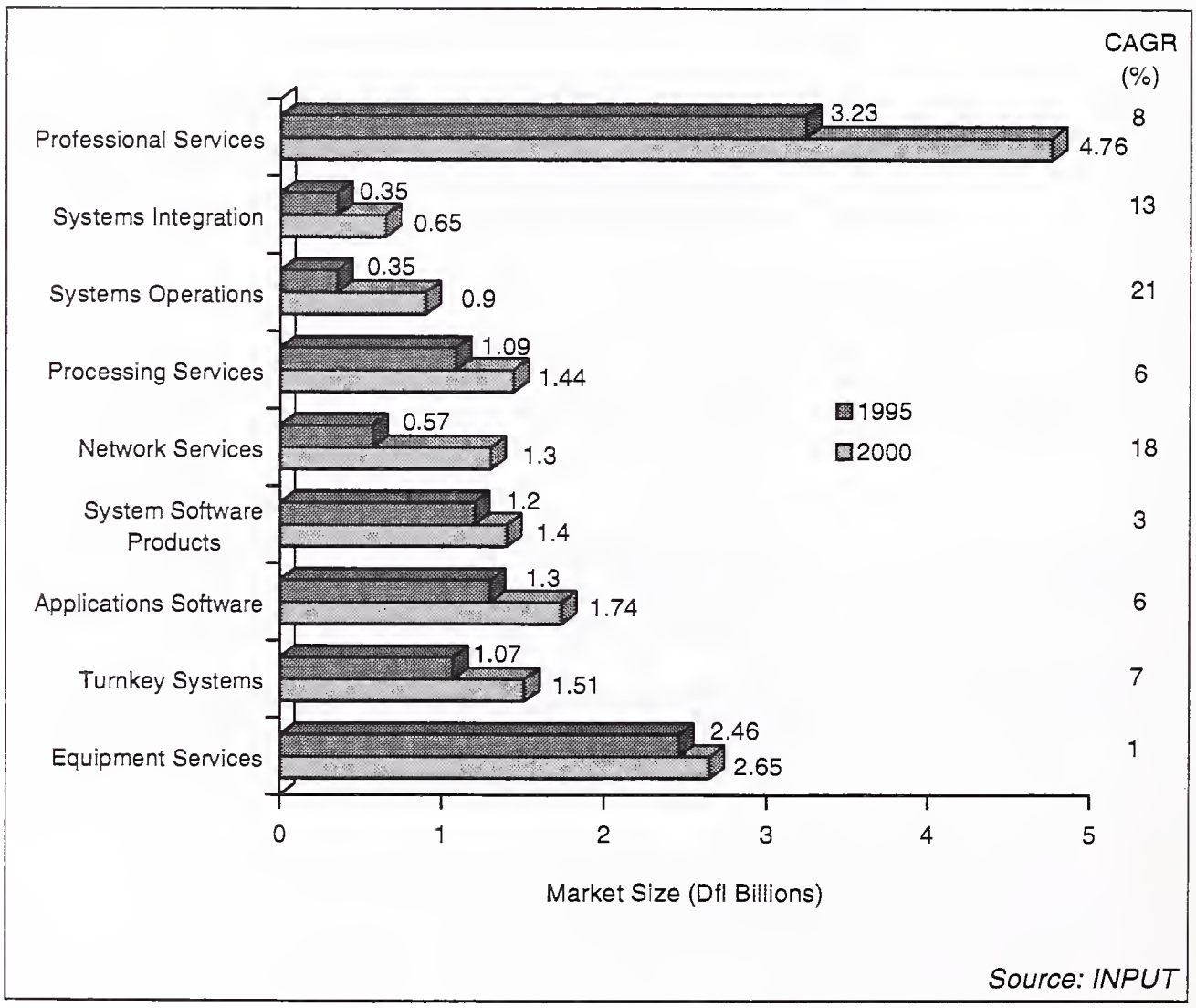
1. Benelux, Austria and Switzerland

These four countries accounted for 14.6% of the total European software and services market in 1994. This will hardly move over the next five years (14.7% by 2000).

The Netherlands market for software and services is the fifth largest in Europe. INPUT forecasts that the market will grow by 8% annually over the next five years from $5.3 billion to $7.9 billion. The major delivery mode forecasts are shown in Exhibit V-15. Appendix L provides a more detailed analysis.

Exhibit V-15

Software and Services Market — Netherlands, 1995-2000



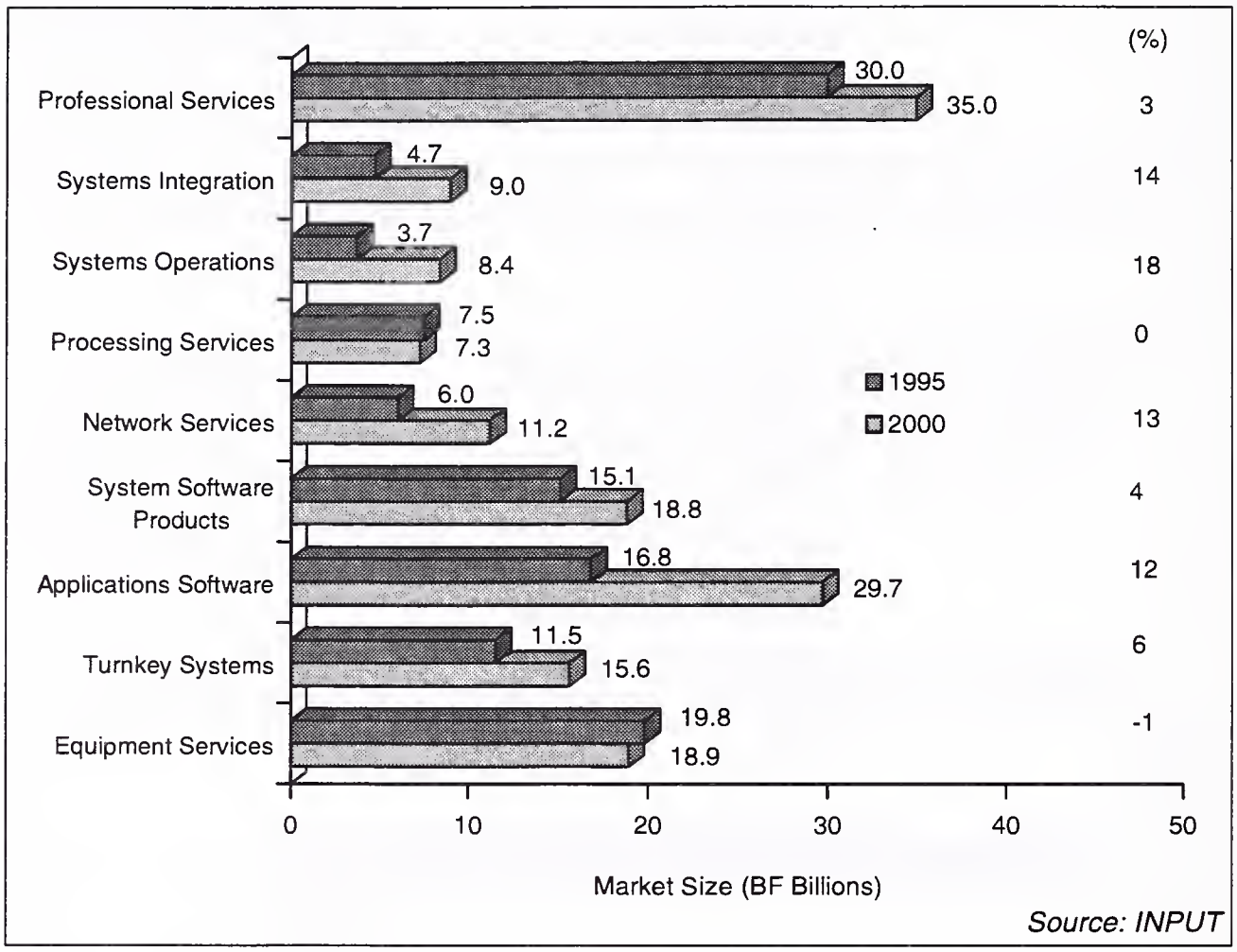
Source: INPUT

In 1995 professional services accounted for 35% of business within the Netherlands, compared to the European average of 27%. By 1998 the Netherlands will have overtaken Italy to become the fourth largest professional services market within Europe and will be worth $2.75 billion by the end of the decade. It's share of the total European professional services market will grow from 7.7% in 1995 to 9.5% by the year 2000. The key areas of growth in this market are outsourcing (21% over the next five years), network services (18%) and systems integration (13%).

Belgium is characterized by a high proportion of business within the application software market, accounting for 16% in 1994 — the second highest after Italy — and rising to 22% by the year 2000. Its primary high growth opportunities lie in the area of application solutions, network services, outsourcing and systems integration. Custom software development continues to decline as a proportion of the software and services market. Exhibit V-16 gives a breakdown by delivery mode. Appendix C provides greater detail. The Belgian market will grow at 7% per annum up to the year 2000 to reach $4.2 billion.

Exhibit V-16

Software Services Market, Belgium, 1995-2000

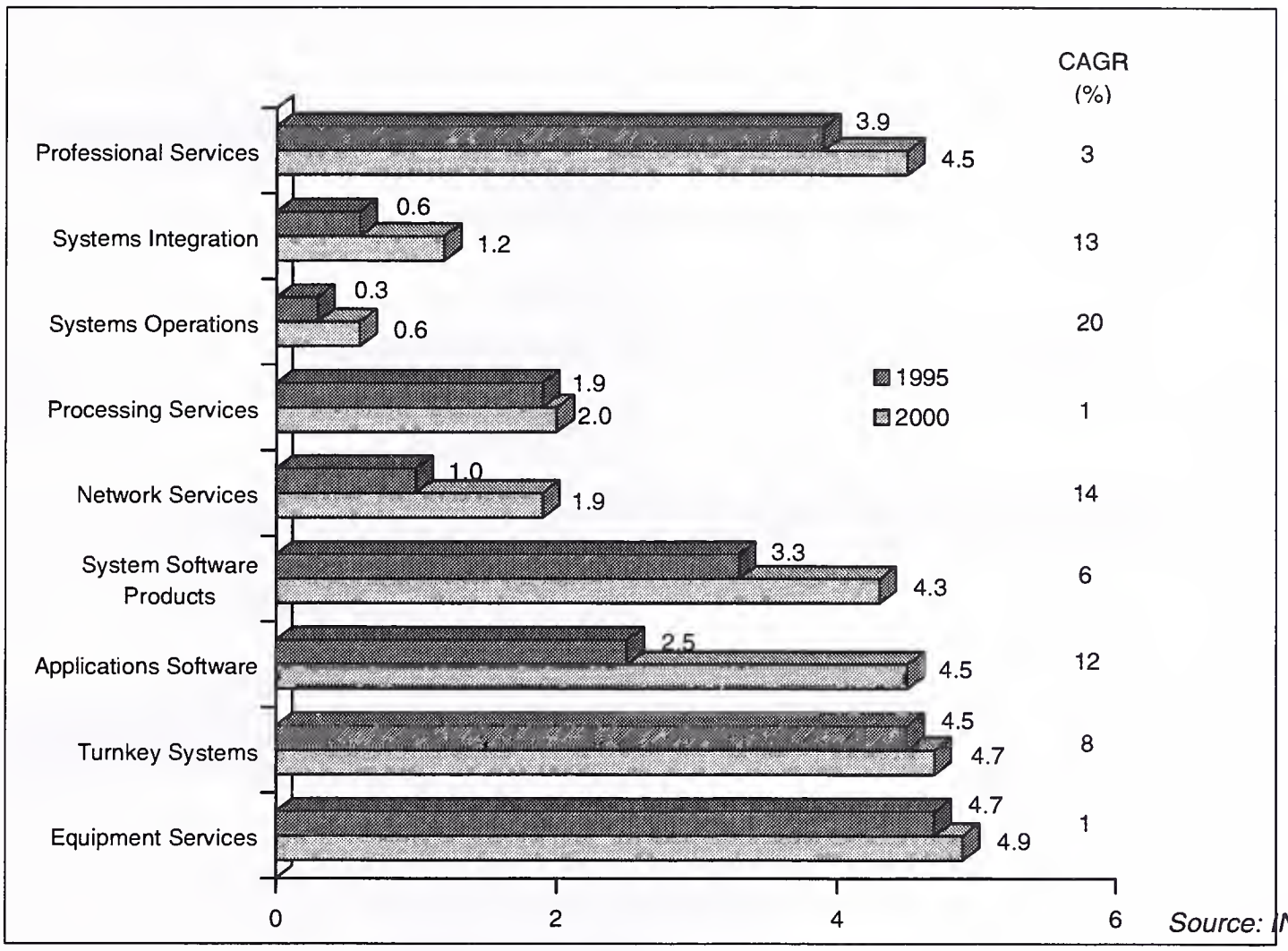


Source: INPUT

Austria has similar characteristics to the German market with systems software and turnkey being the dominant delivery modes. Turnkey systems in Austria accounted for 25% of business within the software and services market in 1995, the highest proportion in Europe and equivalent to Germany. In 1995 the Austrian market was worth $1.7 billion; this will grow at 7% to $2.3 billion by the end of the decade. Exhibit V-17 illustrates that the key areas for growth are similar to Belgium and the Netherlands: outsourcing (20% compound growth per annum), network services (14%) and systems integration (13%). A detailed analysis is provided in Appendix B.

Exhibit V-17

Software and Services Market, Austria, 1995-2000

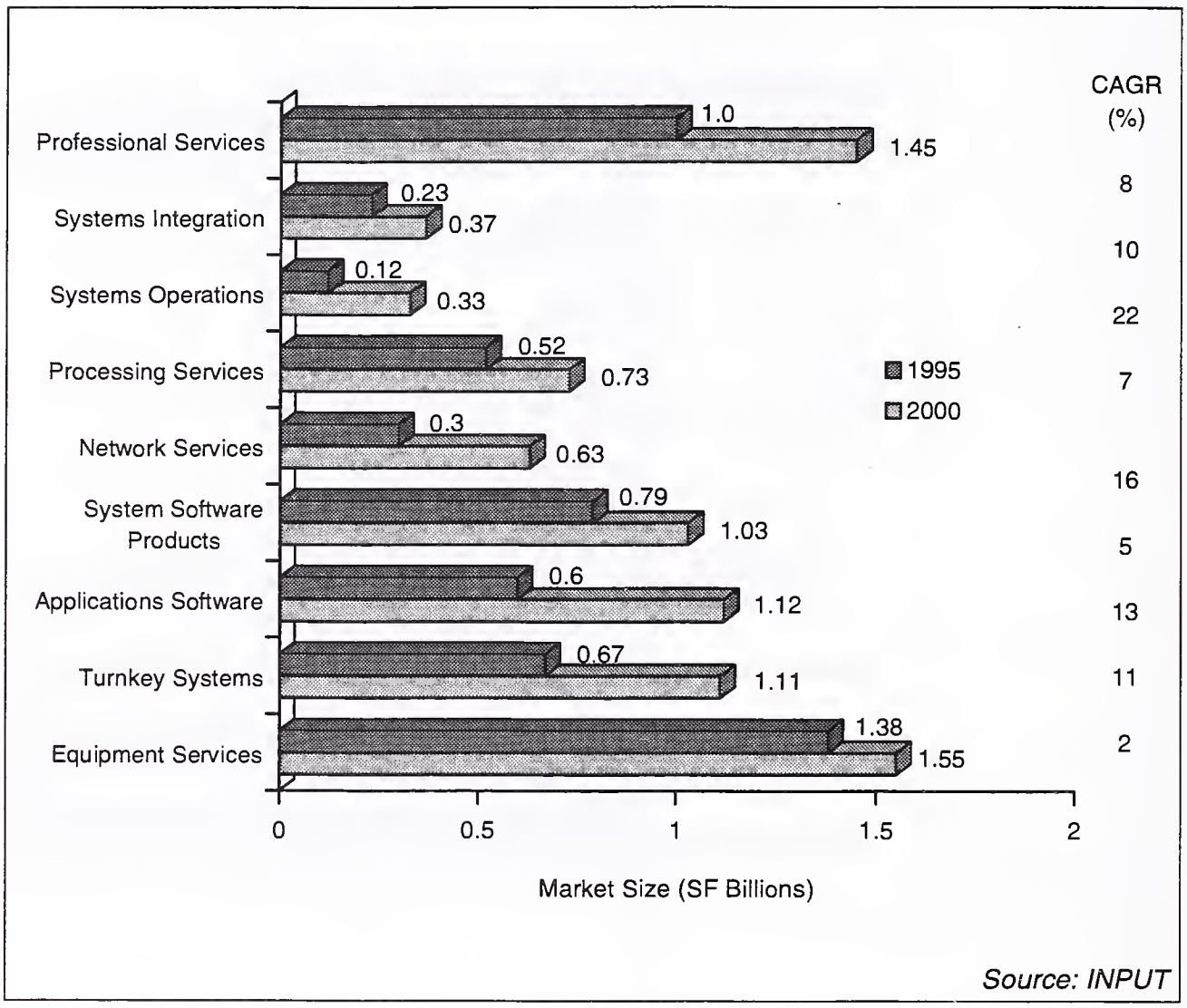


Source: INPUT

The Swiss market for information services will grow at 10% per annum reaching $5.2 billion by the end of the decade from a 1995 base of $3.2 billion. With the exception of systems integration and network services, all of its delivery modes are growing at above average European rates. Exhibit V-18 shows the performance of each segment. Appendix Q gives a more detailed breakdown. The Swiss market has one of the highest proportions of business within the European equipment services market (35% in 1994), but due to declining maintenance markets this is forecast to grow by only 2% up to the year 2000.

Exhibit V-18

Software and Services Market, Switzerland, 1995-2000



Source: INPUT

2. Spain, Greece, Portugal and Ireland

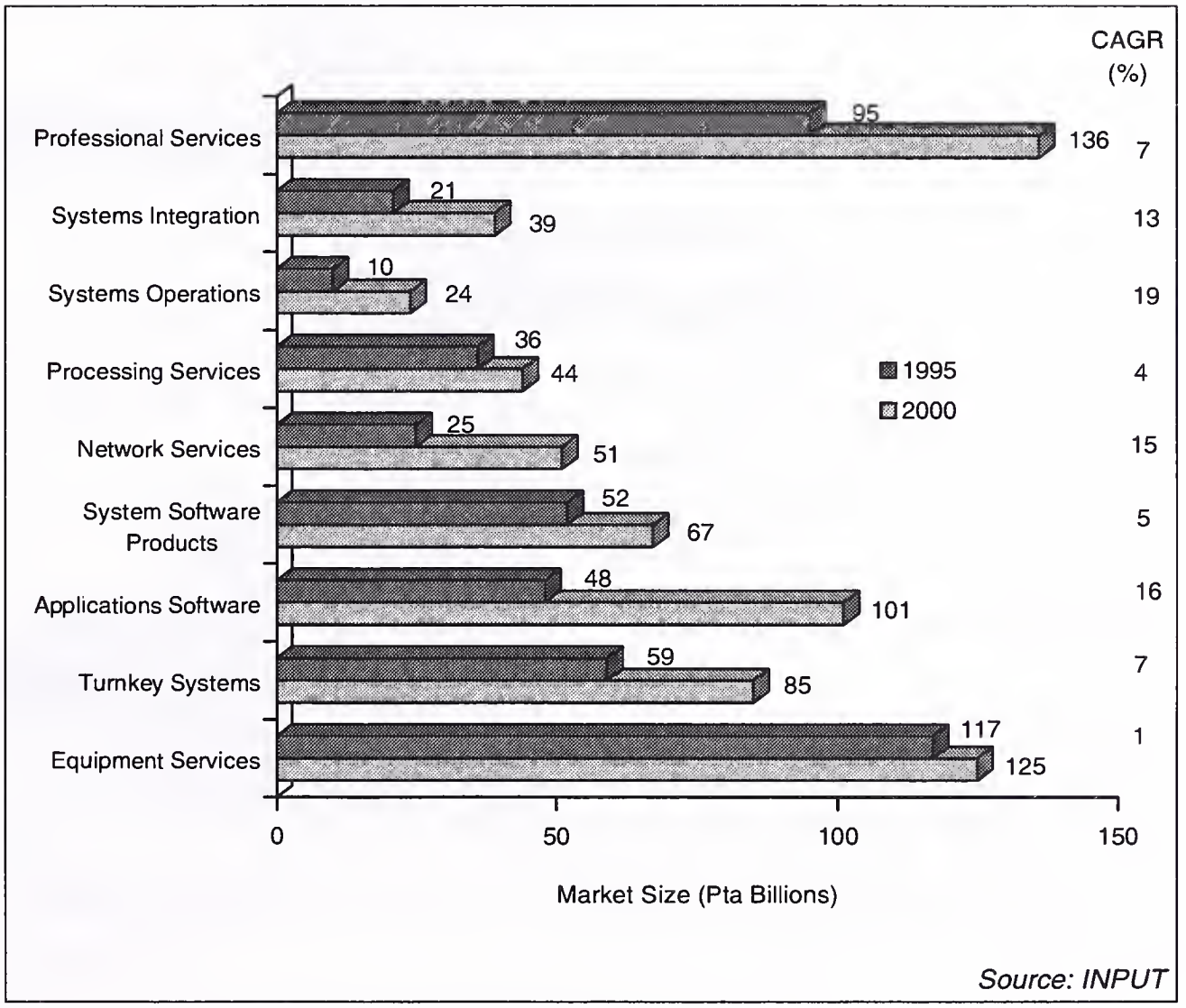
These four countries' share of the European market will increase from 4.2% in 1995 to 4.5% by the year 2000, primarily due to a strong Spanish performance.

The market for software and services in Spain (the largest of these four markets) has been affected by a rapidly decelerating economy and an austere economic policy. In particular, vendors positioned in the public sector faced difficult conditions due to severe public spending reductions. Competitive challenges are increasing as the IT market rapidly integrates with the European Union. Local software and services vendors are either being acquired by German, French and US-based organisations or competing directly with them as they set up local offices.

Government and banking and finance are the two most dynamic sectors. Public institutions are facing restructuring as the authorities reorganise their assets and seek to exploit their technological potential. This trend will increase as the government seeks to fully utilise its state assets. Due to mergers and acquisitions in the banking sector there has been a significant increase in demand for systems integration and outsourcing services. Exhibit V-19 gives an analysis of the growth in the various segments of the market (Appendix O gives greater detail).

Exhibit V-19

Software and Services Market, Spain, 1995-2000



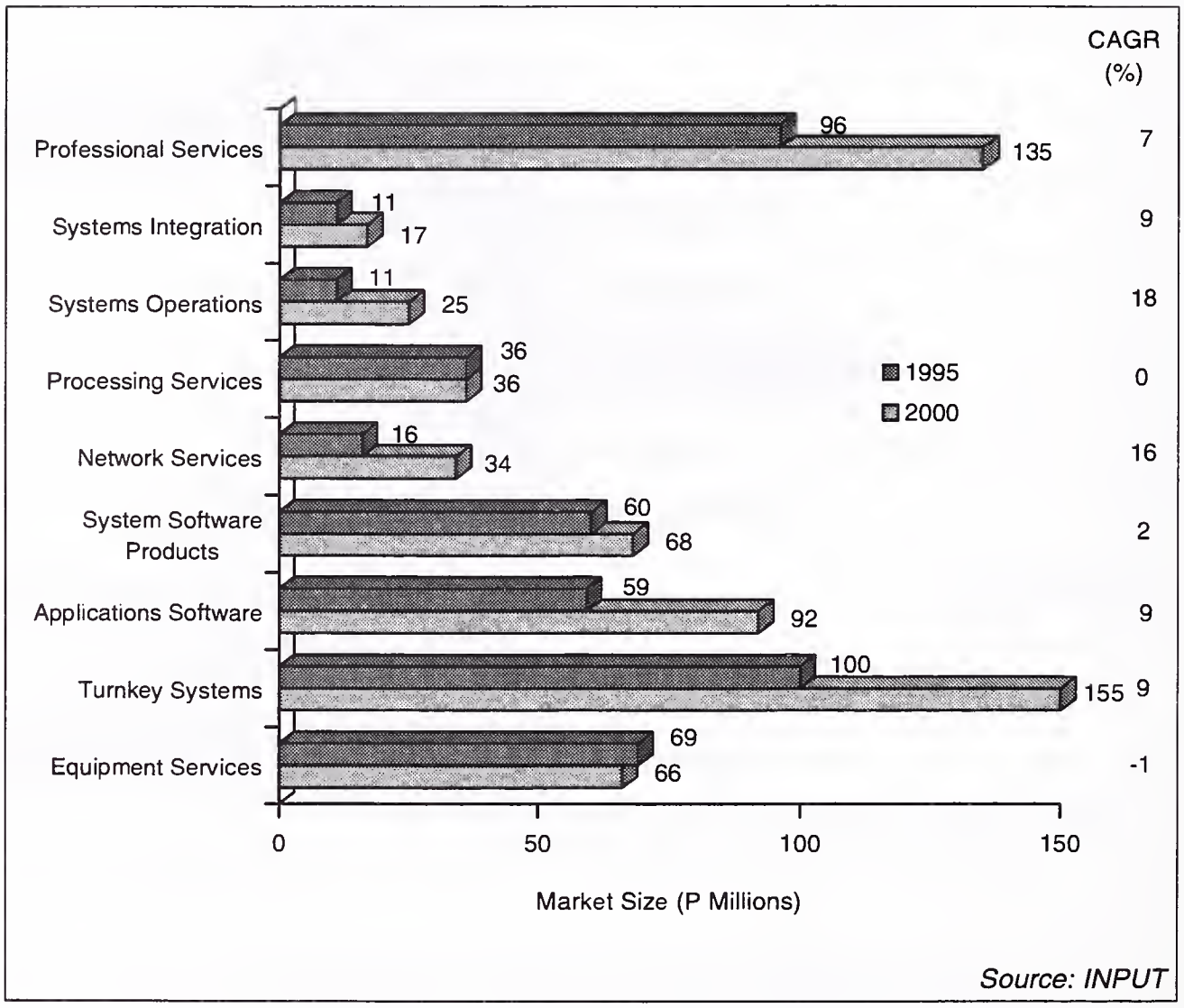
Source: INPUT

The Spanish market will grow from $2.6 billion in 1995 to $4.1 billion by the end of the decade - a 10% growth rate. IS consulting, application software, outsourcing and network services will continue to provide good growth opportunities. Network applications will grow strongly over the next five years (22%) as the major Spanish telecoms operator, Telefonica SA, which has a significant presence in the information services market, continues to invest in infrastructure development.

The Irish market is characterised by strong growth in professional services (7%), the only area where growth is above the European average rate. In 1994 this was the largest segment of the Irish market. Exhibit V-20 shows the performance of the market by delivery mode (Appendix J gives a more detailed forecast). Overall, the Irish market will see significant movement in the outsourcing and network services markets, growing at 18% and 16% respectively. The Irish market will grow at 8% reaching $0.9 billion by the year 2000.

Exhibit V-20

Software and Services Market, Ireland, 1995-2000

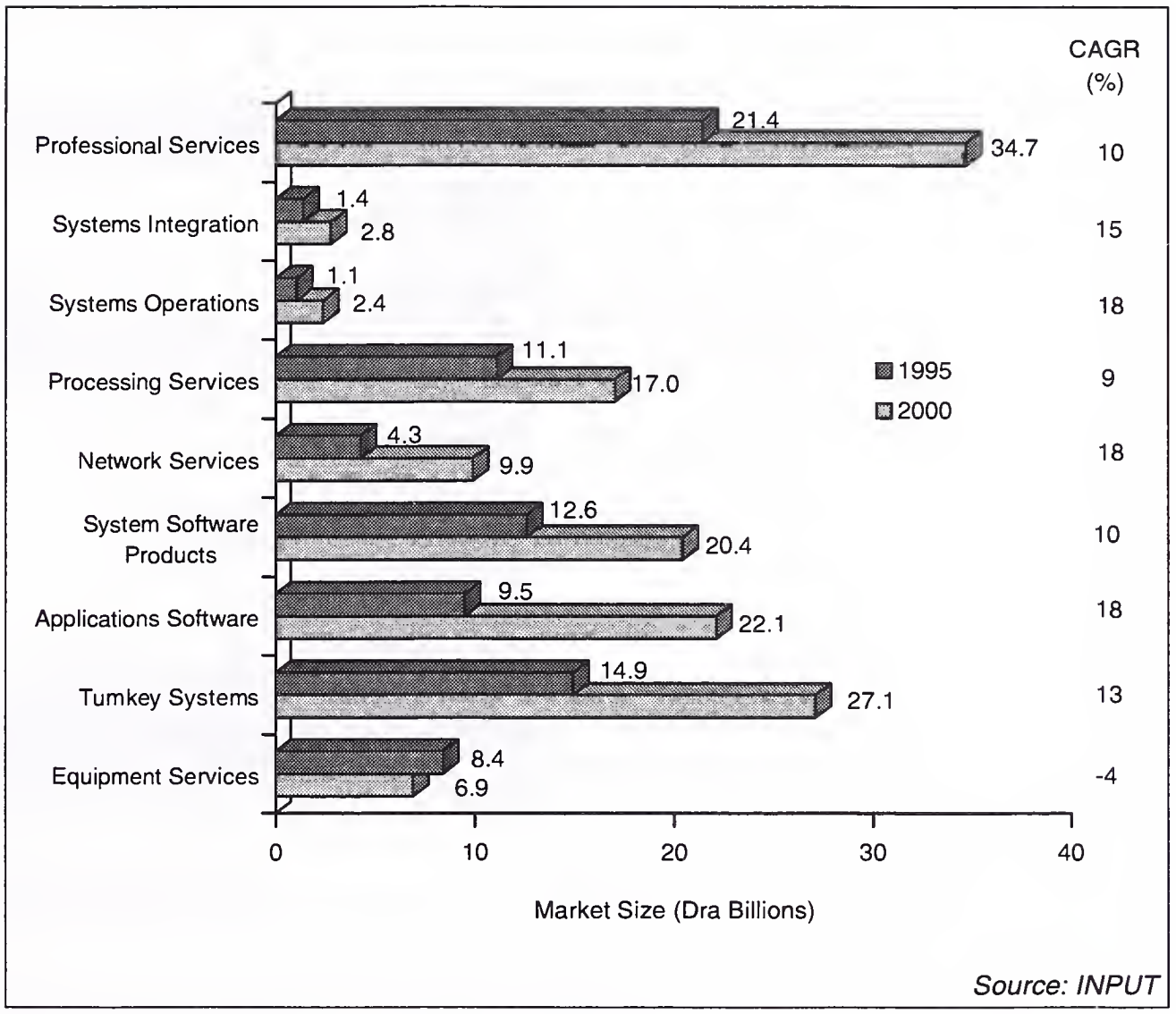


Source: INPUT

Greece and Portugal are both working from a small base and therefore exhibit high rates of growth in virtually all areas. Again, as in Ireland, the largest segment in the Greek market is professional services due to the domination of custom software development. This market will be worth $0.6 billion by the end of the decade. Exhibit V-21 gives an analysis of the movements within this market and Appendix I provides greater detail.

Exhibit V-21

Software and Services Market, Greece, 1995-2000

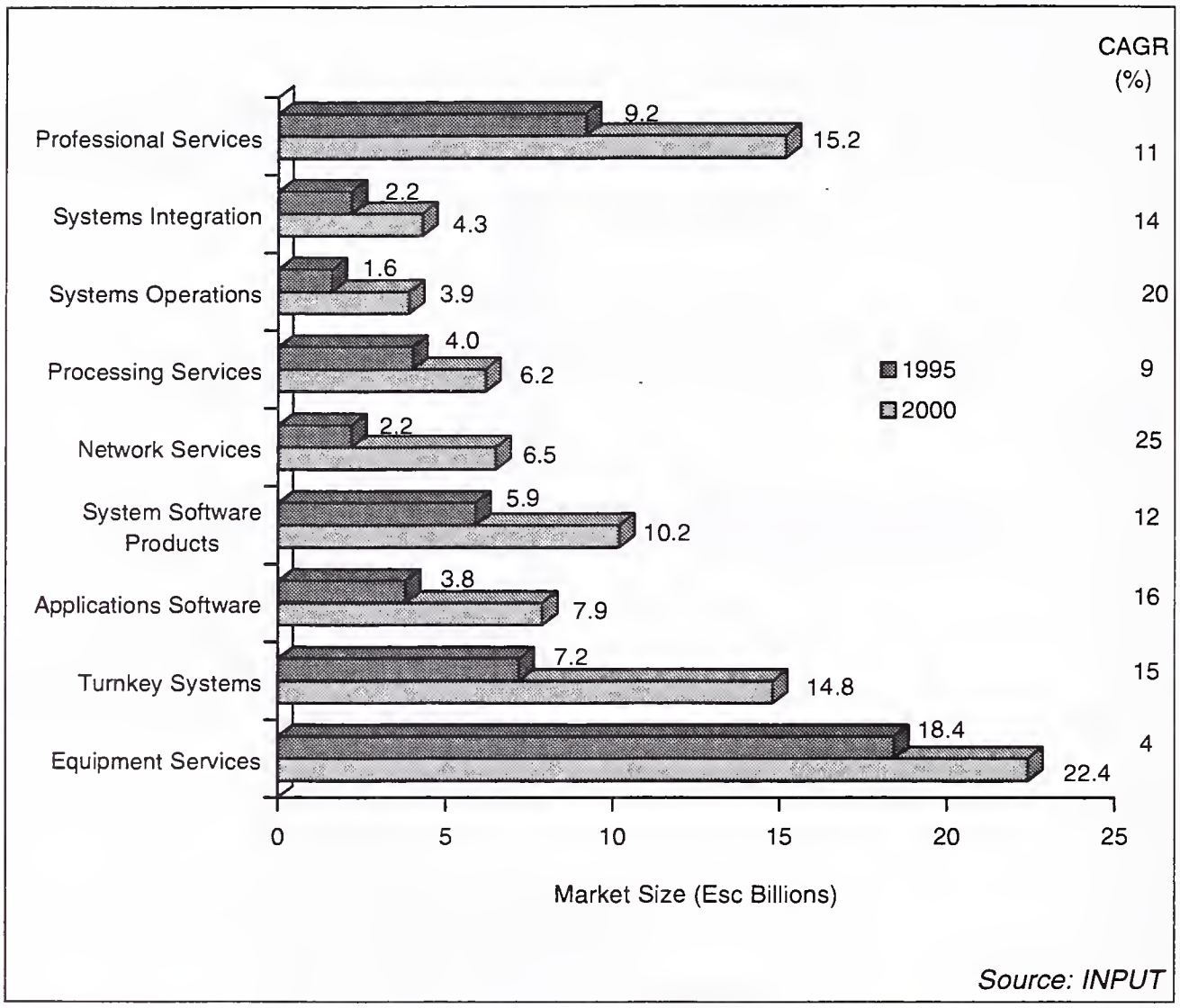


Source: INPUT

Portugal is a slightly smaller market than Greece, valued at $0.4 billion by the year 2000, but has a higher growth rate (14%) over the next five years. Network services (25%) and outsourcing (20%) provide the major sources of growth. Exhibit V-22 breaks down the delivery mode movements over the next five years, supported by detailed analysis in Appendix N.

Exhibit V-22

Software and Services Market, Portugal, 1995-2000



Source: INPUT

Appendices

Forecast Database, 1995-2000 Europe

A

Market Forecast

Exhibit A-1

Top Level IT Expenditure, Europe

Sector	US$ Million								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-00 CAGR (%)
Equipment Sales	50,750	-2	49,580	48,700	48,550	48,360	48,300	48,520	0
Mainframe	8,990	-11	7,970	6,800	6,030	5,180	4,460	3,900	-13
Minicomputer	12,810	-4	12,330	12,030	11,790	11,430	10,990	10,790	-3
PC/Workstation	28,950	1	29,280	29,870	30,730	31,750	32,850	33,830	3
Equipment Services	21,080	0	20,990	21,030	21,120	21,300	21,470	21,690	1
Software Products	24,400	8	26,420	30,350	32,400	34,020	37,020	39,190	8
Other Information Services	51,490	7	55,150	59,480	64,800	70,720	77,490	84,810	9
Data Communications	20,070	7	21,450	22,650	24,120	25,710	27,300	28,970	6
Facilities/Administration	25,440	-4	24,510	23,760	23,220	23,020	22,780	22,580	-2
In-house Staff	81,780	-4	78,250	75,100	72,490	70,060	68,240	66,490	-3
IT Budget Total	275,000	1	276,400	281,100	286,700	293,200	302,600	312,300	2

Exhibit A-2

Information Services Market
Forecast by Delivery Mode and Submode
Europe, 1995-2000

Delivery Modes	US$ Million								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-00 CAGR(%)
Software and Services Total (ex. Equipment Services)	83,300	7	89,100	97,700	105,300	113,300	123,400	133,300	8
Professional Services	23,290	3	23,930	24,660	25,610	26,510	27,630	28,860	4
- IS Consulting	3,590	10	3,940	4,290	4,700	5,160	5,700	6,270	10
- Education & Training	2,650	6	2,820	3,010	3,210	3,420	3,650	3,870	7
- Custom Software	16,760	0	16,780	16,930	17,330	17,440	17,700	17,810	1
- Application Management	230	26	290	360	460	570	710	850	24
Systems Integration	4,710	12	5,260	5,900	6,710	7,550	8,490	9,600	13
- Equipment	1,190	6	1,260	1,260	1,300	1,370	1,420	1,560	4
- Application Software	830	19	990	1,190	1,490	1,800	2,220	2,640	22
- System Software	350	11	390	430	480	530	590	670	11
- Professional Services	2,150	12	2,400	2,780	3,140	3,480	3,860	4,260	12
- Other	200	10	220	260	290	370	380	460	16
Systems Operations	3,620	26	4,570	5,670	6,880	8,200	9,640	11,180	20
- Platform Operations	1,030	14	1,170	1,350	1,490	1,690	1,860	2,010	11
- Application Operations	2,080	31	2,730	3,450	4,250	5,100	6,040	6,990	21
- Desktop Services	490	33	650	860	1,110	1,410	1,750	2,160	27
Processing Services	8,290	3	8,560	8,800	9,130	9,510	9,840	10,300	4
- Transaction Processing	7,090	2	7,240	7,390	7,600	7,840	8,060	8,320	3
- Utility Processing	270	0	270	270	270	270	270	280	1
- Other Processing	950	8	1,030	1,140	1,260	1,390	1,540	1,690	10
Network Services	6,110	13	6,890	7,930	9,210	10,710	12,580	14,780	16
- Electronic Info Svcs	3,740	9	4,090	4,520	4,960	5,380	5,850	6,270	9
- Network Applications	1,800	21	2,180	2,720	3,460	4,410	5,630	7,180	27
- Network Management	560	11	620	700	800	920	1,080	1,310	16
System Software	13,450	5	14,130	15,340	15,700	16,170	16,960	17,440	4
- Mainframe	5,550	-4	5,310	5,090	4,820	4,500	4,210	3,840	-6
- Minicomputer	4,270	5	4,480	4,720	4,940	5,210	5,470	5,750	5
- Workstation /PC	3,590	21	4,330	5,470	5,920	6,420	7,250	7,890	13
Application Software	11,100	10	12,230	15,010	16,680	17,830	20,130	21,730	12
- Mainframe	860	-7	800	770	720	690	670	630	-5
- Minicomputer	3,080	6	3,250	3,460	3,750	4,110	4,450	4,830	8
- Workstation /PC	7,120	15	8,190	10,870	12,300	12,990	14,930	16,180	15
Turnkey Systems	12,890	5	13,530	14,300	15,350	16,600	18,010	19,460	8
- Equipment	6,260	2	6,410	6,620	6,870	7,160	7,480	7,760	4
- Application Software	2,580	10	2,840	3,050	3,420	3,840	4,350	4,870	11
- System Software	730	3	750	800	840	900	950	1,000	6
- Professional Services	3,310	8	3,560	3,850	4,230	4,690	5,240	5,790	10
Equipment Services	21,060	0	20,990	21,000	21,030	21,280	21,490	21,790	1
- Equipment Maintenance	13,300	-4	12,760	12,060	11,650	11,270	10,710	10,360	-4
- Environmental Services	7,760	7	8,340	8,850	9,480	10,010	10,870	11,440	7
Grand Total Information Service Market	104,810	5	110,200	118,370	126,060	135,030	145,110	155,180	7

B

Forecast Database in ECUs

Exhibit A-3

Forecast Database in ECUs
Europe, 1995-2000

Delivery Modes	ECU Millions (rounded)								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-00 CAGR(%)
Software and Services Total (ex. Equipment Services)	67,900	7	72,600	79,600	85,800	92,300	100,600	108,600	8
Professional Services	18,981	3	19,503	20,098	20,872	21,606	22,518	23,521	4
- IS Consulting	2,926	10	3,211	3,496	3,831	4,205	4,646	5,110	10
- Education & Training	2,160	6	2,298	2,453	2,616	2,787	2,975	3,154	7
- Custom Software	13,659	0	13,676	13,798	14,124	14,214	14,426	14,515	1
- Application Management	187	26	236	293	375	465	579	693	24
Systems Integration	3,839	12	4,287	4,809	5,469	6,153	6,919	7,824	13
- Equipment	970	6	1,027	1,027	1,060	1,117	1,157	1,271	4
- Application Software	676	19	807	970	1,214	1,467	1,809	2,152	22
- System Software	285	11	318	350	391	432	481	546	11
- Professional Services	1,752	12	1,956	2,266	2,559	2,836	3,146	3,472	12
- Other	163	10	179	212	236	302	310	375	16
Systems Operations	2,950	26	3,725	4,621	5,607	6,683	7,857	9,112	20
- Platform Operations	839	14	954	1,100	1,214	1,377	1,516	1,638	11
- Application Operations	1,695	31	2,225	2,812	3,464	4,157	4,923	5,697	21
- Desktop Services	399	33	530	701	905	1,149	1,426	1,760	27
Processing Services	6,756	3	6,976	7,172	7,441	7,751	8,020	8,395	4
- Transaction Processing	5,778	2	5,901	6,023	6,194	6,390	6,569	6,781	3
- Utility Processing	220	0	220	220	220	220	220	228	1
- Other Processing	774	8	839	929	1,027	1,133	1,255	1,377	10
Network Services	4,980	13	5,615	6,463	7,506	8,729	10,253	12,046	16
- Electronic Info Svcs	3,048	9	3,333	3,684	4,042	4,385	4,768	5,110	9
- Network Applications	1,467	21	1,777	2,217	2,820	3,594	4,588	5,852	27
- Network Management	456	11	505	571	652	750	880	1,068	16
System Software	10,962	5	11,516	12,502	12,796	13,179	13,822	14,214	4
- Mainframe	4,523	-4	4,328	4,148	3,928	3,668	3,431	3,130	-6
- Minicomputer	3,480	5	3,651	3,847	4,026	4,246	4,458	4,686	5
- Workstation /PC	2,926	21	3,529	4,458	4,825	5,232	5,909	6,430	13
Application Software	9,047	10	9,967	12,233	13,594	14,531	16,406	17,710	12
- Mainframe	701	-7	652	628	587	562	546	513	-5
- Minicomputer	2,510	6	2,649	2,820	3,056	3,350	3,627	3,936	8
- Workstation /PC	5,803	15	6,675	8,859	10,025	10,587	12,168	13,187	15
Turnkey Systems	10,505	5	11,027	11,655	12,510	13,529	14,678	15,860	8
- Equipment	5,102	2	5,224	5,395	5,599	5,835	6,096	6,324	4
- Application Software	2,103	10	2,315	2,486	2,787	3,130	3,545	3,969	11
- System Software	595	3	611	652	685	734	774	815	6
- Professional Services	2,698	8	2,901	3,138	3,447	3,822	4,271	4,719	10
Equipment Services	17,164	0	17,107	17,115	17,139	17,343	17,514	17,759	1
- Equipment Maintenance	10,840	-4	10,399	9,829	9,495	9,185	8,729	8,443	-4
- Environmental Services	6,324	7	6,797	7,213	7,726	8,158	8,859	9,324	7
Grand Total Information Service Market	85,420	5	89,813	96,472	102,739	110,049	118,265	126,472	7

C

Information Services Forecast Reconciliation

Exhibit A-4

Forecast Reconciliation, Europe, 1994-1999

Currency: US$ Million	1994 Market				1999 Market				1994	1995
Delivery Mode	1994 Report (Fcst)	1995 Report (Act)	1994-1995 Variance (Amount)	1994-1995 Variance (%)	1994 Report (Fcst)	1995 Report (Fcst)	1994-1995 Variance (Amount)	1994-1995 Variance (%)	Report %CAGR (Fcst)	Report %CAGR (Fcst)
Software and Services Total (ex Equipment Services)	76,000	83,300	7,300	10	109,600	123,400	13,800	13	8	8
Professional Services	21,000	23,290	2,290	11	25,000	27,630	2,630	11	4	3
- IS Consulting	3,250	3,590	340	10	5,200	5,700	500	10	10	10
- Education & Training	2,400	2,650	250	10	3,000	3,650	650	22	5	7
- Custom Software	15,300	16,760	1,460	10	16,100	17,700	1,600	10	1	1
- Application Management	210	230	20	10	665	710	45	7	26	25
Systems Integration	4,600	4,710	110	2	8,000	8,490	490	6	12	13
- Equipment	1,200	1,190	-10	-1	1,750	1,420	-330	-19	8	4
- Application Software	890	830	-60	-7	2,680	2,220	-460	-17	25	22
- System Software	360	350	-10	-3	540	590	50	9	8	11
- Professional Services	2,050	2,150	100	5	2,850	3,860	1,010	35	7	12
- Other	95	200	105	111	210	380	170	81	17	14
Systems Operations	3,200	3,620	420	13	7,650	9,640	1,990	26	19	22
- Platform Operations	930	1,030	100	11	1,600	1,860	260	16	11	13
- Application Operations	1,850	2,080	230	12	4,750	6,040	1,290	27	21	24
- Desktop Services	400	490	90	23	1,300	1,750	450	35	27	29
Processing Services	7,600	8,290	690	9	9,000	9,840	840	9	3	3
- Transaction Processing	6,400	7,090	690	11	7,300	8,060	760	10	3	3
- Utility Processing	250	270	20	8	250	270	20	8	0	0
- Other Processing	860	950	90	10	1,390	1,540	150	11	10	10
Network Services	5,600	6,110	510	9	11,600	12,580	980	8	16	16
- Electronic Info Svcs	3,400	3,740	340	10	5,200	5,850	650	13	9	9
- Network Applications	1,650	1,800	150	9	5,350	5,630	280	5	27	26
- Network Management	490	560	70	14	1,010	1,080	70	7	16	14
System Software	12,200	13,450	1,250	10	14,500	16,960	2,460	17	4	5
- Mainframe	5,100	5,550	450	9	3,600	4,210	610	17	-7	-5
- Minicomputer	3,900	4,270	370	9	4,950	5,470	520	11	5	5
- Workstation/PC	3,250	3,590	340	10	5,900	7,250	1,350	23	13	15
Application Software	10,100	11,100	1,000	10	17,200	20,130	2,930	17	11	13
- Mainframe	780	860	80	10	610	670	60	10	-5	-5
- Minicomputer	2,800	3,080	280	10	4,300	4,450	150	3	9	8
- Workstation/PC	6,500	7,120	620	10	12,200	14,930	2,730	22	13	16
Turnkey Systems	11,700	12,890	1,190	10	16,600	18,010	1,410	8	7	7
- Equipment	5,700	6,260	560	10	6,900	7,480	580	8	4	4
- Application Software	2,350	2,580	230	10	4,050	4,350	300	7	12	11
- System Software	660	730	70	11	870	950	80	9	6	5
- Professional Services	3,000	3,310	310	10	4,900	5,240	340	7	10	10
Equipment Services	19,200	21,060	1,860	10	19,100	21,490	2,390	13	0	0
- Equipment Maintenance	12,100	13,300	1,200	10	9,700	10,710	1,010	10	-4	-4
- Environmental Services	7,100	7,760	660	9	9,400	10,870	1,470	16	6	7
Grand Total	95,000	104,810	9,810	10	129,000	145,110	16,110	12	6	7

D

Delivery Mode Country Comparisons

Exhibit A-5

Software and Services Country Comparisons, Europe

Country	US$ Million								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-00 CAGR(%)
Total (rounded)	83,000	7	89,000	98,000	105,000	115,000	125,000	135,000	8
France	20,000	4	21,000	22,500	23,500	24,500	26,500	28,500	6
Germany	17,500	8	19,000	20,500	22,500	24,500	27,000	29,500	9
United Kingdom	13,500	10	15,000	16,500	18,500	20,000	22,000	24,000	10
Italy	7,300	6	7,800	8,600	9,200	9,900	10,500	11,500	8
Sweden	3,200	7	3,400	3,800	4,200	4,600	5,000	5,500	10
Denmark	2,100	6	2,250	2,400	2,600	2,750	2,900	3,000	6
Norway	1,750	3	1,800	1,900	2,000	2,100	2,250	2,350	6
Finland	1,300	5	1,350	1,450	1,550	1,650	1,800	1,950	8
Netherlands	4,900	7	5,300	5,700	6,200	6,600	7,200	7,900	8
Belgium	2,800	7	3,000	3,300	3,500	3,700	4,000	4,200	7
Switzerland	3,000	8	3,200	3,600	3,900	4,300	4,700	5,200	10
Austria	1,500	9	1,650	1,850	1,950	2,100	2,250	2,350	7
Spain	2,450	7	2,600	2,900	3,200	3,400	3,800	4,100	10
Portugal	200	14	225	260	300	340	390	430	14
Greece	285	10	320	360	400	450	510	570	12
Ireland	560	7	600	660	700	750	810	870	8
Eastern Europe	720	16	830	990	1,200	1,400	1,650	1,950	19

Exhibit A-6

Professional Services Country Comparisons, Europe

Country	US$ Million								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-00 CAGR(%)
Total (rounded)	23,500	3	24,000	24,500	25,500	26,500	27,500	29,000	4
France	7,300	2	7,400	7,500	7,600	7,700	7,800	7,900	1
Germany	3,400	4	3,500	3,600	3,800	3,900	4,100	4,100	3
United Kingdom	3,100	3	3,200	3,300	3,300	3,400	3,400	3,500	2
Italy	2,100	0	2,100	2,100	2,200	2,200	2,300	2,500	3
Sweden	1,350	4	1,400	1,500	1,650	1,800	1,950	2,100	8
Denmark	500	7	540	570	610	650	690	740	7
Norway	430	0	430	440	450	480	490	510	3
Finland	340	2	350	370	390	410	450	490	7
Netherlands	1,750	6	1,850	1,950	2,100	2,250	2,450	2,750	8
Belgium	930	2	950	980	1,000	1,050	1,050	1,100	3
Switzerland	740	3	770	800	860	930	1,000	1,100	8
Austria	340	5	360	370	390	400	410	420	3
Spain	690	4	720	760	820	890	960	1,050	7
Portugal	52	12	58	64	71	79	87	95	11
Greece	81	9	89	97	105	120	130	145	10
Ireland	145	2	150	155	165	175	195	210	7
Eastern Europe	71	14	81	93	105	125	145	165	15

Exhibit A-7

Systems Integration Country Comparisons, Europe

Country	US$ Million								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-00 CAGR(%)
Total (rounded)	4,700	12	5,300	5,900	6,700	7,600	8,500	9,600	13
France	1,000	8	1,100	1,200	1,350	1,500	1,650	1,800	11
Germany	710	14	810	870	1,000	1,100	1,250	1,400	11
United Kingdom	1,350	14	1,550	1,800	2,050	2,350	2,650	3,000	14
Italy	330	9	360	400	440	490	550	600	11
Sweden	50	8	54	61	68	74	84	90	11
Denmark	50	8	55	60	69	78	89	100	13
Norway	37	10	41	46	52	58	64	72	12
Finland	45	14	51	58	67	76	86	98	14
Netherlands	180	13	200	235	265	300	330	370	13
Belgium	130	12	150	165	185	210	245	280	14
Switzerland	160	10	175	190	220	240	265	285	10
Austria	51	15	58	64	73	82	93	105	13
Spain	145	11	160	180	205	225	255	295	13
Portugal	12	16	14	17	19	22	24	27	14
Greece	5	13	6	7	8	9	10	12	15
Ireland	14	22	17	17	19	23	23	27	9
Eastern Europe	410	12	460	530	630	740	870	1,000	17

Exhibit A-8

Systems Operations Country Comparisons, Europe

Country	US$ Million								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-00 CAGR(%)
Total (rounded)	3,600	26	4,600	5,700	6,900	8,200	9,600	11,000	20
France	880	18	1,050	1,250	1,500	1,700	2,000	2,300	17
Germany	310	58	490	650	830	1,050	1,250	1,450	24
United Kingdom	1,250	28	1,600	2,000	2,450	2,900	3,400	3,900	20
Italy	270	33	350	440	550	650	780	910	21
Sweden	290	22	350	430	520	610	720	830	19
Denmark	38	17	45	53	63	74	86	100	18
Norway	39	19	47	55	65	75	88	100	17
Finland	68	17	79	91	105	120	140	160	15
Netherlands	165	21	200	240	290	350	430	510	21
Belgium	100	16	115	135	160	190	220	265	18
Switzerland	79	19	94	115	140	175	210	250	22
Austria	20	19	23	28	34	41	48	56	20
Spain	64	19	76	92	110	130	160	185	19
Portugal	8	20	10	12	14	18	21	25	20
Greece	4	24	4	5	6	7	9	10	18
Ireland	14	22	17	20	23	27	33	39	18
Eastern Europe	20	35	27	32	42	50	60	72	22

Exhibit A-9

Processing Services Country Comparisons, Europe

Country	US$ Million								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-00 CAGR(%)
Total (rounded)	8,300	3	8,600	8,800	9,100	9,500	9,800	10,500	4
France	1,650	0	1,650	1,650	1,700	1,700	1,800	1,850	2
Germany	1,700	8	1,800	1,950	2,150	2,300	2,400	2,550	7
United Kingdom	890	7	950	980	1,050	1,100	1,150	1,200	5
Italy	710	0	710	710	710	740	740	770	2
Sweden	380	0	380	380	380	390	390	390	0
Denmark	490	-1	480	480	470	470	460	440	-2
Norway	490	0	490	490	490	490	490	490	0
Finland	200	0	200	200	200	200	200	200	0
Netherlands	590	6	630	660	700	740	780	830	6
Belgium	240	-2	235	235	235	235	235	230	0
Switzerland	370	7	400	420	450	480	520	560	7
Austria	175	2	180	180	185	185	190	190	1
Spain	260	4	275	280	295	310	320	330	4
Portugal	23	13	25	28	30	34	36	39	9
Greece	42	9	46	50	54	59	65	70	9
Ireland	56	0	56	56	56	56	56	56	0
Eastern Europe	20	25	25	29	36	45	59	79	26

Exhibit A-10

Network Services Country Comparisons, Europe

Country	US$ Million								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-00 CAGR(%)
Total (rounded)	6,100	13	6,900	7,900	9,200	10,500	12,500	15,000	16
France	1,550	9	1,700	1,900	2,150	2,500	2,950	3,500	16
Germany	1,150	15	1,300	1,550	1,850	2,200	2,650	3,200	20
United Kingdom	1,600	16	1,850	2,100	2,450	2,800	3,300	3,700	15
Italy	460	14	520	600	700	820	970	1,150	17
Sweden	145	12	160	190	220	260	300	350	17
Denmark	110	13	125	145	165	190	210	235	13
Norway	68	7	73	79	89	100	115	125	12
Finland	66	13	74	85	95	110	125	140	14
Netherlands	290	14	330	380	450	530	640	750	18
Belgium	170	11	190	215	245	275	320	350	13
Switzerland	205	11	225	265	310	360	420	480	16
Austria	81	11	90	100	115	130	150	170	14
Spain	170	12	190	220	255	295	340	380	15
Portugal	11	23	14	17	22	28	34	41	25
Greece	15	16	18	21	25	30	35	41	18
Ireland	22	14	25	30	34	40	45	53	16
Eastern Europe	8	13	9	13	19	27	39	57	45

Exhibit A-11

System Software Country Comparisons, Europe

Country	US$ Million								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-00 CAGR(%)
Total (rounded)	13,500	5	14,000	15,500	15,500	16,000	17,000	17,500	4
France	2,950	4	3,100	3,300	3,300	3,400	3,500	3,600	3
Germany	3,400	6	3,600	3,900	3,900	4,000	4,200	4,300	4
United Kingdom	2,000	8	2,100	2,300	2,400	2,500	2,600	2,700	5
Italy	1,500	8	1,600	1,800	1,900	1,900	2,000	2,000	5
Sweden	310	2	320	350	360	370	390	400	5
Denmark	295	8	320	360	370	390	410	410	5
Norway	210	4	215	235	245	255	275	285	6
Finland	165	-3	160	170	170	175	180	185	3
Netherlands	690	0	690	750	750	810	810	810	3
Belgium	450	6	480	520	530	550	580	590	4
Switzerland	580	4	610	650	670	700	750	780	5
Austria	280	8	310	340	360	370	400	400	6
Spain	380	5	390	420	430	450	480	510	5
Portugal	33	11	37	43	47	53	58	64	12
Greece	48	9	52	59	64	70	77	85	10
Ireland	91	2	93	97	100	105	105	105	2
Eastern Europe	67	21	81	100	120	140	170	200	20

Exhibit A-12

Applications Software Country Comparisons, Europe

Country	US$ Million								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-00 CAGR(%)
Total (rounded)	11,000	10	12,000	15,000	16,500	18,000	20,000	21,500	12
France	2,800	5	2,900	3,400	3,600	3,700	4,100	4,300	8
Germany	2,400	14	2,700	3,400	3,800	4,200	4,900	5,500	15
United Kingdom	1,300	15	1,500	1,800	2,100	2,200	2,500	2,600	12
Italy	1,300	11	1,400	1,800	2,000	2,200	2,500	2,700	13
Sweden	340	15	390	490	560	610	690	760	14
Denmark	265	9	290	360	410	440	480	510	12
Norway	215	11	240	300	340	360	410	450	13
Finland	185	10	205	255	285	310	350	390	14
Netherlands	700	7	750	880	920	930	980	1,000	6
Belgium	460	14	530	670	750	800	880	940	12
Switzerland	410	13	460	580	650	700	790	860	13
Austria	200	14	230	290	330	350	400	420	12
Spain	320	13	360	470	540	600	690	770	16
Portugal	20	19	24	31	36	41	45	50	16
Greece	33	19	39	52	62	69	81	92	18
Ireland	82	11	91	110	120	125	135	140	9
Eastern Europe	94	20	115	150	175	195	230	260	18

Exhibit A-13

Turnkey Systems Country Comparisons, Europe

Country	US$ Million								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-00 CAGR(%)
Total (rounded)	13,000	5	13,500	14,500	15,500	16,500	18,000	19,500	8
France	2,050	4	2,150	2,250	2,350	2,550	2,750	2,950	7
Germany	4,400	4	4,600	4,800	5,300	5,700	6,200	6,700	8
United Kingdom	2,150	6	2,250	2,350	2,500	2,700	2,900	3,100	7
Italy	670	2	680	720	770	830	890	950	7
Sweden	350	6	370	400	420	470	520	570	9
Denmark	360	6	380	400	430	460	480	500	6
Norway	245	4	250	260	270	285	300	320	5
Finland	210	5	220	235	255	270	285	300	7
Netherlands	590	4	620	630	660	710	780	870	7
Belgium	340	8	360	380	410	440	470	490	6
Switzerland	480	6	510	570	620	690	770	850	11
Austria	370	10	410	450	490	540	590	610	8
Spain	430	4	450	480	510	550	600	640	7
Portugal	40	14	45	52	60	71	82	93	15
Greece	57	10	62	69	77	88	100	115	13
Ireland	140	11	155	170	185	200	225	240	9
Eastern Europe	27	22	33	43	54	69	89	110	27

Exhibit A-14

Equipment Services Country Comparisons, Europe

Country	US$ Million								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-00 CAGR(%)
Total (rounded)	21,000	0	21,000	21,000	21,000	21,500	21,500	22,000	1
France	3,730	-2	3,650	3,650	3,640	3,640	3,670	3,690	0
Germany	4,500	-2	4,400	4,300	4,300	4,300	4,300	4,400	0
United Kingdom	3,700	0	3,700	3,700	3,600	3,600	3,600	3,600	-1
Italy	2,200	0	2,200	2,200	2,200	2,300	2,300	2,300	1
Sweden	790	3	820	860	880	920	960	1,000	4
Denmark	510	2	520	520	530	530	540	540	1
Norway	430	0	430	430	430	430	440	440	1
Finland	340	1	350	350	350	360	360	370	1
Netherlands	1,400	1	1,400	1,450	1,450	1,450	1,500	1,550	1
Belgium	630	-1	625	620	620	610	600	600	-1
Switzerland	1,050	1	1,050	1,100	1,100	1,150	1,150	1,200	2
Austria	430	1	430	430	440	440	450	450	1
Spain	880	1	890	910	920	930	940	950	1
Portugal	110	4	115	120	125	130	135	140	4
Greece	36	-3	35	33	32	31	30	29	-4
Ireland	110	-1	105	105	105	105	100	100	-1
Eastern Europe	245	10	270	300	340	390	440	500	13

Exhibit A-15

Information Services Country Comparisons, Europe

Country	US$ Million 1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-00 CAGR(%)
Total (rounded)	105,000	5	110,000	120,000	125,000	135,000	145,000	155,000	7
France	24,000	3	24,500	26,000	27,000	28,500	30,000	32,000	5
Germany	22,000	6	23,000	25,000	27,000	29,000	31,000	34,000	8
United Kingdom	17,000	8	19,000	20,000	22,000	24,000	26,000	27,000	8
Italy	10,000	3	10,000	11,000	11,000	12,000	13,000	14,000	7
Sweden	4,000	6	4,300	4,700	5,100	5,500	6,000	6,500	9
Denmark	2,650	6	2,800	2,950	3,200	3,300	3,500	3,600	5
Norway	2,150	3	2,200	2,300	2,450	2,550	2,650	2,800	5
Finland	1,600	4	1,700	1,800	1,900	2,050	2,150	2,300	7
Netherlands	6,400	5	6,700	7,200	7,600	8,100	8,700	9,400	7
Belgium	3,500	5	3,600	3,900	4,100	4,400	4,600	4,900	6
Switzerland	4,100	6	4,300	4,700	5,000	5,400	5,900	6,400	8
Austria	1,950	7	2,050	2,250	2,400	2,550	2,700	2,800	6
Spain	3,400	5	3,500	3,800	4,100	4,400	4,800	5,100	8
Portugal	310	11	340	380	420	470	520	570	11
Greece	320	10	350	390	430	480	540	590	11
Ireland	670	6	710	760	800	860	910	970	6
Eastern Europe	960	15	1,100	1,300	1,500	1,750	2,100	2,450	17

B

Information Services Industry Forecast Database, 1995-2000 Austria

A

Forecast Database in Local Currency (Sch Millions)

Exhibit B-1

Top Level IT Expenditure, Austria

Sector	Sch Millions								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR (%)
Total IT Spending	54,500	2	55,500	58,000	59,500	61,000	62,500	61,500	2
Equipment Sales	15,500	2	15,800	15,800	16,100	16,300	16,300	15,900	0
Mainframe	2,700	0	2,700	2,300	2,100	2,000	1,800	1,600	-10
Minicomputer	4,200	-2	4,100	4,000	3,900	3,800	3,600	3,300	-4
PC/Workstation	8,600	5	9,000	9,500	10,100	10,500	10,900	11,000	4
Equipment Services	4,650	1	4,700	4,700	4,800	4,800	4,850	4,850	1
Software Products	5,250	10	5,800	6,800	7,400	7,850	8,600	8,850	9
Other Information Services	9,200	8	9,900	10,800	11,500	12,400	13,000	13,600	7
Data Communications	3,000	7	3,200	3,400	3,600	3,800	4,000	4,000	5
Facilities/Administration	3,300	0	3,300	3,400	3,400	3,500	3,500	3,400	1
In-house Staff	13,500	-4	13,000	13,000	12,500	12,500	12,000	11,000	-3

Exhibit B-2

Information Services Market
Forecast by Delivery Mode and Submode
Austria, 1995-2000

Delivery Modes	Sch Millions								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	16,500	9	18,000	20,000	21,500	23,000	24,500	25,500	7
Professional Services	3,650	5	3,850	4,000	4,200	4,300	4,400	4,500	3
- IS Consulting	520	10	570	630	690	740	790	840	8
- Education & Training	430	4	447	465	484	498	513	529	3
- Custom Software	2,700	4	2,800	2,900	3,000	3,050	3,050	3,050	2
- Application Management	20	10	22	25	30	35	45	57	21
Systems Integration	550	15	630	700	790	890	1,010	1,150	13
- Equipment	143	8	155	165	173	186	192	196	5
- Application Software	121	16	140	155	181	204	253	323	18
- System Software	43	16	50	60	63	62	81	81	10
- Professional Services	231	16	267	305	346	382	455	508	14
- Other	12	25	15	17	24	53	30	46	25
Systems Operations	210	19	250	300	370	440	520	610	20
- Platform Operations	45	16	52	60	67	75	85	90	12
- Application Operations	120	21	145	175	225	260	300	340	19
- Desktop Services	45	22	55	65	80	105	135	180	27
Processing Services	1,910	2	1,940	1,950	1,990	2,030	2,070	2,080	1
- Transaction Processing	1,675	1	1,690	1,700	1,730	1,760	1,790	1,790	1
- Utility Processing	68	-3	66	64	62	61	59	57	-3
- Other Processing	170	6	180	185	200	210	220	230	5
Network Services	875	11	975	1,110	1,265	1,425	1,630	1,850	14
- Electronic Info Svcs	675	9	735	815	905	985	1,090	1,190	10
- Network Applications	155	23	190	240	300	370	460	565	24
- Network Management	45	11	50	55	60	70	80	95	14
System Software	3,050	8	3,300	3,650	3,850	4,050	4,300	4,350	6
- Mainframe	1,240	-1	1,230	1,210	1,200	1,190	1,170	1,100	-2
- Minicomputer	1,030	9	1,120	1,220	1,330	1,450	1,570	1,630	8
- Workstation/PC	800	19	955	1,212	1,309	1,414	1,581	1,636	11
Application Software	2,200	14	2,500	3,150	3,550	3,800	4,300	4,500	12
- Mainframe	165	0	165	165	165	165	165	155	-1
- Minicomputer	640	9	700	770	850	930	1,020	1,070	9
- Workstation/PC	1,400	17	1,640	2,230	2,525	2,700	3,095	3,275	15
Turnkey Systems	4,080	10	4,480	4,920	5,360	5,830	6,380	6,670	8
- Equipment	1,945	8	2,100	2,260	2,410	2,570	2,750	2,810	6
- Application Software	855	16	990	1,145	1,315	1,510	1,735	1,910	14
- System Software	240	8	260	280	300	320	340	345	6
- Professional Services	1,040	9	1,130	1,230	1,330	1,430	1,550	1,600	7
Equipment Services	4,650	1	4,700	4,700	4,800	4,800	4,850	4,850	1
- Equipment Maintenance	2,890	-2	2,832	2,747	2,665	2,558	2,456	2,333	-4
- Environmental Services	1,740	6	1,844	1,974	2,112	2,259	2,395	2,515	6
Grand Total Information Service Market	21,200	7	22,600	24,500	26,200	27,600	29,500	30,600	6

B

Forecast Database in U.S. Dollars

Exhibit B-3

Software and Services Market Forecast in Dollars
Austria, 1995-2000

Delivery Modes	U.S. $ Million (rounded)								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	1,515	9	1,650	1,835	1,970	2,110	2,250	2,340	7
Professional Services	335	5	355	365	385	395	405	415	3
- IS Consulting	48	10	53	58	64	68	73	77	8
- Education & Training	40	4	41	43	45	46	47	49	3
- Custom Software	250	4	255	265	275	280	280	280	2
- Application Management	2	10	2	2	3	3	4	5	21
Systems Integration	51	15	58	64	73	82	93	106	13
- Equipment	13	8	14	15	16	17	18	18	5
- Application Software	11	16	13	14	17	19	23	30	18
- System Software	4	16	5	6	6	6	7	7	10
- Professional Services	21	16	25	28	32	35	42	47	14
- Other	1	25	1	2	2	5	3	4	25
Systems Operations	20	19	23	28	34	41	48	56	20
- Platform Operations	4	16	5	6	6	7	8	9	12
- Application Operations	11	21	14	16	21	24	28	31	19
- Desktop Services	4	22	5	6	7	10	12	17	27
Processing Services	175	2	178	179	183	186	190	191	1
- Transaction Processing	154	1	155	156	159	162	164	164	1
- Utility Processing	6	-3	6	6	6	6	6	5	-3
- Other Processing	16	6	17	17	19	20	20	21	5
Network Services	81	11	90	102	116	131	150	170	14
- Electronic Info Svcs	62	9	68	75	83	91	100	109	10
- Network Applications	14	23	18	22	28	34	42	52	24
- Network Management	4	11	5	5	6	7	8	9	14
System Software	280	8	305	335	355	370	395	400	6
- Mainframe	114	-1	113	111	110	109	108	101	-2
- Minicomputer	95	9	103	112	122	133	144	150	8
- Workstation/PC	74	19	88	111	120	130	145	150	11
Application Software	200	14	230	290	325	350	395	415	12
- Mainframe	15	0	15	15	15	15	15	14	-1
- Minicomputer	59	9	64	71	78	86	94	98	9
- Workstation/PC	130	17	150	205	230	250	285	300	15
Turnkey Systems	375	10	411	452	492	535	586	612	8
- Equipment	179	8	193	208	221	236	253	258	6
- Application Software	79	16	91	105	121	139	159	175	14
- System Software	22	8	24	26	28	29	31	32	6
- Professional Services	96	9	104	113	122	131	142	147	7
Equipment Services	425	1	430	430	440	440	445	445	1
- Equipment Maintenance	265	-2	260	250	245	235	225	215	-4
- Environmental Services	160	6	170	180	195	205	220	230	6
Grand Total Information Service Market	1,950	7	2,050	2,250	2,400	2,550	2,700	2,800	6

C

Forecast Database in ECUs

Exhibit B-4

Software and Services Market Forecast in ECUs
Austria, 1995-2000

Delivery Modes	ECU Millions (rounded)								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	1,230	9	1,345	1,495	1,605	1,715	1,830	1,905	7
Professional Services	270	5	285	300	315	320	330	335	3
- IS Consulting	39	10	43	47	52	55	59	63	8
- Education & Training	32	4	34	35	36	37	39	40	3
- Custom Software	200	4	210	215	225	230	230	230	2
- Application Management	2	10	2	2	2	3	4	5	21
Systems Integration	41	15	47	52	59	67	76	86	13
- Equipment	11	8	12	13	13	14	15	15	5
- Application Software	9	16	10	12	14	15	19	24	18
- System Software	3	16	4	5	5	5	6	6	10
- Professional Services	17	16	20	23	26	29	34	38	14
- Other	1	25	1	1	2	4	2	3	25
Systems Operations	16	19	19	23	28	33	39	46	20
- Platform Operations	4	16	4	5	5	6	7	7	12
- Application Operations	9	21	11	13	17	20	23	26	19
- Desktop Services	3	22	4	5	6	8	10	13	27
Processing Services	143	2	145	146	149	152	155	155	1
- Transaction Processing	125	1	126	127	129	132	134	134	1
- Utility Processing	5	-3	5	5	5	5	5	5	-3
- Other Processing	13	6	14	14	15	16	17	17	5
Network Services	66	11	73	83	95	107	122	138	14
- Electronic Info Svcs	51	9	55	61	68	74	82	89	10
- Network Applications	12	23	14	18	23	28	35	42	24
- Network Management	4	11	4	4	5	5	6	7	14
System Software	230	8	245	270	285	300	320	325	6
- Mainframe	93	-1	92	91	90	89	88	82	-2
- Minicomputer	77	9	84	91	100	108	117	122	8
- Workstation/PC	60	19	71	91	98	106	118	122	11
Application Software	165	14	185	235	265	285	320	335	12
- Mainframe	13	0	13	13	13	13	13	12	-1
- Minicomputer	48	9	52	58	64	70	76	80	9
- Workstation/PC	105	17	123	167	189	202	231	245	15
Turnkey Systems	305	10	335	367	400	435	476	498	8
- Equipment	145	8	157	169	180	192	205	210	6
- Application Software	64	16	74	86	98	113	130	143	14
- System Software	18	8	19	21	22	24	25	26	6
- Professional Services	78	9	85	92	100	107	116	120	7
Equipment Services	345	1	350	350	360	360	360	360	1
- Equipment Maintenance	215	-2	210	205	200	190	185	175	-4
- Environmental Services	130	6	140	145	160	170	180	190	6
Grand Total Information Service Market	1,600	7	1,700	1,850	1,950	2,050	2,200	2,300	6

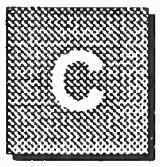
D

Information Services Forecast Reconciliation in Local Currency

Exhibit B-5

Forecast Reconciliation, Austria, 1994-1999

Currency: Sch Millions	1994 Market				1999 Market				1994 Report %CAGR	1995 Report %CAGR
Delivery Mode	1994 Report (Fcst)	1995 Report (Act)	1994-1995 Variance (Amount)	1994-1995 Variance (%)	1994 Report (Fcst)	1995 Report (Fcst)	1994-1995 Variance (Amount)	1994-1995 Variance (%)	(Fcst)	(Fcst)
Software and Services Total (ex Equipment Services)	16,500	16,500	0	0	23,000	24,500	1,500	7	7	8
Professional Services	3,650	3,650	0	0	4,250	4,400	150	4	3	4
- IS Consulting	520	520	0	0	760	790	30	4	8	9
- Education & Training	430	430	0	0	470	513	43	9	2	4
- Custom Software	2,700	2,700	0	0	2,950	3,050	100	3	2	2
- Application Management	19	20	1	5	57	45	-12	-21	25	18
Systems Integration	500	550	50	10	890	1,010	120	13	12	13
- Equipment	130	143	13	10	180	192	12	7	7	6
- Application Software	110	121	11	10	340	253	-87	-26	25	16
- System Software	39	43	4	10	68	81	13	19	12	14
- Professional Services	210	231	21	10	280	455	175	63	6	15
- Other	12	12	0	0	24	30	6	25	15	20
Systems Operations	210	210	0	0	495	520	25	5	19	20
- Platform Operations	46	45	-1	-2	82	85	3	4	12	14
- Application Operations	120	120	0	0	275	300	25	9	18	20
- Desktop Services	45	45	0	0	140	135	-5	-4	25	25
Processing Services	1,890	1,910	20	1	1,990	2,070	80	4	1	2
- Transaction Processing	1,660	1,675	15	1	1,730	1,790	60	3	1	1
- Utility Processing	68	68	0	0	58	59	1	2	-3	-3
- Other Processing	160	170	10	6	205	220	15	7	5	5
Network Services	875	875	0	0	1,625	1,630	5	0	13	13
- Electronic Info Svcs	675	675	0	0	1,085	1,090	5	0	10	10
- Network Applications	155	155	0	0	445	460	15	3	23	24
- Network Management	46	45	-1	-2	93	80	-13	-14	15	12
System Software	3,050	3,050	0	0	3,950	4,300	350	9	5	7
- Mainframe	1,240	1,240	0	0	1,110	1,170	60	5	-2	-1
- Minicomputer	1,020	1,030	10	1	1,490	1,570	80	5	8	9
- Workstation/PC	790	800	10	1	1,340	1,581	241	18	11	15
Application Software	2,200	2,200	0	0	3,850	4,300	450	12	12	14
- Mainframe	165	165	0	0	155	165	10	6	-1	0
- Minicomputer	640	640	0	0	980	1,020	40	4	9	10
- Workstation/PC	1,400	1,400	0	0	2,700	3,095	395	15	14	17
Turnkey Systems	4,060	4,080	20	0	6,000	6,380	380	6	8	9
- Equipment	1,940	1,945	5	0	2,595	2,750	155	6	6	7
- Application Software	850	855	5	1	1,640	1,735	95	6	14	15
- System Software	235	240	5	2	315	340	25	8	6	7
- Professional Services	1,030	1,040	10	1	1,450	1,550	100	7	7	8
Equipment Services	4,650	4,650	0	0	4,450	4,850	400	9	-1	1
- Equipment Maintenance	2,890	2,890	0	0	2,300	2,456	156	7	-4	-3
- Environmental Services	1,740	1,740	0	0	2,170	2,395	225	10	5	7
Grand Total	21,100	21,200	100	0	27,500	29,500	2,000	7	5	7



Information Services Industry Forecast Database, 1995-2000 Belgium

A

Forecast Database in Local Currency (BF Millions)

Exhibit C-1

Top Level IT Expenditure, Belgium

Sector	BF Millions								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR (%)
Total IT Spending	299,000	1	301,000	311,000	320,000	327,000	337,000	341,000	3
Equipment Sales	61,500	-2	60,400	61,400	62,600	63,200	63,500	63,600	1
Mainframe	13,200	-11	11,700	10,700	9,800	8,800	7,900	7,000	-10
Minicomputer	14,100	-3	13,700	13,800	13,900	13,800	13,600	13,300	-1
PC/Workstation	34,200	2	35,000	36,900	38,900	40,600	42,000	43,300	4
Equipment Services	20,100	-1	19,800	19,600	19,500	19,300	19,100	18,900	-1
Software Products	29,000	10	31,900	37,400	40,700	43,000	46,400	48,500	9
Other Information Services	54,000	5	56,800	60,100	64,600	69,100	74,400	79,300	7
Data Communications	23,000	4	24,000	25,500	27,100	28,900	30,700	31,900	6
Facilities/Administration	24,800	-2	24,200	24,000	23,900	23,700	23,600	22,900	-1
In-house Staff	87,000	-3	84,000	83,000	82,000	80,000	79,000	76,000	-2

Exhibit C-2

Information Services Market
Forecast by Delivery Mode and Submode
Belgium, 1995-2000

Delivery Modes	BF Millions								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	89,000	7	95,000	104,000	112,000	119,000	128,000	135,000	7
Professional Services	29,400	2	30,000	31,000	31,800	32,900	34,100	35,000	3
- IS Consulting	4,970	9	5,440	6,010	6,570	7,250	8,000	8,720	10
- Education & Training	2,420	2	2,468	2,542	2,619	2,697	2,805	2,917	3
- Custom Software	21,900	0	22,000	22,300	22,400	22,700	23,000	23,000	1
- Application Management	100	15	115	140	175	225	290	365	26
Systems Integration	4,200	12	4,700	5,200	5,900	6,650	7,750	8,950	14
- Equipment	966	12	1,081	1,200	1,297	1,399	1,468	1,517	7
- Application Software	924	12	1,034	1,148	1,356	1,532	1,932	2,499	19
- System Software	336	26	423	443	472	466	618	625	8
- Professional Services	1,722	15	1,974	2,243	2,594	2,864	3,477	3,927	15
- Other	252	-25	188	183	177	400	232	357	14
Systems Operations	3,190	16	3,710	4,290	5,040	5,970	7,050	8,430	18
- Platform Operations	1,000	15	1,150	1,300	1,500	1,650	1,850	2,050	12
- Application Operations	2,000	15	2,300	2,650	3,100	3,750	4,500	5,500	19
- Desktop Services	190	37	260	335	435	565	700	880	28
Processing Services	7,640	-2	7,470	7,400	7,450	7,440	7,510	7,340	0
- Transaction Processing	6,750	-3	6,550	6,450	6,450	6,400	6,400	6,200	-1
- Utility Processing	200	-3	195	190	185	180	180	175	-2
- Other Processing	690	4	720	760	810	860	925	960	6
Network Services	5,400	11	6,000	6,800	7,800	8,800	10,100	11,200	13
- Electronic Info Svcs	3,200	8	3,450	3,800	4,150	4,500	4,950	5,200	9
- Network Applications	2,000	18	2,350	2,850	3,400	4,050	4,850	5,600	19
- Network Management	150	10	165	180	210	240	290	360	17
System Software	14,300	6	15,100	16,300	16,900	17,500	18,500	18,800	4
- Mainframe	6,400	-1	6,350	6,300	6,250	6,200	6,200	6,000	-1
- Minicomputer	4,700	6	5,000	5,300	5,650	6,000	6,400	6,650	6
- Workstation/PC	3,150	19	3,750	4,650	4,950	5,300	5,850	6,100	10
Application Software	14,700	14	16,800	21,100	23,800	25,500	27,900	29,700	12
- Mainframe	1,050	0	1,050	1,050	1,050	1,050	1,050	1,000	-1
- Minicomputer	4,250	11	4,700	5,200	5,750	6,350	7,000	7,550	10
- Workstation/PC	9,400	18	11,075	14,805	16,960	18,130	19,845	21,145	14
Turnkey Systems	10,650	8	11,460	12,220	13,020	13,890	14,910	15,590	6
- Equipment	5,000	4	5,200	5,300	5,400	5,500	5,700	5,700	2
- Application Software	2,350	13	2,650	2,950	3,300	3,700	4,100	4,450	11
- System Software	475	5	500	530	555	580	605	615	4
- Professional Services	2,820	10	3,110	3,440	3,760	4,110	4,500	4,820	9
Equipment Services	20,100	-1	19,800	19,600	19,500	19,300	19,100	18,900	-1
- Equipment Maintenance	13,300	-5	12,672	12,165	11,679	11,211	10,651	10,118	-4
- Environmental Services	6,800	4	7,088	7,442	7,814	8,127	8,452	8,790	4
Grand Total Information Service Market	110,000	5	115,000	124,000	131,000	138,000	147,000	154,000	6

B

Forecast Database in U.S. Dollars

Exhibit C-3

Software and Services Market Forecast in Dollars
Belgium, 1995-2000

Delivery Modes	U.S. $ Million (rounded)								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	2,800	7	2,985	3,270	3,520	3,740	4,025	4,245	7
Professional Services	925	2	945	975	1,000	1,035	1,070	1,100	3
- IS Consulting	157	9	171	189	207	228	252	274	10
- Education & Training	76	2	78	80	83	85	88	92	3
- Custom Software	690	0	690	700	705	715	725	725	1
- Application Management	3	15	4	4	6	7	9	12	26
Systems Integration	132	12	148	164	186	209	244	282	14
- Equipment	31	12	34	38	41	44	46	48	7
- Application Software	29	12	33	36	43	48	61	79	19
- System Software	11	26	13	14	15	15	19	20	8
- Professional Services	54	15	62	71	82	90	110	124	15
- Other	8	-25	6	6	6	13	7	11	14
Systems Operations	101	16	117	135	159	188	222	265	18
- Platform Operations	32	15	36	41	47	52	58	65	12
- Application Operations	63	15	73	84	98	118	142	173	19
- Desktop Services	6	37	8	11	14	18	22	28	28
Processing Services	241	-2	235	233	235	234	236	231	0
- Transaction Processing	213	-3	206	203	203	202	202	195	-1
- Utility Processing	7	-3	6	6	6	6	6	6	-2
- Other Processing	22	4	23	24	26	27	29	30	6
Network Services	170	11	189	214	246	277	318	352	13
- Electronic Info Svcs	101	8	109	120	131	142	156	164	9
- Network Applications	63	18	74	90	107	128	153	176	19
- Network Management	5	10	5	6	7	8	9	12	17
System Software	450	6	475	515	530	550	580	590	4
- Mainframe	202	-1	200	198	197	195	195	189	-1
- Minicomputer	148	6	157	167	178	189	202	209	6
- Workstation/PC	99	19	118	146	156	167	184	192	10
Application Software	460	14	530	665	750	800	875	935	12
- Mainframe	33	0	33	33	33	33	33	32	-1
- Minicomputer	134	11	148	164	181	200	220	238	10
- Workstation/PC	295	18	350	465	535	570	625	665	14
Turnkey Systems	335	8	361	385	410	437	469	491	6
- Equipment	157	4	164	167	170	173	179	179	2
- Application Software	74	13	84	93	104	117	129	140	11
- System Software	15	5	16	17	17	18	19	19	4
- Professional Services	89	10	98	108	118	129	142	152	9
Equipment Services	630	-1	625	615	615	605	600	595	-1
- Equipment Maintenance	420	-5	400	385	365	355	335	320	-4
- Environmental Services	215	4	225	235	245	255	265	275	4
Grand Total Information Service Market	3,450	5	3,600	3,900	4,100	4,350	4,600	4,850	6

C

Forecast Database in ECUs

Exhibit C-4

Software and Services Market Forecast in ECUs
Belgium, 1995-2000

Delivery Modes	ECU Millions (rounded)								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	2,280	7	2,435	2,665	2,870	3,050	3,280	3,460	7
Professional Services	755	2	770	795	815	845	875	895	3
- IS Consulting	128	9	140	154	169	186	205	224	10
- Education & Training	62	2	64	65	67	69	72	75	3
- Custom Software	560	0	565	570	575	580	590	590	1
- Application Management	3	15	3	4	5	6	8	10	26
Systems Integration	108	12	121	134	152	171	199	230	14
- Equipment	25	12	28	31	34	36	38	39	7
- Application Software	24	12	27	29	35	39	50	64	19
- System Software	9	26	11	11	12	12	16	16	8
- Professional Services	44	15	51	58	67	74	89	101	15
- Other	6	-25	5	5	5	10	6	9	14
Systems Operations	82	16	95	110	129	153	181	216	18
- Platform Operations	26	15	30	34	39	43	48	53	12
- Application Operations	52	15	59	68	80	96	116	141	19
- Desktop Services	5	37	7	9	11	15	18	23	28
Processing Services	196	-2	192	190	191	191	193	188	0
- Transaction Processing	173	-3	168	166	166	164	164	159	-1
- Utility Processing	5	-3	5	5	5	5	5	5	-2
- Other Processing	18	4	19	20	21	22	24	25	6
Network Services	139	11	154	175	200	226	259	287	13
- Electronic Info Svcs	82	8	89	98	107	116	127	134	9
- Network Applications	52	18	61	73	87	104	125	144	19
- Network Management	4	10	4	5	6	6	8	9	17
System Software	365	6	385	420	435	450	475	480	4
- Mainframe	164	-1	163	162	161	159	159	154	-1
- Minicomputer	121	6	128	136	145	154	164	171	6
- Workstation/PC	81	19	96	119	127	136	150	157	10
Application Software	375	14	430	540	610	655	715	760	12
- Mainframe	27	0	27	27	27	27	27	26	-1
- Minicomputer	109	11	121	134	148	163	180	194	10
- Workstation/PC	241	18	284	380	435	465	509	542	14
Turnkey Systems	273	8	294	314	334	356	383	400	6
- Equipment	128	4	134	136	139	141	146	146	2
- Application Software	61	13	68	76	85	95	105	114	11
- System Software	12	5	13	14	14	15	16	16	4
- Professional Services	73	10	80	88	97	106	116	124	9
Equipment Services	515	-1	510	505	500	495	490	485	-1
- Equipment Maintenance	340	-5	325	310	300	285	275	260	-4
- Environmental Services	175	4	180	190	200	210	215	225	4
Grand Total Information Service Market	2,800	5	2,950	3,200	3,350	3,550	3,750	3,950	6

D

Information Services Forecast Reconciliation in Local Currency

Exhibit C-5

Forecast Reconciliation, Belgium, 1994-1999

Currency: BF Millions	1994 Market				1999 Market				1994	1995
Delivery Mode	1994 Report (Fcst)	1995 Report (Act)	1994-1995 Variance (Amount)	1994-1995 Variance (%)	1994 Report (Fcst)	1995 Report (Fcst)	1994-1995 Variance (Amount)	1994-1995 Variance (%)	Report %CAGR (Fcst)	Report %CAGR (Fcst)
Software and Services Total (ex Equipment Services)	88,000	86,000	-2,000	-2	137,000	118,000	-19,000	-14	9	7
Professional Services	29,900	28,800	-1,100	-4	42,600	32,800	-9,800	-23	7	3
- IS Consulting	4,540	4,540	0	0	7,880	7,250	-630	-8	12	10
- Education & Training	2,390	2,390	0	0	2,870	2,620	-250	-9	4	2
- Custom Software	22,900	21,800	-1,100	-5	31,600	22,700	-8,900	-28	7	1
- Application Management	80	80	0	0	250	250	0	0	26	26
Systems Integration	5,000	4,750	-250	-5	10,000	8,150	-1,850	-19	15	11
- Equipment	1,350	1,300	-50	-4	2,100	1,900	-200	-10	9	8
- Application Software	900	850	-50	-6	3,600	2,700	-900	-25	32	26
- System Software	400	370	-30	-8	700	510	-190	-27	12	7
- Professional Services	2,250	2,150	-100	-4	3,300	2,830	-470	-14	8	6
- Other	100	90	-10	-10	310	190	-120	-39	25	16
Systems Operations	2,690	2,690	0	0	5,900	6,590	690	12	17	20
- Platform Operations	1,700	900	-800	-47	3,600	1,650	-1,950	-54	16	13
- Application Operations	950	1,650	700	74	2,150	4,400	2,250	105	18	22
- Desktop Services	40	140	100	250	150	535	385	257	30	31
Processing Services	7,860	7,820	-40	-1	8,310	7,610	-700	-8	1	-1
- Transaction Processing	6,990	6,950	-40	-1	7,230	6,550	-680	-9	1	-1
- Utility Processing	208	208	0	0	205	185	-20	-10	0	-2
- Other Processing	660	660	0	0	870	875	5	1	6	6
Network Services	4,800	4,800	0	0	9,000	8,900	-100	-1	13	13
- Electronic Info Svcs	2,860	2,950	90	3	4,100	4,550	450	11	7	9
- Network Applications	1,790	1,700	-90	-5	4,550	4,050	-500	-11	21	19
- Network Management	135	130	-5	-4	355	300	-55	-15	21	18
System Software	14,000	13,700	-300	-2	19,100	16,700	-2,400	-13	6	4
- Mainframe	6,590	6,450	-140	-2	6,810	6,200	-610	-9	1	-1
- Minicomputer	4,410	4,410	0	0	6,690	5,900	-790	-12	9	6
- Workstation/PC	2,970	2,850	-120	-4	5,640	4,600	-1,040	-18	14	10
Application Software	13,700	13,200	-500	-4	26,700	23,400	-3,300	-12	14	12
- Mainframe	1,060	1,050	-10	-1	990	1,050	60	6	-1	0
- Minicomputer	3,940	3,850	-90	-2	6,250	6,300	50	1	10	10
- Workstation/PC	8,650	8,250	-400	-5	19,500	16,000	-3,500	-18	18	14
Turnkey Systems	10,000	9,900	-100	-1	15,700	13,660	-2,040	-13	9	7
- Equipment	4,800	4,800	0	0	6,100	5,400	-700	-11	5	2
- Application Software	2,330	2,100	-230	-10	4,460	3,650	-810	-18	14	12
- System Software	270	450	180	67	365	565	200	55	6	5
- Professional Services	2,600	2,550	-50	-2	4,770	4,040	-730	-15	13	10
Equipment Services	21,000	20,000	-1,000	-5	24,500	19,100	-5,400	-22	3	-1
- Equipment Maintenance	14,650	13,600	-1,050	-7	16,500	11,000	-5,500	-33	2	-4
- Environmental Services	6,340	6,350	10	0	7,980	8,050	70	1	5	5
Grand Total	109,000	106,000	-3,000	-3	162,000	137,000	-25,000	-15	8	5

D

Information Services Industry Forecast Database, 1995-2000 Denmark

A

Forecast Database in Local Currency (DK Millions)

Exhibit D-1

Top Level IT Expenditure, Denmark

Sector	DK Millions								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR (%)
Total IT Spending	43,000	1	43,500	45,000	46,000	47,500	48,000	48,500	2
Equipment Sales	8,700	1	8,800	9,100	9,400	9,400	9,200	9,300	1
Mainframe	1,800	-11	1,600	1,500	1,400	1,200	1,000	900	-11
Minicomputer	2,200	0	2,200	2,300	2,300	2,300	2,200	2,200	0
PC/Workstation	4,700	6	5,000	5,300	5,700	5,900	6,000	6,200	4
Equipment Services	3,070	2	3,120	3,170	3,210	3,230	3,250	3,260	1
Software Products	2,880	28	3,700	4,350	4,700	5,000	5,350	5,600	9
Other Information Services	8,900	-1	8,800	9,200	9,800	10,400	11,100	11,700	6
Data Communications	3,000	8	3,250	3,500	3,750	4,050	4,250	4,450	6
Facilities/Administration	3,200	0	3,200	3,300	3,300	3,300	3,300	3,200	0
In-house Staff	13,000	-4	12,500	12,500	12,000	12,000	11,500	11,000	-3

Exhibit D-2

Information Services Market
Forecast by Delivery Mode and Submode
Denmark, 1995-2000

Delivery Modes	DK Millions								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	12,800	6	13,600	14,700	15,700	16,600	17,600	18,500	6
Professional Services	3,050	7	3,250	3,450	3,700	3,950	4,200	4,500	7
- IS Consulting	570	11	630	700	780	870	970	1,070	11
- Education & Training	270	5	284	301	319	334	351	369	5
- Custom Software	2,200	5	2,300	2,400	2,550	2,700	2,850	3,000	5
- Application Management	25	20	30	30	35	42	52	70	18
Systems Integration	305	8	330	365	415	470	540	610	13
- Equipment	70	4	73	77	83	85	87	103	7
- Application Software	49	14	56	62	79	108	141	170	25
- System Software	24	8	26	31	29	33	38	43	11
- Professional Services	143	6	152	172	200	221	260	268	12
- Other	18	28	23	24	25	24	16	24	1
Systems Operations	230	17	270	320	380	450	520	610	18
- Platform Operations	60	17	70	80	90	100	110	125	12
- Application Operations	110	14	125	145	165	195	230	265	16
- Desktop Services	55	27	70	95	120	150	180	220	26
Processing Services	2,960	-1	2,940	2,910	2,880	2,830	2,770	2,690	-2
- Transaction Processing	2,700	-1	2,670	2,640	2,600	2,550	2,480	2,400	-2
- Utility Processing	53	-2	52	51	50	48	46	44	-3
- Other Processing	205	5	215	220	230	235	240	245	3
Network Services	670	13	760	880	1,010	1,150	1,280	1,430	13
- Electronic Info Svcs	390	8	420	470	520	560	600	630	8
- Network Applications	260	19	310	380	460	550	640	750	19
- Network Management	23	9	25	28	30	35	40	50	15
System Software	1,800	8	1,950	2,150	2,250	2,350	2,450	2,500	5
- Mainframe	680	1	690	680	680	670	660	640	-1
- Minicomputer	630	8	680	730	780	830	860	890	6
- Workstation/PC	480	21	580	735	795	845	940	985	11
Application Software	1,600	9	1,750	2,200	2,450	2,650	2,900	3,100	12
- Mainframe	87	-5	83	82	81	79	76	73	-3
- Minicomputer	470	5	495	540	590	635	675	710	7
- Workstation/PC	1,020	15	1,170	1,580	1,800	1,930	2,160	2,300	14
Turnkey Systems	2,170	6	2,310	2,460	2,630	2,790	2,920	3,030	6
- Equipment	1,000	3	1,030	1,055	1,085	1,105	1,110	1,105	1
- Application Software	420	10	460	505	555	605	650	690	8
- System Software	135	6	143	151	160	168	174	178	4
- Professional Services	610	11	680	750	830	910	990	1,060	9
Equipment Services	3,070	2	3,120	3,170	3,210	3,230	3,250	3,260	1
- Equipment Maintenance	1,765	-3	1,712	1,644	1,578	1,499	1,424	1,339	-5
- Environmental Services	1,305	8	1,409	1,522	1,629	1,726	1,830	1,922	6
Grand Total Information Service Market	16,000	6	17,000	18,000	19,000	20,000	21,000	22,000	5

B

Forecast Database in U.S. Dollars

Exhibit D-3

Software and Services Market Forecast in Dollars
Denmark, 1995-2000

Delivery Modes	U.S. $ Million (rounded)								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	2,105	6	2,235	2,420	2,580	2,730	2,895	3,045	6
Professional Services	500	7	535	565	610	650	690	740	7
- IS Consulting	94	11	104	115	129	143	160	176	11
- Education & Training	45	5	47	50	53	55	58	61	5
- Custom Software	360	5	380	395	420	445	470	495	5
- Application Management	4	20	5	5	6	7	9	12	18
Systems Integration	50	8	55	60	69	78	89	101	13
- Equipment	12	4	12	13	14	14	15	17	7
- Application Software	8	14	9	10	13	18	23	28	25
- System Software	4	8	4	5	5	5	6	7	11
- Professional Services	24	6	25	29	33	37	43	44	12
- Other	3	28	4	4	4	4	3	4	1
Systems Operations	38	17	45	53	63	74	86	101	18
- Platform Operations	10	17	12	13	15	17	18	21	12
- Application Operations	18	14	21	24	27	32	38	44	16
- Desktop Services	9	27	12	16	20	25	30	36	26
Processing Services	487	-1	484	479	474	466	456	443	-2
- Transaction Processing	444	-1	439	434	428	420	408	395	-2
- Utility Processing	9	-2	9	9	8	8	8	7	-3
- Other Processing	34	5	36	36	38	39	40	41	3
Network Services	110	13	125	145	166	189	211	235	13
- Electronic Info Svcs	64	8	69	78	86	92	99	104	8
- Network Applications	43	19	51	63	76	91	106	124	19
- Network Management	4	9	4	5	5	6	7	8	15
System Software	295	8	320	355	370	385	405	410	5
- Mainframe	112	1	114	112	112	110	109	106	-1
- Minicomputer	104	8	112	120	129	137	142	147	6
- Workstation/PC	79	21	96	121	131	139	155	162	11
Application Software	265	9	290	360	405	435	475	510	12
- Mainframe	15	-5	14	14	14	13	13	12	-3
- Minicomputer	78	5	82	89	97	105	111	117	7
- Workstation/PC	170	15	190	260	295	315	355	380	14
Turnkey Systems	357	6	380	405	433	459	481	499	6
- Equipment	165	3	170	174	179	182	183	182	1
- Application Software	69	10	76	83	92	100	107	114	8
- System Software	22	6	24	25	26	28	29	29	4
- Professional Services	101	11	112	124	137	150	163	175	9
Equipment Services	505	2	515	520	530	530	535	535	1
- Equipment Maintenance	290	-3	280	270	260	245	235	220	-5
- Environmental Services	215	8	230	250	270	285	300	315	6
Grand Total Information Service Market	2,650	6	2,800	2,950	3,150	3,300	3,450	3,600	5

C

Forecast Database in ECUs

Exhibit D-4

Software and Services Market Forecast in ECUs
Denmark, 1995-2000

Delivery Modes	ECU Millions (rounded)								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	1,715	6	1,825	1,970	2,105	2,225	2,360	2,480	6
Professional Services	410	7	435	460	495	530	565	605	7
- IS Consulting	77	11	85	94	105	117	130	144	11
- Education & Training	36	5	38	41	43	45	47	50	5
- Custom Software	295	5	310	320	340	360	380	400	5
- Application Management	4	20	4	4	5	6	7	10	18
Systems Integration	41	8	44	49	56	63	73	82	13
- Equipment	10	4	10	11	11	12	12	14	7
- Application Software	7	14	8	8	11	15	19	23	25
- System Software	3	8	4	4	4	4	5	6	11
- Professional Services	19	6	21	23	27	30	35	36	12
- Other	2	28	3	3	3	3	2	3	1
Systems Operations	31	17	36	43	51	61	70	82	18
- Platform Operations	8	17	10	11	12	14	15	17	12
- Application Operations	15	14	17	20	22	26	31	36	16
- Desktop Services	7	27	9	13	16	20	24	30	26
Processing Services	397	-1	394	390	386	380	371	361	-2
- Transaction Processing	362	-1	358	354	349	342	333	322	-2
- Utility Processing	7	-2	7	7	7	7	6	6	-3
- Other Processing	28	5	29	30	31	32	32	33	3
Network Services	90	13	102	118	136	154	172	192	13
- Electronic Info Svcs	53	8	57	63	70	75	81	85	8
- Network Applications	35	19	42	51	62	74	86	101	19
- Network Management	3	9	4	4	4	5	6	7	15
System Software	240	8	260	290	300	315	330	335	5
- Mainframe	91	1	93	91	91	90	89	86	-1
- Minicomputer	85	8	91	98	105	112	116	120	6
- Workstation/PC	65	21	78	99	107	114	126	132	11
Application Software	215	9	235	295	330	355	390	415	12
- Mainframe	12	-5	11	11	11	11	10	10	-3
- Minicomputer	63	5	67	73	79	85	91	95	7
- Workstation/PC	137	15	157	212	242	259	290	309	14
Turnkey Systems	291	6	310	330	353	374	392	406	6
- Equipment	134	3	138	142	146	148	149	148	1
- Application Software	57	10	62	68	75	81	87	93	8
- System Software	18	6	19	20	21	23	23	24	4
- Professional Services	82	11	91	101	112	122	133	142	9
Equipment Services	410	2	420	425	430	435	435	435	1
- Equipment Maintenance	235	-3	230	220	210	200	190	180	-5
- Environmental Services	175	8	190	205	220	230	245	260	6
Grand Total Information Service Market	2,150	6	2,300	2,400	2,550	2,700	2,800	2,950	5

D

Information Services Forecast Reconciliation in Local Currency

Exhibit D-5

Forecast Reconciliation, Denmark, 1994-1999

Currency: DK Millions	1994 Market				1999 Market				1994 Report %CAGR	1995 Report %CAGR
Delivery Mode	1994 Report (Fcst)	1995 Report (Act)	1994-1995 Variance (Amount)	1994-1995 Variance (%)	1994 Report (Fcst)	1995 Report (Fcst)	1994-1995 Variance (Amount)	1994-1995 Variance (%)	(Fcst)	(Fcst)
Software and Services Total (ex Equipment Services)	12,600	12,300	-300	-2	17,700	15,900	-1,800	-10	7	5
Professional Services	3,100	2,950	-150	-5	4,250	3,850	-400	-9	7	5
- IS Consulting	520	520	0	0	850	860	10	1	10	11
- Education & Training	260	260	0	0	350	320	-30	-9	6	4
- Custom Software	2,300	2,150	-150	-7	3,000	2,600	-400	-13	5	4
- Application Management	20	20	0	0	60	66	6	10	25	27
Systems Integration	390	385	-5	-1	970	635	-335	-35	20	11
- Equipment	105	100	-5	-5	205	145	-60	-29	14	8
- Application Software	70	70	0	0	350	190	-160	-46	38	22
- System Software	30	30	0	0	65	50	-15	-23	17	11
- Professional Services	175	175	0	0	320	235	-85	-27	13	6
- Other	10	10	0	0	29	15	-14	-48	24	8
Systems Operations	180	180	0	0	430	470	40	9	19	21
- Platform Operations	65	50	-15	-23	145	95	-50	-34	17	14
- Application Operations	75	90	15	20	180	240	60	33	19	22
- Desktop Services	40	40	0	0	100	130	30	30	20	27
Processing Services	3,010	3,010	0	0	2,750	2,720	-30	-1	-2	-2
- Transaction Processing	2,750	2,750	0	0	2,480	2,440	-40	-2	-2	-2
- Utility Processing	55	55	0	0	45	46	1	2	-4	-4
- Other Processing	200	200	0	0	220	230	10	5	2	3
Network Services	620	610	-10	-2	1,350	1,080	-270	-20	17	12
- Electronic Info Svcs	365	365	0	0	500	530	30	6	6	8
- Network Applications	235	220	-15	-6	790	510	-280	-35	27	18
- Network Management	19	20	1	5	60	44	-16	-27	26	17
System Software	1,750	1,700	-50	-3	2,400	2,100	-300	-13	7	4
- Mainframe	710	680	-30	-4	710	630	-80	-11	0	-2
- Minicomputer	600	590	-10	-2	750	770	20	3	5	5
- Workstation/PC	450	425	-25	-6	950	710	-240	-25	16	11
Application Software	1,500	1,450	-50	-3	2,750	2,400	-350	-13	13	11
- Mainframe	92	92	0	0	78	78	0	0	-3	-3
- Minicomputer	445	445	0	0	620	620	0	0	7	7
- Workstation/PC	950	920	-30	-3	2,050	1,680	-370	-18	17	13
Turnkey Systems	2,050	2,040	-10	0	2,770	2,650	-120	-4	6	5
- Equipment	980	980	0	0	1,075	1,050	-25	-2	2	1
- Application Software	395	385	-10	-3	660	575	-85	-13	11	8
- System Software	128	128	0	0	160	158	-2	-1	5	4
- Professional Services	550	550	0	0	870	870	0	0	10	10
Equipment Services	3,080	3,000	-80	-3	3,340	3,120	-220	-7	2	1
- Equipment Maintenance	1,875	1,800	-75	-4	1,750	1,470	-280	-16	-1	-4
- Environmental Services	1,200	1,200	0	0	1,590	1,650	60	4	6	7
Grand Total	16,000	15,000	-1,000	-6	21,000	19,000	-2,000	-10	6	5

E

Information Services Industry Forecast Database, 1995-2000 Central and Eastern Europe

A

Forecast Database in Local Currency (US$ Millions)

Exhibit E-1

Top Level IT Expenditure, Central and Eastern Europe

Sector	US$ Millions								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR (%)
Total IT Spending	2,350	11	2,600	2,950	3,350	3,800	4,300	4,900	14
Equipment Sales	579	12	646	730	826	929	1,038	1,182	13
Mainframe	59	-2	58	58	58	57	56	56	-1
Minicomputer	106	6	112	120	128	136	143	153	6
PC/Workstation	414	15	476	552	640	736	839	973	15
Equipment Services	245	10	270	300	335	385	435	495	13
Software Products	161	20	194	249	292	335	398	462	19
Other Information Services	450	16	520	610	740	890	1,070	1,270	20
Data Communications	110	14	125	145	165	195	225	260	16
Facilities/Administration	140	4	145	145	150	155	160	165	3
In-house Staff	660	8	710	760	820	890	980	1,070	9

Exhibit E-2

Information Services Market
Forecast by Delivery Mode and Submode
Central and Eastern Europe, 1995-2000

Delivery Modes	US$ Millions								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	715	16	830	990	1,175	1,385	1,655	1,955	19
Professional Services	71	14	81	93	107	125	144	165	15
- IS Consulting	2	0	2	2	2	2	2	2	0
- Education & Training	41	15	47	55	64	76	89	105	17
- Custom Software	28	14	32	36	41	47	53	58	13
- Application Management	0	0	0	0	0	0	0	0	0
Systems Integration	410	12	460	530	625	735	865	1,010	17
- Equipment	94	7	101	111	119	125	147	172	11
- Application Software	57	30	74	90	125	162	207	262	29
- System Software	33	-3	32	37	44	52	52	71	17
- Professional Services	193	12	216	249	294	346	405	444	16
- Other	33	12	37	42	44	52	52	61	11
Systems Operations	20	35	27	32	42	50	60	72	22
- Platform Operations	9	33	12	15	20	25	28	35	24
- Application Operations	8	38	11	12	15	15	20	22	15
- Desktop Services	3	33	4	5	7	10	12	15	30
Processing Services	20	25	25	29	36	45	59	79	26
- Transaction Processing	10	20	12	13	15	17	20	24	15
- Utility Processing	6	17	7	7	8	8	9	10	7
- Other Processing	4	50	6	9	13	20	30	45	49
Network Services	8	13	9	13	19	27	39	57	45
- Electronic Info Svcs	1	0	1	1	2	2	3	3	43
- Network Applications	4	50	6	9	14	21	31	47	51
- Network Management	3	-7	3	3	4	4	5	7	20
System Software	67	21	81	101	119	141	170	202	20
- Mainframe	15	0	15	15	15	15	16	16	1
- Minicomputer	21	19	25	29	35	42	50	60	19
- Workstation/PC	31	32	41	57	69	84	104	126	25
Application Software	94	20	113	148	173	194	228	260	18
- Mainframe	10	0	10	11	11	11	11	11	2
- Minicomputer	30	17	35	41	47	54	62	71	15
- Workstation/PC	54	26	68	96	115	129	155	178	21
Turnkey Systems	27	22	33	43	54	69	88	111	27
- Equipment	13	23	16	20	25	31	39	48	25
- Application Software	5	20	6	8	10	13	17	22	30
- System Software	1	0	1	2	2	3	3	4	32
- Professional Services	8	25	10	13	17	22	29	37	30
Equipment Services	245	10	270	300	335	385	435	495	13
- Equipment Maintenance	195	9	213	232	255	283	308	333	9
- Environmental Services	48	19	57	68	82	101	127	163	23
Grand Total Information Service Market	960	15	1,100	1,290	1,510	1,770	2,090	2,450	17

B

Forecast Database in U.S. Dollars

Exhibit E-3

Software and Services Market Forecast in Dollars
Central and Eastern Europe, 1995-2000

Delivery Modes	U.S. $ Million (rounded)								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	715	16	830	990	1,175	1,385	1,655	1,955	19
Professional Services	71	14	81	93	107	125	144	165	15
- IS Consulting	2	0	2	2	2	2	2	2	0
- Education & Training	41	15	47	55	64	76	89	105	17
- Custom Software	28	14	32	36	41	47	53	58	13
- Application Management	0	0	0	0	0	0	0	0	0
Systems Integration	410	12	460	530	625	735	865	1,010	17
- Equipment	94	7	101	111	119	125	147	172	11
- Application Software	57	30	74	90	125	162	207	262	29
- System Software	33	-3	32	37	44	52	52	71	17
- Professional Services	193	12	216	249	294	346	405	444	16
- Other	33	12	37	42	44	52	52	61	11
Systems Operations	20	35	27	32	42	50	60	72	22
- Platform Operations	9	33	12	15	20	25	28	35	24
- Application Operations	8	38	11	12	15	15	20	22	15
- Desktop Services	3	33	4	5	7	10	12	15	30
Processing Services	20	25	25	29	36	45	59	79	26
- Transaction Processing	10	20	12	13	15	17	20	24	15
- Utility Processing	6	17	7	7	8	8	9	10	7
- Other Processing	4	50	6	9	13	20	30	45	49
Network Services	8	13	9	13	19	27	39	57	45
- Electronic Info Svcs	1	0	1	1	2	2	3	3	43
- Network Applications	4	50	6	9	14	21	31	47	51
- Network Management	3	-7	3	3	4	4	5	7	20
System Software	67	21	81	101	119	141	170	202	20
- Mainframe	15	0	15	15	15	15	16	16	1
- Minicomputer	21	19	25	29	35	42	50	60	19
- Workstation/PC	31	32	41	57	69	84	104	126	25
Application Software	94	20	113	148	173	194	228	260	18
- Mainframe	10	0	10	11	11	11	11	11	2
- Minicomputer	30	17	35	41	47	54	62	71	15
- Workstation/PC	54	26	68	96	115	129	155	178	21
Turnkey Systems	27	22	33	43	54	69	88	111	27
- Equipment	13	23	16	20	25	31	39	48	25
- Application Software	5	20	6	8	10	13	17	22	30
- System Software	1	0	1	2	2	3	3	4	32
- Professional Services	8	25	10	13	17	22	29	37	30
Equipment Services	245	10	270	300	335	385	435	495	13
- Equipment Maintenance	195	9	213	232	255	283	308	333	9
- Environmental Services	48	19	57	68	82	101	127	163	23
Grand Total Information Service Market	960	15	1,100	1,290	1,510	1,770	2,090	2,450	17

C

Forecast Database in ECUs

Exhibit E-4

Software and Services Market Forecast in ECUs
Central and Eastern Europe, 1995-2000

Delivery Modes	ECU Millions (rounded)								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	877	16	1,018	1,215	1,442	1,699	2,031	2,399	19
Professional Services	87	14	99	114	131	153	177	202	15
- IS Consulting	3	0	3	3	3	3	3	3	0
- Education & Training	50	15	58	68	79	93	109	129	17
- Custom Software	34	14	39	44	50	58	65	71	13
- Application Management	0	0	0	0	0	0	0	0	0
Systems Integration	503	12	564	650	767	902	1,061	1,239	17
- Equipment	115	7	124	136	146	153	180	211	11
- Application Software	70	30	91	110	153	199	254	321	29
- System Software	40	-3	39	45	54	64	64	87	17
- Professional Services	237	12	265	306	361	425	497	545	16
- Other	40	12	45	52	54	64	64	75	11
Systems Operations	25	35	33	39	52	61	74	88	22
- Platform Operations	11	33	15	18	25	31	34	43	24
- Application Operations	10	38	14	15	18	18	25	27	15
- Desktop Services	4	33	5	6	9	12	15	18	30
Processing Services	25	25	31	36	44	55	72	96	26
- Transaction Processing	12	20	15	16	18	21	25	29	15
- Utility Processing	7	17	9	9	10	10	11	12	7
- Other Processing	5	50	7	11	16	24	36	55	49
Network Services	10	13	11	16	23	33	48	70	45
- Electronic Info Svcs	1	0	1	1	2	3	3	4	43
- Network Applications	5	50	7	11	17	25	38	57	51
- Network Management	4	-7	3	4	5	5	6	9	20
System Software	82	21	99	124	146	173	209	248	20
- Mainframe	18	0	18	18	18	18	20	20	1
- Minicomputer	26	19	31	36	43	52	61	74	19
- Workstation/PC	38	32	50	70	85	103	128	155	25
Application Software	115	20	139	182	212	238	280	319	18
- Mainframe	12	0	12	14	14	14	14	14	2
- Minicomputer	37	17	43	50	58	66	76	87	15
- Workstation/PC	66	26	83	118	141	158	190	218	21
Turnkey Systems	33	22	41	53	66	85	108	136	27
- Equipment	16	23	20	25	31	38	48	59	25
- Application Software	6	20	7	10	12	16	21	27	30
- System Software	1	0	1	2	2	4	4	5	32
- Professional Services	10	25	12	16	21	27	36	45	30
Equipment Services	301	10	331	368	411	472	534	607	13
- Equipment Maintenance	239	9	261	285	313	347	378	409	9
- Environmental Services	59	19	70	83	101	124	156	200	23
Grand Total Information Service Market	1,180	15	1,350	1,580	1,850	2,170	2,560	3,010	17

D

Information Services Forecast Reconciliation in Local Currency

Exhibit E-5

Forecast Reconciliation, Central and Eastern Europe, 1994-1999

Currency: US$ Millions	1994 Market				1999 Market				1994	1995
Delivery Mode	1994 Report (Fcst)	1995 Report (Act)	1994-1995 Variance (Amount)	1994-1995 Variance (%)	1994 Report (Fcst)	1995 Report (Fcst)	1994-1995 Variance (Amount)	1994-1995 Variance (%)	Report %CAGR (Fcst)	Report %CAGR (Fcst)
Software and Services Total (ex Equipment Services)	695	715	20	3	1,690	1,655	-35	-2	19	18
Professional Services	71	71	0	0	127	144	17	13	12	15
- IS Consulting	2	2	0	0	2	2	0	0	0	0
- Education & Training	41	41	0	0	75	89	14	19	13	17
- Custom Software	28	28	0	0	50	53	3	6	12	14
- Application Management	0	0	0	0	0	0	0	-100	0	-100
Systems Integration	390	410	20	5	920	865	-55	-6	19	16
- Equipment	105	94	-11	-10	205	147	-58	-28	14	9
- Application Software	80	57	-23	-29	325	207	-118	-36	32	29
- System Software	30	33	3	10	65	52	-13	-20	17	10
- Professional Services	170	193	23	14	295	405	110	37	12	16
- Other	7	33	26	371	29	52	23	79	33	10
Systems Operations	20	20	0	0	81	60	-21	-26	32	25
- Platform Operations	9	9	0	0	26	28	2	8	24	25
- Application Operations	8	8	0	0	40	20	-20	-50	38	20
- Desktop Services	3	3	0	0	15	12	-3	-20	38	32
Processing Services	20	20	0	0	58	59	1	2	24	24
- Transaction Processing	10	10	0	0	21	20	-1	-5	16	15
- Utility Processing	6	6	0	0	9	9	0	0	8	8
- Other Processing	4	4	0	0	28	30	2	7	47	49
Network Services	7	8	1	14	41	39	-2	-5	42	37
- Electronic Info Svcs	1	1	0	0	3	3	-1	-17	43	38
- Network Applications	4	4	0	0	30	31	2	5	49	51
- Network Management	3	3	0	7	8	5	-3	-38	23	11
System Software	67	67	0	0	162	170	8	5	19	20
- Mainframe	15	15	0	0	16	16	0	0	1	1
- Minicomputer	21	21	0	0	52	50	-2	-4	20	19
- Workstation/PC	31	31	0	0	94	104	10	11	25	27
Application Software	94	94	0	0	207	228	21	10	17	19
- Mainframe	10	10	0	0	11	11	0	0	2	2
- Minicomputer	30	30	0	0	62	62	0	0	16	16
- Workstation/PC	54	54	0	0	134	155	21	16	20	23
Turnkey Systems	27	27	0	0	92	88	-4	-4	28	27
- Equipment	13	13	0	0	41	39	-2	-5	26	25
- Application Software	5	5	0	0	19	17	-2	-11	31	28
- System Software	1	1	0	0	4	3	-1	-25	32	25
- Professional Services	8	8	0	0	28	29	1	4	28	29
Equipment Services	245	245	0	0	415	435	20	5	11	12
- Equipment Maintenance	195	195	0	0	295	308	13	4	9	10
- Environmental Services	48	48	0	0	120	127	7	6	20	21
Grand Total	940	960	20	2	2,105	2,090	-15	-1	17	17

F

Information Services Industry Forecast Database, 1995-2000 Finland

A

Forecast Database in Local Currency (FM Millions)

Exhibit F-1

Top Level IT Expenditure, Finland

Sector	FM Millions								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR (%)
Total IT Spending	24,000	2	24,500	25,000	26,000	26,500	27,500	29,000	3
Equipment Sales	6,000	0	6,000	6,100	6,300	6,400	6,400	6,700	2
Mainframe	1,250	-12	1,100	950	850	750	650	600	-11
Minicomputer	1,350	0	1,350	1,400	1,450	1,450	1,450	1,500	2
PC/Workstation	3,400	4	3,550	3,750	3,950	4,150	4,300	4,550	5
Equipment Services	1,620	1	1,630	1,640	1,670	1,690	1,700	1,720	1
Software Products	1,660	4	1,730	2,000	2,160	2,280	2,510	2,700	9
Other Information Services	3,900	5	4,100	4,400	4,700	5,000	5,500	6,000	8
Data Communications	2,200	5	2,300	2,450	2,600	2,800	3,000	3,200	7
Facilities/Administration	2,250	-2	2,200	2,200	2,200	2,200	2,200	2,200	0
In-house Staff	6,400	-2	6,300	6,300	6,300	6,300	6,300	6,300	0

Exhibit F-2

Information Services Market
Forecast by Delivery Mode and Submode
Finland, 1995-2000

Delivery Modes	FM Millions								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	6,070	5	6,350	6,910	7,390	7,900	8,590	9,300	8
Professional Services	1,620	2	1,650	1,730	1,820	1,950	2,120	2,310	7
- IS Consulting	285	5	300	325	355	395	445	500	11
- Education & Training	150	1	152	156	162	170	179	190	5
- Custom Software	1,180	1	1,190	1,240	1,290	1,370	1,480	1,600	6
- Application Management	7	14	8	8	10	12	15	20	20
Systems Integration	210	14	240	275	315	360	405	465	14
- Equipment	48	10	53	58	60	65	69	79	8
- Application Software	29	31	38	47	63	83	98	120	26
- System Software	17	12	19	23	25	25	24	28	8
- Professional Services	99	14	113	130	149	166	192	208	13
- Other	17	0	17	18	19	22	24	28	10
Systems Operations	320	17	375	430	495	575	665	765	15
- Platform Operations	110	15	127	145	165	185	205	225	12
- Application Operations	185	15	213	245	280	330	385	450	16
- Desktop Services	25	32	33	40	50	60	73	88	22
Processing Services	950	0	950	950	950	955	945	945	0
- Transaction Processing	850	-1	845	845	840	840	830	825	0
- Utility Processing	25	-4	24	22	21	20	19	18	-6
- Other Processing	77	4	80	84	88	93	96	100	5
Network Services	310	13	350	400	450	510	580	670	14
- Electronic Info Svcs	165	9	180	200	220	240	260	285	10
- Network Applications	105	19	125	150	180	215	255	305	20
- Network Management	38	11	42	45	50	58	67	80	14
System Software	790	-3	770	800	800	820	850	880	3
- Mainframe	290	-14	250	225	205	190	175	165	-8
- Minicomputer	270	0	270	275	285	300	320	340	5
- Workstation/PC	225	11	250	295	305	325	350	375	8
Application Software	870	10	960	1,200	1,360	1,460	1,660	1,820	14
- Mainframe	60	-8	55	53	51	49	47	45	-4
- Minicomputer	255	8	275	305	340	375	420	465	11
- Workstation/PC	550	14	625	845	965	1,035	1,195	1,310	16
Turnkey Systems	1,000	5	1,050	1,120	1,200	1,270	1,360	1,440	7
- Equipment	460	2	470	490	505	520	535	550	3
- Application Software	200	10	220	240	265	290	320	350	10
- System Software	61	5	64	69	73	77	82	87	6
- Professional Services	275	7	295	325	355	385	420	455	9
Equipment Services	1,620	1	1,630	1,640	1,670	1,690	1,700	1,720	1
- Equipment Maintenance	990	-3	960	922	885	850	807	767	-4
- Environmental Services	625	7	669	722	780	835	893	956	7
Grand Total Information Service Market	7,700	4	8,000	8,500	9,100	9,600	10,300	11,000	7

B

Forecast Database in U.S. Dollars

Exhibit F-3

Software and Services Market Forecast in Dollars
Finland, 1995-2000

Delivery Modes	U.S. $ Million (rounded)								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	1,280	5	1,340	1,460	1,560	1,665	1,810	1,960	8
Professional Services	340	2	350	365	385	410	445	485	7
- IS Consulting	60	5	64	69	75	84	94	106	11
- Education & Training	32	1	32	33	34	36	38	40	5
- Custom Software	250	1	250	260	270	290	310	340	6
- Application Management	2	14	2	2	2	3	3	4	20
Systems Integration	45	14	51	58	67	76	86	98	14
- Equipment	10	10	11	12	13	14	15	17	8
- Application Software	6	31	8	10	13	18	21	25	26
- System Software	4	12	4	5	5	5	5	6	8
- Professional Services	21	14	24	28	32	35	41	44	13
- Other	4	0	4	4	4	5	5	6	10
Systems Operations	68	17	79	91	105	122	141	162	15
- Platform Operations	23	15	27	31	35	39	43	48	12
- Application Operations	39	15	45	52	59	70	81	95	16
- Desktop Services	5	32	7	8	11	13	15	19	22
Processing Services	201	0	201	201	201	202	200	200	0
- Transaction Processing	180	-1	179	179	177	177	175	174	0
- Utility Processing	6	-4	5	5	5	4	4	4	-6
- Other Processing	16	4	17	18	19	20	21	21	5
Network Services	66	13	74	85	95	108	123	142	14
- Electronic Info Svcs	35	9	38	42	47	51	55	60	10
- Network Applications	22	19	27	32	38	46	54	65	20
- Network Management	8	11	9	10	11	12	14	17	14
System Software	165	-3	160	170	170	175	180	185	3
- Mainframe	61	-14	53	48	43	40	37	35	-8
- Minicomputer	57	0	57	58	60	64	68	72	5
- Workstation/PC	48	11	53	62	65	69	74	79	8
Application Software	185	10	205	255	285	310	350	385	14
- Mainframe	13	-8	12	11	11	11	10	10	-4
- Minicomputer	54	8	58	65	72	79	89	98	11
- Workstation/PC	115	14	130	180	205	220	250	275	16
Turnkey Systems	211	5	222	237	253	268	287	304	7
- Equipment	97	2	99	104	107	110	113	116	3
- Application Software	42	10	47	51	56	61	68	74	10
- System Software	13	5	14	15	15	16	17	18	6
- Professional Services	58	7	62	69	75	81	89	96	9
Equipment Services	340	1	345	345	350	355	360	365	1
- Equipment Maintenance	210	-3	205	195	185	180	170	160	-4
- Environmental Services	130	7	140	150	165	175	190	200	7
Grand Total Information Service Market	1,600	4	1,700	1,800	1,900	2,050	2,150	2,300	7

C

Forecast Database in ECUs

Exhibit F-4

Software and Services Market Forecast in ECUs
Finland, 1995-2000

Delivery Modes	ECU Millions (rounded)								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	1,045	5	1,090	1,185	1,270	1,355	1,475	1,600	8
Professional Services	280	2	285	295	315	335	365	395	7
- IS Consulting	49	5	52	56	61	68	77	86	11
- Education & Training	26	1	26	27	28	29	31	33	5
- Custom Software	205	1	205	215	220	235	255	275	6
- Application Management	1	14	2	2	2	2	3	4	20
Systems Integration	36	14	41	48	54	62	70	80	14
- Equipment	8	10	9	10	11	11	12	14	8
- Application Software	5	31	7	8	11	14	17	21	26
- System Software	3	12	3	4	4	4	4	5	8
- Professional Services	17	14	20	23	26	29	33	36	13
- Other	3	0	3	3	3	4	4	5	10
Systems Operations	55	17	65	74	85	99	115	132	15
- Platform Operations	19	15	22	25	29	32	35	39	12
- Application Operations	32	15	37	42	48	57	66	78	16
- Desktop Services	4	32	6	7	9	10	13	15	22
Processing Services	164	0	163	164	163	164	163	162	0
- Transaction Processing	146	-1	145	145	145	145	143	142	0
- Utility Processing	5	-4	4	4	4	4	4	3	-6
- Other Processing	13	4	14	15	15	16	17	17	5
Network Services	54	13	60	69	78	88	100	115	14
- Electronic Info Svcs	29	9	31	35	38	41	45	49	10
- Network Applications	18	19	22	26	31	37	44	53	20
- Network Management	7	11	7	8	9	10	12	14	14
System Software	135	-3	130	135	135	140	145	150	3
- Mainframe	50	-14	43	39	35	33	30	29	-8
- Minicomputer	47	0	47	48	49	52	55	59	5
- Workstation/PC	39	11	43	51	53	56	60	65	8
Application Software	150	10	165	205	235	250	285	315	14
- Mainframe	11	-8	10	9	9	9	8	8	-4
- Minicomputer	44	8	48	53	59	65	72	80	11
- Workstation/PC	95	14	108	145	166	178	206	225	16
Turnkey Systems	172	5	181	193	206	218	234	248	7
- Equipment	79	2	81	84	87	90	92	95	3
- Application Software	35	10	38	41	46	50	55	60	10
- System Software	11	5	11	12	13	13	14	15	6
- Professional Services	48	7	51	56	61	66	72	78	9
Equipment Services	280	1	280	280	285	290	290	295	1
- Equipment Maintenance	170	-3	165	160	150	145	140	130	-4
- Environmental Services	105	7	115	125	135	145	155	165	7
Grand Total Information Service Market	1,300	4	1,350	1,450	1,550	1,650	1,750	1,900	7

D

Information Services Forecast Reconciliation in Local Currency

Exhibit F-5

Forecast Reconciliation, Finland, 1994-1999

Currency: FM Millions	1994 Market				1999 Market				1994 Report %CAGR	1995 Report %CAGR
Delivery Mode	1994 Report (Fcst)	1995 Report (Act)	1994-1995 Variance (Amount)	1994-1995 Variance (%)	1994 Report (Fcst)	1995 Report (Fcst)	1994-1995 Variance (Amount)	1994-1995 Variance (%)	(Fcst)	(Fcst)
Software and Services Total (ex Equipment Services)	6,080	6,070	-10	0	8,310	8,590	280	3	5	7
Professional Services	1,620	1,620	0	0	2,130	2,120	-10	0	5	6
- IS Consulting	285	285	0	0	445	445	0	0	8	9
- Education & Training	150	150	0	0	185	179	-6	-3	3	4
- Custom Software	1,180	1,180	0	0	1,480	1,480	0	0	5	5
- Application Management	6	7	1	17	15	15	0	0	25	16
Systems Integration	300	210	-90	-30	600	405	-195	-33	22	14
- Equipment	80	48	-32	-40	135	69	-66	-49	16	8
- Application Software	60	29	-31	-52	195	98	-97	-50	40	28
- System Software	24	17	-7	-29	44	24	-20	-45	20	7
- Professional Services	130	99	-31	-24	210	192	-18	-9	14	14
- Other	7	17	10	143	14	24	10	71	30	7
Systems Operations	250	320	70	28	535	665	130	24	17	16
- Platform Operations	85	110	25	29	150	205	55	37	16	13
- Application Operations	145	185	40	28	330	385	55	17	17	16
- Desktop Services	19	25	6	32	53	73	20	38	25	24
Processing Services	950	950	0	0	900	945	45	5	-5	0
- Transaction Processing	850	850	0	0	790	830	40	5	-5	0
- Utility Processing	25	25	0	0	18	19	1	6	-7	-5
- Other Processing	77	77	0	0	92	96	4	4	-1	5
Network Services	300	310	10	3	560	580	20	4	9	13
- Electronic Info Svcs	165	165	0	0	245	260	15	6	2	10
- Network Applications	105	105	0	0	250	255	5	2	11	19
- Network Management	29	38	9	31	63	67	4	6	27	12
System Software	790	790	0	0	820	850	30	4	1	1
- Mainframe	290	290	0	0	180	175	-5	-3	-8	-10
- Minicomputer	270	270	0	0	320	320	0	0	2	3
- Workstation/PC	225	225	0	0	320	350	30	9	11	9
Application Software	870	870	0	0	1,470	1,660	190	13	7	14
- Mainframe	60	60	0	0	45	47	2	4	-7	-5
- Minicomputer	255	255	0	0	400	420	20	5	5	10
- Workstation/PC	550	550	0	0	1,020	1,195	175	17	10	17
Turnkey Systems	1,000	1,000	0	0	1,290	1,360	70	5	4	6
- Equipment	460	460	0	0	505	535	30	6	0	3
- Application Software	200	200	0	0	310	320	10	3	7	10
- System Software	61	61	0	0	79	82	3	4	3	6
- Professional Services	275	275	0	0	400	420	20	5	7	9
Equipment Services	1,620	1,620	0	0	1,690	1,700	10	1	-3	1
- Equipment Maintenance	990	990	0	0	810	807	-3	0	-5	-4
- Environmental Services	625	625	0	0	880	893	13	1	0	7
Grand Total	7,700	7,700	0	0	10,000	10,300	300	3	4	6

Information Services Industry Forecast Database, 1995-2000 France

A

Forecast Database in Local Currency (FF Millions)

Exhibit G-1

Top Level IT Expenditure, France

Sector	FF Millions								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR (%)
Total IT Spending	316,000	-2	311,000	309,000	308,000	310,000	320,000	328,000	1
Equipment Sales	49,900	-8	46,100	42,200	39,400	37,900	37,200	36,400	-5
Mainframe	8,300	-17	6,900	5,600	4,600	3,800	3,100	2,600	-18
Minicomputer	14,000	-7	13,060	12,230	11,480	10,740	10,090	9,720	-6
PC/Workstation	27,600	-5	26,100	24,400	23,300	23,400	24,000	24,100	-2
Equipment Services	19,900	-2	19,500	19,500	19,400	19,400	19,600	19,700	0
Software Products	30,700	5	32,100	35,600	36,900	37,800	40,600	42,400	6
Other Information Services	70,500	3	72,900	77,300	81,900	86,700	93,600	100,500	7
Data Communications	20,000	5	21,000	21,900	23,000	24,600	26,400	28,000	6
Facilities/Administration	33,100	-4	31,800	30,400	29,100	28,200	27,800	27,500	-3
In-house Staff	91,700	-5	87,300	82,400	78,700	75,600	74,600	73,700	-3

Exhibit G-2

Information Services Market
Forecast by Delivery Mode and Submode
France, 1995-2000

Delivery Modes	FF Millions								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	108,000	4	112,000	120,000	126,000	132,000	142,000	151,000	6
Professional Services	38,800	2	39,400	40,100	40,800	41,200	41,800	42,400	1
- IS Consulting	4,800	10	5,300	5,550	5,900	6,250	6,700	7,150	6
- Education & Training	3,610	6	3,827	4,094	4,381	4,644	4,923	5,218	6
- Custom Software	30,100	-1	29,900	29,950	29,900	29,550	29,250	28,950	-1
- Application Management	260	35	350	460	600	740	930	1,100	26
Systems Integration	5,400	8	5,850	6,500	7,150	7,900	8,700	9,650	11
- Equipment	1,352	8	1,460	1,490	1,496	1,503	1,580	1,641	2
- Application Software	973	14	1,109	1,361	1,639	1,977	2,370	2,703	20
- System Software	432	8	467	454	499	554	614	676	8
- Professional Services	2,541	6	2,684	2,980	3,278	3,638	3,862	4,248	10
- Other	108	8	117	194	214	237	263	386	27
Systems Operations	4,700	18	5,540	6,700	7,950	9,200	10,600	12,250	17
- Platform Operations	1,580	12	1,770	2,000	2,200	2,450	2,700	2,900	10
- Application Operations	2,600	18	3,070	3,750	4,500	5,150	5,900	6,850	17
- Desktop Services	520	35	700	950	1,250	1,600	2,000	2,500	29
Processing Services	8,900	0	8,900	8,850	8,950	9,150	9,550	10,000	2
- Transaction Processing	7,650	-1	7,600	7,450	7,450	7,550	7,850	8,150	1
- Utility Processing	355	0	355	345	340	340	345	350	0
- Other Processing	875	10	965	1,060	1,155	1,265	1,370	1,475	9
Network Services	8,350	9	9,100	10,185	11,510	13,260	15,730	18,780	16
- Electronic Info Svcs	4,700	9	5,100	5,500	5,900	6,350	7,000	7,650	8
- Network Applications	2,810	7	3,015	3,535	4,265	5,325	6,855	8,900	24
- Network Management	840	17	985	1,150	1,345	1,585	1,875	2,230	18
System Software	15,800	4	16,500	17,500	17,600	17,900	18,700	19,300	3
- Mainframe	6,300	-4	6,050	5,800	5,450	5,050	4,700	4,250	-7
- Minicomputer	5,300	4	5,500	5,600	5,750	6,000	6,350	6,750	4
- Workstation/PC	4,200	18	4,935	6,110	6,425	6,830	7,675	8,305	11
Application Software	14,900	5	15,600	18,100	19,300	19,900	21,900	23,100	8
- Mainframe	860	-14	740	640	565	505	465	430	-10
- Minicomputer	4,340	1	4,380	4,450	4,690	5,065	5,365	5,505	5
- Workstation/PC	9,700	8	10,475	13,010	14,010	14,365	16,090	17,190	10
Turnkey Systems	11,000	4	11,400	11,900	12,500	13,500	14,600	15,800	7
- Equipment	5,400	2	5,500	5,600	5,750	5,950	6,200	6,450	3
- Application Software	2,600	6	2,750	2,950	3,150	3,550	3,950	4,400	10
- System Software	190	5	200	215	230	240	255	270	6
- Professional Services	2,800	6	2,960	3,170	3,380	3,750	4,220	4,700	10
Equipment Services	19,900	-2	19,500	19,500	19,400	19,400	19,600	19,700	0
- Equipment Maintenance	12,600	-7	11,718	11,015	10,354	9,836	9,443	9,065	-5
- Environmental Services	7,300	7	7,811	8,436	9,026	9,568	10,142	10,649	6
Grand Total Information Service Market	128,000	3	132,000	139,000	145,000	151,000	161,000	171,000	5

B

Forecast Database in U.S. Dollars

Exhibit G-3

Software and Services Market Forecast in Dollars
France, 1995-2000

Delivery Modes	U.S. $ Million (rounded)								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	20,225	4	20,975	22,470	23,595	24,720	26,590	28,275	6
Professional Services	7,265	2	7,380	7,510	7,640	7,715	7,830	7,940	1
- IS Consulting	899	10	993	1,040	1,105	1,171	1,255	1,339	6
- Education & Training	676	6	717	767	821	870	922	977	6
- Custom Software	5,635	-1	5,600	5,610	5,600	5,535	5,480	5,420	-1
- Application Management	49	35	66	86	112	139	174	206	26
Systems Integration	1,011	8	1,096	1,217	1,339	1,480	1,629	1,807	11
- Equipment	253	8	274	279	280	282	296	308	2
- Application Software	182	14	208	255	307	370	444	506	20
- System Software	81	8	87	85	93	104	115	127	8
- Professional Services	476	6	503	558	614	682	723	796	10
- Other	20	8	22	36	40	44	49	72	27
Systems Operations	880	18	1,038	1,255	1,489	1,723	1,985	2,294	17
- Platform Operations	296	12	332	375	412	459	506	543	10
- Application Operations	487	18	575	702	843	965	1,105	1,283	17
- Desktop Services	97	35	131	178	234	300	375	468	29
Processing Services	1,667	0	1,667	1,658	1,676	1,714	1,789	1,873	2
- Transaction Processing	1,433	-1	1,423	1,395	1,395	1,414	1,470	1,526	1
- Utility Processing	67	0	67	65	64	64	65	66	0
- Other Processing	164	10	181	199	217	237	257	276	9
Network Services	1,564	9	1,704	1,908	2,156	2,483	2,946	3,517	16
- Electronic Info Svcs	880	9	955	1,030	1,105	1,189	1,311	1,433	8
- Network Applications	526	7	565	662	799	997	1,284	1,667	24
- Network Management	158	17	185	216	252	297	351	418	18
System Software	2,960	4	3,090	3,275	3,295	3,350	3,500	3,615	3
- Mainframe	1,180	-4	1,133	1,086	1,021	946	880	796	-7
- Minicomputer	993	4	1,030	1,049	1,077	1,124	1,189	1,264	4
- Workstation/PC	787	18	924	1,144	1,203	1,279	1,438	1,555	11
Application Software	2,790	5	2,920	3,390	3,615	3,725	4,100	4,325	8
- Mainframe	161	-14	139	120	106	95	87	81	-10
- Minicomputer	813	1	820	834	879	949	1,005	1,031	5
- Workstation/PC	1,815	8	1,960	2,435	2,625	2,690	3,015	3,220	10
Turnkey Systems	2,060	4	2,135	2,229	2,341	2,528	2,734	2,959	7
- Equipment	1,011	2	1,030	1,049	1,077	1,114	1,161	1,208	3
- Application Software	487	6	515	553	590	665	740	824	10
- System Software	36	5	37	40	43	45	48	51	6
- Professional Services	525	6	555	594	633	702	791	880	10
Equipment Services	3,725	-2	3,650	3,650	3,635	3,635	3,670	3,690	0
- Equipment Maintenance	2,360	-7	2,195	2,065	1,940	1,840	1,770	1,700	-5
- Environmental Services	1,365	7	1,465	1,580	1,690	1,790	1,900	1,995	6
Grand Total Information Service Market	23,950	3	24,700	26,050	27,150	28,300	30,150	32,000	5

C

Forecast Database in ECUs

Exhibit G-4

Software and Services Market Forecast in ECUs
France, 1995-2000

Delivery Modes	ECU Millions (rounded)								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	16,515	4	17,125	18,350	19,265	20,185	21,715	23,090	6
Professional Services	5,935	2	6,025	6,130	6,240	6,300	6,390	6,485	1
- IS Consulting	734	10	811	849	902	956	1,025	1,094	6
- Education & Training	552	6	585	626	670	710	753	798	6
- Custom Software	4,600	-1	4,570	4,580	4,570	4,520	4,470	4,425	-1
- Application Management	40	35	54	71	92	113	142	168	26
Systems Integration	826	8	895	994	1,094	1,208	1,331	1,476	11
- Equipment	207	8	223	228	229	230	242	251	2
- Application Software	149	14	170	208	251	302	362	413	20
- System Software	66	8	71	69	76	85	94	103	8
- Professional Services	389	6	411	456	501	557	591	650	10
- Other	17	8	18	30	33	36	40	59	27
Systems Operations	719	18	847	1,025	1,216	1,407	1,621	1,873	17
- Platform Operations	242	12	271	306	337	375	413	444	10
- Application Operations	398	18	470	574	688	788	902	1,048	17
- Desktop Services	80	35	107	145	191	245	306	382	29
Processing Services	1,358	0	1,364	1,354	1,368	1,400	1,463	1,525	2
- Transaction Processing	1,170	-1	1,162	1,139	1,139	1,155	1,201	1,246	1
- Utility Processing	55	0	55	53	52	52	53	54	0
- Other Processing	134	10	148	162	177	194	210	226	9
Network Services	1,277	9	1,392	1,558	1,760	2,028	2,405	2,872	16
- Electronic Info Svcs	719	9	780	841	902	971	1,071	1,170	8
- Network Applications	430	7	461	541	652	814	1,048	1,361	24
- Network Management	129	17	151	176	206	243	287	341	18
System Software	2,415	4	2,525	2,675	2,690	2,735	2,860	2,950	3
- Mainframe	964	-4	925	887	834	772	719	650	-7
- Minicomputer	811	4	841	857	879	918	971	1,032	4
- Workstation/PC	642	18	755	935	983	1,045	1,174	1,270	11
Application Software	2,280	5	2,385	2,770	2,950	3,045	3,350	3,530	8
- Mainframe	132	-14	113	98	87	77	71	66	-10
- Minicomputer	664	1	670	681	717	775	821	842	5
- Workstation/PC	1,483	8	1,602	1,990	2,142	2,197	2,460	2,629	10
Turnkey Systems	1,682	4	1,743	1,820	1,912	2,064	2,233	2,416	7
- Equipment	826	2	841	857	879	910	948	986	3
- Application Software	398	6	421	451	482	543	604	673	10
- System Software	29	5	31	33	35	37	39	41	6
- Professional Services	428	6	453	485	517	574	646	719	10
Equipment Services	3,045	-2	2,980	2,980	2,965	2,965	2,995	3,010	0
- Equipment Maintenance	1,925	-7	1,790	1,685	1,585	1,505	1,445	1,385	-5
- Environmental Services	1,115	7	1,195	1,290	1,380	1,465	1,550	1,630	6
Grand Total Information Service Market	19,550	3	20,200	21,250	22,150	23,100	24,600	26,150	5

D

Information Services Forecast Reconciliation in Local Currency

Exhibit G-5

Forecast Reconciliation, France, 1994-1999

Currency: FF Millions	1994 Market				1999 Market				1994	1995
Delivery Mode	1994 Report (Fcst)	1995 Report (Act)	1994-1995 Variance (Amount)	1994-1995 Variance (%)	1994 Report (Fcst)	1995 Report (Fcst)	1994-1995 Variance (Amount)	1994-1995 Variance (%)	Report %CAGR (Fcst)	Report %CAGR (Fcst)
Software and Services Total (ex Equipment Services)	108,000	108,000	0	0	141,000	142,000	1,000	1	5	6
Professional Services	38,800	38,800	0	0	41,300	41,800	500	1	1	2
- IS Consulting	4,800	4,800	0	0	6,450	6,700	250	4	6	7
- Education & Training	3,610	3,610	0	0	4,410	4,923	513	12	4	6
- Custom Software	30,100	30,100	0	0	29,600	29,250	-350	-1	0	-1
- Application Management	260	260	0	0	790	930	140	18	25	29
Systems Integration	5,500	5,400	-100	-2	9,100	8,700	-400	-4	11	10
- Equipment	1,450	1,352	-98	-7	2,050	1,580	-470	-23	7	3
- Application Software	1,000	973	-27	-3	2,800	2,370	-430	-15	23	19
- System Software	450	432	-18	-4	650	614	-36	-6	8	7
- Professional Services	2,500	2,541	41	2	3,300	3,862	562	17	6	9
- Other	120	108	-12	-10	275	263	-12	-4	18	19
Systems Operations	4,510	4,700	190	4	9,870	10,600	730	7	17	18
- Platform Operations	1,580	1,580	0	0	2,535	2,700	165	7	10	11
- Application Operations	2,600	2,600	0	0	6,210	5,900	-310	-5	19	18
- Desktop Services	325	520	195	60	1,120	2,000	880	79	28	31
Processing Services	8,900	8,900	0	0	9,900	9,550	-350	-4	2	1
- Transaction Processing	7,650	7,650	0	0	8,200	7,850	-350	-4	1	1
- Utility Processing	355	355	0	0	350	345	-5	-1	0	-1
- Other Processing	875	875	0	0	1,340	1,370	30	2	9	9
Network Services	8,350	8,350	0	0	17,000	15,730	-1,270	-7	15	14
- Electronic Info Svcs	4,700	4,700	0	0	7,000	7,000	0	0	8	8
- Network Applications	2,810	2,810	0	0	8,310	6,855	-1,455	-18	24	20
- Network Management	840	840	0	0	1,690	1,875	185	11	15	17
System Software	15,800	15,800	0	0	17,700	18,700	1,000	6	2	3
- Mainframe	6,300	6,300	0	0	4,350	4,700	350	8	-7	-6
- Minicomputer	5,300	5,300	0	0	6,450	6,350	-100	-2	4	4
- Workstation/PC	4,200	4,200	0	0	6,900	7,675	775	11	10	13
Application Software	14,900	14,900	0	0	21,200	21,900	700	3	7	8
- Mainframe	860	860	0	0	490	465	-25	-5	-11	-12
- Minicomputer	4,340	4,340	0	0	5,460	5,365	-95	-2	5	4
- Workstation/PC	9,700	9,700	0	0	15,200	16,090	890	6	9	11
Turnkey Systems	11,000	11,000	0	0	15,200	14,600	-600	-4	7	6
- Equipment	5,400	5,400	0	0	6,350	6,200	-150	-2	3	3
- Application Software	2,600	2,600	0	0	4,200	3,950	-250	-6	10	9
- System Software	190	190	0	0	240	255	15	6	5	6
- Professional Services	2,800	2,800	0	0	4,450	4,220	-230	-5	10	9
Equipment Services	19,900	19,900	0	0	19,200	19,600	400	2	-1	0
- Equipment Maintenance	12,600	12,600	0	0	9,500	9,443	-57	-1	-5	-6
- Environmental Services	7,300	7,300	0	0	9,700	10,142	442	5	6	7
Grand Total	128,000	128,000	0	0	160,000	161,000	1,000	1	5	5

Information Services Industry Forecast Database, 1995-2000 Germany

A

Forecast Database in Local Currency (DM Millions)

Exhibit H-1

Top Level IT Expenditure, Germany

Sector	DM Millions								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR (%)
Total IT Spending	104,000	0	104,000	104,000	106,000	108,000	111,000	114,000	2
Equipment Sales	18,300	-3	17,800	17,200	17,000	16,800	16,600	16,400	-2
Mainframe	3,300	-12	2,900	2,500	2,300	1,900	1,600	1,400	-14
Minicomputer	4,600	-4	4,410	4,310	4,220	4,120	3,930	3,830	-3
PC/Workstation	10,400	1	10,500	10,400	10,500	10,800	11,100	11,200	1
Equipment Services	6,950	-2	6,800	6,700	6,700	6,700	6,700	6,750	0
Software Products	9,000	9	9,800	11,200	12,000	12,700	14,100	15,200	9
Other Information Services	14,400	10	15,800	17,200	19,300	21,300	23,600	26,100	11
Data Communications	8,400	8	9,100	9,600	10,300	11,000	11,700	12,500	7
Facilities/Administration	9,000	-6	8,500	8,100	7,900	7,900	7,800	7,800	-2
In-house Staff	38,200	-5	36,300	34,300	32,900	31,900	30,800	29,700	-4

Exhibit H-2

Information Services Market
Forecast by Delivery Mode and Submode
Germany, 1995-2000

Delivery Modes	DM Millions								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	27,000	8	29,200	32,100	35,100	37,900	41,700	45,400	9
Professional Services	5,200	4	5,400	5,600	5,900	6,100	6,300	6,400	3
- IS Consulting	930	12	1,040	1,165	1,335	1,480	1,635	1,780	11
- Education & Training	1,100	8	1,188	1,295	1,399	1,496	1,601	1,697	7
- Custom Software	3,150	-2	3,100	3,100	3,100	3,000	2,900	2,750	-2
- Application Management	33	36	45	60	75	95	120	140	25
Systems Integration	1,100	14	1,250	1,350	1,550	1,700	1,900	2,150	11
- Equipment	303	6	321	274	276	289	305	344	1
- Application Software	225	21	272	288	353	425	514	602	17
- System Software	79	9	86	96	107	119	133	151	12
- Professional Services	460	7	494	658	737	782	857	946	14
- Other	56	11	62	55	61	85	95	108	12
Systems Operations	480	58	760	1,000	1,290	1,620	1,930	2,270	24
- Platform Operations	100	15	115	130	145	165	180	200	12
- Application Operations	275	80	495	670	870	1,100	1,300	1,500	25
- Desktop Services	105	38	145	200	270	350	450	570	31
Processing Services	2,600	8	2,800	3,050	3,300	3,550	3,700	3,950	7
- Transaction Processing	2,150	7	2,300	2,500	2,650	2,850	2,950	3,100	6
- Utility Processing	120	0	120	120	120	120	120	120	0
- Other Processing	350	13	395	450	505	575	645	720	13
Network Services	1,780	15	2,050	2,405	2,890	3,435	4,120	5,020	20
- Electronic Info Svcs	1,200	10	1,320	1,465	1,630	1,740	1,850	1,960	8
- Network Applications	395	34	530	715	1,015	1,415	1,945	2,670	38
- Network Management	185	8	200	225	245	280	325	390	14
System Software	5,300	6	5,600	6,000	6,100	6,200	6,500	6,700	4
- Mainframe	2,400	-4	2,300	2,200	2,050	1,800	1,600	1,350	-10
- Minicomputer	1,550	3	1,600	1,700	1,800	1,900	2,000	2,100	6
- Workstation/PC	1,350	23	1,660	2,060	2,275	2,540	2,935	3,275	15
Application Software	3,700	14	4,200	5,200	5,900	6,500	7,600	8,500	15
- Mainframe	390	-5	370	350	340	330	320	310	-3
- Minicomputer	1,050	10	1,150	1,260	1,410	1,620	1,895	2,265	15
- Workstation/PC	2,250	18	2,665	3,610	4,170	4,550	5,335	5,950	17
Turnkey Systems	6,800	4	7,100	7,500	8,200	8,800	9,600	10,400	8
- Equipment	3,300	0	3,300	3,400	3,500	3,600	3,700	3,800	3
- Application Software	1,300	12	1,450	1,550	1,850	2,050	2,400	2,700	13
- System Software	460	2	470	495	515	545	570	595	5
- Professional Services	1,750	9	1,910	2,070	2,340	2,610	2,940	3,260	11
Equipment Services	6,950	-2	6,800	6,700	6,700	6,700	6,700	6,750	0
- Equipment Maintenance	4,360	-7	4,055	3,771	3,545	3,367	3,199	3,071	-5
- Environmental Services	2,590	6	2,745	2,938	3,143	3,332	3,498	3,673	6
Grand Total Information Service Market	34,000	6	36,000	39,000	42,000	44,500	48,500	52,000	8

B

Forecast Database in U.S. Dollars

Exhibit H-3

Software and Services Market Forecast in Dollars
Germany, 1995-2000

Delivery Modes	U.S. $ Million (rounded)								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	17,400	8	18,800	20,700	22,600	24,500	26,900	29,300	9
Professional Services	3,400	4	3,500	3,600	3,800	3,900	4,100	4,100	3
- IS Consulting	600	12	670	750	860	950	1,050	1,150	11
- Education & Training	710	8	770	840	900	970	1,030	1,090	7
- Custom Software	2,000	-2	2,000	2,000	2,000	1,900	1,900	1,800	-2
- Application Management	21	36	29	39	48	61	77	90	25
Systems Integration	710	14	810	870	1,000	1,100	1,230	1,390	11
- Equipment	200	6	210	180	180	190	200	220	1
- Application Software	145	21	175	186	228	274	332	388	17
- System Software	51	9	55	62	69	77	86	97	12
- Professional Services	300	7	320	420	480	500	550	610	14
- Other	36	11	40	35	39	55	61	70	12
Systems Operations	310	58	490	650	830	1,050	1,250	1,460	24
- Platform Operations	60	15	70	80	90	110	120	130	12
- Application Operations	180	80	320	430	560	710	840	970	25
- Desktop Services	68	38	94	129	174	226	290	368	31
Processing Services	1,680	8	1,810	1,970	2,130	2,290	2,390	2,550	7
- Transaction Processing	1,390	7	1,480	1,610	1,710	1,840	1,900	2,000	6
- Utility Processing	80	0	80	80	80	80	80	80	0
- Other Processing	230	13	250	290	330	370	420	460	13
Network Services	1,150	15	1,320	1,550	1,860	2,220	2,660	3,240	20
- Electronic Info Svcs	770	10	850	950	1,050	1,120	1,190	1,260	8
- Network Applications	250	34	340	460	650	910	1,250	1,720	38
- Network Management	120	8	130	150	160	180	210	250	14
System Software	3,400	6	3,600	3,900	3,900	4,000	4,200	4,300	4
- Mainframe	1,550	-4	1,480	1,420	1,320	1,160	1,030	870	-10
- Minicomputer	1,000	3	1,030	1,100	1,160	1,230	1,290	1,350	6
- Workstation/PC	870	23	1,070	1,330	1,470	1,640	1,890	2,110	15
Application Software	2,400	14	2,700	3,400	3,800	4,200	4,900	5,500	15
- Mainframe	250	-5	240	230	220	210	210	200	-3
- Minicomputer	680	10	740	810	910	1,050	1,220	1,460	15
- Workstation/PC	1,500	18	1,700	2,300	2,700	2,900	3,400	3,800	17
Turnkey Systems	4,390	4	4,580	4,840	5,290	5,680	6,190	6,710	8
- Equipment	2,130	0	2,130	2,190	2,260	2,320	2,390	2,450	3
- Application Software	840	12	940	1,000	1,190	1,320	1,550	1,740	13
- System Software	297	2	303	319	332	352	368	384	5
- Professional Services	1,130	9	1,230	1,340	1,510	1,680	1,900	2,100	11
Equipment Services	4,500	-2	4,400	4,300	4,300	4,300	4,300	4,400	0
- Equipment Maintenance	2,800	-7	2,600	2,400	2,300	2,200	2,100	2,000	-5
- Environmental Services	1,700	6	1,800	1,900	2,000	2,100	2,300	2,400	6
Grand Total Information Service Market	22,000	6	23,000	25,000	27,000	29,000	31,000	34,000	8

C

Forecast Database in ECUs

Exhibit H-4

Software and Services Market Forecast in ECUs
Germany, 1995-2000

Delivery Modes	ECU Millions (rounded)								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	14,200	8	15,400	16,900	18,500	19,900	21,900	23,900	9
Professional Services	2,700	4	2,800	2,900	3,100	3,200	3,300	3,400	3
- IS Consulting	490	12	550	610	700	780	860	940	11
- Education & Training	580	8	630	680	740	790	840	890	7
- Custom Software	1,700	-2	1,600	1,600	1,600	1,600	1,500	1,400	-2
- Application Management	20	36	20	30	40	50	60	70	25
Systems Integration	580	14	660	710	820	890	1,000	1,130	11
- Equipment	160	6	170	140	150	150	160	180	1
- Application Software	118	21	143	152	186	224	271	317	17
- System Software	42	9	45	51	56	63	70	79	12
- Professional Services	240	7	260	350	390	410	450	500	14
- Other	29	11	33	29	32	45	50	57	12
Systems Operations	250	58	400	530	680	850	1,020	1,190	24
- Platform Operations	50	15	60	70	80	90	90	110	12
- Application Operations	140	80	260	350	460	580	680	790	25
- Desktop Services	55	38	76	105	142	184	237	300	31
Processing Services	1,380	8	1,480	1,620	1,720	1,870	1,960	2,070	7
- Transaction Processing	1,130	7	1,210	1,320	1,390	1,500	1,550	1,630	6
- Utility Processing	60	0	60	60	60	60	60	60	0
- Other Processing	180	13	210	240	270	300	340	380	13
Network Services	940	15	1,080	1,270	1,520	1,810	2,170	2,640	20
- Electronic Info Svcs	630	10	690	770	860	920	970	1,030	8
- Network Applications	210	34	280	380	530	740	1,020	1,410	38
- Network Management	100	8	110	120	130	150	170	210	14
System Software	2,800	6	2,900	3,200	3,200	3,300	3,400	3,500	4
- Mainframe	1,260	-4	1,210	1,160	1,080	950	840	710	-10
- Minicomputer	820	3	840	890	950	1,000	1,050	1,110	6
- Workstation/PC	710	23	870	1,080	1,200	1,340	1,540	1,720	15
Application Software	1,900	14	2,200	2,700	3,100	3,400	4,000	4,500	15
- Mainframe	210	-5	190	180	180	170	170	160	-3
- Minicomputer	550	10	610	660	740	850	1,000	1,190	15
- Workstation/PC	1,180	18	1,400	1,900	2,190	2,390	2,810	3,130	17
Turnkey Systems	3,580	4	3,740	3,950	4,320	4,630	5,050	5,470	8
- Equipment	1,740	0	1,740	1,790	1,840	1,890	1,950	2,000	3
- Application Software	680	12	760	820	970	1,080	1,260	1,420	13
- System Software	242	2	247	261	271	287	300	313	5
- Professional Services	920	9	1,010	1,090	1,230	1,370	1,550	1,720	11
Equipment Services	3,700	-2	3,600	3,500	3,500	3,500	3,500	3,600	0
- Equipment Maintenance	2,300	-7	2,100	2,000	1,900	1,800	1,700	1,600	-5
- Environmental Services	1,400	6	1,400	1,500	1,700	1,800	1,800	1,900	6
Grand Total Information Service Market	18,000	6	19,000	21,000	22,000	23,000	26,000	27,000	8

D

Information Services Forecast Reconciliation in Local Currency

Exhibit H-5

Forecast Reconciliation, Germany, 1994-1999

Currency: DM Millions	1994 Market				1999 Market				1994	1995
Delivery Mode	1994 Report (Fcst)	1995 Report (Act)	1994-1995 Variance (Amount)	1994-1995 Variance (%)	1994 Report (Fcst)	1995 Report (Fcst)	1994-1995 Variance (Amount)	1994-1995 Variance (%)	Report %CAGR (Fcst)	Report %CAGR (Fcst)
Software and Services Total (ex Equipment Services)	27,000	27,000	0	0	40,400	41,700	1,300	3	8	9
Professional Services	5,200	5,200	0	0	5,800	6,300	500	9	2	4
- IS Consulting	930	930	0	0	1,590	1,635	45	3	11	12
- Education & Training	1,100	1,100	0	0	1,300	1,601	301	23	3	8
- Custom Software	3,150	3,150	0	0	2,800	2,900	100	4	-2	-2
- Application Management	33	33	0	0	123	120	-3	-2	30	29
Systems Integration	1,150	1,100	-50	-4	2,000	1,900	-100	-5	12	12
- Equipment	310	303	-7	-2	430	305	-125	-29	7	0
- Application Software	250	225	-25	-10	770	514	-256	-33	25	18
- System Software	95	79	-16	-17	145	133	-12	-8	9	11
- Professional Services	470	460	-10	-2	600	857	257	43	5	13
- Other	25	56	31	124	60	95	35	58	19	11
Systems Operations	480	480	0	0	1,190	1,930	740	62	20	32
- Platform Operations	100	100	0	0	160	180	20	13	10	12
- Application Operations	275	275	0	0	715	1,300	585	82	21	36
- Desktop Services	105	105	0	0	315	450	135	43	25	34
Processing Services	2,600	2,600	0	0	3,650	3,700	50	1	7	7
- Transaction Processing	2,150	2,150	0	0	2,900	2,950	50	2	6	7
- Utility Processing	120	120	0	0	120	120	0	0	0	0
- Other Processing	350	350	0	0	640	645	5	1	13	13
Network Services	1,780	1,780	0	0	4,160	4,120	-40	-1	19	18
- Electronic Info Svcs	1,200	1,200	0	0	1,780	1,850	70	4	8	9
- Network Applications	395	395	0	0	2,005	1,945	-60	-3	38	38
- Network Management	185	185	0	0	375	325	-50	-13	15	12
System Software	5,300	5,300	0	0	6,200	6,500	300	5	3	4
- Mainframe	2,400	2,400	0	0	1,350	1,600	250	19	-11	-8
- Minicomputer	1,550	1,550	0	0	2,050	2,000	-50	-2	6	5
- Workstation/PC	1,350	1,350	0	0	2,800	2,935	135	5	16	17
Application Software	3,700	3,700	0	0	7,600	7,600	0	0	15	15
- Mainframe	390	390	0	0	330	320	-10	-3	-3	-4
- Minicomputer	1,050	1,050	0	0	2,450	1,895	-555	-23	18	13
- Workstation/PC	2,250	2,250	0	0	4,800	5,335	535	11	16	19
Turnkey Systems	6,800	6,800	0	0	9,800	9,600	-200	-2	8	7
- Equipment	3,300	3,300	0	0	3,800	3,700	-100	-3	3	2
- Application Software	1,300	1,300	0	0	2,450	2,400	-50	-2	14	13
- System Software	460	460	0	0	570	570	0	0	4	4
- Professional Services	1,750	1,750	0	0	3,000	2,940	-60	-2	11	11
Equipment Services	6,950	6,950	0	0	6,550	6,700	150	2	-1	-1
- Equipment Maintenance	4,360	4,360	0	0	3,350	3,199	-151	-5	-5	-6
- Environmental Services	2,590	2,590	0	0	3,185	3,498	313	10	4	6
Grand Total	34,000	34,000	0	0	47,000	48,500	1,500	3	7	7

Information Services Industry Forecast Database, 1995-2000 Greece

A

Forecast Database in Local Currency (Dra Millions)

Exhibit I-1

Top Level IT Expenditure, Greece

Sector	Dra Millions								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR (%)
Total IT Spending	290,000	5	305,000	325,000	350,000	375,000	400,000	430,000	7
Equipment Sales	59,000	6	62,500	67,500	73,500	79,500	85,500	94,000	9
Mainframe	7,400	-12	6,500	5,800	5,200	4,600	4,000	3,600	-11
Minicomputer	14,500	0	14,500	14,700	14,900	14,900	14,800	15,000	1
PC/Workstation	37,000	12	41,600	47,100	53,400	59,900	66,700	75,600	13
Equipment Services	8,700	-3	8,400	8,000	7,600	7,400	7,100	6,900	-4
Software Products	19,600	13	22,100	26,800	30,200	33,400	38,100	42,500	14
Other Information Services	42,500	9	46,500	52,500	58,500	65,500	74,000	82,500	12
Data Communications	27,000	6	28,700	30,500	32,400	34,500	36,600	38,900	6
Facilities/Administration	30,600	2	31,300	32,000	32,700	33,500	34,300	35,100	2
In-house Staff	101,000	4	105,000	110,000	115,000	120,000	125,000	130,000	4

Exhibit I-2

Information Services Market
Forecast by Delivery Mode and Submode
Greece, 1995-2000

Delivery Modes	Dra Millions								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	69,000	10	76,000	87,000	97,000	108,000	122,000	136,000	12
Professional Services	19,600	9	21,400	23,400	25,600	28,400	31,400	34,700	10
- IS Consulting	2,250	11	2,500	2,800	3,150	3,600	4,100	4,650	13
- Education & Training	1,780	6	1,887	2,000	2,120	2,268	2,450	2,646	7
- Custom Software	15,600	9	17,000	18,600	20,300	22,500	24,800	27,400	10
- Application Management	0	-100	0	0	0	0	0	0	0
Systems Integration	1,200	13	1,350	1,600	1,800	2,050	2,400	2,750	15
- Equipment	300	5	315	318	326	330	383	413	6
- Application Software	168	30	219	270	362	454	551	717	27
- System Software	96	15	110	135	145	165	168	193	12
- Professional Services	540	14	617	739	834	950	1,126	1,240	15
- Other	96	15	110	127	145	165	168	193	12
Systems Operations	850	24	1,050	1,200	1,400	1,600	2,100	2,400	18
- Platform Operations	230	17	270	320	375	431	500	550	15
- Application Operations	550	20	660	760	875	1,004	1,350	1,550	19
- Desktop Services	80	19	95	115	140	187	245	315	27
Processing Services	10,150	9	11,100	12,000	13,100	14,250	15,550	16,950	9
- Transaction Processing	8,950	9	9,800	10,600	11,600	12,650	13,850	15,100	9
- Utility Processing	420	5	440	460	490	510	540	570	5
- Other Processing	800	9	870	930	1,010	1,090	1,180	1,280	8
Network Services	3,650	16	4,250	5,050	6,050	7,200	8,350	9,850	18
- Electronic Info Svcs	2,320	13	2,610	2,980	3,410	3,900	4,300	4,790	13
- Network Applications	1,190	25	1,490	1,900	2,420	3,080	3,800	4,720	26
- Network Management	150	10	165	180	200	230	265	315	14
System Software	11,600	9	12,600	14,200	15,400	16,800	18,600	20,400	10
- Mainframe	4,450	-4	4,250	4,150	4,050	3,950	3,850	3,750	-2
- Minicomputer	4,100	12	4,600	5,250	6,000	6,850	7,850	8,950	14
- Workstation/PC	3,060	22	3,720	4,840	5,390	6,010	6,920	7,730	16
Application Software	8,000	19	9,500	12,600	14,800	16,600	19,500	22,100	18
- Mainframe	590	-3	570	560	540	530	510	500	-3
- Minicomputer	2,050	15	2,350	2,750	3,150	3,650	4,200	4,850	16
- Workstation/PC	5,400	21	6,560	9,270	11,070	12,390	14,750	16,730	21
Turnkey Systems	13,600	10	14,900	16,500	18,500	21,100	24,100	27,100	13
- Equipment	6,450	6	6,850	7,350	7,950	8,750	9,650	10,450	9
- Application Software	2,900	14	3,300	3,800	4,400	5,200	6,150	7,150	17
- System Software	710	6	750	810	880	970	1,070	1,160	9
- Professional Services	3,500	13	3,950	4,550	5,250	6,150	7,200	8,300	16
Equipment Services	8,700	-3	8,400	8,000	7,600	7,400	7,100	6,900	-4
- Equipment Maintenance	7,910	-5	7,515	7,064	6,640	6,308	5,992	5,693	-5
- Environmental Services	800	6	848	907	971	1,049	1,132	1,223	8
Grand Total Information Service Market	77,000	10	85,000	95,000	104,000	115,000	129,000	143,000	11

B

Forecast Database in U.S. Dollars

Exhibit I-3

Software and Services Market Forecast in Dollars
Greece, 1995-2000

Delivery Modes	U.S. $ Million (rounded)								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	287	10	316	362	403	449	507	565	12
Professional Services	81	9	89	97	106	118	131	144	10
- IS Consulting	9	11	10	12	13	15	17	19	13
- Education & Training	7	6	8	8	9	9	10	11	7
- Custom Software	65	9	71	77	84	94	103	114	10
- Application Management	0	-100	0	0	0	0	0	0	0
Systems Integration	5	13	6	7	8	9	10	11	15
- Equipment	1	5	1	1	1	1	2	2	6
- Application Software	1	30	1	1	2	2	2	3	27
- System Software	0	15	0	1	1	1	1	1	12
- Professional Services	2	14	3	3	4	4	5	5	15
- Other	0	15	0	1	1	1	1	1	12
Systems Operations	4	24	4	5	6	7	9	10	18
- Platform Operations	1	17	1	1	2	2	2	2	15
- Application Operations	2	20	3	3	4	4	6	6	19
- Desktop Services	0	19	0	0	1	1	1	1	27
Processing Services	42	9	46	50	54	59	65	70	9
- Transaction Processing	37	9	41	44	48	53	58	63	9
- Utility Processing	2	5	2	2	2	2	2	2	5
- Other Processing	3	9	4	4	4	5	5	5	8
Network Services	15	16	18	21	25	30	35	41	18
- Electronic Info Svcs	10	13	11	12	14	16	18	20	13
- Network Applications	5	25	6	8	10	13	16	20	26
- Network Management	1	10	1	1	1	1	1	1	14
System Software	48	9	52	59	64	70	77	85	10
- Mainframe	19	-4	18	17	17	16	16	16	-2
- Minicomputer	17	12	19	22	25	29	33	37	14
- Workstation/PC	13	22	16	20	22	25	29	32	16
Application Software	33	19	39	52	62	69	81	92	18
- Mainframe	3	-3	2	2	2	2	2	2	-3
- Minicomputer	9	15	10	11	13	15	18	20	16
- Workstation/PC	22	21	27	39	46	51	61	70	21
Turnkey Systems	57	10	62	69	77	88	100	113	13
- Equipment	27	6	29	31	33	36	40	43	9
- Application Software	12	14	14	16	18	22	26	30	17
- System Software	3	6	3	3	4	4	4	5	9
- Professional Services	15	13	16	19	22	26	30	35	16
Equipment Services	36	-3	35	33	32	31	30	29	-4
- Equipment Maintenance	33	-5	31	29	28	26	25	24	-5
- Environmental Services	3	6	4	4	4	4	5	5	8
Grand Total Information Service Market	320	10	350	390	430	480	540	590	11

C

Forecast Database in ECUs

Exhibit I-4

Software and Services Market Forecast in ECUs
Greece, 1995-2000

Delivery Modes	ECU Millions (rounded)								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	234	10	257	295	329	366	413	461	12
Professional Services	66	9	72	79	87	96	106	118	10
- IS Consulting	8	11	9	10	11	12	14	16	13
- Education & Training	6	6	6	7	7	8	8	9	7
- Custom Software	53	9	58	63	69	76	84	93	10
- Application Management	0	-100	0	0	0	0	0	0	0
Systems Integration	4	13	5	5	6	7	8	9	15
- Equipment	1	5	1	1	1	1	1	1	6
- Application Software	1	30	1	1	1	2	2	2	27
- System Software	0	15	0	0	0	1	1	1	12
- Professional Services	2	14	2	3	3	3	4	4	15
- Other	0	15	0	0	0	1	1	1	12
Systems Operations	3	24	4	4	5	5	7	8	18
- Platform Operations	1	17	1	1	1	2	2	2	15
- Application Operations	2	20	2	3	3	3	5	5	19
- Desktop Services	0	19	0	0	0	1	1	1	27
Processing Services	35	9	38	41	44	48	53	57	9
- Transaction Processing	30	9	33	36	39	43	47	51	9
- Utility Processing	1	5	2	2	2	2	2	2	5
- Other Processing	3	9	3	3	3	4	4	4	8
Network Services	12	16	14	17	21	24	28	33	18
- Electronic Info Svcs	8	13	9	10	12	13	15	16	13
- Network Applications	4	25	5	6	8	10	13	16	26
- Network Management	1	10	1	1	1	1	1	1	14
System Software	39	9	43	48	52	57	63	69	10
- Mainframe	15	-4	14	14	14	13	13	13	-2
- Minicomputer	14	12	16	18	20	23	27	30	14
- Workstation/PC	10	22	13	16	18	20	23	26	16
Application Software	27	19	32	43	50	56	66	75	18
- Mainframe	2	-3	2	2	2	2	2	2	-3
- Minicomputer	7	15	8	9	11	12	14	16	16
- Workstation/PC	18	21	22	31	38	42	50	57	21
Turnkey Systems	46	10	51	56	63	72	82	92	13
- Equipment	22	6	23	25	27	30	33	35	9
- Application Software	10	14	11	13	15	18	21	24	17
- System Software	2	6	3	3	3	3	4	4	9
- Professional Services	12	13	13	15	18	21	24	28	16
Equipment Services	29	-3	28	27	26	25	24	23	-4
- Equipment Maintenance	27	-5	25	24	22	21	20	19	-5
- Environmental Services	3	6	3	3	3	4	4	4	8
Grand Total Information Service Market	260	10	290	320	350	390	440	480	11

D

Information Services Forecast Reconciliation in Local Currency

Exhibit I-5

Forecast Reconciliation, Greece, 1994-1999

Currency: Dra Millions	1994 Market				1999 Market				1994	1995
Delivery Mode	1994 Report (Fcst)	1995 Report (Act)	1994-1995 Variance (Amount)	1994-1995 Variance (%)	1994 Report (Fcst)	1995 Report (Fcst)	1994-1995 Variance (Amount)	1994-1995 Variance (%)	Report %CAGR (Fcst)	Report %CAGR (Fcst)
Software and Services Total (ex Equipment Services)	70,000	69,000	-1,000	-1	120,000	122,000	2,000	2	11	12
Professional Services	19,600	19,600	0	0	31,000	31,400	400	1	10	10
- IS Consulting	2,250	2,250	0	0	4,050	4,100	50	1	12	13
- Education & Training	1,780	1,780	0	0	2,350	2,450	100	4	6	7
- Custom Software	15,600	15,600	0	0	24,600	24,800	200	1	10	10
- Application Management	0	0	0	0	0	0	0	-100	0	-100
Systems Integration	1,700	1,200	-500	-29	3,400	2,400	-1,000	-29	15	15
- Equipment	460	300	-160	-35	815	383	-432	-53	12	5
- Application Software	340	168	-172	-51	1,010	551	-459	-45	24	27
- System Software	130	96	-34	-26	205	168	-37	-18	10	12
- Professional Services	750	540	-210	-28	1,250	1,126	-124	-10	11	16
- Other	40	96	56	140	100	168	68	68	20	12
Systems Operations	800	850	50	6	1,550	2,100	550	35	14	20
- Platform Operations	450	230	-220	-49	830	500	-330	-40	13	17
- Application Operations	290	550	260	90	530	1,350	820	155	13	20
- Desktop Services	70	80	10	14	190	245	55	29	22	25
Processing Services	10,150	10,150	0	0	15,350	15,550	200	1	9	9
- Transaction Processing	8,950	8,950	0	0	13,650	13,850	200	1	9	9
- Utility Processing	420	420	0	0	530	540	10	2	5	5
- Other Processing	800	800	0	0	1,160	1,180	20	2	8	8
Network Services	3,700	3,650	-50	-1	8,450	8,350	-100	-1	18	18
- Electronic Info Svcs	2,320	2,320	0	0	4,180	4,300	120	3	12	13
- Network Applications	1,190	1,190	0	0	3,720	3,800	80	2	26	26
- Network Management	165	150	-15	-9	530	265	-265	-50	26	12
System Software	11,600	11,600	0	0	17,900	18,600	700	4	9	10
- Mainframe	4,450	4,450	0	0	3,850	3,850	0	0	-3	-3
- Minicomputer	4,100	4,100	0	0	7,850	7,850	0	0	14	14
- Workstation/PC	3,060	3,060	0	0	6,160	6,920	760	12	15	18
Application Software	8,000	8,000	0	0	17,600	19,500	1,900	11	17	20
- Mainframe	590	590	0	0	500	510	10	2	-3	-3
- Minicomputer	2,050	2,050	0	0	4,200	4,200	0	0	15	15
- Workstation/PC	5,400	5,400	0	0	12,900	14,750	1,850	14	19	22
Turnkey Systems	14,000	13,600	-400	-3	25,200	24,100	-1,100	-4	12	12
- Equipment	6,450	6,450	0	0	9,700	9,650	-50	-1	9	8
- Application Software	2,900	2,900	0	0	6,300	6,150	-150	-2	17	16
- System Software	710	710	0	0	1,070	1,070	0	0	9	9
- Professional Services	3,950	3,500	-450	-11	8,150	7,200	-950	-12	16	16
Equipment Services	8,700	8,700	0	0	7,300	7,100	-200	-3	-3	-4
- Equipment Maintenance	7,910	7,910	0	0	6,190	5,992	-198	-3	-5	-5
- Environmental Services	800	800	0	0	1,130	1,132	2	0	7	7
Grand Total	78,000	77,000	-1,000	-1	128,000	129,000	1,000	1	10	11

J

Information Services Industry Forecast Database, 1995-2000 Ireland

A

Forecast Database in Local Currency (IP Millions)

Exhibit J-1

Top Level IT Expenditure, Ireland

Sector	IP Millions								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR (%)
Total IT Spending	1,130	2	1,150	1,180	1,200	1,230	1,260	1,290	2
Equipment Sales	325	2	330	320	325	320	320	325	0
Mainframe	65	0	65	50	44	39	34	30	-14
Minicomputer	82	-4	79	77	75	73	70	68	-3
PC/Workstation	180	3	185	195	205	210	215	225	4
Equipment Services	70	-1	69	68	67	67	66	66	-1
Software Products	112	6	119	134	143	148	155	160	6
Other Information Services	205	7	220	240	255	280	310	335	9
Data Communications	72	7	77	82	87	93	99	106	7
Facilities/Administration	78	-1	77	76	75	74	73	72	-1
In-house Staff	270	-4	260	260	250	250	240	230	-2

Exhibit J-2

Information Services Market
Forecast by Delivery Mode and Submode
Ireland, 1995-2000

Delivery Modes	IP Millions								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	365	7	390	425	455	485	525	560	8
Professional Services	94	2	96	101	106	114	125	135	7
- IS Consulting	11	0	11	12	12	13	14	15	6
- Education & Training	9	0	9	9	10	10	11	11	4
- Custom Software	74	3	76	80	84	91	100	109	7
- Application Management	0	-100	0	0	0	0	0	0	0
Systems Integration	9	22	11	11	12	15	15	17	9
- Equipment	2	0	2	2	2	3	2	3	8
- Application Software	1	100	2	2	2	3	4	5	20
- System Software	1	0	1	1	1	1	1	1	0
- Professional Services	4	25	5	5	6	7	7	7	7
- Other	1	0	1	1	1	1	1	1	0
Systems Operations	9	22	11	13	15	17	21	25	18
- Platform Operations	5	20	6	7	8	9	11	12	15
- Application Operations	3	33	4	4	5	5	7	9	18
- Desktop Services	1	0	1	2	2	3	3	4	32
Processing Services	36	0	36	36	36	36	36	36	0
- Transaction Processing	27	-4	26	26	25	24	24	23	-2
- Utility Processing	1	0	1	1	1	1	1	1	0
- Other Processing	8	6	9	9	10	11	11	12	6
Network Services	14	14	16	19	22	26	29	34	16
- Electronic Info Svcs	8	13	9	11	12	14	15	17	14
- Network Applications	5	20	6	7	9	10	12	15	19
- Network Management	1	0	1	1	1	2	2	2	15
System Software	59	2	60	63	65	67	68	68	2
- Mainframe	25	-8	23	22	21	20	18	17	-6
- Minicomputer	19	3	20	20	21	22	23	23	3
- Workstation/PC	15	17	18	22	23	25	27	28	10
Application Software	53	11	59	71	78	81	87	92	9
- Mainframe	5	0	5	4	4	4	3	3	-10
- Minicomputer	13	4	14	15	16	17	18	19	7
- Workstation/PC	35	14	40	52	58	60	66	70	12
Turnkey Systems	90	11	100	110	120	130	145	155	9
- Equipment	46	5	49	52	54	57	59	62	5
- Application Software	19	16	22	25	29	33	37	42	14
- System Software	3	0	3	3	3	3	3	3	0
- Professional Services	24	15	28	31	35	40	45	50	13
Equipment Services	70	-1	69	68	67	67	66	66	-1
- Equipment Maintenance	48	-4	46	44	42	40	38	36	-5
- Environmental Services	22	5	23	24	25	27	28	30	5
Grand Total	435	6	460	490	520	555	590	630	6
Information Service Market	0	0	0	0	0	0	0	0	0

B

Forecast Database in U.S. Dollars

Exhibit J-3

Software and Services Market Forecast in Dollars
Ireland, 1995-2000

Delivery Modes	U.S. $ Million (rounded)								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	564	7	603	657	703	750	811	866	8
Professional Services	145	2	148	156	164	176	193	209	7
- IS Consulting	17	0	17	18	19	20	22	23	6
- Education & Training	14	0	14	14	16	16	17	17	4
- Custom Software	114	3	117	124	130	141	155	168	7
- Application Management	0	-100	0	0	0	0	0	0	0
Systems Integration	14	22	17	17	19	23	23	26	9
- Equipment	3	0	3	3	3	5	3	5	8
- Application Software	2	100	3	3	3	5	6	8	20
- System Software	2	0	2	2	2	2	2	2	0
- Professional Services	6	25	8	8	9	11	11	11	7
- Other	2	0	2	2	2	2	2	2	0
Systems Operations	14	22	17	20	23	26	33	39	18
- Platform Operations	8	20	9	11	12	14	17	19	15
- Application Operations	5	33	6	6	8	8	11	14	18
- Desktop Services	2	0	2	3	3	5	5	6	32
Processing Services	56	0	56	56	56	56	56	56	0
- Transaction Processing	42	-4	40	40	39	37	37	36	-2
- Utility Processing	2	0	2	2	2	2	2	2	0
- Other Processing	12	6	13	14	15	16	17	18	6
Network Services	22	14	25	29	34	40	45	53	16
- Electronic Info Svcs	12	13	14	16	19	21	23	26	14
- Network Applications	8	20	9	11	13	16	19	22	19
- Network Management	2	0	2	2	2	3	3	3	15
System Software	91	2	93	97	100	103	104	104	2
- Mainframe	39	-8	36	33	32	30	28	26	-6
- Minicomputer	29	3	30	31	33	34	35	36	3
- Workstation/PC	23	17	27	33	36	39	42	43	10
Application Software	82	11	91	110	121	125	134	142	9
- Mainframe	8	0	8	6	6	6	5	5	-10
- Minicomputer	20	4	21	22	24	26	27	29	7
- Workstation/PC	54	14	62	80	90	93	102	108	12
Turnkey Systems	139	11	155	170	186	201	224	240	9
- Equipment	71	5	75	80	84	87	91	95	5
- Application Software	29	16	34	39	44	50	57	65	14
- System Software	5	0	5	5	5	5	5	5	0
- Professional Services	37	15	43	48	54	61	69	77	13
Equipment Services	108	-1	107	105	104	104	102	102	-1
- Equipment Maintenance	74	-4	71	68	65	62	59	56	-5
- Environmental Services	34	5	36	37	39	42	43	46	5
Grand Total	670	6	710	760	800	860	910	970	6
Information Service Market	0	0	0	0	0	0	0	0	0

C

Forecast Database in ECUs

Exhibit J-4

Software and Services Market Forecast in ECUs
Ireland, 1995-2000

Delivery Modes	ECU Millions (rounded)								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	460	7	491	535	573	611	661	705	8
Professional Services	118	2	121	127	134	144	157	170	7
- IS Consulting	14	0	14	15	15	16	18	19	6
- Education & Training	11	0	11	11	13	13	14	14	4
- Custom Software	93	3	96	101	106	115	126	137	7
- Application Management	0	-100	0	0	0	0	0	0	0
Systems Integration	11	22	14	14	15	19	19	21	9
- Equipment	3	0	3	3	3	4	3	4	8
- Application Software	1	100	3	3	3	4	5	6	20
- System Software	1	0	1	1	1	1	1	1	0
- Professional Services	5	25	6	6	8	9	9	9	7
- Other	1	0	1	1	1	1	1	1	0
Systems Operations	11	22	14	16	19	21	26	32	18
- Platform Operations	6	20	8	9	10	11	14	15	15
- Application Operations	4	33	5	5	6	6	9	11	18
- Desktop Services	1	0	1	3	3	4	4	5	32
Processing Services	45	0	45	45	45	45	45	45	0
- Transaction Processing	34	-4	33	33	32	30	30	29	-2
- Utility Processing	1	0	1	1	1	1	1	1	0
- Other Processing	10	6	11	11	12	13	14	15	6
Network Services	18	14	20	24	28	33	37	43	16
- Electronic Info Svcs	10	13	11	13	15	17	19	21	14
- Network Applications	6	20	8	9	11	13	15	18	19
- Network Management	1	0	1	1	1	3	3	3	15
System Software	74	2	76	79	81	84	85	85	2
- Mainframe	32	-8	29	27	26	25	23	21	-6
- Minicomputer	24	3	25	25	26	28	28	29	3
- Workstation/PC	19	17	22	27	29	32	34	35	10
Application Software	67	11	74	89	98	102	110	116	9
- Mainframe	6	0	6	5	5	5	4	4	-10
- Minicomputer	16	4	17	18	20	21	22	23	7
- Workstation/PC	44	14	50	66	73	76	83	88	12
Turnkey Systems	113	11	126	139	151	164	183	195	9
- Equipment	58	5	61	65	68	71	74	78	5
- Application Software	24	16	28	32	36	41	47	53	14
- System Software	4	0	4	4	4	4	4	4	0
- Professional Services	30	15	35	39	44	50	56	63	13
Equipment Services	88	-1	87	86	84	84	83	83	-1
- Equipment Maintenance	60	-4	58	55	53	50	48	45	-5
- Environmental Services	28	5	29	30	31	34	35	38	5
Grand Total	550	6	580	620	650	700	740	790	6
Information Service Market	0	0	0	0	0	0	0	0	0

D

Information Services Forecast Reconciliation in Local Currency

Exhibit J-5

Forecast Reconciliation, Ireland, 1994-1999

Currency: IP Millions	1994 Market				1999 Market				1994 Report %CAGR	1995 Report %CAGR
Delivery Mode	1994 Report (Fcst)	1995 Report (Act)	1994-1995 Variance (Amount)	1994-1995 Variance (%)	1994 Report (Fcst)	1995 Report (Fcst)	1994-1995 Variance (Amount)	1994-1995 Variance (%)	(Fcst)	(Fcst)
Software and Services Total (ex Equipment Services)	365	365	0	0	520	525	5	1	7	8
Professional Services	94	94	0	0	132	125	-7	-5	7	6
- IS Consulting	11	11	0	0	15	14	-1	-7	6	5
- Education & Training	9	9	0	0	11	11	1	5	3	4
- Custom Software	74	74	0	0	106	100	-6	-6	7	6
- Application Management	0	0	0	0	0	0	0	-100	0	-100
Systems Integration	7	9	2	29	11	15	4	36	9	11
- Equipment	2	2	0	3	3	2	-1	-26	7	0
- Application Software	1	1	0	-17	3	4	1	18	23	32
- System Software	1	1	1	100	1	1	0	33	8	0
- Professional Services	3	4	1	25	4	7	3	67	6	12
- Other	0	1	1	9900	0	1	1	9900	0	0
Systems Operations	9	9	0	0	29	21	-8	-28	26	18
- Platform Operations	5	5	0	0	15	11	-4	-27	25	17
- Application Operations	3	3	0	0	11	7	-4	-33	28	18
- Desktop Services	1	1	0	0	4	3	-1	-19	30	25
Processing Services	38	36	-2	-5	38	36	-2	-5	0	0
- Transaction Processing	28	27	-1	-4	25	24	-1	-4	-2	-2
- Utility Processing	1	1	0	0	1	1	0	0	0	0
- Other Processing	9	8	-1	-11	12	11	-1	-8	6	7
Network Services	13	14	1	8	27	29	2	7	16	16
- Electronic Info Svcs	8	8	1	7	14	15	1	7	13	13
- Network Applications	5	5	1	11	11	12	1	9	20	19
- Network Management	1	1	0	0	2	2	0	-9	17	15
System Software	59	59	1	1	64	68	4	6	2	3
- Mainframe	25	25	0	0	18	18	0	0	-6	-6
- Minicomputer	19	19	1	3	22	23	1	2	4	3
- Workstation/PC	15	15	0	0	24	27	4	15	9	12
Application Software	53	53	0	0	79	87	8	10	8	10
- Mainframe	5	5	0	0	3	3	0	0	-10	-10
- Minicomputer	13	13	1	4	17	18	1	3	6	6
- Workstation/PC	35	35	0	0	59	66	7	12	11	14
Turnkey Systems	90	90	0	0	140	145	5	4	9	10
- Equipment	46	46	0	0	58	59	1	2	5	5
- Application Software	19	19	1	3	35	37	2	6	14	14
- System Software	3	3	0	0	3	3	0	0	0	0
- Professional Services	24	24	1	2	43	45	2	3	13	13
Equipment Services	70	70	0	0	63	66	3	5	-2	-1
- Equipment Maintenance	48	48	0	0	37	38	2	4	-5	-5
- Environmental Services	22	22	0	0	27	28	2	6	4	5
Grand Total	435	435	0	0	585	590	5	1	6	6

Information Services Industry Forecast Database, 1995-2000 Italy

A

Forecast Database in Local Currency (Li Billions)

Exhibit K-1

Top Level IT Expenditure, Italy

Sector	Li Billions								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR (%)
Total IT Spending	42,900	1	43,350	44,500	45,750	46,750	48,050	49,650	3
Equipment Sales	8,100	-1	8,050	8,050	8,100	8,150	8,200	8,250	0
Mainframe	890	-15	760	640	540	460	390	330	-15
Minicomputer	1,700	-6	1,605	1,530	1,465	1,380	1,285	1,230	-5
PC/Workstation	5,500	4	5,700	5,900	6,100	6,300	6,500	6,700	3
Equipment Services	3,600	0	3,600	3,600	3,600	3,700	3,700	3,700	1
Software Products	4,500	10	4,940	5,855	6,320	6,655	7,195	7,615	9
Other Information Services	6,700	4	7,000	7,300	7,900	8,600	9,300	10,200	8
Data Communications	3,170	9	3,450	3,700	3,970	4,270	4,530	4,850	7
Facilities/Administration	4,350	-4	4,190	4,080	4,040	4,050	4,040	4,040	-1
In-house Staff	12,500	-3	12,100	11,900	11,800	11,300	11,100	11,000	-2

Exhibit K-2

Information Services Market
Forecast by Delivery Mode and Submode
Italy, 1995-2000

Delivery Modes	Li Billions								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	11,850	6	12,600	13,900	14,950	16,000	17,350	18,700	8
Professional Services	3,400	0	3,400	3,400	3,500	3,600	3,800	4,000	3
- IS Consulting	550	10	605	630	680	760	870	985	10
- Education & Training	265	6	280	280	285	310	335	360	5
- Custom Software	2,580	-4	2,475	2,440	2,515	2,515	2,555	2,595	1
- Application Management	30	10	33	35	40	50	63	80	19
Systems Integration	535	9	585	640	710	795	885	980	11
- Equipment	139	1	140	141	149	159	168	167	4
- Application Software	96	16	111	135	164	183	221	274	20
- System Software	37	11	41	45	50	56	62	69	11
- Professional Services	251	12	280	301	327	366	397	431	9
- Other	11	9	12	19	21	32	35	39	27
Systems Operations	430	33	570	720	890	1,060	1,270	1,470	21
- Platform Operations	115	13	130	150	170	190	210	225	12
- Application Operations	250	40	350	455	570	680	820	940	22
- Desktop Services	65	38	90	115	150	190	240	300	27
Processing Services	1,150	0	1,150	1,150	1,150	1,200	1,200	1,250	2
- Transaction Processing	1,035	-2	1,010	1,000	1,020	1,040	1,050	1,065	1
- Utility Processing	15	0	15	15	15	15	15	15	0
- Other Processing	115	4	120	125	135	140	155	165	7
Network Services	740	14	845	980	1,140	1,330	1,565	1,845	17
- Electronic Info Svcs	420	5	440	465	490	510	510	510	3
- Network Applications	260	31	340	440	570	730	950	1,205	29
- Network Management	60	8	65	75	80	92	105	130	15
System Software	2,400	8	2,600	2,900	3,000	3,100	3,200	3,300	5
- Mainframe	865	-4	830	775	735	700	665	610	-6
- Minicomputer	795	5	835	885	915	940	950	965	3
- Workstation/PC	740	24	920	1,195	1,305	1,415	1,570	1,695	13
Application Software	2,100	11	2 340	2,955	3,320	3,555	3,995	4,315	13
- Mainframe	146	-6	137	129	120	113	107	102	-6
- Minicomputer	494	-8	456	466	474	471	403	315	-7
- Workstation/PC	1,460	20	1,745	2,360	2,725	2,970	3,485	3,900	17
Turnkey Systems	1,080	2	1,100	1,165	1,250	1,350	1,440	1,535	7
- Equipment	540	3	555	580	605	630	650	670	4
- Application Software	255	0	255	275	305	340	375	410	10
- System Software	13	8	14	15	16	18	19	20	7
- Professional Services	270	2	275	295	325	360	395	435	10
Equipment Services	3,600	0	3,600	3,600	3,600	3,700	3,700	3,700	1
- Equipment Maintenance	2,355	0	2,355	2,331	2,262	2,194	2,128	2,043	-3
- Environmental Services	1,205	4	1,253	1,316	1,382	1,465	1,552	1,661	6
Grand Total Information Service Market	15,500	3	16,000	17,500	18,500	19,500	21,000	22,500	7

B

Forecast Database in U.S. Dollars

Exhibit K-3

Software and Services Market Forecast in Dollars
Italy, 1995-2000

Delivery Modes	U.S. $ Million (rounded)								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	7,300	6	7,800	8,600	9,200	9,900	10,700	11,500	8
Professional Services	2,100	0	2,100	2,100	2,200	2,200	2,300	2,500	3
- IS Consulting	340	10	370	390	420	470	540	610	10
- Education & Training	160	6	170	170	180	190	210	220	5
- Custom Software	1,600	-4	1,500	1,500	1,600	1,600	1,600	1,600	1
- Application Management	19	10	20	22	25	31	39	49	19
Systems Integration	330	9	360	400	440	490	550	600	11
- Equipment	90	1	90	90	90	100	100	100	4
- Application Software	59	16	69	83	101	113	136	169	20
- System Software	23	11	25	28	31	35	38	43	11
- Professional Services	150	12	170	190	200	230	250	270	9
- Other	7	9	7	12	13	20	22	24	27
Systems Operations	270	33	350	440	550	650	780	910	21
- Platform Operations	70	13	80	90	100	120	130	140	12
- Application Operations	150	40	220	280	350	420	510	580	22
- Desktop Services	40	38	56	71	93	117	148	185	27
Processing Services	710	0	710	710	710	740	740	770	2
- Transaction Processing	640	-2	620	620	630	640	650	660	1
- Utility Processing	10	0	10	10	10	10	10	10	0
- Other Processing	70	4	70	80	80	90	100	100	7
Network Services	460	14	520	600	700	820	970	1,140	17
- Electronic Info Svcs	260	5	270	290	300	310	310	310	3
- Network Applications	160	31	210	270	350	450	590	740	29
- Network Management	40	8	40	50	50	60	60	80	15
System Software	1,500	8	1,600	1,800	1,900	1,900	2,000	2,000	5
- Mainframe	530	-4	510	480	450	430	410	380	-6
- Minicomputer	490	5	520	550	560	580	590	600	3
- Workstation/PC	460	24	570	740	810	870	970	1,050	13
Application Software	1,300	11	1,400	1,800	2,000	2,200	2,500	2,700	13
- Mainframe	90	-6	80	80	70	70	70	60	-6
- Minicomputer	300	-8	280	290	290	290	250	190	-7
- Workstation/PC	900	20	1,100	1,500	1,700	1,800	2,200	2,400	17
Turnkey Systems	670	2	680	720	770	830	890	950	7
- Equipment	330	3	340	360	370	390	400	410	4
- Application Software	160	0	160	170	190	210	230	250	10
- System Software	8	8	9	9	10	11	11	12	7
- Professional Services	170	2	170	180	200	220	240	270	10
Equipment Services	2,200	0	2,200	2,200	2,200	2,300	2,300	2,300	1
- Equipment Maintenance	1,500	0	1,500	1,400	1,400	1,400	1,300	1,300	-3
- Environmental Services	700	4	800	800	900	900	1,000	1,000	6
Grand Total Information Service Market	10,000	3	10,000	11,000	11,000	12,000	13,000	14,000	7

C

Forecast Database in ECUs

Exhibit K-4

Software and Services Market Forecast in ECUs
Italy, 1995-2000

Delivery Modes	ECU Millions (rounded)								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	6,000	6	6,300	7,000	7,500	8,000	8,700	9,400	8
Professional Services	1,700	0	1,700	1,700	1,800	1,800	1,900	2,000	3
- IS Consulting	280	10	300	320	340	380	440	490	10
- Education & Training	130	6	140	140	140	160	170	180	5
- Custom Software	1,300	-4	1,200	1,200	1,300	1,300	1,300	1,300	1
- Application Management	20	10	20	20	20	30	30	40	19
Systems Integration	270	9	290	320	360	400	440	490	11
- Equipment	70	1	70	70	70	80	80	80	4
- Application Software	48	16	56	68	82	92	111	138	20
- System Software	19	11	21	23	25	28	31	35	11
- Professional Services	130	12	140	150	160	180	200	220	9
- Other	6	9	6	10	11	16	18	20	27
Systems Operations	220	33	290	360	450	530	640	740	21
- Platform Operations	60	13	70	80	90	100	110	110	12
- Application Operations	130	40	180	230	290	340	410	470	22
- Desktop Services	33	38	45	58	75	95	121	151	27
Processing Services	590	0	580	570	590	600	610	630	2
- Transaction Processing	520	-2	510	500	510	520	530	540	1
- Utility Processing	10	0	10	10	10	10	10	10	0
- Other Processing	60	4	60	60	70	70	80	80	7
Network Services	370	14	420	490	570	670	790	930	17
- Electronic Info Svcs	210	5	220	230	250	260	260	260	3
- Network Applications	130	31	170	220	290	370	480	610	29
- Network Management	30	8	30	40	40	50	50	70	15
System Software	1,200	8	1,300	1,500	1,500	1,600	1,600	1,700	5
- Mainframe	430	-4	420	390	370	350	330	310	-6
- Minicomputer	400	5	420	440	460	470	480	480	3
- Workstation/PC	370	24	460	600	660	710	790	850	13
Application Software	1,100	11	1,200	1,500	1,700	1,800	2,000	2,200	13
- Mainframe	70	-6	70	60	60	60	50	50	-6
- Minicomputer	250	-8	230	230	240	240	200	160	-7
- Workstation/PC	730	20	880	1,190	1,370	1,490	1,750	1,960	17
Turnkey Systems	540	2	550	590	630	680	720	770	7
- Equipment	270	3	280	290	300	320	330	340	4
- Application Software	130	0	130	140	150	170	190	210	10
- System Software	7	8	7	8	8	9	9	10	7
- Professional Services	140	2	140	150	160	180	200	220	10
Equipment Services	1,800	0	1,800	1,800	1,800	1,900	1,900	1,900	1
- Equipment Maintenance	1,200	0	1,200	1,200	1,100	1,100	1,100	1,000	-3
- Environmental Services	600	4	600	700	700	700	800	800	6
Grand Total Information Service Market	8,000	3	8,000	9,000	9,000	10,000	11,000	11,000	7

D

Information Services Forecast Reconciliation in Local Currency

Exhibit K-5

Forecast Reconciliation, Italy, 1994-1999

Currency: LI Billions	1994 Market				1999 Market				1994	1995
Delivery Mode	1994 Report (Fcst)	1995 Report (Act)	1994-1995 Variance (Amount)	1994-1995 Variance (%)	1994 Report (Fcst)	1995 Report (Fcst)	1994-1995 Variance (Amount)	1994-1995 Variance (%)	Report %CAGR (Fcst)	Report %CAGR (Fcst)
Software and Services Total (ex Equipment Services)	11,450	11,450	0	0	17,000	15,500	-1,500	-9	8	6
Professional Services	3,460	3,460	0	0	4,100	3,840	-260	-6	3	2
- IS Consulting	500	500	0	0	840	795	-45	-5	11	10
- Education & Training	250	250	0	0	340	315	-25	-7	6	5
- Custom Software	2,680	2,690	10	0	2,840	2,660	-180	-6	1	0
- Application Management	27	25	-2	-7	80	69	-11	-14	24	23
Systems Integration	515	490	-25	-5	1,130	800	-330	-29	17	10
- Equipment	140	140	0	0	235	185	-50	-21	11	6
- Application Software	95	95	0	0	400	210	-190	-48	33	17
- System Software	40	40	0	0	80	60	-20	-25	15	8
- Professional Services	230	205	-25	-11	380	330	-50	-13	11	10
- Other	10	10	0	0	36	17	-19	-53	29	11
Systems Operations	350	350	0	0	815	890	75	9	18	21
- Platform Operations	150	100	-50	-33	320	160	-160	-50	16	10
- Application Operations	190	200	10	5	450	550	100	22	19	22
- Desktop Services	15	50	35	233	46	180	134	291	25	29
Processing Services	1,185	1,185	0	0	1,420	1,235	-185	-13	4	1
- Transaction Processing	1,060	1,060	0	0	1,245	1,075	-170	-14	3	0
- Utility Processing	15	15	0	0	15	15	0	0	0	0
- Other Processing	110	110	0	0	160	145	-15	-9	8	6
Network Services	650	650	0	0	1,370	1,320	-50	-4	16	15
- Electronic Info Svcs	400	400	0	0	520	480	-40	-8	5	4
- Network Applications	200	200	0	0	675	730	55	8	28	30
- Network Management	50	50	0	0	175	110	-65	-37	28	17
System Software	2,300	2,300	0	0	3,050	2,800	-250	-8	6	4
- Mainframe	905	905	0	0	635	695	60	9	-7	-5
- Minicomputer	755	755	0	0	1,035	905	-130	-13	7	4
- Workstation/PC	640	640	0	0	1,380	1,200	-180	-13	17	13
Application Software	1,940	1,940	0	0	3,590	3,200	-390	-11	13	11
- Mainframe	155	155	0	0	120	114	-6	-5	-5	-6
- Minicomputer	535	535	0	0	730	436	-294	-40	6	-4
- Workstation/PC	1,250	1,250	0	0	2,740	2,650	-90	-3	17	16
Turnkey Systems	1,050	1,050	0	0	1,540	1,410	-130	-8	8	6
- Equipment	535	525	-10	-2	665	630	-35	-5	4	4
- Application Software	250	255	5	2	425	375	-50	-12	11	8
- System Software	12	12	0	0	17	17	0	0	7	7
- Professional Services	260	265	5	2	440	390	-50	-11	11	8
Equipment Services	3,500	3,500	0	0	3,700	3,600	-100	-3	1	1
- Equipment Maintenance	2,350	2,350	0	0	2,130	2,095	-35	-2	-2	-2
- Environmental Services	1,150	1,150	0	0	1,570	1,505	-65	-4	6	6
Grand Total	15,000	15,000	0	0	20,500	19,000	-1,500	-7	6	5

Information Services Industry Forecast Database, 1995-2000 Netherlands

A

Forecast Database in Local Currency (Dfl Millions)

Exhibit L-1

Top Level IT Expenditure, Netherlands

Sector	Dfl Millions								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR (%)
Total IT Spending	24,500	2	25,000	26,000	26,500	27,000	28,500	29,500	3
Equipment Sales	4,800	0	4,800	4,800	4,900	4,900	4,900	5,000	1
Mainframe	900	-11	800	750	700	600	550	500	-9
Minicomputer	1,050	0	1,050	1,000	1,000	950	900	900	-3
PC/Workstation	2,800	4	2,900	3,050	3,200	3,300	3,400	3,550	4
Equipment Services	2,440	1	2,460	2,480	2,500	2,530	2,590	2,650	1
Software Products	2,420	3	2,500	2,820	2,900	3,010	3,100	3,140	5
Other Information Services	5,600	9	6,100	6,600	7,300	7,900	8,800	9,900	10
Data Communications	1,550	10	1,700	1,800	1,950	2,100	2,300	2,500	8
Facilities/Administration	1,900	0	1,900	1,850	1,850	1,800	1,800	1,800	-1
In-house Staff	5,800	-3	5,600	5,400	5,200	5,000	4,900	4,700	-3

Exhibit L-2

Information Services Market
Forecast by Delivery Mode and Submode
Netherlands, 1995-2000

Delivery Modes	Dfl Millions								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	8,600	7	9,200	10,000	10,700	11,500	12,500	13,700	8
Professional Services	3,060	6	3,230	3,430	3,640	3,870	4,220	4,760	8
- IS Consulting	420	10	460	505	555	610	685	800	12
- Education & Training	360	7	385	412	441	476	514	561	8
- Custom Software	2,230	4	2,330	2,440	2,550	2,670	2,880	3,220	7
- Application Management	45	22	55	70	90	115	145	180	27
Systems Integration	310	13	350	405	460	520	580	645	13
- Equipment	78	8	84	85	88	94	93	103	4
- Application Software	43	30	56	77	92	120	145	168	25
- System Software	25	12	28	32	37	37	41	45	10
- Professional Services	140	13	158	187	217	245	278	303	14
- Other	25	0	25	24	28	26	23	26	1
Systems Operations	290	21	350	420	505	615	740	895	21
- Platform Operations	80	19	95	110	125	145	165	185	14
- Application Operations	140	14	160	185	220	260	315	385	19
- Desktop Services	70	36	95	125	160	210	260	325	28
Processing Services	1,030	6	1,090	1,150	1,210	1,290	1,360	1,440	6
- Transaction Processing	910	5	960	1,010	1,060	1,130	1,190	1,260	6
- Utility Processing	27	0	27	28	28	29	29	30	2
- Other Processing	94	9	102	110	120	130	141	154	9
Network Services	500	14	570	665	785	930	1,105	1,300	18
- Electronic Info Svcs	270	7	290	320	355	395	435	475	10
- Network Applications	200	23	245	310	390	490	615	760	25
- Network Management	30	10	33	35	40	45	55	65	15
System Software	1,200	0	1,200	1,300	1,300	1,400	1,400	1,400	3
- Mainframe	545	-6	510	490	470	450	420	395	-5
- Minicomputer	345	1	350	365	380	395	400	405	3
- Workstation/PC	305	16	355	440	475	510	550	575	10
Application Software	1,220	7	1,300	1,520	1,600	1,610	1,700	1,740	6
- Mainframe	95	-5	90	90	85	80	80	75	-4
- Minicomputer	370	8	400	435	475	515	560	610	9
- Workstation/PC	750	8	810	990	1,040	1,010	1,060	1,050	5
Turnkey Systems	1,030	4	1,070	1,100	1,150	1,240	1,360	1,510	7
- Equipment	470	0	470	460	460	470	495	525	2
- Application Software	240	10	265	285	315	355	405	470	12
- System Software	64	0	64	64	64	66	70	75	3
- Professional Services	260	6	275	295	315	345	385	435	10
Equipment Services	2,440	1	2,460	2,480	2,500	2,530	2,590	2,650	1
- Equipment Maintenance	1,490	-4	1,430	1,373	1,305	1,239	1,177	1,118	-5
- Environmental Services	950	8	1,026	1,108	1,197	1,292	1,409	1,536	8
Grand Total Information Service Market	11,100	5	11,600	12,500	13,200	14,000	15,100	16,300	7
	0	0	0	0	0	0	0	0	0

B

Forecast Database in U.S. Dollars

Exhibit L-3

Software and Services Market Forecast in Dollars
Netherlands, 1995-2000

Delivery Modes	U.S. $ Million (rounded)								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	4,945	7	5,285	5,745	6,150	6,610	7,185	7,875	8
Professional Services	1,760	6	1,855	1,970	2,090	2,225	2,425	2,735	8
- IS Consulting	242	10	265	290	319	351	394	460	12
- Education & Training	207	7	222	237	254	274	296	323	8
- Custom Software	1,280	4	1,340	1,400	1,465	1,535	1,655	1,850	7
- Application Management	26	22	32	40	52	66	83	103	27
Systems Integration	178	13	201	233	265	299	334	371	13
- Equipment	45	8	49	49	51	54	54	59	4
- Application Software	25	30	32	44	53	69	83	97	25
- System Software	14	12	16	18	21	21	24	26	10
- Professional Services	81	13	91	108	125	141	160	174	14
- Other	14	0	14	14	16	15	13	15	1
Systems Operations	167	21	201	242	290	354	426	515	21
- Platform Operations	46	19	55	63	72	84	95	107	14
- Application Operations	81	14	92	107	127	150	181	222	19
- Desktop Services	40	36	55	72	92	121	149	187	28
Processing Services	592	6	627	661	696	742	782	828	6
- Transaction Processing	523	5	552	581	609	650	684	724	6
- Utility Processing	16	0	16	16	16	17	17	17	2
- Other Processing	54	9	59	63	69	75	81	89	9
Network Services	288	14	328	382	451	535	635	747	18
- Electronic Info Svcs	155	7	167	184	204	227	250	273	10
- Network Applications	115	23	141	178	224	282	354	437	25
- Network Management	17	10	19	20	23	26	32	38	15
System Software	690	0	690	745	745	805	805	805	3
- Mainframe	313	-6	293	282	270	259	242	227	-5
- Minicomputer	199	1	201	210	219	227	230	233	3
- Workstation/PC	176	16	204	253	273	293	316	331	10
Application Software	700	7	745	875	920	925	975	1,000	6
- Mainframe	55	-5	52	52	49	46	46	43	-4
- Minicomputer	213	8	230	250	273	296	322	351	9
- Workstation/PC	430	8	465	570	600	580	610	605	5
Turnkey Systems	592	4	615	632	661	713	782	868	7
- Equipment	270	0	270	265	265	270	285	302	2
- Application Software	138	10	153	164	181	204	233	270	12
- System Software	37	0	37	37	37	38	40	43	3
- Professional Services	150	6	158	170	181	199	222	250	10
Equipment Services	1,400	1	1,415	1,425	1,435	1,455	1,490	1,525	1
- Equipment Maintenance	855	-4	820	790	750	710	675	645	-5
- Environmental Services	545	8	590	635	690	745	810	885	8
Grand Total Information Service Market	6,400	5	6,650	7,200	7,600	8,050	8,700	9,350	7

C

Forecast Database in ECUs

Exhibit L-4

Software and Services Market Forecast in ECUs
Netherlands, 1995-2000

Delivery Modes	ECU Millions (rounded)								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	4,040	7	4,320	4,695	5,025	5,400	5,870	6,430	8
Professional Services	1,435	6	1,515	1,610	1,710	1,815	1,980	2,235	8
- IS Consulting	197	10	216	237	261	287	322	376	12
- Education & Training	169	7	181	194	207	224	242	264	8
- Custom Software	1,045	4	1,095	1,145	1,195	1,255	1,350	1,510	7
- Application Management	21	22	26	33	43	54	68	85	27
Systems Integration	146	13	165	190	216	244	273	303	13
- Equipment	37	8	40	40	42	44	44	49	4
- Application Software	20	30	26	36	43	56	68	79	25
- System Software	12	12	13	15	17	17	19	21	10
- Professional Services	66	13	74	88	102	115	131	143	14
- Other	12	0	12	11	13	12	11	12	1
Systems Operations	136	21	165	197	237	289	348	420	21
- Platform Operations	38	19	45	52	59	68	78	87	14
- Application Operations	66	14	75	87	104	122	148	181	19
- Desktop Services	33	36	45	59	75	99	122	153	28
Processing Services	484	6	512	539	567	605	639	678	6
- Transaction Processing	427	5	451	474	498	531	559	592	6
- Utility Processing	13	0	13	13	13	14	14	14	2
- Other Processing	44	9	48	52	57	61	66	73	9
Network Services	235	14	268	312	369	437	519	611	18
- Electronic Info Svcs	127	7	136	150	167	186	204	223	10
- Network Applications	94	23	115	146	183	230	289	357	25
- Network Management	14	10	16	17	19	21	26	31	15
System Software	565	0	565	610	610	655	655	655	3
- Mainframe	256	-6	240	230	221	212	197	186	-5
- Minicomputer	162	1	165	172	179	186	188	190	3
- Workstation/PC	143	16	167	207	223	240	258	270	10
Application Software	575	7	610	715	750	755	800	815	6
- Mainframe	45	-5	43	43	40	38	38	35	-4
- Minicomputer	174	8	188	204	223	242	263	287	9
- Workstation/PC	352	8	381	465	489	474	498	493	5
Turnkey Systems	484	4	503	517	540	582	639	709	7
- Equipment	221	0	221	216	216	221	233	247	2
- Application Software	113	10	125	134	148	167	190	221	12
- System Software	30	0	30	30	30	31	33	35	3
- Professional Services	122	6	129	139	148	162	181	204	10
Equipment Services	1,145	1	1,155	1,165	1,175	1,190	1,215	1,245	1
- Equipment Maintenance	700	-4	670	645	615	580	555	525	-5
- Environmental Services	445	8	480	520	560	605	660	720	8
Grand Total Information Service Market	5,200	5	5,450	5,850	6,200	6,550	7,100	7,650	7

D

Information Services Forecast Reconciliation in Local Currency

Exhibit L-5

Forecast Reconciliation, Netherlands, 1994-1999

Currency: Dfl Millions	1994 Market				1999 Market				1994	1995
Delivery Mode	1994 Report (Fcst)	1995 Report (Act)	1994-1995 Variance (Amount)	1994-1995 Variance (%)	1994 Report (Fcst)	1995 Report (Fcst)	1994-1995 Variance (Amount)	1994-1995 Variance (%)	Report %CAGR (Fcst)	Report %CAGR (Fcst)
Software and Services Total (ex Equipment Services)	8,700	8,600	-100	-1	12,500	12,500	0	0	8	8
Professional Services	3,050	3,060	10	0	4,440	4,220	-220	-5	8	7
- IS Consulting	420	420	0	0	720	685	-35	-5	11	10
- Education & Training	360	360	0	0	540	514	-26	-5	8	7
- Custom Software	2,230	2,230	0	0	3,040	2,880	-160	-5	6	5
- Application Management	44	45	1	2	135	145	10	7	25	26
Systems Integration	395	310	-85	-22	655	580	-75	-11	11	13
- Equipment	95	78	-17	-18	135	93	-42	-31	7	4
- Application Software	80	43	-37	-46	240	145	-95	-40	25	28
- System Software	30	25	-5	-17	30	41	11	37	0	10
- Professional Services	180	140	-40	-22	235	278	43	18	5	15
- Other	8	25	17	213	17	23	7	39	16	-2
Systems Operations	290	290	0	0	740	740	0	0	21	21
- Platform Operations	80	80	0	0	155	165	10	6	14	16
- Application Operations	140	140	0	0	350	315	-35	-10	20	18
- Desktop Services	72	70	-2	-3	235	260	25	11	27	30
Processing Services	1,030	1,030	0	0	1,340	1,360	20	1	5	6
- Transaction Processing	910	910	0	0	1,170	1,190	20	2	5	6
- Utility Processing	27	27	0	0	29	29	0	0	1	1
- Other Processing	94	94	0	0	140	141	1	1	8	8
Network Services	500	500	0	0	1,120	1,105	-15	-1	18	17
- Electronic Info Svcs	270	270	0	0	430	435	5	1	10	10
- Network Applications	200	200	0	0	625	615	-10	-2	26	25
- Network Management	30	30	0	0	65	55	-10	-15	17	13
System Software	1,200	1,200	0	0	1,280	1,400	120	9	1	3
- Mainframe	545	545	0	0	410	420	10	2	-6	-5
- Minicomputer	345	345	0	0	390	400	10	3	2	3
- Workstation/PC	305	305	0	0	480	550	70	15	9	13
Application Software	1,220	1,220	0	0	1,560	1,700	140	9	5	7
- Mainframe	95	95	0	0	80	80	0	0	-3	-3
- Minicomputer	370	370	0	0	555	560	5	1	8	9
- Workstation/PC	750	750	0	0	920	1,060	140	15	4	7
Turnkey Systems	1,030	1,030	0	0	1,410	1,360	-50	-4	6	6
- Equipment	470	470	0	0	515	495	-20	-4	2	1
- Application Software	240	240	0	0	420	405	-15	-4	12	11
- System Software	64	64	0	0	74	70	-4	-5	3	2
- Professional Services	260	260	0	0	405	385	-20	-5	9	8
Equipment Services	2,440	2,440	0	0	2,510	2,590	80	3	1	1
- Equipment Maintenance	1,490	1,490	0	0	1,170	1,177	7	1	-5	-5
- Environmental Services	950	950	0	0	1,340	1,409	69	5	7	8
Grand Total	11,200	11,100	-100	-1	15,100	15,100	0	0	6	6

Information Services Industry Forecast Database, 1995-2000 Norway

A

Forecast Database in Local Currency (NK Millions)

Exhibit M-1

Top Level IT Expenditure, Norway

Sector	NK Millions								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR (%)
Total IT Spending	36,000	0	36,000	37,000	37,000	38,000	39,000	40,000	2
Equipment Sales	7,100	-1	7,000	6,900	6,900	6,800	6,700	6,700	-1
Mainframe	1,550	-10	1,400	1,300	1,200	1,100	1,000	900	-8
Minicomputer	1,750	-3	1,700	1,650	1,600	1,550	1,500	1,450	-3
PC/Workstation	3,750	3	3,850	3,950	4,050	4,150	4,200	4,350	2
Equipment Services	2,890	0	2,880	2,880	2,880	2,900	2,930	2,960	1
Software Products	2,860	7	3,070	3,620	3,940	4,190	4,610	4,960	10
Other Information Services	8,000	1	8,100	8,400	8,600	9,100	9,500	9,900	4
Data Communications	2,900	5	3,050	3,250	3,500	3,700	4,000	4,300	7
Facilities/Administration	3,100	-3	3,000	3,000	2,950	2,950	2,900	2,850	-1
In-house Staff	8,800	-2	8,600	8,600	8,600	8,600	8,600	8,600	0

Exhibit M-2

Information Services Market
Forecast by Delivery Mode and Submode
Norway, 1995-2000

Delivery Modes	NK Millions								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	11,700	3	12,100	12,900	13,500	14,200	15,100	15,900	6
Professional Services	2,900	0	2,900	2,950	3,050	3,200	3,300	3,400	3
- IS Consulting	445	4	465	495	530	570	615	660	7
- Education & Training	355	3	366	380	399	419	440	462	5
- Custom Software	2,050	0	2,050	2,050	2,100	2,150	2,200	2,200	1
- Application Management	25	12	28	30	35	42	52	70	20
Systems Integration	250	10	275	310	350	390	430	485	12
- Equipment	63	0	63	68	67	67	69	73	3
- Application Software	35	26	44	53	70	86	103	121	22
- System Software	20	10	22	26	28	31	30	34	9
- Professional Services	113	12	127	143	165	184	207	233	13
- Other	20	-5	19	20	21	24	22	24	5
Systems Operations	265	19	315	370	435	505	595	690	17
- Platform Operations	90	17	105	120	135	150	170	185	12
- Application Operations	125	16	145	165	190	220	260	305	16
- Desktop Services	50	30	65	85	110	135	165	200	25
Processing Services	3,340	0	3,340	3,310	3,320	3,320	3,330	3,340	0
- Transaction Processing	3,050	0	3,050	3,020	3,020	3,020	3,020	3,020	0
- Utility Processing	61	-3	59	57	55	53	52	50	-3
- Other Processing	225	2	230	235	245	250	260	265	3
Network Services	460	7	490	530	600	680	760	860	12
- Electronic Info Svcs	275	2	280	290	315	340	360	385	7
- Network Applications	155	13	175	205	245	295	345	410	19
- Network Management	30	10	33	36	40	45	53	65	15
System Software	1,410	4	1,460	1,590	1,660	1,740	1,850	1,940	6
- Mainframe	585	-4	560	550	545	540	535	530	-1
- Minicomputer	465	4	485	515	550	590	630	675	7
- Workstation/PC	355	15	410	520	560	610	680	735	12
Application Software	1,450	11	1,610	2,030	2,280	2,450	2,760	3,020	13
- Mainframe	105	-5	100	100	100	100	95	95	-1
- Minicomputer	410	6	435	470	510	550	595	645	8
- Workstation/PC	930	16	1,075	1,460	1,670	1,800	2,070	2,275	16
Turnkey Systems	1,640	4	1,700	1,760	1,820	1,930	2,050	2,140	5
- Equipment	815	2	830	840	855	890	925	945	3
- Application Software	325	9	355	385	420	465	515	560	10
- System Software	100	0	100	105	105	110	115	115	3
- Professional Services	395	4	410	425	440	465	495	515	5
Equipment Services	2,890	0	2,880	2,880	2,880	2,900	2,930	2,960	1
- Equipment Maintenance	1,780	-2	1,744	1,710	1,675	1,642	1,593	1,545	-2
- Environmental Services	1,110	2	1,132	1,166	1,201	1,261	1,337	1,417	5
Grand Total Information Service Market	14,600	3	15,000	15,700	16,400	17,100	18,000	18,800	5

B

Forecast Database in U.S. Dollars

Exhibit M-3

Software and Services Market Forecast in Dollars
Norway, 1995-2000

Delivery Modes	U.S. $ Million (rounded)								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	1,730	3	1,790	1,910	1,995	2,100	2,235	2,350	6
Professional Services	430	0	430	435	450	475	490	505	3
- IS Consulting	66	4	69	73	79	85	91	98	7
- Education & Training	53	3	54	56	59	62	65	69	5
- Custom Software	305	0	305	305	310	320	325	325	1
- Application Management	4	12	4	4	5	6	8	10	20
Systems Integration	37	10	41	46	52	58	64	72	12
- Equipment	10	0	10	10	10	10	10	11	3
- Application Software	5	26	7	8	10	13	15	18	22
- System Software	3	10	3	4	4	5	4	5	9
- Professional Services	17	12	19	21	25	27	31	35	13
- Other	3	-5	3	3	3	4	3	4	5
Systems Operations	39	19	47	55	65	75	88	102	17
- Platform Operations	14	17	16	18	20	22	25	28	12
- Application Operations	19	16	22	25	28	33	39	45	16
- Desktop Services	7	30	10	13	16	20	24	30	25
Processing Services	494	0	494	490	491	491	493	494	0
- Transaction Processing	451	0	451	447	447	447	447	447	0
- Utility Processing	9	-3	9	9	8	8	8	8	-3
- Other Processing	34	2	34	35	36	37	39	39	3
Network Services	68	7	73	79	89	101	113	127	12
- Electronic Info Svcs	41	2	42	43	47	51	54	57	7
- Network Applications	23	13	26	31	36	44	51	61	19
- Network Management	5	10	5	6	6	7	8	10	15
System Software	210	4	215	235	245	255	275	285	6
- Mainframe	87	-4	83	82	81	80	79	79	-1
- Minicomputer	69	4	72	76	82	88	93	100	7
- Workstation/PC	53	15	61	77	83	90	101	109	12
Application Software	215	11	240	300	335	360	410	445	13
- Mainframe	16	-5	15	15	15	15	14	14	-1
- Minicomputer	61	6	65	70	76	82	88	96	8
- Workstation/PC	140	16	160	215	245	265	305	335	16
Turnkey Systems	243	4	252	261	269	286	304	317	5
- Equipment	121	2	123	125	127	132	137	140	3
- Application Software	48	9	53	57	62	69	76	83	10
- System Software	15	0	15	16	16	16	17	17	3
- Professional Services	59	4	61	63	65	69	73	76	5
Equipment Services	430	0	425	425	425	430	435	440	1
- Equipment Maintenance	265	-2	260	255	250	245	235	230	-2
- Environmental Services	165	2	165	170	180	185	200	210	5
Grand Total Information Service Market	2,150	3	2,200	2,300	2,450	2,550	2,650	2,800	5

C

Forecast Database in ECUs

Exhibit M-4

Software and Services Market Forecast in ECUs
Norway, 1995-2000

Delivery Modes	ECU Millions (rounded)								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	1,410	3	1,460	1,555	1,630	1,715	1,820	1,920	6
Professional Services	350	0	350	355	370	385	400	410	3
- IS Consulting	54	4	56	60	64	69	74	80	7
- Education & Training	43	3	44	46	48	51	53	56	5
- Custom Software	245	0	245	245	255	260	265	265	1
- Application Management	3	12	4	4	4	5	7	9	20
Systems Integration	30	10	33	38	42	47	52	59	12
- Equipment	8	0	8	8	8	8	9	9	3
- Application Software	4	26	5	6	8	10	12	15	22
- System Software	2	10	3	3	3	4	4	4	9
- Professional Services	14	12	16	17	20	22	25	28	13
- Other	2	-5	2	2	3	3	3	3	5
Systems Operations	32	19	38	45	53	61	72	83	17
- Platform Operations	11	17	13	15	17	18	21	23	12
- Application Operations	15	16	18	20	23	27	32	37	16
- Desktop Services	6	30	8	10	13	16	20	24	25
Processing Services	403	0	403	400	401	401	402	403	0
- Transaction Processing	368	0	368	365	365	365	365	365	0
- Utility Processing	8	-3	7	7	7	7	7	6	-3
- Other Processing	27	2	28	29	30	30	32	32	3
Network Services	56	7	59	64	73	82	92	104	12
- Electronic Info Svcs	33	2	34	35	38	41	44	47	7
- Network Applications	19	13	21	25	30	36	42	50	19
- Network Management	4	10	4	5	5	6	7	8	15
System Software	170	4	175	190	200	210	225	235	6
- Mainframe	71	-4	68	67	66	65	65	64	-1
- Minicomputer	56	4	59	62	67	71	76	82	7
- Workstation/PC	43	15	50	63	68	74	82	89	12
Application Software	175	11	195	245	275	295	335	365	13
- Mainframe	13	-5	12	12	12	12	12	12	-1
- Minicomputer	50	6	53	57	62	67	72	78	8
- Workstation/PC	112	16	130	176	202	217	250	275	16
Turnkey Systems	198	4	205	213	220	233	248	258	5
- Equipment	99	2	100	102	103	108	112	114	3
- Application Software	39	9	43	47	51	56	62	68	10
- System Software	12	0	12	13	13	13	14	14	3
- Professional Services	48	4	50	52	53	56	60	62	5
Equipment Services	350	0	345	345	345	350	355	355	1
- Equipment Maintenance	215	-2	210	205	200	200	190	185	-2
- Environmental Services	135	2	135	140	145	150	160	170	5
Grand Total Information Service Market	1,750	3	1,800	1,900	2,000	2,050	2,150	2,250	5

D

Information Services Forecast Reconciliation in Local Currency

Exhibit M-5

Forecast Reconciliation, Norway, 1994-1999

Currency: NK Millions	1994 Market				1999 Market				1994	1995
Delivery Mode	1994 Report (Fcst)	1995 Report (Act)	1994-1995 Variance (Amount)	1994-1995 Variance (%)	1994 Report (Fcst)	1995 Report (Fcst)	1994-1995 Variance (Amount)	1994-1995 Variance (%)	Report %CAGR (Fcst)	Report %CAGR (Fcst)
Software and Services Total (ex Equipment Services)	11,800	11,700	-100	-1	15,000	15,100	100	1	5	5
Professional Services	2,900	2,900	0	0	3,250	3,300	50	2	2	3
- IS Consulting	445	445	0	0	660	615	-45	-7	8	7
- Education & Training	355	355	0	0	460	440	-20	-4	5	4
- Custom Software	2,050	2,050	0	0	2,050	2,200	150	7	0	1
- Application Management	25	25	0	0	65	52	-13	-20	21	16
Systems Integration	310	250	-60	-19	550	430	-120	-22	12	11
- Equipment	80	63	-17	-21	120	69	-51	-43	8	2
- Application Software	55	35	-20	-36	165	103	-62	-38	25	24
- System Software	25	20	-5	-20	25	30	5	20	0	8
- Professional Services	145	113	-32	-22	230	207	-23	-10	10	13
- Other	5	20	15	300	10	22	12	120	15	2
Systems Operations	260	265	5	2	620	595	-25	-4	19	18
- Platform Operations	90	90	0	0	160	170	10	6	12	14
- Application Operations	120	125	5	4	300	260	-40	-13	20	16
- Desktop Services	50	50	0	0	160	165	5	3	26	27
Processing Services	3,340	3,340	0	0	3,330	3,330	0	0	0	0
- Transaction Processing	3,050	3,050	0	0	3,020	3,020	0	0	0	0
- Utility Processing	61	61	0	0	52	52	0	0	-3	-3
- Other Processing	225	225	0	0	260	260	0	0	3	3
Network Services	460	460	0	0	810	760	-50	-6	12	11
- Electronic Info Svcs	275	275	0	0	380	360	-20	-5	7	6
- Network Applications	155	155	0	0	365	345	-20	-5	19	17
- Network Management	29	30	1	3	64	53	-11	-17	17	12
System Software	1,410	1,410	0	0	1,810	1,850	40	2	5	6
- Mainframe	585	585	0	0	555	535	-20	-4	-1	-2
- Minicomputer	465	465	0	0	640	630	-10	-2	7	6
- Workstation/PC	355	355	0	0	615	680	65	11	12	14
Application Software	1,450	1,450	0	0	2,570	2,760	190	7	12	14
- Mainframe	105	105	0	0	100	95	-5	-5	-1	-2
- Minicomputer	410	410	0	0	600	595	-5	-1	8	8
- Workstation/PC	930	930	0	0	1,870	2,070	200	11	15	17
Turnkey Systems	1,640	1,640	0	0	2,060	2,050	-10	0	5	5
- Equipment	815	815	0	0	930	925	-5	-1	3	3
- Application Software	325	325	0	0	520	515	-5	-1	10	10
- System Software	100	100	0	0	115	115	0	0	3	3
- Professional Services	395	395	0	0	490	495	5	1	4	5
Equipment Services	2,890	2,890	0	0	3,110	2,930	-180	-6	1	0
- Equipment Maintenance	1,780	1,780	0	0	1,670	1,593	-77	-5	-1	-2
- Environmental Services	1,110	1,110	0	0	1,440	1,337	-103	-7	5	4
Grand Total	14,700	14,600	-100	-1	18,100	18,000	-100	-1	4	4

Information Services Industry Forecast Database, 1995-2000 Portugal

A

Forecast Database in Local Currency (Esc Millions)

Exhibit N-1

Top Level IT Expenditure, Portugal

Sector	Esc Millions								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR (%)
Total IT Spending	184,000	8	199,000	216,000	235,000	254,000	269,000	284,000	7
Equipment Sales	48,000	6	51,000	55,000	60,000	64,000	67,000	71,000	7
Mainframe	7,200	-11	6,400	5,800	5,200	4,700	4,000	3,500	-11
Minicomputer	10,300	2	10,500	10,700	11,000	11,100	10,800	10,700	0
PC/Workstation	30,500	11	34,000	38,500	43,500	48,500	52,000	56,500	11
Equipment Services	17,700	4	18,400	19,100	19,900	20,700	21,500	22,400	4
Software Products	8,450	14	9,650	11,750	13,300	14,900	16,500	18,050	13
Other Information Services	19,600	15	22,600	25,800	29,800	34,800	39,600	44,900	15
Data Communications	16,000	13	18,000	20,000	22,500	25,000	27,000	29,000	10
Facilities/Administration	16,500	3	17,000	18,000	19,000	19,500	20,000	20,000	3
In-house Staff	58,000	7	62,000	66,000	70,000	75,000	77,000	79,000	5

Exhibit N-2

Information Services Market
Forecast by Delivery Mode and Submode
Portugal, 1995-2000

Delivery Modes	Esc Millions								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	31,500	14	36,000	41,700	47,600	54,800	61,700	68,900	14
Professional Services	8,200	12	9,200	10,200	11,300	12,600	13,800	15,200	11
- IS Consulting	1,170	17	1,370	1,600	1,860	2,170	2,470	2,820	16
- Education & Training	900	12	1,008	1,119	1,242	1,366	1,503	1,638	10
- Custom Software	5,700	11	6,300	6,900	7,550	8,250	8,850	9,450	8
- Application Management	460	9	500	560	640	770	960	1,250	20
Systems Integration	1,930	16	2,230	2,610	3,000	3,390	3,830	4,290	14
- Equipment	482	11	535	574	570	610	613	644	4
- Application Software	270	32	357	444	600	780	919	1,116	26
- System Software	154	1	156	222	240	237	268	301	14
- Professional Services	867	18	1,026	1,200	1,410	1,559	1,800	1,975	14
- Other	154	1	156	170	180	203	230	258	11
Systems Operations	1,330	20	1,590	1,860	2,175	2,805	3,330	3,910	20
- Platform Operations	405	19	480	565	660	760	860	960	15
- Application Operations	605	20	725	835	960	1,300	1,500	1,700	19
- Desktop Services	320	20	385	460	555	745	970	1,250	27
Processing Services	3,550	13	4,000	4,350	4,800	5,350	5,750	6,150	9
- Transaction Processing	3,100	11	3,450	3,750	4,150	4,600	4,900	5,250	9
- Utility Processing	140	7	150	150	160	170	180	180	4
- Other Processing	330	15	380	440	500	580	650	730	14
Network Services	1,750	23	2,150	2,700	3,450	4,450	5,400	6,500	25
- Electronic Info Svcs	1,120	21	1,350	1,680	2,090	2,600	3,040	3,500	21
- Network Applications	470	34	630	860	1,180	1,620	2,110	2,700	34
- Network Management	145	10	160	175	190	220	255	310	14
System Software	5,250	11	5,850	6,800	7,550	8,450	9,300	10,150	12
- Mainframe	2,100	0	2,100	2,150	2,200	2,250	2,250	2,250	1
- Minicomputer	1,850	14	2,100	2,400	2,750	3,150	3,500	3,900	13
- Workstation/PC	1,290	27	1,640	2,230	2,590	3,030	3,530	4,000	20
Application Software	3,200	19	3,800	4,950	5,750	6,450	7,200	7,900	16
- Mainframe	220	5	230	240	250	260	270	280	4
- Minicomputer	900	11	1,000	1,150	1,300	1,500	1,600	1,750	12
- Workstation/PC	2,100	22	2,560	3,550	4,205	4,670	5,350	5,850	18
Turnkey Systems	6,300	14	7,200	8,250	9,550	11,350	13,050	14,750	15
- Equipment	2,950	10	3,250	3,550	3,950	4,500	4,950	5,350	10
- Application Software	1,330	20	1,590	1,920	2,330	2,880	3,450	4,070	21
- System Software	330	12	370	420	480	560	630	700	14
- Professional Services	1,700	18	2,000	2,350	2,800	3,400	4,000	4,650	18
Equipment Services	17,700	4	18,400	19,100	19,900	20,700	21,500	22,400	4
- Equipment Maintenance	12,700	2	12,954	13,213	13,477	13,612	13,748	13,886	1
- Environmental Services	5,000	8	5,400	5,886	6,416	7,057	7,763	8,539	10
Grand Total Information Service Market	49,200	11	54,400	60,800	67,500	75,500	83,200	91,300	11

B

Forecast Database in U.S. Dollars

Exhibit N-3

Software and Services Market Forecast in Dollars
Portugal, 1995-2000

Delivery Modes	U.S. $ Million (rounded)								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	198	14	226	262	299	344	388	433	14
Professional Services	52	12	58	64	71	79	87	95	11
- IS Consulting	7	17	9	10	12	14	16	18	16
- Education & Training	6	12	6	7	8	9	9	10	10
- Custom Software	36	11	40	43	47	52	56	59	8
- Application Management	3	9	3	4	4	5	6	8	20
Systems Integration	12	16	14	16	19	21	24	27	14
- Equipment	3	11	3	4	4	4	4	4	4
- Application Software	2	32	2	3	4	5	6	7	26
- System Software	1	1	1	1	2	1	2	2	14
- Professional Services	5	18	6	8	9	10	11	12	14
- Other	1	1	1	1	1	1	1	2	11
Systems Operations	8	20	10	12	14	18	21	25	20
- Platform Operations	3	19	3	4	4	5	5	6	15
- Application Operations	4	20	5	5	6	8	9	11	19
- Desktop Services	2	20	2	3	3	5	6	8	27
Processing Services	22	13	25	27	30	34	36	39	9
- Transaction Processing	20	11	22	24	26	29	31	33	9
- Utility Processing	1	7	1	1	1	1	1	1	4
- Other Processing	2	15	2	3	3	4	4	5	14
Network Services	11	23	14	17	22	28	34	41	25
- Electronic Info Svcs	7	21	9	11	13	16	19	22	21
- Network Applications	3	34	4	5	7	10	13	17	34
- Network Management	1	10	1	1	1	1	2	2	14
System Software	33	11	37	43	47	53	58	64	12
- Mainframe	13	0	13	14	14	14	14	14	1
- Minicomputer	12	14	13	15	17	20	22	25	13
- Workstation/PC	8	27	10	14	16	19	22	25	20
Application Software	20	19	24	31	36	41	45	50	16
- Mainframe	1	5	1	2	2	2	2	2	4
- Minicomputer	6	11	6	7	8	9	10	11	12
- Workstation/PC	13	22	16	22	26	29	34	37	18
Turnkey Systems	40	14	45	52	60	71	82	93	15
- Equipment	19	10	20	22	25	28	31	34	10
- Application Software	8	20	10	12	15	18	22	26	21
- System Software	2	12	2	3	3	4	4	4	14
- Professional Services	11	18	13	15	18	21	25	29	18
Equipment Services	111	4	116	120	125	130	135	141	4
- Equipment Maintenance	80	2	81	83	85	86	86	87	1
- Environmental Services	31	8	34	37	40	44	49	54	10
Grand Total Information Service Market	310	11	340	380	420	470	520	570	11

C

Forecast Database in ECUs

Exhibit N-4

Software and Services Market Forecast in ECUs
Portugal, 1995-2000

Delivery Modes	ECU Millions (rounded)								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	161	14	184	214	244	281	316	353	14
Professional Services	42	12	47	52	58	65	71	78	11
- IS Consulting	6	17	7	8	10	11	13	14	16
- Education & Training	5	12	5	6	6	7	8	8	10
- Custom Software	29	11	32	35	39	42	45	48	8
- Application Management	2	9	3	3	3	4	5	6	20
Systems Integration	10	16	11	13	15	17	20	22	14
- Equipment	3	11	3	3	3	3	3	3	4
- Application Software	1	32	2	2	3	4	5	6	26
- System Software	1	1	1	1	1	1	1	2	14
- Professional Services	4	18	5	6	7	8	9	10	14
- Other	1	1	1	1	1	1	1	1	11
Systems Operations	7	20	8	10	11	14	17	20	20
- Platform Operations	2	19	3	3	3	4	4	5	15
- Application Operations	3	20	4	4	5	7	8	9	19
- Desktop Services	2	20	2	2	3	4	5	6	27
Processing Services	18	13	20	22	25	27	29	32	9
- Transaction Processing	16	11	18	19	21	24	25	27	9
- Utility Processing	1	7	1	1	1	1	1	1	4
- Other Processing	2	15	2	2	3	3	3	4	14
Network Services	9	23	11	14	18	23	28	33	25
- Electronic Info Svcs	6	21	7	9	11	13	16	18	21
- Network Applications	2	34	3	4	6	8	11	14	34
- Network Management	1	10	1	1	1	1	1	2	14
System Software	27	11	30	35	39	43	48	52	12
- Mainframe	11	0	11	11	11	12	12	12	1
- Minicomputer	10	14	11	12	14	16	18	20	13
- Workstation/PC	7	27	8	11	13	16	18	21	20
Application Software	16	19	19	25	29	33	37	40	16
- Mainframe	1	5	1	1	1	1	1	1	4
- Minicomputer	5	11	5	6	7	8	8	9	12
- Workstation/PC	11	22	13	18	22	24	27	30	18
Turnkey Systems	32	14	37	42	49	58	67	76	15
- Equipment	15	10	17	18	20	23	25	27	10
- Application Software	7	20	8	10	12	15	18	21	21
- System Software	2	12	2	2	2	3	3	4	14
- Professional Services	9	18	10	12	14	17	21	24	18
Equipment Services	91	4	94	98	102	106	110	115	4
- Equipment Maintenance	65	2	66	68	69	70	70	71	1
- Environmental Services	26	8	28	30	33	36	40	44	10
Grand Total Information Service Market	250	11	280	310	350	390	430	470	11

D

Information Services Forecast Reconciliation in Local Currency

Exhibit N-5

Forecast Reconciliation, Portugal, 1994-1999

Currency: Esc Millions	1994 Market				1999 Market				1994	1995
Delivery Mode	1994 Report (Fcst)	1995 Report (Act)	1994-1995 Variance (Amount)	1994-1995 Variance (%)	1994 Report (Fcst)	1995 Report (Fcst)	1994-1995 Variance (Amount)	1994-1995 Variance (%)	Report %CAGR (Fcst)	Report %CAGR (Fcst)
Software and Services Total (ex Equipment Services)	31,500	31,500	0	0	61,900	61,700	-200	0	14	14
Professional Services	8,200	8,200	0	0	13,900	13,800	-100	-1	11	11
- IS Consulting	1,170	1,170	0	0	2,500	2,470	-30	-1	16	16
- Education & Training	900	900	0	0	1,480	1,503	23	2	10	11
- Custom Software	5,700	5,700	0	0	8,950	8,850	-100	-1	9	9
- Application Management	460	460	0	0	925	960	35	4	15	16
Systems Integration	1,960	1,930	-30	-2	3,970	3,830	-140	-4	15	15
- Equipment	540	482	-58	-11	970	613	-357	-37	12	5
- Application Software	330	270	-60	-18	1,260	919	-341	-27	31	28
- System Software	170	154	-16	-9	305	268	-37	-12	12	12
- Professional Services	880	867	-13	-1	1,350	1,800	450	33	9	16
- Other	35	154	119	340	85	230	145	171	19	8
Systems Operations	1,330	1,330	0	0	3,285	3,330	45	1	20	20
- Platform Operations	405	405	0	0	810	860	50	6	15	16
- Application Operations	605	605	0	0	1,500	1,500	0	0	20	20
- Desktop Services	320	320	0	0	975	970	-5	-1	25	25
Processing Services	3,550	3,550	0	0	5,850	5,750	-100	-2	11	10
- Transaction Processing	3,100	3,100	0	0	5,000	4,900	-100	-2	10	10
- Utility Processing	140	140	0	0	180	180	0	0	5	5
- Other Processing	330	330	0	0	650	650	0	0	15	15
Network Services	1,750	1,750	0	0	5,400	5,400	0	0	25	25
- Electronic Info Svcs	1,120	1,120	0	0	3,030	3,040	10	0	22	22
- Network Applications	470	470	0	0	2,100	2,110	10	0	35	35
- Network Management	145	145	0	0	290	255	-35	-12	15	12
System Software	5,250	5,250	0	0	9,250	9,300	50	1	12	12
- Mainframe	2,100	2,100	0	0	2,350	2,250	-100	-4	2	1
- Minicomputer	1,850	1,850	0	0	3,650	3,500	-150	-4	15	14
- Workstation/PC	1,290	1,290	0	0	3,230	3,530	300	9	20	22
Application Software	3,200	3,200	0	0	6,800	7,200	400	6	16	18
- Mainframe	220	220	0	0	300	270	-30	-10	6	4
- Minicomputer	900	900	0	0	1,700	1,600	-100	-6	14	12
- Workstation/PC	2,100	2,100	0	0	4,800	5,350	550	11	18	21
Turnkey Systems	6,300	6,300	0	0	13,400	13,050	-350	-3	16	16
- Equipment	2,950	2,950	0	0	5,050	4,950	-100	-2	11	11
- Application Software	1,330	1,330	0	0	3,530	3,450	-80	-2	22	21
- System Software	330	330	0	0	660	630	-30	-5	15	14
- Professional Services	1,700	1,700	0	0	4,150	4,000	-150	-4	20	19
Equipment Services	17,700	17,700	0	0	21,600	21,500	-100	0	4	4
- Equipment Maintenance	12,700	12,700	0	0	13,400	13,748	348	3	1	2
- Environmental Services	5,000	5,000	0	0	8,200	7,763	-437	-5	10	9
Grand Total	49,200	49,200	0	0	83,500	83,200	-300	0	11	11

Information Services Industry Forecast Database, 1995-2000 Spain

A

Forecast Database in Local Currency (Ptas Millions)

Exhibit O-1

Top Level IT Expenditure, Spain

Sector	Ptas Millions								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR (%)
Total IT Spending	1,330,000	1	1,340,000	1,390,000	1,440,000	1,480,000	1,540,000	1,610,000	4
Equipment Sales	300,000	0	300,000	315,000	330,000	340,000	350,000	370,000	4
Mainframe	34,000	-15	29,000	25,000	22,000	19,000	16,000	14,000	-14
Minicomputer	98,000	-3	95,000	95,000	95,000	94,000	92,000	92,000	-1
PC/Workstation	166,000	6	176,000	193,000	211,000	228,000	244,000	266,000	9
Equipment Services	115,500	1	117,000	119,000	121,000	122,500	123,500	125,000	1
Software Products	91,200	9	99,000	116,700	127,500	137,300	153,300	167,400	11
Other Information Services	201,000	6	214,000	232,000	255,000	280,000	308,000	339,000	10
Data Communications	121,900	5	128,200	137,500	147,400	158,000	169,400	181,600	7
Facilities/Administration	124,000	-2	122,000	122,000	122,000	122,000	123,000	123,000	0
In-house Staff	375,000	-5	355,000	345,000	335,000	325,000	315,000	305,000	-3

Exhibit O-2

Information Services Market
Forecast by Delivery Mode and Submode
Spain, 1995-2000

Delivery Modes	Ptas Millions								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	323,000	7	345,000	382,000	416,000	453,000	499,000	545,000	10
Professional Services	91,000	4	95,000	100,000	108,000	117,000	126,000	136,000	7
- IS Consulting	14,000	11	15,500	17,500	20,000	23,000	26,500	30,000	14
- Education & Training	8,500	1	8,585	8,843	9,196	9,656	10,139	10,747	5
- Custom Software	68,000	3	70,000	73,000	78,000	83,000	88,000	93,000	6
- Application Management	700	10	770	890	1,060	1,330	1,660	2,000	21
Systems Integration	19,000	11	21,100	23,800	26,700	29,600	33,500	38,900	13
- Equipment	4,750	2	4,851	5,243	5,071	5,036	5,356	5,829	4
- Application Software	2,660	27	3,374	4,051	5,338	6,518	8,034	10,103	25
- System Software	1,520	11	1,687	1,906	2,135	2,370	2,678	2,720	10
- Professional Services	8,550	13	9,701	11,201	12,544	13,924	15,734	18,263	13
- Other	1,520	-3	1,476	1,430	1,601	1,778	1,674	1,943	6
Systems Operations	8,400	19	10,000	12,100	14,700	17,400	20,700	24,200	19
- Platform Operations	3,900	17	4,550	5,300	6,140	7,060	8,000	8,900	14
- Application Operations	3,700	20	4,450	5,550	7,000	8,330	10,000	12,000	22
- Desktop Services	800	20	960	1,200	1,560	2,030	2,650	3,300	28
Processing Services	34,500	4	35,900	37,100	38,500	40,200	41,800	43,600	4
- Transaction Processing	29,400	4	30,600	31,600	32,900	34,300	35,800	37,300	4
- Utility Processing	2,150	2	2,200	2,200	2,200	2,250	2,250	2,300	1
- Other Processing	2,950	5	3,100	3,250	3,400	3,600	3,750	3,950	5
Network Services	22,500	12	25,300	28,800	33,200	38,500	44,600	50,600	15
- Electronic Info Svcs	13,800	9	15,100	16,800	18,700	21,000	23,300	25,000	11
- Network Applications	5,800	21	7,000	8,500	10,400	12,800	15,700	18,600	22
- Network Management	2,900	10	3,200	3,500	4,050	4,650	5,600	7,000	17
System Software	49,200	5	51,500	55,200	56,500	59,300	63,300	66,900	5
- Mainframe	18,300	-7	17,100	15,900	14,800	14,100	13,400	12,800	-6
- Minicomputer	17,900	4	18,700	19,400	20,200	21,500	22,800	24,200	5
- Workstation/PC	13,000	20	15,650	19,850	21,500	23,710	27,090	29,940	14
Application Software	42,000	13	47,500	61,500	71,000	78,000	90,000	100,500	16
- Mainframe	2,950	-5	2,800	2,750	2,650	2,600	2,500	2,450	-3
- Minicomputer	11,300	7	12,100	13,200	14,400	15,700	17,200	18,800	9
- Workstation/PC	27,500	19	32,800	45,500	53,760	59,460	70,340	79,260	19
Turnkey Systems	56,400	4	58,900	63,100	67,200	73,000	79,300	84,500	7
- Equipment	26,500	1	26,800	27,900	28,800	30,300	31,900	32,900	4
- Application Software	12,000	8	13,000	14,400	15,900	17,800	20,000	22,000	11
- System Software	3,300	2	3,350	3,550	3,700	3,950	4,150	4,300	5
- Professional Services	14,600	8	15,700	17,200	18,800	20,900	23,200	25,300	10
Equipment Services	115,500	1	117,000	119,000	121,000	122,500	123,500	125,000	1
- Equipment Maintenance	75,200	-2	73,696	72,222	70,055	67,954	65,236	62,626	-3
- Environmental Services	40,300	8	43,524	47,006	50,766	54,320	58,122	62,191	7
Grand Total	439,000	5	462,000	501,000	537,000	576,000	623,000	670,000	8
Information Service Market	0	0	0	0	0	0	0	0	0

B

Forecast Database in U.S. Dollars

Exhibit O-3

Software and Services Market Forecast in Dollars
Spain, 1995-2000

Delivery Modes	U.S. $ Million (rounded)								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	2,455	7	2,620	2,905	3,160	3,440	3,790	4,140	10
Professional Services	690	4	720	760	820	890	955	1,035	7
- IS Consulting	107	11	118	133	152	175	202	228	14
- Education & Training	65	1	65	67	70	74	77	82	5
- Custom Software	515	3	530	555	595	630	670	705	6
- Application Management	5	10	6	7	8	10	13	15	21
Systems Integration	145	11	161	181	203	225	255	296	13
- Equipment	36	2	37	40	39	39	41	45	4
- Application Software	20	27	26	31	41	50	61	77	25
- System Software	12	11	13	15	16	18	20	21	10
- Professional Services	65	13	74	85	96	106	120	139	13
- Other	12	-3	11	11	12	14	13	15	6
Systems Operations	64	19	76	92	112	132	158	184	19
- Platform Operations	30	17	35	41	47	54	61	68	14
- Application Operations	28	20	34	42	53	64	76	91	22
- Desktop Services	6	20	7	9	12	15	20	25	28
Processing Services	262	4	273	282	293	306	318	332	4
- Transaction Processing	224	4	233	240	250	261	272	284	4
- Utility Processing	17	2	17	17	17	17	17	18	1
- Other Processing	23	5	24	25	26	28	29	30	5
Network Services	171	12	192	219	253	293	339	385	15
- Electronic Info Svcs	105	9	115	128	142	160	177	190	11
- Network Applications	44	21	53	65	79	98	120	142	22
- Network Management	22	10	25	27	31	36	43	53	17
System Software	375	5	390	420	430	450	480	510	5
- Mainframe	139	-7	130	121	113	107	102	98	-6
- Minicomputer	136	4	142	148	154	164	174	184	5
- Workstation/PC	99	20	119	151	164	180	206	228	14
Application Software	320	13	360	465	540	595	685	765	16
- Mainframe	23	-5	22	21	20	20	19	19	-3
- Minicomputer	86	7	92	101	110	120	131	143	9
- Workstation/PC	210	19	250	345	410	450	535	600	19
Turnkey Systems	429	4	448	480	511	555	603	642	7
- Equipment	202	1	204	212	219	230	243	250	4
- Application Software	91	8	99	110	121	136	152	167	11
- System Software	25	2	25	27	28	30	32	33	5
- Professional Services	111	8	120	131	143	159	177	192	10
Equipment Services	880	1	890	905	920	930	940	950	1
- Equipment Maintenance	570	-2	560	550	530	515	495	475	-3
- Environmental Services	305	8	330	355	385	415	440	475	7
Grand Total	3,350	5	3,500	3,800	4,100	4,400	4,750	5,100	8
Information Service Market									

C

Forecast Database in ECUs

Exhibit O-4

Software and Services Market Forecast in ECUs
Spain, 1995-2000

Delivery Modes	ECU Millions (rounded)								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	2,000	7	2,140	2,365	2,575	2,805	3,090	3,375	10
Professional Services	565	4	590	620	670	725	780	845	7
- IS Consulting	87	11	96	109	124	143	164	186	14
- Education & Training	53	1	53	55	57	60	63	67	5
- Custom Software	420	3	435	450	485	515	545	575	6
- Application Management	5	10	5	6	7	8	11	13	21
Systems Integration	118	11	131	148	166	184	208	241	13
- Equipment	30	2	30	33	32	31	33	36	4
- Application Software	17	27	21	25	33	40	50	63	25
- System Software	9	11	10	12	13	15	17	17	10
- Professional Services	53	13	60	70	78	87	98	113	13
- Other	9	-3	9	9	10	11	10	12	6
Systems Operations	52	19	62	75	91	108	129	150	19
- Platform Operations	24	17	28	33	38	44	50	55	14
- Application Operations	23	20	28	35	44	52	62	75	22
- Desktop Services	5	20	6	7	10	13	16	20	28
Processing Services	214	4	223	230	239	249	259	270	4
- Transaction Processing	182	4	190	196	204	213	222	231	4
- Utility Processing	14	2	14	14	14	14	14	15	1
- Other Processing	19	5	19	20	21	23	23	25	5
Network Services	140	12	157	179	206	239	277	314	15
- Electronic Info Svcs	86	9	94	104	116	130	145	155	11
- Network Applications	36	21	44	53	65	80	98	115	22
- Network Management	18	10	20	22	25	29	35	44	17
System Software	305	5	320	340	350	365	390	415	5
- Mainframe	114	-7	106	99	92	88	83	80	-6
- Minicomputer	111	4	116	120	125	133	142	150	5
- Workstation/PC	81	20	97	123	133	147	168	186	14
Application Software	260	13	295	380	440	485	560	625	16
- Mainframe	19	-5	18	17	17	16	16	15	-3
- Minicomputer	70	7	75	82	89	98	107	117	9
- Workstation/PC	171	19	203	282	333	369	436	491	19
Turnkey Systems	350	4	365	391	417	453	492	524	7
- Equipment	164	1	166	173	179	188	198	204	4
- Application Software	75	8	81	89	99	111	124	137	11
- System Software	20	2	21	22	23	24	26	27	5
- Professional Services	91	8	98	107	117	130	144	157	10
Equipment Services	715	1	725	735	750	760	765	775	1
- Equipment Maintenance	465	-2	455	445	435	420	405	390	-3
- Environmental Services	250	8	270	290	315	335	360	385	7
Grand Total	2,700	5	2,850	3,100	3,350	3,550	3,850	4,150	8
Information Service Market									

D

Information Services Forecast Reconciliation in Local Currency

Exhibit O-5

Forecast Reconciliation, Spain, 1994-1999

Currency: Ptas Millions	1994 Market				1999 Market				1994 Report %CAGR	1995 Report %CAGR
Delivery Mode	1994 Report (Fcst)	1995 Report (Act)	1994-1995 Variance (Amount)	1994-1995 Variance (%)	1994 Report (Fcst)	1995 Report (Fcst)	1994-1995 Variance (Amount)	1994-1995 Variance (%)	(Fcst)	(Fcst)
Software and Services Total (ex Equipment Services)	325,000	323,000	-2,000	-1	516,000	499,000	-17,000	-3	10	9
Professional Services	91,000	91,000	0	0	134,000	126,000	-8,000	-6	8	7
- IS Consulting	14,000	14,000	0	0	28,000	26,500	-1,500	-5	15	14
- Education & Training	8,500	8,500	0	0	10,500	10,139	-361	-3	4	4
- Custom Software	68,000	68,000	0	0	94,000	88,000	-6,000	-6	7	5
- Application Management	600	700	100	17	1,900	1,660	-240	-13	26	19
Systems Integration	23,600	19,000	-4,600	-19	42,700	33,500	-9,200	-22	13	12
- Equipment	6,100	4,750	-1,350	-22	9,500	5,356	-4,144	-44	9	2
- Application Software	4,300	2,660	-1,640	-38	12,300	8,034	-4,266	-35	23	25
- System Software	1,900	1,520	-380	-20	3,000	2,678	-322	-11	10	12
- Professional Services	10,800	8,550	-2,250	-21	16,800	15,734	-1,066	-6	9	13
- Other	480	1,520	1,040	217	1,100	1,674	574	52	18	2
Systems Operations	6,400	8,400	2,000	31	15,200	20,700	5,500	36	19	20
- Platform Operations	3,000	3,900	900	30	5,250	8,000	2,750	52	12	15
- Application Operations	2,800	3,700	900	32	7,500	10,000	2,500	33	22	22
- Desktop Services	600	800	200	33	2,410	2,650	240	10	32	27
Processing Services	34,500	34,500	0	0	43,500	41,800	-1,700	-4	5	4
- Transaction Processing	29,400	29,400	0	0	37,200	35,800	-1,400	-4	5	4
- Utility Processing	2,150	2,150	0	0	2,350	2,250	-100	-4	2	1
- Other Processing	2,950	2,950	0	0	3,950	3,750	-200	-5	6	5
Network Services	21,800	22,500	700	3	47,000	44,600	-2,400	-5	17	15
- Electronic Info Svcs	13,800	13,800	0	0	23,500	23,300	-200	-1	11	11
- Network Applications	5,800	5,800	0	0	15,800	15,700	-100	-1	22	22
- Network Management	2,200	2,900	700	32	7,700	5,600	-2,100	-27	28	14
System Software	49,200	49,200	0	0	63,600	63,300	-300	0	5	5
- Mainframe	18,300	18,300	0	0	14,300	13,400	-900	-6	-5	-6
- Minicomputer	17,900	17,900	0	0	24,000	22,800	-1,200	-5	6	5
- Workstation/PC	13,000	13,000	0	0	25,300	27,090	1,790	7	14	16
Application Software	42,000	42,000	0	0	86,500	90,000	3,500	4	16	16
- Mainframe	2,950	2,950	0	0	2,650	2,500	-150	-6	-2	-3
- Minicomputer	11,300	11,300	0	0	18,400	17,200	-1,200	-7	10	9
- Workstation/PC	27,500	27,500	0	0	65,600	70,340	4,740	7	19	21
Turnkey Systems	56,400	56,400	0	0	83,900	79,300	-4,600	-5	8	7
- Equipment	26,500	26,500	0	0	33,800	31,900	-1,900	-6	5	4
- Application Software	12,000	12,000	0	0	21,100	20,000	-1,100	-5	12	11
- System Software	3,300	3,300	0	0	4,450	4,150	-300	-7	6	5
- Professional Services	14,600	14,600	0	0	24,500	23,200	-1,300	-5	11	10
Equipment Services	115,500	115,500	0	0	121,000	123,500	2,500	2	1	1
- Equipment Maintenance	75,200	75,200	0	0	64,500	65,236	736	1	-3	-3
- Environmental Services	40,300	40,300	0	0	56,400	58,122	1,722	3	7	8
Grand Total	440,000	439,000	-1,000	0	637,000	623,000	-14,000	-2	8	7

Information Services Industry Forecast Database, 1995-2000 Sweden

A

Forecast Database in Local Currency (SK Millions)

Exhibit P-1

Top Level IT Expenditure, Sweden

Sector	SK Millions								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR (%)
Total IT Spending	68,000	1	69,000	72,000	75,000	78,000	82,000	86,000	5
Equipment Sales	11,200	1	11,300	11,500	11,700	12,000	12,100	12,500	2
Mainframe	1,750	-11	1,550	1,350	1,200	1,050	900	800	-12
Minicomputer	2,850	-5	2,700	2,600	2,500	2,400	2,250	2,150	-4
PC/Workstation	6,600	6	7,000	7,500	8,000	8,500	8,900	9,500	6
Equipment Services	5,850	3	6,050	6,350	6,550	6,850	7,100	7,400	4
Software Products	4,810	9	5,230	6,220	6,800	7,220	8,000	8,610	10
Other Information Services	17,800	7	19,100	20,700	22,700	25,200	27,900	30,500	10
Data Communications	5,500	5	5,800	6,100	6,400	6,700	7,100	7,500	5
Facilities/Administration	6,100	-2	6,000	5,900	5,800	5,700	5,600	5,500	-2
In-house Staff	16,500	-3	16,000	15,500	15,000	14,500	14,000	13,500	-3

Exhibit P-2

Information Services Market
Forecast by Delivery Mode and Submode
Sweden, 1995-2000

Delivery Modes	SK Millions								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	23,900	7	25,600	28,200	30,900	33,900	37,400	40,700	10
Professional Services	10,100	4	10,500	11,200	12,100	13,300	14,500	15,500	8
- IS Consulting	1,110	6	1,180	1,290	1,430	1,600	1,780	1,940	10
- Education & Training	680	5	714	757	817	875	936	1,001	7
- Custom Software	8,200	3	8,450	8,950	9,650	10,550	11,400	12,100	7
- Application Management	145	10	160	185	220	280	350	410	21
Systems Integration	370	8	400	450	500	550	620	670	11
- Equipment	93	3	96	98	94	99	99	108	2
- Application Software	52	23	64	75	94	121	148	175	22
- System Software	30	7	32	36	40	39	43	47	8
- Professional Services	167	8	180	209	239	264	296	310	11
- Other	30	-7	28	27	30	28	31	34	4
Systems Operations	2,140	22	2,620	3,185	3,830	4,540	5,350	6,200	19
- Platform Operations	500	18	590	700	820	940	1,050	1,200	15
- Application Operations	1,250	20	1,500	1,800	2,120	2,500	2,950	3,400	18
- Desktop Services	390	36	530	685	890	1,100	1,350	1,600	25
Processing Services	2,850	0	2,850	2,835	2,845	2,860	2,875	2,900	0
- Transaction Processing	2,570	0	2,560	2,540	2,540	2,540	2,540	2,550	0
- Utility Processing	54	-1	54	52	52	52	51	51	-1
- Other Processing	225	4	235	245	255	270	285	300	5
Network Services	1,070	12	1,200	1,400	1,640	1,920	2,240	2,620	17
- Electronic Info Svcs	550	8	595	665	745	835	920	1,005	11
- Network Applications	370	19	440	550	680	840	1,030	1,250	23
- Network Management	150	10	165	180	210	240	290	360	17
System Software	2,310	2	2,360	2,570	2,650	2,730	2,880	2,990	5
- Mainframe	1,090	-5	1,040	1,010	980	950	920	890	-3
- Minicomputer	645	4	670	710	755	800	850	900	6
- Workstation/PC	570	14	650	850	910	980	1,110	1,200	13
Application Software	2,500	15	2,870	3,650	4,150	4,490	5,120	5,620	14
- Mainframe	175	-3	170	165	160	155	150	145	-3
- Minicomputer	640	9	700	760	830	905	990	1,080	9
- Workstation/PC	1,680	19	2,000	2,720	3,160	3,425	3,975	4,395	17
Turnkey Systems	2,600	6	2,750	2,950	3,150	3,500	3,850	4,200	9
- Equipment	1,170	2	1,190	1,230	1,280	1,360	1,440	1,500	5
- Application Software	550	10	605	675	755	860	985	1,105	13
- System Software	160	3	165	170	175	185	195	205	4
- Professional Services	700	14	800	850	950	1,100	1,250	1,400	12
Equipment Services	5,850	3	6,050	6,350	6,550	6,850	7,100	7,400	4
- Equipment Maintenance	3,650	0	3,650	3,687	3,723	3,761	3,798	3,836	1
- Environmental Services	2,200	9	2,398	2,638	2,849	3,077	3,323	3,555	8
Grand Total Information Service Market	29,800	6	31,600	34,600	37,400	40,700	44,500	48,100	9

B

Forecast Database in U.S. Dollars

Exhibit P-3

Software and Services Market Forecast in Dollars
Sweden, 1995-2000

Delivery Modes	U.S. $ Million (rounded)								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	3,215	7	3,445	3,795	4,160	4,565	5,035	5,480	10
Professional Services	1,360	4	1,415	1,505	1,630	1,790	1,950	2,085	8
- IS Consulting	150	6	159	174	193	216	240	261	10
- Education & Training	92	5	96	102	110	118	126	135	7
- Custom Software	1,105	3	1,135	1,205	1,300	1,420	1,535	1,630	7
- Application Management	20	10	22	25	30	38	47	55	21
Systems Integration	50	8	54	61	68	74	84	90	11
- Equipment	13	3	13	13	13	14	14	15	2
- Application Software	7	23	9	10	13	16	20	24	22
- System Software	4	7	4	5	5	5	6	6	8
- Professional Services	23	8	24	28	32	36	40	42	11
- Other	4	-7	4	4	4	4	4	5	4
Systems Operations	288	22	353	429	516	611	720	835	19
- Platform Operations	68	18	80	94	111	127	142	162	15
- Application Operations	168	20	202	243	286	337	397	458	18
- Desktop Services	53	36	71	92	120	148	182	215	25
Processing Services	384	0	384	382	383	385	387	391	0
- Transaction Processing	346	0	345	342	342	342	342	343	0
- Utility Processing	8	-1	7	7	7	7	7	7	-1
- Other Processing	31	4	32	33	35	37	39	41	5
Network Services	144	12	162	189	221	259	302	353	17
- Electronic Info Svcs	74	8	80	90	101	113	124	136	11
- Network Applications	50	19	59	74	92	113	139	168	23
- Network Management	20	10	22	24	29	33	39	49	17
System Software	310	2	320	345	355	365	390	400	5
- Mainframe	147	-5	140	136	132	128	124	120	-3
- Minicomputer	87	4	90	96	102	108	115	121	6
- Workstation/PC	77	14	88	115	123	132	150	162	13
Application Software	335	15	385	490	560	605	690	755	14
- Mainframe	24	-3	23	22	22	21	20	20	-3
- Minicomputer	86	9	94	103	112	122	133	146	9
- Workstation/PC	225	19	270	365	425	460	535	590	17
Turnkey Systems	350	6	370	397	424	471	518	566	9
- Equipment	158	2	160	166	173	183	194	202	5
- Application Software	74	10	82	91	102	116	133	149	13
- System Software	22	3	22	23	24	25	26	28	4
- Professional Services	94	14	108	115	128	148	168	189	12
Equipment Services	785	3	815	855	880	920	955	995	4
- Equipment Maintenance	490	0	490	495	500	505	510	515	1
- Environmental Services	295	9	325	355	385	415	445	480	8
Grand Total Information Service Market	4,000	6	4,250	4,650	5,050	5,500	6,000	6,450	9

C

Forecast Database in ECUs

Exhibit P-4

Software and Services Market Forecast in ECUs
Sweden, 1995-2000

Delivery Modes	ECU Millions (rounded)								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	2,625	7	2,810	3,095	3,390	3,720	4,105	4,470	10
Professional Services	1,110	4	1,155	1,230	1,330	1,460	1,590	1,700	8
- IS Consulting	122	6	130	142	157	176	196	213	10
- Education & Training	75	5	79	83	90	96	103	110	7
- Custom Software	900	3	930	980	1,060	1,160	1,250	1,330	7
- Application Management	16	10	18	21	24	31	39	45	21
Systems Integration	41	8	44	50	55	61	68	74	11
- Equipment	10	3	11	11	11	11	11	12	2
- Application Software	6	23	7	8	10	13	16	19	22
- System Software	3	7	4	4	4	4	5	5	8
- Professional Services	19	8	20	23	26	29	33	34	11
- Other	3	-7	3	3	3	3	3	4	4
Systems Operations	235	22	288	350	421	499	588	681	19
- Platform Operations	55	18	65	77	90	103	116	132	15
- Application Operations	137	20	165	198	233	275	324	373	18
- Desktop Services	43	36	58	75	98	121	148	176	25
Processing Services	313	0	313	312	313	314	316	319	0
- Transaction Processing	282	0	281	279	279	279	279	280	0
- Utility Processing	6	-1	6	6	6	6	6	6	-1
- Other Processing	25	4	26	27	28	30	32	33	5
Network Services	118	12	132	154	180	211	246	288	17
- Electronic Info Svcs	61	8	66	73	82	92	101	111	11
- Network Applications	41	19	49	61	75	92	113	137	23
- Network Management	17	10	18	20	23	27	32	40	17
System Software	255	2	260	280	290	300	315	330	5
- Mainframe	120	-5	114	111	108	105	101	98	-3
- Minicomputer	71	4	74	78	83	88	94	99	6
- Workstation/PC	63	14	72	94	100	108	122	132	13
Application Software	275	15	315	400	455	495	560	615	14
- Mainframe	19	-3	19	18	18	17	17	16	-3
- Minicomputer	71	9	77	84	91	100	109	119	9
- Workstation/PC	185	19	220	299	347	376	437	483	17
Turnkey Systems	286	6	302	324	346	384	423	461	9
- Equipment	129	2	131	135	141	150	158	165	5
- Application Software	61	10	67	74	83	95	108	122	13
- System Software	18	3	18	19	19	20	21	23	4
- Professional Services	77	14	88	94	105	121	137	154	12
Equipment Services	640	3	665	695	720	750	780	810	4
- Equipment Maintenance	400	0	400	405	410	415	415	420	1
- Environmental Services	240	9	265	290	315	340	365	390	8
Grand Total Information Service Market	3,250	6	3,450	3,800	4,100	4,450	4,900	5,300	9

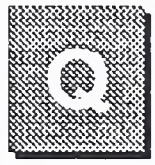
D

Information Services Forecast Reconciliation in Local Currency

Exhibit P-5

Forecast Reconciliation, Sweden, 1994-1999

Currency: SK Millions	1994 Market				1999 Market				1994	1995
Delivery Mode	1994 Report (Fcst)	1995 Report (Act)	1994-1995 Variance (Amount)	1994-1995 Variance (%)	1994 Report (Fcst)	1995 Report (Fcst)	1994-1995 Variance (Amount)	1994-1995 Variance (%)	Report %CAGR (Fcst)	Report %CAGR (Fcst)
Software and Services Total (ex Equipment Services)	23,700	23,900	200	1	36,600	37,400	800	2	9	9
Professional Services	10,100	10,100	0	0	14,600	14,500	-100	-1	8	8
- IS Consulting	1,110	1,110	0	0	1,800	1,780	-20	-1	10	10
- Education & Training	680	680	0	0	970	936	-34	-4	7	7
- Custom Software	8,200	8,200	0	0	11,500	11,400	-100	-1	7	7
- Application Management	125	145	20	16	280	350	70	25	18	19
Systems Integration	640	370	-270	-42	1,140	620	-520	-46	12	11
- Equipment	165	93	-72	-44	240	99	-141	-59	8	1
- Application Software	135	52	-83	-61	370	148	-222	-60	22	23
- System Software	46	30	-16	-35	69	43	-26	-38	8	7
- Professional Services	275	167	-108	-39	395	296	-99	-25	8	12
- Other	18	30	12	67	61	31	-30	-49	28	1
Systems Operations	1,720	2,140	420	24	4,615	5,350	735	16	22	20
- Platform Operations	435	500	65	15	875	1,050	175	20	15	16
- Application Operations	1,000	1,250	250	25	2,690	2,950	260	10	22	19
- Desktop Services	285	390	105	37	1,050	1,350	300	29	30	28
Processing Services	2,850	2,850	0	0	2,840	2,875	35	1	0	0
- Transaction Processing	2,570	2,570	0	0	2,510	2,540	30	1	0	0
- Utility Processing	54	54	1	1	50	51	2	3	-2	-1
- Other Processing	225	225	0	0	280	285	5	2	4	5
Network Services	990	1,070	80	8	2,080	2,240	160	8	16	16
- Electronic Info Svcs	550	550	0	0	915	920	5	1	11	11
- Network Applications	370	370	0	0	1,010	1,030	20	2	22	23
- Network Management	70	150	80	114	150	290	140	93	16	14
System Software	2,310	2,310	0	0	2,760	2,880	120	4	4	5
- Mainframe	1,090	1,090	0	0	920	920	0	0	-3	-3
- Minicomputer	645	645	0	0	850	850	0	0	6	6
- Workstation/PC	570	570	0	0	990	1,110	120	12	12	14
Application Software	2,500	2,500	0	0	4,590	5,120	530	12	13	15
- Mainframe	175	175	0	0	150	150	0	0	-3	-3
- Minicomputer	640	640	0	0	965	990	25	3	9	9
- Workstation/PC	1,680	1,680	0	0	3,470	3,975	505	15	16	19
Turnkey Systems	2,600	2,600	0	0	3,950	3,850	-100	-3	9	8
- Equipment	1,170	1,170	0	0	1,440	1,440	0	0	4	4
- Application Software	550	550	0	0	975	985	10	1	12	12
- System Software	160	160	0	0	190	195	5	3	3	4
- Professional Services	700	700	0	0	1,350	1,250	-100	-7	14	12
Equipment Services	5,800	5,850	50	1	6,950	7,100	150	2	4	4
- Equipment Maintenance	3,650	3,650	0	0	3,790	3,798	8	0	1	1
- Environmental Services	2,150	2,200	50	2	3,150	3,323	173	5	8	9
Grand Total	29,500	29,800	300	1	43,500	44,500	1,000	2	8	8



Information Services Industry Forecast Database, 1995-2000 Switzerland

A

Forecast Database in Local Currency (SF Millions)

Exhibit Q-1

Top Level IT Expenditure, Switzerland

Sector	SF Millions								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR (%)
Total IT Spending	15,000	3	15,400	15,900	16,500	17,100	17,800	18,500	4
Equipment Sales	3,450	3	3,550	3,650	3,850	3,950	4,100	4,300	4
Mainframe	960	-11	850	750	670	590	510	450	-12
Minicomputer	610	7	650	710	770	820	870	940	8
PC/Workstation	1,900	8	2,050	2,200	2,400	2,550	2,700	2,900	7
Equipment Services	1,360	1	1,380	1,410	1,450	1,480	1,510	1,550	2
Software Products	1,290	8	1,390	1,595	1,725	1,820	2,005	2,145	9
Other Information Services	2,250	9	2,450	2,650	2,900	3,300	3,650	4,050	11
Data Communications	1,250	4	1,300	1,350	1,400	1,450	1,500	1,550	4
Facilities/Administration	1,000	0	1,000	1,050	1,050	1,100	1,100	1,100	2
In-house Staff	4,400	-2	4,300	4,200	4,100	4,000	3,900	3,800	-2

Exhibit Q-2

Information Services Market
Forecast by Delivery Mode and Submode
Switzerland, 1995-2000

Delivery Modes	SF Millions								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	3,950	8	4,250	4,700	5,100	5,600	6,200	6,750	10
Professional Services	970	3	1,000	1,050	1,120	1,210	1,320	1,450	8
- IS Consulting	120	8	130	145	165	190	220	255	14
- Education & Training	160	2	163	168	175	184	193	204	5
- Custom Software	685	2	700	730	770	830	895	975	7
- Application Management	6	17	7	7	8	10	13	15	16
Systems Integration	210	10	230	250	285	315	345	370	10
- Equipment	53	0	53	56	54	54	56	59	2
- Application Software	29	21	35	43	54	73	83	96	22
- System Software	17	6	18	18	20	22	24	26	8
- Professional Services	95	12	106	117	137	149	167	174	10
- Other	17	6	18	18	20	19	17	15	-4
Systems Operations	103	19	123	150	184	226	275	327	22
- Platform Operations	23	17	27	32	37	43	50	55	15
- Application Operations	65	20	78	95	117	145	175	210	22
- Desktop Services	15	20	18	23	30	38	50	62	28
Processing Services	485	7	520	550	590	630	680	730	7
- Transaction Processing	420	7	450	475	510	545	585	630	7
- Utility Processing	17	0	17	18	18	18	19	19	2
- Other Processing	48	8	52	57	62	67	74	80	9
Network Services	265	11	295	345	400	465	545	630	16
- Electronic Info Svcs	190	8	205	230	260	290	325	355	12
- Network Applications	65	23	80	100	125	160	200	250	26
- Network Management	11	9	12	13	15	17	20	23	14
System Software	760	4	790	845	875	910	975	1,025	5
- Mainframe	335	-4	320	305	295	285	280	270	-3
- Minicomputer	240	4	250	260	275	290	310	330	6
- Workstation/PC	185	19	220	280	305	335	385	425	14
Application Software	530	13	600	750	850	910	1,030	1,120	13
- Mainframe	60	-3	58	57	55	53	52	50	-3
- Minicomputer	150	10	165	180	200	220	240	265	10
- Workstation/PC	320	19	380	515	590	635	735	805	16
Turnkey Systems	630	6	670	740	810	910	1,010	1,110	11
- Equipment	335	4	350	375	400	435	475	510	8
- Application Software	90	11	100	115	130	150	175	200	15
- System Software	35	0	35	40	45	50	55	60	11
- Professional Services	170	9	185	210	235	270	305	340	13
Equipment Services	1,360	1	1,380	1,410	1,450	1,480	1,510	1,550	2
- Equipment Maintenance	775	0	775	775	775	767	760	752	-1
- Environmental Services	580	5	609	639	671	712	754	800	6
Grand Total Information Service Market	5,300	6	5,600	6,100	6,550	7,050	7,700	8,300	8

B

Forecast Database in U.S. Dollars

Exhibit Q-3

Software and Services Market Forecast in Dollars
Switzerland, 1995-2000

Delivery Modes	U.S. $ Million (rounded)								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	3,015	8	3,245	3,590	3,895	4,275	4,735	5,155	10
Professional Services	740	3	765	800	855	925	1,010	1,105	8
- IS Consulting	92	8	99	111	126	145	168	195	14
- Education & Training	122	2	125	128	134	141	148	156	5
- Custom Software	525	2	535	555	590	635	685	745	7
- Application Management	5	17	5	5	6	8	10	11	16
Systems Integration	161	10	176	191	218	241	264	283	10
- Equipment	41	0	41	43	41	41	43	45	2
- Application Software	22	21	27	33	41	56	63	73	22
- System Software	13	6	14	14	15	17	18	20	8
- Professional Services	73	12	81	90	105	114	128	133	10
- Other	13	6	14	14	15	15	13	11	-4
Systems Operations	79	19	94	115	141	173	210	250	22
- Platform Operations	18	17	21	25	28	33	38	42	15
- Application Operations	50	20	60	73	90	111	134	161	22
- Desktop Services	11	20	14	18	23	29	38	47	28
Processing Services	370	7	397	420	451	481	519	558	7
- Transaction Processing	321	7	344	363	390	416	447	481	7
- Utility Processing	13	0	13	14	14	14	15	15	2
- Other Processing	37	8	40	44	48	51	57	61	9
Network Services	203	11	225	264	306	355	416	481	16
- Electronic Info Svcs	145	8	157	176	199	222	248	271	12
- Network Applications	50	23	61	77	96	122	153	191	26
- Network Management	9	9	9	10	12	13	16	18	14
System Software	580	4	605	645	670	695	745	780	5
- Mainframe	256	-4	245	233	225	218	214	206	-3
- Minicomputer	183	4	191	199	210	222	237	252	6
- Workstation/PC	141	19	168	214	233	256	294	325	14
Application Software	405	13	460	575	650	695	785	855	13
- Mainframe	46	-3	45	44	42	41	40	38	-3
- Minicomputer	115	10	126	138	153	168	183	203	10
- Workstation/PC	245	19	290	395	450	485	560	615	16
Turnkey Systems	481	6	512	565	619	695	771	848	11
- Equipment	256	4	267	287	306	332	363	390	8
- Application Software	69	11	77	88	99	115	134	153	15
- System Software	27	0	27	31	34	38	42	46	11
- Professional Services	130	9	141	161	180	206	233	260	13
Equipment Services	1,040	1	1,055	1,075	1,105	1,130	1,155	1,185	2
- Equipment Maintenance	590	0	590	590	590	585	580	575	-1
- Environmental Services	445	5	465	490	510	545	575	610	6
Grand Total Information Service Market	4,050	6	4,250	4,650	5,000	5,400	5,900	6,350	8

C

Forecast Database in ECUs

Exhibit Q-4

Software and Services Market Forecast in ECUs
Switzerland, 1995-2000

Delivery Modes	ECU Millions (rounded)								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	2,470	8	2,655	2,940	3,190	3,500	3,875	4,220	10
Professional Services	605	3	625	655	700	755	825	905	8
- IS Consulting	75	8	82	91	103	119	138	160	14
- Education & Training	100	2	102	105	110	115	121	128	5
- Custom Software	430	2	440	455	480	520	560	610	7
- Application Management	4	17	5	5	5	7	8	10	16
Systems Integration	132	10	144	157	178	197	216	232	10
- Equipment	33	0	33	35	34	34	35	37	2
- Application Software	18	21	22	27	34	46	52	60	22
- System Software	11	6	11	11	13	14	15	16	8
- Professional Services	60	12	67	73	86	93	105	109	10
- Other	11	6	11	11	13	12	11	9	-4
Systems Operations	65	19	77	94	115	142	172	205	22
- Platform Operations	15	17	17	20	23	27	32	35	15
- Application Operations	41	20	49	60	73	91	110	132	22
- Desktop Services	9	20	11	14	19	24	31	39	28
Processing Services	303	7	325	344	369	394	424	456	7
- Transaction Processing	263	7	282	297	319	341	366	394	7
- Utility Processing	11	0	11	12	12	12	12	12	2
- Other Processing	30	8	33	36	39	42	47	50	9
Network Services	166	11	185	216	250	291	341	394	16
- Electronic Info Svcs	119	8	128	144	163	182	203	222	12
- Network Applications	41	23	50	63	78	100	125	157	26
- Network Management	7	9	8	8	10	11	13	15	14
System Software	475	4	495	530	545	570	610	640	5
- Mainframe	210	-4	200	191	185	178	175	169	-3
- Minicomputer	150	4	157	163	172	182	194	207	6
- Workstation/PC	116	19	138	175	191	210	241	266	14
Application Software	330	13	375	470	530	570	645	700	13
- Mainframe	38	-3	37	36	35	33	33	32	-3
- Minicomputer	94	10	103	113	125	138	150	166	10
- Workstation/PC	200	19	238	322	369	397	460	503	16
Turnkey Systems	394	6	419	463	507	569	632	694	11
- Equipment	210	4	219	235	250	272	297	319	8
- Application Software	57	11	63	72	82	94	110	125	15
- System Software	22	0	22	25	28	31	34	38	11
- Professional Services	107	9	116	132	147	169	191	213	13
Equipment Services	850	1	865	880	905	925	945	970	2
- Equipment Maintenance	485	0	485	485	485	480	475	470	-1
- Environmental Services	365	5	380	400	420	445	470	500	6
Grand Total Information Service Market	3,300	6	3,500	3,800	4,100	4,400	4,800	5,200	8

D

Information Services Forecast Reconciliation in Local Currency

Exhibit Q-5

Forecast Reconciliation, Switzerland, 1994-1999

Currency: SF Millions	1994 Market				1999 Market				1994	1995
Delivery Mode	1994 Report (Fcst)	1995 Report (Act)	1994-1995 Variance (Amount)	1994-1995 Variance (%)	1994 Report (Fcst)	1995 Report (Fcst)	1994-1995 Variance (Amount)	1994-1995 Variance (%)	Report %CAGR (Fcst)	Report %CAGR (Fcst)
Software and Services Total (ex Equipment Services)	4,000	3,950	-50	-1	6,150	6,200	50	1	9	9
Professional Services	970	970	0	0	1,380	1,320	-60	-4	7	6
- IS Consulting	120	120	0	0	225	220	-5	-2	13	13
- Education & Training	160	160	0	0	205	193	-12	-6	5	4
- Custom Software	685	685	0	0	935	895	-40	-4	6	5
- Application Management	6	6	0	0	19	13	-6	-32	26	17
Systems Integration	270	210	-60	-22	410	345	-65	-16	9	10
- Equipment	70	53	-17	-24	90	56	-34	-38	5	1
- Application Software	55	29	-26	-47	120	83	-37	-31	17	23
- System Software	22	17	-5	-23	30	24	-6	-20	6	7
- Professional Services	115	95	-20	-17	160	167	7	4	7	12
- Other	6	17	11	183	11	17	6	55	13	0
Systems Operations	103	103	0	0	241	275	34	14	19	22
- Platform Operations	23	23	0	0	41	50	9	22	12	17
- Application Operations	66	65	-1	-2	150	175	25	17	18	22
- Desktop Services	14	15	1	7	50	50	0	0	29	27
Processing Services	485	485	0	0	665	680	15	2	7	7
- Transaction Processing	420	420	0	0	575	585	10	2	6	7
- Utility Processing	17	17	0	0	19	19	0	0	2	2
- Other Processing	48	48	0	0	72	74	2	3	8	9
Network Services	265	265	0	0	560	545	-15	-3	16	16
- Electronic Info Svcs	190	190	0	0	320	325	5	2	11	11
- Network Applications	65	65	0	0	215	200	-15	-7	27	25
- Network Management	11	11	0	0	23	20	-3	-13	16	13
System Software	760	760	0	0	930	975	45	5	4	5
- Mainframe	335	335	0	0	280	280	0	0	-4	-4
- Minicomputer	240	240	0	0	305	310	5	2	5	5
- Workstation/PC	185	185	0	0	345	385	40	12	13	16
Application Software	530	530	0	0	920	1,030	110	12	12	14
- Mainframe	60	60	0	0	50	52	2	4	-4	-3
- Minicomputer	150	150	0	0	230	240	10	4	9	10
- Workstation/PC	320	320	0	0	640	735	95	15	15	18
Turnkey Systems	630	630	0	0	1,020	1,010	-10	-1	10	10
- Equipment	335	335	0	0	480	475	-5	-1	7	7
- Application Software	90	90	0	0	175	175	0	0	14	14
- System Software	35	35	0	0	60	55	-5	-8	11	9
- Professional Services	170	170	0	0	300	305	5	2	12	12
Equipment Services	1,360	1,360	0	0	1,470	1,510	40	3	2	2
- Equipment Maintenance	775	775	0	0	745	760	15	2	-1	0
- Environmental Services	580	580	0	0	725	754	29	4	5	5
Grand Total	5,350	5,300	-50	-1	7,600	7,700	100	1	7	8

Information Services Industry Forecast Database, 1995-2000 UK

A

Forecast Database in Local Currency (Ps Millions)

Exhibit R-1

Top Level IT Expenditure, UK

Sector	Ps Millions								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR (%)
Total IT Spending	25,000	0	25,000	26,000	26,000	27,000	28,000	28,000	2
Equipment Sales	4,300	-5	4,100	4,000	3,900	3,700	3,600	3,500	-3
Mainframe	850	-6	800	630	540	470	410	350	-15
Minicomputer	1,200	-4	1,150	1,115	1,085	1,040	995	965	-3
PC/Workstation	2,250	-4	2,155	2,220	2,240	2,220	2,240	2,185	0
Equipment Services	2,370	0	2,360	2,345	2,330	2,310	2,290	2,280	-1
Software Products	2,070	11	2,295	2,660	2,865	3,010	3,250	3,390	8
Other Information Services	5,700	12	6,400	7,100	7,800	8,700	9,600	10,600	11
Data Communications	1,670	7	1,785	1,875	1,985	2,080	2,140	2,225	5
Facilities/Administration	2,620	-5	2,490	2,370	2,290	2,255	2,200	2,150	-3
In-house Staff	6,300	-6	5,900	5,550	5,200	4,800	4,500	4,300	-6

Exhibit R-2

Information Services Market
Forecast by Delivery Mode and Submode
UK, 1995-2000

Delivery Modes	Ps Millions								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	8,700	10	9,600	10,700	11,700	12,800	14,000	15,200	10
Professional Services	1,965	3	2,015	2,080	2,130	2,175	2,200	2,230	2
- IS Consulting	450	10	495	550	595	655	720	790	10
- Education & Training	200	5	210	225	238	252	268	284	6
- Custom Software	1,270	-2	1,250	1,230	1,200	1,150	1,065	985	-5
- Application Management	45	33	60	75	95	120	145	170	23
Systems Integration	876	14	997	1,146	1,317	1,500	1,696	1,933	14
- Equipment	219	5	229	229	250	270	271	309	6
- Application Software	158	20	189	241	303	360	458	541	23
- System Software	61	15	70	80	92	105	119	135	14
- Professional Services	412	16	479	550	619	690	763	851	12
- Other	26	15	30	46	53	75	85	97	26
Systems Operations	800	28	1,020	1,290	1,560	1,860	2,180	2,490	20
- Platform Operations	220	11	245	280	300	330	360	380	9
- Application Operations	490	35	660	860	1,075	1,300	1,550	1,780	22
- Desktop Services	85	29	110	145	180	225	270	325	24
Processing Services	570	7	610	625	660	690	725	765	5
- Transaction Processing	430	5	450	450	465	470	480	490	2
- Utility Processing	15	0	15	15	15	15	15	15	0
- Other Processing	125	16	145	160	180	205	230	260	12
Network Services	1,010	16	1,170	1,355	1,565	1,805	2,075	2,365	15
- Electronic Info Svcs	650	12	730	815	905	995	1,095	1,170	10
- Network Applications	270	26	340	430	535	665	805	980	24
- Network Management	90	11	100	110	125	145	175	215	17
System Software	1,250	8	1,350	1,480	1,535	1,580	1,660	1,705	5
- Mainframe	500	-5	475	445	430	410	390	355	-6
- Minicomputer	400	10	440	475	500	525	550	580	6
- Workstation/PC	350	24	435	560	605	645	720	770	12
Application Software	820	15	945	1,180	1,330	1,430	1,590	1,685	12
- Mainframe	62	-5	59	56	52	50	48	46	-5
- Minicomputer	220	9	240	255	275	295	315	340	7
- Workstation/PC	538	20	645	870	1,005	1,085	1,225	1,300	15
Turnkey Systems	1,365	6	1,450	1,515	1,600	1,735	1,855	2,005	7
- Equipment	680	5	715	745	785	835	880	925	5
- Application Software	230	11	255	260	275	310	330	375	8
- System Software	115	4	120	130	140	150	165	175	8
- Professional Services	340	6	360	380	400	440	480	530	8
Equipment Services	2,370	0	2,360	2,345	2,330	2,310	2,290	2,280	-1
- Equipment Maintenance	1,460	-5	1,387	1,304	1,213	1,128	1,037	954	-7
- Environmental Services	910	7	974	1,042	1,115	1,182	1,253	1,328	6
Grand Total Information Service Market	11,000	8	11,900	13,000	14,000	15,100	16,300	17,500	8

B

Forecast Database in U.S. Dollars

Exhibit R-3

Software and Services Market Forecast in Dollars
UK, 1995-2000

Delivery Modes	U.S. $ Million (rounded)								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	13,600	10	15,000	16,700	18,300	20,000	21,900	23,800	10
Professional Services	3,100	3	3,200	3,300	3,300	3,400	3,400	3,500	2
- IS Consulting	700	10	770	860	930	1,030	1,130	1,240	10
- Education & Training	310	5	330	350	370	390	420	440	6
- Custom Software	2,000	-2	2,000	1,900	1,900	1,800	1,700	1,500	-5
- Application Management	70	33	94	117	149	188	227	266	23
Systems Integration	1,370	14	1,560	1,790	2,060	2,350	2,650	3,030	14
- Equipment	340	5	360	360	390	420	420	480	6
- Application Software	247	20	296	377	474	563	717	847	23
- System Software	95	15	110	125	144	164	186	211	14
- Professional Services	640	16	750	860	970	1,080	1,190	1,330	12
- Other	41	15	47	72	83	117	133	152	26
Systems Operations	1,250	28	1,600	2,020	2,440	2,910	3,410	3,900	20
- Platform Operations	340	11	380	440	470	520	560	590	9
- Application Operations	770	35	1,030	1,350	1,680	2,030	2,430	2,790	22
- Desktop Services	133	29	172	227	282	352	423	509	24
Processing Services	890	7	950	980	1,030	1,080	1,130	1,200	5
- Transaction Processing	670	5	700	700	730	740	750	770	2
- Utility Processing	20	0	20	20	20	20	20	20	0
- Other Processing	200	16	230	250	280	320	360	410	12
Network Services	1,580	16	1,830	2,120	2,450	2,820	3,250	3,700	15
- Electronic Info Svcs	1,020	12	1,140	1,280	1,420	1,560	1,710	1,830	10
- Network Applications	420	26	530	670	840	1,040	1,260	1,530	24
- Network Management	140	11	160	170	200	230	270	340	17
System Software	2,000	8	2,100	2,300	2,400	2,500	2,600	2,700	5
- Mainframe	780	-5	740	700	670	640	610	560	-6
- Minicomputer	630	10	690	740	780	820	860	910	6
- Workstation/PC	550	24	680	880	950	1,010	1,130	1,210	12
Application Software	1,300	15	1,500	1,800	2,100	2,200	2,500	2,600	12
- Mainframe	100	-5	90	90	80	80	70	70	-5
- Minicomputer	340	9	380	400	430	460	490	530	7
- Workstation/PC	800	20	1,000	1,400	1,600	1,700	1,900	2,000	15
Turnkey Systems	2,140	6	2,270	2,370	2,500	2,720	2,900	3,140	7
- Equipment	1,060	5	1,120	1,170	1,230	1,310	1,380	1,450	5
- Application Software	360	11	400	410	430	490	520	590	8
- System Software	180	4	188	203	219	235	258	274	8
- Professional Services	530	6	560	590	630	690	750	830	8
Equipment Services	3,700	0	3,700	3,700	3,600	3,600	3,600	3,600	-1
- Equipment Maintenance	2,300	-5	2,200	2,000	1,900	1,800	1,600	1,500	-7
- Environmental Services	1,400	7	1,500	1,600	1,700	1,800	2,000	2,100	6
Grand Total Information Service Market	17,000	8	19,000	20,000	22,000	24,000	26,000	27,000	8

C

Forecast Database in ECUs

Exhibit R-4

Software and Services Market Forecast in ECUs
UK, 1995-2000

Delivery Modes	ECU Millions (rounded)								
	1994	94-95 (%)	1995	1996	1997	1998	1999	2000	95-0 CAGR(%)
Software and Services Total (ex. Equipment Services)	11,100	10	12,200	13,600	14,900	16,300	17,900	19,400	10
Professional Services	2,500	3	2,600	2,700	2,700	2,800	2,800	2,800	2
- IS Consulting	570	10	630	700	760	840	920	1,010	10
- Education & Training	260	5	270	290	300	320	340	360	6
- Custom Software	1,600	-2	1,600	1,600	1,500	1,500	1,400	1,300	-5
- Application Management	60	33	80	100	120	150	180	220	23
Systems Integration	1,120	14	1,270	1,460	1,680	1,910	2,160	2,470	14
- Equipment	280	5	290	290	320	340	350	390	6
- Application Software	202	20	241	307	386	459	584	690	23
- System Software	78	15	89	102	117	134	152	172	14
- Professional Services	530	16	610	700	790	880	970	1,090	12
- Other	33	15	38	59	68	96	108	124	26
Systems Operations	1,020	28	1,300	1,650	1,990	2,370	2,780	3,180	20
- Platform Operations	280	11	310	360	380	420	460	480	9
- Application Operations	630	35	840	1,100	1,370	1,660	1,980	2,270	22
- Desktop Services	108	29	140	185	230	287	344	415	24
Processing Services	730	7	780	800	840	880	920	980	5
- Transaction Processing	550	5	570	570	590	600	610	630	2
- Utility Processing	20	0	20	20	20	20	20	20	0
- Other Processing	160	16	180	200	230	260	290	330	12
Network Services	1,290	16	1,490	1,730	2,000	2,300	2,650	3,020	15
- Electronic Info Svcs	830	12	930	1,040	1,150	1,270	1,400	1,490	10
- Network Applications	340	26	430	550	680	850	1,030	1,250	24
- Network Management	110	11	130	140	160	180	220	270	17
System Software	1,600	8	1,700	1,900	2,000	2,000	2,100	2,200	5
- Mainframe	640	-5	610	570	550	520	500	450	-6
- Minicomputer	510	10	560	610	640	670	700	740	6
- Workstation/PC	450	24	550	710	770	820	920	980	12
Application Software	1,000	15	1,200	1,500	1,700	1,800	2,000	2,100	12
- Mainframe	80	-5	80	70	70	60	60	60	-5
- Minicomputer	280	9	310	330	350	380	400	430	7
- Workstation/PC	690	20	820	1,110	1,280	1,380	1,560	1,660	15
Turnkey Systems	1,740	6	1,850	1,930	2,040	2,210	2,370	2,560	7
- Equipment	870	5	910	950	1,000	1,070	1,120	1,180	5
- Application Software	290	11	330	330	350	400	420	480	8
- System Software	147	4	153	166	179	191	210	223	8
- Professional Services	430	6	460	480	510	560	610	680	8
Equipment Services	3,000	0	3,000	3,000	3,000	2,900	2,900	2,900	-1
- Equipment Maintenance	1,900	-5	1,800	1,700	1,500	1,400	1,300	1,200	-7
- Environmental Services	1,200	7	1,200	1,300	1,400	1,500	1,600	1,700	6
Grand Total Information Service Market	14,000	8	15,000	17,000	18,000	19,000	21,000	22,000	8

D

Information Services Forecast Reconciliation in Local Currency

Exhibit R-5

Forecast Reconciliation, UK, 1994-1999

Currency: Ps Millions	1994 Market				1999 Market				1994 Report %CAGR	1995 Report %CAGR
Delivery Mode	1994 Report (Fcst)	1995 Report (Act)	1994-1995 Variance (Amount)	1994-1995 Variance (%)	1994 Report (Fcst)	1995 Report (Fcst)	1994-1995 Variance (Amount)	1994-1995 Variance (%)	(Fcst)	(Fcst)
Software and Services Total (ex Equipment Services)	7,650	7,900	250	3	12,550	12,000	-550	-4	10	9
Professional Services	1,850	1,930	80	4	1,780	2,080	300	17	-1	2
- IS Consulting	435	410	-25	-6	630	660	30	5	8	10
- Education & Training	195	195	0	0	240	215	-25	-10	4	2
- Custom Software	1,190	1,290	100	8	720	1,080	360	50	-10	-3
- Application Management	35	35	0	0	195	125	-70	-36	41	29
Systems Integration	735	775	40	5	1,990	1,335	-655	-33	22	11
- Equipment	200	200	0	0	410	310	-100	-24	15	9
- Application Software	130	130	0	0	715	395	-320	-45	41	25
- System Software	60	60	0	0	140	85	-55	-39	18	7
- Professional Services	330	370	40	12	665	515	-150	-23	15	7
- Other	15	15	0	0	58	28	-30	-52	31	13
Systems Operations	585	590	5	1	1,565	1,635	70	4	22	23
- Platform Operations	310	150	-160	-52	700	340	-360	-51	18	18
- Application Operations	210	375	165	79	680	1,080	400	59	26	24
- Desktop Services	65	65	0	0	190	215	25	13	24	27
Processing Services	530	530	0	0	785	680	-105	-13	8	5
- Transaction Processing	405	410	5	1	475	460	-15	-3	3	2
- Utility Processing	15	15	0	0	15	15	0	0	0	0
- Other Processing	110	110	0	0	295	205	-90	-31	22	13
Network Services	850	870	20	2	1,830	1,760	-70	-4	17	15
- Electronic Info Svcs	550	580	30	5	670	980	310	46	4	11
- Network Applications	225	215	-10	-4	915	630	-285	-31	32	24
- Network Management	75	75	0	0	245	150	-95	-39	27	15
System Software	1,150	1,190	40	3	1,650	1,450	-200	-12	7	4
- Mainframe	485	525	40	8	345	410	65	19	-7	-5
- Minicomputer	360	365	5	1	510	500	-10	-2	7	6
- Workstation/PC	305	300	-5	-2	795	540	-255	-32	21	12
Application Software	690	730	40	6	1,150	1,270	120	10	11	12
- Mainframe	60	65	5	8	45	50	5	11	-6	-5
- Minicomputer	180	205	25	14	250	290	40	16	7	7
- Workstation/PC	450	460	10	2	855	930	75	9	14	15
Turnkey Systems	1,270	1,290	20	2	1,780	1,740	-40	-2	7	6
- Equipment	660	650	-10	-2	845	840	-5	-1	5	5
- Application Software	290	210	-80	-28	450	300	-150	-33	9	7
- System Software	16	110	94	588	21	155	134	638	6	7
- Professional Services	305	320	15	5	470	450	-20	-4	9	7
Equipment Services	2,450	2,390	-60	-2	2,560	2,240	-320	-13	1	-1
- Equipment Maintenance	1,600	1,540	-60	-4	1,480	1,120	-360	-24	-2	-6
- Environmental Services	850	850	0	0	1,080	1,120	40	4	5	6
Grand Total	10,100	10,300	200	2	15,100	14,200	-900	-6	8	7

Economic Assumptions

INPUT reports are based principally on three strands of research activity conducted throughout the year:

- A vendor research programme with more than 500 interviews with prominent software and services vendors across Europe. This research assesses their attributable revenues in each country by delivery mode and, where possible, by industry sector. INPUT consultants use their own judgement in many cases to categorise revenues into sub-sectors. In particular INPUT excludes revenues considered captive, such as those from a vendor's parent company.

- Several hundred vendor and user interviews across all European market sectors to determine trends and opinions. These interviews are part of the research that INPUT carries out in specific sectors of the software and services market. In 1993, for example, INPUT produced reports on over 20 different software and services market sectors.

- Additionally, INPUT maintains an extensive library and database relating to the information services industry.

All the forecasts from these activities are produced in local currency for each country, then consolidated with common economic and exchange rate data to produce a top level forecast. This is done for software and services in each country and in Europe as a whole. At each stage it is examined for reasonableness and consistency.

The forecasts also benefit from assignments for and feedback from INPUT clients, who include over 100 of the leading vendors of software and services around the world. For example, INPUT supplied an economic model to a market leading client on the potential effect of rising commodity prices on forecast software and services growth rates.

In order to consolidate INPUT's forecasts and vendor data into a consistent set of European analyses each year, it is essential to use a standard set of economic factors. The following pages show the inflation and exchange rates in use for 1995 studies.

A
European Exchange Rates

The following table, Exhibit S-1, shows the standard exchange rates used throughout the 1995 programme to consolidate country market data for overall European forecasts.

Exhibit S-1

US Dollar and ECU Exchange Rates 1995

Country	Currency	US Dollar	ECU
Europe	$	1	0.815
France	FF	5.34	6.54
Germany	DM	1.55	1.90
United Kingdom	PS	0.639	0.784
Italy	Lira (K)	1.62	1.99
Sweden	Sek	7.43	9.11
Denmark	DK	6.08	7.45
Norway	NK	6.76	8.29
Finland	FM	4.74	5.82
Netherlands	Dfl	1.74	2.13
Belgium	BF	31.8	39.0
Switzerland	SF	1.31	1.6
Austria	Sch	10.9	13.4
Spain	Ptas	131.6	161.4
Ireland	IP	0.647	0.794
Portugal	Esc	159.2	195.2
Greece	Dra	240.6	295.2

Source: Financial Time January 1995

B
European Inflation Rates

Exhibit S-2 shows the average five year inflation assumptions for each reported country and the changes from those used in reports produced in the previous year. All INPUT forecasts include the effects of inflation as well as natural market growth rates. For consistency, the same inflation rates are used throughout all the different market sector research and analysis during the calendar year, unless specified otherwise.

Exhibit S-2

Inflation Assumptions 1994-1999 and 1995-2000

Country	Assumption 1994-1999	Assumption 1995-2000	Change
France	1.9	1.9	—
Germany	2.9	2.4	-0.5
United Kingdom	3.0	2.9	-0.1
Italy	3.2	3.2	—
Sweden	2.0	2.4	0.4
Denmark	2.6	2.8	0.2
Norway	1.5	2.3	0.8
Finland	2.0	3.2	1.2
Netherlands	2.0	2.3	0.3
Belgium	2.2	2.4	0.2
Switzerland	1.7	2.1	0.4
Austria	2.8	3.1	0.3
Spain	3.4	2.6	-0.8
Portugal	4.8	3.8	-1.0
Greece	11.2	5.3	-5.9
Ireland	3.3	2.8	-0.5
Eastern Europe	—	—	—
European Average	2.8	2.6	-0.2

Source: OECD 1994

The economic growth measurements and predictions from OECD forecasts are listed in Exhibit S-3.

Exhibit S-3

GDP Growth Rate Assumptions

Country	1993 (%)	1994 (%)	1995 (%)	1996 (%)
Austria	-0.3	2.6	3.0	3.1
Belgium	-1.7	2.3	3.0	3.1
Denmark	1.4	4.7	3.3	2.9
Finland	-2.0	3.5	4.8	3.9
France	-1.0	2.2	3.1	3.2
Germany	-1.1	2.8	2.8	3.5
Greece	-0.5	1.0	1.5	2.3
Ireland	4.0	5.0	5.0	4.6
Italy	-0.7	2.2	2.7	2.9
Netherlands	0.4	2.5	2.9	3.2
Norway	2.2	3.6	2.9	2.3
Portugal	-1.1	1.0	2.6	2.9
Spain	-1.0	1.7	2.9	3.3
Sweden	-2.1	2.3	2.3	2.5
Switzerland	-0.9	1.7	2.2	2.7
United Kingdom	2.0	3.5	3.4	3.0
EC	-0.3	2.5	3.0	3.2

Source: OECD 1994

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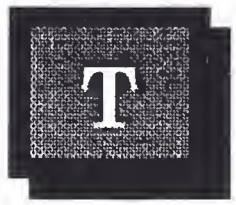


Forecast Reconciliation

No changes were made in INPUT's Definition of Terms between 1994 and 1995.

The analyses provided continue to show a total for the software and services market which excludes the equipment services sector as well as a total which includes it and which, for convenience, is labelled the information services market. This allows for a comparison with previous INPUT analyses.

Forecast reconciliation tables are provided for each individual country market and for Europe as a whole. These can be found within the country specific Appendices B through Q and for Europe in Appendix A.

Forecast reconciliations are in local currency for each country market, and are the fifth exhibit in each specific country appendix.

For Europe as a whole the forecast reconciliation is contained in Exhibit A in US dollars.

Exhibit T-1 shows the percentage change for each country market resulting from changes in the US dollar exchange rates from those used in 1994.

In overall terms these changes reduce the European market, measured in US dollars, by approximately ten per cent.

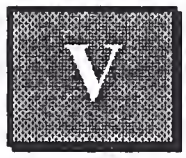
The impact on some country markets is considerable, notably for Finland (18.1).

Exhibit T-1

Impact of US Dollar Exchange Rate Changes, 1994-1995

Country	Currency	Percentage decrease in market from exchange rate changes
France	FF	9.5
Germany	DM	10.9
United Kingdom	PS	5.5
Italy	Lira (K)	5.3
Sweden	SEK	10.9
Denmark	DK	10.5
Norway	NK	10.1
Finland	FM	18.1
Netherlands	Dfl	10.3
Belgium	BF	12.0
Switzerland	SF	5.8
Austria	Sch	10.6
Spain	Ptas	7.9
Ireland	IP	3.5
Portugal	Esc	8.9
Greece	Dra	9.9

Source: Financial Time January 1995



Definition of Terms

A Introduction

INPUT's *Definition of Terms* provides the framework for all of INPUT's market analyses and forecasts of the information services industry. The structure is defined in Exhibit V-1.

One of the strengths of INPUT's market analysis services is the consistency of the underlying market sizing and forecast data. Each year INPUT reviews its industry structure and makes changes if they are required. When changes are made they are carefully documented and the new definitions and forecasts reconciled to the prior definitions and forecasts. INPUT clients have the benefit of being able to track market forecast data from year to year against a proven and consistent foundation of definitions.

B Overall Definitions and Analytical Framework

1. Information Services

Information Services are computer/telecommunications-related products and services that are oriented toward the development or use of information systems. Information services typically involve one or more of the following:

- Use of vendor-provided computer processing services to develop or run applications or provide services such as disaster recovery or data entry (called *Processing Services*)
- A combination of computer equipment, packaged software and associated support services which will meet an application systems need (called *Turnkey Systems*)

- Packaged software products, including systems software or applications software products (called *Software Products*)

- People services that support users in developing and operating their own information systems (called *Professional Services*)

- The combination of products (software and equipment) and services where the vendor assumes total responsibility for the development of a custom integrated solution to an information systems need (called *Systems Integration*)

- Services that provide operation and management of all or a significant part of a user's information systems functions under a long-term contract (called *Systems Operations*)

- Services that support the delivery of information in electronic form — typically network-oriented services such as value-added networks, electronic mail and document interchange (called *Network Applications*)

- Services that support the access and use of public and proprietary information such as on-line databases and news services (called *Electronic Information Services*)

- Services that support the operation of computer and digital communication equipment (called *Equipment Services*).

In general, the market for information services does not involve providing equipment to users. The exception is where the equipment is part of an overall service offering such as a turnkey system, a systems operations contract or a systems integration project.

The information services market also excludes pure data transport services (i.e., data or voice communications circuits). However, where information transport is associated with a network-based service (e.g., electronic data interchange services), or cannot be feasibly separated from other bundled services (e.g., some systems operations contracts), the transport costs are included as part of the services market.

The analytical framework of the information services industry consists of the following interacting factors: overall and industry-specific business environment (trends, events and issues); technology environment; user information system requirements; size and structure of information services markets; vendors and their products, services and revenues; distribution channels; and competitive issues.

2. Market Forecasts/User Expenditures

All information services market forecasts are estimates of *User Expenditures* for information services. When questions arise about the proper place to count these expenditures, INPUT addresses them from the user's viewpoint: expenditures are categorised according to what users perceive they are buying.

By focusing on user expenditures, INPUT avoids two problems which are related to the distribution channels for various categories of services:

- Double-counting, which can occur by estimating total vendor revenues when there is significant reselling within the industry (e.g., software sales to turnkey vendors for repackaging and resale to end users)

- Missed counting, which can occur when sales to end users go through indirect channels such as mail order retailers.

Captive Information Services User Expenditures are expenditures for products and services provided by a vendor that is part of the same parent corporation as the user. These expenditures are not included in INPUT forecasts.

Noncaptive Information Services User Expenditures are expenditures that go to vendors that have a different parent corporation than the user. It is these expenditures which constitute the information services market analysed by INPUT and that are included in INPUT forecasts.

3. Delivery Modes

Delivery Modes are defined as specific products and services that satisfy a given user need. While *Market Sectors* specify *who* the buyer is, *Delivery Modes* specify *what* the user is buying.

Of the nine delivery modes defined by INPUT, six are considered primary products or services:

- Processing Services
- Network Services
- Professional Services
- Applications Software Products
- Systems Software Products
- Equipment Services.

The remaining three delivery modes represent combinations of these products and services, combined with equipment, management and/or other services:

- Turnkey Systems
- Systems Operations
- Systems Integration.

Section C describes the delivery modes and their structure in more detail.

4. Market Sectors

Market Sectors are groupings or categories of the buyers of information services. There are three types of user markets:

- *Vertical Industry* markets, such as Banking, Transportation, Utilities, etc. These are called "industry-specific" markets.
- *Functional Application* markets, such as Human Resources, Accounting, etc. These are called "cross-industry" markets.
- *Other* markets, which are neither industry- nor application-specific, such as the market for systems software products and much of the on-line database market.

Specific market sectors used by INPUT are defined in Section E below.

5. Trading Communities

Information technology is playing a major role in business reengineering, not just companies but the value chain or *Trading Communities* in which these companies operate. This reengineering is resulting in electronic commerce emerging where interorganisational electronic systems facilitate the business processes of the trading community.

- A trading community is the group or organisations — commercial and non-commercial — involved in producing goods or services

- Electronic commerce and trading communities are addressed in INPUT's EDI and Electronic Commerce Program.

6. Outsourcing

Over the past few years a major change has occurred in the way clients are buying some information services. The shift has been labelled *outsourcing*.

INPUT views outsourcing as a change in the form of the client/vendor relationship. Under an outsourcing relationship, all or a major portion of the information systems function is contracted to a vendor in a long-term relationship. The vendor is responsible for the performance of the function.

INPUT considers the following submodes to be outsourcing-type relationships and in aggregate to represent the outsourcing market. See Exhibit V-1. Complete definitions are provided in Section C of this document. INPUT provides these forecasts as part of the corresponding delivery modes.

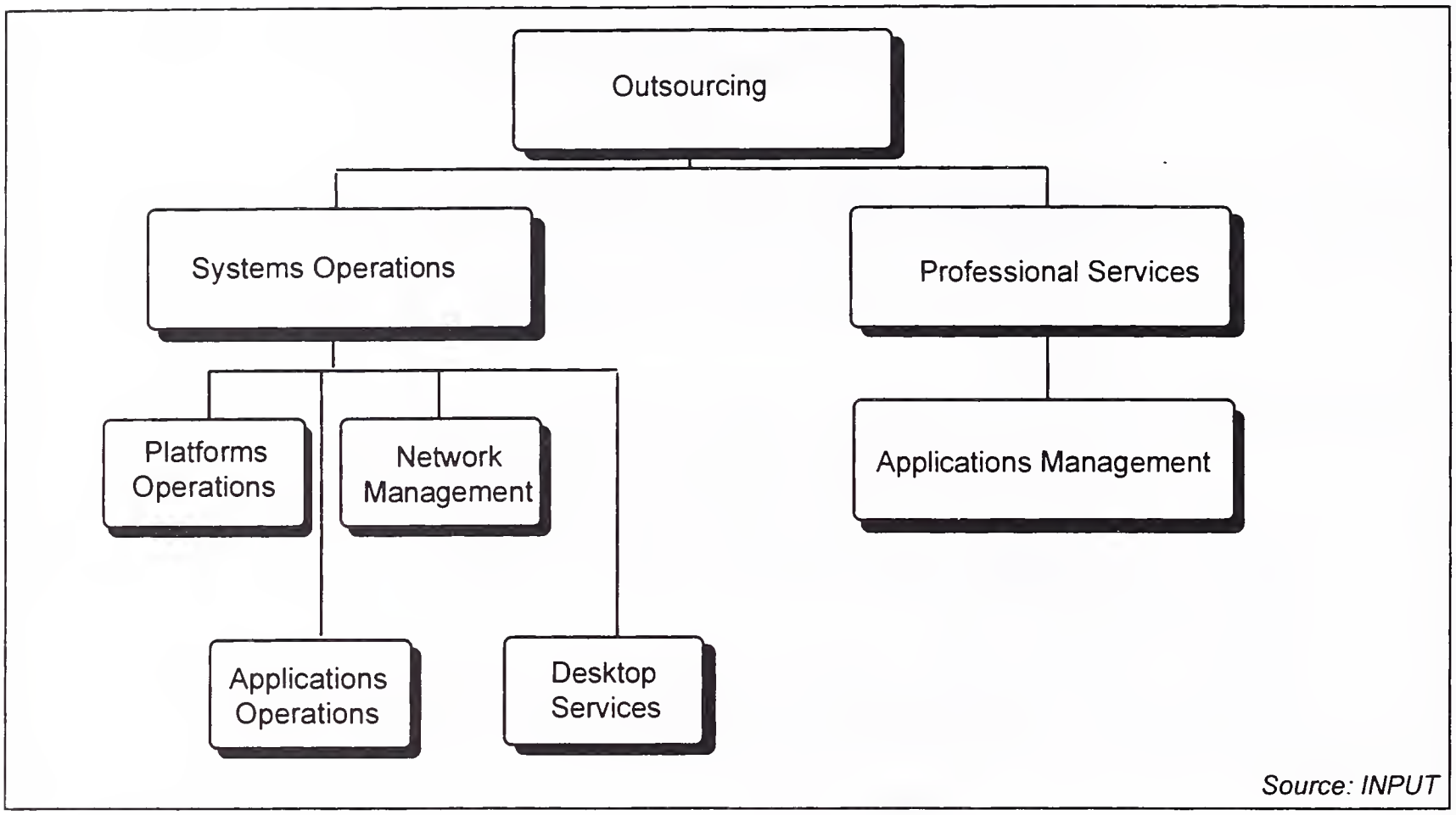
- *Platform Systems Operations* — The vendor is responsible for managing and operating the client's computer systems.

- *Applications System Operations* — The vendor is responsible for developing and/or maintaining a client's applications as well as operating the computer systems.

- *Network Management* — The vendor assumes full responsibility for operating and managing the client's data communications systems. This may also include the voice communications of the client.

Exhibit V-1

Outsourcing Components — INPUT's View



Source: INPUT

- *Applications Management/Maintenance* — The professional services vendor has full responsibility for developing and/or maintaining some or all of the applications systems that a client uses to support business operations. The services are provided on a long-term contractual basis.

- *Desktop Services* — The vendor assumes responsibility for the deployment, maintenance and connectivity between the personal computers and/or intelligent workstations in the client organisation. The services may also include performing the help-desk function. The services are provided on a long-term contractual basis.

C
Delivery Modes and Submodes

Exhibit V-2 provides the overall structure of the information services industry as defined and used by INPUT. This section of *Definition of Terms* provides definitions for each of the delivery modes and their submodes or components.

1. Software Products

INPUT divides the software products market into two delivery modes: systems software and applications software. The two delivery modes have many similarities. Both involve purchases of software packages for in-house computer systems. Included are both lease and purchase expenditures, as well as expenditures for work performed by the vendor to implement or maintain the package at the user's sites. Vendor-provided training or support in operation and use of the package, if part of the software pricing, is also included here.

Expenditures for work performed by organisations other than the package vendor are counted in the professional services delivery mode. Fees for work related to education, consulting, and/or custom modification of software products are also counted as professional services, provided such fees are charged separately from the price of the software product itself.

a. Systems Software Products

Systems software products enable the computer/communications system to perform basic machine-oriented or user interface functions. INPUT divides systems software products into three submodes. See Exhibit V-3.

- *Systems Control Products* — Software programs that manage computer system resources and control the execution of programs. These products include operating systems, emulators, network control, library control, windowing, access control and spoolers.

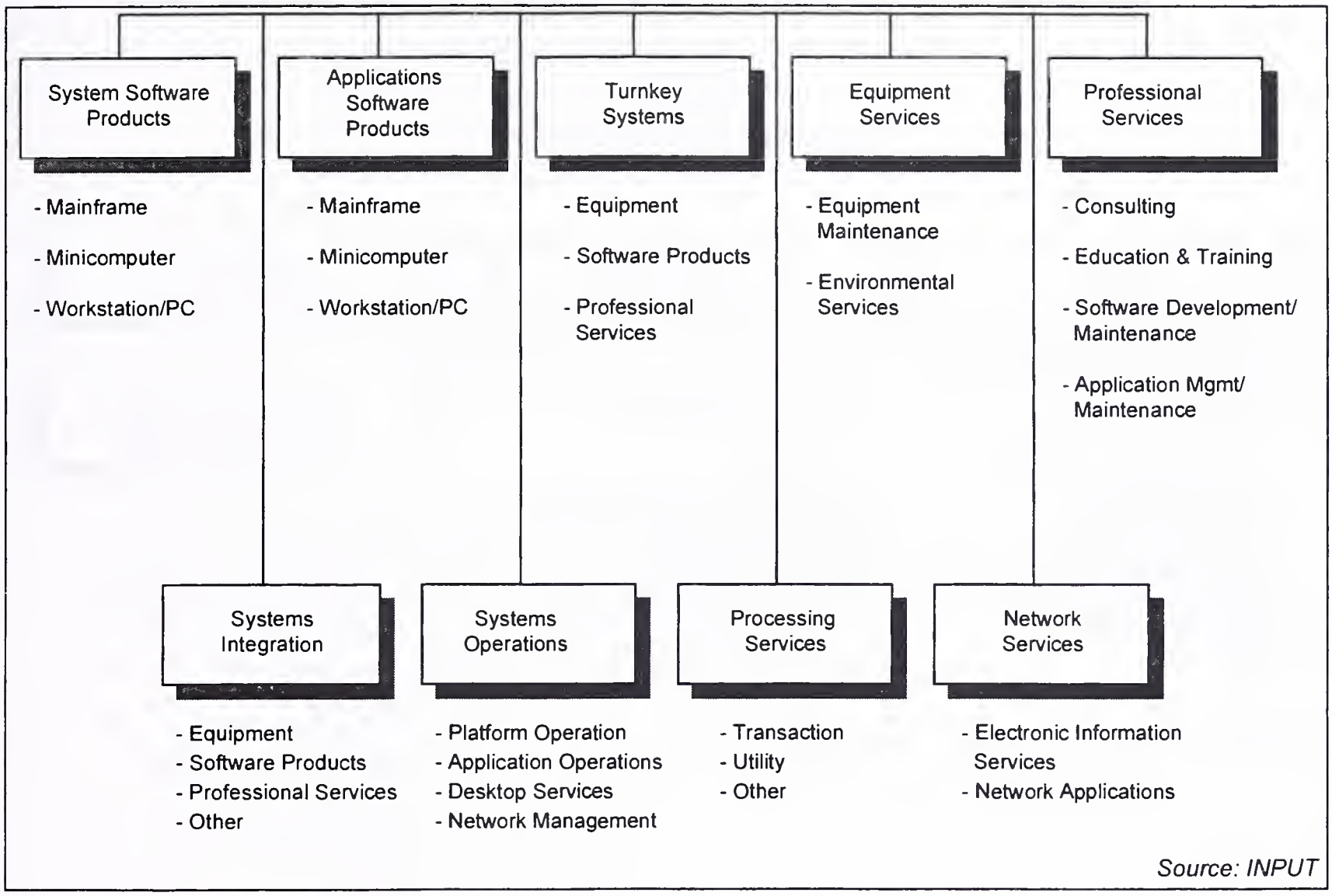
- *Operations Management Tools* — Software programs used by operations personnel to manage the computer system and/or network resources and personnel more effectively. Included are performance measurement, job accounting, computer operation scheduling, disk management utilities and capacity management.

- *Applications Development Tools* — Software programs used to prepare applications for execution by assisting in designing, programming, testing, and related functions. Included are traditional programming languages, 4GLs, data dictionaries, database management systems, report writers, project control systems, CASE systems and other development productivity aids.

INPUT forecasts the systems software products delivery mode by platform level: mainframe, minicomputer and workstation/PC.

Exhibit V-2

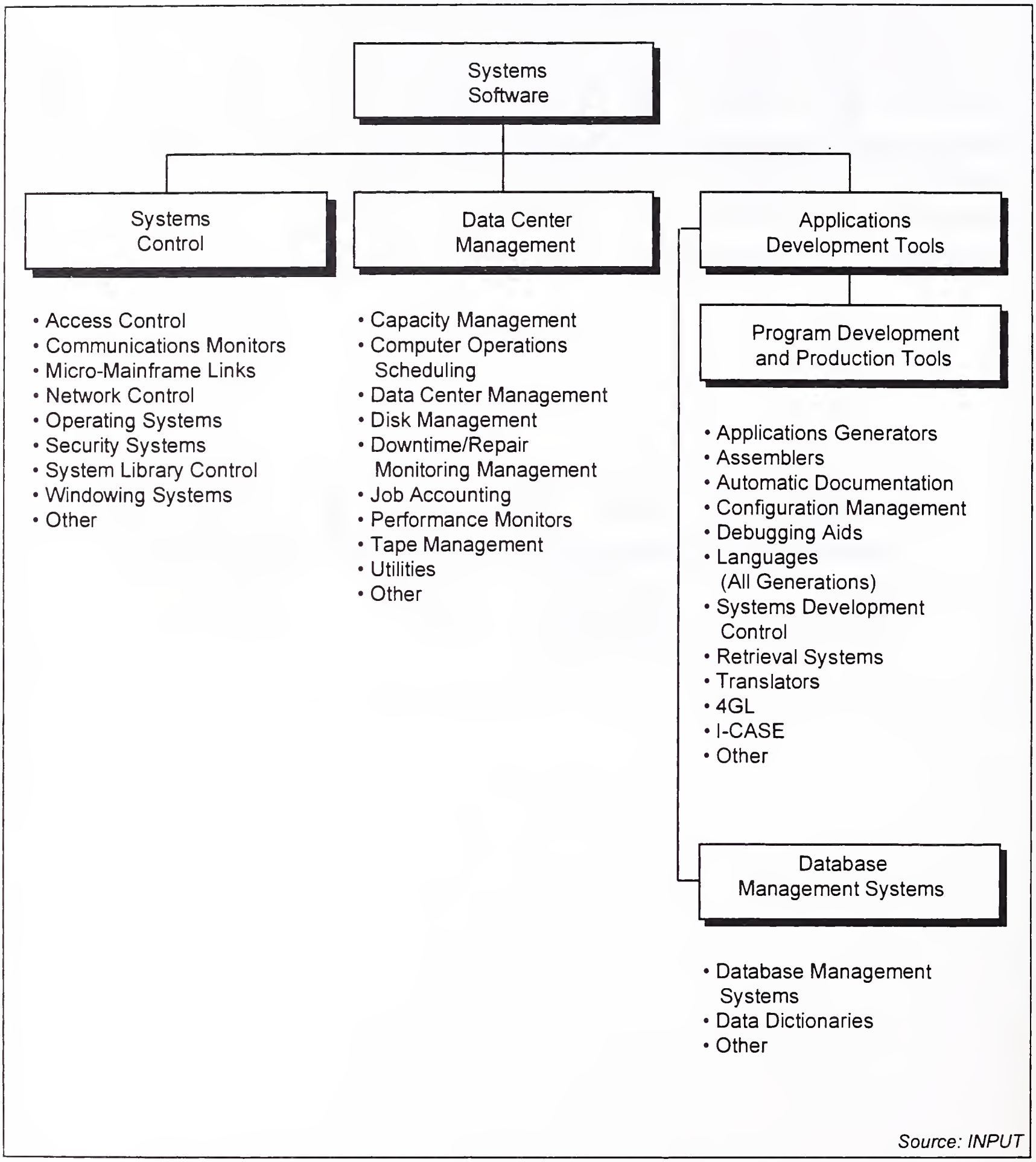
Information Services Structure



Source: INPUT

Exhibit V-3

Systems Software Products Market Structure



Source: INPUT

b. Applications Software Products

Applications software products enable a user or group of users to support an operational or administrative process within an organisation. Examples include accounts payable, order entry, project management and office systems. INPUT categorises applications software products into two groups of market sectors. (See Exhibit V-4)

- *Industry Applications Software Products* — Software products that perform functions related to fulfilling business or organisational needs unique to a specific industry (vertical) market and sold to that market only. Examples include demand deposit accounting, MRPII, medical record keeping, automobile dealer parts inventory, etc.

- *Cross-Industry Applications Software Products* — Software products that perform a specific function that is applicable to a wide range of industry sectors. Examples include payroll and human resource systems, accounting systems, word processing and graphics systems, spreadsheets, etc.

INPUT also forecasts the applications software products delivery mode by platform level: mainframe, minicomputer and workstation/PC.

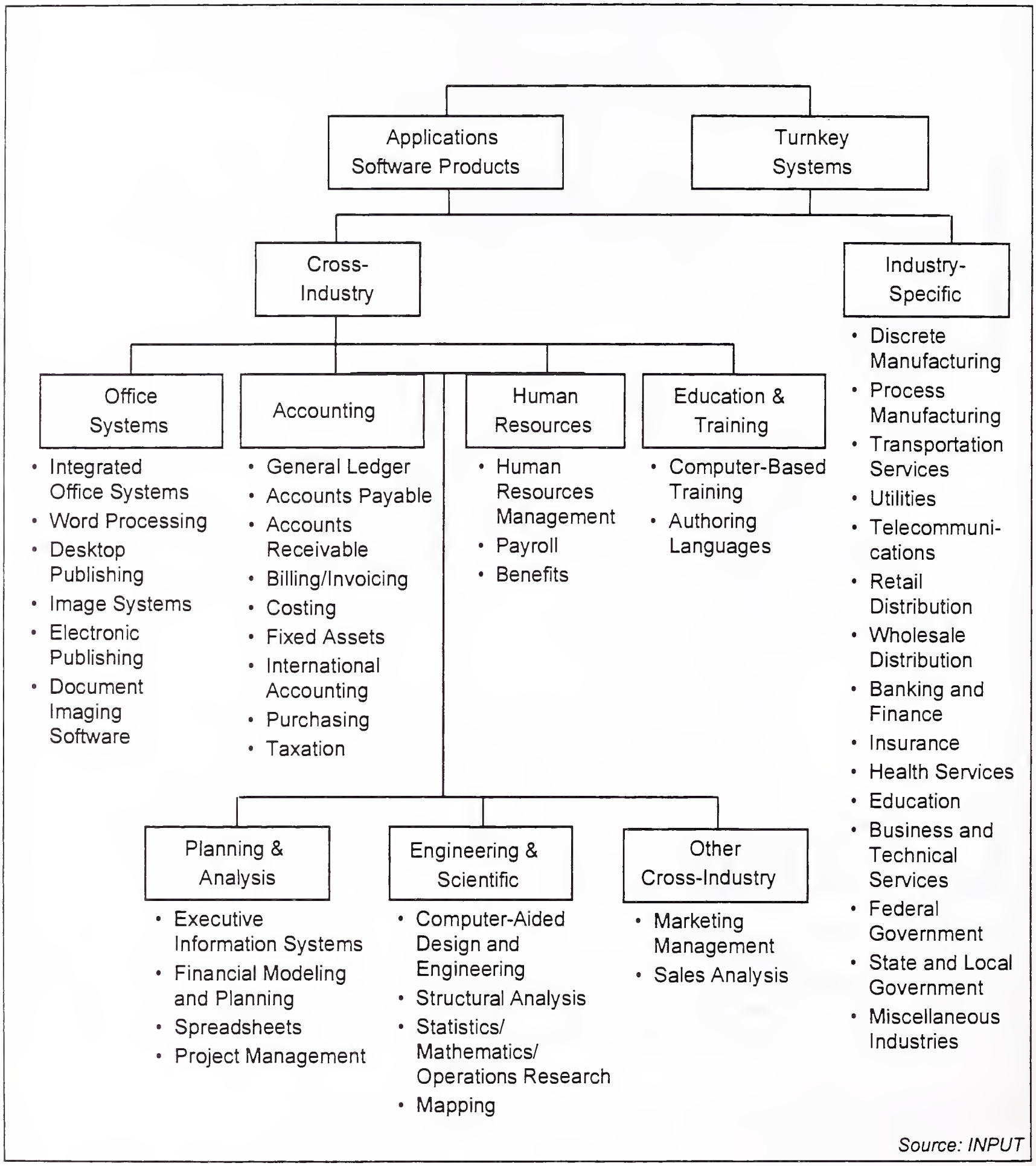
2. Turnkey Systems

A turnkey system is an integration of equipment (CPU, peripherals, etc.), systems software, and packaged applications software into a single product developed to meet a specific set of user requirements. Value added by the turnkey system vendor is primarily in the software and professional services provided. INPUT categorises turnkey systems into two groups of market sectors as it does for applications software products. (See Exhibit V-4)

Most CAD/CAM systems and many small business systems are turnkey systems. Turnkey systems utilise standard computers and do not include specialised hardware such as word processors, cash registers, process control systems or embedded computer systems for military applications.

Exhibit V-4

Application Products and Turnkey Systems



Source: INPUT

Computer manufacturers (e.g., IBM or DEC) that combine software with their own general-purpose hardware are not classified by INPUT as turnkey vendors. Their software revenues are included in the appropriate software category.

Most turnkey systems are sold through channels known as value-added resellers.

- *Value-Added Reseller (VAR):* A VAR adds value to computer hardware and/or software and then resells it to an end user. The major value added is usually applications software for a vertical or cross-industry market, but also includes many of the other components of a turnkey systems solution, such as professional services, software support, and applications upgrades.

Turnkey systems have three components:

- Equipment — computer hardware supplied as part of the turnkey system

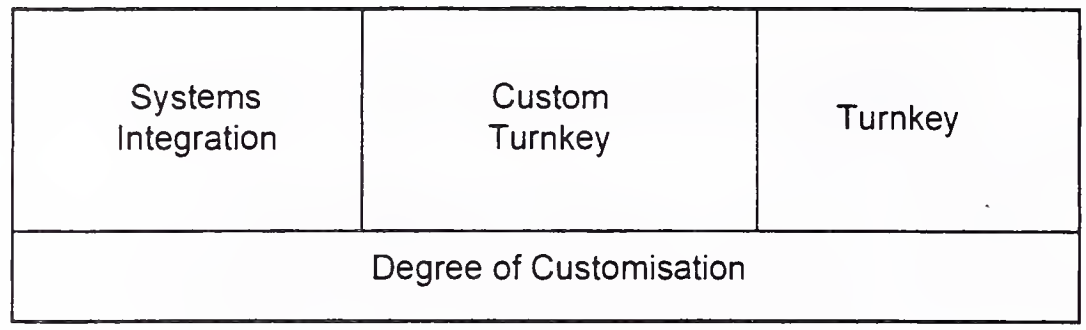
- Software products — pre-packaged systems and applications software products

- Professional services — services to install or customise the system or train the user, provided as part of the turnkey system sale.

Exhibit V-5 contrasts turnkey systems with systems integration. Turnkey systems are based on available software products that a vendor may modify to a modest degree.

Exhibit V-5

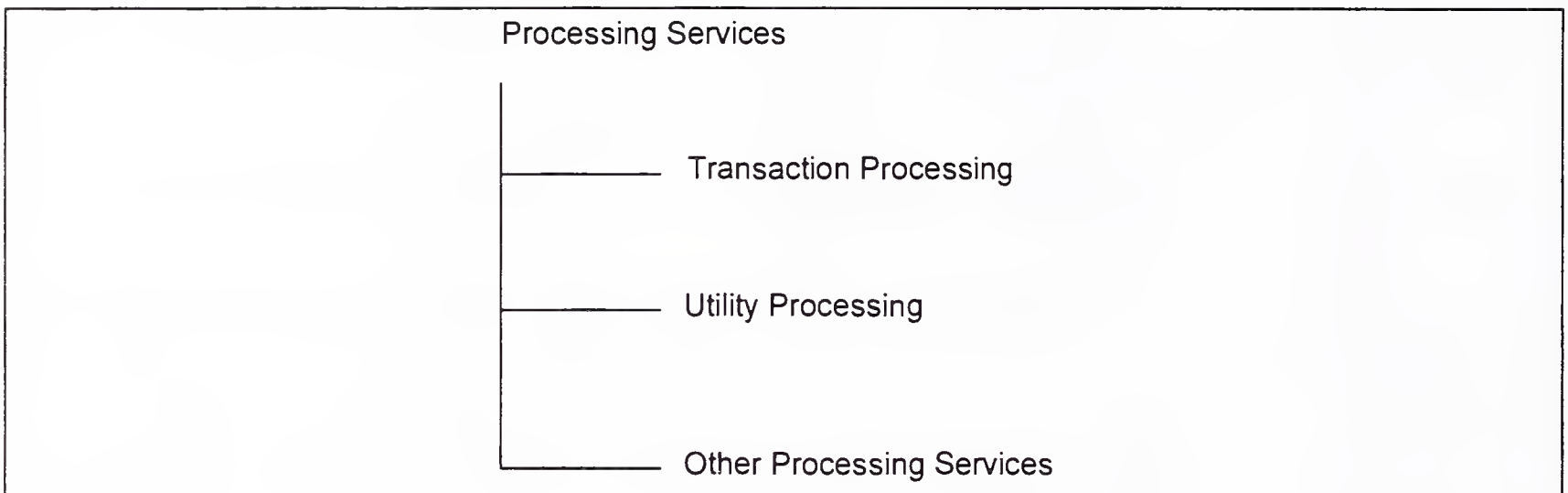
The Customisation Spectrum



Source: INPUT

Exhibit V-6

Processing Services Structure



Source: INPUT

3. Processing Services

This delivery mode includes three submodes: transaction processing, utility processing, and "other" processing services. (See Exhibit V-6)

- *Transaction Processing* — Client uses vendor-provided information systems — including hardware, software and/or data networks — at the vendor site or customer site to process specific applications and update client databases. The application software is typically provided by the vendor.

- *Utility Processing* — Vendor provides basic software tools (language compilers, assemblers, DBMSs, graphics packages, mathematical models, scientific library routines, etc.), enabling clients to develop and/or operate their own programs or process data on the vendor's system.

- *Other Processing Services* — Vendor provides service — usually at the vendor site — such as scanning and other data entry services, laser printing, computer output microfilm (COM), CD preparation and other data output services, backup and disaster recovery, etc.

4. Systems Operations

Systems operations as a delivery mode was introduced in the 1990 Market Analysis and Systems Operations programmes. Previously called Facilities Management, this delivery mode was created by taking the Systems Operations submode out of both Processing Services and Professional Services. Since 1992 the submodes have been defined as follows.

Systems operations involves the operation and management of all or a significant part of the client's information systems functions under a long-term contract. These services can be provided in either of four distinct submodes where the difference is whether the support of applications, as well as data centre operations, is included.

- *Platform systems operations* — The vendor manages and operates the computer systems, to perform the client's business functions, without taking responsibility for the client's application systems.

- *Applications systems operations* — The vendor manages and operates the computer systems to perform the client's business functions, and is also responsible for maintaining, or developing and maintaining, the client's application systems.

- *Network Management* — The vendor assumes responsibility for operating and managing the client's data communications systems. This may also include the voice communications of the client. A network management outsourcing contract may include only the management services or the full costs of the communications services and equipment plus the management services.

- *Desktop Services* — The vendor assumes responsibility for the deployment, maintenance and connectivity among the personal computers and/or workstations in the client organisation. The services may also include performing the help-desk function. Equipment as well as services can be part of a desktop services outsourcing contract.

  Note: This type of client service can also be provided through traditional professional services where the contractual criteria of outsourcing are not present.

Systems operations vendors now provide a wide variety of services in support of existing information systems. The vendor can plan, control, provide, operate, maintain and manage any or all components of the client's information systems environment (equipment, networks, applications systems), either at the client's site or the vendor's site.

Note: In the federal government market, systems operation services are also defined by equipment ownership with the terms "COCO" (Contractor-Owned, Contractor-Operated), and "GOCO" (Government-Owned, Contractor-Operated).

5. Systems Integration (SI)

Systems integration is a vendor service that provides a complete solution to an information system, networking or automation development requirement through the custom selection and implementation of a variety of information system products and services. A systems integrator is responsible for the overall management of a systems integration contract and is the single point of contact and responsibility to the buyer for the delivery of the specified system function, on schedule and at the contracted price. (Refer to Exhibit V-7)

The components of a systems integration project are the following:

- *Equipment* — information processing and communications equipment required to build the systems solution. This component may include custom as well as off-the-shelf equipment to meet the unique needs of the project. The systems integration equipment category excludes turnkey systems by definition

- *Software products* — pre-packaged applications and systems software products

- *Professional services* — the value-added component that adapts the equipment and develops, assembles, or modifies the software and hardware to meet the system's requirements. It includes all of the professional services activities required to develop, implement, and if included in the contract, operate an information system, including consulting, program/project management, design and integration, software development, education and training, documentation, and systems operations and maintenance

- *Other services* — most systems integration contracts include other services and product expenditures that are not classified elsewhere. This category includes miscellaneous items such as engineering services, automation equipment, computer supplies, business support services and supplies, and other items required for a smooth development effort.

Exhibit V-7

Products/Services in Systems Integration Projects

Equipment

- Information systems
- Communications

Software Products

- Systems software
- Applications software

Professional Services

- Consulting
  - Feasibility and trade-off studies
  - Selection of equipment, network and software
- Program/project management
- Design/integration
  - Systems design
  - Installation of equipment, network, and software
  - Demonstration and testing
- Software development
  - Modification of software packages
  - Modification of existing software
  - Custom development of software
- Education/training and documentation
- Systems operations/maintenance

Other Miscellaneous Products/Services

- Site preparation
- Data processing supplies
- Processing/network services
- Data/voice communication services

Source: INPUT

6. Professional Services

This category includes four submodes: consulting, education and training, software development and applications management. Exhibit V-8 provides additional detail.

- *Consulting:* Services include management consulting (related to information systems), information systems reengineering, information systems consulting, feasibility analysis and cost-effectiveness studies and project management assistance. Services may be related to any aspect of the information system, including equipment, software, networks and systems operations.

- *Education and Training:* Services that provide training and education or the development of training materials related to information systems and services for the information systems professional and the user, including computer-aided instruction, computer-based education and vendor instruction of user personnel in operations, design, programming, and documentation. Education and training provided by school systems is not included. General education and training products are included as a cross-industry market sector.

- *Software Development:* Services include user requirements definition, systems design, contract programming, documentation, and implementation of software performed on a custom basis. Conversion and maintenance services are also included.

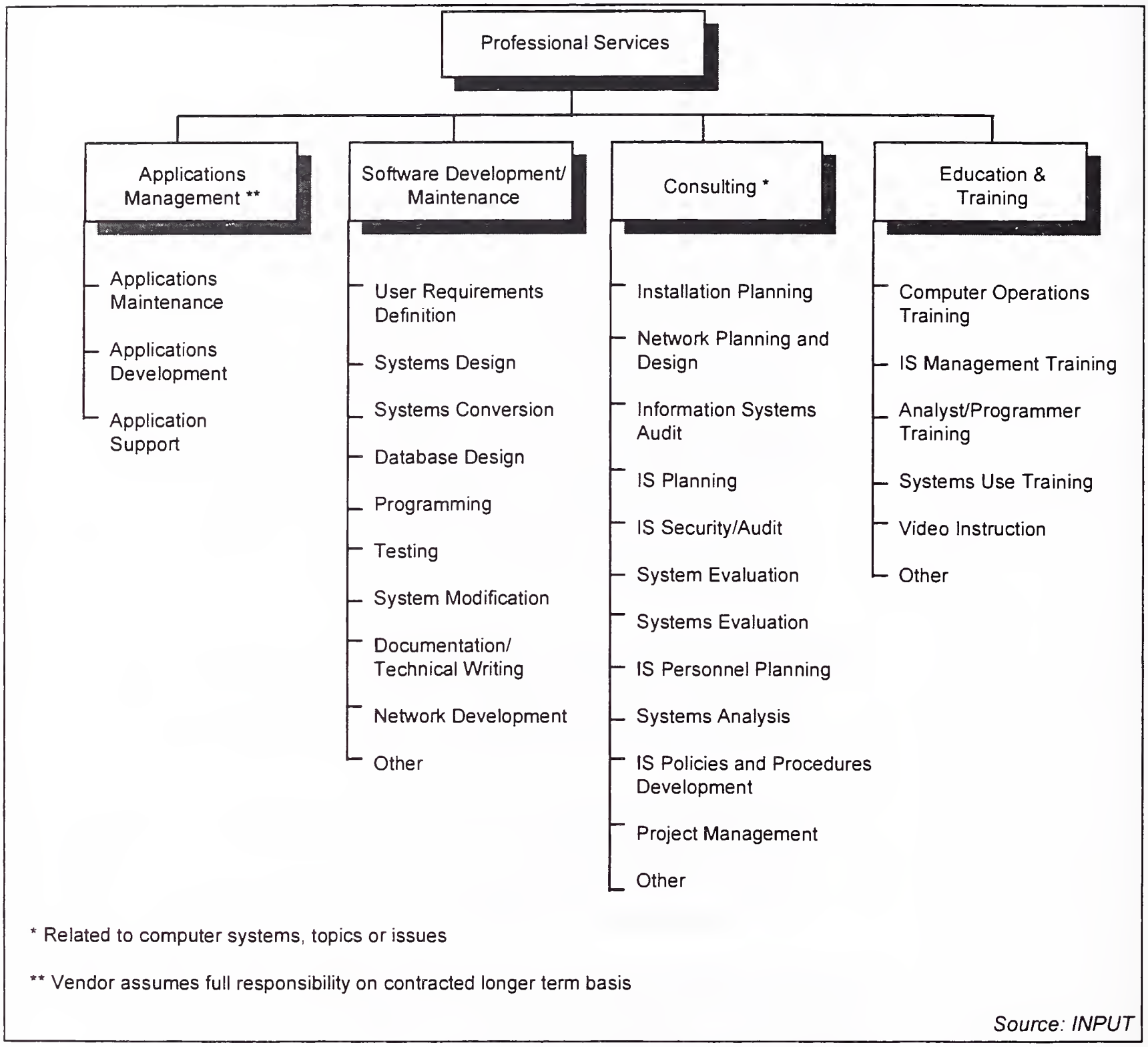
- *Applications Management*: The vendor has full responsibility for maintaining and upgrading some or all of the application systems that a client uses to support business operations and may develop and implement new application systems for the client.

An applications management contract differs from traditional software development in the form of the client/vendor relationship. Under traditional software development services the relationship is project based. Under applications management it is time and function based.

These services may be provided in combination or separately from platform systems operations.

Exhibit V-8

Professional Services Market Structure



* Related to computer systems, topics or issues

** Vendor assumes full responsibility on contracted longer term basis

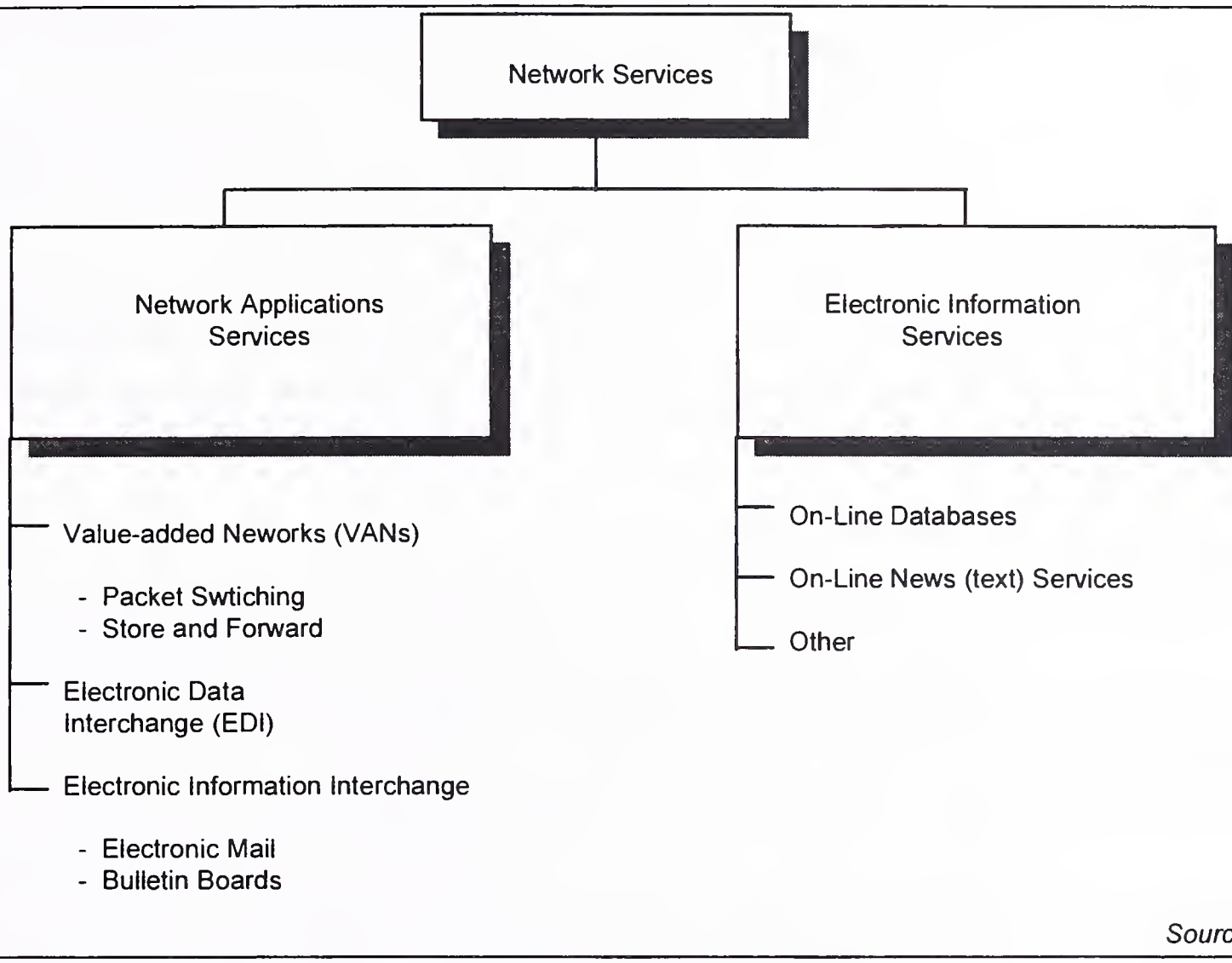
Source: INPUT

7. Network Services

Network services are a variety of telecommunications-based functions and operations. Network service includes two submodes, as shown in Exhibit V-9.

Exhibit V-9

Network Services Market Structure



Source: INPUT

a. Electronic Information Services

Electronic information services are databases that provide specific information via terminal or computer-based inquiry, including items such as stock prices, legal precedents, economic indicators, periodical literature, medical diagnosis, airline schedules, automobile valuations, etc. The terminals used may be computers themselves, such as communications servers or personal computers.

Users inquire into and extract information from the databases. They may load extracted data into their own computer systems; the vendor does not provide data processing or manipulation capability as part of the electronic information service and users cannot update the vendor's databases. However, the vendor may offer other services (network applications or processing services) that do offer processing or manipulation capability.

The two kinds of electronic information services are:

- *On-line Databases* — Structured, primarily numerical data on economic and demographic trends, financial instruments, companies, products, materials, etc.

- Unstructured, primarily textual information on people, companies, events, etc. These are often news services.

While electronic information services have traditionally been delivered via networks, there is a growing trend toward the use of CD ROM optical disks to support or supplant on-line services, and these optical disk-based systems are included in the definition of this delivery mode.

b. Network Applications

Value-Added Network Services (VAN Services) — VAN services are enhanced transport services which involve adding such functions as automatic error detection and correction, protocol conversion, and store-and-forward message switching to the provision of basic network circuits.

While VAN services were originally provided only by specialised VAN carriers (Tymnet, Telenet, etc.), today these services are also offered by traditional common carriers (AT&T, BT, Sprint, etc.). Meanwhile, the VAN carriers have also branched into the traditional common carriers' markets and are offering unenhanced basic network circuits as well.

Electronic Data Interchange (EDI) — Application-to-application electronic exchange of business data between trade partners or facilitators using a telecommunications network.

Electronic Information Interchange — The transmission of messages across an electronic network managed by a services vendor, including electronic mail, voice mail, voice messaging and access to Telex, TWX, and other messaging services. This also includes bulletin board services.

8. Equipment Services

The equipment services delivery mode includes two submodes. Both deal with the support and maintenance of computer equipment:

Equipment Maintenance — Services provided to repair, diagnose problems and provide preventive maintenance both on-site and off-site for computer equipment. The costs of parts, media and other supplies are excluded. These services are typically provided on a contract basis

Environmental Services — Composed of equipment and data centre related special services such as cabling, air conditioning and power supply, equipment relocation and similar services.

D
Computer Equipment

These definitions have been included to provide the basis for market segmentation in the software products markets.

- *Computer Equipment* — Includes all computer and telecommunications equipment that can be separately acquired with or without installation by the vendor and not acquired as part of an integrated system. Unless otherwise noted in an INPUT forecast, computer equipment is only included where it is part of the purchase of services or software products (e.g., turnkey systems and systems integration).

- *Peripherals* — Includes all input, output, communications, and storage devices (other than main memory) that can be channel connected to a processor, and generally cannot be included in other categories such as terminals.

- *Input Devices* — Includes keyboards, numeric pads, card readers, light pens and track balls, tape readers, position and motion sensors, and analogue-to-digital converters.

- *Output Devices* — Includes printers, CRTs, projection television screens, micro graphics processors, digital graphics, and plotters.

- *Communication Devices* — Includes modem, encryption equipment, special interfaces, and error control.

- *Storage Devices* — Includes magnetic tape (reel, cartridge, and cassette), floppy and hard disks, solid state (integrated circuits), and bubble and optical memories.

- *Computer Systems* — Includes all processors from personal computers to supercomputers. Computer systems may require type- or model-unique operating software to be functional, but this category excludes applications software and peripheral devices and processors or CPUs not provided as part of an integrated (turnkey) system.

- *Personal computers* — Smaller computers using 8-, 16-, or 32-bit computer technology. Generally designed to sit on a desktop and are portable for individual use. Price generally less than $5,000.

- *Workstations* — High-performance, desktop, single-user computers often employing Reduced Instruction Set Computing (RISC). Workstations provide integrated, high-speed, local network-based services such as database access, file storage and back-up, remote communications, and peripheral support. These products usually cost from $5,000 to $15,000.

- *Minicomputer or midsize computers* — Minicomputers are generally priced from $15,000 to $350,000. Many of the emerging client/server computers are in this category.

- *Mainframe or large computers* — Traditional mainframe and supercomputers costing more than $350,000.

- *Client/server computing* — Client/server is an architecture that assembles applications software and databases, systems software, and computer and networking equipment into a usable form for the purpose of leveraging information technology investments.

  Broadly defined, it can include any kind of server, such as file servers and network servers, that are accessed by any kind of client, including a non-intelligent terminal. INPUT has elected to use the narrower and newer definition, by which application and data processing is shared between a client and a server. It is through the act of sharing that the greatest benefit is derived in terms of leveraging information technology investments. It is also the cause of the greatest change for vendors and users.

E
Sector Definitions

1. Industry Sector Definitions

INPUT structures the information services market into industry sectors such as process manufacturing, insurance, transportation, etc. The definitions of these sectors are based on the 1987 revision of the Standard Industrial Classification (SIC) code system. The specific industries (and their SIC codes) included under these industry sectors are detailed in Exhibit V-10.

INPUT includes all delivery modes except systems software products and equipment services in industry market sectors. See Exhibit V-9 and section E-3 (Delivery Mode Reporting by Sector).

Note: SIC code 88 is Personal Households. INPUT does not currently analyse or forecast information services in this market sector.

2. Cross-Industry Sector Definitions

INPUT has identified seven cross-industry market sectors. These sectors or markets involve multi-industry applications such as human resource systems, accounting systems, etc.

- In order to be included in an industry sector, the service or product delivered must be specific to that sector only. If a service or product is used in more than one industry sector, it is counted as cross-industry.

- INPUT only includes the turnkey systems, applications software products, and transaction processing services in the cross-industry sectors.

Exhibit V-10

Industry Sector Definitions

Industry Sector	SIC Code	Description
Discrete Manufacturing	23xx	Apparel and other finished products
	25xx	Furniture and fixtures
	27xx	Printing, publishing and allied industries
	31xx	Leather and leather products
	34xx	Fabricated metal products, except machinery and transportation equipment
	35xx	Industrial and commercial machinery and computer equipment
	36xx	Electronic and other electrical equipment and components, except computer equipment
	37xx	Transportation equipment
	38xx	Instruments; photo/med/optical goods; watches/clocks
	39xx	Miscellaneous manufacturing industry
Process Manufacturing	10xx	Metal mining
	12xx	Coal mining
	13xx	Oil and gas extraction
	14xx	Mining/quarrying non-metalic minerals
	20xx	Food and kindred products
	21xx	Tobacco products
	22xx	Textile mill products
	24xx	Lumber and wood products, except furniture
	26xx	Paper and allied products
	28xx	Chemicals and allied products
	29xx	Petroleum refining and related industries
	30xx	Rubber and miscellaneous plastic products
	32xx	Stone, clay, glass and concrete products
	33xx	Primary metal industries
Transportation Services	40xx	Railroad transport
	41xx	Public transit/transport
	42xx	Motor freight transport/warehousing
	43xx	US Postal services
	44xx	Water transportation
	45xx	Air transportation (including airline resevation services in 4512)
	46xx	Pipelines, except natural gas
	47xx	Transportation services (including 472x, arrangement of passenger transportation)
Telecommunications	48xx	Communications
Utilities	49xx	Electric, gas and sanitary services

Exhibit V-10 (Cont'd)

Industry Sector Definitions (Cont'd)

Industry Sector	SIC Code	Description
Retail Distribution	52xx 53xx 54xx 55xx 56xx 57xx 58xx 59xx	Building materials General merchandise stores Food stores Automotive dealers, gas stations Apparel and accessory stores Home furniture, furnishings and accessory stores Eating and drinking places Miscellaneous retail
Wholesale Distribution	50xx 51xx	Wholesale trade–durable goods Wholesale trade–non-durable goods
Banking and Finance	60xx 61xx 62xx 67xx	Depository institutions Non-depository credit institutions security and commodity brokers, dealers, exchanges and services Holding and other investment offices
Insurance	63xx 64xx	Insurance carriers Insurance agents, brokers and services
Health Services	80xx	Health services
Education	82xx	Educational services
Business Services	65xx 70xx 72xx 73xx 7389x	Real estate Hotels, rooming houses, camps and other lodging places Personal services Business services (except hotel reservation services in 7389) Hotel reservation services
	75xx 76xx	Automotive repair, services and parking Miscellaneous repair services
	78xx 79xx 81xx	Motion pictures Amusement and recreation services Legal services
	83xx 84xx 87xx 89xx	Social services Museums, art galleries and botanical/zoological gardens membership organisations Engineering, accounting, research, management and related services Miscellaneous services

Exhibit V-10 (Cont'd)

Industry Sector Definitions (Cont'd)

Industry Sector	SIC Code	Description
Federal Government	9xxx	
State and Local Government	9xxx	
Miscellaneous Industries	01xx 02xx 07xx 08xx 09xx 15xx 16xx 17xx	Agricultural production – crops Agricultural production – livestock/animals Agricultural services Forestry Fishing, hunting and trapping Building construction – general contractors, operative builders Heavy construction – contractors Construction – special trade contractors

Source: INPUT

The seven cross-industry markets are:

Accounting — consists of applications software products and information services that serve such functions as:

- General ledger
- Financial management
- Accounts payable
- Accounts receivable
- Billing/invoicing
- Fixed assets
- International accounting
- Purchasing
- Taxation
- Financial consolidation.

Excluded are accounting products and services directed to a specific industry, such as tax processing services for CPAs and accountants within the business services industry sector.

Human Resources — consists of application solutions purchased by multiple industry sectors to serve the functions of human resources management and payroll. Examples of specific applications within these two major functions are:

- Employee relations
- Benefits administration
- Government compliance
- Manpower planning
- Compensation administration
- Applicant tracking
- Position control
- Payroll processing.

Education and Training — consists of education and training for information systems professionals and users of information systems delivered as a software product, turnkey system or through processing services. The market for computer-based training tools for the training of any employee on any subject is also included.

Office Systems consists of the following six categories:

Integrated Office Systems (IOSs) — IOSs integrate the applications that perform common office tasks. Typically these tasks include the following core applications, all of which are accessed from the same terminal, microcomputer or workstation:

- Electronic mail
- Decision support systems
- Time management
- Filing systems.

IOSs enable office workers to utilise applications that are resident on a number of hosts or servers, thus creating a corporate communication environment through integrating line-of-business software with personal software productivity tools. IOSs capitalise on the cross-platform architectures of major vendors. Major hardware vendors such as IBM, Data General, Digital, Hewlett-Packard and NCR all offer IOSs.

Work flow and groupware products are also included within the IOS definition.

Word Processing — Word processing is the most common microcomputer application and is a basic application within the office systems sector. Word processing addresses several levels of functionality, from the production of simple correspondence to large document generation where many people within different departments have input.

Desktop Publishing (DTP) — Desktop publishing refers to the page-design software programs that allow small and mid-sized organisations to publish printed documents (brochures, catalogues, newsletters, reports, etc.) from the desktop. The primary functions of DPT software include the manipulation of the following functions:

- Layout and design of columns
- Text manipulation (font type)
- Graphic manipulation
- Print Control (colour type, paper type).

Electronic Publishing — Electronic publishing includes composition, printing, and editing software for documents containing multiple typefaces and graphics including charts, diagrams, computer-aided design (CAD) drawings, line art, and photographs. Electronic publishing products may also have different data formats such as text, graphs, images, voice and video.

The fundamental difference between electronic publishing and desktop publishing is that electronic publishing encompasses a method of document management and control from a single point regardless of how many authors/locations work on a document. Desktop publishing (DTP) on the other hand, is considered a personal productivity tool and is generally a lower-end product residing on a personal computer.

Graphics — Graphics packages that are used for presentations or freehand drawings and/or are ancillary to desktop publishing are part of office systems. Thus, the graphics component of office systems sector includes the following elements:

- Presentation graphics represent the bulk of office systems graphics. Most presentations involve a combination of graphs and text. They are used to communicate a series of messages to an audience rather than to analyse data.

- Paint and line art drawing programs are used for illustrations while page layout programs are used to integrate text and graphics.

- Electronic form programs allow users to create and print forms in-house. Some applications work with OCR scanners allowing users to scan pictures and logos directly on the forms.

Document Imaging Software — The software that allows users to manipulate (store, retrieve, print) images that have been scanned from paper documents. The applications that imaging software generates include full text retrieval, document management, and database management. Document imaging software is a component of an imaging system. Hardware components of imaging systems include scanners, image servers, workstations, optical drives, printers, and storage devices.

Engineering and Scientific encompasses the following applications:

- Computer-aided design and engineering (CAD and CAE)
- Structural analysis
- Statistics/mathematics/operations research
- Mapping/GIS.

- Computer-aided manufacturing (CAM) or CAD that is integrated with CAM is excluded from the cross-industry sector as it is specific to the manufacturing industries. CAD or CAE that is dedicated to integrated circuit design is also excluded because it is specific to the semiconductor industry.

Planning and Analysis consists of software products and information services in four application areas:

- Executive Information Systems (EIS)
- Financial modelling or planning systems
- Spreadsheets
- Project management.

Other encompasses marketing/sales and electronic publishing application solutions such as:

- Sales analysis
- Marketing management
- Demographic market planning models.

3. Delivery Mode Reporting by Sector

This section describes how the delivery mode forecasts relate to the market sector forecasts. Exhibit V-11 summarises the relationships.

- *Processing services* — The transaction processing services submode is forecasted for each industry and cross-industry market sector. The utility and other processing services submodes are forecasted in total for the general market sector.

- *Turnkey systems* — Turnkey systems is forecasted for the 15 industry and 7 cross-industry sectors. Each component of turnkey systems is forecasted in each sector.

- *Applications software products* — The applications software products delivery mode is forecasted for the 15 industry and 7 cross-industry sectors. In addition, each forecast is broken down by platform level: mainframe, minicomputer and workstation/PC.

- *Systems operations* — Each of the systems operations submodes is forecasted for each of the 15 industry sectors.

- *Systems integration* — Systems integration and each of the components of systems integration are forecasted for each of the 15 industry sectors.

- *Professional services* — Professional services and each of the submodes is forecasted for each of the 15 industry sectors.

- *Network services* — The network applications submode of network services forecasted for each of the 15 industry sectors.

  Industry and cross-industry electronic information services are forecast in relevant market sectors. The remainder of electronic information services is forecasted in total for the general market sector.

- *Systems software products* — Systems software products and its submodes are forecasted in total for the general market sector. Each submode forecast is broken down by platform level: mainframe, minicomputer and workstation/PC.

- *Equipment services* — Equipment services and its submodes are forecasted in total in the general market sectors.

Exhibit V-11

Delivery Mode versus Market Sector Forecast Content

Delivery Mode	Submode	Market Sectors		
		Industry Sectors	Cross-Industry Sectors	General
Processing Services	Transaction Utility Other	X	X	 X X
Turnkey Systems		X	X	
Applications Software Products		X	X	
Systems Operations	Platform Applications	X X		
Systems Integration		X		
Professional Services		X		
Network Services	Network Applications Electronic Information Services	X X		X
Systems Software Products				X
Equipment Services				X

Source: INPUT

F
Vendor Revenue and User Expenditure Conversion

The size of the information services market may be viewed from two perspectives: vendor (producer) revenues and user expenditures. INPUT defines and forecasts the information services market in terms of user expenditures. User expenditures reflect the mark-up in producer sales when a product such as software is delivered through indirect distribution channels (such as original equipment manufacturers (OEMs), retailers and distributors). The focus on user expenditure also eliminates the double counting of revenues that would occur if sales were tabulated for both producer (e.g., Lotus) and distributor (e.g., ComputerLand).

For most delivery modes, vendor revenues and user expenditures are fairly close. However, there are some areas of significant difference. Many microcomputer software products, for example, are marketed through distribution channels. To capture the valued added through these distribution channels, adjustment factors are used to convert estimated information services vendor revenues to user expenditures.

For some delivery modes, including software products, systems integration and turnkey systems, there is a significant volume of intra-industry sales. For example, systems integrators purchase software and subcontract the services of other professional services vendors. Turnkey vendors incorporate purchased software into the systems they sell to users.

To account for such intra-industry transactions, INPUT uses conversion ratios to derive the estimate of end-user expenditures.

Exhibit V-12 summarises the net effect of the various ratios used by INPUT to convert vendor revenues to user expenditure (market size) figures for each delivery mode.

Exhibit V-12

Vendor Revenue to User Expenditure Conversion

Delivery Mode	Vendor Revenue Multiplier
Applications Software Products	1.18
Systems Software Products	1.10
Systems Operations	0.95
Systems Integration	0.95
Professional Services	0.99
Network Services	0.99
Processing Services	0.99
Turnkey Systems	0.95
Equipment Services	0.99

Source: INPUT

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