INPUT

MARKET FORECAST

European Market for Software and Services

1994-1999

Market Analysis Programme - Europe

DECEMBER 1994

European Market for Software and Services

1994-1999

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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 1993 and 1994 together with annual size estimates for each year up to 1999.

Leading vendors are identified for each country by sector and for each sector in Europe overall. In addition 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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I

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 1993 and 1994 with forecasts for each year through 1999.

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
- Telecommunications
- 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
- System software products
- General utility processing services
- General electronic information services.

The full definition 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.

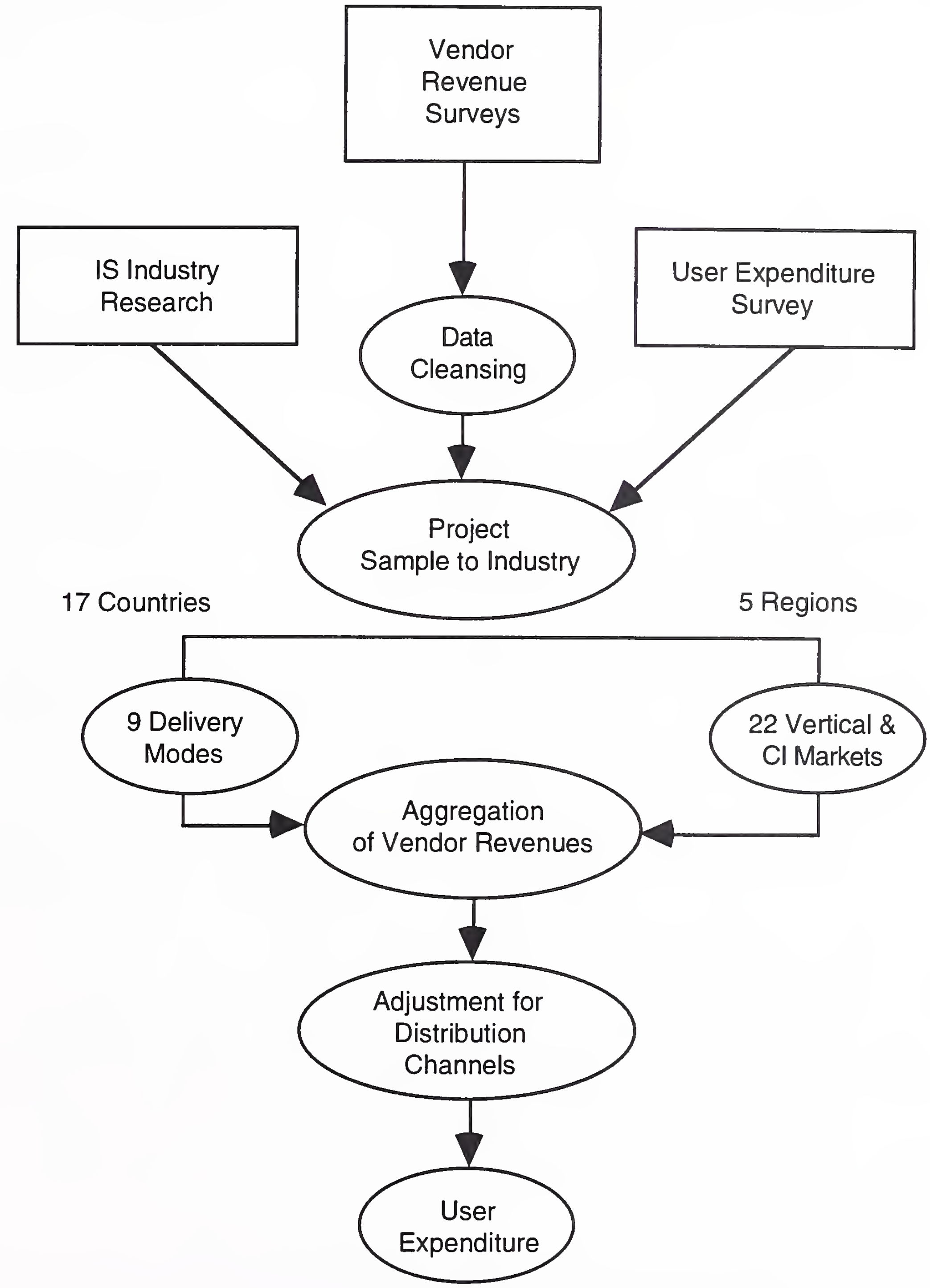
Additionally INPUT's extensive library and data-base of information relating to the software and services industry was used.

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 analysed is 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.

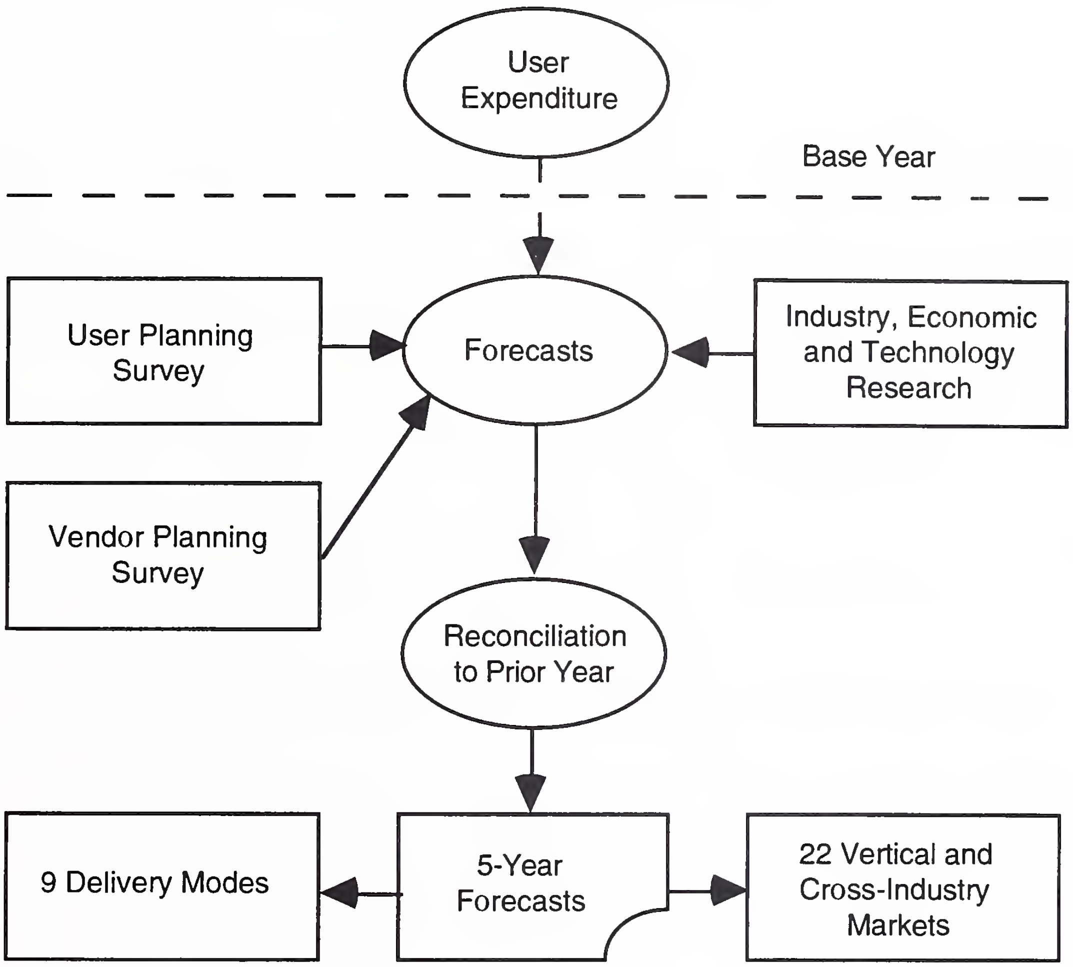
The end result is a base year (in this case 1993) software and services market figure representing user expenditure for each of the market sectors or delivery modes analysed for each country.

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 projections, 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 following way:

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

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

Chapter IV 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 IV.

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 Programmes 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 identified in this report may be found in the reports listed below:

1. European Market Sector Reports

- Systems Integration Market Analysis and Forecast, 1994-1999
- Outsourcing Market Analysis and Forecasts 1994-1999
- Software Product Support — European Market Futures, 1994-1999
- Customer Services Market Analysis and Forecasts, 1994-1999
- Industry Sector Forecast Database, 1994-1999
- Industry Market Sector Analysis and Forecasts, Germany, France Italy and UK 1994-1999.

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, 1993-1998

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II

Executive Overview

A
Industry Outlook — New Market Realities

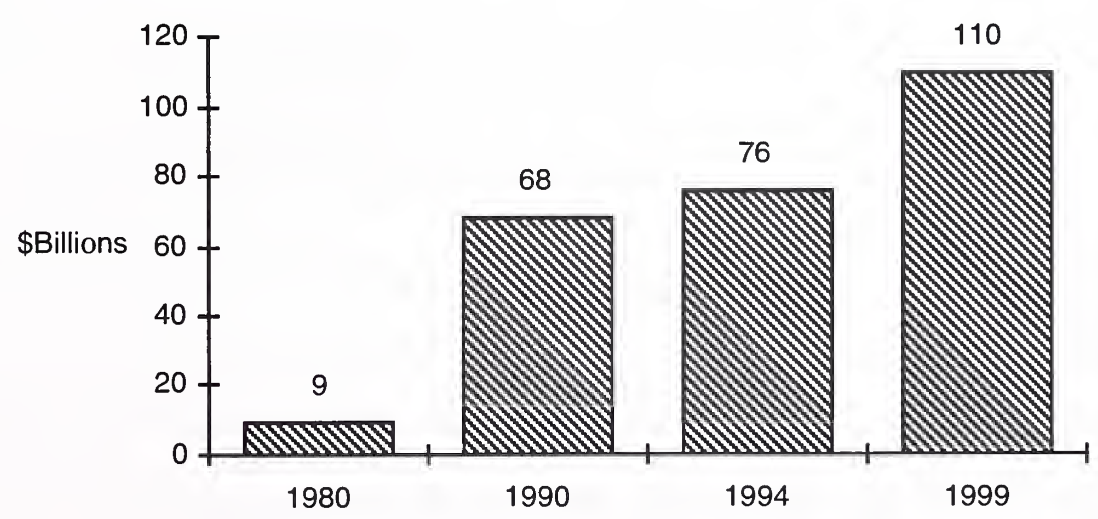
The software and services industry experienced high growth (20% plus per annum) almost from its inception in the early 1970s right through to the end of the 1980s.

However, the early years of the 1990s have seen slowing growth in information services markets which has been widely attributed to the general economic recession experienced in Europe during this time.

However, despite general economic recovery in the major European economies the growth scenario for software and services markets over the next five years is forecast to average only 8% per annum as is shown in Exhibit II-1.

Exhibit II-1

European Information Services 1980-1999



Source: INPUT

This market forecast is consistent with the more conservative expectations of industry executives who are finding themselves in ever more competitive conditions facing customers demanding increased value at lower levels of IT expenditure.

The software and services business is having to adjust to a new set of market realities, a world becoming driven by *deflationery* rather than inflationary expectations.

The vast improvements in price/performance and quality that typify IT product markets are being mirrored not only in services markets but in many of the customer's own industries.

This new deflationery environment means that costs need to be continuously and ruthlessly pared in order to be able to deliver products and services profitably, at the market determined value price level.

Information services firms cannot, in most cases, put up prices to simply adjust to their own internal cost requirements.

Faced with these challenging market conditions information services firms will need to continue to make significant adjustments to their business aims and missions.

It is becoming a priority for firms to continuously question their activities and adjust accordingly the markets they address.

Generally it will be necessary for services firms to make more clear cut choices between being technology oriented organisations or *services and solutions* providers.

Information services executives need to maintain vigilance over the relevance of their firm's activities and mission by:

- Studying the changing environment for information services and gaining understanding of the forces shaping it
- Carefully evaluating changing user needs and adjusting service provision accordingly
- Adapting the organisation's skills mix in line with changed user requirements and investing in appropriate training programmes.

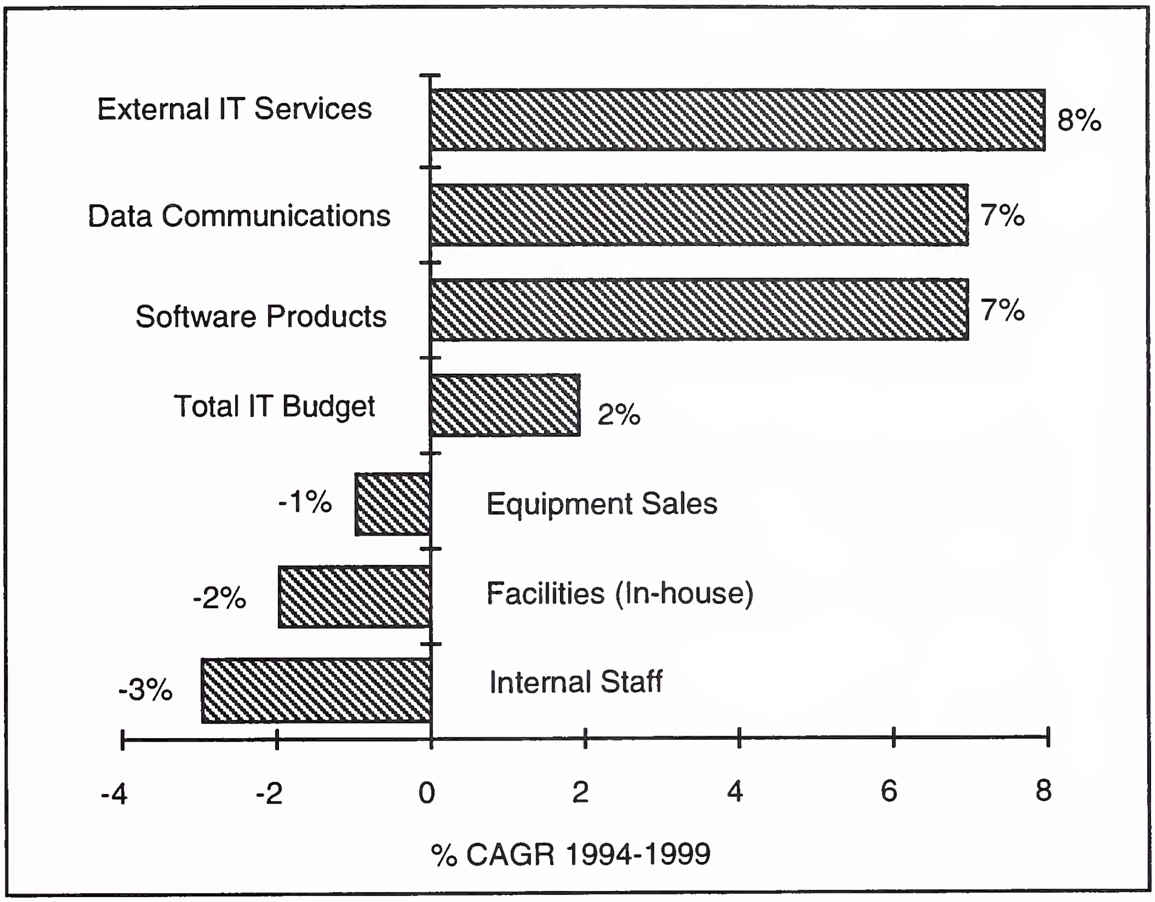
B
European Forecast — $110 Billion Market 1999

Despite the challenging competitive IT market conditions prevailing in the 1990s, software and services markets still represent significant commercial growth opportunities, particularly when viewed within the context of the lower overall growth expectations for user's total IT expenditure (estimated at 2% per annum through to 1999).

Exhibit II-2 shows a comparison of the expected growth rates of the major elements of estimated total IT budgets in Europe.

Exhibit II-2

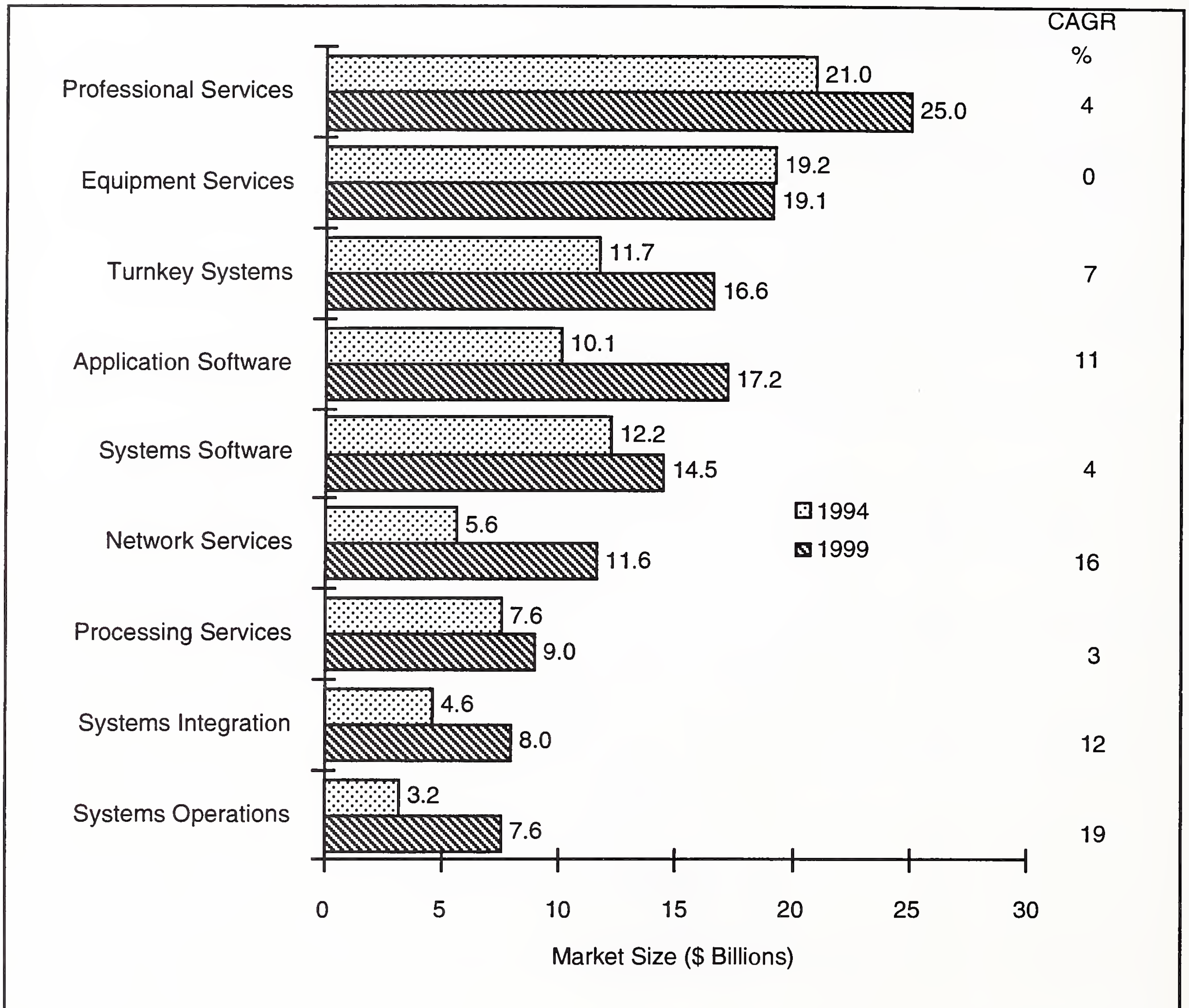
Total IT Spending — Europe 1994-1999
Forecast Growth Rates by Budget Category



The overall annual growth rate of 8% predicted for the entire market clearly disguises the high growth and the low growth sectors, as can be seen from Exhibit II-3.

Exhibit II-3

Delivery Mode Analysis Information Services Market — Europe, 1994-1999



Source: INPUT

The highest growth opportunities lie in the areas of Systems Operations and Network Services.

The growing trend to outsource major portions of the information systems function drives an opportunity for information services vendors to broaden to the entire information systems budget.

That budget includes both expenditure directly controlled by the internal information systems function as well as budgets under the control of operational departments or business units.

The lowest growth sectors are those of:

- Equipment services, where ultra reliable components and open competition have driven down the market, only countered by increasing demand for network communications and desktop support where increasing complexity and critical applications demand higher levels of support

- Systems software, where increases in volume sales are eroded by intense competition

- Professional services, strong growth in IS consulting and the outsourcing of applications management are being countered by dampened demand for custom software development as users shift inexorably to greater reliance on application products

- Processing services, the classic services delivery mode remains marginalised by outsourcing contracts and severe price pressure. Nevertheless there still remain specialised sectors, for example high volume high quality laser printing, that continue to remain attractive business areas.

Other important market sectors are:

- Applications software, which will benefit from the shift away from the increasingly un-economic custom software development approach, but will have its money value growth held back by highly competitive market conditions. The success of SAP's R2/3 range of applications products is testimony to user' increasing appetite for standardised, widely available solutions

- Systems integration will grow at significantly above the overall market rate as users pay for the resolution of the complexity of solution building at the implementation phase and not within the product price

- Turnkey systems will also benefit from the user's need for resolution of system complexity within a total standardised package of hardware and software. This will remain attractive for many standardised environments such as hotels and retail outlets.

However, it is important to keep in perspective that high growth sectors are often associated with smaller overall market sizes.

Exhibit II-4 shows that major sectors in terms of size, but having relatively lower growth rates, represent substantial opportunities in terms of additive user expenditure over the five year forecast period.

Exhibit II-4

Major Revenue Opportunities — Europe 1994-1999 Not Limited to "Growth Markets"

High-Growth Markets	CAGR (%)	Rev.Incr. ($B)
Systems Operations	19	5.4
Network Services	16	6.0
Systems Integration	12	3.4
Lower-Growth Markets		
Professional Services	4	4.0
Turnkey Systems	7	4.9

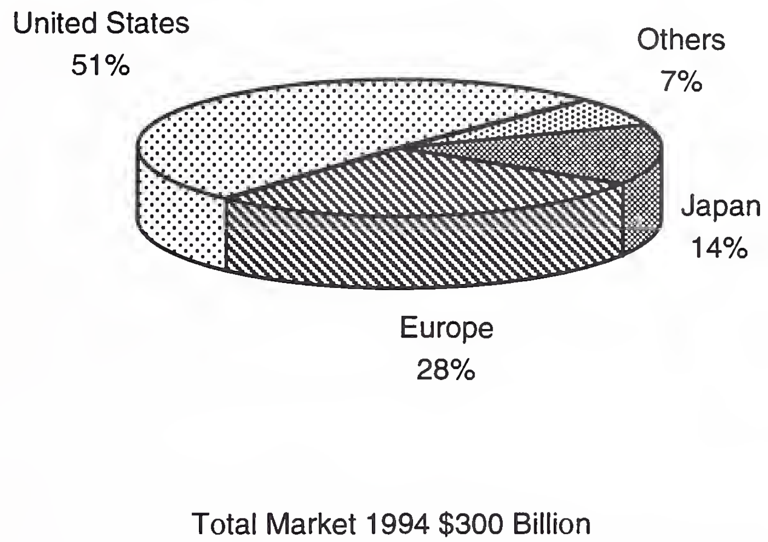
Source: INPUT

C
European Country Markets

Within a global perspective Europe represents the second largest regional grouping, after the United States, for the software and services market. This is clearly shown in Exhibit II-5.

Exhibit II-5

Global Distribution of Information Services Markets



Source: INPUT

A comparison of the leading individual country markets in the world is shown in Exhibit II-6. This exhibit demonstrates the sheer size of the United States information services market in comparison to any other individual country market.

Exhibit II-6

Largest Information Services Country Markets

Country	1994 Market Size ($B)	1994-1999 CAGR (%)
United States	150	12
Japan	39	9
France	21	7
Germany	18	
UK	13	10

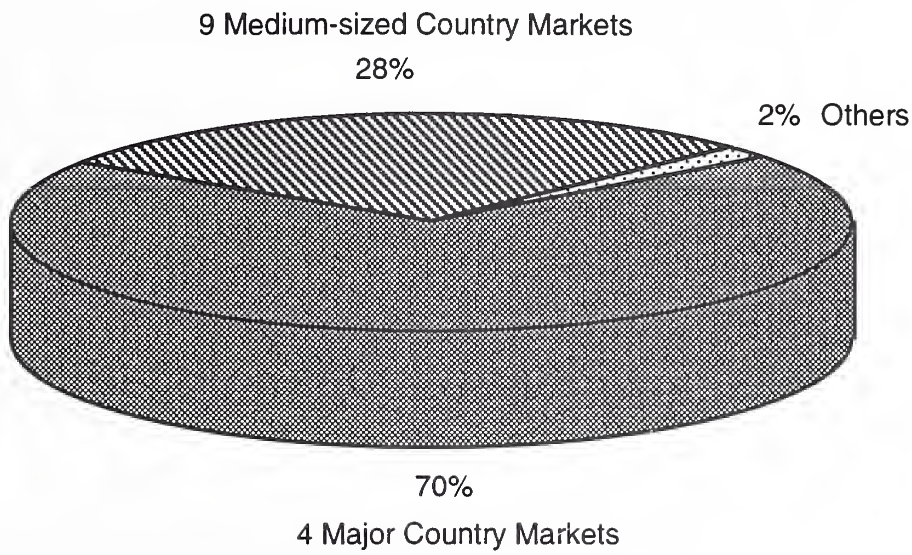
Source: INPUT

Exhibit II-7 shows the overall structure of the European information services market in terms of groupings of individual country markets

The combined country markets of Germany, France, Italy and the United Kingdom dominate the European market. The nine medium sized economies of the Benelux (2 countries), the Nordic Region (4 countries) and Spain, Switzerland and Austria account for virtually all of the remainder.

Exhibit II-7

Distribution of European Country Markets

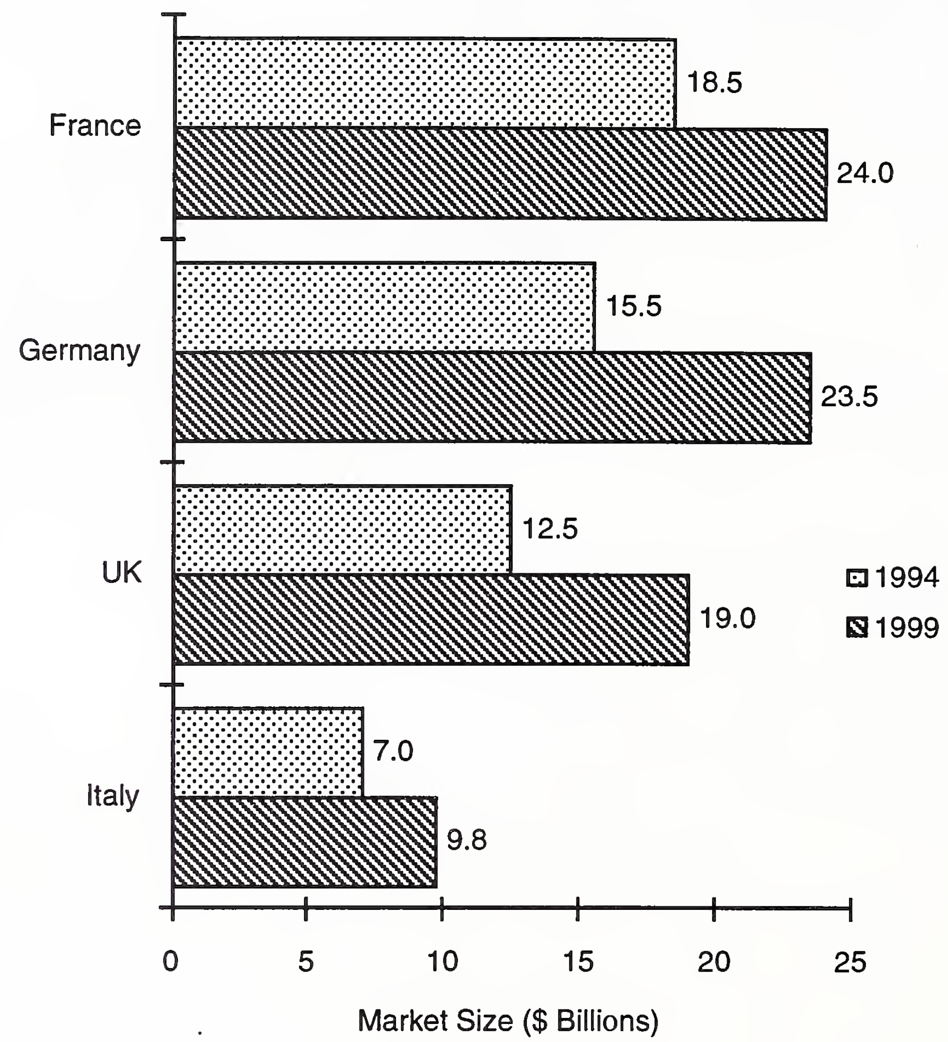


Source: INPUT

Exhibit II-8 shows the individual growth projections for the four largest European country markets.

Exhibit II-8

European Countries Comparative Market Size Software and Services



Source: INPUT

It is salutary to put the emerging markets of the former Soviet block, (now referred to as Central and Eastern Europe), into perspective in terms of the size of opportunity they currently represent for information services business

Exhibit II-9 shows a comparison of key metrics, that clearly caution against a too optimistic scenario for information services opportunities.

Exhibit II-9

Europe in Perspective — 1994

	Population (Millions)	GDP ($T)	Info. Svcs. ($B)
Western Europe	335	5.2	76
Central and Eastern Europe	440	0.6	1
United States	250	5.1	150

Source: INPUT

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III

Future Development of the Software and Services Industry

A
The New Market Realities for Software and Services

Following widespread economic recession across Europe in the early 1990s national government statistics have reported a return to growth in most of the countries of Western Europe.

However, IT industry executives and managers continue to experience highly demanding competitive conditions. They experience increasingly demanding clients and numerous competitors for the services and products they offer.

There now seems little prospect of a return to the benign economic circumstances that held sway in western economies throughout the last forty years. There exists little expectation of a return to the high growth (20% plus) market growth for the software and services industry experienced throughout the 1970s and 1980s.

Under these circumstances it is vital that software and services vendors appreciate the real nature of the radically different environment within which they now have to operate.

Information Services Industry executives and managers are now faced with a new set of market realities.

These *new realities* impact information services markets and require vendors to re-assess their product and services portfolios accordingly.

A framework of analysis is required in order to conduct such a re-assessment. Fundamentally it must incorporate the following three elements:

- A realisation of the changed environment

- A recognition of changed and changing user needs, including the recognition of completely new client groups
- An understanding of the new skill requirements appropriate to these new conditions.

The nature of the changing environment needs to be thoroughly explored in order to understand the opportunities being created by a radically different economic environment and the technology development whirlwinds which continue to outpace human capacity to control and harness them.

As industries and markets are affected by these forces so new user requirements emerge and develop. Vendors need to identify the services and service products that they wish to offer that are appropriate to these new requirements and thus adapt to the decline of redundant service types and the creation of new ones.

Vendors need to assess the new skill requirements determined by the delivery of new types of services and adjust their organisations and business processes accordingly.

This chapter discusses the principal challenges being faced by software and services firms, reviewing:

- The changing environment for the IT industry, the lower growth expectations for overall user expenditure on IT products and services, the impact of increasingly rapid technological change and the challenge of adjusting to a deflationary economic environment
- The fundamental changes in user requirements for IT products and services and the appropriate skills required to services them; the shift to open markets, the challenge of network centric support needs and the inexorable congruence of IT and business processes
- The likely impact of these forces on the structure of the IT software and services industry by type of activity, the issue of the size of firms and the requirements for co-operation and partnership between firms.

B
The Changing Environment of the Software and Services Business

The radical changes in the overall environment within which information services firms must now operate can essentially be discussed under three headings:

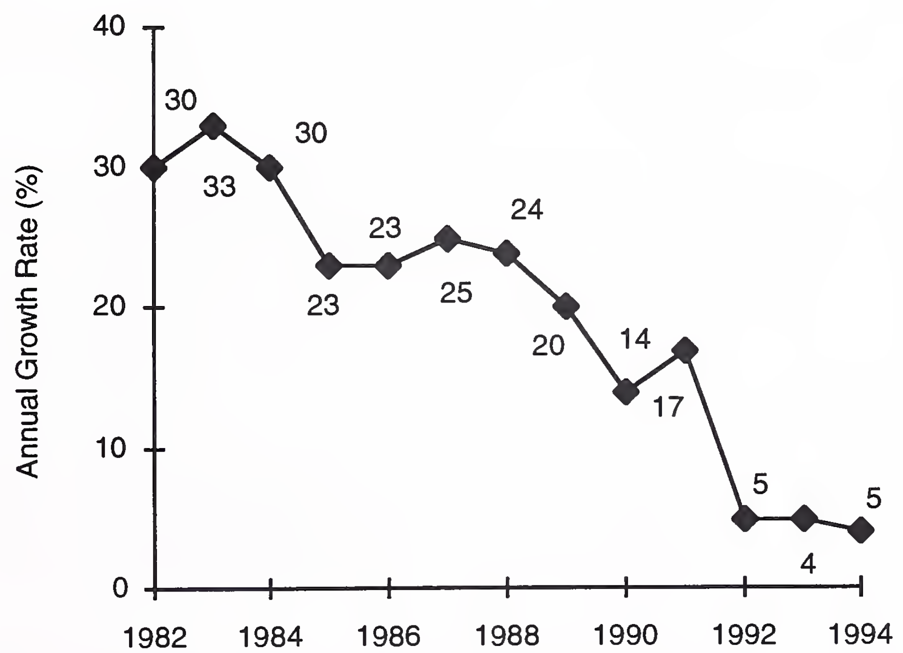
- The overall expectations for growth in user expenditure on information technology and information services
- The technology development whirlwinds and their impact on information services
- The dramatically different economic environment which will affect user expectations and actions.

1. The Change to a Low Growth Scenario

The software and services industry has experienced a consistent history of high growth. Exhibit III-1 shows that in the decade up to 1990 the industry grew by over 7 times in size and averaged in excess of 22% growth per annum.

Exhibit III-1

European Software and Services 1970-1999



Source: INPUT

Given money inflation averaging around 5% per annum throughout this period this still represents real growth in user expenditure on information services at a rate in excess of 15% per annum.

However, the first part of the current decade has ushered in a period of significantly lower growth. In the period up to 1994 INPUT has measured only 9% overall growth per annum of user expenditure on software and services.

Further, expectations of future market growth have been reduced to a rate of 8% per annum for the remainder of the decade.

The slowing growth in the market at the end of the 1980s and the early 1990s was generally attributed to the recessionary economic environment experienced in Europe during that period.

In the past, however, general economic recession has only had a marginal impact on the progress of the information technology industries. The economic problems of the early 1970s, including *the oil shock,* being the only previous example of a significant recessionary impact on the world of IT.

The major economies of Europe are emerging from recession but this changed economic scenario has not returned the industry to a high growth scenario.

The UK economy was the first country to emerge from recession in 1992 followed, earlier than expected in the cycle, by France, Germany and Italy.

By the end of 1994 the four major economies of Europe were all growing at a much stronger rate than most economists had forecasted a year ago.

However, this economic growth has not translated into boom conditions in the IT market as organisations adjust to a world of *deflation* rather than *inflation*, a theme and its underlying causes which are discussed in subsection 3 below.

Consequently the realisation that the lowered growth expectations of the industry may be attributable to structural factors other than economic recession is now beginning to emerge as an important consideration.

The information services industry is now being faced with a completely new set of circumstances with which to come to terms. The 1990s have ushered in an era in which high growth and ever expanding use of IT are being questioned.

Naturally there remain many high growth sectors within the overall expectation of IT services growth. It is thus becoming much more important for vendors to be selective in their approach to the market. The easy market conditions of former times no longer apply.

Within an environment in which the containment of costs has attained much greater significance than previously it is not surprising that the concept of delivering *value* through information services has attained such importance.

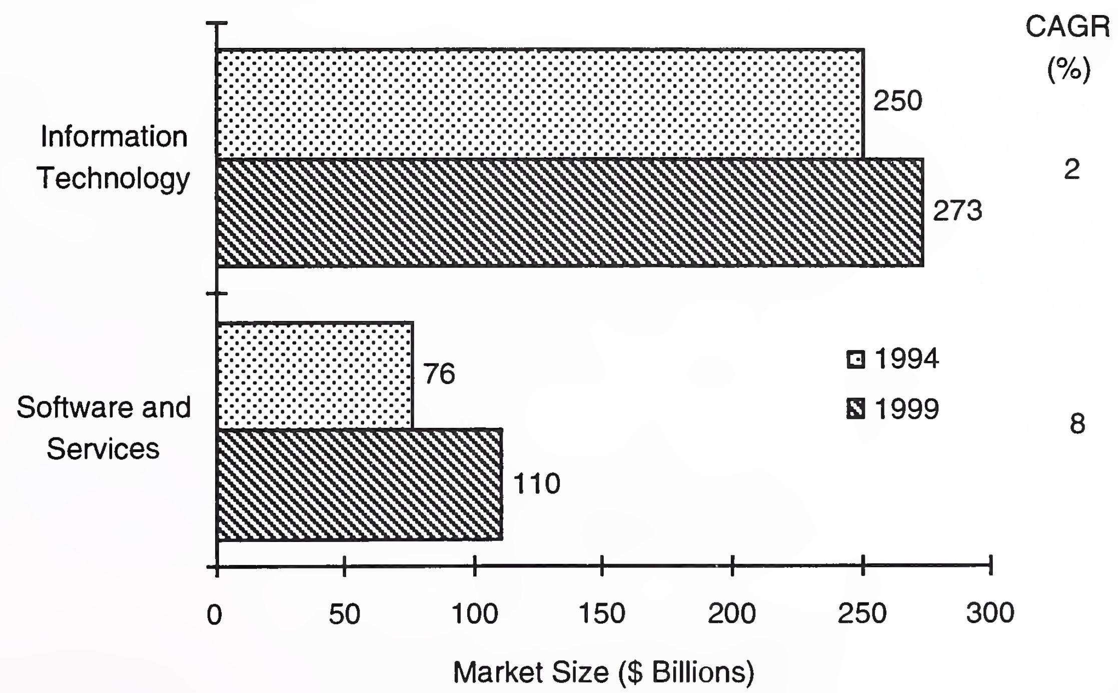
Information services generally still represents an overall higher growth opportunity than other IT markets. This is shown in Exhibit III-2 which contrasts forecast growth in information services with that of the total expected market growth for all IT expenditure.

It can be seen that services are expected to account for more than the total additive amount for all expenditure ($34 v 23 million) over the forecast period thus implying a shrinkage in expenditure in other IT sectors.

This is a manifestation of the deflation impact, lower prices for both hardware and software products, and the continuing switch by users from in-house expenditure to the use of outside services.

Exhibit III-2

European IT Vs, IS Expenditures



Source: INPUT

2. The Impact of the Technology Whirlwinds on Information Services

The last fifty years of IT development has been characterised by unprecedented progress, which for hardware appears to be accelerating.

However, the development of software has not progressed at the same rate. It becomes increasingly apparent that many problems in the IT industry stem from the mistaken view that software is a tangible entity to which the rules that apply to tangible products can also be applied.

Difficulties in developing complex software products and implementing complex systems stem from this misconception. The special requirements of software development and implementation create opportunities for services firms that fully understand the true nature of the software development and implementation challenge.

Another important long term trend has been the convergence of computers, telephony and consumer electronics based on digital technology and away from analogue technology.

One of the most interesting aspects of these developments has been the ascendancy of consumer markets for high-technology products as one of the most important driving forces for new development.

Fifty years ago leading edge high technology development was often the preserve of the defence industries driven by the requirements and big budget resources of the military establishments.

Subsequently business needs and the search for competitive advantage from IT, particularly from large corporations, became the market drivers of IT throughout the 1970s and 1980s.

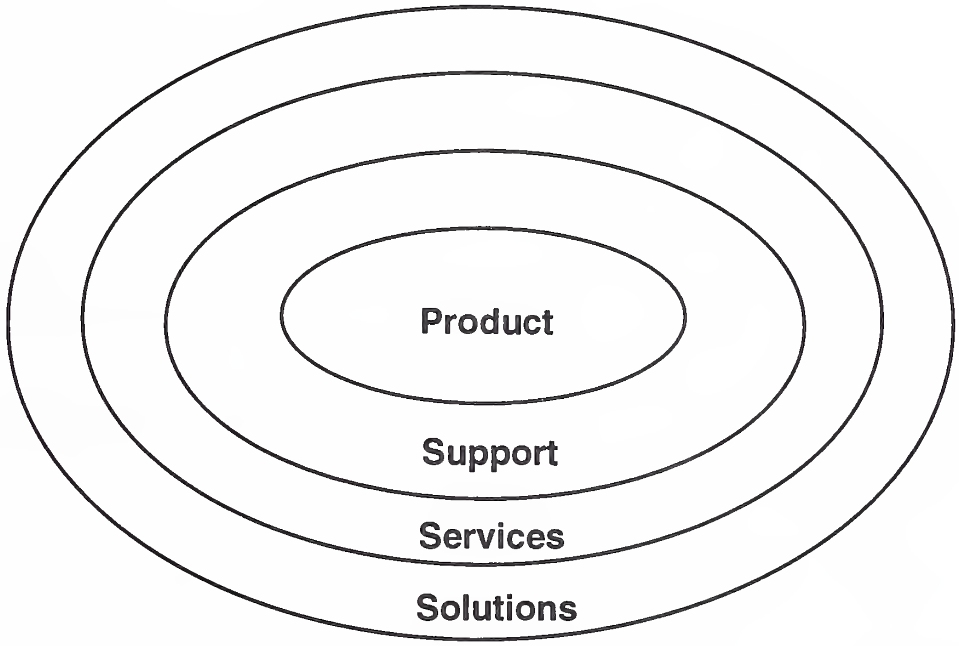
Now in the 1990s consumer demand appears to have assumed a key role, certainly in terms of hardware systems like multimedia PCs and colour graphics screens for games. Personal network use of the Internet is also becoming an important development.

Further difficulties for the information services industry arise from a failure to distinguish between the different stages of market development and the corresponding user needs for products, services and solutions at each stage.

Exhibit III-3 shows a simplified graphic that illustrates the progression of user needs as new products gain wider and wider acceptance in the market. Services markets develop, like ripples on a pond, from the initial introduction of a new product.

Exhibit III-3

Technology as an Information Services Driver



Source: INPUT

There exist lags in the development of various types of services markets as different categories of users take up the new technology:

- Support for products, maintenance, bug resolution and technical assistance are required very early on in the life of a product even for the most sophisticated technically oriented users
- Services that help users gain benefit from using products, for example installation and implementation assistance, training and consultancy services are required to attract a wider range of users into the market
- Solutions which focus on the delivery of specific business functions and thus remove many, if not all, of the technological barriers to use, are required to bring in the non-technology oriented users.

Undoubtedly the technology that is currently having the most significant impact on the market is that of client/server computing. This technology illustrates the lag effect in respect of services, since it is only in the last couple of years that client/server computing has begun to make a major impact on services markets despite the fact that the technology itself has been available in a number of forms for some time.

One can also observe that the *hot* technologies of multimedia, the information super highway and such developments as object oriented programming have as yet had little impact on services. Their use remains restricted to early adopters of the technology who in general supply their own technical services and create their own solutions.

It is interesting to note that the multimedia industry has to date been almost entirely driven by consumer type market demand since the consumer applications bring immediate benefits to users. Commercial applications await the development of genuine applications and the service and solutions providers to assist in their implementation.

It is noticeable that in the desktop environment business users wish to slow down the rate of introduction of new products which offer no significant business benefits to the processes to which they are applied.

3. Adjusting to a Deflationary Environment

The single most important economic change that is affecting the business environment within which information services vendors must sell their services and products is the shift from a world of inflation to one of deflation.

Few economic observers or organisations, including Governments, have given any indication that they even accept this prognosis let alone that they have made the necessary adjustments which it will demand.

The continuing obsession on the part of Governments, and other official bodies such as the OECD, with inflation cannot be dismissed lightly. However, evidence continues to appear, in economic reports and the price cuts and discounting widely reported in numerous sectors of the economy, that deflation is the order of the day.

This is particularly true of the IT industry which was leading with technology driven price performance and quality improvement long before similar trends began affecting other industry sectors.

Information services vendors face a world in which prices can no longer be put up to cover increased cost of inputs whenever these occur in the system. Vendors face demanding customers and a multiplicity of competitors bidding for the available business. Information services markets, like those of their clients, are typified by oversupply and intense pricing and cost pressures.

This whole phenomena can be summed up under the expression 'the Lopez impact', which is summarised in Exhibit III-4.

Exhibit III-4

The Lopez Impact

WAS
Costs + Profit = Selling Price
NOW
Market Price — Profit = Cost Budget

Source: INPUT

The Lopez effect is named after Volkswagen's controversial purchasing czar. Lopez has strongly publicised a new paradigm for firms that emphasise that they cannot any longer determine, in a world of massive over supply, the market price of the goods or services that they supply.

Massive oversupply and consequently keen competition ensure that the market determines the price at which these products and services can be sold. It then becomes a requirement that the producer deliver at a price and cost level that will also result in a reasonable profit.

Businesses are thus under immense pressure to cut cost from their operations. It is within this context that an organisation's need to reengineer or at the very least downsize, can be clearly understood.

Information services vendors need to adjust their thinking and their planning to these new realities of software and services markets.

C
New User Services Requirements

As new types of technology products, notably PCs and client/server computing, gain widespread acceptance in the market so they drive the requirements for new types of services and new skills to deliver them.

Three of the most important trends that are affecting the required services and skills mix are discussed below:

- The development of open markets for software product support
- The network-centric nature of future customer support and service needs
- The increasing congruence of IT and business process requirements.

1. Software Support Enters the Open Market

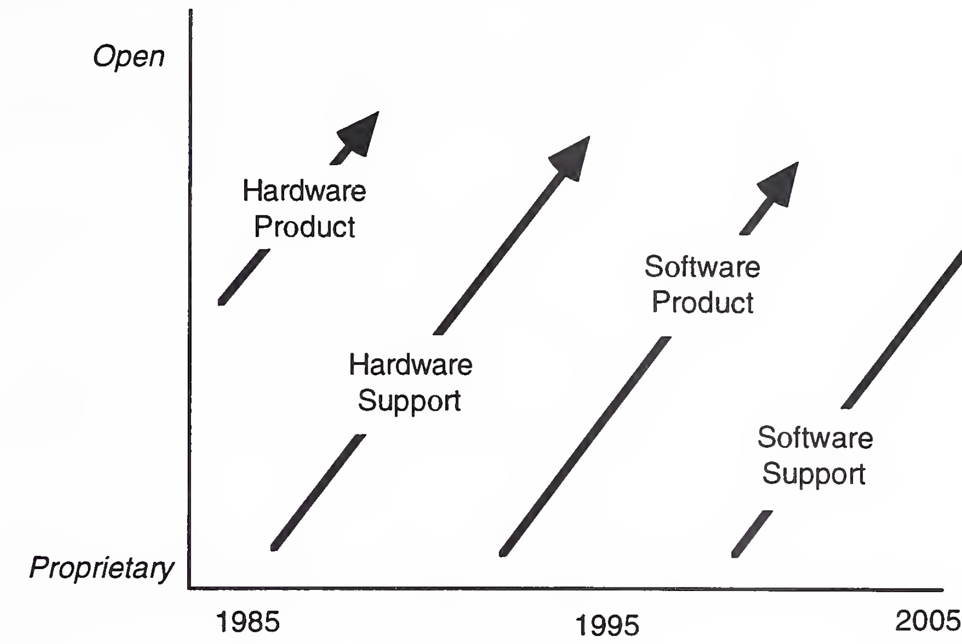
The software products market has grown rapidly over the last fifteen years and has consequently become a key area of focus for many vendors.

At the same time the software product market has changed from being almost exclusively technology driven to one in which customer demand and customer acceptance are the dominant influences.

It now needs to be recognised that software product support is emerging as a clearly identifiable market with *open* characteristics just as hardware markets before have also succumbed to the same competitive and customer pressures. This process is illustrated graphically in Exhibit III-5.

Exhibit III-5

Software Support Enters the Open Market



Source: INPUT

In the past there existed a direct relationship between the vendor and the customer. Now the customer's system tends to be built up from a multiplicity of sources, potentially each element requiring support from a different source.

Thus the growing acceptance of client/server computing and the requirement for *open* systems has not only radically altered the nature of the IT industry but also drastically changed the nature of support and services opportunities.

In the proprietary world that dominated the early decades of the IT industry customers paid for conflict resolution in the product price. The vendor integrated the necessary hardware and software components into a working system.

The world of *open systems* and its highly competitive environment and low prices has however shifted the integration burden onto the customer. Customers now pay for conflict resolution in the services that they need for implementing their desired solution.

Exhibit III-6

European Software Markets

	Market Size ($B)	
	1994	1999
Software product sales	22.3	31.7
Software product support	2.9	4.3
Software product-related services	4.0	6.5
Total	29.2	42.5

Source: INPUT

The size of the available opportunities in Europe are indicated in Exhibit III-6. In addition to the market for direct product support is also indicated the opportunity for services associated with products.

Recent INPUT user research has indicated a significant level of dissatisfaction with the support currently being offered by many vendors and this is frequently expressed as a perception of lack of value for money for support services. This is a manifestation of a deflationary environment.

Vendors seeking to exploit future software product support opportunities, particularly those generated by desktop users, should focus their support and service capabilities around the following principles:

- Support oriented to user needs not specific products
- A recognition of a multiplicity of differing user requirements
- Application of technology support, e.g. bulletin boards, for the provision of support.

2. Network Support Requirements Set to Dominate User Needs

The continuing acceptance of local area networks (LANs), and the growing importance of the desktop domain, are changing the dynamics of the information services market.

Whereas in the past support and service needs tended to be based on a centralised computing paradigm, now those needs have spread and diversified throughout the organisation.

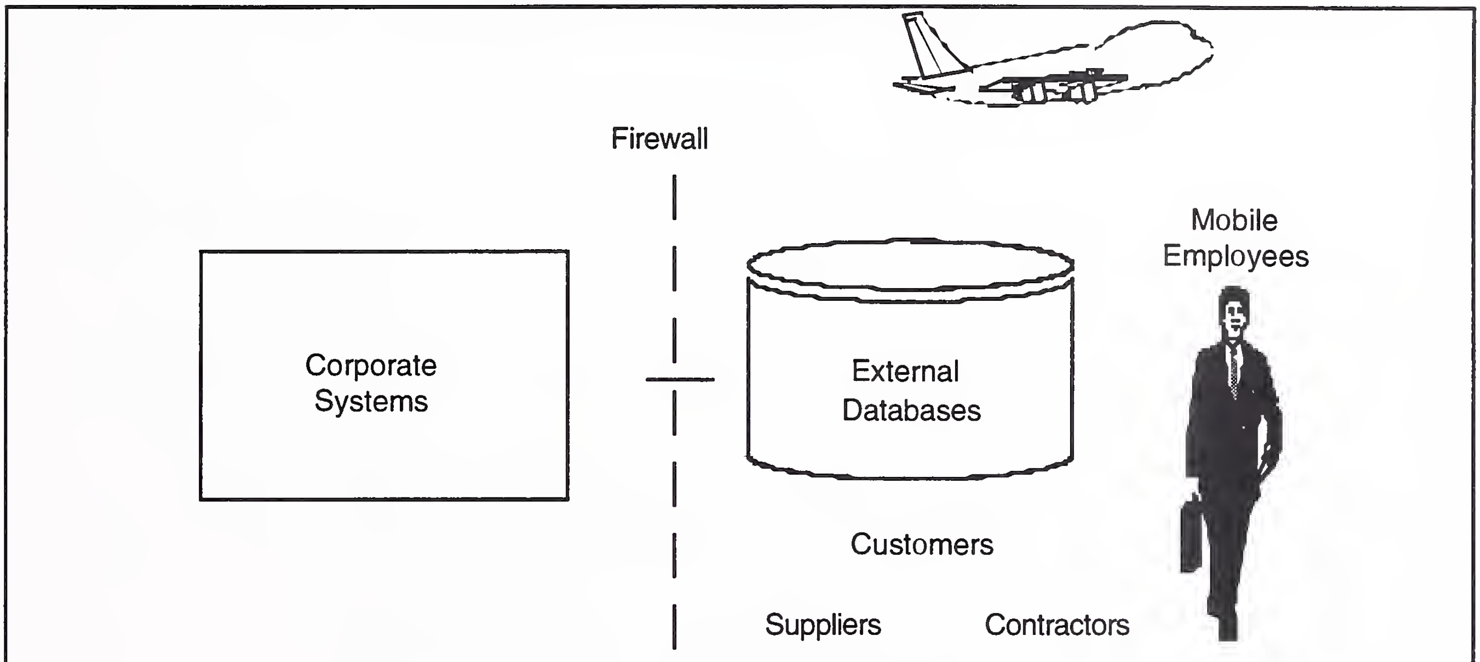
Most corporate network infrastructures are characterised by their lack of coherence and integration. In many cases individual business units have implemented their own local networks which have operated independently of one another.

However, there is now increasing pressure to integrate these networks on an enterprise-wide scale in order to fully leverage their potential business benefits.

Exhibit III-7 indicates in graphic form another major challenge facing organisations, the need to develop inter-enterprise networking as well as intra-enterprise connectivity.

Exhibit III-7

Reengineering Enterprise Systems



Source: INPUT

The most important manifestation of this trend is the rapidly expanding use of the Internet and its development for commercial applications.

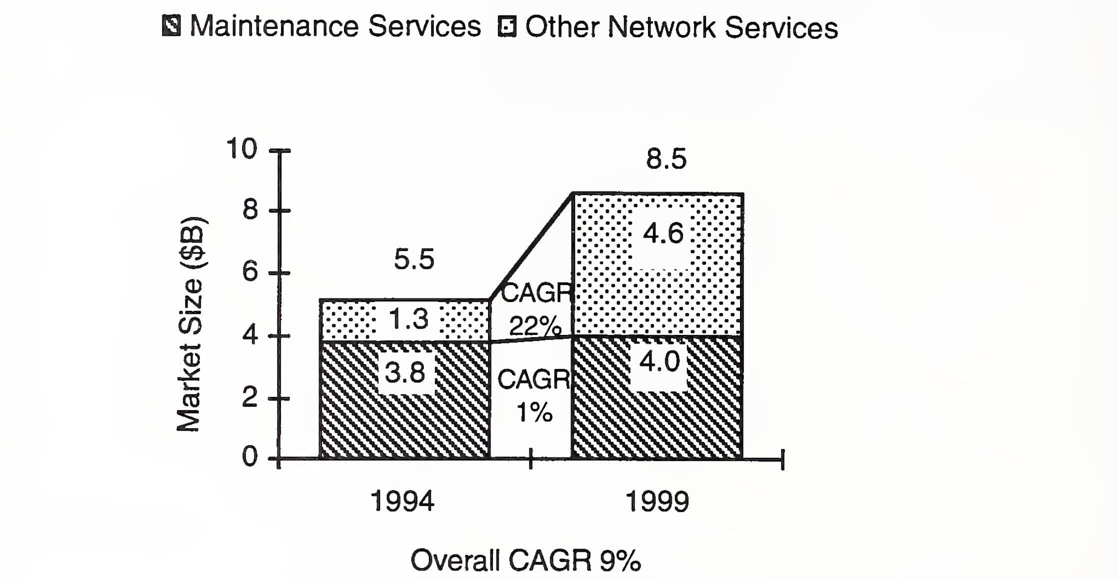
One of the major challenges faced by organisations in this environment is the maintenance of the security and integrity of their data.

Another aspect is the need to appeal to varying levels of customer support and service need. A variety of users will require support, all with different individual requirements.

Consequently a fast developing opportunity is now emerging for the outsourcing of these functions, see Exhibit III-8.

Exhibit III-8

Desktop Network Services — Europe



Source: INPUT

The major growth opportunities lie in the non-product support sectors, for example in the provision of :

- Full network outsourcing
- Network management and monitoring services
- Business continuity services
- Help-desk support services.

The inherent complexity of the network environment is driving the need for the application of new skills and capabilities, many needing to be delivered remotely.

Successful vendors will need to continuously refresh and develop their skill bases and seek strategic agreements with other vendors to obtain access to otherwise unavailable or complementary skill sets.

Careful long range planning will also be required in an environment in which the time to develop real in-depth skills is lengthening and is measured in years not months.

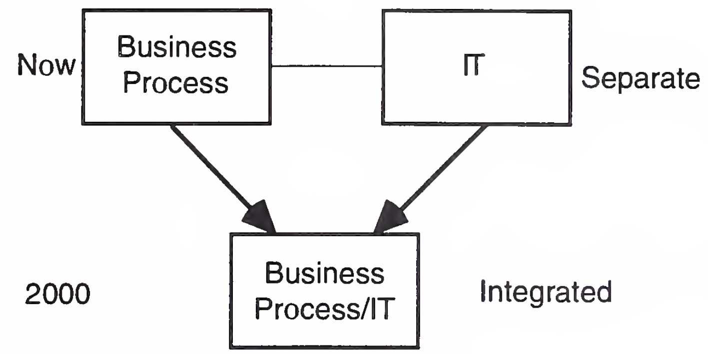
3. The Integration of IT and Business Processes

One of the most important trends in the development of the services business that will affect the development of new services and new skill requirements is the tendency for IT services to become more and more integrated within the business processes they serve.

This concept is illustrated graphically in Exhibit III-9.

Exhibit III-9

Integration of IT and Business Processes



Source: INPUT

This trend first became of major significance in outsourcing contracts where the vendor was contracted to provide a service defined largely or exclusively in business terms rather than in IT terms, defined as business operations. There have also been precedents in processing services, for such activities as payroll processing and the factoring of invoices, that could more properly have been described as business services.

The first major business operations contract in Europe was between BP Exploration and Andersen Consulting in 1991.

Subsequently this phenomena has manifested itself in numerous other contracts, notably in EDS's KF contract. However, it also manifests itself at all levels of services contracting as an increased requirement for the vendor to demonstrate industry specific understanding and knowledge.

This trend is likely to accelerate as the idea of outsourcing non-core processes gains wider acceptance. As this happens organisations' business processes will become more and more delineated as core and non-core processes.

Core processes will become the focus of intermittent re-engineering efforts. They are therefore likely to require the assistance of a partner with considerable expertise, and preferably world-class practice, in the relevant business process.

Ideally this business process expertise needs to be developed across a range of different industries in order to optimise the likelihood of achieving innovative approaches to the business problem.

Vendors will therefore need to establish skills in business process areas like customer systems, supply chain management and document workflow where hitherto they may have defined their skills in terms of accounting systems or, for example, a payroll package.

Clearly there exists a need for the integration of IT skills and business skills both in terms of the operational and development aspects of the customers' business processes.

D
The Changing Nature of the Software and Services Industry

The information services industry is undergoing a period of profound change driven not only by rapid development of the technologies which it supports but also by radical change amongst the customers it serves.

Just as individual vendors are facing the challenge of changing to match a new set of customer requirements, so also will the industry change its shape and form to match the new market realities.

Three important aspects of that industry change are likely to be:

- The change in categorisation of the principal **activities** that services firms will undertake
- The change in the relative **size** of firms and thus the shape of the industry in respect of its degree of concentration/fragmentation
- The **relationships**, i.e. the partnerships, alliances and co-operative agreements, that firms will need to develop with other industry participants in order to fulfil their customer commitments.

1.The Changing Categorisation of the Information Services Industry

The information services industry first emerged over twenty years ago in response to the complex and costly demands of owning, managing and developing computer based systems.

Information services firms quickly established *independence* from proprietary system architectures as one of their major distinguishing characteristics, hence the use of the term *independents* to describe them and distinguish them from the dominant system vendors.

The emergence of open systems and services has eroded the distinction between these different types of firms. All of the systems vendors have developed significant software and services delivery arms and many services firms deliver equipment as part of their delivery of complete solutions to their clients.

The development of technology, particularly in the PC and workstation arenas has propelled the stratification of the industry into a horizontal inter-dependent model away from its original vertically integrated, separate proprietary architecture form.

We can expect this trend to intensify over the next few years with an increasing imperative to specialisation, and the inter-dependence of firms, required to deliver highly complex computer system based solutions to clients.

The commercial success of individual firms within the industry has often been the result of a clear focus on one particular aspect of software and service delivery.

For example Andersen Consulting in professional services management, EDS in the management of IT assets and the efficient delivery of services based upon them and Computer Associates in the marketing of software products.

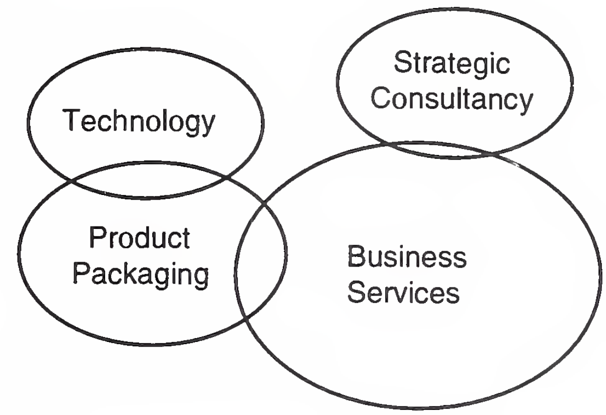
However, the sheer complexity of computer systems has ensured that most firms, unless quite small, have become involved in a variety of different IT related services.

This is likely to become an increasing cause of problems for many firms in the future.

Two of the most likely areas for problems will be an exaggeration of the user's desire for complete solutions from one single vendor and a failure to distinguish between *technology* development and *services* delivery.

Exhibit III-10

European Industry Reengineers



Source: INPUT

Exhibit III-10 provides a simplified view of the most likely polarisation of activity related to software and service delivery.

It implies an understanding that the fundamentally different types of activity, requiring different skills and management models, place emphasis on different management styles and models.

In consequence it can be anticipated that there will not only be a clearer distinction between these different types of firms in the future, but an increased interdependence between them.

Whilst some firms may be able to successfully combine a presence in more than one of these areas, it is likely that this will prove increasingly difficult for most organisations without the presence of other special factors.

The drive of productisation and standardisation (openness) will force more and more software development away from the user site into the development factory of technology firms, both equipment dependent and in standalone form.

Technology firms will fundamentally be concerned with the development of products and will, certainly in the case of software products, find it increasingly difficult to market their own products directly.

Packaging firms, and most systems vendors have fundamentally been packaging organisations for some time, are distinguished by their marketing skills, their ability to understand user needs and their degree of influence over distribution channels.

At the opposite pole from technology dominated organisations will exist those organisations fundamentally focused on the relationship between technology and its effective application.

These organisations will provide the *strategic consultancy* necessary for reengineering business processes to optimise the use of available technology.

The remaining mainstream services opportunity is that of *business services*. As indicated in the previous section IT and business processes are increasingly becoming integrated.

In the past services firms have been able to operate through specialisation on some aspect of service, e.g. running a data centre, or system development.

Now they are finding that general purpose skills are widely available, e.g. data centre operations, and that consequently there is severe price competition and little opportunity for profit.

Software and services firms are finding that a continuing development of technology skills requires more and more specialisation thus limiting the capability to maintain delivery skills at the customer interface.

Vendors are also experiencing the imperative to demonstrate an increasing awareness and knowledge of the customer's industry and business processes in order to deliver and support IT systems.

The combination of these factors is causing the identification of the general category of *business services* to emerge as the significant major area of opportunity for most software and services firms.

2. Industry Fragmentation/Concentration

In industry and commerce in general there has existed, over the last twenty five years, a tendency for the average size of firms to fall. The break-up of some large firms into smaller units, e.g. Union Carbide and ICI, has contributed to this phenomena.

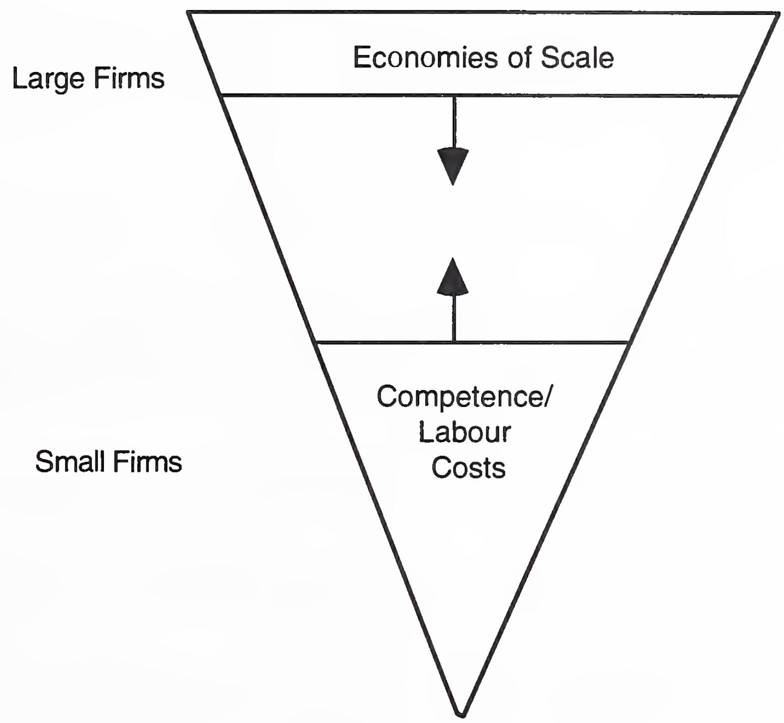
However, over the last few years software and services businesses have witnessed an increasing concentration as large firms, for example EDS and Andersen Consulting in services and firms like Microsoft, Oracle and SAP in software products, have grown faster than the overall industry.

At the same time many small firms continue to be created, albeit that this part of the industry experiences considerable volatility.

Exhibit III-11 summarises in graphic form the principal factors that determine the extent to which large and small firms are likely to dominate the software and services industry. In effect the extent to which the industry will become more fragmented or more concentrated.

Exhibit III-11

Industry Structure



Source: INPUT

The extent to which the factors indicated in Exhibit III-11 hold sway will to some extent be a function of the differences between the major sectors of the overall industry identified in the previous section.

For example the software technology sector is likely to become more rather than less fragmented since it will be largely a function of individual skills and brain power from which success will be generated. In this sense Microsoft is likely to become less and less a *technology* company and more and more a *packaging* company reliant on licensing agreements, technology alliances and acquisitions to feed the marketing machine that has been created.

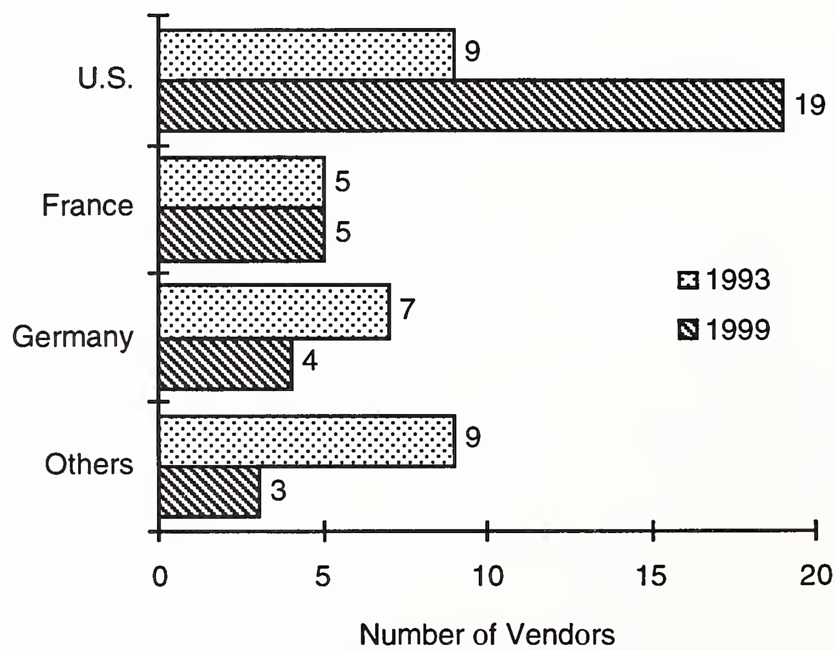
Hardware development will most likely become more concentrated since the investment levels required to bring technologies to a marketable state, particularly that for processors, are increasing at a non-linear rate.

The packaging firms will also experience more fragmentation, although this should not be interpreted to mean that no new large firms will emerge to take up industry leadership positions. It can be expected that new Microsoft's and Oracles will emerge as new technology platforms emerge to be made *de facto* standards.

The increasing concentration amongst software product packaging firms is clearly shown in Exhibit III-12. The apparently inexorable advance of US based firms at the expense of European ones, with the notable exception of SAP AG, underlines the desire of customers for the security of *de facto* standardisation determined by what is viewed as the leading edge market of the United States.

Exhibit III-12

Top 30 Software Product Vendors — Europe



Source: INPUT

Strategic Consultancy will remain largely a fragmented business since it must ultimately be driven by the expertise and experience of a limited supply of individuals.

However, it is most likely to continue to be led by a limited number of prestigious firms that confer their clients with the seal of an internationally revered brand image, but at a premium price.

Business Services is likely to become an industry characterised by both more concentration at the top end and more fragmentation at the lower, as indicated in Exhibit III-11.

At the top end of the industry there will continue to exist many economies of scale to be exploited. These will include, service automation in the support of standard products, both hardware and software, and the provision of asset based services, notably network services.

However, the increasing complexity of information technology based systems and the need to access specialist skills, many of which will take years to develop fully, points inexorably towards continued industry fragmentation in many business service sub-sectors.

3. The Requirement for Networked Relationships

Services vendors need access to the technology and packaged product knowledge necessary to integrate and implement business solutions. Technology and packaged product firms require distribution channels for their products.

The knowledge and experience required to implement some of the most complex IT systems is now stretching out to a period of several years. For example Oracle expertise is now generally reckoned to require anything up to 6- 8 years in its acquisition.

Consequently the imperative exists to develop relationships with vendors whose products or services are necessary conditions for service or solution delivery.

In addition to the development of relationships with complementary vendors is the issue of the development of partnerships with clients.

The partnership business relationship model has been frequently promoted by vendors, particularly by vendors of project contracting services.

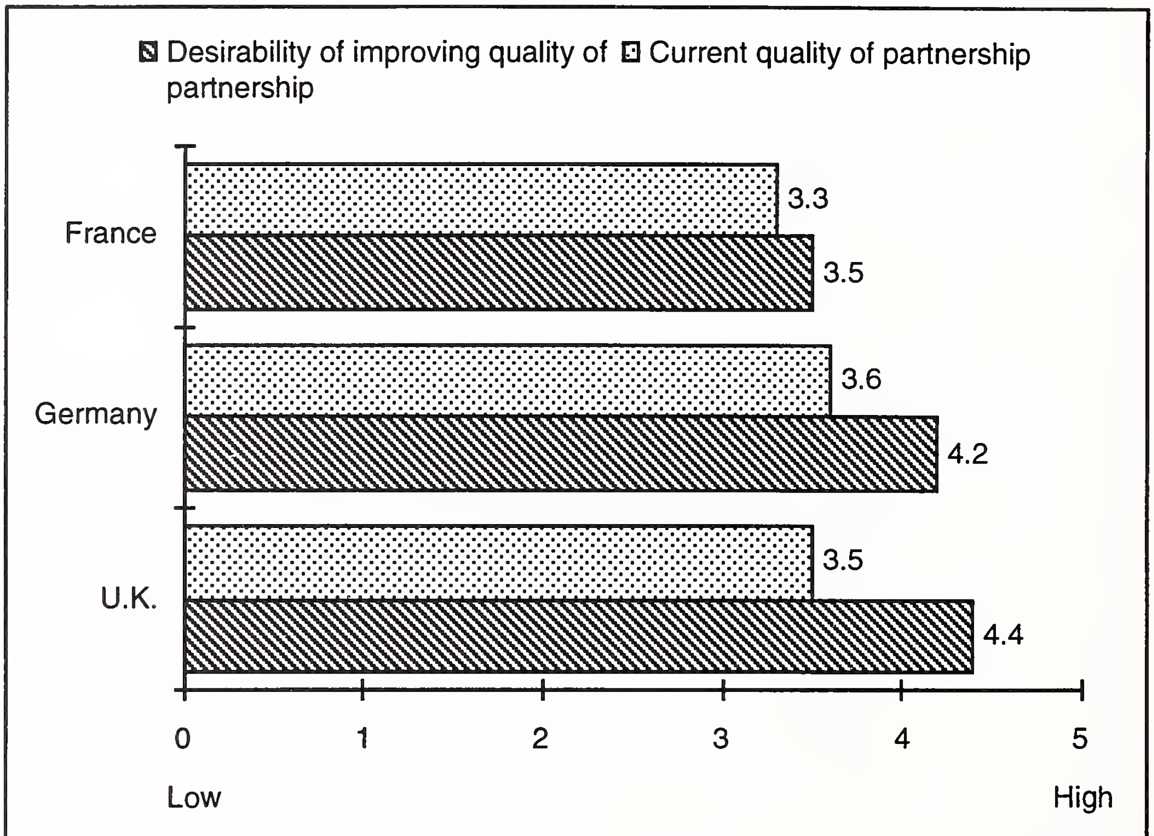
Unfortunately its value has been undermined by overuse and its application in inappropriate situations.

Consequently while it is a commonplace for vendors to talk about developing partnerships with their clients, in practice few true client/vendor partnership relationships exist which results in users remaining sceptical about the vendor's true motivations and objectives.

These attitudes are illustrated by reference to the data from a recent survey summarised in Exhibit III-13. Users express only moderate satisfaction with the quality of their current relationships with vendors, and except for France, a strong desire for those relationships to be improved.

Exhibit III-13

Client/Vendor Partnerships — Europe



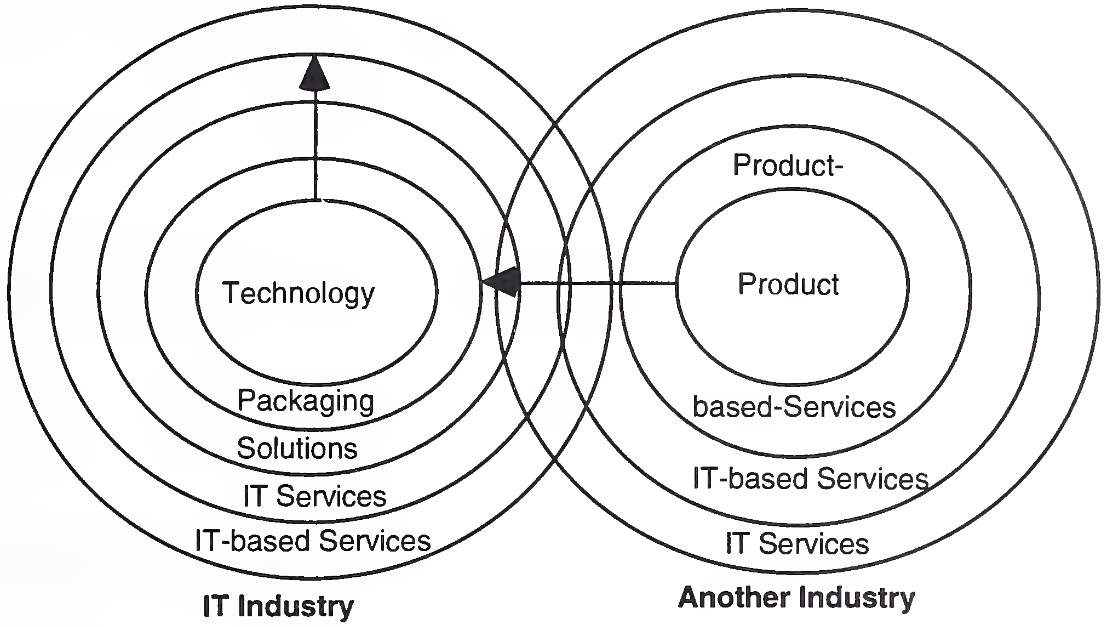
Sample of 60 Managers *Source: INPUT*

A further complicating factor for information services vendors is the requirement to gain knowledge and experience of the industry sectors and business processes of their clients.

The information services industry can therefore expect to experience an increasing level of involvement and competition from other industry vendors, a concept that is expressed graphically in Exhibit III-14.

Exhibit III-14

Industry Intersections



Source: INPUT

The requirement to focus attention on these industry intersections can be viewed both as a defensive strategy and as a positive opportunity.

A defensive strategy will be required to protect established clients from being drawn away to vendors able to demonstrate superior industry or business process knowledge.

It offers a positive opportunity for those vendors prepared to invest entrepreneurially in new IT based business services and business solutions.

For it is at these industry intersections that new service requirements emerge. One working definition of entrepreneurs is that they are people who create solutions to unstructured business problems.

By definition it is at the margins of existing established services that users face unstructured business problems, particularly for customers whose size precludes their investment in significant in-house resources.

In any event, investment in in-house resources for non-key processes is increasingly recognised as an unproductive avenue of development.

The same argument would apply to supporting increasingly key, IT based, processes for which the capital infrastructure would be uneconomic or where the technical skills required are difficult to acquire or retain.

Information services vendors are therefore recommended to place increasing emphasis on their ability to develop and sustain partnership relationships with both other vendors and their clients.

This is probably one of the most difficult challenges facing vendors over the next ten years.

Undoubtedly this will become one of the major distinguishing success factors for vendors in the future, particularly vendors of *business services.*

IV

Country Market Analysis

This chapter contains key highlights of the analysis and forecast for each country market in Europe. In each case the alphabetic designation (A through Q) for each section corresponds to the equivalent designated appendix which contains the detailed data on each country.

A

France — Market Commentary

1. Information Services Industry

INPUT forecasts a five year average growth of 6% from FF 128 billion ($22 billion) in 1994 to FF 161 billion ($27 billion) in 1999 for user spending on information services. In Cap Gemini Sogeti (CGS) France has by far the largest European owned independent professional services company to operate on a world scale.

The French market is the largest national market for information services (which includes equipment services) in Europe and represents some 23% of the total European market.

Exhibit IV-1 provides an analysis of the French market by industry, cross industry and generic sectors, the latter being equipment services, system software products and utility and other processing services market sectors.

Exhibit IV-1

Information Services Industry Analysis France, 1993

Market Sector	Market Size (FF Millions)	Percent of Total
Total Information Services	127,000	100
Industry Sectors Total	76,500	60
Discrete Manufacturing	10,900	9
Process Manufacturing	5,900	5
Transportation	4,800	4
Utilities	3,550	3
Telecommunications	3,650	3
Retail Distribution	2,450	2
Wholesale Distribution	3,300	3
Banking & Finance	14,100	11
Insurance	4,750	4
Healthcare	3,450	3
Education	1,380	1
Local Government	5,800	5
Central Government	6,050	5
Business Services	4,050	3
Other Industries	2,250	2
Cross-Industry Sectors Total	9,500	7
Accounting	1,700	1
Education & Training	145	0
Engineering & Scientific	500	0
Human Resources	500	0
Office Systems	1,850	1
Planning & Analysis	1,650	1
Other Cross-Industry	3000	2
Generic Sectors Total	41,000	32
Equipment Services	21,600	17
System Software Products	16,000	13
Utility and Other Processing	1,150	1
Other Electronic Info Services	2,170	2

**Software and Services excludes equipment Services*

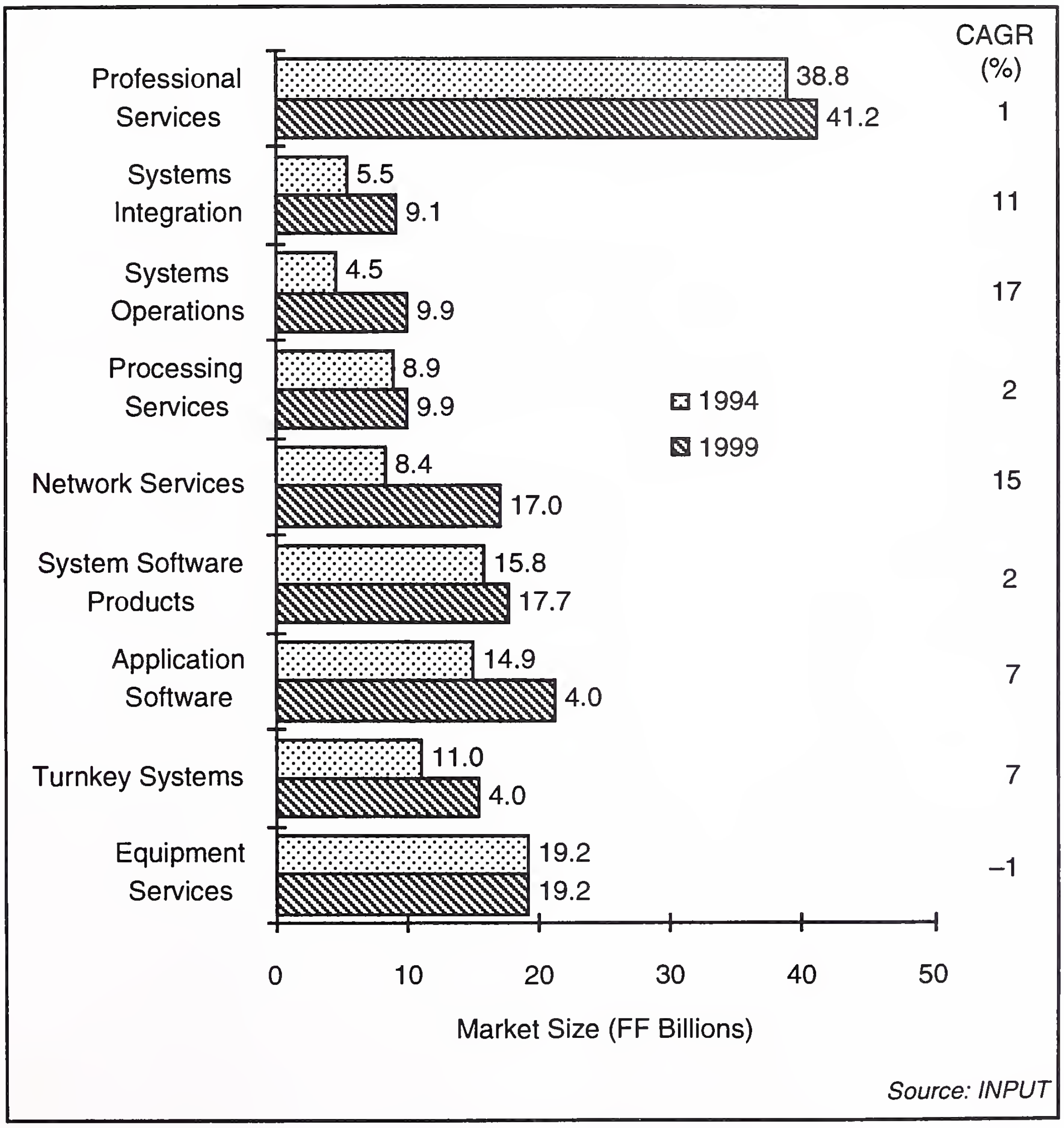
Source: INPUT

INPUT forecasts that market growth over the next five years is expected to average only 5% per annum. Although the overall economic climate is expected to improve over the five year period, the desire among buyers of software and services for better value for money will limit any return to higher growth rates.

Exhibit IV-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 A, in local currency, US dollars and ECUs.

Exhibit IV-2

Software and Services Market–France, 1994-1999



Applications management and maintenance, a small sub-sector of professional services, has grown rapidly in popularity over the last few years as vendors offer to support users in-house-developed operational software.

2. Competitive Environment

Historically the larger French vendors of information services (for example Sligos, GSI, CGI, SG2 and Steria, in addition to CGS) have been highly successful in creating a strong indigenous French industry. This is in stark contrast to the computer systems market where Bull, the state aided computer systems manufacturer continues to face major challenges in its traditional product markets, and is taking steps to transform itself into a largely services led firm, in its build up to privatisation.

Exhibit IV-3 lists the leading 30 vendors in the French software and services market in 1993. The high proportion of these vendors in French ownership is clear from this exhibit. Eight companies listed are of US origin. France is the only European country to maintain a strong national presence in its home market.

Lists of leading vendors for each market sector are shown at the end of Appendix A. These exhibits list the leading vendors in each of the separately defined delivery modes including separate vendor analyses within the network services area for electronic information services and network application services.

Exhibit IV-3

Leading Vendors — Software and Services France, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenues (FF Millions)	Market Share (%)
1	IBM	US	7,940	7.6
2	Cap Gemini Sogeti	France	2,980	2.9
3	Groupe Bull	France	2,160	2.1
4	Sligos	France	1,860	1.8
5	Axime	France	1,790	1.7
6	Microsoft	US	1,760	1.7
7	EDS	US	1,700	1.6
8	Reuters	UK	1,680	1.6
9	Digital	US	1,570	1.5
10	GSI	France	1,545	1.5
11	Sema Group	France	1,465	1.4
12	Telesystemes	France	1,435	1.4
13	Syseca (Thomson)	France	1,360	1.3
14	CGI	France	1,185	1.1
15	SG2	France	1,075	1.0
16	Steria	France	975	0.9
17	Alcatel TiTn	France	895	0.9
18	CISI	France	790	0.8
19	CCMX	France	785	0.8
20	Euriware	France	780	0.8
21	Sopra	France	700	0.7
22	AT&T	France	700	0.7
23	Unilog	France	680	0.7
24	Andersen Consulting	US	670	0.6
25	Computer Associates	US	655	0.6
26	Altran	France	555	0.5
27	Fininfor	France	540	0.5
28	Novell	US	535	0.5
29	Siemens-Nixdorf	Germany	535	0.5
30	IBSI	France	530	0.5

**Software and Services excludes equipment Services*

Source: INPUT

One of the most interesting developments in the French industry has been Sogeti's move into management consultancy with the formation, through acquisitions, of Gemini Consulting. CGS and Gemini are managed separately, but the objective is to build business of mutual interest. Synergy between CGS and Gemini Consulting is reported to be growing, with Gemini identifying a wide range of business process re-engineering opportunities. Gemini Consulting grew its revenues over 40% in 1993.

B
Germany — Market Commentary

1. Information Services Industry

Germany has by far the largest population in Europe but has only the second largest information services market (including equipment maintenance) in Europe, with a total value of DM34 billion ($20 billion) in 1994.

Exhibit IV-4 provides an analysis of the German market by industry, cross industry and generic sectors, the latter being equipment services, system software products and utility and other processing services market sectors.

Exhibit IV-4

Information Services Industry Analysis Germany, 1993;

Market Sector	Market Size (DM Millions)	Percent of Total
Total Information Services	32,700	100
Industry Sector Total	17,800	54
Discrete Manufacturing	3,555	11
Process Manufacturing	1,580	5
Transportation	765	2
Utilities	415	1
Telecommunications	390	1
Retail Distribution	630	2
Wholesale Distribution	835	3
Banking & Finance	3,830	12
Insurance	1,445	4
Healthcare	895	3
Education	255	1
Local Government	740	2
Central Government	940	3
Business Services	855	3
Other Industries	745	2
Cross-Industry Sectors Total	1,700	5
Accounting	165	1
Education & Training	16	0
Engineering & Scientific	40	0
Human Resources	50	0
Office Systems	190	1
Planning & Analysis	155	0
Other Cross-Industry	1,050	3
Generic Sectors Total	13,200	40
Equipment Services	7,250	22
System Software Products	5,100	16
Utility and Other Processing	430	1
Other Electronic Info Services	435	1

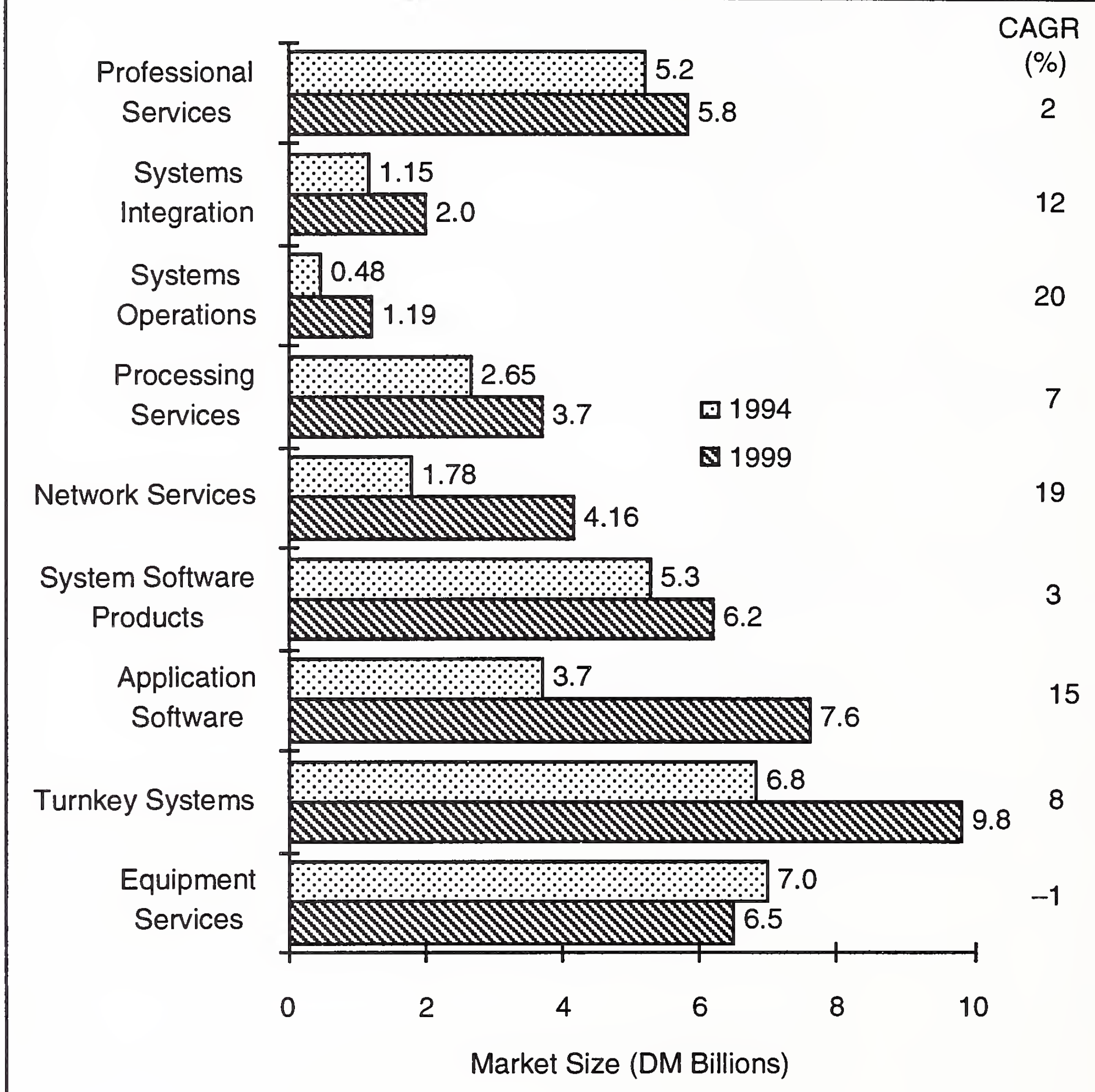
**Software and Services excludes equipment Services*

Source: INPUT

The German information services market is analysed by major delivery mode in Exhibit IV-5.

Exhibit IV-5

Software and Services Market, Germany, 1994-1999



Source: INPUT

The German market is estimated to grow at an average of 7% per annum to reach DM 47 billion ($27 billion) by 1999. The development of eastern Germany is not forecast to have significantly increased growth rates for information services in the near-term.

Professional Services firms adopt a lower profile in Germany compared to the other major European national markets. As elsewhere the use of contract labour (body-shopping) has been severely curtailed, reducing the custom software sub-sector growth.

Another delivery mode where Germany lags behind the European average is systems operations. This should not be surprising since Germany has traditionally shown a strong aversion to outsourcing across much of its industry. This aversion has begun to change and it is now clear that outsourcing has become a subject of widespread interest in Germany.

Led by Siemens Nixdorf Informationssystemes (SNI) the German market has always had a strong emphasis on turnkey systems. The longer term forecast growth has been revised down from 11% last year to 8% to reflect dampening of prices in a cost conscious environment.

Detailed forecasts of the components making up each delivery mode are shown in local currency in Appendix B for Germany for the period 1994-1999.

2. Competitive Environment

Exhibit IV-6 lists the top thirty vendors in the German software and services market during 1993. It is compiled using only the information services revenues attributable to the domestic market within Germany excluding exports and excluding revenues from within any parent group companies.

Exhibit IV-6

Leading Vendors — Software and Services Germany, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenues (DM Millions)	Market Share (%)
1	IBM	US	3,090	12.1
2	Siemens-Nixdorf	Germany	1,920	7.5
3	Datev	Germany	940	3.7
4	Digital	US	630	2.5
5	Cap debis	Germany	610	2.4
6	Microsoft	US	590	2.3
7	SAP	Germany	550	2.2
8	Reuters	UK	520	2.0
9	CGS	France	325	1.3
10	HP	US	260	1.0
11	Compunet Computer	Germany	240	0.9
12	Computer Associates	US	235	0.9
13	Fiducia	Germany	220	0.9
14	Ploenzke-Gruppe	Germany	220	0.9
15	Oracle	US	205	0.8
16	Novell	US	195	0.8
17	Software AG	Germany	190	0.7
18	Alldata	Germany	170	0.7
19	Taylorix	Germany	165	0.6
20	Intergraph	US	165	0.6
21	EDS	US	155	0.6
22	ESG	Germany	145	0.6
23	Lotus	US	130	0.5
24	Unisys	US	130	0.5
25	AT&T	US	125	0.5
26	Strassle	Germany	125	0.5
27	Sligos	France	120	0.5
28	PDV-Gruppe	Germany	120	0.5
29	Bull	France	115	0.5
30	Andersen Consulting	US	115	0.5

**Software and Services excludes equipment Services*

Source: INPUT

As in nearly every European country, IBM leads in software and services revenues. However, in Germany, it is matched by Siemens-Nixdorf Informationssysteme (SNI).

IBM, SNI and Digital have all continued to make announcements of major staff reductions and plant closures. Employment practices in Germany mitigate against laying off staff. This seems to have slowed difficult decisions on the downsizing of the equipment vendors operations. All these vendors have been re-deploying staff into services roles, but this has not reduced their cost base fast enough to meet new market conditions profitably.

SAP is a uniquely successful European vendor. It established itself during the 1980s as the largest and fastest growing European application software products vendor. It dominates the market for accounting and production management applications based on mainframe architectures in Germany.

The conservative German market remains a difficult one for foreign software products companies to penetrate. While this is particularly true for commercial applications software products, vendors of technical products such as the CAD vendors, Intergraph and Computervision, have met with greater success. Germany remains the largest national market for Intergraph across Europe.

C
United Kingdom — Market Commentary

1. Software and Services Industry

The United Kingdom's information services market is the third largest in Europe, totalling £11 billion ($16 billion) in 1994.

Exhibit IV-7 provides an analysis of the UK market by industry, cross industry and generic sectors, the latter being equipment services, system software products and utility and other processing services market sectors.

Exhibit IV- 7

Information Services Industry Analysis United Kingdom, 1993

Market Sector	Market Size (£ Millions)	Percent of Total
Total Information Services	10,100	100
Industry Sector Total	5,650	56
Discrete Manufacturing	650	6
Process Manufacturing	510	5
Transportation	385	4
Utilities	235	2
Telecommunications	120	1
Retail Distribution	300	3
Wholesale Distribution	190	2
Banking & Finance	1,340	13
Insurance	425	4
Healthcare	305	3
Education	80	1
Local Government	350	3
Central Government	460	5
Business Services	220	2
Other Industries	75	1
Cross-Industry Sectors Total	450	5
Accounting	105	1
Education & Training	25	0
Engineering & Scientific	35	0
Human Resources	50	0
Office Systems	105	1
Planning & Analysis	65	1
Other Cross-Industry	65	1
Generic Sectors Total	4,000	40
Equipment Services	2,450	24
System Software Products	1,150	11
Utility and Other Processing	125	1
Other Electronic Info Services	275	3

**Software and Services excludes equipment Services*

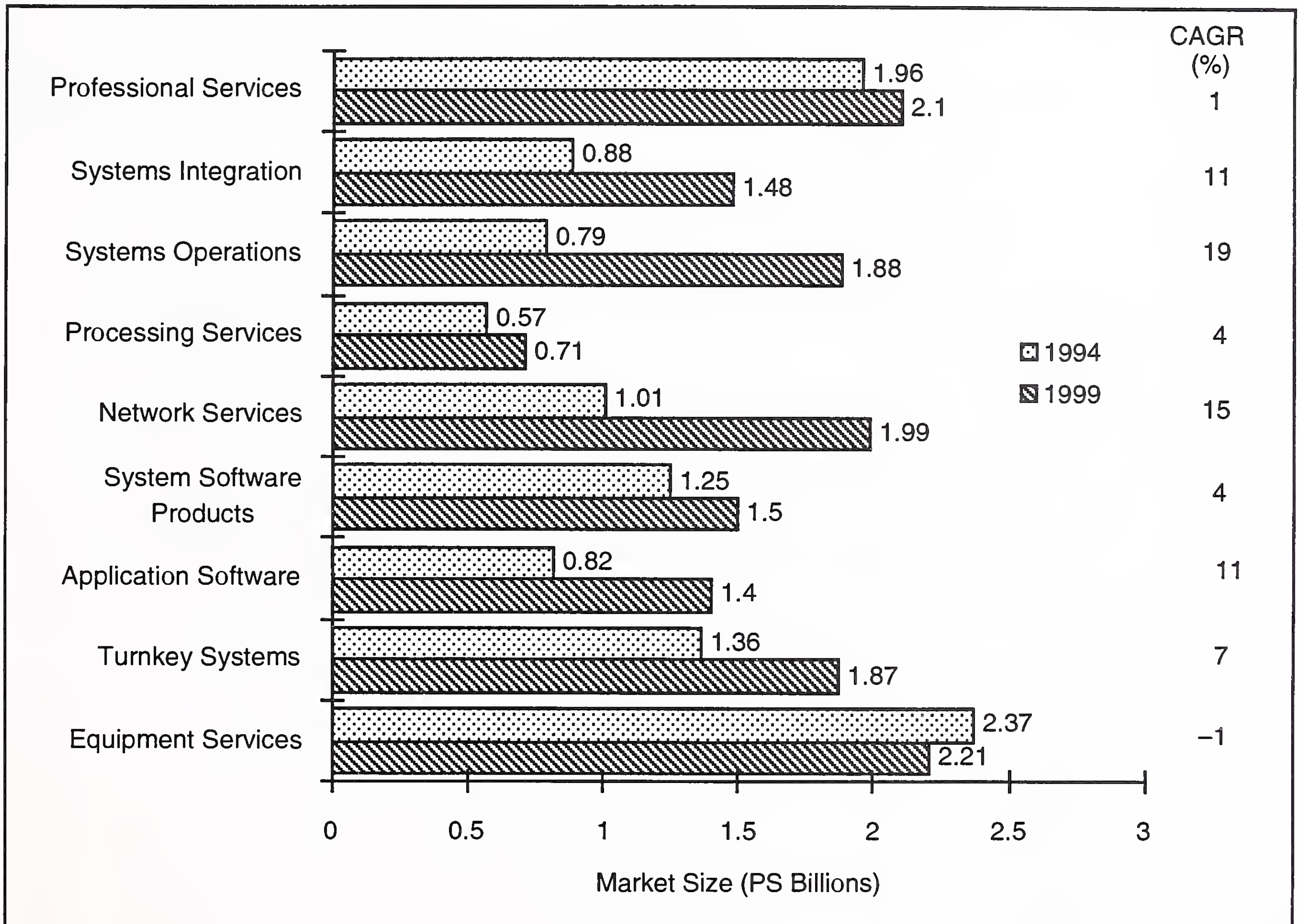
Source: INPUT

INPUT forecasts that the UK market for information services will grow at an average of 7% per annum to £15 billion ($22 billion) by 1999. This growth reflects an improved general economic outlook but also recognises the highly competitive nature of the IT market in the UK.

Exhibit IV-8 gives the detailed forecast by delivery mode in local currency. Overall the UK market for information services is forecast to grow slightly faster than the European average.

Exhibit IV-8

Software and Services Market — United Kingdom, 1994-1999



Source: INPUT

The professional services sector in the UK is shrinking slightly primarily due to continued falling demand for custom software development and contract staff. New development tools are improving programmer productivity, but customers are giving preference to standard solutions. These come either in the form of application packages or as turnkey systems or systems integration projects based on such packages.

The systems integration market is forecast to show comparatively low level short-term growth in the UK, because of the postponement of major projects resulting from recession induced decisions. Growth is forecast to improve over the next five years.

The UK is estimated to account for 36% of the European market for systems operations, and this leadership position is forecast to be even further fuelled by the continuing impact of deflationary forces with users keen to fix their computing costs for a period of years. The culture of the UK also shows a greater propensity to outsourcing than is typically found in continental Europe.

The UK network services market is two to five years ahead of the rest of Europe, especially in developing services such as EDI and electronic commerce. Part of this is due to the influence of U.S. vendors in the UK, part is the continuing strength of the City of London in financial services, a sector with heavy demand for this type of service.

2. Competitive Environment

Exhibit IV-9 lists the top thirty vendors of software and services in the United Kingdom for 1993. It is compiled using only the software and services revenues attributable to the domestic market in the UK, excluding exports and excluding revenues from within any parent group companies.

Exhibit IV-9

Leading Vendors — Software and Services UK, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenues (£ Millions)	Market Share (%)
1	IBM	US	760	9.7
2	ICL (Fujitsu)	UK (Japan)	530	6.7
3	Digital	US	280	3.5
4	Reuters	UK	270	3.4
5	Sema Group	France	210	2.7
6	Hoskyns (CGS)	UK (F)	200	2.5
7	Andersen Consulting	US	190	2.4
8	EDS	US	190	2.4
9	AT&T	US	170	2.2
10	Oracle	US	150	1.9
11	Microsoft	US	150	1.9
12	P&P	UK	140	1.8
13	ACT Group	UK	135	1.7
14	Syntegra	UK	130	1.6
15	Cray Electronics	US	130	1.6
16	Logica	UK	125	1.6
17	Computer Associates	US	95	1.2
18	Misys	UK	90	1.1
19	MDIS	US	85	1.1
20	Data Sciences	UK	80	1.0
21	HP	US	80	1.0
22	Coopers & Lybrand	US	65	0.8
23	Unisys	US	65	0.8
24	Bull	France	65	0.8
25	CSC	US	60	0.8
26	Easams	UK	60	0.8
27	Dun & Bradstreet	US	55	0.7
28	JBA	UK	55	0.7
29	Kalamazoo	UK	55	0.7
30	Telerate	US	55	0.7

**Software and Services excludes equipment Services*

Source: INPUT

In the UK, IBM is now closely followed by ICL. ICL is one of the most profitable of the equipment vendors operating in Europe. ICL is particularly strong in the retail and public sectors in the United Kingdom. Like most other equipment manufacturers ICL is increasingly active in the systems integration and systems operations delivery modes.

Overall the UK information services market is dominated by US-owned organisations which account for about 53% of the revenues shown.

D
Italy — Market Commentary

1. Software and Services Industry

Although the Italian economy is considered to be the third largest in Europe, its information services market is only the fourth largest after France, Germany and the United Kingdom. Thus the Italian information services market is still only about 60% of the level of the United Kingdom market and less than half that of France, the largest country market in Europe.

To date, with perhaps the exception of Olivetti, Italian information services firms have made little impact outside of their home market. Finsiel, the largest Italian vendor, ranks in revenue as one of the top ten independent information services firms in Europe, but over 90% of its business is domestic.

Exhibit IV-10 provides an analysis of the Italian market by industry, cross industry and generic sectors, the latter being equipment services, system software products and utility and other processing services market sectors.

Exhibit IV-10

Software and Services Industry Analysis, Italy, 1993

Market Sector	Market Size (Lira Millions)	Percent of Total
Total Information Services	15,000	100
Industry Sector Total	7,950	53
Discrete Manufacturing	1,195	8
Process Manufacturing	650	4
Transportation	455	3
Utilities	335	2
Telecommunications	235	2
Retail Distribution	225	2
Wholesale Distribution	295	2
Banking & Finance	1,280	9
Insurance	475	3
Healthcare	465	3
Education	120	1
Local Government	585	4
Central Government	905	6
Business Services	410	3
Other Industries	320	2
Cross-Industry Sectors Total	875	6
Accounting	205	1
Education & Training	30	0
Engineering & Scientific	60	0
Human Resources	145	1
Office Systems	185	1
Planning & Analysis	175	1
Other Cross-Industry	75	1
Generic Sectors Total	6,125	41
Equipment Services	3,500	23
System Software Products	2,300	15
Utility and Other Processing	125	1
Other Electronic Info Services	200	1

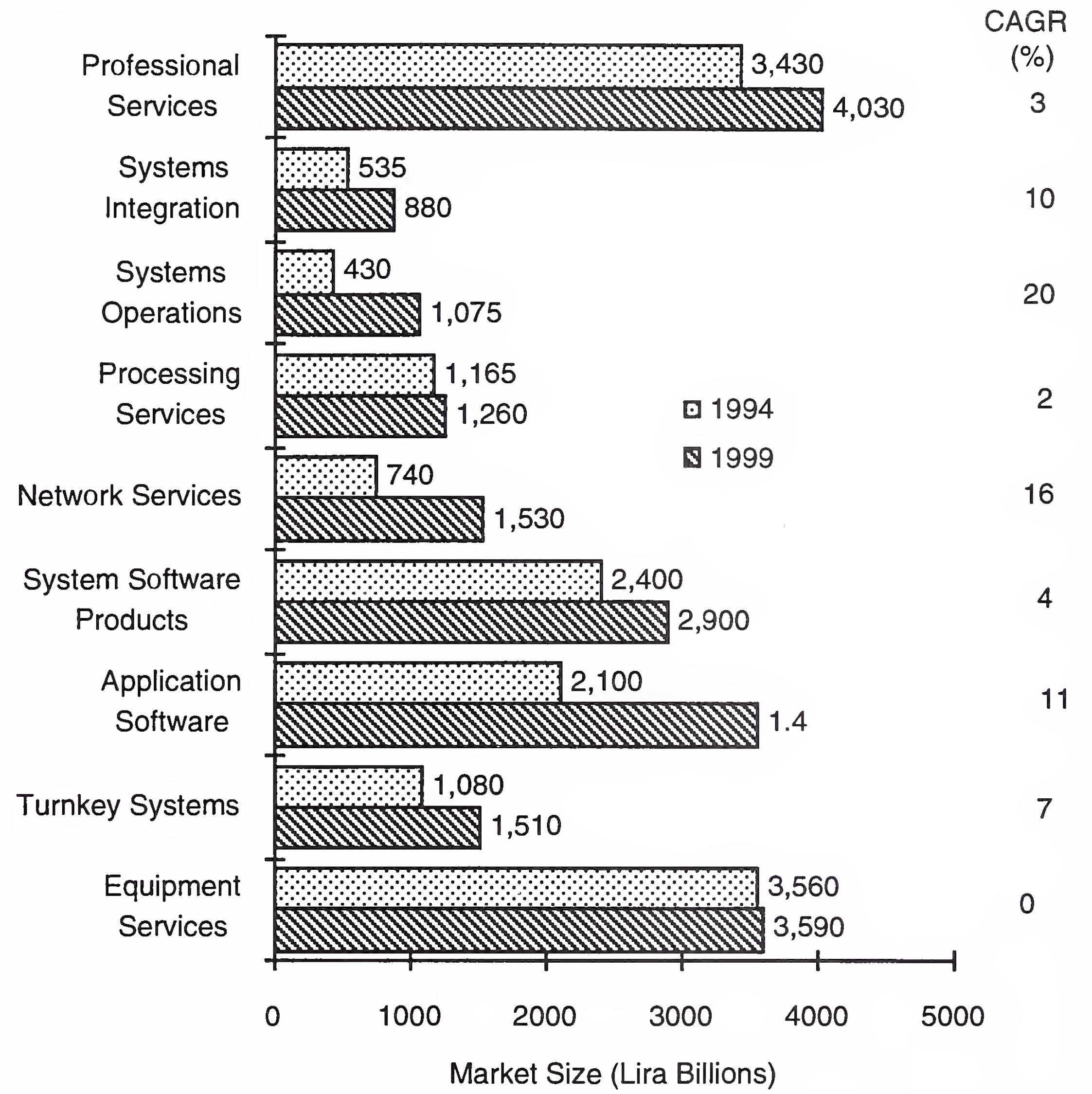
**Software and Services excludes equipment Services* Source: INPUT

The Italian information Services industry, following strong growth (around 30% per annum) throughout the 1980's is expected to only show 6% annual average growth between 1994 and 1999. The market size in 1994 is estimated at Lira 15.5 trillion ($9 billion).

The market forecast is shown in Exhibit IV-10 for all nine information services delivery modes. Demand for computer software and services, once largely unaffected by macroeconomic and general investment trends, has now reached a size and level of penetration which subjects it strongly to these influences.

Exhibit IV-11

Software and Services Market — Italy, 1994-1999



Source: INPUT

In comparison with the whole of Europe the Italian market is particularly strong in both software products sectors. This despite a reputation within Italy of software product copying being a widely accepted practice.

Professional Services is another delivery mode which represents a larger share of the overall information services market in Italy than in the whole of Europe. Correspondingly the turnkey systems sector is proportionally lower in Italy, only 7% of the market compared to a European average of 12%.

2. Competitive Environment

Exhibit IV-11 lists the leading thirty organisations active in the Italian software and services market. This exhibit demonstrates a high representation of indigenous vendors with the exception of foreign owned computer system vendors.

Exhibit IV-12

Leading Vendors — Software and Services Italy, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenues (Lira Millions)	Market Share (%)
1	Finsiel	Italy	1,460	12.8
2	IBM	US	1,410	12.3
3	Olivetti	Italy	980	8.6
4	Digital	US	350	3.1
5	Reuters	UK	220	1.9
6	Microsoft	US	220	1.9
7	Cerved	Italy	180	1.6
8	Database Informatica	Italy	180	1.6
9	Andersen Consulting	US	170	1.5
10	Bull	France	160	1.4
11	Siemens-Nixdorf	Germany	145	1.3
12	Computer Associates	US	140	1.2
13	Cap Gemini Sogeti	France	125	1.1
14	Datamat	Italy	110	1.0
15	S&M Group	Italy	110	1.0
16	Engineering	Italy	105	0.9
17	HP	US	75	0.7
18	Novell	US	75	0.7
19	Syntax (Olivetti)	Italy	70	0.6
20	Lombardia Informatica	Italy	70	0.6
21	ITP	Italy	70	0.6
22	Unisys	US	65	0.6
23	Logica	UK	65	0.6
24	Lotus	US	65	0.6
25	Oracle	US	60	0.5
26	Sopin	Italy	60	0.5
27	CDS	Italy	55	0.5
28	Sicit	Italy	55	0.5
29	EDS	US	55	0.5
30	Wordperfect	US	55	0.5

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

Finsiel was the leading information services vendor with Italian non-captive revenues of nearly one and a half billion in 1993. Finsiel's direct majority state ownership was changed in 1993 to put it under the control of the state-owned telephone company STET. Finsiel controlled some 13% of the overall Italian market in 1993, and specialises in processing services and customised software development. Over 50% of its total revenues come from government clients, and it is trying to diversify into other commercial sectors.

Olivetti was the third largest information services vendor in 1993 with revenues of nearly one billion lira. Despite falling revenues and losses in the parent group, software and services revenues grew strongly through its successful Oliservice organisation. particularly in the areas of multi-vendor maintenance and environmental services.

E
Sweden — Market Commentary

1. Software and Services Industry

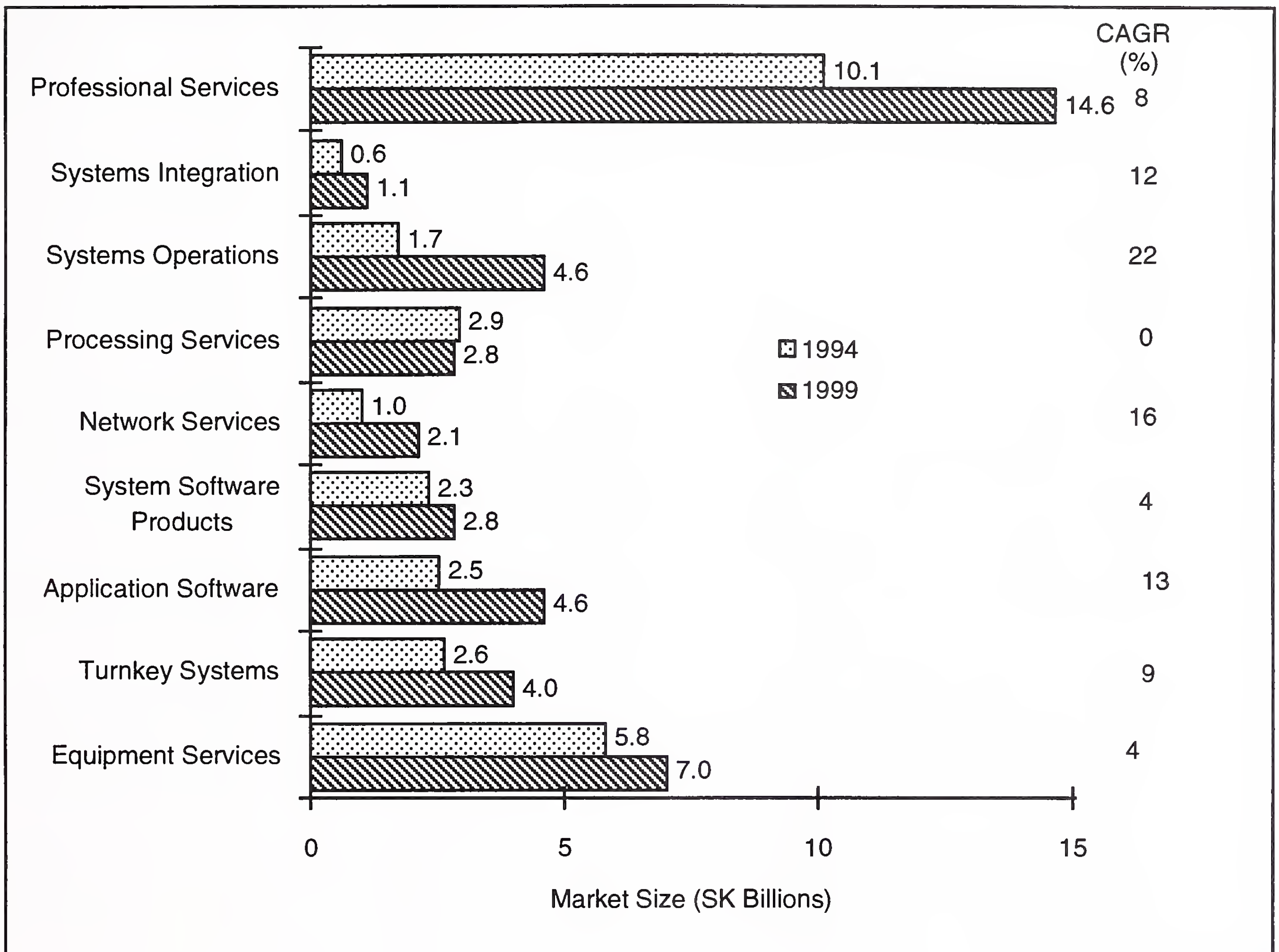
Sweden is the fifth largest software and services market in Europe, estimated at SEK 29.5 billion ($3.5 billion) in 1994.

INPUT forecasts that the Swedish market for software and services grow at an average 8% per annum to reach SEK 43 billion ($5.2 billion) by 1999.

Exhibit IV-13 provides a detailed forecast by INPUT delivery mode in local currency. Professional services forms the largest sector of the Swedish software and services market accounting for over 42% of the total in 1994 compared with the overall European average figure for professional services market share of 28%.

Exhibit IV-13

Software and Services Market — Sweden, 1994-1999



Source: INPUT

2. Competitive Environment

Exhibit IV-14 lists the top thirty vendors of software and services in Sweden for 1993. It is compiled using only the software and services revenues attributable to the domestic market in the UK, excluding exports and excluding revenues from within any parent group companies.

Exhibit IV-14

Leading Vendors–Software and Services Sweden, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenues (SK Millions)	Market Share (%)
1	IBM	US	1,920	8.5
2	Cap Programmator (CGS)	France	1,270	5.6
3	Sapia	Sweden	1,050	4.7
4	Apiron	Sweden	710	3.2
5	SKD Foretagen	Sweden	710	3.2
6	Digital	US	680	3.0
7	WM Data Nordic	Sweden	590	2.6
8	EDS	US	540	2.4
9	Enator	Sweden	410	1.8
10	Reuters	UK	355	1.6
11	Computer Associates	US	350	1.6
12	Sema Group	France	330	1.5
13	Lantbruksdata	Sweden	320	1.4
14	Microsoft	US	310	1.4
15	ICL (FUjitsu)	UK	305	1.4
16	Oracle	US	300	1.3
17	Andersen Consulting	US	250	1.1
18	Communicator AB	Sweden	210	0.9
19	Conor Information	Sweden	210	0.9
20	IBS	Sweden	200	0.9
21	Industri-Matematik	Sweden	190	0.8
22	Siemens-Nixdorf	Germany	180	0.8
23	Unisys	US	160	0.7
24	Infonet	Belgium	150	0.7
25	Intergraph	US	145	0.6
26	CRS Datacraft	Sweden	100	0.4
27	Maldata	Sweden	100	0.4
28	Olivetti	Italy	100	0.4
29	Ask	US	95	0.4
30	HP	US	90	0.4

**Software and Services excludes equipment Services*

Source: INPUT

F
Denmark — Market Commentary

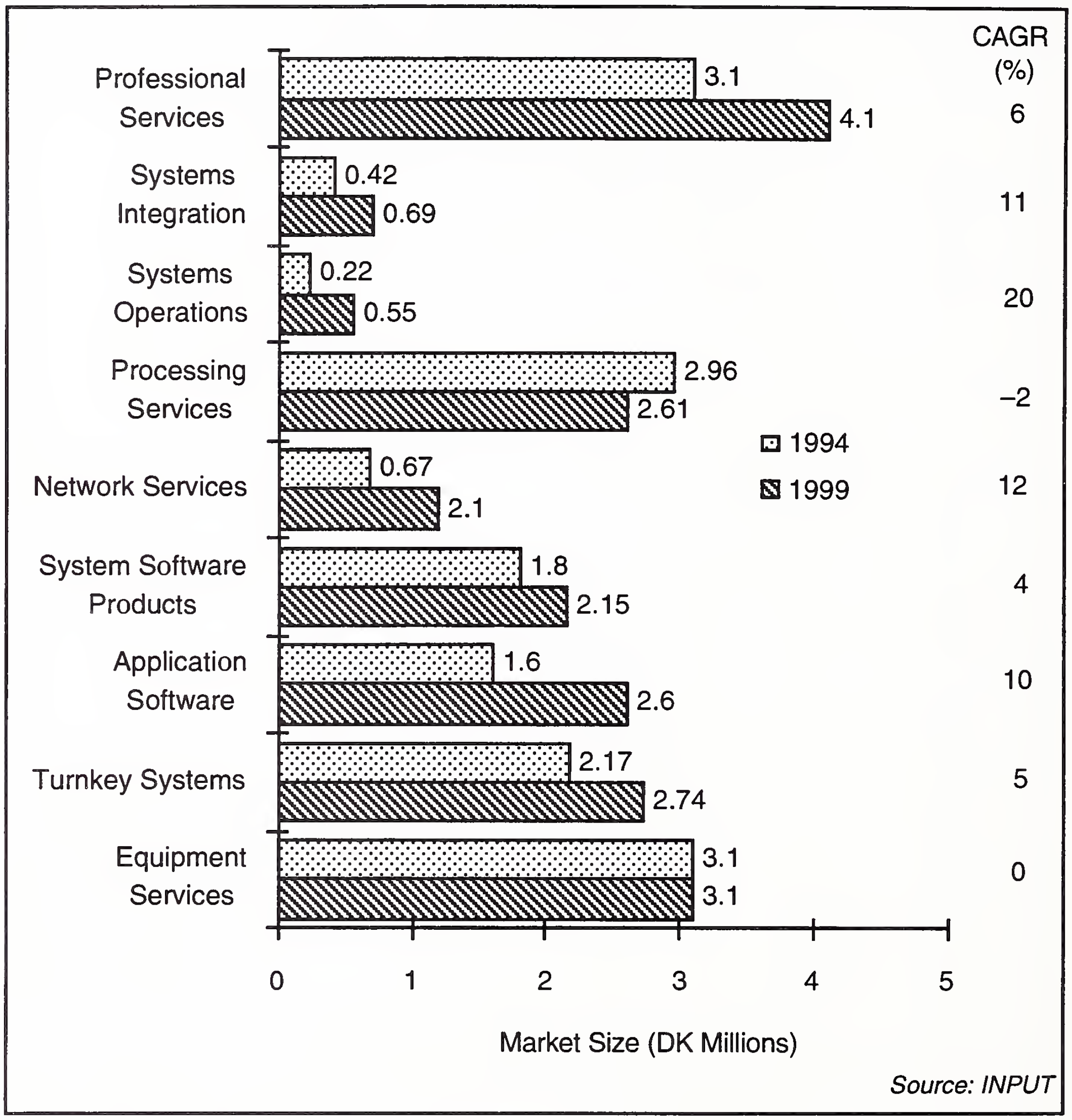
1. Software and Services Industry

The software and services industry in Denmark is closely linked to the state of the country's economy. INPUT forecasts that the total Danish information services market reached $2.35 billion (or ECU 2.1 billion) in 1994, and will grow at an average of 5% per annum to reach almost $3 billion by 1999.

Exhibit V-15 shows the forecast analysed by INPUT delivery mode in local currency.

Exhibit IV-15

Software and Services Market — Denmark, 1994-1999



The main opportunity markets (all with forecast growth rates of over 10%) are in network services, systems integration, systems operations and applications software products. The professional services sector shows strong interest in CASE tools and the application of object-oriented systems techniques. But professional services spending in 1993 was 5% down on INPUT's previous forecast due to customers cutting back on consulting and training services.

Systems Integration in Denmark has half the penetration of Europe as a whole, again due to the small number of large project opportunities. Its forecast growth rate of 11% pa is below the European average.

Systems operations is less favoured in Denmark than in the larger country markets of Europe, due to the smaller number of large opportunities. However, t is now expected to grow at 20% pa, with public sector and utilities contracts offering the most opportunities.

Processing Services constituted 24% of the 1993 market, which is more than double the European average but is forecast to fall at 2% CAGR. Processing Services in Denmark is still important especially in the agricultural and financial services sectors.

The Network Applications sector is expected to grow at annual rate of 18% pa over the five-year period to 1999. The use of network services is more highly developed in Denmark than in some of the other country markets, both large and small. The public telecommunications authority, Danish Telecom was reconstituted to include the previously local telephone companies. It is expected to increase its activities in Value-added network Services (VANS).

The Applications Software Products sector in Denmark is forecast to grow at 10% per annum. The attractiveness of standard products is expected to increase in the midrange and minicomputer sectors, as open systems based on UNIX and networks are already accepted in the Danish market. Downsizing is not a major issue in Denmark since there are few large systems installed.

2. Competitive Environment

Exhibit IV-16 lists the top ten vendors in the Danish market as measured on their calendar year 1993 revenues. It has been compiled using only the information services revenues attributable to the domestic market in Denmark, and excludes exports and revenues gained from within any parent group companies. Such captive markets exclude vendors such as Datacentralen from the list.

As in most other countries IBM heads the list in information services revenues, assisted by its large component of systems software product revenues. IBM's strengths in Denmark include also PC-level product sales, systems integration, processing and network services. IBM has a joint-Venture participation with KTAS, the Copenhagen telephone company in the danNet processing and network services company.

Exhibit IV-16

Leading Vendors — Software and Services Denmark, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenues (DK Millions)	Market Share (%)
1	IBM	US	1,710	13.9
2	Kommundata	Sweden	1,430	11.6
3	PBS	Denmark	830	6.7
4	Digital	US	220	1.8
5	Computer Associates	US	210	1.7
6	Oracle	US	200	1.6
7	Microsoft	US	190	1.5
8	Danet	Denmark	150	1.2
9	JDC Data	Denmark	135	1.1
10	ICL (Fujitsu)	UK	135	1.1

**Software and Services excludes equipment Services*

Source: INPUT

G
Norway — Market Commentary

1. Software and Services Industry

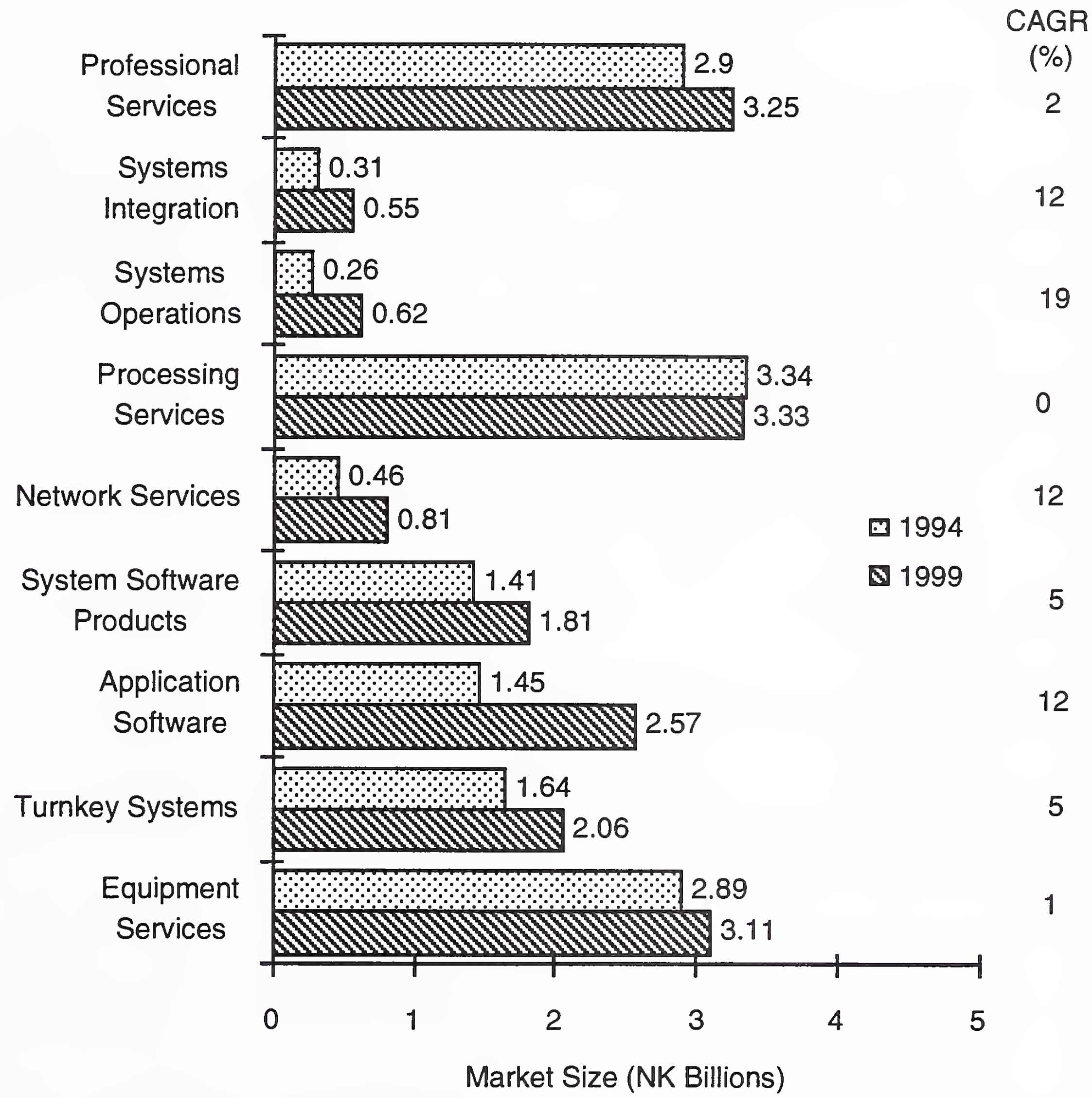
Norway is the seventh largest software, services and maintenance market in Europe, estimated at NOK 14.7 billion ($2 billion) for 1994.

INPUT forecasts that the Norwegian market for software and service will grow at 4% per annum to reach $2.4 billion (or ECU 2.2 billion) by 1999.

Exhibit IV- 17 provides a detailed forecast by INPUT delivery mode in local currency.

Exhibit IV-17

Software and Services Market — Norway, 1994-1999



Source: INPUT

In Norway the largest sector of the software and services market in 1993 was represented by processing services, accounting for about 23% of the total market. However, no growth in the processing services sector is forecast, between 1994 and 1999 which implies a decline in real terms.

The primary growth opportunities in the Norwegian market lie in the areas of systems operations, systems integration, applications software products and network applications.

2. Competitive Environment

Exhibit IV- 18 lists the leading ten software and services vendors in the Norwegian market during 1993. This listing is compiled using only the software and services revenues attributable to the domestic market in Norway, excluding exports and excluding revenues from within any parent group or subsidiaries.

Exhibit IV-18

Leading Vendors — Software and Services Norway, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenues (NK Millions)	Market Share (%)
1	IBM	US	1,220	10.7
2	NIT	Norway	1,120	9.8
3	Fellesdata	Norway	540	4.7
4	Bankenes Betalingssentral	Norway	530	4.6
5	Novit	Norway	400	3.5
6	Rogalandsdata	Norway	250	2.2
7	EDB	Norway	240	2.1
8	Computer Associates	US	200	1.8
9	Digital	US	195	1.7
10	Andersen Consulting	US	180	1.6

**Software and Services excludes equipment Services*

Source: INPUT

Within the Norwegian software and services market six of the leading ten vendors are indigenous companies.

NIT, the leading indigenous firm is dedicated to the local and national government in Norway. The primary activities of this company are the provision of processing services which account for about 75% of revenue. It also provides professional services which contribute about 22% of revenue, the remainder being derived from network services.

Fellesadata primarily supplies Processing Services to the savings bank sector in Norway.

H
Finland — Market Commentary

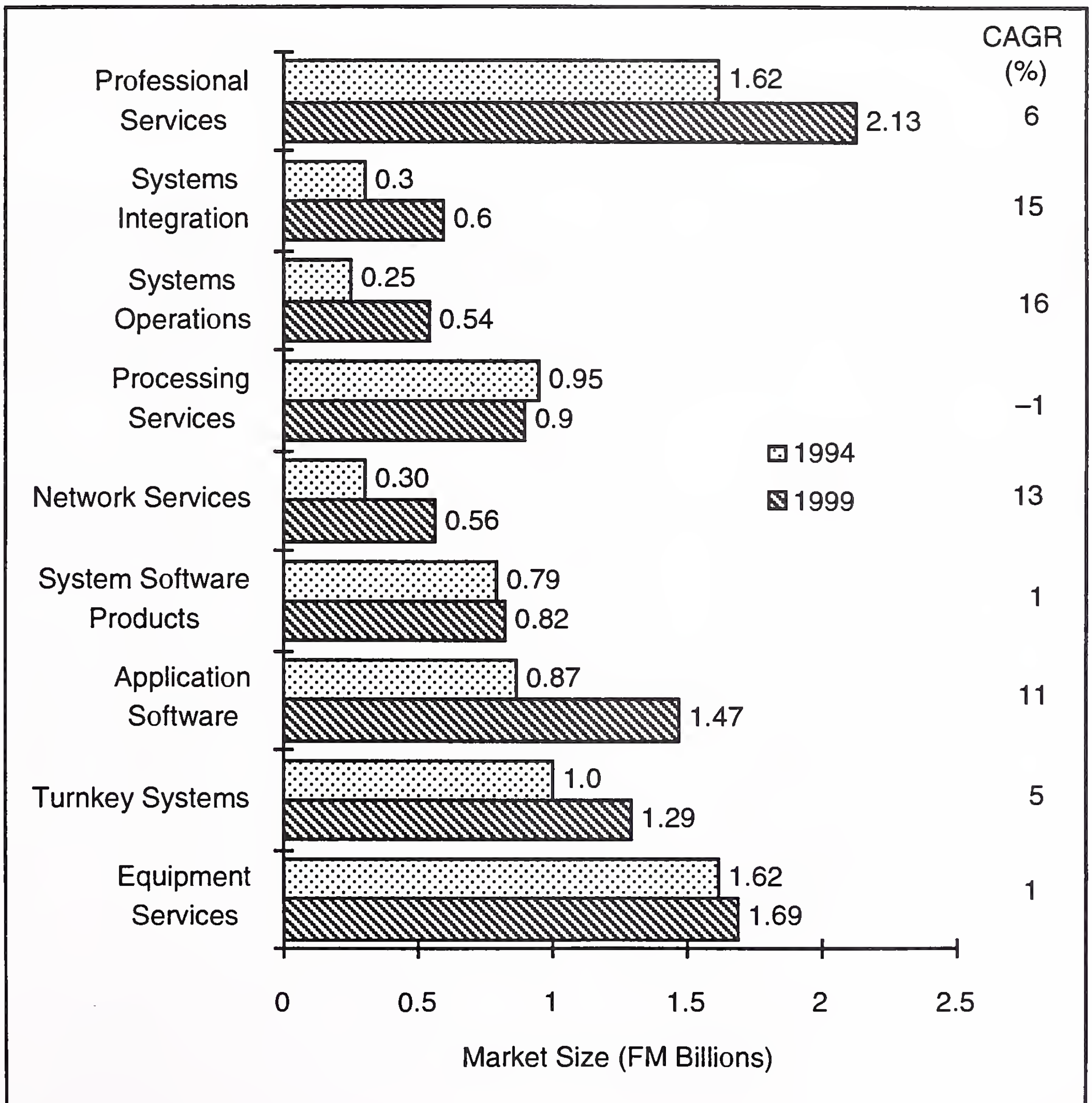
1. Software and Services Industry

The software and services market in Finland is assessed at $1 billion in 1994. The market is forecast to grow at an average of 6% per annum to reach $1.4 billion or ECU 1.3 billion by 1999.

Exhibit IV- 19 shows the forecast by INPUT delivery mode in local currency.

Exhibit IV-19

Software and Services Market — Finland, 1994-1999



Source: INPUT

Demand for custom software development projects and contract staff having fallen in Finland as elsewhere in Europe, is expected to generate 6% growth in professional services over the next five years.

Outsourcing systems operations is expected to continue a healthy growth pattern. This is a market which is generally stimulated by the imposition of tight financial constraints on IT budgets.

Downsizing of hardware investments is expected to lead to further falls in equipment services revenues in Finland.

2. Competitive Environment

Exhibit IV- 20 lists the leading ten information services vendors in the Finnish market as measured on their calendar 1993 revenues. This list has been compiled using only the software and services revenues attributable to the domestic Finnish market, and excludes exports and revenues gained from within any parent group companies.

Exhibit IV-20

Leading Vendors — Software and Services Finland, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenues (FM Millions)	Market Share (%)
1	IBM	US	560	9.5
2	Tietotehdas	Finland	550	9.2
3	VTKK	Finland	390	6.5
4	Digital	US	280	4.7
5	ICL (Fujitsu)	UK	220	3.7
6	Elorg-Data	Finland	160	2.7
7	Computer Associates	US	150	2.5
8	Paakaupunkiseudom	Finland	140	2.3
9	Cap Gemini Sogeti	France	115	1.9
10	Kunnallistieto	Finland	110	1.8

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

Five of the companies are from Finland itself. IBM, Digital and ICL have increased their penetration of information services markets as hardware markets have suffered from significant deflation. The analysis excludes the equipment Service revenues of these vendors.

The leading two Finnish information Services companies Tietotehdas and VTKK are both long established (1960s) companies which have developed from service bureaux into vendors offering a broad range of capabilities including professional services, equipment supply, processing and network services.

Nokia Data was sold in 1991 to ICL, the UK company now itself 80% owned by Fujitsu of Japan. It is strong in turnkey systems with special strength in the banking and finance sector.

The largest vendor specialising in professional services rather than processing services is the Finnish subsidiary of the Cap Gemini Sogeti group.

I
Netherlands — Market Commentary

1. Software and Services Industry

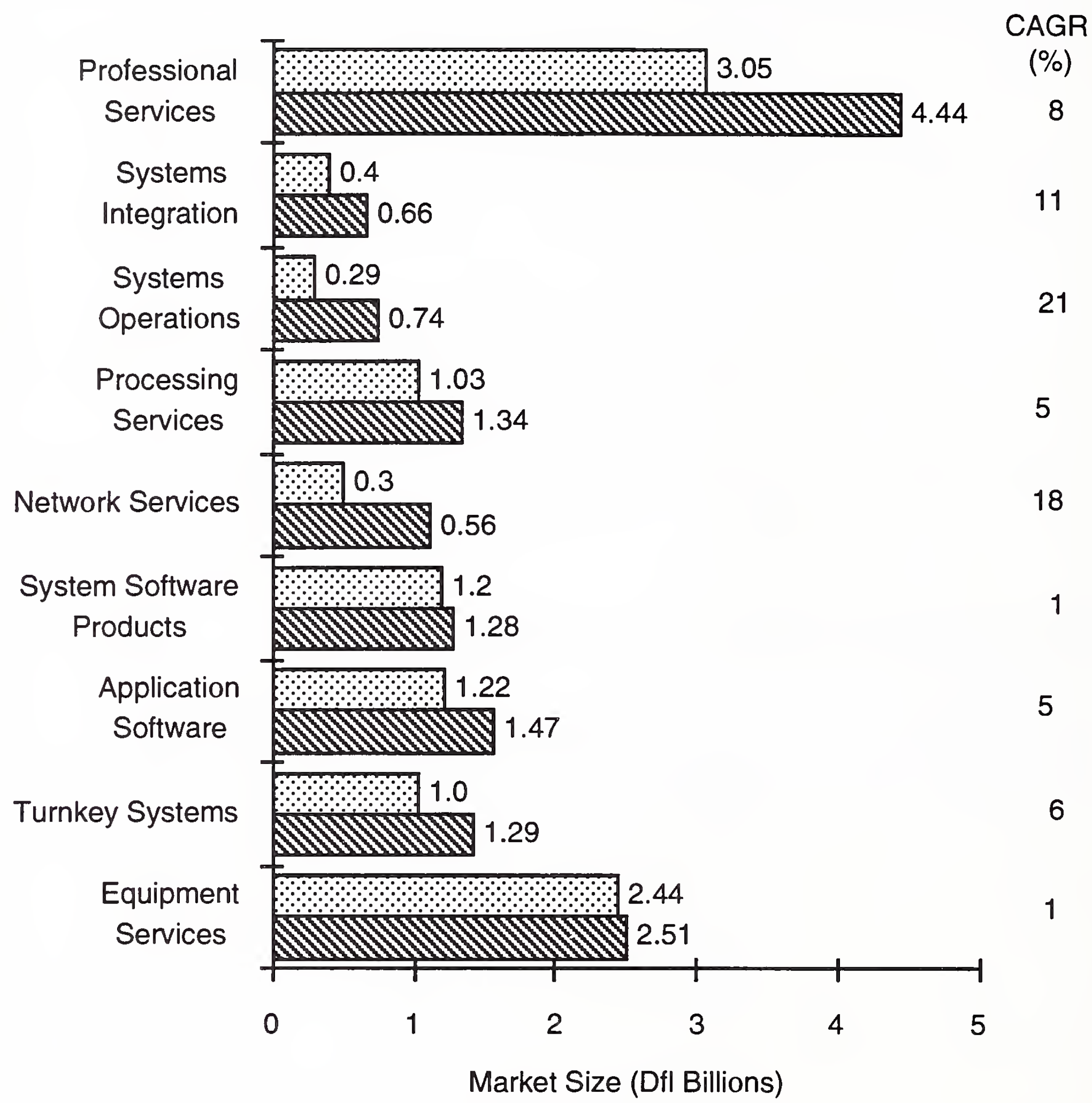
The Information Services market in the Netherlands is the fifth largest in Europe and was Dfl 11.2 billion ($5.8 billion) in 1994.

The Dutch Information Services market is forecast by INPUT to reach $7.8 billion (ECU 7 billion) by 1999. This represents a growth rate averaging 6% per year over the period, a further decrease from the last forecast.

The Netherlands market represents about 6% of the overall European information Services market. Exhibit IV-21 provides the breakdown of the market by service delivery mode.

Exhibit IV-21

Software and Services Market — Netherlands, 1994-1999



Source: INPUT

2. Competitive Environment

Exhibit IV- 22 lists the top ten Vendors in the Dutch market during 1992. It is compiled using only the information services revenues attributable to the domestic market within the Netherlands excluding exports and excluding revenues from within any parent group companies.

Exhibit IV-22

Leading Vendors — Software and Services Netherlands, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Dfl Millions)	Market Share (%)
1	IBM	US	760	9.1
2	Cap Volmac	France	670	8.1
3	Raet	Netherlands	500	6.0
4	RCC	Netherlands	470	5.7
5	Getronics	Netherlands	450	5.4
6	BSO Origin	Netherlands	390	4.7
7	Digital	US	210	2.5
8	CMG	UK	190	2.3
9	Microsoft	US	135	1.6
10	Multihouse	Netherlands	125	1.5

**Software and Services excludes equipment Services*

Source: INPUT

J
Belgium — Market Commentary

1. Information Services Industry

The Belgian information services market is estimated to be ninth largest in Europe at $3 billion (ECU 2.7 billion) in 1994.

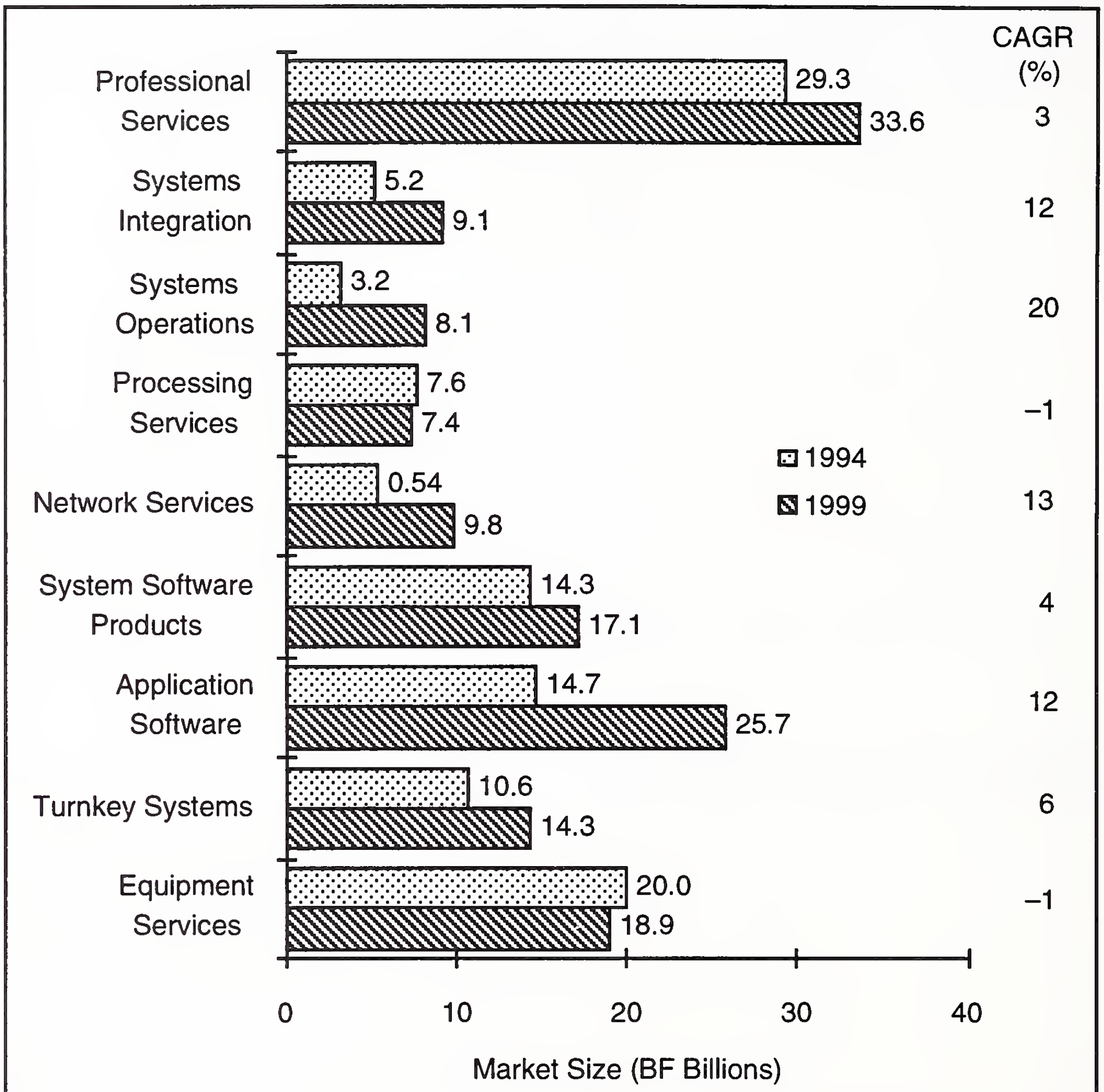
INPUT forecasts that the Belgian market for information services will grow at an average of 6% per annum to reach $4 billion (ECU 3.5 billion) by 1999.

Exhibit IV- 23 gives the detailed forecast by service delivery mode in local currency. The Belgian market has been hit by a rapid decline in demand for custom software development - an element of the professional services delivery mode.

The primary high growth opportunities lie in the area of application solutions, especially application software products, network services, systems operations and systems integration.

Exhibit IV-23

Software and Services Market, Belgium, 1994-1999



Source: INPUT

2. Competitive Environment

Exhibit IV- 24 lists the top ten vendors in the Belgian market during 1993. It is compiled using only the software and service revenues attributable to the domestic market within Belgium, excluding exports and excluding revenues from within any parent group companies.

Exhibit IV-24

Leading Vendors — Software and Services Belgium, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenues (BF Millions)	Market Share (%)
1	IBM	US	7,910	9.2
2	Digital	US	2,720	3.2
3	CSC	US	2,560	3.0
4	Siemens-Nixdorf	Germany	2,430	2.8
5	Dolmen	Belgium	2,100	2.4
6	Computer Associates	US	1,710	2.0
7	Cap Gemini Sogeti	France	1,670	1.9
8	Microsoft	US	1,490	1.7
9	TIS Group	Belgium	1,450	1.7
10	Unisys	US	1,245	1.4

**Software and Services excludes equipment Services*

Source: INPUT

As in nearly every European country IBM leads in information Services revenues. It has vigorously pursued additional business in both software and services in order to counter falling income and margins from its equipment supply and maintenance businesses.

CSC, one of the largest independent software and services vendors in the U.S., established a strong position in Belgium with its acquisition of CIG Intersys in 1989. This acquisition doubled CSC's revenues in Europe at the time. The Belgian subsidiary offers a full range of services specialising in the transport, manufacturing and banking and finance sectors.

K
Switzerland — Market Commentary

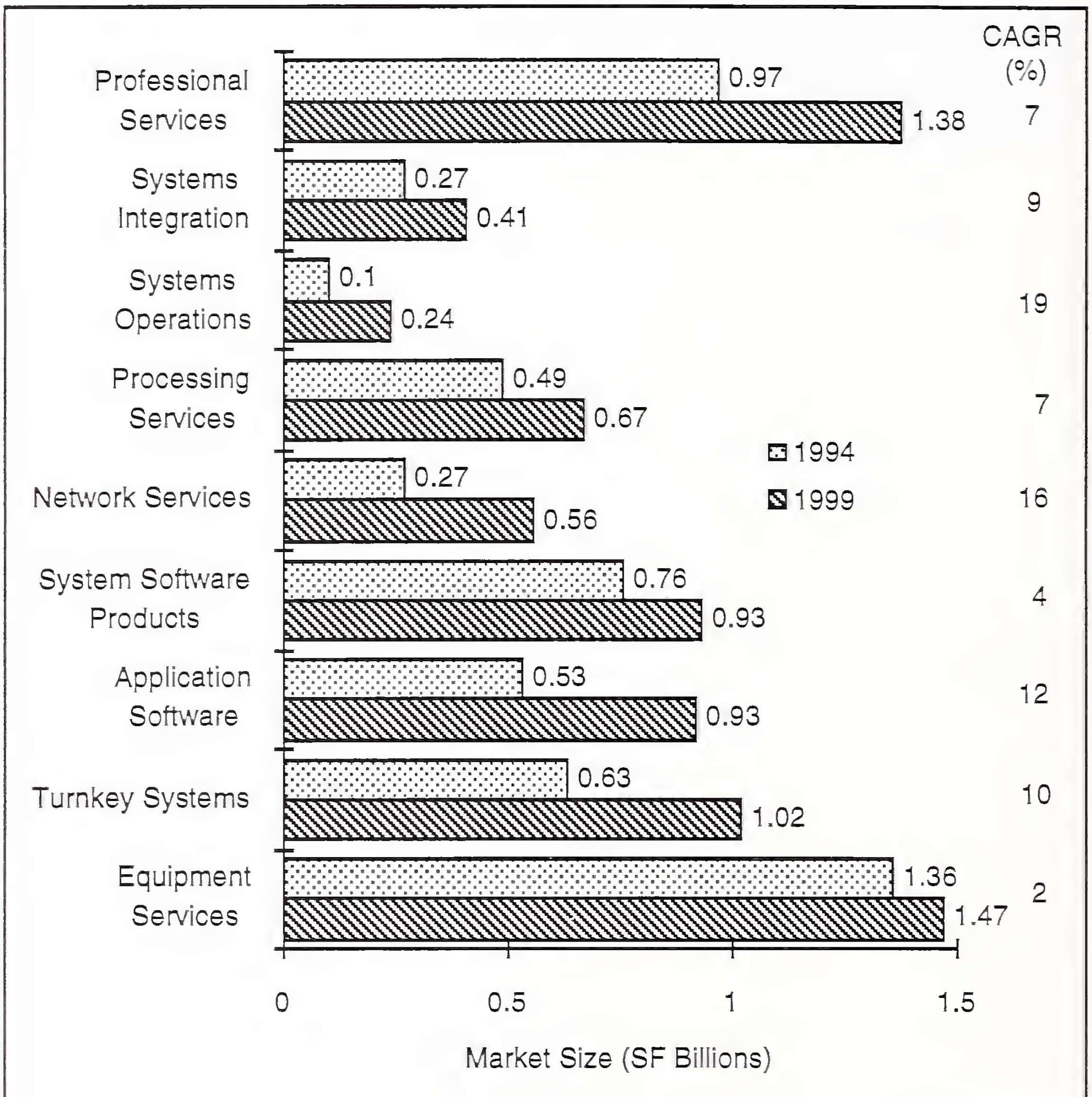
1. Information Services Industry

The Swiss information services market is the eighth largest in Europe with a total size of $3.85 billion (ECU 3.25 billion) in 1994.

Exhibit IV- 25 illustrates the analysis of the market into the nine information service delivery modes.

Exhibit IV-25

Software and Services Market, Switzerland, 1994-1999



Source: INPUT

The Swiss Information Services market is forecast by INPUT to grow to $5.45 billion (ECU 4.6 billion) by 1999. This represents a forecast average annual growth rate of 7%, similar to that of the European market as a whole.

2. Competitive Environment

The top ten vendors in the Swiss market for 1993 are listed in Exhibit IV- 26. This listing is compiled using only the software and services revenues attributable to the domestic market in Switzerland, excluding exports and excluding revenues from within any parent group or subsidiaries.

Exhibit IV-26

Leading Vendors — Software and Services Switzerland, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (SF Millions)	Market Share (%)
1	IBM	US	570	14.9
2	Telekurs	Switzerland	230	6.1
3	Digital	US	190	5.0
4	Fides	Switzerland	100	2.6
5	Reuters	UK	100	2.6
6	Microsoft	US	80	2.1
7	Siemens-Nixdorf	Germany	80	2.1
8	Computer Associates	US	70	1.8
9	AT&T	US	65	1.7
10	ATAG debis Informatik	Switzerland	60	1.6

**Software and Services excludes equipment Services*

Source: INPUT

Telekurs is a major European electronic information services vendor to the banking and finance sector. They provide on-line financial information, trading systems, processing services and related professional services.

An association of largely Swiss banks own Telekurs which is also responsible for the computer centre where all payment transfers between Swiss banks are executed.

Fides Informatics is part of the Fides Group which also includes a Trust Dvision and a Management Consultancy. The company specialises in banking, insurance, healthcare, communications and industrial automation.

L

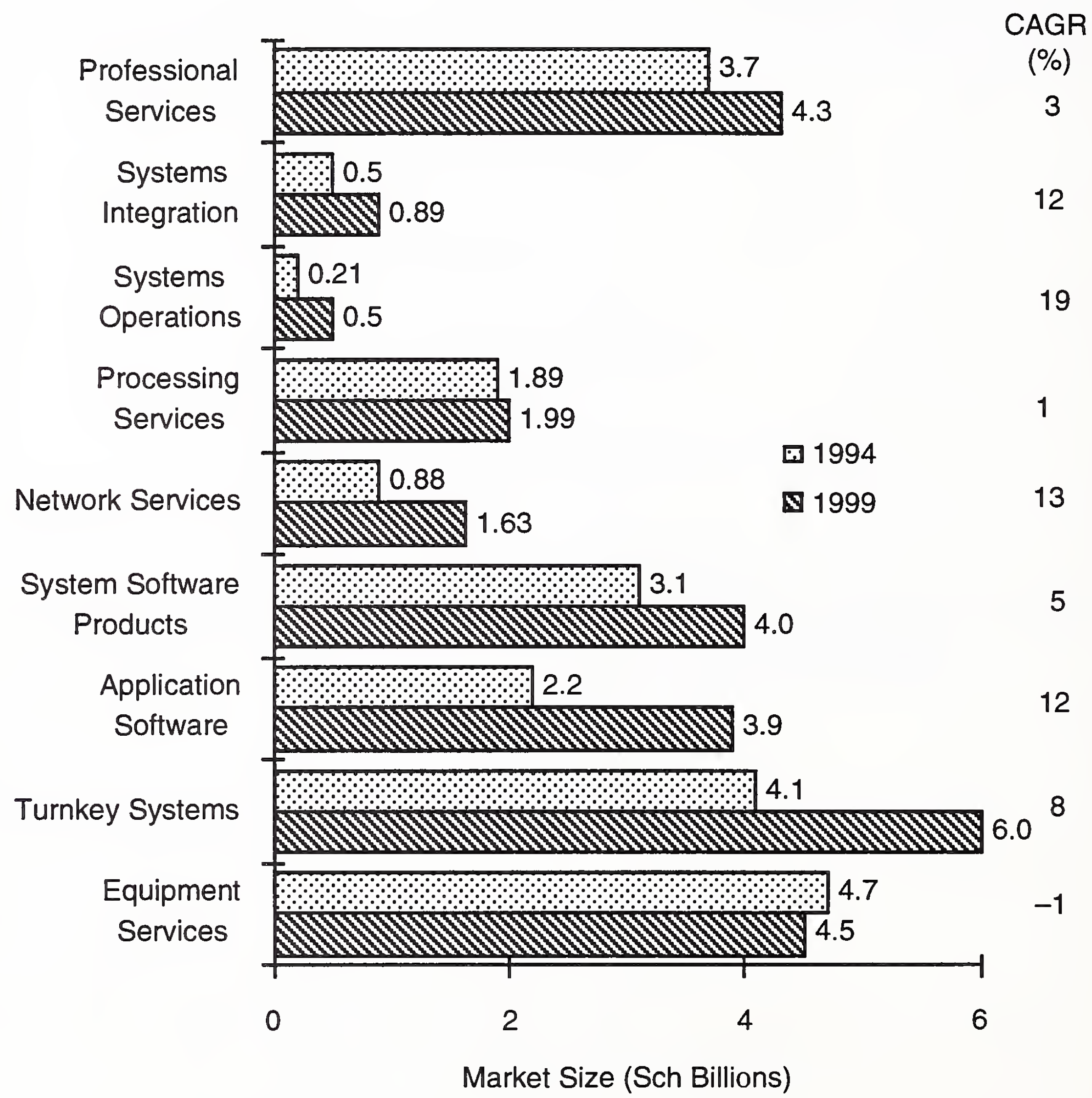
Austria — Market Commentary

1. Information Services Industry

Exhibit IV- 27 provides the analysis of the Austrian market for information Services in local currency broken down by delivery mode.

Exhibit IV-27

Software and Services Market, Austria, 1994-1999



Source: INPUT

The market is forecast to grow from $1.8 billion (ECU 1.6 billion) in 1994 to $2.3 billion (ECU 2 billion) by 1999, an average annual rate of 5%, a rate below last year's forecast of 7%.

In comparison to the overall European market, Austria exhibits similar characteristics to the German market with packaged application solutions, applications software products and turnkey systems, dominant in the business mix.

2. Competitive Environment

Exhibit IV- 28 lists the top vendors in the Austrian market for 1993.

Exhibit IV-28

Leading Vendors — Software and Services Austria, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenues (Sch Millions)	Market Share (%)
1	IBM	US	2,190	14.1
2	Siemens-Nixdorf	Germany	910	5.9
3	Digital	US	880	5.7
4	Management Data	Austria	400	2.6
5	Computer Associates	US	380	2.5
6	EDV	Austria	370	2.4
7	AI Informatics	Austria	310	2.0
8	Microsoft	US	290	1.9
9	Beko	Austria	275	1.8
10	GRZ Linz	Austria	250	1.6

**Software and Services excludes equipment Services*

Source: INPUT

IBM is by far the largest information services Vendor in Austria with the merged Siemens-Nixdorf (SNI) still generating attributable revenues of less than half those of the market leader.

Management Data operates out of Vienna, Innsbruck, Salzburg, Germany, Hungary, UK and Singapore. It has a network of agents across the rest of Europe, Japan and South Africa. Its main specialisation is in International banking applications software products, primarily sold as turnkey systems.

M
Spain — Market Commentary

1. Information Services Industry

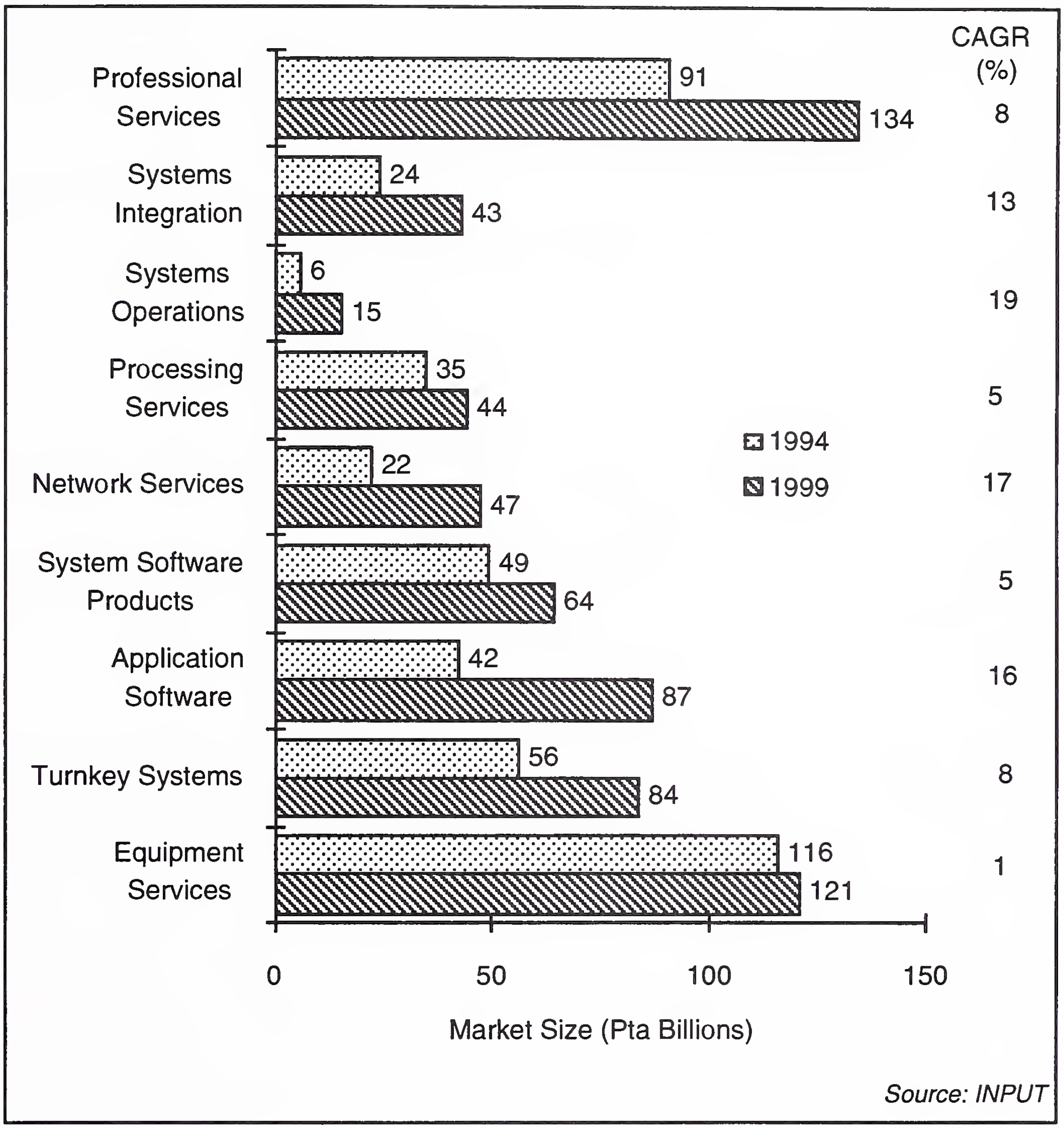
With an information services market of $3.1 billion (ECU 2.8 billion) in 1994, Spain is the seventh largest market in Europe.

The information services industry in Spain is beset by the general difficulties of the economy. It is forecast that the Spanish market will reach about $4.5 billion (ECU 4 billion) by 1999.

Exhibit IV- 29 shows the forecast by delivery mode in local currency. The Spanish market is strong in professional services with IS consulting, systems operations, applications software and network services exhibiting good market growth.

Exhibit IV-29

Software and Services Market, Spain, 1994-1999



The propensity of Spanish companies to opt for a custom developed solution is giving way to greater use of pre-built application products. But custom software project demand is still expected to grow much more rapidly than elsewhere in Europe.

Processing Services is forecast to grow faster (at 5%) than the average for the European market (3%). Processing Services in Spain are still important especially in the financial services sectors of banking, securities and insurance.

Network applications services are expected to show a high growth rate (22% pa) over the five-year period. The use of network services is less highly developed in Spain than in the larger country markets, but Spain is intent on catching up in this as in many other areas. The public telecommunications operator (PTO), Telefonica SA, is making considerable investments in the country's infrastructure and has also a strong presence in the information services industry.

Applications software in Spain is a strong market at the lower end of the system price range where multi-user or networked microcomputers are being installed with proprietary software products from multi-national vendors. The attractiveness of the pre-built solution is likely over our forecast period to increase in the mainframe and minicomputer sectors, as open systems based on UNIX and networks are installed to replace older and larger systems (downsizing).

Turnkey systems has always been a strong sector in Spain due to the number of small systems platforms being sold into the country's large number of relatively small companies. It is expected to continue with good growth as many small enterprises install their first company systems. Average prices for new installations are expected to continue falling.

2. Competitive Environment

Exhibit IV- 30 lists the top ten vendors in the Spanish market as measured on their calendar 1993 revenues. It has been compiled using only the software and services revenues attributable to the domestic market in Spain, and excludes exports and revenues gained from within any parent group companies.

Exhibit IV-30

Leading Vendors — Software and Services Spain, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenues (Pta Millions)	Market Share (%)
1	IBM	US	32,510	10.7
2	Andersen Consulting	US	21,000	6.9
3	Eritel	Spain	13,270	4.4
4	Microsoft	US	7,880	2.6
5	Digital	US	7,460	2.5
6	Sema Group	France	7,180	2.4
7	Reuters	UK	7,120	2.3
8	Siemens-Nixdorf	Germany	6,720	2.2
9	GEIS	US	6,710	2.2
10	HP	US	5,950	2.0

**Software and Services excludes equipment Services*

Source: INPUT

As in many other countries IBM heads the list in software and services revenues, strongly assisted by its large component of systems software product revenues. IBM's strengths in Spain include also PC-level product sales, systems integration and network services.

Eritel is now the largest of the indigenous information services vendors. Eritel is owned by the INI state holding company and Telefonica, the Spanish PTO. Its strategic thrusts are in the areas of systems integration, consultancy and other professional services. The high proportion of foreign vendors illustrates the overall weakness of indigenous firms in the Spanish market.

N
Central and Eastern Europe — Market Commentary

1. Introduction

For the purposes of INPUT's forecasts Central and Eastern Europe is defined as comprising Poland, Hungary, the Czech Republic and Slovakia, Bulgaria and Romania, Estonia, Latvia and Lithuania, the independent states emerging from the break-up of Yugoslavia, Albania and the new Commonwealth of former states of the Soviet Union (Byelorussia, the Russian Federation, Ukraine etc.).

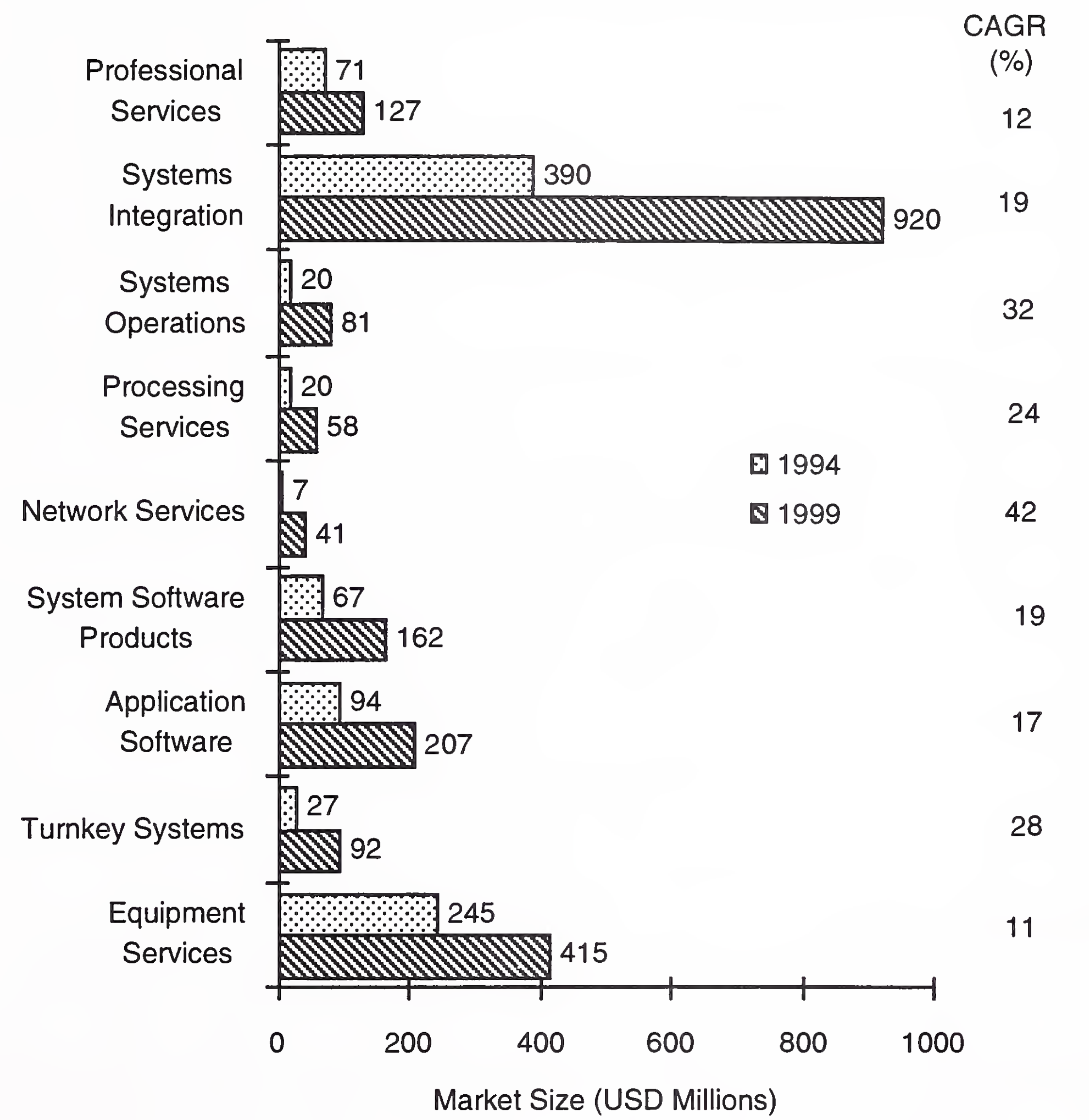
2. Information Services Industry

The Central and Eastern European market for software, services and maintenance reached some $940 million in 1994. By 1999 the market is expected to reach nearly $2 billion with an average annual growth rate of 17%.

Exhibit IV-31 provides an analysis of the Central and Eastern European market analysed by the major software and services delivery modes.

Exhibit IV-31

Software and Services Market, Central and Eastern Europe, 1994-1999



Source: INPUT

In comparison to the rest of Europe the market for software and services is embryonic in these country markets. As a result a relative rapid rise in nearly all sectors is anticipated over the remaining years of the decade.

The systems integration sector is booming in Eastern Europe. Major contracts are being placed to establish financial trading, processing and communications infrastructures.

Equipment Services is the second largest delivery mode and the forecast growth reflects the opportunity to sell large volumes of current technology hardware products into the region. Applications and systems software products are expected to benefit similarly with very positive growth. Systems integration projects will follow the natural adoption of open systems and PCs and the demand for relatively complex systems required for infrastructure development.

Processing and network services will remain fairly small sectors, although network services is likely to expand more rapidly once telecommunications infrastructure is established.

Telecommunications infrastructures are woefully inadequate in all countries in this area. New systems and improvements are being obtained by installing cellular-based mobile networks either before or alongside fixed network projects. Banking systems are also being installed to help establish western standards of financial trading services.

Logistics is the third key area of infrastructure investment, but is likely to be the last to be funded.

Electronic mail already has over 15,000 subscribers in Russia from among what were parts of the previous state apparatus. Privatisation will bring many similar state-funded systems to the open market.

3. Competitive Environment

Exhibit IV-32 identifies the leading vendors in the central and eastern European information services market.

Exhibit IV-32

Leading Vendors — Information Services Central and Eastern Europe, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenues ($ Millions)	Market Share (%)
1	Unisys	US	120	12.0
2	IBM	US	60	6.0
3	Microsoft	US	20	2.0
4	Siemens-Nixdorf	Germany	10	1.0
5	Digital	UK	10	1.0
6	ICL (Fujitsu)		10	1.0

**Software and Services excludes equipment Services*

Source: INPUT

Local distributors stress the need to reinvest profits locally in order to counter the vicious circle that follows when technology imports are transferred into inflation prone economies. Nantucket and Lotus are two software companies that have set up local offices and distributor/dealer networks in this market.

Andersen Consulting's activities include implementing distribution systems. AT&T GIS has interests in government and banking sectors. ICL has been long established in Russia and Poland. IBM and Unisys have announced contract awards. In early 1992 Digital opened its Moscow office.

Many opportunities will be created by working closely with partners in local industry and local government in central and eastern European countries. At the strategic level, these countries have the chance to leap-frog technology generations and establish electronic commerce-based businesses in what are effectively 'green-field site' economies. Innovative thinking based on partnerships between Western Service-orientated companies and local post-communist, neo-capitalist entrepreneurs is the way forward.

O
Portugal — Market Commentary

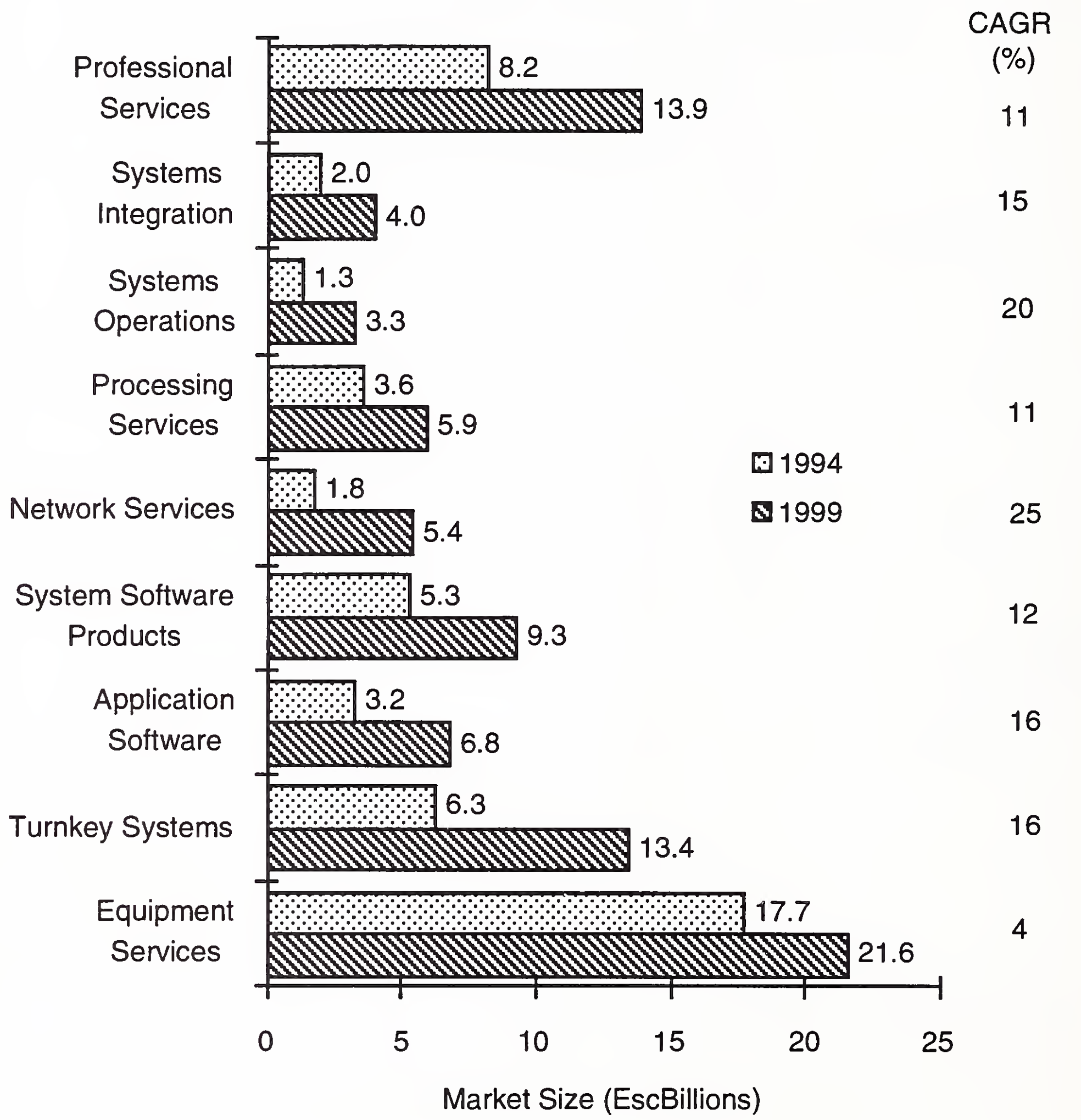
1. Information Services Industry

Portugal is expected to grow overall from $280 million (ECU 250 million) in 1994 to $470 million (ECU 420) million by 1999, an average annual growth rate of 11% including inflation. However, higher growth can be expected in software and services, some 14% per annum when equipment maintenance is excluded.

Exhibit IV- 33 provides the analysis of the Portuguese market forecast by major delivery mode.

Exhibit IV-33

Software and Services Market, Portugal, 1994-1999



Source: INPUT

Exhibit IV-34 lists the leading vendors in the Portuguese software and services market in 1993.

Exhibit IV-34

Leading Vendors — Information Services Portugal, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenues (Esc Millions)	Market Share (%)
1	IBM	US	5,740	20.7
2	Andersen Consulting	US	3,980	14.4
3	Digital	US	2,780	10.0
4	Unisys	US	1,890	6.8
5	Reuters	UK	1,260	4.5
6	GEIS	US	1,190	4.3
7	Computer Associates	US	930	3.4
8	HP	US	890	3.2
9	Microsoft	US	730	2.6
10	Intergraph	US	520	1.9

**Software and Services excludes equipment Services*

Source: INPUT

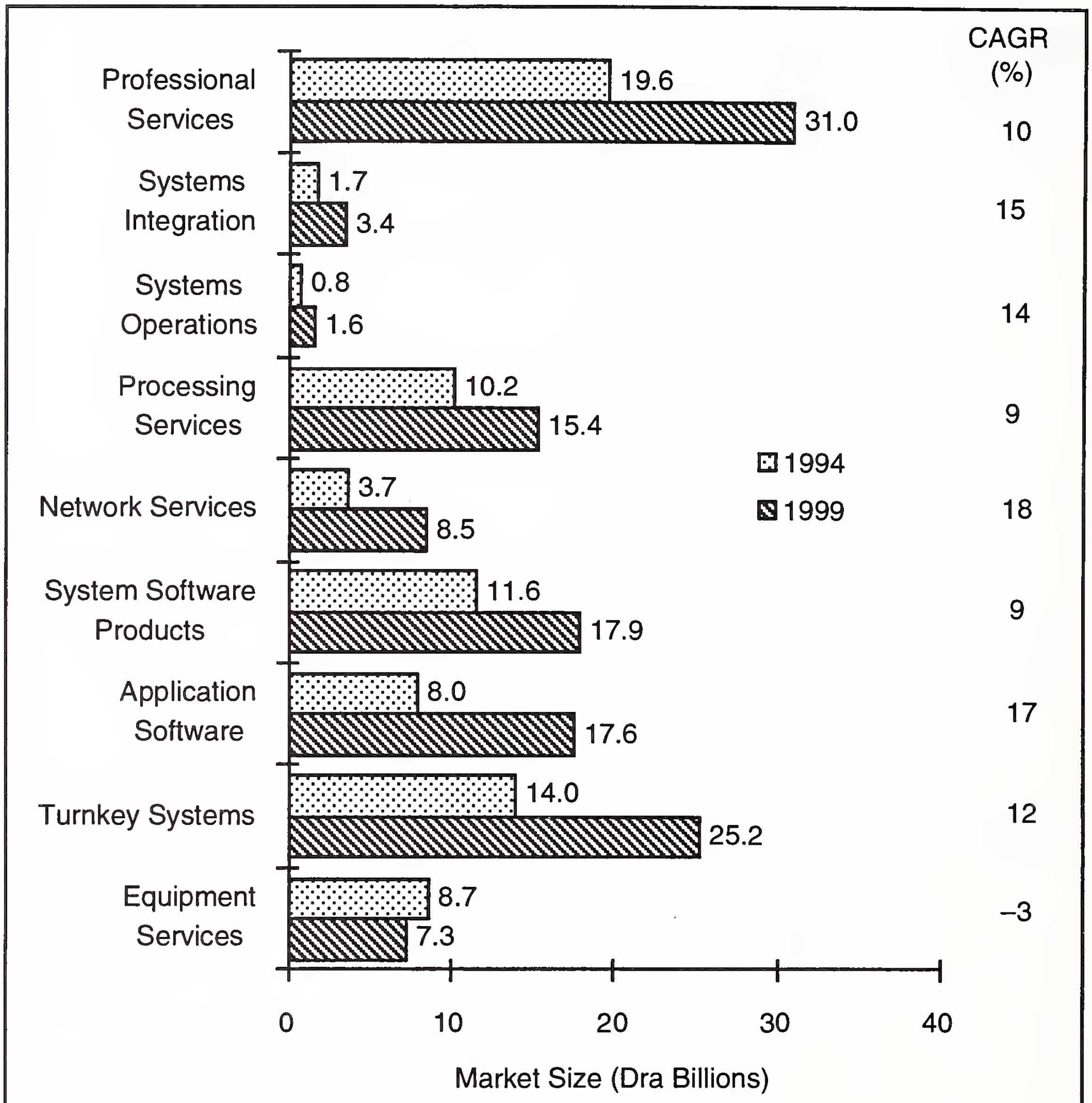
P
Greece — Market Commentary

The Greek market for information services reached $310 million in 1994 (ECU 280 million) and is expected to reach $510 million (ECU 460 million) by 1999.

Exhibit IV-35 provides an analysis of the Greek market by major service delivery mode.

Exhibit IV-35

Software and Services Market, Greece, 1994-1999



Source: INPUT

Exhibit IV-36 lists the leading vendors in the Greek software and services market in 1993.

Exhibit IV-36

Leading Vendors — Information Services Greece, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenues (Dra Millions)	Market Share (%)
1	IBM	US	8,100	12.7
2	Andersen Consulting	US	5,620	8.8
3	Digital	US	3,920	6.1
4	Reuters	UK	1,770	2.8
5	GEIS	US	1,670	2.6
6	Computer Associates	US	1,310	2.0
7	HP	US	1,260	2.0
8	Microsoft	US	1,030	1.6
9	Intergraph	US	735	1.1
10	Bull	France	635	1.0

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

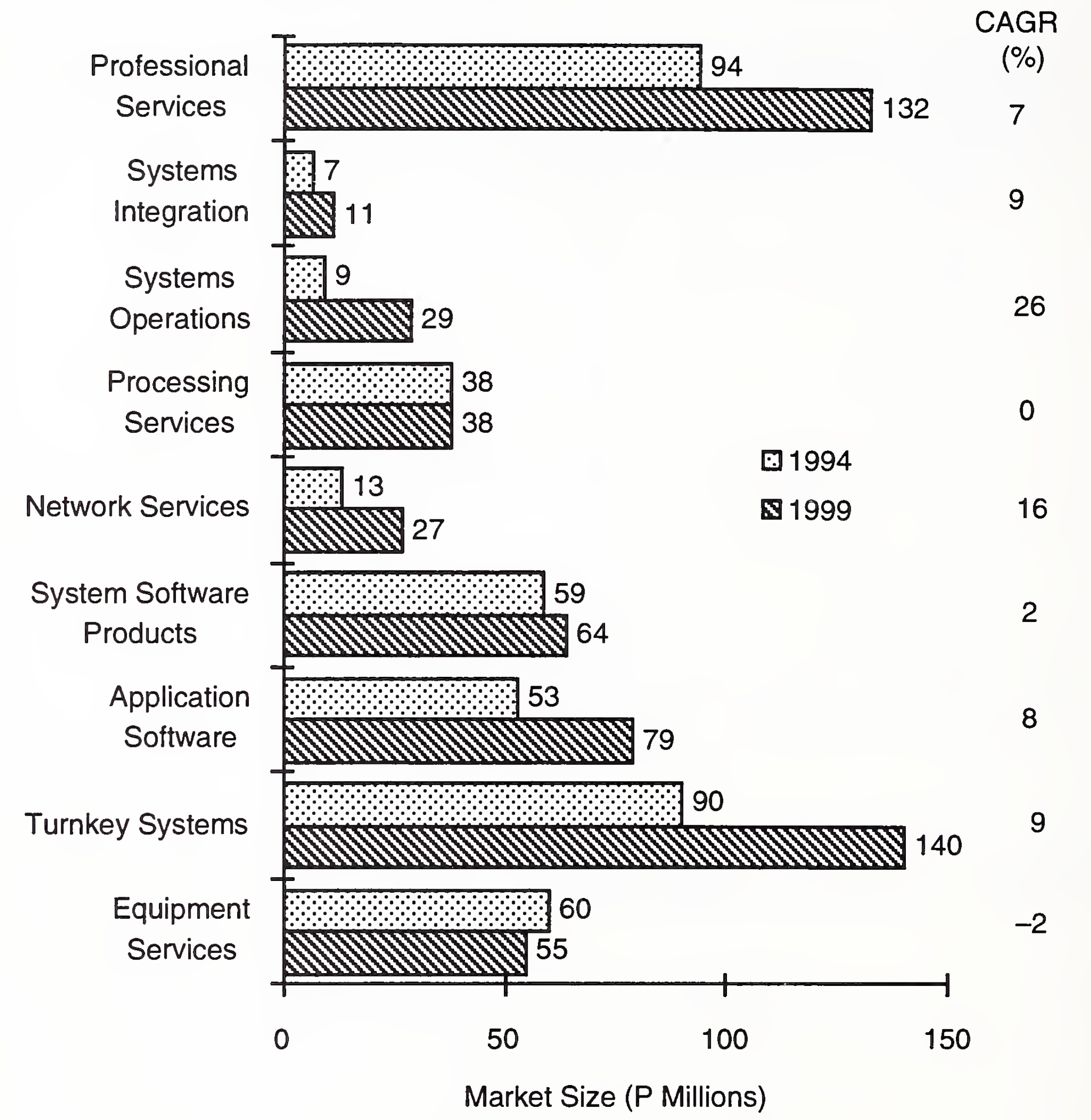
Q
Ireland — Market Commentary

The Irish market for information services reached $610 million (ECU 550 million) in 1994 and is expected to grow at an average annual rate of 6% to attain $820 million (ECU 740 million) in 1999.

Exhibit IV-37 provides an analysis of the Irish market forecast by major software and services delivery mode.

Exhibit IV-37

Software and Services Market, Ireland, 1994-1999



Source: INPUT

Exhibit IV-38 lists the leading vendors active in the Irish software and services market in 1993.

Exhibit IV-38

Leading Vendors — Information Services
Ireland, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenues (IR £ Millions)	Market Share (%)
1	IBM	US	30	9.9
2	Digital	US	20	5.7
3=	Reuters	UK	10	2.9
3=	Microsoft	US	10	2.9
3=	Unisys	US	10	2.9
3=	Andersen Consulting	US	10	2.9
3=	HP	US	10	2.9
8	ACT Group	UK	5	1.4
8	Novell	US	5	1.4

**Software and Services excludes equipment Services*

Source: INPUT

Blank

A

Information Services Industry Forecast Database, 1994-1999 France

A

Forecast Database in Local Currency (FF Millions)

Exhibit A-1

Top Level IT Expenditure, France

Sector	FF Millions								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR (%)
Total IT Spending	322,000	-2	316,000	309,000	306,000	307,000	315,000	324,000	1
Equipment Sales	54,200	-8	49,900	45,700	42,600	40,900	40,000	39,100	-5
Mainframe	10,000	-17	8,300	6,800	5,600	4,600	3,800	3,200	-17
Minicomputer	15,000	-7	14,000	13,100	12,300	11,500	10,800	10,400	-6
PC/Workstation	29,200	-5	27,600	25,800	24,700	24,800	25,400	25,500	-2
Equipment Services	20,600	-3	19,900	19,900	19,900	19,600	19,500	19,200	-1
Software Products	30,000	2	30,700	31,400	32,550	34,200	36,500	38,850	5
Other Information Services	67,300	5	70,500	72,600	76,200	80,200	86,500	93,800	6
Data Communications	19,100	5	20,000	20,900	22,000	23,500	25,100	26,600	6
Facilities/Administration	34,400	-4	33,100	31,600	30,200	29,300	28,900	28,600	-3
In-house Staff	96,300	-5	91,700	86,500	82,600	79,400	78,300	77,400	-3

Exhibit A-2

Information Services Market
Forecast by Delivery Mode and Submode
France, 1994-1999

Delivery Modes	FF Millions								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	104,000	4	108,000	111,000	116,000	122,000	131,000	141,000	5
Professional Services	38,200	2	38,800	39,300	39,700	39,900	40,500	41,200	1
- IS Consulting	4,350	10	4,800	5,050	5,350	5,650	6,050	6,450	6
- Education & Training	3,350	8	3,610	3,740	3,870	4,010	4,210	4,410	4
- Custom Software	30,300	-1	30,100	30,200	30,100	29,700	29,600	29,600	0
- Application Management	200	30	260	320	400	500	630	790	25
Systems Integration	5,100	8	5,500	6,000	6,500	7,000	7,600	9,100	11
- Equipment	1,400	4	1,450	1,550	1,650	1,800	1,950	2,050	7
- Application Software	950	5	1,000	1,250	1,550	1,900	2,350	2,850	23
- System Software	400	13	450	480	520	560	610	650	8
- Professional Services	2,250	11	2,500	2,600	2,600	2,550	2,450	3,300	6
- Other	100	20	120	140	165	195	230	270	18
Systems Operations	3,800	18	4,500	5,100	5,900	6,850	8,100	9,850	17
- Platform Operations	1,400	13	1,580	1,610	1,720	1,860	2,050	2,520	10
- Application Operations	2,150	21	2,600	3,080	3,650	4,320	5,180	6,210	19
- Desktop Services	250	30	325	415	530	675	870	1,120	28
Processing Services	8,850	1	8,900	8,800	8,900	9,100	9,500	9,900	2
- Transaction Processing	7,700	-1	7,650	7,500	7,500	7,600	7,900	8,200	1
- Utility Processing	355	0	355	345	340	340	345	350	0
- Other Processing	795	10	875	965	1,050	1,150	1,245	1,340	9
Network Services	7,670	9	8,350	9,320	10,500	12,120	14,300	17,000	15
- Electronic Info Svcs	4,350	8	4,700	5,050	5,400	5,850	6,400	7,000	8
- Network Applications	2,620	7	2,810	3,300	3,980	4,970	6,400	8,310	24
- Network Management	700	20	840	970	1,120	1,300	1,500	1,690	15
System Software	15,500	2	15,800	16,000	16,200	16,500	17,100	17,700	2
- Mainframe	6,550	-4	6,300	6,000	5,650	5,250	4,850	4,350	-7
- Minicomputer	5,100	4	5,300	5,400	5,550	5,750	6,100	6,450	4
- Workstation/PC	3,850	9	4,200	4,600	5,000	5,500	6,150	6,900	10
Application Software	14,500	3	14,900	15,400	16,350	17,700	19,400	21,150	7
- Mainframe	1,000	-14	860	740	650	580	530	490	-11
- Minicomputer	4,300	1	4,340	4,410	4,650	5,020	5,320	5,460	5
- Workstation/PC	9,200	5	9,700	10,250	11,050	12,100	13,550	15,200	9
Turnkey Systems	10,640	4	11,040	11,450	12,040	12,950	14,060	15,270	7
- Equipment	5,300	2	5,400	5,500	5,650	5,850	6,100	6,350	3
- Application Software	2,450	6	2,600	2,800	3,000	3,350	3,750	4,200	10
- System Software	180	6	190	200	210	220	230	240	5
- Professional Services	2,650	6	2,800	3,000	3,200	3,550	4,000	4,450	10
Equipment Services	20,600	-3	19,900	19,900	19,900	19,600	19,500	19,200	-1
- Equipment Maintenance	13,700	-8	12,600	12,100	11,600	10,800	10,300	9,500	-5
- Environmental Services	6,900	6	7,300	7,800	8,300	8,800	9,200	9,700	6
Grand Total Information Service Market	125,000	2	127,500	131,500	136,000	141,500	150,000	160,500	5

B

Forecast Database in U.S. Dollars

Exhibit A-3

Software and Services Market Forecast in Dollars
France, 1994-1999

Delivery Modes	U.S. $ Million (rounded)								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	17,600	4	18,300	18,800	19,700	20,700	22,200	23,900	5
Professional Services	6,500	2	6,600	6,700	6,700	6,800	6,900	7,000	1
- IS Consulting	740	10	810	860	910	960	1,030	1,090	6
- Education & Training	570	8	610	630	660	680	710	750	4
- Custom Software	5,100	-1	5,100	5,100	5,100	5,000	5,000	5,000	0
- Application Management	34	30	44	54	68	85	107	134	25
Systems Integration	860	8	930	1,020	1,100	1,190	1,290	1,540	11
- Equipment	240	4	250	260	280	310	330	350	7
- Application Software	161	5	169	212	263	322	398	483	23
- System Software	68	13	76	81	88	95	103	110	8
- Professional Services	380	11	420	440	440	430	420	560	6
- Other	17	20	20	24	28	33	39	46	18
Systems Operations	640	18	760	860	1,000	1,160	1,370	1,670	17
- Platform Operations	240	13	270	270	290	320	350	430	10
- Application Operations	360	21	440	520	620	730	880	1,050	19
- Desktop Services	42	30	55	70	90	114	147	190	28
Processing Services	1,500	1	1,510	1,490	1,510	1,540	1,610	1,680	2
- Transaction Processing	1,310	-1	1,300	1,270	1,270	1,290	1,340	1,390	1
- Utility Processing	60	0	60	60	60	60	60	60	0
- Other Processing	130	10	150	160	180	190	210	230	9
Network Services	1,300	9	1,420	1,580	1,780	2,050	2,420	2,880	15
- Electronic Info Svcs	740	8	800	860	920	990	1,080	1,190	8
- Network Applications	440	7	480	560	670	840	1,080	1,410	24
- Network Management	120	20	140	160	190	220	250	290	15
System Software	2,600	2	2,700	2,700	2,700	2,800	2,900	3,000	2
- Mainframe	1,110	-4	1,070	1,020	960	890	820	740	-7
- Minicomputer	860	4	900	920	940	970	1,030	1,090	4
- Workstation/PC	650	9	710	780	850	930	1,040	1,170	10
Application Software	2,500	3	2,500	2,600	2,800	3,000	3,300	3,600	7
- Mainframe	170	-14	150	130	110	100	90	80	-11
- Minicomputer	730	1	740	750	790	850	900	930	5
- Workstation/PC	1,600	5	1,600	1,700	1,900	2,100	2,300	2,600	9
Turnkey Systems	1,800	4	1,870	1,940	2,040	2,190	2,380	2,590	7
- Equipment	900	2	920	930	960	990	1,030	1,080	3
- Application Software	420	6	440	470	510	570	640	710	10
- System Software	31	6	32	34	36	37	39	41	5
- Professional Services	450	6	470	510	540	600	680	750	10
Equipment Services	3,500	-3	3,400	3,400	3,400	3,300	3,300	3,300	-1
- Equipment Maintenance	2,300	-8	2,100	2,100	2,000	1,800	1,700	1,600	-5
- Environmental Services	1,200	6	1,200	1,300	1,400	1,500	1,600	1,600	6
Grand Total Information Service Market	21,000	2	22,000	22,000	23,000	24,000	25,000	27,000	5

C

Forecast Database in ECUs

Exhibit A-4

Software and Services Market Forecast in ECUs France, 1994-1999

Delivery Modes	ECU Millions (rounded)								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	15,800	4	16,400	16,800	17,600	18,500	19,900	21,400	5
Professional Services	5,800	2	5,900	6,000	6,000	6,100	6,100	6,300	1
- IS Consulting	660	10	730	770	810	860	920	980	6
- Education & Training	510	8	550	570	590	610	640	670	4
- Custom Software	4,600	-1	4,600	4,600	4,600	4,500	4,500	4,500	0
- Application Management	30	30	40	50	60	80	100	120	25
Systems Integration	770	8	830	910	990	1,060	1,150	1,380	11
- Equipment	210	4	220	240	250	270	300	310	7
- Application Software	144	5	152	190	235	288	357	432	23
- System Software	61	13	68	73	79	85	93	99	8
- Professional Services	340	11	380	390	390	390	370	500	6
- Other	15	20	18	21	25	30	35	41	18
Systems Operations	580	18	680	770	900	1,040	1,230	1,490	17
- Platform Operations	210	13	240	240	260	280	310	380	10
- Application Operations	330	21	390	470	550	660	790	940	19
- Desktop Services	38	30	49	63	80	102	132	170	28
Processing Services	1,340	1	1,350	1,340	1,350	1,380	1,440	1,500	2
- Transaction Processing	1,170	-1	1,160	1,140	1,140	1,150	1,200	1,240	1
- Utility Processing	50	0	50	50	50	50	50	50	0
- Other Processing	120	10	130	150	160	170	190	200	9
Network Services	1,160	9	1,270	1,410	1,590	1,840	2,170	2,580	15
- Electronic Info Svcs	660	8	710	770	820	890	970	1,060	8
- Network Applications	400	7	430	500	600	750	970	1,260	24
- Network Management	110	20	130	150	170	200	230	260	15
System Software	2,400	2	2,400	2,400	2,500	2,500	2,600	2,700	2
- Mainframe	990	-4	960	910	860	800	740	660	-7
- Minicomputer	770	4	800	820	840	870	930	980	4
- Workstation/PC	580	9	640	700	760	830	930	1,050	10
Application Software	2,200	3	2,300	2,300	2,500	2,700	2,900	3,200	7
- Mainframe	150	-14	130	110	100	90	80	70	-11
- Minicomputer	650	1	660	670	710	760	810	830	5
- Workstation/PC	1,400	5	1,470	1,560	1,680	1,840	2,060	2,310	9
Turnkey Systems	1,610	4	1,680	1,740	1,830	1,970	2,130	2,320	7
- Equipment	800	2	820	830	860	890	930	960	3
- Application Software	370	6	390	420	460	510	570	640	10
- System Software	27	6	29	30	32	33	35	36	5
- Professional Services	400	6	420	460	490	540	610	680	10
Equipment Services	3,100	-3	3,000	3,000	3,000	3,000	3,000	2,900	-1
- Equipment Maintenance	2,100	-8	1,900	1,800	1,800	1,600	1,600	1,400	-5
- Environmental Services	1,000	6	1,100	1,200	1,300	1,300	1,400	1,500	6
Grand Total Information Service Market	19,000	2	19,000	20,000	21,000	21,000	23,000	24,000	5

D

Information Services Forecast Reconciliation in Local Currency

Exhibit A-5

Forecast Reconciliation, France, 1993-1998

Currency: FF Millions	1993 Market				1998 Market				1993	1994
Delivery Mode	1993 Report (Fcst)	1994 Report (Act)	1993-1994 Variance (Amount)	1993-1994 Variance (%)	1993 Report (Fcst)	1994 Report (Fcst)	1993-1994 Variance (Amount)	1993-1994 Variance (%)	Report %CAGR (Fcst)	Report %CAGR (Fcst)
Software and Services Total (ex Equipment Services)	105,000	104,000	-1,000	-1	147,000	131,000	-16,000	-11	7	5
Professional Services	38,300	38,200	-100	0	42,600	40,500	-2,100	-5	2	1
- IS Consulting	4,350	4,350	0	0	6,050	6,050	0	0	7	7
- Education & Training	3,350	3,350	0	0	4,230	4,210	-20	0	5	5
- Custom Software	30,400	30,300	-100	0	31,400	29,600	-1,800	-6	1	0
- Application Management	200	200	0	0	950	630	-320	-34	37	26
Systems Integration	5,600	5,100	-500	-9	14,500	7,600	-6,900	-48	21	8
- Equipment	1,450	1,400	-50	-3	3,150	1,950	-1,200	-38	17	7
- Application Software	1,000	950	-50	-5	5,200	2,350	-2,850	-55	39	20
- System Software	450	400	-50	-11	1,000	610	-390	-39	17	9
- Professional Services	2,600	2,250	-350	-13	4,700	2,450	-2,250	-48	13	2
- Other	100	100	0	0	440	230	-210	-48	34	18
Systems Operations	3,300	3,800	500	15	7,900	8,100	200	3	19	16
- Platform Operations	1,750	1,400	-350	-20	4,010	2,050	-1,960	-49	18	8
- Application Operations	1,350	2,150	800	59	3,200	5,180	1,980	62	19	19
- Desktop Services	200	250	50	25	690	870	180	26	28	28
Processing Services	9,000	8,850	-150	-2	9,950	9,500	-450	-5	2	1
- Transaction Processing	7,850	7,700	-150	-2	8,300	7,900	-400	-5	1	1
- Utility Processing	355	355	0	0	355	345	-10	-3	0	-1
- Other Processing	795	795	0	0	1,305	1,245	-60	-5	10	9
Network Services	7,720	7,670	-50	-1	17,580	14,300	-3,280	-19	18	13
- Electronic Info Svcs	4,350	4,350	0	0	6,650	6,400	-250	-4	9	8
- Network Applications	2,670	2,620	-50	-2	9,130	6,400	-2,730	-30	28	20
- Network Management	700	700	0	0	1,800	1,500	-300	-17	21	16
System Software	16,000	15,500	-500	-3	20,300	17,100	-3,200	-16	5	2
- Mainframe	6,800	6,550	-250	-4	5,600	4,850	-750	-13	-4	-6
- Minicomputer	5,150	5,100	-50	-1	5,900	6,100	200	3	3	4
- Workstation/PC	4,050	3,850	-200	-5	8,800	6,150	-2,650	-30	17	10
Application Software	14,700	14,500	-200	-1	19,900	19,400	-500	-3	6	6
- Mainframe	1,000	1,000	0	0	600	530	-70	-12	-10	-12
- Minicomputer	4,300	4,300	0	0	3,950	5,320	1,370	35	-2	4
- Workstation/PC	9,400	9,200	-200	-2	15,350	13,550	-1,800	-12	10	8
Turnkey Systems	10,740	10,640	-100	-1	14,560	14,060	-500	-3	6	6
- Equipment	5,500	5,300	-200	-4	6,600	6,100	-500	-8	4	3
- Application Software	2,400	2,450	50	2	3,750	3,750	0	0	9	9
- System Software	180	180	0	0	240	230	-10	-4	6	5
- Professional Services	2,600	2,650	50	2	4,000	4,000	0	0	9	9
Equipment Services	21,600	20,600	-1,000	-5	21,900	19,500	-2,400	-11	0	-1
- Equipment Maintenance	14,700	13,700	-1,000	-7	13,100	10,300	-2,800	-21	-2	-6
- Environmental Services	6,900	6,900	0	0	8,800	9,200	400	5	5	6
Grand Total	127,000	125,000	-2,000	-2	169,000	150,000	-19,000	-11	6	4

E

Leading Vendors in Local Currency (FF Millions)

Exhibit A-6

Software and Services Leading Vendors
France, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (FF Millions)	Market Share (%)
1	IBM	U.S.	7,940	7.6
2	Cap Gemini Sogeti	France	2,980	2.9
3	Groupe Bull	France	2,160	2.1
4	Sligos	France	1,860	1.8
5	Axime	France	1,790	1.7
6	Microsoft	U.S.	1,760	1.7
7	EDS	U.S.	1,700	1.6
8	Reuters	U.K.	1,680	1.6
9	Digital	U.S.	1,570	1.5
10	GSI	France	1,545	1.5
11	Sema Group	France	1,465	1.4
12	Telesystemes	France	1,435	1.4
13	Syseca [Thomson]	France	1,360	1.3
14	CGI	France	1,185	1.1
15	SG2	France	1,075	1.0
16	Steria	France	975	0.9
17	Alcatel TiTN	France	895	0.9
18	CISI	France	790	0.8
19	CCMX	France	785	0.8
20	Euriware	France	780	0.8
21	Sopra	France	700	0.7
22	AT&T	France	700	0.7
23	Unilog	France	680	0.7
24	Andersen Consulting	U.S.	670	0.6
25	Computer Associates	U.S.	655	0.6
26	Altran	France	555	0.5
27	Fininfor	France	540	0.5
28	Novell	U.S.	535	0.5
29	Siemens-Nixdorf	Germany	535	0.5
30	IBSI	France	530	0.5
	Total Listed		41,830	40.2
	Total Market		104,000	100.0

Exhibit A-7

Professional Services Leading Vendors France, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (FF Millions)	Market Share (%)
1	Cap Gemini Sogeti	France	1,380	3.6
2	IBM	U.S.	1,105	2.9
3	Sema Group	France	955	2.5
4	Syseca [Thomson]	France	850	2.2
5	CGI	France	760	2.0
6	Unilog	France	555	1.5
7	Altran	France	530	1.4
8	IBSI	France	465	1.2
9	Steria	France	465	1.2
10	Digital	U.S.	440	1.2
	Total Listed		7,505	19.6
	Total Market		38,200	100.0

Exhibit A-8

Systems Integration Leading Vendors France, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (FF Millions)	Market Share (%)
1	IBM	U.S.	930	18.2
2	Cap Gemini Sogeti	France	830	16.3
3	Sema Group	France	480	9.4
4	Andersen Consulting	France	435	8.5
5	Groupe Bull	U.S.	320	6.3
6	EDS	U.S.	310	6.1
7	Syseca (Thomson)	France	225	4.4
8=	Digital	U.S.	165	3.2
8=	Alcatel ISR	France	165	3.2
10	Axime	France	110	2.2
	Total Listed		3,970	77.8
	Total Market		5,100	100.0

Exhibit A-9

Systems Operations Leading Vendors France, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (FF Millions)	Market Share (%)
1	EDS	U.S.	820	17.4
2	GSI	France	370	7.9
3	IBM (Axone)	U.S.	360	7.7
4	Telesystemes	France	360	7.7
5	Groupe Bull (Athesa)	France	355	7.5
6=	Cap Gemini Sogeti	France	300	6.4
6=	Sligos	France	300	6.4
8=	Perot Systems	U.S.	200	4.2
8=	SG2	France	200	4.2
10	France Telecom	France	180	3.8
	Total Listed		3,445	73.2
	Total Market		4,700	100.0

Exhibit A-10

Processing Services Leading Vendors France, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (FF Millions)	Market Share (%)
1	Axime	France	850	9.6
2	Sligos	France	730	8.2
3	Telesystemes	France	370	4.2
4	GSI	France	310	3.5
5	Inforsud	France	200	2.3
6	Ares	France	170	1.9
7	CCMX	France	170	1.9
8	SG2	France	160	1.8
9	Cegedim	France	130	1.5
10	Euriware	France	130	1.5
	Total Listed		3,220	36.4
	Total Market		8,850	100.0

Exhibit A-11

Network Applications Leading Vendors France, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (FF Millions)	Market Share (%)
1	Infonet	Belgium	370	14.1
2	SG2	France	215	8.2
3	GSI	France	185	7.1
4	Sligos	France	180	6.9
5	AT&T	France	130	5.0
6	IBM	U.S.	115	4.4
7	Groupe Bull	France	100	3.8
8	GEIS	U.S.	100	3.8
9	Creditrans	France	80	3.1
10	Axime	France	55	2.1
	Total Listed		1,530	58.4
	Total Market		2,600	100.0

Exhibit A-12

Electronic Information Services Leading Vendors France, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (FF Millions)	Market Share (%)
1	Reuters	U.K.	1,295	29.8
2	Telerate	U.S.	290	6.7
3	Dun & Bradstreet	U.S.	240	5.5
4	Citicorp	U.S.	110	2.5
5	Mead	U.S.	65	1.5
6	Telekurs	Switzerland	25	0.6
7	Lotus	U.S.	10	0.2
8	Extel	U.K.	5	0.1
9	Quick	Japan	5	0.1
10	Amdahl	U.S.	0	0.0
	Total Listed		2,045	47.0
	Total Market		4,350	100.0

Exhibit A-13

Systems Software Products Leading Vendors France, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (FF Millions)	Market Share (%)
1	IBM	U.S.	4,535	29.3
2	Microsoft	U.S.	1,020	6.6
3	Groupe Bull	France	995	6.4
4	Digital	U.S.	535	3.5
5	Novell	U.S.	535	3.5
6	Computer Associates	U.S.	305	2.0
7	Oracle	U.S.	295	1.9
8	CGI	France	250	1.6
9	HP	U.S.	230	1.5
10	Borland	U.S.	170	1.1
	Total Listed		8,870	57.2
	Total Market		15,500	100.0

Exhibit A-14

Application Software Products Leading Vendors France, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (FF Millions)	Market Share (%)
1	Microsoft	U.S.	705	4.9
2	IBM	U.S.	635	4.4
3	Lotus	U.S.	440	3.0
4	Sopra	France	345	2.4
5	GSI	France	340	2.3
6	Axime	France	280	1.9
7	CCMX	France	280	1.9
8	Computer Associates	U.S.	230	1.6
9	Fininfor	France	200	1.4
10	Wordperfect	U.S.	185	1.3
	Total Listed		3,640	25.1
	Total Market		14,500	100.0

Exhibit A-15

Turnkey Systems Leading Vendors France, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (FF Millions)	Market Share (%)
1	Sligos	France	350	3.3
2	IBM	U.S.	270	2.5
3	Digital	U.S.	250	2.3
4	Fininfor	France	250	2.3
5	Syseca [Thomson]	France	200	1.9
6	Alcatel TiTN	France	200	1.9
7	CISI	France	180	1.7
8	Reuters	U.K.	170	1.6
9	Siemens-Nixdorf	Germany	165	1.6
10	Intergraph	U.S.	150	1.4
	Total Listed		2,185	20.5
	Total Market		10,640	100.0

Exhibit A-16

Equipment Maintenance Leading Vendors France, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (FF Millions)	Market Share (%)
1	IBM	U.S.	2,650	19.3
2	Groupe Bull	France	2,100	15.3
3	Digital	U.S.	850	6.2
4	Thomainfor [Thomson]	France	685	5.0
5	Siemens-Nixdorf	Germany	575	4.2
6	HP	U.S.	530	3.9
7	Unisys	U.S.	530	3.9
8	Olivetti	Italy	445	3.2
9	AT&T	France	435	3.2
10	ICL [Fujitsu]	U.K. [J]	370	2.7
	Total Listed		9,170	66.9
	Total Market		13,700	100.0

Exhibit A-17

Environmental Services Leading Vendors France, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (FF Millions)	Market Share (%)
1	IBM	U.S.	410	5.9
2	Digital	U.S.	285	4.1
3	Unisys	U.S.	125	1.8
4	Groupe Bull	France	75	1.1
5	HP	U.S.	65	0.9
6	Wang	U.S.	50	0.7
7	ComputerVision	U.S.	40	0.6
8	Rank Xerox	U.K.	35	0.5
9	AT&T	France	30	0.4
10	Sun	U.S.	20	0.3
	Total Listed		1,135	16.4
	Total Market		6,900	100.0

Exhibit A-18

Information Services Leading Vendors France, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (FF Millions)	Market Share (%)
1	IBM	U.S.	11,030	8.8
2	Groupe Bull	France	4,350	3.5
3	Cap Gemini Sogeti	France	2,990	2.4
4	Digital	U.S.	2,720	2.2
5	EDS	U.S.	1,960	1.6
6	Sligos	France	1,840	1.5
7	Axime	France	1,790	1.4
8	Microsoft	U.S.	1,760	1.4
9	Reuters	U.K.	1,680	1.3
10	GSI	France	1,550	1.2
	Total Listed		31,670	25.3
	Total Market		125,000	100.0

B

Information Services Industry Forecast Database, 1994-1999 Germany

A

Forecast Database in Local Currency (DM Millions)

Exhibit B-1

Top Level IT Expenditure, Germany

Sector	DM Millions								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR (%)
Total IT Spending	106,000	-2	104,000	103,000	104,000	106,000	108,000	111,000	1
Equipment Sales	18,900	-3	18,300	17,700	17,400	17,200	17,000	16,800	-2
Mainframe	3,800	-13	3,300	2,900	2,600	2,200	1,900	1,700	-12
Minicomputer	4,800	-4	4,600	4,500	4,400	4,300	4,100	4,000	-3
PC/Workstation	10,300	1	10,400	10,300	10,400	10,700	11,000	11,100	1
Equipment Services	7,200	-3	6,950	6,750	6,650	6,600	6,550	6,500	-1
Software Products	8,500	6	9,000	9,600	10,500	11,400	12,500	13,800	9
Other Information Services	13,400	8	14,500	15,700	17,300	18,800	20,600	22,500	9
Data Communications	7,800	8	8,400	8,900	9,500	10,200	10,800	11,600	7
Facilities/Administration	9,600	-6	9,000	8,600	8,400	8,400	8,300	8,300	-2
In-house Staff	40,200	-5	38,200	36,100	34,700	33,600	32,400	31,300	-4

Exhibit B-2

Information Services Market
Forecast by Delivery Mode and Submode
Germany, 1994-1999

Delivery Modes	DM Millions								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	25,500	6	27,100	29,000	31,600	34,200	37,200	40,500	8
Professional Services	5,100	2	5,200	5,400	5,600	5,700	5,800	5,800	2
- IS Consulting	830	12	930	1,040	1,190	1,320	1,460	1,590	11
- Education & Training	1,060	4	1,100	1,150	1,200	1,250	1,300	1,300	3
- Custom Software	3,200	-2	3,150	3,150	3,150	3,050	2,950	2,800	-2
- Application Management	25	32	33	43	57	74	96	123	30
Systems Integration	1,050	10	1,150	1,300	1,450	1,650	1,800	2,000	12
- Equipment	290	7	310	330	350	370	400	430	7
- Application Software	200	25	250	310	390	490	610	770	25
- System Software	90	6	95	105	115	125	135	145	9
- Professional Services	450	4	470	530	560	630	610	600	5
- Other	20	25	25	30	35	40	45	60	19
Systems Operations	380	26	480	590	720	850	1,000	1,190	20
- Platform Operations	80	25	100	110	125	135	145	160	10
- Application Operations	220	25	275	345	425	505	600	715	21
- Desktop Services	80	31	105	135	170	210	255	315	25
Processing Services	2,400	10	2,650	2,800	3,050	3,300	3,500	3,700	7
- Transaction Processing	2,000	8	2,150	2,300	2,500	2,650	2,800	2,900	6
- Utility Processing	120	0	120	120	120	120	120	120	0
- Other Processing	310	13	350	400	450	510	570	640	13
Network Services	1,540	16	1,780	2,080	2,490	2,930	3,470	4,160	19
- Electronic Info Svcs	1,090	10	1,200	1,330	1,480	1,580	1,680	1,780	8
- Network Applications	295	34	395	535	760	1,060	1,460	2,005	38
- Network Management	155	19	185	215	250	290	330	375	15
System Software	5,100	4	5,300	5,500	5,700	5,800	6,000	6,200	3
- Mainframe	2,400	0	2,400	2,300	2,150	1,900	1,650	1,350	-11
- Minicomputer	1,500	3	1,550	1,650	1,750	1,850	1,950	2,050	6
- Workstation/PC	1,200	13	1,350	1,550	1,800	2,050	2,400	2,800	16
Application Software	3,400	9	3,700	4,100	4,800	5,600	6,500	7,600	15
- Mainframe	410	-5	390	370	360	350	340	330	-3
- Minicomputer	1,050	0	1,050	1,150	1,450	1,750	2,050	2,450	18
- Workstation/PC	1,950	15	2,250	2,600	3,000	3,500	4,100	4,800	16
Turnkey Systems	6,500	5	6,800	7,200	7,800	8,400	9,100	9,800	8
- Equipment	3,300	0	3,300	3,400	3,500	3,600	3,700	3,800	3
- Application Software	1,150	13	1,300	1,400	1,650	1,850	2,150	2,450	14
- System Software	450	2	460	480	500	530	550	570	4
- Professional Services	1,600	9	1,750	1,900	2,150	2,400	2,700	3,000	11
Equipment Services	7,200	-3	6,950	6,750	6,650	6,600	6,550	6,500	-1
- Equipment Maintenance	4,730	-8	4,360	4,030	3,820	3,660	3,490	3,320	-5
- Environmental Services	2,470	5	2,590	2,720	2,830	2,940	3,060	3,180	4
Grand Total Information Service Market	32,500	5	34,000	35,500	38,500	41,000	43,500	47,000	7

B

Forecast Database in U.S. Dollars

Exhibit B-3

Software and Services Market Forecast in Dollars
Germany, 1994-1999

Delivery Modes	U.S. $ Million (rounded)								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	14,700	6	15,600	16,700	18,200	19,700	21,400	23,300	8
Professional Services	2,900	2	3,000	3,100	3,200	3,300	3,300	3,300	2
- IS Consulting	480	12	530	600	680	760	840	910	11
- Education & Training	610	4	630	660	690	720	750	750	3
- Custom Software	1,800	-2	1,800	1,800	1,800	1,800	1,700	1,600	-2
- Application Management	14	32	19	25	33	43	55	71	30
Systems Integration	600	10	660	750	830	950	1,030	1,150	12
- Equipment	170	7	180	190	200	210	230	250	7
- Application Software	115	25	144	178	224	282	351	443	25
- System Software	52	6	55	60	66	72	78	83	9
- Professional Services	260	4	270	300	320	360	350	340	5
- Other	11	25	14	17	20	23	26	34	19
Systems Operations	220	26	280	340	410	490	570	680	20
- Platform Operations	50	25	60	60	70	80	80	90	10
- Application Operations	130	25	160	200	240	290	340	410	21
- Desktop Services	46	31	60	78	98	121	147	181	25
Processing Services	1,380	10	1,520	1,610	1,750	1,900	2,010	2,130	7
- Transaction Processing	1,150	8	1,240	1,320	1,440	1,520	1,610	1,670	6
- Utility Processing	70	0	70	70	70	70	70	70	0
- Other Processing	180	13	200	230	260	290	330	370	13
Network Services	890	16	1,020	1,200	1,430	1,680	1,990	2,390	19
- Electronic Info Svcs	630	10	690	760	850	910	970	1,020	8
- Network Applications	170	34	230	310	440	610	840	1,150	38
- Network Management	90	19	110	120	140	170	190	220	15
System Software	2,900	4	3,000	3,200	3,300	3,300	3,400	3,600	3
- Mainframe	1,380	0	1,380	1,320	1,240	1,090	950	780	-11
- Minicomputer	860	3	890	950	1,010	1,060	1,120	1,180	6
- Workstation/PC	690	13	780	890	1,030	1,180	1,380	1,610	16
Application Software	2,000	9	2,100	2,400	2,800	3,200	3,700	4,400	15
- Mainframe	240	-5	220	210	210	200	200	190	-3
- Minicomputer	600	0	600	660	830	1,010	1,180	1,410	18
- Workstation/PC	1,100	15	1,300	1,500	1,700	2,000	2,400	2,800	16
Turnkey Systems	3,740	5	3,910	4,140	4,480	4,830	5,230	5,630	8
- Equipment	1,900	0	1,900	1,950	2,010	2,070	2,130	2,180	3
- Application Software	660	13	750	800	950	1,060	1,240	1,410	14
- System Software	259	2	264	276	287	305	316	328	4
- Professional Services	920	9	1,010	1,090	1,240	1,380	1,550	1,720	11
Equipment Services	4,100	-3	4,000	3,900	3,800	3,800	3,800	3,700	-1
- Equipment Maintenance	2,700	-8	2,500	2,300	2,200	2,100	2,000	1,900	-5
- Environmental Services	1,400	5	1,500	1,600	1,600	1,700	1,800	1,800	4
Grand Total Information Service Market	19,000	5	20,000	20,000	22,000	24,000	25,000	27,000	7

C

Forecast Database in ECUs

Exhibit B-4

Software and Services Market Forecast in ECUs
Germany, 1994-1999

Delivery Modes	ECU Millions (rounded)								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	13,100	6	14,000	14,900	16,300	17,600	19,200	20,900	8
Professional Services	2,600	2	2,700	2,800	2,900	2,900	3,000	3,000	2
- IS Consulting	430	12	480	540	610	680	750	820	11
- Education & Training	550	4	570	590	620	640	670	670	3
- Custom Software	1,600	-2	1,600	1,600	1,600	1,600	1,500	1,400	-2
- Application Management	10	32	20	20	30	40	50	60	30
Systems Integration	540	10	590	670	750	850	930	1,030	12
- Equipment	150	7	160	170	180	190	210	220	7
- Application Software	103	25	129	160	201	253	314	397	25
- System Software	46	6	49	54	59	64	70	75	9
- Professional Services	230	4	240	270	290	320	310	310	5
- Other	10	25	13	15	18	21	23	31	19
Systems Operations	200	26	250	300	370	440	520	610	20
- Platform Operations	40	25	50	60	60	70	70	80	10
- Application Operations	110	25	140	180	220	260	310	370	21
- Desktop Services	41	31	54	70	88	108	131	162	25
Processing Services	1,250	10	1,350	1,450	1,580	1,690	1,800	1,890	7
- Transaction Processing	1,030	8	1,110	1,190	1,290	1,370	1,440	1,490	6
- Utility Processing	60	0	60	60	60	60	60	60	0
- Other Processing	160	13	180	210	230	260	290	330	13
Network Services	790	16	920	1,070	1,280	1,510	1,790	2,140	19
- Electronic Info Svcs	560	10	620	690	760	810	870	920	8
- Network Applications	150	34	200	280	390	550	750	1,030	38
- Network Management	80	19	100	110	130	150	170	190	15
System Software	2,600	4	2,700	2,800	2,900	3,000	3,100	3,200	3
- Mainframe	1,240	0	1,240	1,190	1,110	980	850	700	-11
- Minicomputer	770	3	800	850	900	950	1,010	1,060	6
- Workstation/PC	620	13	700	800	930	1,060	1,240	1,440	16
Application Software	1,800	9	1,900	2,100	2,500	2,900	3,400	3,900	15
- Mainframe	210	-5	200	190	190	180	180	170	-3
- Minicomputer	540	0	540	590	750	900	1,060	1,260	18
- Workstation/PC	1,010	15	1,160	1,340	1,550	1,800	2,110	2,470	16
Turnkey Systems	3,350	5	3,510	3,710	4,020	4,330	4,690	5,050	8
- Equipment	1,700	0	1,700	1,750	1,800	1,860	1,910	1,960	3
- Application Software	590	13	670	720	850	950	1,110	1,260	14
- System Software	232	2	237	247	258	273	284	294	4
- Professional Services	820	9	900	980	1,110	1,240	1,390	1,550	11
Equipment Services	3,700	-3	3,600	3,500	3,400	3,400	3,400	3,400	-1
- Equipment Maintenance	2,400	-8	2,200	2,100	2,000	1,900	1,800	1,700	-5
- Environmental Services	1,300	5	1,300	1,400	1,500	1,500	1,600	1,600	4
Grand Total Information Service Market	17,000	5	18,000	18,000	20,000	21,000	22,000	24,000	7

D

Information Services Forecast Reconciliation in Local Currency

Exhibit B-5

Forecast Reconciliation, Germany, 1993-1998

Currency: DM Millions	1993 Market				1998 Market				1993	1994
Delivery Mode	1993 Report (Fcst)	1994 Report (Act)	1993-1994 Variance (Amount)	1993-1994 Variance (%)	1993 Report (Fcst)	1994 Report (Fcst)	1993-1994 Variance (Amount)	1993-1994 Variance (%)	Report %CAGR (Fcst)	Report %CAGR (Fcst)
Software and Services Total (ex Equipment Services)	25,500	25,500	0	0	41,200	37,200	-4,000	-10	10	8
Professional Services	5,100	5,100	0	0	6,000	5,800	-200	-3	3	3
- IS Consulting	825	830	5	1	1,310	1,460	150	11	10	12
- Education & Training	1,050	1,060	10	1	1,320	1,300	-20	-2	5	4
- Custom Software	3,200	3,200	0	0	3,310	2,950	-360	-11	1	-2
- Application Management	23	25	2	9	65	96	31	48	23	31
Systems Integration	1,100	1,050	-50	-5	2,025	1,800	-225	-11	13	11
- Equipment	300	290	-10	-3	425	400	-25	-6	7	7
- Application Software	200	200	0	0	730	610	-120	-16	30	25
- System Software	90	90	0	0	140	135	-5	-4	9	8
- Professional Services	490	450	-40	-8	670	610	-60	-9	6	6
- Other	20	20	0	0	60	45	-15	-25	25	18
Systems Operations	385	380	-5	-1	1,030	1,000	-30	-3	22	21
- Platform Operations	180	80	-100	-56	485	145	-340	-70	22	13
- Application Operations	125	220	95	76	335	600	265	79	22	22
- Desktop Services	80	80	0	0	210	255	45	21	21	26
Processing Services	2,420	2,400	-20	-1	3,820	3,500	-320	-8	10	8
- Transaction Processing	1,990	2,000	10	1	3,070	2,800	-270	-9	9	7
- Utility Processing	110	120	10	9	110	120	10	9	0	0
- Other Processing	320	310	-10	-3	640	570	-70	-11	15	13
Network Services	1,550	1,540	-10	-1	3,440	3,470	30	1	17	18
- Electronic Info Svcs	1,090	1,090	0	0	1,260	1,680	420	33	3	9
- Network Applications	305	295	-10	-3	1,780	1,460	-320	-18	42	38
- Network Management	155	155	0	0	400	330	-70	-18	21	16
System Software	5,100	5,100	0	0	6,460	6,000	-460	-7	5	3
- Mainframe	2,440	2,400	-40	-2	1,690	1,650	-40	-2	-7	-7
- Minicomputer	1,490	1,500	10	1	1,940	1,950	10	1	5	5
- Workstation/PC	1,170	1,200	30	3	2,830	2,400	-430	-15	19	15
Application Software	3,350	3,400	50	1	7,260	6,500	-760	-10	17	14
- Mainframe	410	410	0	0	355	340	-15	-4	-3	-4
- Minicomputer	1,030	1,050	20	2	2,145	2,050	-95	-4	16	14
- Workstation/PC	1,910	1,950	40	2	4,760	4,100	-660	-14	20	16
Turnkey Systems	6,530	6,500	-30	0	11,130	9,100	-2,030	-18	11	7
- Equipment	3,220	3,300	80	2	3,810	3,700	-110	-3	3	2
- Application Software	1,565	1,150	-415	-27	3,545	2,150	-1,395	-39	18	13
- System Software	90	450	360	400	115	550	435	378	5	4
- Professional Services	1,655	1,600	-55	-3	3,660	2,700	-960	-26	17	11
Equipment Services	7,250	7,200	-50	-1	6,790	6,550	-240	-4	-1	-2
- Equipment Maintenance	4,800	4,730	-70	-1	3,800	3,490	-310	-8	-5	-6
- Environmental Services	2,450	2,470	20	1	2,990	3,060	70	2	4	4
Grand Total	33,000	32,500	-500	-2	48,000	43,500	-4,500	-9	8	6

E

Leading Vendors in Local Currency (DM Millions)

Exhibit B-6

Software and Services Leading Vendors
Germany, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (DM Millions)	Market Share (%)
1	IBM	U.S.	3,090	12.1
2	Siemens-Nixdorf	Germany	1,920	7.5
3	Datev	Germany	940	3.7
4	Digital	U.S.	630	2.5
5	Cap debis	Germany	610	2.4
6	Microsoft	U.S.	590	2.3
7	SAP	Germany	550	2.2
8	Reuters	U.K.	520	2.0
9	CGS	France	325	1.3
10	HP	U.S.	260	1.0
11	Compunet Computer	Germany	240	0.9
12	Computer Associates	U.S.	235	0.9
13	Fiducia	Germany	220	0.9
14	Ploenzke-Gruppe	Germany	220	0.9
15	Oracle	U.S.	205	0.8
16	Novell	U.S.	195	0.8
17	Software AG	Germany	190	0.7
18	Alldata	Germany	170	0.7
19	Taylorix	Germany	165	0.6
20	Intergraph	U.S.	165	0.6
21	EDS	U.S.	155	0.6
22	ESG	Germany	145	0.6
23	Lotus	U.S.	130	0.5
24	Unisys	U.S.	130	0.5
25	AT&T	U.S.	125	0.5
26	Strassle	Germany	125	0.5
27	Sligos	France	120	0.5
28	PDV-Gruppe	Germany	120	0.5
29	Bull	France	115	0.5
30	Andersen Consulting	U.S.	115	0.5
	Total Listed		12,720	49.9
	Total Market		25,500	100.0

Exhibit B-7

Professional Services Leading Vendors
Germany, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (DM Millions)	Market Share (%)
1	IBM	U.S.	455	8.9
2	Siemens-Nixdorf	Germany	365	7.2
3	CGS	France	240	4.7
4	SAP	Germany	200	3.9
5	Ploenzke-Gruppe	Germany	190	3.7
6	Cap debis	Germany	155	3.0
7	Digital	U.S.	145	2.8
8	Datev	Germany	140	2.7
9	ESG	Germany	135	2.6
10	HP	U.S.	120	2.4
	Total Listed		2,145	42.1
	Total Market		5,100	100.0

Exhibit B-8

Systems Integration Leading Vendors
Germany, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (DM Millions)	Market Share (%)
1	IBM	U.S.	220	20.9
2	Siemens-Nixdorf	Germany	195	18.6
3=	Digital	U.S.	65	6.2
3=	Andersen Consulting	U.S.	65	6.2
5	Cap debis	France	60	5.7
6	EDS	U.S.	55	5.2
7	Bull	France	50	4.8
8=	debis Systemhaus	Germany	30	2.9
8=	Ploenzke-Gruppe	Germany	30	2.9
8=	Hewlett Packard	U.S.	30	2.9
	Total Listed		760	72.6
	Total Market		1,050	100.0

Exhibit B-9

Systems Operations Leading Vendors
Germany, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (DM Millions)	Market Share (%)
1	debis Systemhaus	Germany	170	16.5
2	EDS	U.S.	160	15.5
3	Alldata	Germany	75	7.3
4	Sema Group	France	50	4.8
5	IBM	U.S.	47	4.6
6	tds	Germany	45	4.4
7	Digital	U.S.	40	3.9
8	AC Service (Raet)	Netherlands	35	3.4
9	Orga	Germany	20	1.9
10	BB-Data	Germany	20	1.9
	Total Listed		662	64.2
	Total Market		1,030	100.0

Exhibit B-10

Processing Services Leading Vendors Germany, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (DM Millions)	Market Share (%)
1	Datev	Germany	660	27.5
2	Fiducia	Germany	145	6.0
3	Cap debis	Germany	125	5.2
4	IBM	U.S.	95	4.0
5	RRZ	Germany	60	2.5
6	Sligos	France	55	2.3
7	Alldata	Germany	45	1.9
8	Info AG	Germany	45	1.9
9	Telekurs	Switzerland	40	1.7
10	Taylorix	Germany	30	1.3
	Total Listed		1,300	54.2
	Total Market		2,400	100.0

Exhibit B-11

Network Applications Leading Vendors Germany, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (DM Millions)	Market Share (%)
1	IBM	U.S.	65	22.0
2	Telekom	Germany	60	20.3
3	Digital	U.S.	25	8.5
4	Infonet	Belgium	20	6.8
5	Cap debis	Germany	20	6.8
6	Sligos	France	15	5.1
7	GEIS	U.S.	10	3.4
8	AT&T	U.S.	10	3.4
9	GSI	France	10	3.4
10	Bull	France	5	1.7
	Total Listed		240	81.4
	Total Market		300	100.0

Exhibit B-12

Electronic Information Services Leading Vendors Germany, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (DM Millions)	Market Share (%)
1	Reuters	U.K.	400	36.7
2	Telerate	U.S.	90	8.3
3	Bertelsmann	Germany	60	5.5
4	Genios	Germany	60	5.5
5	Dun & Bradstreet	U.S.	45	4.1
6	VW-Gedas	Germany	40	3.7
7	Telekurs	Switzerland	30	2.8
8	Info AG	Germany	15	1.4
9	Infodas	Germany	10	0.9
10	Mead	U.S.	10	0.9
	Total Listed		760	69.7
	Total Market		1,090	100.0

Exhibit B-13

Systems Software Products Leading Vendors
Germany, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (DM Millions)	Market Share (%)
1	IBM	U.S.	1,860	36.5
2	Siemens-Nixdorf	Germany	570	11.2
3	Microsoft	U.S.	345	6.8
4	Digital	U.S.	215	4.2
5	Novell	U.S.	195	3.8
6	Software AG	Germany	155	3.0
7	Computer Associates	U.S.	110	2.2
8	Oracle	U.S.	100	2.0
9	Borland	U.S.	100	2.0
10	HP	U.S.	100	2.0
	Total Listed		3,750	73.5
	Total Market		5,100	100.0

Exhibit B-14

Application Software Products Leading Vendors
Germany, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (DM Millions)	Market Share (%)
1	SAP	Germany	345	10.1
2	IBM	U.S.	260	7.6
3	Microsoft	U.S.	240	7.1
4	Siemens-Nixdorf	Germany	200	5.9
5	Lotus	U.S.	120	3.5
6	Wordperfect	U.S.	90	2.6
7	Computer Associates	U.S.	80	2.4
8	Datev	Germany	75	2.2
9	Compunet Computer	Germany	70	2.1
10	KHK	Germany	70	2.1
	Total Listed		1,550	45.6
	Total Market		3,400	100.0

Exhibit B-15

Turnkey Systems Leading Vendors
Germany, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (DM Millions)	Market Share (%)
1	Siemens-Nixdorf	Germany	600	9.2
2	Intergraph	U.S.	130	2.0
3	IBM	U.S.	110	1.7
4	Taylorix	Germany	105	1.6
5	Digital	U.S.	100	1.5
6	Compunet Computer	Germany	80	1.2
7	Cap debis	Germany	80	1.2
8	mbp [EDS]	Germany	65	1.0
9	Reuters	U.K.	50	0.8
10	Sligos	France	25	0.4
	Total Listed		1,345	20.7
	Total Market		6,500	100.0

Exhibit B-16

Equipment Maintenance Leading Vendors
Germany, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (DM Millions)	Market Share (%)
1	Siemens-Nixdorf	Germany	1,400	29.6
2	IBM	U.S.	950	20.1
3	Digital	U.S.	250	5.3
4	HP	U.S.	155	3.3
5	AT&T	U.S.	120	2.5
6	Comparex	U.S.	120	2.5
7	Unisys	U.S.	110	2.3
8	Bull	France	105	2.2
9	Olivetti	Italy	85	1.8
10	ICL [Fujitsu]	U.K. [J]	70	1.5
	Total Listed		3,365	71.1
	Total Market		4,700	100.0

Exhibit B-17

Environmental Services Leading Vendors
Germany, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (DM Millions)	Market Share (%)
1	IBM	U.S.	175	7.1
2	Digital	U.S.	100	4.0
3	Siemens-Nixdorf	Germany	85	3.4
4	HP	U.S.	30	1.2
5	Bull	France	20	0.8
6	Unisys	U.S.	15	0.6
7	ComputerVision	U.S.	10	0.4
8	Comparex	U.S.	10	0.4
9	Wang	U.S.	10	0.4
10	AT&T	U.S.	10	0.4
	Total Listed		465	18.8
	Total Market		2,470	100.0

Exhibit B-18

Information Services Leading Vendors
Germany, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (DM Millions)	Market Share (%)
1	IBM	U.S.	4,380	13.3
2	Siemens-Nixdorf	Germany	3,430	10.4
3	Digital	U.S.	990	3.0
4	Datev	Germany	940	2.8
5	Cap debis	Germany	630	1.9
6	Microsoft	U.S.	590	1.8
7	SAP	Germany	560	1.7
8	Reuters	U.K.	520	1.6
9	HP	U.S.	390	1.2
10	CGS	France	320	1.0
	Total Listed		12,750	38.6
	Total Market		33,000	100.0

C

Information Services Industry Forecast Database, 1994-1999 United Kingdom

A

Forecast Database in Local Currency (PS Millions)

Exhibit C-1

Top Level IT Expenditure, United Kingdom

Sector	PS Millions								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR (%)
Total IT Spending	24,900	0	24,900	25,100	25,400	25,500	26,000	26,500	1
Equipment Sales	4,500	-4	4,300	4,150	4,050	3,900	3,800	3,650	-3
Mainframe	900	-6	850	670	580	500	430	370	-15
Minicomputer	1,250	-4	1,200	1,160	1,130	1,080	1,030	1,000	-4
PC/Workstation	2,350	-4	2,250	2,320	2,340	2,320	2,340	2,280	0
Equipment Services	2,390	-1	2,370	2,360	2,340	2,270	2,240	2,210	-1
Software Products	1,920	8	2,070	2,210	2,370	2,550	2,720	2,900	7
Other Information Services	5,100	10	5,600	6,200	6,800	7,400	8,100	8,800	9
Data Communications	1,560	7	1,670	1,750	1,850	1,940	2,000	2,080	4
Facilities/Administration	2,760	-5	2,620	2,500	2,420	2,380	2,320	2,270	-3
In-house Staff	6,700	-6	6,300	5,900	5,550	5,100	4,800	4,550	-6

Exhibit C-2

Information Services Market
Forecast by Delivery Mode and Submode
United Kingdom, 1994-1999

Delivery Modes	PS Millions								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	7,900	9	8,600	9,400	10,200	11,000	12,000	12,900	8
Professional Services	1,930	2	1,960	2,010	2,040	2,070	2,080	2,100	1
- IS Consulting	410	10	450	500	545	600	660	725	10
- Education & Training	195	3	200	205	205	210	215	220	2
- Custom Software	1,290	-2	1,270	1,250	1,220	1,170	1,080	1,000	-5
- Application Management	35	29	45	60	75	95	125	160	29
Systems Integration	775	13	875	980	1,090	1,205	1,335	1,480	11
- Equipment	200	10	220	240	260	285	310	325	8
- Application Software	130	27	165	205	255	320	395	480	24
- System Software	60	8	65	70	75	80	85	90	7
- Professional Services	370	11	410	445	480	495	515	555	6
- Other	15	13	17	19	22	25	28	31	13
Systems Operations	590	34	790	975	1,190	1,410	1,635	1,880	19
- Platform Operations	150	43	215	265	300	325	340	360	11
- Application Operations	375	31	490	600	750	910	1,080	1,260	21
- Desktop Services	65	31	85	110	140	175	215	260	25
Processing Services	530	8	570	590	620	640	680	710	4
- Transaction Processing	410	5	430	430	440	450	460	470	2
- Utility Processing	15	0	15	15	15	15	15	15	0
- Other Processing	110	14	125	140	160	180	205	230	13
Network Services	870	16	1,010	1,170	1,340	1,540	1,760	1,990	15
- Electronic Info Svcs	580	12	650	730	810	890	980	1,050	10
- Network Applications	215	26	270	340	420	520	630	770	23
- Network Management	75	20	90	100	110	130	150	170	14
System Software	1,190	5	1,250	1,300	1,350	1,400	1,450	1,500	4
- Mainframe	525	-5	500	470	455	430	410	375	-6
- Minicomputer	365	10	400	435	455	480	500	525	6
- Workstation/PC	300	17	350	395	440	490	540	600	11
Application Software	730	12	820	910	1,020	1,150	1,270	1,400	11
- Mainframe	65	-5	62	58	55	52	50	48	-5
- Minicomputer	205	7	220	235	250	270	290	315	7
- Workstation/PC	460	17	538	617	715	828	930	1,037	14
Turnkey Systems	1,290	5	1,360	1,420	1,510	1,630	1,740	1,870	7
- Equipment	650	5	680	710	750	800	840	880	5
- Application Software	210	10	230	240	250	280	300	340	8
- System Software	110	5	115	125	135	145	155	165	7
- Professional Services	320	6	340	360	380	420	450	500	8
Equipment Services	2,390	-1	2,370	2,360	2,340	2,270	2,240	2,210	-1
- Equipment Maintenance	1,540	-5	1,460	1,400	1,330	1,200	1,120	1,030	-7
- Environmental Services	850	7	910	960	1,010	1,070	1,120	1,180	5
Grand Total Information Service Market	10,300	7	11,000	11,700	12,500	13,300	14,200	15,100	7

B

Forecast Database in U.S. Dollars

Exhibit C-3

Software and Services Market Forecast in Dollars United Kingdom, 1994-1999

Delivery Modes	U.S. $ Million (rounded)								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	11,700	9	12,700	13,900	15,100	16,300	17,800	19,100	8
Professional Services	2,900	2	2,900	3,000	3,000	3,100	3,100	3,100	1
- IS Consulting	610	10	670	740	810	890	980	1,070	10
- Education & Training	290	3	300	300	300	310	320	330	2
- Custom Software	1,900	-2	1,900	1,800	1,800	1,700	1,600	1,500	-5
- Application Management	52	29	67	89	111	141	185	237	29
Systems Integration	1,150	13	1,290	1,450	1,610	1,780	1,970	2,190	11
- Equipment	300	10	330	360	380	420	460	480	8
- Application Software	192	27	244	303	377	473	584	710	24
- System Software	89	8	96	104	111	118	126	133	7
- Professional Services	550	11	610	660	710	730	760	820	6
- Other	22	13	25	28	33	37	41	46	13
Systems Operations	870	34	1,170	1,440	1,760	2,090	2,420	2,780	19
- Platform Operations	220	43	320	390	440	480	500	530	11
- Application Operations	550	31	720	890	1,110	1,350	1,600	1,860	21
- Desktop Services	96	31	126	163	207	259	318	385	25
Processing Services	780	8	840	870	920	950	1,010	1,050	4
- Transaction Processing	610	5	640	640	650	670	680	700	2
- Utility Processing	20	0	20	20	20	20	20	20	0
- Other Processing	160	14	180	210	240	270	300	340	13
Network Services	1,290	16	1,490	1,730	1,980	2,280	2,600	2,940	15
- Electronic Info Svcs	860	12	960	1,080	1,200	1,320	1,450	1,550	10
- Network Applications	320	26	400	500	620	770	930	1,140	23
- Network Management	110	20	130	150	160	190	220	250	14
System Software	1,800	5	1,800	1,900	2,000	2,100	2,100	2,200	4
- Mainframe	780	-5	740	700	670	640	610	550	-6
- Minicomputer	540	10	590	640	670	710	740	780	6
- Workstation/PC	440	17	520	580	650	720	800	890	11
Application Software	1,100	12	1,200	1,300	1,500	1,700	1,900	2,100	11
- Mainframe	100	-5	90	90	80	80	70	70	-5
- Minicomputer	300	7	330	350	370	400	430	470	7
- Workstation/PC	700	17	800	900	1,100	1,200	1,400	1,500	14
Turnkey Systems	1,910	5	2,010	2,100	2,230	2,410	2,570	2,770	7
- Equipment	960	5	1,010	1,050	1,110	1,180	1,240	1,300	5
- Application Software	310	10	340	360	370	410	440	500	8
- System Software	163	5	170	185	200	214	229	244	7
- Professional Services	470	6	500	530	560	620	670	740	8
Equipment Services	3,500	-1	3,500	3,500	3,500	3,400	3,300	3,300	-1
- Equipment Maintenance	2,300	-5	2,200	2,100	2,000	1,800	1,700	1,500	-7
- Environmental Services	1,300	7	1,300	1,400	1,500	1,600	1,700	1,700	5
Grand Total Information Service Market	15,000	7	16,000	17,000	18,000	20,000	21,000	22,000	7

C

Forecast Database in ECUs

Exhibit C-4

Software and Services Market Forecast in ECUs
United Kingdom, 1994-1999

Delivery Modes	ECU Millions (rounded)								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	10,500	9	11,400	12,500	13,500	14,600	15,900	17,100	8
Professional Services	2,600	2	2,600	2,700	2,700	2,700	2,800	2,800	1
- IS Consulting	540	10	600	660	720	800	880	960	10
- Education & Training	260	3	270	270	270	280	290	290	2
- Custom Software	1,700	-2	1,700	1,700	1,600	1,600	1,400	1,300	-5
- Application Management	50	29	60	80	100	130	170	210	29
Systems Integration	1,030	13	1,160	1,300	1,450	1,600	1,770	1,970	11
- Equipment	270	10	290	320	350	380	410	430	8
- Application Software	173	27	219	272	339	425	525	637	24
- System Software	80	8	86	93	100	106	113	120	7
- Professional Services	490	11	540	590	640	660	680	740	6
- Other	20	13	23	25	29	33	37	41	13
Systems Operations	780	34	1,050	1,290	1,580	1,870	2,170	2,500	19
- Platform Operations	200	43	290	350	400	430	450	480	11
- Application Operations	500	31	650	800	1,000	1,210	1,430	1,670	21
- Desktop Services	86	31	113	146	186	232	286	345	25
Processing Services	710	8	760	780	820	860	900	950	4
- Transaction Processing	540	5	570	570	580	600	610	620	2
- Utility Processing	20	0	20	20	20	20	20	20	0
- Other Processing	150	14	170	190	210	240	270	310	13
Network Services	1,160	16	1,340	1,550	1,780	2,050	2,340	2,640	15
- Electronic Info Svcs	770	12	860	970	1,080	1,180	1,300	1,390	10
- Network Applications	290	26	360	450	560	690	840	1,020	23
- Network Management	100	20	120	130	150	170	200	230	14
System Software	1,600	5	1,700	1,700	1,800	1,900	1,900	2,000	4
- Mainframe	700	-5	660	620	600	570	540	500	-6
- Minicomputer	480	10	530	580	600	640	660	700	6
- Workstation/PC	400	17	460	520	580	650	720	800	11
Application Software	1,000	12	1,100	1,200	1,400	1,500	1,700	1,900	11
- Mainframe	90	-5	80	80	70	70	70	60	-5
- Minicomputer	270	7	290	310	330	360	390	420	7
- Workstation/PC	610	17	710	820	950	1,100	1,240	1,380	14
Turnkey Systems	1,710	5	1,810	1,890	2,010	2,160	2,310	2,480	7
- Equipment	860	5	900	940	1,000	1,060	1,120	1,170	5
- Application Software	280	10	310	320	330	370	400	450	8
- System Software	146	5	153	166	179	193	206	219	7
- Professional Services	420	6	450	480	500	560	600	660	8
Equipment Services	3,200	-1	3,100	3,100	3,100	3,000	3,000	2,900	-1
- Equipment Maintenance	2,000	-5	1,900	1,900	1,800	1,600	1,500	1,400	-7
- Environmental Services	1,100	7	1,200	1,300	1,300	1,400	1,500	1,600	5
Grand Total Information Service Market	14,000	7	15,000	16,000	17,000	18,000	19,000	20,000	7

D

Information Services Forecast Reconciliation in Local Currency

Exhibit C-5

Forecast Reconciliation, United Kingdom, 1993-1998

Currency: PS Millions	1993 Market				1998 Market				1993	1994
Delivery Mode	1993 Report (Fcst)	1994 Report (Act)	1993-1994 Variance (Amount)	1993-1994 Variance (%)	1993 Report (Fcst)	1994 Report (Fcst)	1993-1994 Variance (Amount)	1993-1994 Variance (%)	Report %CAGR (Fcst)	Report %CAGR (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

E

Leading Vendors in Local Currency (PS Millions)

Exhibit C-6

Software and Services Leading Vendors United Kingdom, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (PS Millions)	Market Share (%)
1	IBM	U.S.	760	9.7
2	ICL (Fujitsu)	U.K. (Japan)	530	6.7
3	Digital	U.S.	280	3.5
4	Reuters	U.K.	270	3.4
5	Sema Group	France	210	2.7
6	Hoskyns (CGS)	U.K. (F)	200	2.5
7	Andersen Consulting	U.S.	190	2.4
8	EDS UK	U.S.	190	2.4
9	AT&T	U.S.	170	2.2
10	Oracle	U.S.	150	1.9
11	Microsoft	U.S.	150	1.9
12	P&P	U.K.	140	1.8
13	ACT Group	U.K.	135	1.7
14	Syntegra	U.K.	130	1.6
15	Cray Electronics	U.S.	130	1.6
16	Logica	U.K.	125	1.6
17	Computer Associates	U.S.	95	1.2
18	Misys	U.K.	90	1.1
19	MDIS	U.S.	85	1.1
20	Data Sciences	U.K.	80	1.0
21	HP	U.S.	80	1.0
22	Coopers & Lybrand	U.S.	65	0.8
23	Unisys	U.S.	65	0.8
24	Bull	France	65	0.8
25	CSC	U.S.	60	0.8
26	Easams	U.K.	60	0.8
27	Dun & Bradstreet	U.S.	55	0.7
28	JBA	U.K.	55	0.7
29	Kalamazoo	U.K.	55	0.7
30	Telerate	U.S.	55	0.7
	Total Listed		4,725	59.8
	Total Market		7,900	100.0

Exhibit C-7

Professional Services Leading Vendors United Kingdom, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (PS Millions)	Market Share (%)
1	ICL (Fujitsu)	U.K. (Japan)	180	9.3
2	IBM	U.S.	105	5.4
3	Sema Group	France	90	4.7
4	Cray Electronics	U.S.	80	4.1
5	Andersen Consulting	U.S.	80	4.1
6	Oracle	U.S.	70	3.6
7	Digital	U.S.	65	3.4
8	Coopers & Lybrand	U.S.	65	3.4
9	Logica	U.K.	60	3.1
10	Misys	U.K.	60	3.1
	Total Listed		855	44.3
	Total Market		1,930	100.0

Exhibit C-8

Systems Integration Leading Vendors United Kingdom, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (PS Millions)	Market Share (%)
1	IBM	U.S.	130	16.8
2	ICL (Fujitsu)	U.K. (Japan)	110	14.2
3	Andersen Consulting	U.S.	75	9.7
4	Syntegra	U.K.	60	7.7
5	EDS UK	U.S.	50	6.4
6	Digital	U.S.	45	5.8
6	Sema Group	France	45	5.8
6=	Groupe Bull	France	45	5.8
9	Hoskyns (CGS)	U.K. (F)	40	5.2
10	Logica	U.K.	30	3.9
	Total Listed		640	79.4
	Total Market		775	100.0

Exhibit C-9

Systems Operations Leading Vendors United Kingdom, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (PS Millions)	Market Share (%)
1	Hoskyns (CGS)	U.K. (F)	100	13.0
2	ICL (Fujitsu)	U.K. (Japan)	85	11.0
3	Sema Group	France	75	9.7
4	EDS UK	U.S.	65	8.4
5	AT&T	U.S.	60	7.8
6	Digital	U.S.	45	5.8
7	Data Sciences	U.K.	37	4.8
8	Capita Group	U.K.	30	3.9
9	Andersen Consulting	U.S.	27	3.5
10=	CSC	U.S.	25	3.2
10=	P&P	U.K.	25	3.2
10=	Perot Systems	U.S.	25	3.2
	Total Listed		599	77.5
	Total Market		770	100.0

Exhibit C-10

Processing Services Leading Vendors United Kingdom, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (PS Millions)	Market Share (%)
1	EDS UK	U.S.	35	6.6
2	MR-Data Management	U.K.	35	6.6
3	Microgen	U.K.	25	4.7
4	Centre-file	U.K.	25	4.7
5	ADP	U.S.	15	2.8
6	GEIS	U.S.	15	2.8
7	Data Sciences	U.K.	10	1.9
8	IBM	U.S.	10	1.9
9	Compower	U.K.	10	1.9
10	CSC	U.S.	10	1.9
	Total Listed		190	35.8
	Total Market		530	100.0

Exhibit C-11

Network Applications Leading Vendors United Kingdom, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (PS Millions)	Market Share (%)
1	IBM	U.S.	40	18.6
2	AT&T	U.S.	30	14.0
3	Syntegra	U.K.	20	9.3
4	GEIS	U.S.	20	9.3
5	ICL (Fujitsu)	U.K. (Japan)	10	4.7
6	Compuserve	U.K.	5	2.3
7	Sprint-Telenet	U.K.	5	2.3
8	EDS UK	U.S.	5	2.3
9	Digital	U.S.	5	2.3
10	GSI	France	0	0.0
	Total Listed		140	65.1
	Total Market		200	100.0

Exhibit C-12

Electronic Information Services Leading Vendors United Kingdom, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (PS Millions)	Market Share (%)
1	Reuters	U.K.	205	35.3
2	Telerate	U.S.	55	9.5
3	Citicorp	U.S.	30	5.2
4	Extel	U.K.	30	5.2
5	Dun & Bradstreet	U.S.	30	5.2
6	ADP	U.S.	20	3.4
7	Quick	U.K.	15	2.6
8	Mead	U.S.	10	1.7
9	Infolink	Belgium	10	1.7
10	Infocheck	U.K.	5	0.9
	Total Listed		410	70.7
	Total Market		580	100.0

Exhibit C-16

Equipment Maintenance Leading Vendors United Kingdom, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (PS Millions)	Market Share (%)
1	IBM	U.S.	200	13.0
2	ICL (Fujitsu)	U.K. (Japan)	200	13.0
3	Digital	U.S.	200	13.0
4	HP	U.S.	100	6.5
5	Unisys	U.S.	80	5.2
6	Granada	U.K.	70	4.5
7	AT&T	U.S.	55	3.6
8	Bull	France	50	3.2
9	Olivetti	Italy	45	2.9
10	Siemens-Nixdorf	Germany	45	2.9
	Total Listed		1,045	67.9
	Total Market		1,500	100.0

Exhibit C-17

Environmental Services Leading Vendors United Kingdom, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (PS Millions)	Market Share (%)
1	Digital	U.S.	30	3.5
2	ICL (Fujitsu)	U.K. (Japan)	25	2.9
3	IBM	U.S.	20	2.4
4	Unisys	U.S.	15	1.8
5	HP	U.S.	10	1.2
6	Wang	U.S.	5	0.6
7	AT&T	U.S.	5	0.6
8	Rank Xerox	U.K.	5	0.6
9	Prime	U.S.	5	0.6
10	ACT Group	U.K.	5	0.6
	Total Listed		125	14.7
	Total Market		850	100.0

Exhibit C-18

Information Services Leading Vendors United Kingdom, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (PS Millions)	Market Share (%)
1	IBM	U.S.	1,010	10.1
2	ICL (Fujitsu)	U.K. (Japan)	720	7.2
3	Digital	U.S.	510	5.1
4	Reuters	U.K.	270	2.7
5	EDS UK	U.S.	220	2.2
6	AT&T	U.S.	220	2.2
7	Sema Group	France	210	2.1
8	Hoskyns (CGS)	U.K. (F)	200	2.0
9	Andersen Consulting	U.S.	190	1.9
10	HP	U.S.	190	1.9
	Total Listed		3,740	37.4
	Total Market		10,000	100.0

D

Information Services Industry Forecast Database, 1994-1999 Italy

A

Forecast Database in Local Currency (Lira Billions)

Exhibit D-1

Top Level IT Expenditure, Italy

Sector	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR (%)
	Lira Billions								
Total IT Spending	42,500	1	43,000	43,500	44,500	45,000	46,500	47,500	2
Equipment Sales	8,150	-1	8,050	8,050	8,100	8,150	8,150	8,150	0
Mainframe	1,050	-15	890	760	650	550	460	390	-15
Minicomputer	1,800	-6	1,700	1,620	1,550	1,460	1,360	1,300	-5
PC/Workstation	5,300	4	5,500	5,700	5,900	6,100	6,300	6,500	3
Equipment Services	3,500	2	3,560	3,580	3,590	3,610	3,600	3,590	0
Software Products	4,240	6	4,500	4,820	5,180	5,590	6,000	6,460	7
Other Information Services	6,500	3	6,700	7,000	7,400	8,000	8,700	9,400	7
Data Communications	2,920	9	3,170	3,410	3,660	3,930	4,180	4,480	7
Facilities/Administration	4,510	-4	4,350	4,230	4,190	4,200	4,190	4,190	-1
In-house Staff	12,900	-3	12,500	12,300	12,200	11,700	11,500	11,400	-2

Exhibit D-2

Information Services Market
Forecast by Delivery Mode and Submode
Italy, 1994-1999

Delivery Modes	Lira Billions								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	11,450	4	11,900	12,500	13,350	14,400	15,500	16,750	7
Professional Services	3,460	-1	3,430	3,420	3,550	3,660	3,840	4,030	3
- IS Consulting	500	10	550	575	620	695	795	900	10
- Education & Training	250	6	265	265	270	290	315	340	5
- Custom Software	2,690	-4	2,580	2,540	2,620	2,620	2,660	2,700	1
- Application Management	25	24	31	36	43	54	69	87	23
Systems Integration	490	9	535	585	650	725	800	880	10
- Equipment	140	0	140	150	160	170	185	200	7
- Application Software	95	0	95	115	140	170	210	260	22
- System Software	40	0	40	45	50	55	60	65	10
- Professional Services	205	22	250	265	285	315	330	335	6
- Other	10	0	10	11	13	15	17	20	15
Systems Operations	350	23	430	505	605	735	890	1,075	20
- Platform Operations	100	15	115	120	125	145	160	200	12
- Application Operations	200	25	250	300	370	450	550	650	21
- Desktop Services	50	30	65	85	110	140	180	225	28
Processing Services	1,185	-2	1,165	1,160	1,185	1,215	1,235	1,260	2
- Transaction Processing	1,060	-2	1,035	1,025	1,045	1,065	1,075	1,090	1
- Utility Processing	15	0	15	15	15	15	15	15	0
- Other Processing	110	5	115	120	125	135	145	155	6
Network Services	650	14	740	850	980	1,140	1,320	1,530	16
- Electronic Info Svcs	400	5	420	440	460	480	480	480	3
- Network Applications	200	30	260	340	440	565	730	925	29
- Network Management	50	20	60	70	80	95	110	125	16
System Software	2,300	4	2,400	2,500	2,600	2,700	2,800	2,900	4
- Mainframe	905	-4	865	810	770	730	695	640	-6
- Minicomputer	755	5	795	840	870	890	905	920	3
- Workstation/PC	640	16	740	850	960	1,080	1,200	1,340	13
Application Software	1,940	10	2,100	2,320	2,580	2,890	3,200	3,560	11
- Mainframe	155	-6	146	136	127	120	114	109	-6
- Minicomputer	535	-8	494	504	513	510	436	341	-7
- Workstation/PC	1,250	17	1,460	1,680	1,940	2,260	2,650	3,110	16
Turnkey Systems	1,050	3	1,080	1,140	1,220	1,320	1,410	1,510	7
- Equipment	525	3	540	560	585	610	630	650	4
- Application Software	255	0	255	275	305	340	375	410	10
- System Software	12	8	13	14	15	16	17	18	7
- Professional Services	265	2	270	290	320	355	390	430	10
Equipment Services	3,500	2	3,560	3,580	3,590	3,610	3,600	3,590	0
- Equipment Maintenance	2,350	0	2,355	2,320	2,265	2,200	2,095	1,990	-3
- Environmental Services	1,150	5	1,205	1,260	1,325	1,410	1,505	1,600	6
Grand Total Information Service Market	15,000	3	15,500	16,000	17,000	18,000	19,000	20,500	6

B

Forecast Database in U.S. Dollars

Exhibit D-3

Software and Services Market Forecast in Dollars Italy, 1994-1999

Delivery Modes	U.S. $ Million (rounded)								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	6,700	4	7,000	7,300	7,800	8,400	9,100	9,800	7
Professional Services	2,000	-1	2,000	2,000	2,100	2,100	2,200	2,400	3
- IS Consulting	290	10	320	340	360	410	460	530	10
- Education & Training	150	6	150	150	160	170	180	200	5
- Custom Software	1,600	-4	1,500	1,500	1,500	1,500	1,600	1,600	1
- Application Management	15	24	18	21	25	32	40	51	23
Systems Integration	290	9	310	340	380	420	470	510	10
- Equipment	80	0	80	90	90	100	110	120	7
- Application Software	56	0	56	67	82	99	123	152	22
- System Software	23	0	23	26	29	32	35	38	10
- Professional Services	120	22	150	150	170	180	190	200	6
- Other	6	0	6	6	8	9	10	12	15
Systems Operations	200	23	250	300	350	430	520	630	20
- Platform Operations	60	15	70	70	70	80	90	120	12
- Application Operations	120	25	150	180	220	260	320	380	21
- Desktop Services	29	30	38	50	64	82	105	132	28
Processing Services	690	-2	680	680	690	710	720	740	2
- Transaction Processing	620	-2	610	600	610	620	630	640	1
- Utility Processing	10	0	10	10	10	10	10	10	0
- Other Processing	60	5	70	70	70	80	80	90	6
Network Services	380	14	430	500	570	670	770	890	16
- Electronic Info Svcs	230	5	250	260	270	280	280	280	3
- Network Applications	120	30	150	200	260	330	430	540	29
- Network Management	30	20	40	40	50	60	60	70	16
System Software	1,300	4	1,400	1,500	1,500	1,600	1,600	1,700	4
- Mainframe	530	-4	510	470	450	430	410	370	-6
- Minicomputer	440	5	460	490	510	520	530	540	3
- Workstation/PC	370	16	430	500	560	630	700	780	13
Application Software	1,100	10	1,200	1,400	1,500	1,700	1,900	2,100	11
- Mainframe	90	-6	90	80	70	70	70	60	-6
- Minicomputer	310	-8	290	290	300	300	250	200	-7
- Workstation/PC	700	17	900	1,000	1,100	1,300	1,500	1,800	16
Turnkey Systems	610	3	630	670	710	770	820	880	7
- Equipment	310	3	320	330	340	360	370	380	4
- Application Software	150	0	150	160	180	200	220	240	10
- System Software	7	8	8	8	9	9	10	11	7
- Professional Services	150	2	160	170	190	210	230	250	10
Equipment Services	2,000	2	2,100	2,100	2,100	2,100	2,100	2,100	0
- Equipment Maintenance	1,400	0	1,400	1,400	1,300	1,300	1,200	1,200	-3
- Environmental Services	700	5	700	700	800	800	900	900	6
Grand Total Information Service Market	9,000	3	9,000	9,000	10,000	11,000	11,000	12,000	6

C

Forecast Database in ECUs

Exhibit D-4

Software and Services Market Forecast in ECUs
Italy, 1994-1999

Delivery Modes	ECU Millions (rounded)								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	6,000	4	6,300	6,600	7,000	7,600	8,200	8,800	7
Professional Services	1,800	-1	1,800	1,800	1,900	1,900	2,000	2,100	3
- IS Consulting	260	10	290	300	330	370	420	470	10
- Education & Training	130	6	140	140	140	150	170	180	5
- Custom Software	1,400	-4	1,400	1,300	1,400	1,400	1,400	1,400	1
- Application Management	10	24	20	20	20	30	40	50	23
Systems Integration	260	9	280	310	340	380	420	460	10
- Equipment	70	0	70	80	80	90	100	110	7
- Application Software	50	0	50	61	74	89	111	137	22
- System Software	21	0	21	24	26	29	32	34	10
- Professional Services	110	22	130	140	150	170	170	180	6
- Other	5	0	5	6	7	8	9	11	15
Systems Operations	180	23	230	270	320	390	470	570	20
- Platform Operations	50	15	60	60	70	80	80	110	12
- Application Operations	110	25	130	160	190	240	290	340	21
- Desktop Services	26	30	34	45	58	74	95	118	28
Processing Services	620	-2	610	610	620	640	650	660	2
- Transaction Processing	560	-2	540	540	550	560	570	570	1
- Utility Processing	10	0	10	10	10	10	10	10	0
- Other Processing	60	5	60	60	70	70	80	80	6
Network Services	340	14	390	450	520	600	690	810	16
- Electronic Info Svcs	210	5	220	230	240	250	250	250	3
- Network Applications	110	30	140	180	230	300	380	490	29
- Network Management	30	20	30	40	40	50	60	70	16
System Software	1,200	4	1,300	1,300	1,400	1,400	1,500	1,500	4
- Mainframe	480	-4	460	430	410	380	370	340	-6
- Minicomputer	400	5	420	440	460	470	480	480	3
- Workstation/PC	340	16	390	450	510	570	630	710	13
Application Software	1,000	10	1,100	1,200	1,400	1,500	1,700	1,900	11
- Mainframe	80	-6	80	70	70	60	60	60	-6
- Minicomputer	280	-8	260	270	270	270	230	180	-7
- Workstation/PC	660	17	770	880	1,020	1,190	1,390	1,640	16
Turnkey Systems	550	3	570	600	640	690	740	790	7
- Equipment	280	3	280	290	310	320	330	340	4
- Application Software	130	0	130	140	160	180	200	220	10
- System Software	6	8	7	7	8	8	9	9	7
- Professional Services	140	2	140	150	170	190	210	230	10
Equipment Services	1,800	2	1,900	1,900	1,900	1,900	1,900	1,900	0
- Equipment Maintenance	1,200	0	1,200	1,200	1,200	1,200	1,100	1,000	-3
- Environmental Services	600	5	600	700	700	700	800	800	6
Grand Total Information Service Market	8,000	3	8,000	8,000	9,000	9,000	10,000	11,000	6

D

Information Services Forecast Reconciliation in Local Currency

Exhibit D-5

Forecast Reconciliation, Italy, 1993-1998

Currency: Lira Billions	1993 Market				1998 Market				1993	1994
Delivery Mode	1993 Report (Fcst)	1994 Report (Act)	1993-1994 Variance (Amount)	(%)	1993 Report (Fcst)	1994 Report (Fcst)	1993-1994 Variance (Amount)	(%)	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

E

Leading Vendors in Local Currency (Lira Billions)

Exhibit D-6

Software and Services Leading Vendors Italy, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Lira Billions)	Market Share (%)
1	Finsiel	Italy	1,460	12.8
2	IBM	U.S.	1,410	12.3
3	Olivetti	Italy	980	8.6
4	Digital	U.S.	350	3.1
5	Reuters	U.K.	220	1.9
6	Microsoft	U.S.	220	1.9
7	Cerved	Italy	180	1.6
8	Database Informatica	Italy	180	1.6
9	Andersen Consulting	U.S.	170	1.5
10	Bull	France	160	1.4
11	Siemens-Nixdorf	Germany	145	1.3
12	Computer Associates	U.S.	140	1.2
13	Cap Gemini Sogeti	France	125	1.1
14	Datamat	Italy	110	1.0
15	S & M Group	Italy	110	1.0
16	Engineering	Italy	105	0.9
17	HP	U.S.	75	0.7
18	Novell	U.S.	75	0.7
19	Syntax [Olivetti]	Italy	70	0.6
20	Lombardia Informatica	Italy	70	0.6
21	ITP	Italy	70	0.6
22	Unisys	U.S.	65	0.6
23	Logica	U.K.	65	0.6
24	Lotus	U.S.	65	0.6
25	Oracle	U.S.	60	0.5
26	Sopin	Italy	60	0.5
27	CDS	Italy	55	0.5
28	Sicit	Italy	55	0.5
29	EDS	U.S.	55	0.5
30	Wordperfect	U.S.	55	0.5
	Total Listed		6,960	60.8
	Total Market		11,450	100.0

Exhibit D-7

Professional Services Leading Vendors Italy, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Lira Billions)	Market Share (%)
1	Finsiel	Italy	1,015	29.3
2	Olivetti	Italy	350	10.1
3	IBM	U.S.	300	8.7
4	Database Informatica	Italy	145	4.2
5	Cerved	Italy	100	2.9
6	Digital	U.S.	95	2.7
7	Engineering	Italy	80	2.3
8	Cap Gemini Sogeti	France	75	2.2
9	Datamat	Italy	75	2.2
10	Andersen Consulting	U.S.	75	2.2
	Total Listed		2,310	66.8
	Total Market		3,460	100.0

Exhibit D-8

Systems Integration Leading Vendors Italy, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Lira Billions)	Market Share (%)
1	IBM	U.S.	85	17.3
2	Andersen Consulting	U.S.	75	15.3
3	Finsiel	Italy	70	14.3
4	Olivetti	Italy	60	12.2
5	Bull	France	50	10.2
6	Digital	U.S.	40	8.2
7	Cap Gemini Sogeti	France	25	5.1
8	Logica	U.K.	20	4.1
9	Siemens-Nixdorf	Germany	20	4.1
10	Datitalia	U.S.	10	2.0
	Total Listed		455	92.8
	Total Market		490	100.0

Exhibit D-9

Systems Operations Leading Vendors Italy, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Lira Billions)	Market Share (%)
1	Finsiel	Italy	140	32.9
2	Olivetti	Italy	50	11.8
3	IBM	U.S.	20	4.7
4	Bull (Athesa)	France	15	3.5
5	Digital	U.S.	12	2.8
	Total Listed		237	55.8
	Total Market		425	100.0

Exhibit D-10

Processing Services Leading Vendors
Italy, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Lira Billions)	Market Share (%)
1	Finsiel	Italy	115	9.7
2	Lombardia Informatica	Italy	55	4.6
3	Sopin	Italy	45	3.8
4	Olivetti	Italy	30	2.5
5	Sarin	Italy	25	2.1
6	Cedacrinord	Italy	20	1.7
7	Database Informatica	Italy	15	1.3
8	IBM	U.S.	15	1.3
9	GEIS	U.S.	15	1.3
10	CDS	Italy	10	0.8
	Total Listed		345	29.1
	Total Market		1,185	100.0

Exhibit D-11

Network Applications Leading Vendors
Italy, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Lira Billions)	Market Share (%)
1	IBM	U.S.	25	12.5
2	GEIS	U.S.	25	12.5
3	Olivetti	Italy	20	10.0
4	Finsiel	Italy	15	7.5
5	Infonet	Belgium	10	5.0
6	INTESA	Italy	10	5.0
7	Digital	U.S.	10	5.0
8	Bull	France	10	5.0
9	Engineering	Italy	5	2.5
10	Datamont	Italy	5	2.5
	Total Listed		135	67.5
	Total Market		200	100.0

Exhibit D-12

Electronic Information Services Leading Vendors
Italy, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Lira Billions)	Market Share (%)
1	Reuters	U.K.	170	42.5
2	Telerate	U.S.	40	10.0
3	Cerved	Italy	40	10.0
4	Stet	Italy	25	6.3
5	Dun & Bradstreet	U.S.	20	5.0
6	Citicorp	U.S.	15	3.8
7	INTESA	Italy	10	2.5
8	Datitalia Processing	Italy	5	1.3
9	Mead	U.S.	5	1.3
10	Extel	U.K.	0	0.0
	Total Listed		330	82.5
	Total Market		400	100.0

Exhibit D-13

Systems Software Products Leading Vendors
Italy, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Lira Billions)	Market Share (%)
1	IBM	U.S.	805	35.0
2	Microsoft	U.S.	125	5.4
3	Digital	U.S.	120	5.2
4	Olivetti	Italy	105	4.6
5	Novell	U.S.	75	3.3
6	Bull	France	75	3.3
7	Computer Associates	U.S.	65	2.8
8	Siemens-Nixdorf	Germany	40	1.7
9	HP	U.S.	40	1.7
10	Borland	U.S.	35	1.5
	Total Listed		1,485	64.6
	Total Market		2,300	100.0

Exhibit D-14

Application Software Products Leading Vendors
Italy, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Lira Billions)	Market Share (%)
1	Olivetti	Italy	165	8.5
2	IBM	U.S.	115	5.9
3	Microsoft	U.S.	85	4.4
4	Finsiel	Italy	70	3.6
5	Lotus	U.S.	60	3.1
6	Wordperfect	U.S.	55	2.8
7	Computer Associates	U.S.	50	2.6
8	S & M Group	Italy	25	1.3
9	ITP	Italy	15	0.8
10	Siemens-Nixdorf	Germany	15	0.8
	Total Listed		655	33.8
	Total Market		1,940	100.0

Exhibit D-15

Turnkey Systems Leading Vendors
Italy, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Lira Billions)	Market Share (%)
1	Olivetti	Italy	180	17.1
2	Digital	U.S.	55	5.2
3	IBM	U.S.	50	4.8
4	Siemens-Nixdorf	Germany	45	4.3
5	Sicit	Italy	35	3.3
6	Editrice	Italy	25	2.4
7	Reuters	U.K.	20	1.9
8	Cerved	Italy	20	1.9
9	Intergraph	Netherlands	20	1.9
10	Cortis Lentini	Italy	15	1.4
	Total Listed		465	44.3
	Total Market		1,050	100.0

Exhibit D-16

Equipment Maintenance Leading Vendors
Italy, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Lira Billions)	Market Share (%)
1	IBM	U.S.	600	25.5
2	Olivetti	Italy	600	25.5
3	Bull	France	150	6.4
4	Digital	U.S.	145	6.2
5	Siemens-Nixdorf	Germany	105	4.5
6	HP	U.S.	95	4.0
7	Unisys	U.S.	50	2.1
8	AT&T (NCR)	U.S.	40	1.7
9	Wang	U.S.	25	1.1
10	Rank Xerox	U.K.	20	0.9
	Total Listed		1,830	77.9
	Total Market		2,400	100.0

Exhibit D-17

Environmental Services Leading Vendors
Italy, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Lira Billions)	Market Share (%)
1	IBM	U.S.	115	10.0
2	Olivetti	Italy	85	7.4
3	Digital	U.S.	55	4.8
4	Bull	France	10	0.9
5	HP	U.S.	10	0.9
6	Unisys	U.S.	10	0.9
7	Wang	U.S.	5	0.4
8	AT&T (NCR)	U.S.	5	0.4
9	Rank Xerox	U.K.	5	0.4
10	Prime	U.S.	0	0.0
	Total Listed		300	26.1
	Total Market		1,150	100.0

Exhibit D-18

Information Services Leading Vendors
Italy, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Lira Billions)	Market Share (%)
1	IBM	U.S.	2,140	14.3
2	Olivetti	Italy	1,660	11.1
3	Finsiel	Italy	1,460	9.7
4	Digital	U.S.	550	3.7
5	Bull	France	320	2.1
6	Siemens-Nixdorf	Germany	250	1.7
7	Reuters	U.K.	220	1.5
8	Microsoft	U.S.	220	1.5
9	HP	U.S.	190	1.3
10	Andersen Consulting	U.S.	180	1.2
	Total Listed		7,190	47.9
	Total Market		15,000	100.0

E

Information Services Industry Forecast Database, 1994-1999 Sweden

A

Forecast Database in Local Currency (SK Millions)

Exhibit E-1

Top Level IT Expenditure, Sweden

Sector	SK Millions								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR (%)
Total IT Spending	67,000	1	68,000	69,000	71,000	74,000	76,000	80,000	3
Equipment Sales	11,200	0	11,200	11,300	11,500	11,600	11,700	12,100	2
Mainframe	2,000	-13	1,750	1,550	1,350	1,200	1,050	950	-12
Minicomputer	3,000	-5	2,850	2,700	2,600	2,450	2,300	2,200	-5
PC/Workstation	6,200	6	6,600	7,000	7,500	7,900	8,300	8,900	6
Equipment Services	5,650	3	5,800	6,050	6,300	6,500	6,750	6,950	4
Software Products	4,510	7	4,810	5,180	5,610	6,110	6,700	7,350	9
Other Information Services	16,700	5	17,600	18,800	20,700	22,900	25,100	27,600	9
Data Communications	5,300	4	5,500	5,800	6,100	6,400	6,700	7,000	5
Facilities/Administration	6,200	-2	6,100	5,900	5,800	5,600	5,500	5,400	-2
In-house Staff	17,000	-3	16,500	15,500	15,000	14,500	14,000	13,500	-4

Exhibit E-2

Information Services Market
Forecast by Delivery Mode and Submode
Sweden, 1994-1999

Delivery Modes	SK Millions								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	22,500	5	23,700	25,400	27,700	30,500	33,400	36,600	9
Professional Services	9,800	3	10,100	10,700	11,600	12,700	13,700	14,600	8
- IS Consulting	1,050	6	1,110	1,210	1,340	1,500	1,660	1,800	10
- Education & Training	660	3	680	720	780	850	920	970	7
- Custom Software	8,000	3	8,200	8,650	9,300	10,100	10,900	11,500	7
- Application Management	110	14	125	145	170	205	240	280	18
Systems Integration	610	5	640	720	810	900	1,010	1,140	12
- Equipment	160	3	165	180	195	210	225	240	8
- Application Software	115	17	135	165	205	250	305	370	22
- System Software	45	2	46	50	55	59	64	69	8
- Professional Services	270	2	275	300	325	345	370	395	8
- Other	15	20	18	23	30	38	48	61	28
Systems Operations	1,400	23	1,720	2,080	2,515	3,045	3,730	4,615	22
- Platform Operations	380	14	435	500	570	650	750	875	15
- Application Operations	800	25	1,000	1,210	1,470	1,780	2,180	2,690	22
- Desktop Services	220	30	285	370	475	615	800	1,050	30
Processing Services	2,850	0	2,850	2,825	2,825	2,825	2,840	2,840	0
- Transaction Processing	2,580	0	2,570	2,540	2,530	2,520	2,520	2,510	0
- Utility Processing	54	-1	54	52	52	51	50	50	-2
- Other Processing	215	5	225	235	245	255	270	280	4
Network Services	880	13	990	1,150	1,340	1,570	1,810	2,080	16
- Electronic Info Svcs	510	8	550	615	685	765	840	915	11
- Network Applications	305	21	370	450	560	690	840	1,010	22
- Network Management	60	17	70	80	95	115	130	150	16
System Software	2,290	1	2,310	2,370	2,450	2,540	2,650	2,760	4
- Mainframe	1,150	-5	1,090	1,050	1,020	990	950	920	-3
- Minicomputer	620	4	645	680	720	760	805	850	6
- Workstation/PC	520	10	570	640	710	790	890	990	12
Application Software	2,220	13	2,500	2,810	3,160	3,570	4,050	4,590	13
- Mainframe	180	-3	175	170	165	160	155	150	-3
- Minicomputer	590	8	640	695	755	820	890	965	9
- Workstation/PC	1,450	16	1,680	1,940	2,240	2,590	3,000	3,470	16
Turnkey Systems	2,450	6	2,600	2,750	3,000	3,300	3,650	3,950	9
- Equipment	1,150	2	1,170	1,200	1,240	1,310	1,390	1,440	4
- Application Software	500	10	550	605	675	765	875	975	12
- System Software	155	3	160	160	165	175	185	190	3
- Professional Services	650	8	700	800	900	1,050	1,200	1,350	14
Equipment Services	5,650	3	5,800	6,050	6,300	6,500	6,750	6,950	4
- Equipment Maintenance	3,650	0	3,650	3,710	3,740	3,770	3,800	3,790	1
- Environmental Services	2,000	8	2,150	2,350	2,550	2,750	2,950	3,150	8
Grand Total Information Service Market	28,200	5	29,500	31,500	34,000	37,000	40,200	43,500	8

B

Forecast Database in U.S. Dollars

Exhibit E-3

Software and Services Market Forecast in Dollars
Sweden, 1994-1999

Delivery Modes	U.S. $ Million (rounded)								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	2,700	5	2,840	3,045	3,320	3,655	4,005	4,390	9
Professional Services	1,175	3	1,210	1,285	1,390	1,525	1,645	1,750	8
- IS Consulting	126	6	133	145	161	180	199	216	10
- Education & Training	79	3	82	87	94	102	111	117	7
- Custom Software	960	3	985	1,035	1,115	1,210	1,305	1,380	7
- Application Management	13	14	15	17	20	25	29	34	18
Systems Integration	73	5	77	87	97	108	121	137	12
- Equipment	19	3	20	22	24	25	27	29	8
- Application Software	14	17	16	20	25	30	37	44	22
- System Software	5	2	6	6	7	7	8	8	8
- Professional Services	33	2	33	36	39	42	45	48	8
- Other	2	20	2	3	4	5	6	7	28
Systems Operations	168	23	206	250	302	365	447	554	22
- Platform Operations	46	14	52	60	69	78	90	105	15
- Application Operations	96	25	120	145	177	214	262	323	22
- Desktop Services	26	30	34	44	57	74	96	126	30
Processing Services	342	0	342	339	339	339	341	341	0
- Transaction Processing	310	0	308	305	304	302	302	301	0
- Utility Processing	7	-1	7	6	6	6	6	6	-2
- Other Processing	26	5	27	28	30	31	33	34	4
Network Services	106	13	119	138	161	188	217	250	16
- Electronic Info Svcs	61	8	66	74	82	92	101	110	11
- Network Applications	37	21	45	54	67	83	101	121	22
- Network Management	7	17	9	10	12	14	16	18	16
System Software	275	1	275	285	295	305	320	330	4
- Mainframe	138	-5	131	126	123	119	114	111	-3
- Minicomputer	75	4	78	82	87	91	97	102	6
- Workstation/PC	63	10	69	77	85	95	107	119	12
Application Software	265	13	300	335	380	430	485	550	13
- Mainframe	22	-3	21	21	20	19	19	18	-3
- Minicomputer	71	8	77	84	91	99	107	116	9
- Workstation/PC	175	16	200	235	270	310	360	415	16
Turnkey Systems	294	6	312	330	360	396	438	474	9
- Equipment	138	2	141	144	149	157	167	173	4
- Application Software	60	10	66	73	81	92	105	117	12
- System Software	19	3	19	19	20	21	22	23	3
- Professional Services	78	8	84	96	108	126	144	162	14
Equipment Services	675	3	695	725	755	780	810	835	4
- Equipment Maintenance	440	0	440	445	450	450	455	455	1
- Environmental Services	240	8	260	280	305	330	355	380	8
Grand Total Information Service Market	3,400	5	3,550	3,800	4,100	4,450	4,800	5,200	8

C

Forecast Database in ECUs

Exhibit E-4

Software and Services Market Forecast in ECUs
Sweden, 1994-1999

Delivery Modes	ECU Millions (rounded)								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	2,415	5	2,545	2,725	2,970	3,275	3,585	3,925	9
Professional Services	1,050	3	1,085	1,150	1,245	1,365	1,470	1,565	8
- IS Consulting	113	6	119	130	144	161	178	193	10
- Education & Training	71	3	73	78	84	91	99	104	7
- Custom Software	860	3	880	930	1,000	1,085	1,170	1,235	7
- Application Management	12	14	14	16	18	22	26	30	18
Systems Integration	66	5	69	78	87	97	109	123	12
- Equipment	17	3	18	20	21	23	24	26	8
- Application Software	12	17	15	18	22	27	33	40	22
- System Software	5	2	5	5	6	6	7	7	8
- Professional Services	29	2	30	32	35	37	40	43	8
- Other	2	20	2	2	3	4	5	7	28
Systems Operations	150	23	185	223	270	327	400	495	22
- Platform Operations	41	14	47	54	61	70	81	94	15
- Application Operations	86	25	108	130	158	191	234	289	22
- Desktop Services	24	30	31	40	51	66	86	113	30
Processing Services	306	0	306	304	304	303	305	305	0
- Transaction Processing	277	0	276	273	272	271	271	270	0
- Utility Processing	6	-1	6	6	6	6	6	6	-2
- Other Processing	23	5	24	25	27	28	29	30	4
Network Services	95	13	106	124	144	169	194	223	16
- Electronic Info Svcs	55	8	59	66	74	82	90	98	11
- Network Applications	33	21	40	49	60	74	90	109	22
- Network Management	7	17	8	9	10	13	14	16	16
System Software	245	1	250	255	265	275	285	295	4
- Mainframe	124	-5	117	113	110	106	102	99	-3
- Minicomputer	67	4	69	73	78	82	87	91	6
- Workstation/PC	56	10	61	69	76	85	96	106	12
Application Software	240	13	270	300	340	385	435	490	13
- Mainframe	20	-3	19	18	18	17	17	16	-3
- Minicomputer	64	8	69	75	81	88	96	104	9
- Workstation/PC	156	16	181	208	241	278	322	373	16
Turnkey Systems	263	6	279	295	322	354	392	424	9
- Equipment	124	2	126	129	133	141	149	155	4
- Application Software	54	10	59	65	73	82	94	105	12
- System Software	17	3	17	17	18	19	20	20	3
- Professional Services	70	8	75	86	97	113	129	145	14
Equipment Services	605	3	620	650	675	695	725	745	4
- Equipment Maintenance	390	0	390	400	400	405	410	405	1
- Environmental Services	215	8	230	250	275	295	315	340	8
Grand Total Information Service Market	3,050	5	3,150	3,400	3,650	3,950	4,300	4,650	8

D

Information Services Forecast Reconciliation in Local Currency

Exhibit E-5

Forecast Reconciliation, Sweden, 1993-1998

Currency: SK Millions	1993 Market				1998 Market				1993 Report %CAGR (Fcst)	1994 Report %CAGR (Fcst)
Delivery Mode	1993 Report (Fcst)	1994 Report (Act)	1993-1994 Variance (Amount)	1993-1994 Variance (%)	1993 Report (Fcst)	1994 Report (Fcst)	1993-1994 Variance (Amount)	1993-1994 Variance (%)		
Software and Services Total (ex Equipment Services)	22,500	22,500	0	0	33,400	33,400	0	0	8	8
Professional Services	10,000	9,800	-200	-2	13,400	13,700	300	2	6	7
- IS Consulting	1,090	1,050	-40	-4	1,700	1,660	-40	-2	9	10
- Education & Training	680	660	-20	-3	940	920	-20	-2	7	7
- Custom Software	8,200	8,000	-200	-2	10,650	10,900	250	2	5	6
- Application Management	45	110	65	144	150	240	90	60	27	17
Systems Integration	630	610	-20	-3	1,700	1,010	-690	-41	22	11
- Equipment	170	160	-10	-6	360	225	-135	-38	16	7
- Application Software	115	115	0	0	610	305	-305	-50	40	22
- System Software	50	45	-5	-10	125	64	-61	-49	20	7
- Professional Services	280	270	-10	-4	560	370	-190	-34	15	7
- Other	15	15	0	0	49	48	-1	-2	27	26
Systems Operations	740	1,400	660	89	1,560	3,730	2,170	139	16	22
- Platform Operations	280	380	100	36	565	750	185	33	15	15
- Application Operations	400	800	400	100	840	2,180	1,340	160	16	22
- Desktop Services	60	220	160	267	155	800	645	416	21	29
Processing Services	2,850	2,850	0	0	2,710	2,840	130	5	-1	0
- Transaction Processing	2,580	2,580	0	0	2,400	2,520	120	5	-1	0
- Utility Processing	54	54	0	0	48	50	2	4	-2	-2
- Other Processing	215	215	0	0	260	270	10	4	4	5
Network Services	920	880	-40	-4	2,290	1,810	-480	-21	20	16
- Electronic Info Svcs	510	510	0	0	705	840	135	19	7	10
- Network Applications	350	305	-45	-13	1,360	840	-520	-38	31	22
- Network Management	60	60	0	0	220	130	-90	-41	30	17
System Software	2,430	2,290	-140	-6	3,220	2,650	-570	-18	6	3
- Mainframe	1,220	1,150	-70	-6	1,220	950	-270	-22	0	-4
- Minicomputer	655	620	-35	-5	905	805	-100	-11	7	5
- Workstation/PC	550	520	-30	-5	1,090	890	-200	-18	15	11
Application Software	2,300	2,220	-80	-3	4,330	4,050	-280	-6	13	13
- Mainframe	185	180	-5	-3	165	155	-10	-6	-2	-3
- Minicomputer	605	590	-15	-2	885	890	5	1	8	9
- Workstation/PC	1,510	1,450	-60	-4	3,280	3,000	-280	-9	17	16
Turnkey Systems	2,650	2,450	-200	-8	4,150	3,650	-500	-12	9	8
- Equipment	1,270	1,150	-120	-9	1,580	1,390	-190	-12	4	4
- Application Software	530	500	-30	-6	995	875	-120	-12	13	12
- System Software	170	155	-15	-9	225	185	-40	-18	6	4
- Professional Services	700	650	-50	-7	1,350	1,200	-150	-11	14	13
Equipment Services	5,800	5,650	-150	-3	6,750	6,750	0	0	3	4
- Equipment Maintenance	3,700	3,650	-50	-1	3,850	3,800	-50	-1	1	1
- Environmental Services	2,080	2,000	-80	-4	2,880	2,950	70	2	7	8
Grand Total	28,300	28,200	-100	0	40,100	40,200	100	0	7	7

E

Leading Vendors in Local Currency (SK Millions)

Exhibit E-6

Software and Services Leading Vendors
Sweden, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (SK Millions)	Market Share (%)
1	IBM	U.S.	1,920	8.5
2	Cap Programmator [CGS]	France	1,270	5.6
3	Sapia	Sweden	1,050	4.7
4	Apiron	Sweden	710	3.2
5	SKD Foretagen	Sweden	710	3.2
6	Digital	U.S.	680	3.0
7	WM Data Nordic	Sweden	590	2.6
8	EDS	U.S.	540	2.4
9	Enator	Sweden	410	1.8
10	Reuters	U.K.	355	1.6
11	Computer Associates	U.S.	350	1.6
12	Sema Group	France	330	1.5
13	Lantbruksdata	Sweden	320	1.4
14	Microsoft	U.S.	310	1.4
15	ICL (Fujitsu)	U.K.	305	1.4
16	Oracle	U.S.	300	1.3
17	Andersen Consulting	U.S.	250	1.1
18	Communicator AB	Sweden	210	0.9
19	Conor Information	Sweden	210	0.9
20	IBS	Sweden	200	0.9
21	Industri-Matematik	Sweden	190	0.8
22	Siemens-Nixdorf	Germany	180	0.8
23	Unisys	U.S.	160	0.7
24	Infonet	Belgium	150	0.7
25	Intergraph	U.S.	145	0.6
26	CRS Datacraft	Sweden	100	0.4
27	Maldata	Sweden	100	0.4
28	Olivetti	Italy	100	0.4
29	Ask	U.S.	95	0.4
30	HP	U.S.	90	0.4
	Total Listed		12,330	54.8
	Total Market		22,500	100.0

Exhibit E-7

Professional Services Leading Vendors Sweden, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (SK Millions)	Market Share (%)
1	Cap Programmator [CGS]	France	485	4.9
2	Apiron	Sweden	400	4.1
3	Enator	Sweden	310	3.2
4	WM Data Nordic	Sweden	265	2.7
5	Sapia	Sweden	255	2.6
6	Communicator AB	Sweden	170	1.7
7	IBM	U.S.	165	1.7
8	IBS	Sweden	165	1.7
9	Sema Group	France	160	1.6
10	Oracle	U.S.	140	1.4
	Total Listed		2,515	25.7
	Total Market		9,800	100.0

Exhibit E-8

Systems Integration Leading Vendors Sweden, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (SK Millions)	Market Share (%)
1	IBM	U.S.	160	26.2
2	Cap Programmator (CGS)	France	100	16.4
3	ICL (Fujitsu)	U.K.	85	13.9
4	EDS	U.S.	60	9.8
5	Ericsson	Sweden	45	7.4
	Total Listed		475	77.8
	Total Market		610	100.0

Exhibit E-9

Systems Operations Leading Vendors Sweden, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (SK Millions)	Market Share (%)
1	Cap Programmator [CGS]	France	500	25.0
2	EDS	U.S.	350	17.5
3	Sema Group	France	300	15.0
4	WM-Data	France	250	12.5
5	IBM	U.S.	200	10.0
	Total Listed		1,600	80.0
	Total Market		2,000	100.0

Exhibit E-10

Processing Services Leading Vendors Sweden, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (SK Millions)	Market Share (%)
1	SKD Foretagen	Sweden	560	19.6
2	Sapia	Sweden	340	11.9
3	Apiron	Sweden	150	5.3
4	WM Data Nordic	Sweden	140	4.9
5	Conor Information	Sweden	135	4.7
6	Lantbruksdata	Sweden	125	4.4
7	CRS Datacraft	Sweden	65	2.3
8	EDS	U.S.	40	1.4
9	Datema	Sweden	40	1.4
10	JDC Data	Denmark	20	0.7
	Total Listed		1,615	56.7
	Total Market		2,850	100.0

Exhibit E-11

Network Applications Leading Vendors Sweden, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (SK Millions)	Market Share (%)
1	Infonet	Belgium	100	49.2
2	Lantbruksdata	Sweden	60	29.5
3	IBM	U.S.	40	19.7
4	GEIS	U.S.	30	9.8
5	Digital	U.S.	15	4.9
	Total Listed		245	131.1
	Total Market		300	100.0

Exhibit E-12

Electronic Information Services Leading Vendors Sweden, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (SK Millions)	Market Share (%)
1	Reuters	U.K.	275	53.9
2	Telerate	U.S.	65	12.7
3	Dun & Bradstreet	U.S.	30	5.9
	Total Listed		370	72.5
	Total Market		510	100.0

Exhibit E-13

Systems Software Products Leading Vendors Sweden, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (SK Millions)	Market Share (%)
1	IBM	U.S.	1,105	48.3
2	Digital	U.S.	230	10.0
3	Microsoft	U.S.	180	7.9
4	Computer Associates	U.S.	165	7.2
5	Oracle	U.S.	145	6.3
6	Ask	U.S.	90	3.9
7	Novell	U.S.	85	3.7
8	Lantbruksdata	Sweden	60	2.6
9	ICL (Fujitsu)	U.K.	55	2.4
10	Siemens-Nixdorf	Germany	55	2.4
	Total Listed		2,170	94.8
	Total Market		2,290	100.0

Exhibit E-14

Application Software Products Leading Vendors Sweden, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (SK Millions)	Market Share (%)
1	IBM	U.S.	155	7.0
2	Microsoft	U.S.	125	5.6
3	Computer Associates	U.S.	125	5.6
4	WM Data Nordic	Sweden	110	5.0
5	Wordperfect	U.S.	70	3.2
6	Lotus	U.S.	60	2.7
7	Cap Programmator [CGS]	France	45	2.0
8	ICL (Fujitsu)	U.K.	40	1.8
9	IBS	Sweden	35	1.6
10	Maldata	Sweden	35	1.6
	Total Listed		800	36.0
	Total Market		2,220	100.0

Exhibit E-15

Turnkey Systems Leading Vendors Sweden, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (SK Millions)	Market Share (%)
1	Sapia	Sweden	430	17.6
2	Industri-Matematik	Sweden	170	6.9
3	Intergraph	U.S.	115	4.7
4	Digital	U.S.	110	4.5
5	IBM	U.S.	65	2.7
6	Cap Programmator [CGS]	France	55	2.2
7	Siemens-Nixdorf	Germany	55	2.2
8	Apiron	Sweden	50	2.0
9	Maldata	Sweden	50	2.0
10	Reuters	U.K.	35	1.4
	Total Listed		1,135	46.3
	Total Market		2,450	100.0

Exhibit E-16

Equipment Maintenance Leading Vendors
Sweden, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (SK Millions)	Market Share (%)
1	IBM	U.S.	900	24.7
2	Digital	U.S.	350	9.6
3	ICL (Fujitsu)	U.K.	350	9.6
4	Siemens-Nixdorf	Germany	175	4.8
5	Unisys	U.S.	150	4.1
6	HP	U.S.	110	3.0
7	Bull	France	85	2.3
8	Sun Microsystems	U.S.	85	2.3
9	Wang	U.S.	85	2.3
10	AT&T	U.S.	65	1.8
	Total Listed		2,355	64.5
	Total Market		3,700	100.0

Exhibit E-17

Environmental Services Leading Vendors
Sweden, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (SK Millions)	Market Share (%)
1	IBM	U.S.	85	4.3
2	Digital	U.S.	60	3.0
3	Unisys	U.S.	20	1.0
4	HP	U.S.	15	0.8
5	Wang	U.S.	15	0.8
6	ICL (Fujitsu)	U.K.	10	0.5
7	Olivetti	Italy	10	0.5
8	Bull	France	5	0.3
9	AT&T	U.S.	5	0.3
10	Rank Xerox	U.K.	5	0.3
	Total Listed		230	11.5
	Total Market		2,000	100.0

Exhibit E-18

Information Services Leading Vendors
Sweden, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (SK Millions)	Market Share (%)
1	IBM	U.S.	2,900	10.4
2	Cap Programmator [CGS]	France	1,270	4.5
3	Digital	U.S.	1,110	4.0
4	Sapia	Sweden	1,050	3.8
5	ICL (Fujitsu)	U.K.	710	2.5
6	Apiron	Sweden	710	2.5
7	SKD Foretagen	Sweden	710	2.5
8	WM Data Nordic	Sweden	590	2.1
9	EDS	U.S.	460	1.6
10	Enator	Sweden	410	1.5
	Total Listed		9,920	35.4
	Total Market		28,000	100.0

F

Information Services Industry Forecast Database, 1994-1999 Denmark

A

Forecast Database in Local Currency (DK Millions)

Exhibit F-1

Top Level IT Expenditure, Denmark

Sector	DK Millions								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR (%)
Total IT Spending	42,500	1	43,000	43,500	44,000	44,500	44,500	45,000	1
Equipment Sales	8,700	0	8,700	8,800	8,900	9,000	8,800	8,900	0
Mainframe	2,000	-10	1,800	1,600	1,400	1,300	1,100	1,000	-11
Minicomputer	2,200	0	2,200	2,200	2,200	2,200	2,100	2,100	-1
PC/Workstation	4,500	4	4,700	5,000	5,300	5,500	5,600	5,800	4
Equipment Services	3,000	2	3,070	3,060	3,120	3,160	3,120	3,070	0
Software Products	2,880	18	3,400	3,600	3,900	4,250	4,500	4,750	7
Other Information Services	8,300	1	8,400	8,900	9,300	9,800	10,200	10,700	5
Data Communications	2,800	7	3,000	3,200	3,450	3,650	3,800	3,950	6
Facilities/Administration	3,200	0	3,200	3,200	3,200	3,200	3,100	3,000	-1
In-house Staff	13,500	-4	13,000	12,500	12,000	11,500	11,000	10,500	-4

Exhibit F-2

Information Services Market
Forecast by Delivery Mode and Submode
Denmark, 1994-1999

Delivery Modes	DK Millions								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	12,300	5	12,900	13,600	14,400	15,200	15,900	16,600	5
Professional Services	2,950	3	3,050	3,250	3,450	3,650	3,850	4,050	6
- IS Consulting	520	10	570	630	700	780	860	940	11
- Education & Training	260	4	270	280	290	310	320	330	4
- Custom Software	2,150	2	2,200	2,300	2,400	2,500	2,600	2,700	4
- Application Management	20	25	25	32	41	52	66	83	27
Systems Integration	385	8	415	465	525	580	635	685	11
- Equipment	100	5	105	115	125	135	145	150	7
- Application Software	70	21	85	105	130	160	190	225	21
- System Software	30	0	30	35	40	45	50	55	13
- Professional Services	175	6	185	200	215	225	235	240	5
- Other	10	10	11	12	13	14	15	16	8
Systems Operations	180	22	220	270	330	400	470	550	20
- Platform Operations	50	10	55	65	75	85	95	105	14
- Application Operations	90	28	115	140	170	205	240	280	19
- Desktop Services	40	30	52	65	85	105	130	160	25
Processing Services	3,010	-2	2,960	2,920	2,870	2,790	2,720	2,610	-2
- Transaction Processing	2,750	-2	2,700	2,650	2,600	2,520	2,440	2,340	-3
- Utility Processing	55	-4	53	52	50	48	46	44	-4
- Other Processing	200	3	205	215	220	225	230	230	2
Network Services	610	10	670	770	870	980	1,080	1,200	12
- Electronic Info Svcs	365	7	390	430	470	500	530	560	8
- Network Applications	220	18	260	310	370	440	510	590	18
- Network Management	20	15	23	28	33	38	44	50	17
System Software	1,700	6	1,800	1,850	1,950	2,050	2,100	2,150	4
- Mainframe	680	0	680	670	660	650	630	600	-2
- Minicomputer	590	7	630	670	710	750	770	790	5
- Workstation/PC	425	13	480	530	590	650	710	770	10
Application Software	1,450	10	1,600	1,750	1,950	2,200	2,400	2,600	10
- Mainframe	92	-5	87	86	84	82	78	74	-3
- Minicomputer	445	6	470	505	545	585	620	650	7
- Workstation/PC	920	11	1,020	1,170	1,330	1,510	1,680	1,860	13
Turnkey Systems	2,040	6	2,170	2,290	2,430	2,550	2,650	2,740	5
- Equipment	980	2	1,000	1,020	1,040	1,050	1,050	1,035	1
- Application Software	385	9	420	460	500	540	575	610	8
- System Software	128	5	135	141	148	154	158	161	4
- Professional Services	550	11	610	670	740	810	870	930	9
Equipment Services	3,000	2	3,070	3,060	3,120	3,160	3,120	3,070	0
- Equipment Maintenance	1,800	-2	1,765	1,680	1,630	1,570	1,470	1,365	-5
- Environmental Services	1,200	9	1,305	1,380	1,485	1,585	1,650	1,705	5
Grand Total Information Service Market	15,000	7	16,000	17,000	17,000	18,000	19,000	20,000	5

B

Forecast Database in U.S. Dollars

Exhibit F-3

Software and Services Market Forecast in Dollars
Denmark, 1994-1999

Delivery Modes	U.S. $ Million (rounded)								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	1,810	5	1,900	2,005	2,120	2,240	2,340	2,445	5
Professional Services	435	3	450	480	510	540	565	595	6
- IS Consulting	77	10	84	93	103	115	127	139	11
- Education & Training	39	4	40	41	43	46	47	49	4
- Custom Software	315	2	325	340	355	370	385	400	4
- Application Management	3	25	4	5	6	8	10	12	27
Systems Integration	57	8	61	69	78	86	94	101	11
- Equipment	15	5	16	17	19	20	22	22	7
- Application Software	10	21	13	15	19	24	28	33	21
- System Software	4	0	4	5	6	7	7	8	13
- Professional Services	26	6	27	30	32	33	35	36	5
- Other	1	10	2	2	2	2	2	2	8
Systems Operations	27	22	33	40	49	59	69	81	20
- Platform Operations	8	10	8	10	11	13	14	16	14
- Application Operations	14	28	17	21	25	30	36	41	19
- Desktop Services	6	30	8	10	13	15	19	24	25
Processing Services	444	-2	436	430	423	411	401	385	-2
- Transaction Processing	405	-2	398	391	383	371	360	345	-3
- Utility Processing	8	-4	8	8	8	7	7	7	-4
- Other Processing	30	3	30	32	33	33	34	34	2
Network Services	90	10	99	114	128	145	159	177	12
- Electronic Info Svcs	54	7	58	64	69	74	78	83	8
- Network Applications	33	18	39	46	55	65	75	87	18
- Network Management	3	15	4	4	5	6	7	8	17
System Software	250	6	265	270	285	300	310	315	4
- Mainframe	100	0	100	99	97	96	93	89	-2
- Minicomputer	87	7	93	99	105	111	114	117	5
- Workstation/PC	63	13	71	78	87	96	105	114	10
Application Software	215	10	235	260	285	325	355	385	10
- Mainframe	14	-5	13	13	13	12	12	11	-3
- Minicomputer	66	6	69	75	81	86	92	96	7
- Workstation/PC	135	11	150	170	195	220	245	275	13
Turnkey Systems	301	6	320	338	358	376	391	404	5
- Equipment	145	2	148	150	153	155	155	153	1
- Application Software	57	9	62	68	74	80	85	90	8
- System Software	19	5	20	21	22	23	23	24	4
- Professional Services	81	11	90	99	109	120	128	137	9
Equipment Services	440	2	450	450	460	465	460	450	0
- Equipment Maintenance	265	-2	260	245	240	230	215	200	-5
- Environmental Services	175	9	190	205	220	235	245	250	5
Grand Total Information Service Market	2,200	7	2,350	2,500	2,500	2,650	2,800	2,950	5

C

Forecast Database in ECUs

Exhibit F-4

Software and Services Market Forecast in ECUs
Denmark, 1994-1999

Delivery Modes	ECU Millions (rounded)								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	1,625	5	1,705	1,800	1,905	2,010	2,105	2,195	5
Professional Services	390	3	405	430	455	485	510	535	6
- IS Consulting	69	10	76	84	93	103	114	125	11
- Education & Training	35	4	36	37	39	41	43	44	4
- Custom Software	285	2	290	305	315	330	345	355	4
- Application Management	3	25	4	4	6	7	9	11	27
Systems Integration	51	8	55	62	70	77	84	91	11
- Equipment	13	5	14	15	17	18	19	20	7
- Application Software	9	21	11	14	17	21	25	30	21
- System Software	4	0	4	5	5	6	7	7	13
- Professional Services	23	6	25	27	29	30	31	32	5
- Other	1	10	1	2	2	2	2	2	8
Systems Operations	24	22	29	36	44	53	62	73	20
- Platform Operations	7	10	8	9	10	11	13	14	14
- Application Operations	12	28	15	19	23	27	32	37	19
- Desktop Services	5	30	7	9	11	14	17	21	25
Processing Services	398	-2	392	386	380	370	360	346	-2
- Transaction Processing	364	-2	357	351	344	334	323	310	-3
- Utility Processing	8	-4	7	7	7	7	6	6	-4
- Other Processing	27	3	27	29	29	30	31	31	2
Network Services	81	10	89	102	115	130	143	159	12
- Electronic Info Svcs	49	7	52	57	62	66	70	74	8
- Network Applications	29	18	35	41	49	58	68	78	18
- Network Management	3	15	3	4	5	5	6	7	17
System Software	225	6	240	245	260	270	280	285	4
- Mainframe	90	0	90	89	88	86	84	80	-2
- Minicomputer	78	7	84	89	94	99	102	105	5
- Workstation/PC	56	13	64	70	78	86	94	102	10
Application Software	190	10	210	230	260	290	315	345	10
- Mainframe	12	-5	12	12	11	11	11	10	-3
- Minicomputer	59	6	62	67	72	78	82	86	7
- Workstation/PC	122	11	135	155	176	200	222	246	13
Turnkey Systems	270	6	287	303	322	338	351	363	5
- Equipment	130	2	133	135	138	139	139	137	1
- Application Software	51	9	56	61	66	72	76	81	8
- System Software	17	5	18	19	20	20	21	21	4
- Professional Services	73	11	81	89	98	107	115	123	9
Equipment Services	395	2	405	405	415	420	415	405	0
- Equipment Maintenance	240	-2	235	220	215	210	195	180	-5
- Environmental Services	160	9	175	185	195	210	220	225	5
Grand Total Information Service Market	2,000	7	2,100	2,250	2,250	2,400	2,500	2,650	5

D

Information Services Forecast Reconciliation in Local Currency

Exhibit F-5

Forecast Reconciliation, Denmark, 1993-1998

Currency: DK Millions	1993 Market				1998 Market				1993	1994
Delivery Mode	1993 Report (Fcst)	1994 Report (Act)	1993-1994 Variance (Amount)	1993-1994 Variance (%)	1993 Report (Fcst)	1994 Report (Fcst)	1993-1994 Variance (Amount)	1993-1994 Variance (%)	Report %CAGR (Fcst)	Report %CAGR (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

Leading Vendors in Local Currency (DK Millions)

Exhibit F-6

Software and Services Leading Vendors
Denmark, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (DK Millions)	Market Share (%)
1	IBM	U.S.	1,710	13.9
2	Kommundata	Sweden	1,430	11.6
3	PBS	Denmark	830	6.7
4	Digital	U.S.	220	1.8
5	Computer Associates	U.S.	210	1.7
6	Oracle	U.S.	200	1.6
7	Microsoft	U.S.	190	1.5
8	Danet	Denmark	150	1.2
9	JDC Data	Denmark	135	1.1
10	ICL (Fujitsu)	U.K.	135	1.1
	Total Listed		5,210	42.4
	Total Market		12,300	100.0

Exhibit F-7

Professional Services Leading Vendors
Denmark, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (DK Millions)	Market Share (%)
1	PBS	Denmark	830	28.1
2	IBM	U.S.	220	7.5
3	JDC Data	Denmark	115	3.9
4	Oracle	U.S.	90	3.1
5	Kommundata	Sweden	75	2.5
6	ICL (Fujitsu)	U.K.	75	2.5
7	Danet	Denmark	70	2.4
8	Cap Gemini Sogeti	France	70	2.4
9	Digital	U.S.	60	2.0
10	AT&T	U.S.	45	1.5
	Total Listed		1,650	55.9
	Total Market		2,950	100.0

Exhibit F-8

Systems Integration Leading Vendors
Denmark, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (DK Millions)	Market Share (%)
1	IBM	U.S.	90	23.4
2	Computer Resources Intn'l	Denmark	50	13.0
3	Kommunedata	Denmark	40	10.4
4	Digital	U.S.	20	5.2
5	Cap Gemini Sogeti	France	15	3.9
	Total Listed		215	55.9
	Total Market		385	100.0

Exhibit F-9

Systems Operations Leading Vendors
Denmark, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (DK Millions)	Market Share (%)
1	PBS	Denmark	45	20.4
2	JDC	Denmark	35	15.9
3=	OK Data	Denmark	15	6.8
3=	Olivetti	Italy	15	6.8
3=	danNet	Denmark	15	6.8
	Total Listed		125	22.2
	Total Market		220	100.0

Exhibit F-10

Processing Services Leading Vendors
Denmark, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (DK Millions)	Market Share (%)
1	IBM	U.S.	15	0.5
2	GEIS	U.S.	5	0.2
3	Unisys	U.S.	5	0.2
4	Olivetti	Italy	5	0.2
5	HP	U.S.	0	0.0
6	ICL (Fujitsu)	U.K.	0	0.0
7	Digital	U.S.	0	0.0
8	Amdahl	U.S.	0	0.0
9	ComputerVision	U.S.	0	0.0
10	Comparex	Germany	0	0.0
	Total Listed		30	1.0
	Total Market		3,010	100.0

Exhibit F-11

Network Applications Leading Vendors
Denmark, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (DK Millions)	Market Share (%)
1	Danet	Denmark	50	22.7
2	IBM	U.S.	45	20.5
3	Infonet	Belgium	35	15.9
4	GEIS	U.S.	10	4.5
5	Digital	U.S.	5	2.3
6	Olivetti	Italy	0	0.0
7	AT&T	U.S.	0	0.0
8	Bull	France	0	0.0
9	ICL (Fujitsu)	U.K.	0	0.0
10	ACT Group	U.K.	0	0.0
	Total Listed		145	65.9
	Total Market		200	100.0

Exhibit F-12

Electronic Information Services Leading Vendors
Denmark, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (DK Millions)	Market Share (%)
1	Reuters	U.K.	75	20.5
2	Dun & Bradstreet	U.S.	25	6.8
3	Telerate	U.S.	20	5.5
4	Lotus	U.S.	0	0.0
5	ACT Group	U.K.	0	0.0
6	Amdahl	U.S.	0	0.0
7	Andersen Consulting	U.S.	0	0.0
8	Ask	U.S.	0	0.0
9	AT&T	U.S.	0	0.0
10	Axime	France	0	0.0
	Total Listed		120	32.9
	Total Market		365	100.0

Exhibit F-13

Systems Software Products Leading Vendors
Denmark, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (DK Millions)	Market Share (%)
1	IBM	U.S.	900	52.9
2	Microsoft	U.S.	110	6.5
3	Computer Associates	U.S.	100	5.9
4	Oracle	U.S.	95	5.6
5	Digital	U.S.	75	4.4
6	Computer People	U.K.	60	3.5
7	Novell	U.S.	60	3.5
8	Ask	U.S.	55	3.2
9	ICL (Fujitsu)	U.K.	35	2.1
10	HP	U.S.	25	1.5
	Total Listed		1,515	89.1
	Total Market		1,700	100.0

Exhibit F-14

Application Software Products Leading Vendors Denmark, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (DK Millions)	Market Share (%)
1	Kommundata	Sweden	1,350	93.1
2	IBM	U.S.	125	8.6
3	Microsoft	U.S.	75	5.2
4	Computer Associates	U.S.	75	5.2
5	Wordperfect	U.S.	40	2.8
6	Lotus	U.S.	40	2.8
7	Danet	Denmark	30	2.1
8	ICL (Fujitsu)	U.K.	25	1.7
9	AT&T	U.S.	25	1.7
10	SAP	Germany	20	1.4
	Total Listed		1,805	124.5
	Total Market		1,450	100.0

Exhibit F-15

Turnkey Systems Leading Vendors Denmark, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (DK Millions)	Market Share (%)
1	IBM	U.S.	55	2.7
2	Digital	U.S.	35	1.7
3	Intergraph	U.S.	30	1.5
4	Olivetti	Italy	15	0.7
5	AT&T	U.S.	15	0.7
6	Reuters	U.K.	10	0.5
7	Cap Gemini Sogeti	France	5	0.2
8	ComputerVision	U.S.	0	0.0
9	Logica	U.K.	0	0.0
10	SAP	Germany	0	0.0
	Total Listed		165	8.1
	Total Market		2,040	100.0

Exhibit F-16

Equipment Maintenance Leading Vendors Denmark, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (DK Millions)	Market Share (%)
1	IBM	U.S.	550	30.6
2	AT&T	U.S.	150	8.3
3	ICL (Fujitsu)	U.K.	150	8.3
4	Olivetti	Italy	135	7.5
5	Siemens-Nixdorf	Germany	130	7.2
6	Digital	U.S.	105	5.8
7	HP	U.S.	60	3.3
8	JDC Data	Denmark	40	2.2
9	Unisys	U.S.	40	2.2
10	Datapoint	U.S.	35	1.9
	Total Listed		1,395	77.5
	Total Market		1,800	100.0

Exhibit F-17

Environmental Services Leading Vendors
Denmark, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (DK Millions)	Market Share (%)
1	IBM	U.S.	90	7.5
2	Digital	U.S.	45	3.8
3	AT&T	U.S.	10	0.8
4	HP	U.S.	5	0.4
5	Olivetti	Italy	5	0.4
6	Unisys	U.S.	5	0.4
7	Bull	France	5	0.4
8	Wang	U.S.	5	0.4
9	Rank Xerox	U.K.	5	0.4
10	ComputerVision	U.S.	0	0.0
	Total Listed		175	14.6
	Total Market		1,200	100.0

Exhibit F-18

Information Services Leading Vendors
Denmark, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (DK Millions)	Market Share (%)
1	IBM	U.S.	2,220	14.8
2	Kommundata	Sweden	1,430	9.5
3	PBS	Denmark	830	5.5
4	Digital	U.S.	370	2.5
5	ICL (Fujitsu)	U.K.	350	2.3
6	AT&T	U.S.	270	1.8
7	Olivetti	Italy	220	1.5
8	Computer Associates	U.S.	210	1.4
9	Oracle	U.S.	200	1.3
10	Microsoft	U.S.	190	1.3
	Total Listed		6,290	41.9
	Total Market		15,000	100.0

G

Information Services Industry Forecast Database, 1994-1999 Norway

A

Forecast Database in Local Currency (NK Millions)

Exhibit G-1

Top Level IT Expenditure, Norway

Sector	NK Millions								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR (%)
Total IT Spending	36,000	0	36,000	36,000	37,000	38,000	39,000	40,000	2
Equipment Sales	7,200	-1	7,100	7,000	7,000	6,900	6,800	6,700	-1
Mainframe	1,700	-9	1,550	1,400	1,300	1,150	1,050	950	-9
Minicomputer	1,800	-3	1,750	1,700	1,650	1,600	1,550	1,500	-3
PC/Workstation	3,700	1	3,750	3,900	4,000	4,100	4,150	4,250	3
Equipment Services	2,940	-2	2,890	2,970	3,020	3,040	3,090	3,110	1
Software Products	2,700	6	2,860	3,080	3,350	3,650	4,000	4,380	9
Other Information Services	7,800	3	8,000	8,200	8,500	8,900	9,200	9,600	4
Data Communications	2,750	5	2,900	3,100	3,300	3,550	3,800	4,050	7
Facilities/Administration	3,200	-3	3,100	3,050	3,000	3,000	2,950	2,900	-1
In-house Staff	9,000	-2	8,800	8,800	8,800	8,800	8,800	8,800	0

Exhibit G-2

Information Services Market
Forecast by Delivery Mode and Submode
Norway, 1994-1999

Delivery Modes	NK Millions								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	11,400	4	11,800	12,200	12,800	13,500	14,200	15,000	5
Professional Services	2,900	0	2,900	2,950	3,000	3,100	3,150	3,250	2
- IS Consulting	425	5	445	485	525	570	615	660	8
- Education & Training	350	1	355	375	395	420	440	460	5
- Custom Software	2,100	-2	2,050	2,050	2,050	2,050	2,050	2,050	0
- Application Management	20	25	25	30	35	45	55	65	21
Systems Integration	280	11	310	355	400	445	500	550	12
- Equipment	75	7	80	90	100	105	115	120	8
- Application Software	50	10	55	70	90	110	135	165	25
- System Software	20	25	25	25	25	25	25	25	0
- Professional Services	130	12	145	165	180	195	215	230	10
- Other	5	0	5	6	7	8	9	10	15
Systems Operations	220	18	260	310	365	435	515	620	19
- Platform Operations	80	13	90	100	110	125	140	160	12
- Application Operations	100	20	120	145	175	210	250	300	20
- Desktop Services	40	25	50	65	80	100	125	160	26
Processing Services	3,330	0	3,340	3,310	3,320	3,320	3,330	3,330	0
- Transaction Processing	3,050	0	3,050	3,020	3,020	3,020	3,020	3,020	0
- Utility Processing	63	-3	61	59	57	55	54	52	-3
- Other Processing	220	2	225	230	240	245	255	260	3
Network Services	430	7	460	500	565	640	715	810	12
- Electronic Info Svcs	270	2	275	285	310	335	355	380	7
- Network Applications	135	15	155	180	215	260	305	365	19
- Network Management	25	16	29	33	39	46	54	64	17
System Software	1,380	2	1,410	1,460	1,540	1,620	1,710	1,810	5
- Mainframe	610	-4	585	575	570	565	560	555	-1
- Minicomputer	445	4	465	490	525	560	600	640	7
- Workstation/PC	325	9	355	395	440	495	550	615	12
Application Software	1,320	10	1,450	1,620	1,810	2,030	2,290	2,570	12
- Mainframe	110	-5	105	105	105	105	100	100	-1
- Minicomputer	385	6	410	440	475	515	555	600	8
- Workstation/PC	820	13	930	1,070	1,230	1,410	1,630	1,870	15
Turnkey Systems	1,580	4	1,640	1,690	1,750	1,860	1,970	2,060	5
- Equipment	800	2	815	825	840	875	910	930	3
- Application Software	300	8	325	355	385	425	475	520	10
- System Software	100	0	100	105	105	110	115	115	3
- Professional Services	380	4	395	405	420	445	470	490	4
Equipment Services	2,940	-2	2,890	2,970	3,020	3,040	3,090	3,110	1
- Equipment Maintenance	1,830	-3	1,780	1,790	1,780	1,750	1,710	1,670	-1
- Environmental Services	1,110	0	1,110	1,180	1,240	1,290	1,380	1,440	5
Grand Total Information Service Market	14,400	2	14,700	15,200	15,800	16,500	17,300	18,100	4

B

Forecast Database in U.S. Dollars

Exhibit G-3

Software and Services Market Forecast in Dollars
Norway, 1994-1999

Delivery Modes	U.S. $ Million (rounded)							
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	1,515	4	1,570	1,620	1,700	1,795	1,890	1,995	5
Professional Services	385	0	385	390	400	410	420	430	2
- IS Consulting	57	5	59	65	70	76	82	88	8
- Education & Training	47	1	47	50	53	56	59	61	5
- Custom Software	280	-2	275	275	275	275	275	275	0
- Application Management	3	25	3	4	5	6	7	9	21
Systems Integration	37	11	41	47	53	59	67	73	12
- Equipment	10	7	11	12	14	14	16	16	8
- Application Software	7	10	7	9	12	15	18	22	25
- System Software	3	25	3	3	3	3	3	3	0
- Professional Services	18	12	20	22	24	26	29	31	10
- Other	1	0	1	1	1	1	1	1	15
Systems Operations	30	18	35	41	49	58	69	83	19
- Platform Operations	11	13	12	14	15	17	19	22	12
- Application Operations	14	20	16	20	24	28	33	40	20
- Desktop Services	5	25	7	9	11	13	17	21	26
Processing Services	443	0	444	440	442	442	443	443	0
- Transaction Processing	406	0	406	402	402	402	402	402	0
- Utility Processing	9	-3	8	8	8	8	7	7	-3
- Other Processing	30	2	30	31	32	33	34	35	3
Network Services	57	7	61	67	75	85	95	108	12
- Electronic Info Svcs	36	2	37	38	41	45	47	51	7
- Network Applications	18	15	21	24	29	35	41	49	19
- Network Management	4	16	4	5	5	6	7	9	17
System Software	185	2	190	195	205	215	225	240	5
- Mainframe	81	-4	78	77	76	75	75	74	-1
- Minicomputer	59	4	62	65	70	75	80	85	7
- Workstation/PC	43	9	47	53	59	66	73	82	12
Application Software	175	10	195	215	240	270	305	340	12
- Mainframe	15	-5	14	14	14	14	14	14	-1
- Minicomputer	51	6	55	59	63	69	74	80	8
- Workstation/PC	110	13	125	140	165	190	215	250	15
Turnkey Systems	210	4	218	225	233	248	262	274	5
- Equipment	107	2	109	110	112	117	121	124	3
- Application Software	40	8	43	47	51	57	63	69	10
- System Software	13	0	13	14	14	15	15	15	3
- Professional Services	51	4	53	54	56	59	63	65	4
Equipment Services	390	-2	385	395	400	405	410	415	1
- Equipment Maintenance	245	-3	235	240	235	235	225	220	-1
- Environmental Services	150	0	150	155	165	170	185	190	5
Grand Total Information Service Market	1,900	2	1,950	2,000	2,100	2,200	2,300	2,400	4

C

Forecast Database in ECUs

Exhibit G-4

Software and Services Market Forecast in ECUs
Norway, 1994-1999

Delivery Modes	ECU Millions (rounded)							
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	1,360	4	1,405	1,455	1,525	1,610	1,690	1,790	5
Professional Services	345	0	345	350	360	370	375	385	2
- IS Consulting	51	5	53	58	63	68	74	79	8
- Education & Training	42	1	43	45	47	50	53	55	5
- Custom Software	250	-2	245	245	245	245	245	245	0
- Application Management	3	25	3	4	4	6	7	8	21
Systems Integration	34	11	37	43	48	53	60	66	12
- Equipment	9	7	10	11	12	13	14	15	8
- Application Software	6	10	7	8	11	13	16	20	25
- System Software	2	25	3	3	3	3	3	3	0
- Professional Services	16	12	18	20	22	23	26	28	10
- Other	1	0	1	1	1	1	1	1	15
Systems Operations	26	18	31	37	44	52	62	74	19
- Platform Operations	10	13	11	12	13	15	17	19	12
- Application Operations	12	20	15	18	21	25	30	36	20
- Desktop Services	5	25	6	8	10	12	15	19	26
Processing Services	398	0	398	395	396	396	397	397	0
- Transaction Processing	364	0	364	360	360	360	360	360	0
- Utility Processing	8	-3	8	7	7	7	7	6	-3
- Other Processing	26	2	27	28	29	29	31	31	3
Network Services	52	7	55	60	68	77	85	97	12
- Electronic Info Svcs	32	2	33	34	37	40	43	46	7
- Network Applications	16	15	19	22	26	31	37	44	19
- Network Management	3	16	4	4	5	6	7	8	17
System Software	165	2	170	175	185	195	205	215	5
- Mainframe	73	-4	70	69	68	68	67	66	-1
- Minicomputer	53	4	56	59	63	67	72	77	7
- Workstation/PC	39	9	43	47	53	59	66	74	12
Application Software	155	10	175	195	215	240	275	305	12
- Mainframe	13	-5	13	13	13	13	12	12	-1
- Minicomputer	46	6	49	53	57	62	66	72	8
- Workstation/PC	98	13	111	128	147	168	195	223	15
Turnkey Systems	189	4	196	202	209	222	235	246	5
- Equipment	96	2	97	99	100	105	109	111	3
- Application Software	36	8	39	43	46	51	57	62	10
- System Software	12	0	12	13	13	13	14	14	3
- Professional Services	46	4	47	49	50	53	56	59	4
Equipment Services	350	-2	345	355	360	360	370	370	1
- Equipment Maintenance	220	-3	210	215	210	210	205	200	-1
- Environmental Services	130	0	130	140	150	155	165	170	5
Grand Total Information Service Market	1,700	2	1,750	1,800	1,900	1,950	2,050	2,150	4

D

Information Services Forecast Reconciliation in Local Currency

Exhibit G-5

Forecast Reconciliation, Norway, 1993-1998

Currency: NK Millions	1993 Market				1998 Market				1993	1994
Delivery Mode	1993 Report (Fcst)	1994 Report (Act)	1993-1994 Variance (Amount)	1993-1994 Variance (%)	1993 Report (Fcst)	1994 Report (Fcst)	1993-1994 Variance (Amount)	1993-1994 Variance (%)	Report %CAGR (Fcst)	Report %CAGR (Fcst)
Software and Services Total (ex Equipment Services)	11,900	11,400	-500	-4	16,100	14,200	-1,900	-12	6	4
Professional Services	3,150	2,900	-250	-8	4,150	3,150	-1,000	-24	6	2
- IS Consulting	425	425	0	0	670	615	-55	-8	10	8
- Education & Training	370	350	-20	-5	590	440	-150	-25	10	5
- Custom Software	2,350	2,100	-250	-11	2,850	2,050	-800	-28	4	0
- Application Management	15	20	5	33	45	55	10	22	25	22
Systems Integration	300	280	-20	-7	660	500	-160	-24	17	12
- Equipment	80	75	-5	-6	140	115	-25	-18	12	9
- Application Software	55	50	-5	-9	240	135	-105	-44	34	22
- System Software	25	20	-5	-20	40	25	-15	-38	10	5
- Professional Services	135	130	-5	-4	220	215	-5	-2	10	11
- Other	5	5	0	0	20	9	-11	-55	32	12
Systems Operations	225	220	-5	-2	505	515	10	2	18	19
- Platform Operations	100	80	-20	-20	210	140	-70	-33	16	12
- Application Operations	85	100	15	18	180	250	70	39	16	20
- Desktop Services	40	40	0	0	115	125	10	9	24	26
Processing Services	3,450	3,330	-120	-3	3,530	3,330	-200	-6	0	0
- Transaction Processing	3,160	3,050	-110	-3	3,200	3,020	-180	-6	0	0
- Utility Processing	63	63	0	0	55	54	-1	-2	-3	-3
- Other Processing	230	220	-10	-4	270	255	-15	-6	3	3
Network Services	430	430	0	0	805	715	-90	-11	13	11
- Electronic Info Svcs	270	270	0	0	360	355	-5	-1	6	6
- Network Applications	135	135	0	0	360	305	-55	-15	22	18
- Network Management	25	25	0	0	83	54	-29	-35	27	17
System Software	1,380	1,380	0	0	1,810	1,710	-100	-6	6	4
- Mainframe	610	610	0	0	590	560	-30	-5	-1	-2
- Minicomputer	445	445	0	0	635	600	-35	-6	7	6
- Workstation/PC	325	325	0	0	585	550	-35	-6	12	11
Application Software	1,320	1,320	0	0	2,350	2,290	-60	-3	12	12
- Mainframe	110	110	0	0	105	100	-5	-5	-1	-2
- Minicomputer	385	385	0	0	575	555	-20	-3	8	8
- Workstation/PC	820	820	0	0	1,670	1,630	-40	-2	15	15
Turnkey Systems	1,610	1,580	-30	-2	2,270	1,970	-300	-13	7	5
- Equipment	805	800	-5	-1	1,035	910	-125	-12	5	3
- Application Software	315	300	-15	-5	560	475	-85	-15	12	10
- System Software	100	100	0	0	130	115	-15	-12	5	3
- Professional Services	385	380	-5	-1	540	470	-70	-13	7	4
Equipment Services	2,940	2,940	0	0	3,190	3,090	-100	-3	2	1
- Equipment Maintenance	1,830	1,830	0	0	1,750	1,710	-40	-2	-1	-1
- Environmental Services	1,110	1,110	0	0	1,440	1,380	-60	-4	5	4
Grand Total	14,800	14,400	-400	-3	19,300	17,300	-2,000	-10	5	4

E

Leading Vendors in Local Currency (NK Millions)

Exhibit G-6

Software and Services Leading Vendors
Norway, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (NK Millions)	Market Share (%)
1	IBM	U.S.	1,220	10.7
2	NIT	Norway	1,120	9.8
3	Fellesdata	Norway	540	4.7
4	Bankenes Betalingssentral	Norway	530	4.6
5	Novit	Norway	400	3.5
6	Rogalandsdata	Norway	250	2.2
7	EDB	Norway	240	2.1
8	Computer Associates	U.S.	200	1.8
9	Digital	U.S.	195	1.7
10	Andersen Consulting	U.S.	180	1.6
	Total Listed		4,875	42.8
	Total Market		11,400	100.0

Exhibit G-7

Professional Services Leading Vendors
Norway, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (NK Millions)	Market Share (%)
1	NIT	Norway	420	14.5
2	Fellesdata	Norway	290	10.0
3	Novit	Norway	200	6.9
4	Rogalandsdata	Norway	180	6.2
5	IBM	U.S.	155	5.3
6	Cap Gemini Sogeti	France	125	4.3
7	Bankenes Betalingssentral	Norway	125	4.3
8	Enator	Sweden	105	3.6
9	EDB	Norway	100	3.4
10	Andersen Consulting	U.S.	85	2.9
	Total Listed		1,785	61.6
	Total Market		2,900	100.0

Exhibit G-8

Systems Integration Leading Vendors Norway, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (NK Millions)	Market Share (%)
1	IBM	U.S.	95	34.0
2	Andersen Consulting	U.S.	25	8.9
3=	Unisys	U.S.	10	3.6
3=	Cap Gemini Sogeti	France	10	3.6
3=	ICL	U.K.	10	3.6
	Total Listed		150	53.7
	Total Market		220	100.0

Exhibit G-9

Systems Operations Leading Vendors Norway, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (NK Millions)	Market Share (%)
1	Fellesdata	Norway	50	18.9
2	Wm-Data	Sweden	40	15.1
3	NIT	Norway	25	9.4
4	Teamco	Norway	20	7.5
5	Digital	U.S.	15	5.7
	Total Listed		150	56.6
	Total Market		265	100.0

Exhibit G-10

Processing Services Leading Vendors Norway, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (NK Millions)	Market Share (%)
1	NIT	Norway	600	18.0
2	Bankenes Betalingssentral	Norway	400	12.0
3	Fellesdata	Norway	200	6.0
4	Novit	Norway	145	4.4
5	EDB	Norway	130	3.9
6	Rogalandsdata	Norway	50	1.5
7	IBM	U.S.	10	0.3
8	GEIS	U.S.	5	0.2
9	Unisys	U.S.	5	0.2
10	Olivetti	Italy	5	0.2
	Total Listed		1,550	46.5
	Total Market		3,330	100.0

Exhibit G-11

Network Applications Leading Vendors
Norway, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (NK Millions)	Market Share (%)
1	IBM	U.S.	35	25.9
2	Infonet	Belgium	15	11.1
3	GEIS	U.S.	15	11.1
4	Digital	U.S.	5	3.7
	Total Listed		70	51.9
	Total Market		150	100.0

Exhibit G-12

Electronic Information Services Leading Vendors
Norway, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (NK Millions)	Market Share (%)
1	Reuters	U.K.	80	29.6
2	Dun & Bradstreet	U.S.	25	9.3
3	Telerate	U.S.	20	7.4
	Total Listed		125	46.3
	Total Market		270	100.0

Exhibit G-13

Systems Software Products Leading Vendors
Norway, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (NK Millions)	Market Share (%)
1	IBM	U.S.	640	46.4
2	Computer Associates	U.S.	95	6.9
3	Microsoft	U.S.	85	6.2
4	Digital	U.S.	65	4.7
5	Oracle	U.S.	60	4.3
6	Ask	U.S.	40	2.9
7	Novell	U.S.	30	2.2
8	Bull	France	25	1.8
9	ICL (Fujitsu)	U.K.	25	1.8
10	HP	U.S.	15	1.1
	Total Listed		1,080	78.3
	Total Market		1,380	100.0

Exhibit G-14

Application Software Products Leading Vendors
Norway, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (NK Millions)	Market Share (%)
1	NIT	Norway	100	7.6
2	IBM	U.S.	90	6.8
3	Computer Associates	U.S.	70	5.3
4	Microsoft	U.S.	60	4.5
5	Fellesdata	Norway	50	3.8
6	Novit	Norway	50	3.8
7	Wordperfect	U.S.	35	2.7
8	Provida	Norway	30	2.3
9	Lotus	U.S.	25	1.9
10	Rogalandsdata	Norway	20	1.5
	Total Listed		530	40.2
	Total Market		1,320	100.0

Exhibit G-15

Turnkey Systems Leading Vendors
Norway, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (NK Millions)	Market Share (%)
1	IBM	U.S.	40	2.5
2	Intergraph	U.S.	35	2.2
3	Digital	U.S.	30	1.9
4	Olivetti	Italy	15	0.9
5	Reuters	U.K.	10	0.6
6	Cap Gemini Sogeti	France	5	0.3
7	AT&T	U.S.	5	0.3
	Total Listed		140	8.9
	Total Market		1,580	100.0

Exhibit G-16

Equipment Maintenance Leading Vendors
Norway, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (NK Millions)	Market Share (%)
1	IBM	U.S.	350	19.1
2	Norsk Data(Comma)	Norway	200	10.9
3	ICL (Fujitsu)	U.K.	150	8.2
4	Olivetti	Italy	150	8.2
5	Digital	U.S.	100	5.5
6	Siemens-Nixdorf	Germany	75	4.1
7	AT&T	U.S.	65	3.6
8	Bull	France	55	3.0
9	HP	U.S.	40	2.2
10	Unisys	U.S.	40	2.2
	Total Listed		1,225	66.9
	Total Market		1,800	100.0

Exhibit G-17

Environmental Services Leading Vendors
Norway, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (NK Millions)	Market Share (%)
1	IBM	U.S.	65	5.9
2	Norsk Data(Comma)	Norway	15	1.4
3	Digital	U.S.	10	0.9
4	Olivetti	Italy	10	0.9
5	Unisys	U.S.	5	0.5
6	HP	U.S.	5	0.5
7	AT&T	U.S.	5	0.5
8	Rank Xerox	U.K.	5	0.5
9	Bull	France	5	0.5
	Total Listed		125	11.3
	Total Market		1,110	100.0

Exhibit G-18

Information Services Leading Vendors
Norway, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (NK Millions)	Market Share (%)
1	IBM	U.S.	1,560	11.1
2	NIT	Norway	1,120	8.0
3	Fellesdata	Norway	540	3.9
4	Bankenes Betalingssentral	Norway	530	3.8
5	Novit	Norway	400	2.9
6	ICL (Fujitsu)	U.K.	310	2.2
7	Digital	U.S.	300	2.1
8	Rogalandsdata	Norway	250	1.8
9	Olivetti	Italy	250	1.8
10	EDB	Norway	240	1.7
	Total Listed		5,500	39.3
	Total Market		14,000	100.0

H

Information Services Industry Forecast Database, 1994-1999 Finland

A

Forecast Database in Local Currency (FM Millions)

Exhibit H-1

Top Level IT Expenditure, Finland

Sector	FM Millions								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR (%)
Total IT Spending	24,000	0	24,000	24,500	24,500	25,000	26,000	26,500	2
Equipment Sales	6,100	-2	6,000	6,000	6,000	6,100	6,100	6,200	1
Mainframe	1,450	-14	1,250	1,100	950	850	750	650	-12
Minicomputer	1,350	0	1,350	1,350	1,350	1,350	1,350	1,350	0
PC/Workstation	3,300	3	3,400	3,550	3,700	3,850	3,950	4,150	4
Equipment Services	1,620	0	1,620	1,650	1,650	1,660	1,670	1,690	1
Software Products	1,650	1	1,660	1,730	1,830	1,970	2,110	2,290	7
Other Information Services	3,800	3	3,900	4,100	4,300	4,600	5,000	5,400	7
Data Communications	2,100	5	2,200	2,300	2,450	2,550	2,700	2,850	5
Facilities/Administration	2,300	-2	2,250	2,200	2,150	2,150	2,100	2,050	-2
In-house Staff	6,600	-3	6,400	6,300	6,200	6,100	6,100	6,000	-1

Exhibit H-2

Information Services Market
Forecast by Delivery Mode and Submode
Finland, 1994-1999

Delivery Modes	FM Millions								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	5,960	2	6,080	6,360	6,710	7,150	7,680	8,310	6
Professional Services	1,610	1	1,620	1,680	1,740	1,840	1,980	2,130	6
- IS Consulting	270	6	285	305	330	360	400	445	9
- Education & Training	150	0	150	155	160	165	175	185	4
- Custom Software	1,180	0	1,180	1,210	1,240	1,300	1,390	1,480	5
- Application Management	5	20	6	7	8	10	12	15	20
Systems Integration	280	7	300	335	380	435	500	600	15
- Equipment	75	7	80	85	95	105	115	135	11
- Application Software	50	20	60	75	95	120	150	195	27
- System Software	22	9	24	27	30	33	38	44	13
- Professional Services	125	4	130	140	150	165	185	210	10
- Other	6	17	7	8	9	10	12	14	15
Systems Operations	210	19	250	290	335	385	445	535	16
- Platform Operations	75	13	85	95	105	115	130	150	12
- Application Operations	120	21	145	170	200	235	275	330	18
- Desktop Services	15	27	19	23	28	34	42	53	23
Processing Services	990	-4	950	930	920	920	920	900	-1
- Transaction Processing	885	-4	850	830	820	810	810	790	-1
- Utility Processing	28	-11	25	24	22	21	20	18	-6
- Other Processing	76	1	77	79	82	85	89	92	4
Network Services	270	11	300	340	390	430	490	560	13
- Electronic Info Svcs	155	6	165	180	195	210	225	245	8
- Network Applications	90	17	105	125	150	175	210	250	19
- Network Management	25	16	29	34	40	46	54	63	17
System Software	840	-6	790	770	770	780	800	820	1
- Mainframe	340	-15	290	255	230	210	195	180	-9
- Minicomputer	275	-2	270	275	280	295	305	320	3
- Workstation/PC	225	0	225	240	255	275	295	320	7
Application Software	810	7	870	960	1,060	1,190	1,310	1,470	11
- Mainframe	66	-9	60	57	54	51	48	45	-6
- Minicomputer	240	6	255	280	305	335	365	400	9
- Workstation/PC	500	10	550	620	700	800	900	1,020	13
Turnkey Systems	950	5	1,000	1,050	1,110	1,170	1,230	1,290	5
- Equipment	455	1	460	470	480	490	495	505	2
- Application Software	185	8	200	220	240	260	285	310	9
- System Software	59	3	61	65	68	71	75	79	5
- Professional Services	255	8	275	295	320	345	370	400	8
Equipment Services	1,620	0	1,620	1,650	1,650	1,660	1,670	1,690	1
- Equipment Maintenance	1,030	-4	990	965	925	885	845	810	-4
- Environmental Services	585	7	625	680	725	775	825	880	7
Grand Total Information Service Market	7,600	1	7,700	8,000	8,400	8,800	9,300	10,000	5

B

Forecast Database in U.S. Dollars

Exhibit H-3

Software and Services Market Forecast in Dollars
Finland, 1994-1999

Delivery Modes	U.S. $ Million (rounded)								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	1,030	2	1,050	1,100	1,160	1,235	1,325	1,435	6
Professional Services	280	1	280	290	300	320	340	370	6
- IS Consulting	47	6	49	53	57	62	69	77	9
- Education & Training	26	0	26	27	28	29	30	32	4
- Custom Software	205	0	205	210	215	225	240	255	5
- Application Management	1	20	1	1	1	2	2	3	20
Systems Integration	49	7	52	58	66	75	87	104	15
- Equipment	13	7	14	15	17	18	20	24	11
- Application Software	9	20	10	13	16	21	26	34	27
- System Software	4	9	4	5	5	6	7	8	13
- Professional Services	22	4	23	24	26	29	32	37	10
- Other	1	17	1	1	2	2	2	2	15
Systems Operations	37	19	43	50	58	67	77	93	16
- Platform Operations	13	13	15	17	18	20	23	26	12
- Application Operations	21	21	25	30	35	41	48	57	18
- Desktop Services	3	27	3	4	5	6	7	9	23
Processing Services	171	-4	164	161	159	159	159	156	-1
- Transaction Processing	153	-4	147	144	142	140	140	137	-1
- Utility Processing	5	-11	5	4	4	4	4	3	-6
- Other Processing	13	1	14	14	14	15	16	16	4
Network Services	47	11	52	59	68	75	85	97	13
- Electronic Info Svcs	27	6	29	31	34	37	39	43	8
- Network Applications	16	17	18	22	26	30	37	43	19
- Network Management	5	16	5	6	7	8	10	11	17
System Software	145	-6	135	135	135	135	140	140	1
- Mainframe	59	-15	50	44	40	37	34	31	-9
- Minicomputer	48	-2	47	48	49	51	53	56	3
- Workstation/PC	39	0	39	42	44	48	51	56	7
Application Software	140	7	150	165	185	205	225	255	11
- Mainframe	12	-9	11	10	10	9	9	8	-6
- Minicomputer	42	6	44	49	53	58	63	69	9
- Workstation/PC	85	10	95	105	120	140	155	175	13
Turnkey Systems	164	5	173	182	192	202	213	223	5
- Equipment	79	1	80	81	83	85	86	87	2
- Application Software	32	8	35	38	42	45	49	54	9
- System Software	10	3	11	11	12	12	13	14	5
- Professional Services	44	8	48	51	56	60	64	69	8
Equipment Services	280	0	280	285	285	285	290	290	1
- Equipment Maintenance	180	-4	170	165	160	155	145	140	-4
- Environmental Services	100	7	110	115	125	135	140	150	7
Grand Total Information Service Market	1,300	1	1,350	1,400	1,450	1,500	1,600	1,750	5

C

Forecast Database in ECUs

Exhibit H-4

Software and Services Market Forecast in ECUs
Finland, 1994-1999

Delivery Modes	ECU Millions (rounded)							
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	940	2	955	1,000	1,055	1,125	1,210	1,310	6
Professional Services	255	1	255	265	275	290	310	335	6
- IS Consulting	43	6	45	48	52	57	63	70	9
- Education & Training	24	0	24	25	25	26	28	29	4
- Custom Software	185	0	185	190	195	205	220	235	5
- Application Management	1	20	1	1	2	2	2	3	20
Systems Integration	44	7	47	53	60	69	79	95	15
- Equipment	12	7	13	14	15	17	18	22	11
- Application Software	8	20	9	12	15	19	24	31	27
- System Software	3	9	4	4	5	5	6	7	13
- Professional Services	20	4	21	22	24	26	29	33	10
- Other	1	17	1	1	1	2	2	2	15
Systems Operations	33	19	40	46	53	61	70	85	16
- Platform Operations	12	13	14	15	17	18	21	24	12
- Application Operations	19	21	23	27	32	37	44	52	18
- Desktop Services	2	27	3	4	4	5	7	8	23
Processing Services	156	-4	150	147	146	145	145	142	-1
- Transaction Processing	140	-4	134	131	129	128	128	125	-1
- Utility Processing	5	-11	4	4	4	4	3	3	-6
- Other Processing	12	1	12	13	13	14	14	15	4
Network Services	43	11	47	54	62	68	77	88	13
- Electronic Info Svcs	25	6	26	29	31	33	36	39	8
- Network Applications	14	17	17	20	24	28	33	40	19
- Network Management	4	16	5	6	7	7	9	10	17
System Software	130	-6	125	120	120	125	125	130	1
- Mainframe	54	-15	46	40	36	33	31	29	-9
- Minicomputer	44	-2	43	44	44	47	48	51	3
- Workstation/PC	36	0	36	38	40	44	47	51	7
Application Software	130	7	135	150	165	185	205	230	11
- Mainframe	11	-9	10	9	9	8	8	7	-6
- Minicomputer	38	6	40	44	48	53	58	63	9
- Workstation/PC	79	10	87	98	110	126	142	161	13
Turnkey Systems	150	5	158	166	175	185	194	203	5
- Equipment	72	1	73	74	76	77	78	80	2
- Application Software	29	8	32	35	38	41	45	49	9
- System Software	9	3	10	10	11	11	12	12	5
- Professional Services	40	8	44	47	51	55	59	63	8
Equipment Services	255	0	255	260	260	260	265	265	1
- Equipment Maintenance	160	-4	155	150	145	140	135	130	-4
- Environmental Services	90	7	100	105	115	120	130	140	7
Grand Total Information Service Market	1,200	1	1,200	1,250	1,300	1,400	1,450	1,550	5

D

Information Services Forecast Reconciliation in Local Currency

Exhibit H-5

Forecast Reconciliation, Finland, 1993-1998

Currency: FM Millions	1993 Market				1998 Market				1993	1994
Delivery Mode	1993 Report (Fcst)	1994 Report (Act)	1993-1994 Variance (Amount)	1993-1994 Variance (%)	1993 Report (Fcst)	1994 Report (Fcst)	1993-1994 Variance (Amount)	1993-1994 Variance (%)	Report %CAGR (Fcst)	Report %CAGR (Fcst)
Software and Services Total (ex Equipment Services)	5,960	5,960	0	0	7,670	7,680	10	0	5	5
Professional Services	1,610	1,610	0	0	2,090	1,980	-110	-5	5	4
- IS Consulting	270	270	0	0	395	400	5	1	8	8
- Education & Training	150	150	0	0	170	175	5	3	3	3
- Custom Software	1,180	1,180	0	0	1,510	1,390	-120	-8	5	3
- Application Management	5	5	0	0	15	12	-3	-20	25	19
Systems Integration	280	280	0	0	745	500	-245	-33	22	12
- Equipment	75	75	0	0	155	115	-40	-26	16	9
- Application Software	50	50	0	0	270	150	-120	-44	40	25
- System Software	22	22	0	0	55	38	-17	-31	20	11
- Professional Services	125	125	0	0	245	185	-60	-24	14	8
- Other	6	6	0	0	22	12	-10	-45	30	15
Systems Operations	210	210	0	0	460	445	-15	-3	17	16
- Platform Operations	115	75	-40	-35	240	130	-110	-46	16	12
- Application Operations	80	120	40	50	175	275	100	57	17	18
- Desktop Services	15	15	0	0	45	42	-3	-7	25	23
Processing Services	990	990	0	0	770	920	150	19	-5	-1
- Transaction Processing	885	885	0	0	680	810	130	19	-5	-2
- Utility Processing	28	28	0	0	19	20	1	5	-7	-7
- Other Processing	76	76	0	0	72	89	17	24	-1	3
Network Services	270	270	0	0	410	490	80	20	9	13
- Electronic Info Svcs	155	155	0	0	175	225	50	29	2	8
- Network Applications	90	90	0	0	155	210	55	35	11	18
- Network Management	23	25	2	9	76	54	-22	-29	27	17
System Software	840	840	0	0	900	800	-100	-11	1	-1
- Mainframe	340	340	0	0	220	195	-25	-11	-8	-11
- Minicomputer	275	275	0	0	300	305	5	2	2	2
- Workstation/PC	225	225	0	0	380	295	-85	-22	11	6
Application Software	810	810	0	0	1,150	1,310	160	14	7	10
- Mainframe	68	66	-2	-3	47	48	1	2	-7	-6
- Minicomputer	240	240	0	0	305	365	60	20	5	9
- Workstation/PC	500	500	0	0	800	900	100	13	10	12
Turnkey Systems	950	950	0	0	1,140	1,230	90	8	4	5
- Equipment	455	455	0	0	455	495	40	9	0	2
- Application Software	185	185	0	0	265	285	20	8	7	9
- System Software	59	59	0	0	70	75	5	7	3	5
- Professional Services	255	255	0	0	350	370	20	6	7	8
Equipment Services	1,620	1,620	0	0	1,380	1,670	290	21	-3	1
- Equipment Maintenance	1,030	1,030	0	0	800	845	45	6	-5	-4
- Environmental Services	585	585	0	0	580	825	245	42	0	7
Grand Total	7,580	7,600	20	0	9,050	9,300	250	3	4	4

E

Leading Vendors in Local Currency (FM Millions)

Exhibit H-6

Software and Services Leading Vendors
Finland, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (FM Millions)	Market Share (%)
1	IBM	U.S.	560	9.5
2	Tietotehdas	Finland	550	9.2
3	VTKK	Finland	390	6.5
4	Digital	U.S.	280	4.7
5	ICL (Fujitsu)	U.K.	220	3.7
6	Elorg-Data	Finland	160	2.7
7	Computer Associates	U.S.	150	2.5
8	Paakaupunkiseudom	Finland	140	2.3
9	Cap Gemini Sogeti	France	115	1.9
10	Kunnallistieto	Finland	110	1.8
	Total Listed		2,675	44.9
	Total Market		5,960	100.0

Exhibit H-7

Professional Services Leading Vendors Finland, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (FM Millions)	Market Share (%)
1	VTKK	Finland	390	24.2
2	KT-Tietokeskus	Finland	245	15.2
3	Elorg-Data	Finland	160	9.9
4	Paakaupunkiseudom	Finland	140	8.7
5	Kunnallistieto	Finland	110	6.8
6	ICL (Fujitsu)	U.K.	95	5.9
7	Valmet Data	Finland	95	5.9
8	Digital	U.S.	80	5.0
9	IBM	U.S.	70	4.3
10	Unic	Finland	70	4.3
	Total Listed		1,455	90.4
	Total Market		1,610	100.0

Exhibit H-8

Systems Integration Leading Vendors Finland, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (FM Millions)	Market Share (%)
1	KT-Tietokesku	Finland	55	19.6
2	Tietotehdas	Finland	50	17.9
3	ICL (Fujitsu)	U.K.	35	12.5
4	Cap Gemini Sogeti	France	15	5.4
5	Unisys	U.S.	10	3.6
	Total Listed		165	59.0
	Total Market		280	100.0

Exhibit H-9

Systems Operations Leading Vendors Finland, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (FM Millions)	Market Share (%)
1	Tietotehdas	Finland	45	18.7
2	EDS	U.S.	35	14.6
3	Paakupunk	Finland	30	12.5
4	Progmatic	Finland	25	10.4
5	Cap Gemini Sogeti	France	25	10.4
	Total Listed		160	66.6
	Total Market		240	100.0

Exhibit H-10

Processing Services Leading Vendors
Finland, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (FM Millions)	Market Share (%)
1	KT-Tietokeskus	Finland	300	30.3
2	IBM	U.S.	5	0.5
3	GEIS	U.S.	5	0.5
4	EDS	U.S.	5	0.5
	Total Listed		315	31.8
	Total Market		990	100.0

Exhibit H-11

Network Applications Leading Vendors
Finland, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (FM Millions)	Market Share (%)
1	IBM	U.S.	15	16.7
2	Infonet	Belgium	10	11.1
3	GEIS	U.S.	5	5.6
4	Digital	U.S.	5	5.6
5	ICL (Fujitsu)	U.K.	5	5.6
	Total Listed		40	44.4
	Total Market		100	100.0

Exhibit H-12

Electronic Information Services Leading Vendors
Finland, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (FM Millions)	Market Share (%)
1	Reuters	U.K.	45	29.0
2	Telerate	U.S.	10	6.5
3	Dun & Bradstreet	U.S.	5	3.2
	Total Listed		60	38.7
	Total Market		155	100.0

Exhibit H-13

Systems Software Products Leading Vendors
Finland, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (FM Millions)	Market Share (%)
1	IBM	U.S.	295	35.1
2	Digital	U.S.	100	11.9
3	Computer Associates	U.S.	70	8.3
4	Microsoft	U.S.	55	6.5
5	ICL (Fujitsu)	U.K.	45	5.4
6	Novell	U.S.	35	4.2
7	Oracle	U.S.	20	2.4
8	Ask	U.S.	15	1.8
9	Unic	Finland	10	1.2
10	Unisys	U.S.	10	1.2
	Total Listed		655	78.0
	Total Market		840	100.0

Exhibit H-14

Application Software Products Leading Vendors Finland, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (FM Millions)	Market Share (%)
1	Computer Associates	U.S.	55	6.8
2	IBM	U.S.	40	4.9
3	Microsoft	U.S.	40	4.9
4	ICL (Fujitsu)	U.K.	30	3.7
5	Unic	Finland	30	3.7
6	Lotus	U.S.	30	3.7
7	Wordperfect	U.S.	30	3.7
8	Digital	U.S.	5	0.6
9	Informix	U.S.	5	0.6
10	Cap Gemini Sogeti	France	5	0.6
	Total Listed		270	33.3
	Total Market		810	100.0

Exhibit H-15

Turnkey Systems Leading Vendors Finland, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (FM Millions)	Market Share (%)
1	Digital	U.S.	45	4.7
2	Intergraph	U.S.	40	4.2
3	IBM	U.S.	20	2.1
4	Reuters	U.K.	5	0.5
5	Cap Gemini Sogeti	France	5	0.5
6	Olivetti	Italy	5	0.5
	Total Listed		120	12.6
	Total Market		950	100.0

Exhibit H-16

Equipment Maintenance Leading Vendors Finland, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (FM Millions)	Market Share (%)
1	ICL (Fujitsu)	U.K.	400	38.8
2	IBM	U.S.	200	19.4
3	Digital	U.S.	150	14.6
4	Siemens-Nixdorf	Germany	75	7.3
5	AT&T	U.S.	25	2.4
6	Unisys	U.S.	25	2.4
7	Rank Xerox	U.K.	15	1.5
8	Intergraph	U.S.	15	1.5
9	Tandem	U.S.	10	1.0
10	Data General	U.S.	10	1.0
	Total Listed		925	89.8
	Total Market		1,000	100.0

Exhibit H-17

Environmental Services Leading Vendors
Finland, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (FM Millions)	Market Share (%)
1	Digital	U.S.	60	10.3
2	IBM	U.S.	40	6.8
3	ICL (Fujitsu)	U.K.	5	0.9
4	Unisys	U.S.	5	0.9
	Total Listed		110	18.8
	Total Market		590	100.0

Exhibit H-18

Information Services Leading Vendors
Finland, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (FM Millions)	Market Share (%)
1	IBM	U.S.	770	9.6
2	ICL (Fujitsu)	U.K.	660	8.3
3	KT-Tietokeskus	Finland	550	6.9
4	Digital	U.S.	490	6.1
5	VTKK	Finland	390	4.9
6	Elorg-Data	Finland	160	2.0
7	Computer Associates	U.S.	150	1.9
8	Paakaupunkiseudom	Finland	140	1.8
9	Cap Gemini Sogeti	France	110	1.4
10	Kunnallistieto	Finland	110	1.4
	Total Listed		3,530	44.1
	Total Market		8,000	100.0

I

Information Services Industry Forecast Database, 1994-1999 Netherlands

A

Forecast Database in Local Currency (Dfl Millions)

Exhibit I-1

Top Level IT Expenditure, Netherlands

Sector	Dfl Millions								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR (%)
Total IT Spending	24,500	0	24,500	25,000	25,500	26,000	27,000	28,000	3
Equipment Sales	4,800	0	4,800	4,800	4,800	4,800	4,800	4,900	0
Mainframe	1,000	-10	900	800	700	650	550	500	-11
Minicomputer	1,100	-5	1,050	1,050	1,050	1,000	950	950	-2
PC/Workstation	2,700	4	2,800	2,900	3,050	3,150	3,250	3,400	4
Equipment Services	2,430	0	2,440	2,470	2,480	2,500	2,500	2,510	1
Software Products	2,370	2	2,420	2,490	2,570	2,670	2,750	2,840	3
Other Information Services	5,400	6	5,700	6,100	6,700	7,200	8,000	9,000	10
Data Communications	1,450	7	1,550	1,700	1,850	2,000	2,150	2,300	8
Facilities/Administration	1,900	0	1,900	1,850	1,850	1,800	1,800	1,800	-1
In-house Staff	6,000	-3	5,800	5,600	5,400	5,200	5,000	4,800	-4

Exhibit I-2

Information Services Market
Forecast by Delivery Mode and Submode
Netherlands, 1994-1999

Delivery Modes	Dfl Millions								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	8,300	5	8,700	9,200	9,800	10,500	11,400	12,500	8
Professional Services	2,900	5	3,050	3,230	3,420	3,610	3,930	4,440	8
- IS Consulting	385	9	420	460	505	550	620	720	11
- Education & Training	340	6	360	385	410	435	475	540	8
- Custom Software	2,140	4	2,230	2,330	2,430	2,540	2,730	3,040	6
- Application Management	35	26	44	55	70	85	105	135	25
Systems Integration	370	7	395	430	470	520	590	655	11
- Equipment	90	6	95	100	105	115	125	135	7
- Application Software	68	18	80	100	125	155	195	240	25
- System Software	30	0	30	30	30	30	30	30	0
- Professional Services	175	3	180	190	200	210	225	235	5
- Other	7	14	8	9	11	12	14	17	16
Systems Operations	240	21	290	350	415	500	610	740	21
- Platform Operations	70	14	80	90	100	115	135	155	14
- Application Operations	115	22	140	170	200	240	290	350	20
- Desktop Services	55	31	72	90	115	145	185	235	27
Processing Services	970	6	1,030	1,080	1,140	1,200	1,270	1,340	5
- Transaction Processing	860	6	910	950	1,000	1,050	1,110	1,170	5
- Utility Processing	27	0	27	27	28	28	29	29	1
- Other Processing	87	8	94	101	110	119	129	140	8
Network Services	440	14	500	585	685	805	955	1,120	18
- Electronic Info Svcs	250	8	270	295	325	360	395	430	10
- Network Applications	165	21	200	255	320	400	505	625	26
- Network Management	25	20	30	35	40	45	55	65	17
System Software	1,210	-1	1,200	1,210	1,230	1,260	1,270	1,280	1
- Mainframe	585	-7	545	520	495	470	440	410	-6
- Minicomputer	340	1	345	355	365	375	385	390	2
- Workstation/PC	280	9	305	335	370	410	445	480	9
Application Software	1,160	5	1,220	1,280	1,340	1,410	1,480	1,560	5
- Mainframe	100	-5	95	95	90	85	85	80	-3
- Minicomputer	340	9	370	400	435	470	510	555	8
- Workstation/PC	715	5	750	780	810	850	880	920	4
Turnkey Systems	1,000	3	1,030	1,060	1,100	1,180	1,290	1,410	6
- Equipment	475	-1	470	465	460	470	490	515	2
- Application Software	220	9	240	260	285	320	365	420	12
- System Software	64	0	64	64	64	66	70	74	3
- Professional Services	245	6	260	275	295	325	360	405	9
Equipment Services	2,430	0	2,440	2,470	2,480	2,500	2,500	2,510	1
- Equipment Maintenance	1,550	-4	1,490	1,440	1,370	1,310	1,240	1,170	-5
- Environmental Services	875	9	950	1,030	1,105	1,185	1,260	1,340	7
Grand Total Information Service Market	10,700	5	11,200	11,700	12,300	13,000	13,900	15,100	6

B

Forecast Database in U.S. Dollars

Exhibit I-3

Software and Services Market Forecast in Dollars
Netherlands, 1994-1999

Delivery Modes	U.S. $ Million (rounded)								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	4,280	5	4,485	4,740	5,050	5,410	5,875	6,445	8
Professional Services	1,495	5	1,570	1,665	1,765	1,860	2,025	2,290	8
- IS Consulting	199	9	217	237	261	284	320	371	11
- Education & Training	176	6	186	199	212	224	245	279	8
- Custom Software	1,105	4	1,150	1,200	1,255	1,310	1,405	1,565	6
- Application Management	18	26	23	28	36	44	54	70	25
Systems Integration	191	7	204	222	243	268	304	338	11
- Equipment	47	6	49	52	54	60	65	70	7
- Application Software	35	18	41	52	64	80	101	124	25
- System Software	15	0	15	15	15	15	15	15	0
- Professional Services	90	3	93	98	103	108	116	121	5
- Other	4	14	4	5	5	6	7	9	16
Systems Operations	124	21	150	181	214	258	315	382	21
- Platform Operations	36	14	41	47	52	60	70	80	14
- Application Operations	60	22	72	88	103	124	150	181	20
- Desktop Services	28	31	37	46	59	75	95	121	27
Processing Services	500	6	531	557	588	619	655	691	5
- Transaction Processing	444	6	469	490	516	541	572	603	5
- Utility Processing	14	0	14	14	15	15	15	15	1
- Other Processing	45	8	49	52	57	62	67	72	8
Network Services	227	14	258	302	353	415	493	578	18
- Electronic Info Svcs	129	8	139	152	168	186	204	222	10
- Network Applications	85	21	103	132	165	206	261	322	26
- Network Management	13	20	16	18	21	23	29	34	17
System Software	625	-1	620	625	635	650	655	660	1
- Mainframe	302	-7	281	268	255	243	227	212	-6
- Minicomputer	176	1	178	183	188	194	199	201	2
- Workstation/PC	145	9	157	173	191	212	230	248	9
Application Software	600	5	630	660	690	725	765	805	5
- Mainframe	52	-5	49	49	47	44	44	41	-3
- Minicomputer	176	9	191	206	224	243	263	286	8
- Workstation/PC	370	5	385	400	420	440	455	475	4
Turnkey Systems	516	3	531	547	567	608	665	727	6
- Equipment	245	-1	243	240	237	243	253	266	2
- Application Software	114	9	124	134	147	165	188	217	12
- System Software	33	0	33	33	33	34	36	38	3
- Professional Services	127	6	134	142	152	168	186	209	9
Equipment Services	1,255	0	1,260	1,275	1,280	1,290	1,290	1,295	1
- Equipment Maintenance	800	-4	770	740	705	675	640	605	-5
- Environmental Services	450	9	490	530	570	610	650	690	7
Grand Total Information Service Market	5,500	5	5,750	6,050	6,350	6,700	7,150	7,800	6

C

Forecast Database in ECUs

Exhibit I-4

Software and Services Market Forecast in ECUs
Netherlands, 1994-1999

Delivery Modes	ECU Millions (rounded)								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	3,825	5	4,010	4,240	4,515	4,840	5,255	5,760	8
Professional Services	1,335	5	1,405	1,490	1,575	1,665	1,810	2,045	8
- IS Consulting	178	9	194	212	233	254	286	332	11
- Education & Training	157	6	166	178	189	201	219	249	8
- Custom Software	985	4	1,030	1,075	1,120	1,170	1,260	1,400	6
- Application Management	16	26	21	26	33	39	49	62	25
Systems Integration	171	7	182	198	217	240	272	302	11
- Equipment	42	6	44	46	49	53	58	62	7
- Application Software	31	18	37	46	58	71	90	111	25
- System Software	14	0	14	14	14	14	14	14	0
- Professional Services	81	3	83	88	92	97	104	109	5
- Other	3	14	4	4	5	6	6	8	16
Systems Operations	111	21	134	162	191	231	281	341	21
- Platform Operations	33	14	37	42	46	53	62	72	14
- Application Operations	53	22	65	79	92	111	134	162	20
- Desktop Services	25	31	33	41	53	67	85	108	27
Processing Services	449	6	475	497	525	552	585	617	5
- Transaction Processing	397	6	420	438	461	484	512	539	5
- Utility Processing	13	0	13	13	13	13	14	14	1
- Other Processing	40	8	44	47	51	55	60	65	8
Network Services	203	14	231	270	316	371	440	516	18
- Electronic Info Svcs	115	8	125	136	150	166	182	198	10
- Network Applications	76	21	92	118	148	185	233	288	26
- Network Management	12	20	14	16	19	21	26	30	17
System Software	560	-1	555	560	565	580	585	590	1
- Mainframe	270	-7	251	240	228	217	203	189	-6
- Minicomputer	157	1	159	164	168	173	178	180	2
- Workstation/PC	129	9	141	155	171	189	205	221	9
Application Software	535	5	560	590	620	650	680	720	5
- Mainframe	46	-5	44	44	42	39	39	37	-3
- Minicomputer	157	9	171	185	201	217	235	256	8
- Workstation/PC	330	5	346	360	374	392	406	424	4
Turnkey Systems	461	3	475	489	507	544	595	650	6
- Equipment	219	-1	217	215	212	217	226	238	2
- Application Software	102	9	111	120	132	148	168	194	12
- System Software	30	0	30	30	30	30	32	34	3
- Professional Services	113	6	120	127	136	150	166	187	9
Equipment Services	1,120	0	1,125	1,140	1,145	1,150	1,150	1,155	1
- Equipment Maintenance	715	-4	685	665	630	605	570	540	-5
- Environmental Services	405	9	440	475	510	545	580	620	7
Grand Total Information Service Market	4,950	5	5,150	5,400	5,650	6,000	6,400	6,950	6

D

Information Services Forecast Reconciliation in Local Currency

Exhibit I-5

Forecast Reconciliation, Netherlands, 1993-1998

Currency: Dfl Millions	1993 Market				1998 Market				1993 Report %CAGR	1994 Report %CAGR
Delivery Mode	1993 Report (Fcst)	1994 Report (Act)	1993-1994 Variance (Amount)	(%)	1993 Report (Fcst)	1994 Report (Fcst)	1993-1994 Variance (Amount)	(%)	(Fcst)	(Fcst)
Software and Services Total (ex Equipment Services)	8,700	8,300	-400	-5	14,200	11,400	-2,800	-20	10	7
Professional Services	3,140	2,900	-240	-8	4,500	3,930	-570	-13	7	6
- IS Consulting	425	385	-40	-9	725	620	-105	-14	11	10
- Education & Training	350	340	-10	-3	520	475	-45	-9	8	7
- Custom Software	2,330	2,140	-190	-8	3,150	2,730	-420	-13	6	5
- Application Management	35	35	0	0	105	105	0	0	25	25
Systems Integration	380	370	-10	-3	940	590	-350	-37	20	10
- Equipment	100	90	-10	-10	200	125	-75	-38	15	7
- Application Software	68	68	0	0	340	195	-145	-43	38	23
- System Software	30	30	0	0	65	30	-35	-54	17	0
- Professional Services	175	175	0	0	310	225	-85	-27	12	5
- Other	7	7	0	0	25	14	-11	-44	29	15
Systems Operations	240	240	0	0	540	610	70	13	18	21
- Platform Operations	120	70	-50	-42	250	135	-115	-46	16	14
- Application Operations	65	115	50	77	150	290	140	93	18	20
- Desktop Services	55	55	0	0	140	185	45	32	21	27
Processing Services	970	970	0	0	1,160	1,270	110	9	4	6
- Transaction Processing	860	860	0	0	1,000	1,110	110	11	3	5
- Utility Processing	27	27	0	0	29	29	0	0	1	1
- Other Processing	87	87	0	0	128	129	1	1	8	8
Network Services	445	440	-5	-1	1,230	955	-275	-22	23	17
- Electronic Info Svcs	250	250	0	0	385	395	10	3	9	10
- Network Applications	170	165	-5	-3	780	505	-275	-35	36	25
- Network Management	25	25	0	0	65	55	-10	-15	21	17
System Software	1,250	1,210	-40	-3	1,680	1,270	-410	-24	6	1
- Mainframe	605	585	-20	-3	685	440	-245	-36	3	-6
- Minicomputer	350	340	-10	-3	440	385	-55	-13	5	3
- Workstation/PC	290	280	-10	-3	555	445	-110	-20	14	10
Application Software	1,220	1,160	-60	-5	2,290	1,480	-810	-35	13	5
- Mainframe	105	100	-5	-5	105	85	-20	-19	0	-3
- Minicomputer	355	340	-15	-4	580	510	-70	-12	10	8
- Workstation/PC	760	715	-45	-6	1,600	880	-720	-45	16	4
Turnkey Systems	1,070	1,000	-70	-7	1,870	1,290	-580	-31	12	5
- Equipment	505	475	-30	-6	735	490	-245	-33	8	1
- Application Software	235	220	-15	-6	510	365	-145	-28	17	11
- System Software	64	64	0	0	97	70	-27	-28	9	2
- Professional Services	265	245	-20	-8	530	360	-170	-32	15	8
Equipment Services	2,490	2,430	-60	-2	3,050	2,500	-550	-18	4	1
- Equipment Maintenance	1,610	1,550	-60	-4	1,750	1,240	-510	-29	2	-4
- Environmental Services	875	875	0	0	1,300	1,260	-40	-3	8	8
Grand Total	11,200	10,700	-500	-4	17,300	13,900	-3,400	-20	9	5

E

Leading Vendors in Local Currency (Dfl Millions)

Exhibit I-6

Software and Services Leading Vendors Netherlands, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Dfl Millions)	Market Share (%)
1	IBM	U.S.	760	9.1
2	Cap Volmac	France	670	8.1
3	Raet	Netherlands	500	6.0
4	RCC	Netherlands	470	5.7
5	Getronics	Netherlands	450	5.4
6	BSO Origin	Netherlands	390	4.7
7	Digital	U.S.	210	2.5
8	CMG	U.K.	190	2.3
9	Microsoft	U.S.	135	1.6
10	Multihouse	Netherlands	125	1.5
11	Bouwfonds Informatica	Netherlands	110	1.3
12	Ordina	Netherlands	95	1.1
13	Oracle	U.S.	90	1.1
14	Olivetti	Italy	85	1.0
15	Reuters	U.K.	85	1.0
16	Computer Centrum Nederland	Netherlands	80	1.0
17	Computer Associates	U.S.	80	1.0
18	Siemens-Nixdorf	Germany	75	0.9
19	CSC	U.S.	65	0.8
20	EDS	U.S.	65	0.8
21	Unisys	U.S.	50	0.6
22	Bull	France	50	0.6
23	HP	U.S.	50	0.6
24	Novell	U.S.	50	0.6
25	Logica	U.K.	45	0.5
26	Dun & Bradstreet	U.S.	40	0.5
27	Andersen Consulting	U.S.	40	0.5
28	Intergraph	U.S.	40	0.5
29	Lotus	U.S.	35	0.4
30	ADP	U.S.	35	0.4
	Total Listed		5,165	62.2
	Total Market		8,300	100.0

Exhibit I-7

Professional Services Leading Vendors Netherlands, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Dfl Millions)	Market Share (%)
1	Cap Volmac	France	495	17.1
2	Getronics	Netherlands	275	9.5
3	RCC	Netherlands	270	9.3
4	Raet	Netherlands	195	6.7
5	BSO Origin	Netherlands	175	6.0
6	CMG	U.K./NL	110	3.8
7	IBM	U.S.	110	3.8
8	Bouwfonds Informatica	Netherlands	85	2.9
9	Ordina	Netherlands	80	2.8
10	Digital	U.S.	60	2.1
	Total Listed		1,855	64.0
	Total Market		2,900	100.0

Exhibit I-8

Systems Integration Leading Vendors Netherlands, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Dfl Millions)	Market Share (%)
1	IBM	U.S.	85	23.0
2	Cap Volmac	France	45	12.2
3	BSO Origin	Netherlands	40	10.8
4=	Digital	U.S.	20	5.4
4=	Bull	France	20	5.4
4=	Andersen Consulting	U.S.	20	5.4
4=	Getronics	Netherlands	20	5.4
4=	Logica	U.K.	20	5.4
9=	EDS	U.S.	15	4.1
9=	Siemens Nixdorf	Germany	15	4.1
	Total Listed		300	81.2
	Total Market		370	100.0

Exhibit I-9

Systems Operations Leading Vendors Netherlands, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Dfl Millions)	Market Share (%)
1	CSC	U.S.	40	13.3
2	EDS	U.S.	35	11.7
3=	Cap Volmac	France	25	8.3
3=	CMG	U.K.	25	8.3
5	debis Systemhaus	Germany	20	6.7
	Total Listed		145	48.3
	Total Market		300	100.0

Exhibit I-10

Processing Services Leading Vendors Netherlands, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Dfl Millions)	Market Share (%)
1	RCC	Netherlands	200	20.6
2	Raet	Netherlands	155	16.0
3	BSO Origin	Netherlands	70	7.2
4	Computer Centrum Nederland	Netherlands	40	4.1
5	ADP	U.S.	35	3.6
6	CMG	U.K.	20	2.1
7	Getronics	Netherlands	20	2.1
8	Telekurs	Switzerland	15	1.5
9	Medsys	Netherlands	10	1.0
10	IBM	U.S.	10	1.0
	Total Listed		575	59.3
	Total Market		970	100.0

Exhibit I-11

Network Applications Leading Vendors Netherlands, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Dfl Millions)	Market Share (%)
1	Raet	Netherlands	25	15.2
2	IBM	U.S.	25	15.2
3	Infonet	Belgium	20	12.1
4	CMG	U.K.	10	6.1
5	Digital	U.S.	5	3.0
6	BSO Origin	Netherlands	5	3.0
	Total Listed		90	54.5
	Total Market		150	100.0

Exhibit I-12

Electronic Information Services Leading Vendors Netherlands, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Dfl Millions)	Market Share (%)
1	Reuters	U.K.	65	26.0
2	Dun & Bradstreet	U.S.	20	8.0
3	Telerate	U.S.	15	6.0
4	Telekurs	Switzerland	10	4.0
	Total Listed		110	44.0
	Total Market		250	100.0

Exhibit I-13

Systems Software Products Leading Vendors Netherlands, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Dfl Millions)	Market Share (%)
1	IBM	U.S.	445	36.8
2	Getronics	Netherlands	90	7.4
3	Microsoft	U.S.	80	6.6
4	Digital	U.S.	70	5.8
5	Novell	U.S.	50	4.1
6	Oracle	U.S.	45	3.7
7	Computer Associates	U.S.	35	2.9
8	Cap Volmac	France	25	2.1
9	Raet	Netherlands	25	2.1
10	HP	U.S.	25	2.1
	Total Listed		890	73.6
	Total Market		1,210	100.0

Exhibit I-14

Application Software Products Leading Vendors Netherlands, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Dfl Millions)	Market Share (%)
1	IBM	U.S.	65	5.6
2	Microsoft	U.S.	55	4.7
3	Raet	Netherlands	50	4.3
4	Lotus	U.S.	35	3.0
5	Wordperfect	U.S.	35	3.0
6	Computer Associates	U.S.	30	2.6
7	Cap Volmac	France	25	2.2
8	SAP	Germany	20	1.7
9	Bouwfonds Informatica	Netherlands	15	1.3
10	Olivetti	Italy	15	1.3
	Total Listed		345	29.7
	Total Market		1,160	100.0

Exhibit I-15

Turnkey Systems Leading Vendors Netherlands, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Dfl Millions)	Market Share (%)
1	Getronics	Netherlands	70	7.0
2	BSO Origin	Netherlands	60	6.0
3	Multihouse	Netherlands	50	5.0
4	Digital	U.S.	35	3.5
5	Intergraph	U.S.	30	3.0
6	Cap Volmac	France	30	3.0
7	IBM	U.S.	25	2.5
8	Siemens-Nixdorf	Germany	25	2.5
9	Olivetti	Italy	15	1.5
10	Ordina	Netherlands	15	1.5
	Total Listed		355	35.5
	Total Market		1,000	100.0

Exhibit I-16

Equipment Maintenance Leading Vendors Netherlands, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Dfl Millions)	Market Share (%)
1	IBM	U.S.	300	19.4
2	Getronics	Netherlands	250	16.1
3	Digital	U.S.	100	6.5
4	Unisys	U.S.	80	5.2
5	Siemens-Nixdorf	Germany	60	3.9
6	HP	U.S.	60	3.9
7	AT&T	U.S.	50	3.2
8	Bull	France	40	2.6
9	Olivetti	Italy	40	2.6
10	RCC	Netherlands	25	1.6
	Total Listed		1,005	64.8
	Total Market		1,600	100.0

Exhibit I-17

Environmental Services Leading Vendors Netherlands, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Dfl Millions)	Market Share (%)
1	Getronics	Netherlands	80	9.1
2	IBM	U.S.	50	5.7
3	Digital	U.S.	15	1.7
4	Unisys	U.S.	10	1.1
5	HP	U.S.	5	0.6
6	Olivetti	Italy	5	0.6
7	Raet	Netherlands	5	0.6
8	Bull	France	5	0.6
9	AT&T	U.S.	5	0.6
	Total Listed		180	20.6
	Total Market		880	100.0

Exhibit I-18

Information Services Leading Vendors Netherlands, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Dfl Millions)	Market Share (%)
1	IBM	U.S.	1,120	10.2
2	Getronics	Netherlands	770	7.0
3	Cap Volmac	France	670	6.1
4	Raet	Netherlands	540	4.9
5	RCC	Netherlands	500	4.5
6	BSO Origin	Netherlands	400	3.6
7	Digital	U.S.	340	3.1
8	CMG	U.K.	180	1.6
9	Unisys	U.S.	140	1.3
10	Siemens-Nixdorf	Germany	140	1.3
	Total Listed		4,800	43.6
	Total Market		11,000	100.0

J

Information Services Industry Forecast Database, 1994-1999 Belgium

A

Forecast Database in Local Currency (BF Millions)

Exhibit J-1

Top Level IT Expenditure, Belgium

Sector	BF Millions								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR (%)
Total IT Spending	299,000	0	300,000	304,000	310,000	318,000	325,000	330,000	2
Equipment Sales	61,500	0	61,500	61,000	61,900	62,500	62,500	62,500	0
Mainframe	13,500	-2	13,200	10,900	9,900	9,000	8,000	7,100	-12
Minicomputer	14,500	-3	14,100	14,100	14,100	14,000	13,700	13,400	-1
PC/Workstation	33,500	2	34,200	36,000	37,900	39,500	40,800	42,000	4
Equipment Services	20,000	0	20,000	20,000	19,800	19,500	19,100	18,900	-1
Software Products	26,900	8	29,000	31,400	34,000	36,900	40,100	42,800	8
Other Information Services	53,000	3	54,600	58,000	61,200	65,100	70,600	74,800	6
Data Communications	22,000	4	22,900	24,300	25,800	27,400	29,100	30,300	6
Facilities/Administration	25,500	-3	24,800	24,600	24,400	24,200	24,000	23,300	-1
In-house Staff	90,000	-3	87,000	85,000	83,000	82,000	80,000	77,000	-2

Exhibit J-2

Information Services Market
Forecast by Delivery Mode and Submode
Belgium, 1994-1999

Delivery Modes	BF Millions								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	86,000	5	90,000	96,000	102,000	109,000	118,000	125,000	7
Professional Services	28,800	2	29,300	30,200	30,700	31,700	32,800	33,600	3
- IS Consulting	4,540	9	4,960	5,470	5,970	6,580	7,250	7,900	10
- Education & Training	2,390	1	2,420	2,470	2,500	2,560	2,620	2,650	2
- Custom Software	21,800	0	21,800	22,100	22,100	22,400	22,700	22,700	1
- Application Management	80	25	100	130	160	200	250	310	25
Systems Integration	4,750	9	5,200	5,750	6,400	7,250	8,150	9,050	12
- Equipment	1,300	8	1,400	1,500	1,600	1,750	1,900	2,000	7
- Application Software	850	24	1,050	1,350	1,700	2,150	2,700	3,350	26
- System Software	370	5	390	420	450	480	510	530	6
- Professional Services	2,150	4	2,240	2,380	2,530	2,690	2,830	2,930	6
- Other	90	11	100	120	140	160	190	220	17
Systems Operations	2,690	18	3,180	3,750	4,470	5,410	6,590	8,050	20
- Platform Operations	900	10	990	1,100	1,250	1,450	1,650	1,900	14
- Application Operations	1,650	21	2,000	2,400	2,900	3,550	4,400	5,450	22
- Desktop Services	140	36	190	245	315	410	535	700	30
Processing Services	7,820	-2	7,640	7,570	7,560	7,560	7,610	7,440	-1
- Transaction Processing	6,950	-3	6,750	6,650	6,600	6,550	6,550	6,350	-1
- Utility Processing	208	-4	200	195	190	190	185	180	-2
- Other Processing	660	5	690	725	770	815	875	910	6
Network Services	4,800	13	5,400	6,100	6,900	7,700	8,900	9,800	13
- Electronic Info Svcs	2,950	8	3,200	3,500	3,800	4,100	4,550	4,800	8
- Network Applications	1,700	18	2,000	2,400	2,850	3,350	4,050	4,650	18
- Network Management	130	15	150	180	215	250	300	340	18
System Software	13,700	4	14,300	14,800	15,400	16,100	16,700	17,100	4
- Mainframe	6,450	-1	6,400	6,350	6,300	6,250	6,200	6,000	-1
- Minicomputer	4,410	7	4,700	4,950	5,250	5,600	5,900	6,150	6
- Workstation/PC	2,850	11	3,150	3,450	3,800	4,200	4,600	4,950	9
Application Software	13,200	11	14,700	16,600	18,600	20,800	23,400	25,700	12
- Mainframe	1,050	0	1,050	1,050	1,050	1,050	1,050	1,000	-1
- Minicomputer	3,850	10	4,250	4,700	5,200	5,750	6,300	6,800	10
- Workstation/PC	8,250	14	9,400	10,800	12,300	14,000	16,000	17,900	14
Turnkey Systems	9,900	7	10,640	11,350	12,060	12,840	13,660	14,300	6
- Equipment	4,800	4	5,000	5,100	5,200	5,300	5,400	5,400	2
- Application Software	2,100	12	2,350	2,650	2,950	3,300	3,650	4,000	11
- System Software	450	6	475	500	520	540	565	575	4
- Professional Services	2,550	10	2,810	3,100	3,390	3,700	4,040	4,320	9
Equipment Services	20,000	0	20,000	20,000	19,800	19,500	19,100	18,900	-1
- Equipment Maintenance	13,600	-3	13,200	12,800	12,300	11,700	11,000	10,500	-4
- Environmental Services	6,350	6	6,750	7,150	7,500	7,800	8,050	8,350	4
Grand Total Information Service Market	106,000	4	110,000	116,000	122,000	129,000	137,000	144,000	6

B

Forecast Database in U.S. Dollars

Exhibit J-3

Software and Services Market Forecast in Dollars
Belgium, 1994-1999

Delivery Modes	U.S. $ Million (rounded)								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	2,380	5	2,490	2,655	2,820	3,015	3,265	3,460	7
Professional Services	795	2	810	835	850	875	905	930	3
- IS Consulting	126	9	137	152	165	182	201	219	10
- Education & Training	66	1	67	69	69	71	73	74	2
- Custom Software	605	0	605	610	610	620	630	630	1
- Application Management	2	25	3	4	4	6	7	9	25
Systems Integration	132	9	144	159	177	201	226	251	12
- Equipment	36	8	39	42	45	49	53	56	7
- Application Software	24	24	29	37	47	59	75	93	26
- System Software	10	5	11	12	12	13	14	15	6
- Professional Services	60	4	62	66	70	75	79	81	6
- Other	3	11	3	3	4	4	5	6	17
Systems Operations	75	18	88	104	124	150	183	223	20
- Platform Operations	25	10	28	31	35	40	46	53	14
- Application Operations	46	21	56	67	80	98	122	151	22
- Desktop Services	4	36	5	7	9	11	15	19	30
Processing Services	217	-2	212	210	209	209	211	206	-1
- Transaction Processing	193	-3	187	184	183	181	181	176	-1
- Utility Processing	6	-4	6	6	6	6	5	5	-2
- Other Processing	19	5	19	20	22	23	24	25	6
Network Services	133	13	150	169	191	213	246	271	13
- Electronic Info Svcs	82	8	89	97	105	114	126	133	8
- Network Applications	47	18	56	67	79	93	112	129	18
- Network Management	4	15	4	5	6	7	9	10	18
System Software	380	4	395	410	425	445	460	475	4
- Mainframe	179	-1	177	176	175	173	172	166	-1
- Minicomputer	122	7	130	137	145	155	163	170	6
- Workstation/PC	79	11	87	96	105	116	127	137	9
Application Software	365	11	405	460	515	575	645	710	12
- Mainframe	29	0	29	29	29	29	29	28	-1
- Minicomputer	107	10	118	130	144	159	175	188	10
- Workstation/PC	230	14	260	300	340	385	445	495	14
Turnkey Systems	274	7	295	314	334	355	378	396	6
- Equipment	133	4	139	141	144	147	150	150	2
- Application Software	58	12	65	74	82	92	101	111	11
- System Software	12	6	13	14	14	15	16	16	4
- Professional Services	71	10	78	86	94	103	112	120	9
Equipment Services	555	0	555	555	550	540	530	525	-1
- Equipment Maintenance	375	-3	365	355	340	325	305	290	-4
- Environmental Services	175	6	185	200	205	215	225	230	4
Grand Total Information Service Market	2,950	4	3,050	3,200	3,350	3,550	3,800	4,000	6

C

Forecast Database in ECUs

Exhibit J-4

Software and Services Market Forecast in ECUs
Belgium, 1994-1999

Delivery Modes	ECU Millions (rounded)								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	2,130	5	2,225	2,375	2,525	2,695	2,920	3,095	7
Professional Services	715	2	725	745	760	785	810	830	3
- IS Consulting	113	9	123	136	148	163	180	196	10
- Education & Training	59	1	60	61	62	64	65	66	2
- Custom Software	540	0	540	545	545	555	560	560	1
- Application Management	2	25	3	3	4	5	6	8	25
Systems Integration	118	9	129	143	159	180	202	224	12
- Equipment	32	8	35	37	40	44	47	50	7
- Application Software	21	24	26	33	42	53	67	83	26
- System Software	9	5	10	10	11	12	13	13	6
- Professional Services	53	4	56	59	63	67	70	73	6
- Other	2	11	2	3	3	4	5	5	17
Systems Operations	67	18	79	93	111	134	163	199	20
- Platform Operations	23	10	25	27	31	36	41	47	14
- Application Operations	41	21	50	60	72	88	109	135	22
- Desktop Services	3	36	5	6	8	10	13	17	30
Processing Services	194	-2	189	188	187	187	189	184	-1
- Transaction Processing	172	-3	167	165	164	162	162	157	-1
- Utility Processing	5	-4	5	5	5	5	5	5	-2
- Other Processing	17	5	17	18	19	20	22	23	6
Network Services	119	13	134	151	171	191	220	243	13
- Electronic Info Svcs	73	8	79	87	94	102	113	119	8
- Network Applications	42	18	50	60	71	83	100	115	18
- Network Management	3	15	4	5	6	6	8	9	18
System Software	340	4	355	365	380	400	415	425	4
- Mainframe	160	-1	159	157	156	155	154	149	-1
- Minicomputer	109	7	117	123	130	139	146	152	6
- Workstation/PC	71	11	78	86	94	104	114	123	9
Application Software	325	11	365	410	460	515	580	635	12
- Mainframe	26	0	26	26	26	26	26	25	-1
- Minicomputer	96	10	105	117	129	143	156	169	10
- Workstation/PC	204	14	233	268	305	347	396	443	14
Turnkey Systems	245	7	264	281	299	318	338	354	6
- Equipment	119	4	124	126	129	131	134	134	2
- Application Software	52	12	58	66	73	82	91	99	11
- System Software	11	6	12	12	13	13	14	14	4
- Professional Services	63	10	70	77	84	92	100	107	9
Equipment Services	495	0	495	495	490	485	475	470	-1
- Equipment Maintenance	335	-3	325	315	305	290	270	260	-4
- Environmental Services	155	6	165	175	185	195	200	205	4
Grand Total Information Service Market	2,600	4	2,700	2,850	3,000	3,200	3,400	3,550	6

D

Information Services Forecast Reconciliation in Local Currency

Exhibit J-5

Forecast Reconciliation, Belgium, 1993-1998

Currency: BF Millions	1993 Market				1998 Market				1993	1994
Delivery Mode	1993 Report (Fcst)	1994 Report (Act)	1993-1994 Variance (Amount)	1993-1994 Variance (%)	1993 Report (Fcst)	1994 Report (Fcst)	1993-1994 Variance (Amount)	1993-1994 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

E

Leading Vendors in Local Currency (BF Millions)

Exhibit J-6

Software and Services Leading Vendors
Belgium, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (BF Millions)	Market Share (%)
1	IBM	U.S.	7,910	9.2
2	Digital	U.S.	2,720	3.2
3	CSC	U.S.	2,560	3.0
4	Siemens-Nixdorf	Germany	2,430	2.8
5	Dolmen	Belgium	2,100	2.4
6	Computer Associates	U.S.	1,710	2.0
7	Cap Gemini Sogeti	France	1,670	1.9
8	Microsoft	U.S.	1,490	1.7
9	TIS Group	Belgium	1,450	1.7
10	Unisys	U.S.	1,245	1.4
	Total Listed		25,285	29.4
	Total Market		86,000	100.0

Exhibit J-7

Professional Services Leading Vendors Belgium, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (BF Millions)	Market Share (%)
1	IBM	U.S.	1,265	4.4
2	Cap Gemini Sogeti	France	1,230	4.3
3	Dolmen	Belgium	1,200	4.2
4	TIS Group	Belgium	1,050	3.6
5	Trasys	Belgium	900	3.1
6	Sema Group	France	745	2.6
7	Digital	U.S.	725	2.5
8	Cipal	Belgium	700	2.4
9	CSC	U.S.	680	2.4
10	Orda-B	Belgium	650	2.3
	Total Listed		9,145	31.8
	Total Market		28,800	100.0

Exhibit J-8

Systems Integration Leading Vendors Belgium, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (BF Millions)	Market Share (%)
1	Sema Group	France	350	7.4
2	Cap Gemini Sogeti	France	345	7.3
3	EDS	U.S.	310	6.5
4	Bull	France	285	6.0
5	Logica	U.S.	255	5.4
	Total Listed		1,545	32.6
	Total Market		4,750	100.0

Exhibit J-9

Systems Operations Leading Vendors Belgium, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (BF Millions)	Market Share (%)
1	CSC	U.S.	850	29.3
2	Cegeka	Belgium	300	10.3
3	Digital	U.S.	200	6.9
4	EDS	U.S.	190	6.5
5	Hewlett-Packard	Switzerland	75	2.6
	Total Listed		1,615	55.6
	Total Market		2,900	100.0

Exhibit J-10

Processing Services Leading Vendors Belgium, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (BF Millions)	Market Share (%)
1	CSC	U.S.	365	4.7
2	Dolmen	Belgium	300	3.8
3	Administra Computing	Belgium	250	3.2
4	Orda-B	Belgium	200	2.6
5	BSO Origin	Netherlands	150	1.9
6	Unisys	U.S.	100	1.3
7	Cipal	Belgium	100	1.3
8	EDS	U.S.	85	1.1
9	IBM	U.S.	70	0.9
10	Raet	Netherlands	65	0.8
	Total Listed		1,685	21.5
	Total Market		7,820	100.0

Exhibit J-11

Network Applications Leading Vendors Belgium, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (BF Millions)	Market Share (%)
1	Infonet	Belgium	325	19.1
2	IBM	U.S.	210	12.4
3	GEIS	U.S.	75	4.4
4	Digital	U.S.	55	3.2
5	Bull	France	35	2.1
6	SG2	France	30	1.8
7	GSI	France	25	1.5
8	EDS	U.S.	20	1.2
9	Olivetti	Italy	15	0.9
10	Raet	Netherlands	10	0.6
	Total Listed		800	47.1
	Total Market		1,700	100.0

Exhibit J-12

Electronic Information Services Leading Vendors Belgium, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (BF Millions)	Market Share (%)
1	Reuters	U.K.	790	26.8
2	Dun & Bradstreet	U.S.	385	13.1
3	Telerate	U.S.	190	6.4
	Total Listed		1,375	46.6
	Total Market		2,950	100.0

Exhibit J-13

Systems Software Products Leading Vendors Belgium, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (BF Millions)	Market Share (%)
1	IBM	U.S.	4,015	29.3
2	Digital	U.S.	885	6.5
3	Microsoft	U.S.	870	6.4
4	Computer Associates	U.S.	805	5.9
5	Siemens-Nixdorf	Germany	720	5.3
6	Novell	U.S.	480	3.5
7	Unisys	U.S.	440	3.2
8	Oracle	U.S.	420	3.1
9	HP	U.S.	350	2.6
10	Bull	France	340	2.5
	Total Listed		9,325	68.1
	Total Market		13,700	100.0

Exhibit J-14

Application Software Products Leading Vendors Belgium, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (BF Millions)	Market Share (%)
1	Wordperfect	U.S.	650	4.9
2	Microsoft	U.S.	600	4.5
3	Computer Associates	U.S.	600	4.5
4	IBM	U.S.	565	4.3
5	Lotus	U.S.	350	2.7
6	SAP	Germany	335	2.5
7	Dolmen	Belgium	300	2.3
8	Siemens-Nixdorf	Germany	255	1.9
9	Dun & Bradstreet	U.S.	220	1.7
10	TIS Group	Belgium	200	1.5
	Total Listed		4,075	30.9
	Total Market		13,200	100.0

Exhibit J-15

Turnkey Systems Leading Vendors Belgium, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (BF Millions)	Market Share (%)
1	Siemens-Nixdorf	Germany	760	7.7
2	Digital	U.S.	415	4.2
3	CSC	U.S.	395	4.0
4	IBM	U.S.	240	2.4
5	Intergraph	U.S.	170	1.7
6	Olivetti	Italy	155	1.6
7	Getronics	Netherlands	145	1.5
8	BSO Origin	Netherlands	125	1.3
9	Reuters	U.K.	105	1.1
10	McDonnell Douglas	U.S.	95	1.0
	Total Listed		2,605	26.3
	Total Market		9,900	100.0

Exhibit J-16

Equipment Maintenance Leading Vendors
Belgium, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (BF Millions)	Market Share (%)
1	IBM	U.S.	2,450	18.0
2	Siemens-Nixdorf	Germany	1,350	9.9
3	Digital	U.S.	1,100	8.1
4	ICL (Fujitsu)	U.K.	1,050	7.7
5	Olivetti	Italy	905	6.7
6	HP	U.S.	825	6.1
7	Unisys	U.S.	795	5.8
8	Bull	France	685	5.0
9	Getronics	Netherlands	500	3.7
10	AT&T	U.S.	410	3.0
	Total Listed		10,070	74.0
	Total Market		13,600	100.0

Exhibit J-17

Environmental Services Leading Vendors
Belgium, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (BF Millions)	Market Share (%)
1	IBM	U.S.	430	6.8
2	Siemens-Nixdorf	Germany	415	6.5
3	Digital	U.S.	345	5.4
4	Getronics	Netherlands	175	2.8
5	Unisys	U.S.	145	2.3
6	HP	U.S.	100	1.6
7	Bull	France	100	1.6
8	Olivetti	Italy	75	1.2
9	Wang	U.S.	45	0.7
10	AT&T	U.S.	30	0.5
	Total Listed		1,860	29.3
	Total Market		6,350	100.0

Exhibit J-18

Information Services Leading Vendors
Belgium, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (BF Millions)	Market Share (%)
1	IBM	U.S.	9,930	9.4
2	Siemens-Nixdorf	Germany	4,210	4.0
3	Digital	U.S.	4,030	3.8
4	CSC	U.S.	2,820	2.7
5	Unisys	U.S.	2,200	2.1
6	Dolmen	Belgium	2,100	2.0
7	Olivetti	Italy	1,850	1.7
8	Computer Associates	U.S.	1,710	1.6
9	HP	U.S.	1,670	1.6
10	Getronics	Netherlands	1,660	1.6
	Total Listed		32,180	30.4
	Total Market		106,000	100.0

K

Information Services Industry Forecast Database, 1994-1999 Switzerland

A

Forecast Database in Local Currency (SF Millions)

Exhibit K-1

Top Level IT Expenditure, Switzerland

Sector	SF Millions								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR (%)
Total IT Spending	14,900	1	15,100	15,500	15,900	16,500	16,900	17,500	3
Equipment Sales	3,450	0	3,450	3,550	3,650	3,800	3,900	4,050	3
Mainframe	1,100	-13	960	860	760	670	580	510	-12
Minicomputer	570	7	610	660	710	760	800	860	7
PC/Workstation	1,800	6	1,900	2,050	2,200	2,350	2,500	2,700	7
Equipment Services	1,330	2	1,360	1,390	1,410	1,440	1,460	1,470	2
Software Products	1,230	5	1,290	1,360	1,465	1,570	1,705	1,850	7
Other Information Services	2,200	5	2,300	2,500	2,750	3,050	3,350	3,750	10
Data Communications	1,200	4	1,250	1,300	1,350	1,400	1,450	1,500	4
Facilities/Administration	1,000	0	1,000	1,050	1,050	1,100	1,100	1,100	2
In-house Staff	4,500	-2	4,400	4,300	4,200	4,100	3,900	3,800	-3

Exhibit K-2

Information Services Market
Forecast by Delivery Mode and Submode
Switzerland, 1994-1999

Delivery Modes	SF Millions								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	3,800	5	4,000	4,300	4,650	5,100	5,600	6,150	9
Professional Services	950	2	970	1,020	1,070	1,160	1,260	1,380	7
- IS Consulting	110	9	120	135	150	170	195	225	13
- Education & Training	160	0	160	165	170	180	190	205	5
- Custom Software	675	1	685	710	745	800	860	935	6
- Application Management	5	20	6	7	9	12	15	19	26
Systems Integration	240	13	270	295	325	355	385	410	9
- Equipment	64	9	70	75	80	84	88	90	5
- Application Software	45	22	55	65	75	90	105	120	17
- System Software	20	10	22	24	26	27	29	30	6
- Professional Services	105	10	115	125	135	145	155	160	7
- Other	5	20	6	7	8	9	10	11	13
Systems Operations	85	21	103	124	147	173	206	241	19
- Platform Operations	20	15	23	26	29	33	37	41	12
- Application Operations	55	20	66	80	95	110	130	150	18
- Desktop Services	10	40	14	18	23	30	39	50	29
Processing Services	455	7	485	515	550	585	625	665	7
- Transaction Processing	395	6	420	445	475	505	540	575	6
- Utility Processing	17	0	17	17	18	18	18	19	2
- Other Processing	44	9	48	52	56	61	66	72	8
Network Services	240	10	265	310	360	420	490	560	16
- Electronic Info Svcs	175	9	190	210	235	260	295	320	11
- Network Applications	55	18	65	85	110	140	175	215	27
- Network Management	10	10	11	13	15	18	21	23	16
System Software	750	1	760	770	805	840	885	930	4
- Mainframe	355	-6	335	320	310	300	290	280	-4
- Minicomputer	230	4	240	245	260	275	290	305	5
- Workstation/PC	165	12	185	205	235	265	305	345	13
Application Software	480	10	530	590	660	730	820	920	12
- Mainframe	62	-3	60	58	56	54	52	50	-4
- Minicomputer	135	11	150	160	175	190	210	230	9
- Workstation/PC	280	14	320	370	425	485	560	640	15
Turnkey Systems	590	7	630	690	750	840	930	1,020	10
- Equipment	320	5	335	355	380	415	450	480	7
- Application Software	80	13	90	100	115	135	155	175	14
- System Software	35	0	35	40	45	50	55	60	11
- Professional Services	155	10	170	190	210	240	270	300	12
Equipment Services	1,330	2	1,360	1,390	1,410	1,440	1,460	1,470	2
- Equipment Maintenance	775	0	775	775	770	765	760	745	-1
- Environmental Services	550	5	580	610	640	670	700	725	5
Grand Total Information Service Market	5,100	5	5,350	5,700	6,100	6,550	7,050	7,600	7

B

Forecast Database in U.S. Dollars

Exhibit K-3

Software and Services Market Forecast in Dollars
Switzerland, 1994-1999

Delivery Modes	U.S. $ Million (rounded)								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	2,735	5	2,880	3,095	3,345	3,670	4,030	4,425	9
Professional Services	685	2	700	735	770	835	905	995	7
- IS Consulting	79	9	87	97	108	123	141	162	13
- Education & Training	115	0	115	119	123	130	137	148	5
- Custom Software	485	1	495	510	535	575	620	675	6
- Application Management	4	20	4	5	6	9	11	14	26
Systems Integration	173	13	194	212	234	256	277	295	9
- Equipment	46	9	51	54	58	61	64	65	5
- Application Software	32	22	40	47	54	65	76	86	17
- System Software	14	10	16	17	19	19	21	22	6
- Professional Services	76	10	83	90	97	105	112	115	7
- Other	4	20	4	5	6	6	7	8	13
Systems Operations	61	21	74	89	106	125	148	174	19
- Platform Operations	15	15	17	19	21	24	27	30	12
- Application Operations	40	20	48	58	69	79	94	108	18
- Desktop Services	7	40	10	13	17	22	28	36	29
Processing Services	328	7	349	371	396	421	450	479	7
- Transaction Processing	284	6	302	320	342	364	389	414	6
- Utility Processing	12	0	12	12	13	13	13	14	2
- Other Processing	32	9	35	38	41	44	48	52	8
Network Services	173	10	191	223	259	302	353	403	16
- Electronic Info Svcs	126	9	137	151	169	187	212	230	11
- Network Applications	40	18	47	61	79	101	126	155	27
- Network Management	7	10	8	10	11	13	15	17	16
System Software	540	1	545	555	580	605	635	670	4
- Mainframe	256	-6	241	230	223	216	209	202	-4
- Minicomputer	166	4	173	177	187	198	209	220	5
- Workstation/PC	119	12	133	148	169	191	220	248	13
Application Software	345	10	380	425	475	525	590	660	12
- Mainframe	45	-3	43	42	41	39	38	36	-4
- Minicomputer	97	11	108	115	126	137	151	166	9
- Workstation/PC	200	14	230	265	305	350	405	460	15
Turnkey Systems	425	7	453	497	540	605	669	734	10
- Equipment	230	5	241	256	274	299	324	346	7
- Application Software	58	13	65	72	83	97	112	126	14
- System Software	25	0	25	29	32	36	40	43	11
- Professional Services	112	10	123	137	151	173	194	216	12
Equipment Services	955	2	980	1,000	1,015	1,035	1,050	1,060	2
- Equipment Maintenance	560	0	560	560	555	550	545	535	-1
- Environmental Services	395	5	415	440	460	480	505	520	5
Grand Total Information Service Market	3,650	5	3,850	4,100	4,400	4,700	5,050	5,450	7

C

Forecast Database in ECUs

Exhibit K-4

Software and Services Market Forecast in ECUs
Switzerland, 1994-1999

Delivery Modes	ECU Millions (rounded)								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	2,305	5	2,425	2,605	2,820	3,090	3,395	3,725	9
Professional Services	575	2	590	620	650	705	765	835	7
- IS Consulting	67	9	73	82	91	103	118	137	13
- Education & Training	97	0	97	100	103	109	115	124	5
- Custom Software	410	1	415	430	450	485	520	565	6
- Application Management	3	20	4	4	6	8	9	12	26
Systems Integration	146	13	164	179	197	215	234	249	9
- Equipment	39	9	43	46	49	51	54	55	5
- Application Software	27	22	33	39	45	55	64	73	17
- System Software	12	10	13	15	16	16	18	18	6
- Professional Services	64	10	70	76	82	88	94	97	7
- Other	3	20	4	4	5	5	6	7	13
Systems Operations	52	21	63	75	89	105	125	146	19
- Platform Operations	12	15	14	16	18	20	23	25	12
- Application Operations	34	20	40	49	58	67	79	91	18
- Desktop Services	6	40	9	11	14	18	24	30	29
Processing Services	277	7	294	312	333	354	378	404	7
- Transaction Processing	240	6	255	270	288	306	328	349	6
- Utility Processing	11	0	11	11	11	11	11	12	2
- Other Processing	27	9	29	32	34	37	40	44	8
Network Services	146	10	161	188	218	255	297	340	16
- Electronic Info Svcs	106	9	115	128	143	158	179	194	11
- Network Applications	34	18	40	52	67	85	106	131	27
- Network Management	6	10	7	8	9	11	13	14	16
System Software	455	1	460	465	490	510	535	565	4
- Mainframe	215	-6	203	194	188	182	176	170	-4
- Minicomputer	140	4	146	149	158	167	176	185	5
- Workstation/PC	100	12	112	124	143	161	185	209	13
Application Software	290	10	320	360	400	440	495	560	12
- Mainframe	38	-3	37	35	34	33	32	31	-4
- Minicomputer	82	11	91	97	106	115	128	140	9
- Workstation/PC	170	14	194	224	258	294	340	388	15
Turnkey Systems	358	7	382	418	455	509	564	618	10
- Equipment	194	5	203	215	231	252	273	291	7
- Application Software	49	13	55	61	70	82	94	106	14
- System Software	21	0	21	24	27	30	33	36	11
- Professional Services	94	10	103	115	128	146	164	182	12
Equipment Services	805	2	825	840	855	875	885	890	2
- Equipment Maintenance	470	0	470	470	465	465	460	450	-1
- Environmental Services	335	5	350	370	390	405	425	440	5
Grand Total Information Service Market	3,100	5	3,250	3,450	3,700	3,950	4,250	4,600	7

D

Information Services Forecast Reconciliation in Local Currency

Exhibit K-5

Forecast Reconciliation, Switzerland, 1993-1998

Currency: SF Millions	1993 Market				1998 Market				1993	1994
Delivery Mode	1993 Report (Fcst)	1994 Report (Act)	1993-1994 Variance (Amount)	1993-1994 Variance (%)	1993 Report (Fcst)	1994 Report (Fcst)	1993-1994 Variance (Amount)	1993-1994 Variance (%)	Report %CAGR (Fcst)	Report %CAGR (Fcst)
Software and Services Total (ex Equipment Services)	4,150	3,800	-350	-8	6,650	5,600	-1,050	-16	10	8
Professional Services	950	950	0	0	1,390	1,260	-130	-9	8	6
- IS Consulting	110	110	0	0	195	195	0	0	12	12
- Education & Training	160	160	0	0	205	190	-15	-7	5	3
- Custom Software	675	675	0	0	980	860	-120	-12	8	5
- Application Management	3	5	2	67	9	15	6	67	25	25
Systems Integration	255	240	-15	-6	510	385	-125	-25	15	10
- Equipment	68	64	-4	-6	110	88	-22	-20	10	7
- Application Software	45	45	0	0	180	105	-75	-42	32	18
- System Software	20	20	0	0	35	29	-6	-17	12	8
- Professional Services	115	105	-10	-9	170	155	-15	-9	8	8
- Other	5	5	0	0	15	10	-5	-33	25	15
Systems Operations	63	85	22	35	121	206	85	70	14	19
- Platform Operations	35	20	-15	-43	60	37	-23	-38	11	13
- Application Operations	23	55	32	139	45	130	85	189	14	19
- Desktop Services	5	10	5	100	16	39	23	144	26	31
Processing Services	455	455	0	0	630	625	-5	-1	7	7
- Transaction Processing	395	395	0	0	540	540	0	0	6	6
- Utility Processing	17	17	0	0	19	18	-1	-5	2	1
- Other Processing	44	44	0	0	73	66	-7	-10	11	8
Network Services	240	240	0	0	580	490	-90	-16	19	15
- Electronic Info Svcs	175	175	0	0	285	295	10	4	10	11
- Network Applications	55	55	0	0	265	175	-90	-34	37	26
- Network Management	9	10	1	11	32	21	-12	-36	29	15
System Software	750	750	0	0	975	885	-90	-9	5	3
- Mainframe	355	355	0	0	320	290	-30	-9	-2	-4
- Minicomputer	235	230	-5	-2	330	290	-40	-12	7	5
- Workstation/PC	160	165	5	3	325	305	-20	-6	15	13
Application Software	480	480	0	0	910	820	-90	-10	14	11
- Mainframe	63	62	-1	-2	58	52	-6	-10	-2	-3
- Minicomputer	135	135	0	0	220	210	-10	-5	10	9
- Workstation/PC	280	280	0	0	635	560	-75	-12	18	15
Turnkey Systems	960	590	-370	-39	1,540	930	-610	-40	10	10
- Equipment	485	320	-165	-34	695	450	-245	-35	7	7
- Application Software	180	80	-100	-56	340	155	-185	-54	14	14
- System Software	60	35	-25	-42	85	55	-30	-35	7	9
- Professional Services	235	155	-80	-34	420	270	-150	-36	12	12
Equipment Services	1,340	1,330	-10	-1	1,510	1,460	-50	-3	2	2
- Equipment Maintenance	785	775	-10	-1	820	760	-60	-7	1	0
- Environmental Services	550	550	0	0	690	700	10	1	5	5
Grand Total	5,500	5,100	-400	-7	8,150	7,050	-1,100	-13	8	7

E

Leading Vendors in Local Currency (SF Millions)

Exhibit K-6

Software and Services Leading Vendors Switzerland, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (SF Millions)	Market Share (%)
1	IBM	U.S.	570	14.9
2	Telekurs	Switzerland	230	6.1
3	Digital	U.S.	190	5.0
4	Fides	Switzerland	100	2.6
5	Reuters	U.K.	100	2.6
6	Microsoft	U.S.	80	2.1
7	Siemens-Nixdorf	Germany	80	2.1
8	Computer Associates	U.S.	70	1.8
9	AT&T	U.S.	65	1.7
10	ATAG debis Informatik	Switzerland	60	1.6
	Total Listed		1,545	40.7
	Total Market		3,800	100.0

Exhibit K-7

Professional Services Leading Vendors Switzerland, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (SF Millions)	Market Share (%)
1	Digital	U.S.	70	7.4
2	IBM	U.S.	70	7.4
3	Fides	Switzerland	60	6.3
4	AT&T	U.S.	25	2.6
5	ATAG debis Informatik	Switzerland	25	2.6
6	Delta ST	Switzerland	20	2.1
7	Unisys	U.S.	15	1.6
8	Oracle	U.S.	15	1.6
9	Siemens-Nixdorf	Germany	15	1.6
10	Cap Gemini Sogeti	France	15	1.6
	Total Listed		330	34.7
	Total Market		950	100.0

Exhibit K-8

Systems Integration Leading Vendors Switzerland, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (SF Millions)	Market Share (%)
1	Digital	U.S.	65	27.1
2	EDS	U.S.	20	8.3
3=	Logica	U.K.	10	4.2
3=	Unisys	U.S.	10	4.2
3=	Cap Gemini Sogeti	France	10	4.2
	Total Listed		115	48.0
	Total Market		240	100.0

Exhibit K-9

Systems Operations Leading Vendors Switzerland, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (SF Millions)	Market Share (%)
1	GSI	France	13	13.0
2	IBM	U.S.	12	12.0
3	Telekurs	Switzerland	12	12.0
4	Digital	U.S.	10	10.0
5	AC Service	Switzerland	7	7.0
	Total Listed		54	54.0
	Total Market		100	100.0

Exhibit K-10

Processing Services Leading Vendors Switzerland, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (SF Millions)	Market Share (%)
1	Telekurs	Switzerland	125	27.5
2	ATAG debis Informatik	Switzerland	20	4.4
3	Fides	Switzerland	20	4.4
4	IBM	U.S.	5	1.1
5	Raet	Netherlands	5	1.1
6	Unisys	U.S.	5	1.1
7	GSI	France	5	1.1
	Total Listed		185	40.7
	Total Market		455	100.0

Exhibit K-11

Network Applications Leading Vendors Switzerland, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (SF Millions)	Market Share (%)
1	IBM	U.S.	15	27.3
2	Infonet	Belgium	5	9.1
3	Digital	U.S.	5	9.1
4	GEIS	U.S.	5	9.1
	Total Listed		30	54.5
	Total Market		50	100.0

Exhibit K-12

Electronic Information Services Leading Vendors Switzerland, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (SF Millions)	Market Share (%)
1	Telekurs	Switzerland	105	60.0
2	Reuters	U.K.	75	42.9
3	Telerate	U.S.	20	11.4
4	Dun & Bradstreet	U.S.	10	5.7
	Total Listed		210	120.0
	Total Market		175	100.0

Exhibit K-13

Systems Software Products Leading Vendors Switzerland, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (SF Millions)	Market Share (%)
1	IBM	U.S.	290	38.7
2	Digital	U.S.	65	8.7
3	Microsoft	U.S.	45	6.0
4	Computer Associates	U.S.	30	4.0
5	Novell	U.S.	25	3.3
6	Siemens-Nixdorf	Germany	25	3.3
7	Oracle	U.S.	20	2.7
8	Unisys	U.S.	15	2.0
9	HP	U.S.	15	2.0
10	AT&T	U.S.	10	1.3
	Total Listed		540	72.0
	Total Market		750	100.0

Exhibit K-14

Application Software Products Leading Vendors Switzerland, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (SF Millions)	Market Share (%)
1	IBM	U.S.	40	8.3
2	Microsoft	U.S.	30	6.3
3	Computer Associates	U.S.	25	5.2
4	Lotus	U.S.	20	4.2
5	Wordperfect	U.S.	20	4.2
6	SAP	Germany	15	3.1
7	AT&T	U.S.	15	3.1
8	Siemens-Nixdorf	Germany	10	2.1
9	Dun & Bradstreet	U.S.	5	1.0
10	Digital	U.S.	5	1.0
	Total Listed		185	38.5
	Total Market		480	100.0

Exhibit K-15

Turnkey Systems Leading Vendors Switzerland, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (SF Millions)	Market Share (%)
1	Siemens-Nixdorf	Germany	25	4.2
2	Fides	Switzerland	20	3.4
3	IBM	U.S.	15	2.5
4	Reuters	U.K.	10	1.7
5	Intergraph	U.S.	10	1.7
6	AT&T	U.S.	10	1.7
7	Digital	U.S.	5	0.8
	Total Listed		95	16.1
	Total Market		590	100.0

Exhibit K-16

Equipment Maintenance Leading Vendors Switzerland, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (SF Millions)	Market Share (%)
1	IBM	U.S.	100	12.9
2	Digital	U.S.	100	12.9
3	AT&T	U.S.	100	12.9
4	Unisys	U.S.	55	7.1
5	Siemens-Nixdorf	Germany	40	5.2
6	HP	U.S.	30	3.9
7	Bull	France	15	1.9
8	ICL (Fujitsu)	U.K.	15	1.9
9	Olivetti	Italy	15	1.9
10	Data General	U.S.	10	1.3
	Total Listed		480	61.9
	Total Market		800	100.0

Exhibit K-17

Environmental Services Leading Vendors Switzerland, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (SF Millions)	Market Share (%)
1	Digital	U.S.	20	3.6
2	IBM	U.S.	15	2.7
3	Siemens-Nixdorf	Germany	10	1.8
4	AT&T	U.S.	5	0.9
5	Unisys	U.S.	5	0.9
6	HP	U.S.	5	0.9
	Total Listed		60	10.9
	Total Market		550	100.0

Exhibit K-18

Information Services Leading Vendors Switzerland, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (SF Millions)	Market Share (%)
1	IBM	U.S.	640	12.8
2	Digital	U.S.	300	6.0
3	Telekurs	Switzerland	240	4.8
4	AT&T	U.S.	160	3.2
5	Siemens-Nixdorf	Germany	130	2.6
6	Unisys	U.S.	100	2.0
7	Fides	Switzerland	100	2.0
8	Reuters	U.K.	100	2.0
9	Microsoft	U.S.	80	1.6
10	Computer Associates	U.S.	70	1.4
	Total Listed		1,920	38.4
	Total Market		5,000	100.0

L

Information Services Industry Forecast Database, 1994-1999 Austria

A

Forecast Database in Local Currency (Sch Millions)

Exhibit L-1

Top Level IT Expenditure, Austria

Sector	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR (%)
	Sch Millions								
Total IT Spending	53,500	2	54,500	55,500	56,500	58,500	59,500	59,000	2
Equipment Sales	15,100	3	15,500	15,400	15,600	15,900	15,900	15,500	0
Mainframe	2,600	4	2,700	2,200	2,000	1,900	1,700	1,500	-11
Minicomputer	4,300	-2	4,200	4,100	4,000	3,900	3,700	3,400	-4
PC/Workstation	8,200	5	8,600	9,100	9,600	10,100	10,500	10,600	4
Equipment Services	4,600	1	4,650	4,650	4,700	4,650	4,600	4,450	-1
Software Products	4,850	8	5,250	5,650	6,200	6,750	7,400	7,800	8
Other Information Services	8,700	6	9,200	9,600	10,400	11,200	11,900	12,400	6
Data Communications	2,800	7	3,000	3,100	3,300	3,500	3,700	3,700	4
Facilities/Administration	3,300	0	3,300	3,400	3,400	3,500	3,500	3,400	1
In-house Staff	14,000	-4	13,500	13,500	13,000	13,000	12,500	11,500	-3

Exhibit L-2

Information Services Market
Forecast by Delivery Mode and Submode
Austria, 1994-1999

Delivery Modes	Sch Millions								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	15,500	6	16,500	17,500	19,000	20,500	22,000	23,000	7
Professional Services	3,500	4	3,650	3,850	4,000	4,150	4,200	4,250	3
- IS Consulting	470	11	520	570	620	670	720	760	8
- Education & Training	415	4	430	450	460	470	470	470	2
- Custom Software	2,600	4	2,700	2,800	2,900	2,950	2,950	2,950	2
- Application Management	15	27	19	24	30	37	46	57	25
Systems Integration	440	14	500	560	630	710	800	890	12
- Equipment	120	8	130	140	150	160	170	180	7
- Application Software	85	29	110	140	175	220	275	340	25
- System Software	34	15	39	44	49	55	62	68	12
- Professional Services	195	8	210	225	240	255	270	280	6
- Other	10	20	12	14	16	18	21	24	15
Systems Operations	175	20	210	250	300	355	430	495	19
- Platform Operations	40	15	46	52	59	67	76	82	12
- Application Operations	100	20	120	145	170	200	240	275	18
- Desktop Services	35	29	45	55	70	90	115	140	25
Processing Services	1,880	1	1,890	1,920	1,950	1,990	2,060	1,990	1
- Transaction Processing	1,650	1	1,660	1,680	1,710	1,740	1,790	1,730	1
- Utility Processing	70	-3	68	66	64	63	62	58	-3
- Other Processing	155	3	160	170	180	190	205	205	5
Network Services	785	11	875	990	1,120	1,260	1,435	1,625	13
- Electronic Info Svcs	620	9	675	745	825	900	995	1,085	10
- Network Applications	125	24	155	190	235	290	360	445	23
- Network Management	40	15	46	53	61	70	81	93	15
System Software	2,900	5	3,050	3,200	3,400	3,650	3,850	3,950	5
- Mainframe	1,250	-1	1,240	1,220	1,210	1,200	1,180	1,110	-2
- Minicomputer	940	9	1,020	1,110	1,210	1,320	1,430	1,490	8
- Workstation/PC	710	11	790	890	1,000	1,120	1,250	1,340	11
Application Software	1,950	13	2,200	2,450	2,800	3,100	3,550	3,850	12
- Mainframe	165	0	165	165	165	165	165	155	-1
- Minicomputer	580	10	640	700	770	850	930	980	9
- Workstation/PC	1,200	17	1,400	1,600	1,850	2,100	2,450	2,700	14
Turnkey Systems	3,710	9	4,060	4,450	4,840	5,270	5,760	6,000	8
- Equipment	1,800	8	1,940	2,090	2,230	2,380	2,545	2,595	6
- Application Software	735	16	850	985	1,130	1,295	1,490	1,640	14
- System Software	220	7	235	255	270	290	310	315	6
- Professional Services	950	8	1,030	1,120	1,210	1,300	1,410	1,450	7
Equipment Services	4,600	1	4,650	4,650	4,700	4,650	4,600	4,450	-1
- Equipment Maintenance	2,950	-2	2,890	2,810	2,720	2,610	2,470	2,300	-4
- Environmental Services	1,630	7	1,740	1,850	1,960	2,050	2,130	2,170	5
Grand Total Information Service Market	19,900	6	21,100	22,300	23,700	25,100	26,700	27,500	5

B

Forecast Database in U.S. Dollars

Exhibit L-3

Software and Services Market Forecast in Dollars
Austria, 1994-1999

Delivery Modes	U.S. $ Million (rounded)							
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	1,270	6	1,355	1,435	1,560	1,680	1,805	1,885	7
Professional Services	285	4	300	315	330	340	345	350	3
- IS Consulting	39	11	43	47	51	55	59	63	8
- Education & Training	34	4	36	37	38	39	39	39	2
- Custom Software	215	4	220	230	240	240	240	240	2
- Application Management	1	27	2	2	2	3	4	5	25
Systems Integration	36	14	41	46	52	58	66	73	12
- Equipment	10	8	11	12	13	13	14	15	7
- Application Software	7	29	9	12	14	18	23	28	25
- System Software	3	15	3	4	4	5	5	6	12
- Professional Services	16	8	17	19	20	21	22	23	6
- Other	1	20	1	1	1	2	2	2	15
Systems Operations	15	20	17	21	25	29	36	41	19
- Platform Operations	4	15	4	5	5	6	6	7	12
- Application Operations	8	20	10	12	14	17	20	23	18
- Desktop Services	3	29	4	5	6	7	9	12	25
Processing Services	154	1	155	158	160	163	169	163	1
- Transaction Processing	136	1	136	138	141	143	147	142	1
- Utility Processing	6	-3	6	6	6	5	5	5	-3
- Other Processing	13	3	13	14	15	16	17	17	5
Network Services	65	11	72	81	92	104	118	134	13
- Electronic Info Svcs	51	9	56	61	68	74	82	89	10
- Network Applications	11	24	13	16	20	24	30	37	23
- Network Management	4	15	4	5	5	6	7	8	15
System Software	240	5	250	265	280	300	315	325	5
- Mainframe	103	-1	102	100	100	99	97	91	-2
- Minicomputer	77	9	84	91	100	109	118	122	8
- Workstation/PC	58	11	65	73	82	92	103	110	11
Application Software	160	13	180	200	230	255	290	315	12
- Mainframe	14	0	14	14	14	14	14	13	-1
- Minicomputer	48	10	53	58	63	70	77	81	9
- Workstation/PC	100	17	115	130	150	170	200	220	14
Turnkey Systems	305	9	333	365	397	433	473	492	8
- Equipment	148	8	159	172	183	195	209	213	6
- Application Software	61	16	70	81	93	106	122	135	14
- System Software	18	7	19	21	22	24	25	26	6
- Professional Services	78	8	85	92	100	107	116	119	7
Equipment Services	375	1	380	380	385	380	375	365	-1
- Equipment Maintenance	240	-2	235	230	225	215	205	190	-4
- Environmental Services	135	7	145	150	160	170	175	180	5
Grand Total Information Service Market	1,650	6	1,750	1,850	1,950	2,050	2,200	2,250	5

C

Forecast Database in ECUs

Exhibit L-4

Software and Services Market Forecast in ECUs
Austria, 1994-1999

Delivery Modes	ECU Millions (rounded)								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	1,120	6	1,195	1,265	1,375	1,485	1,590	1,665	7
Professional Services	255	4	265	280	290	300	305	310	3
- IS Consulting	34	11	38	41	45	49	52	55	8
- Education & Training	30	4	31	33	34	34	34	34	2
- Custom Software	190	4	195	205	210	215	215	215	2
- Application Management	1	27	2	2	2	3	4	4	25
Systems Integration	32	14	36	41	46	52	58	65	12
- Equipment	9	8	10	10	11	12	13	13	7
- Application Software	6	29	8	10	13	16	20	25	25
- System Software	2	15	3	3	4	4	5	5	12
- Professional Services	14	8	15	17	18	19	20	21	6
- Other	1	20	1	1	1	1	2	2	15
Systems Operations	13	20	15	18	22	26	31	36	19
- Platform Operations	3	15	4	4	5	5	6	6	12
- Application Operations	7	20	9	11	13	15	18	20	18
- Desktop Services	3	29	3	4	5	7	8	10	25
Processing Services	136	1	137	139	142	144	149	144	1
- Transaction Processing	120	1	120	122	124	126	130	125	1
- Utility Processing	5	-3	5	5	5	5	5	4	-3
- Other Processing	11	3	12	13	13	14	15	15	5
Network Services	57	11	64	72	81	91	104	118	13
- Electronic Info Svcs	45	9	49	54	60	65	72	79	10
- Network Applications	9	24	11	14	17	21	26	32	23
- Network Management	3	15	4	4	5	5	6	7	15
System Software	210	5	220	230	245	265	280	285	5
- Mainframe	91	-1	90	89	88	87	86	81	-2
- Minicomputer	68	9	74	81	88	96	104	108	8
- Workstation/PC	52	11	57	65	73	81	91	97	11
Application Software	140	13	160	175	205	225	255	280	12
- Mainframe	12	0	12	12	12	12	12	11	-1
- Minicomputer	42	10	47	51	56	62	68	71	9
- Workstation/PC	87	17	102	116	134	152	178	196	14
Turnkey Systems	269	9	294	322	350	382	417	434	8
- Equipment	130	8	141	151	162	172	184	188	6
- Application Software	53	16	62	72	82	94	108	119	14
- System Software	16	7	17	18	20	21	22	23	6
- Professional Services	69	8	75	81	88	94	102	105	7
Equipment Services	335	1	335	335	340	335	335	320	-1
- Equipment Maintenance	215	-2	210	205	195	190	180	165	-4
- Environmental Services	120	7	125	135	140	150	155	155	5
Grand Total Information Service Market	1,450	6	1,550	1,600	1,700	1,800	1,950	2,000	5

D

Information Services Forecast Reconciliation in Local Currency

Exhibit L-5

Forecast Reconciliation, Austria, 1993-1998

Currency: Sch Millions	1993 Market				1998 Market				1993	1994
Delivery Mode	1993 Report (Fcst)	1994 Report (Act)	1993-1994 Variance (Amount)	1993-1994 Variance (%)	1993 Report (Fcst)	1994 Report (Fcst)	1993-1994 Variance (Amount)	1993-1994 Variance (%)	Report %CAGR (Fcst)	Report %CAGR (Fcst)
Software and Services Total (ex Equipment Services)	15,800	15,500	-300	-2	23,900	22,000	-1,900	-8	9	7
Professional Services	3,610	3,500	-110	-3	4,900	4,200	-700	-14	6	4
- IS Consulting	470	470	0	0	750	720	-30	-4	10	9
- Education & Training	420	415	-5	-1	520	470	-50	-10	4	3
- Custom Software	2,700	2,600	-100	-4	3,600	2,950	-650	-18	6	3
- Application Management	15	15	0	0	31	46	15	48	16	25
Systems Integration	460	440	-20	-4	885	800	-85	-10	14	13
- Equipment	125	120	-5	-4	185	170	-15	-8	8	7
- Application Software	85	85	0	0	320	275	-45	-14	30	26
- System Software	34	34	0	0	59	62	3	5	12	13
- Professional Services	205	195	-10	-5	295	270	-25	-8	8	7
- Other	10	10	0	0	25	21	-4	-16	20	16
Systems Operations	175	175	0	0	360	430	70	19	16	20
- Platform Operations	75	40	-35	-47	140	76	-64	-46	13	14
- Application Operations	65	100	35	54	120	240	120	100	13	19
- Desktop Services	35	35	0	0	100	115	15	15	23	27
Processing Services	1,930	1,880	-50	-3	2,080	2,060	-20	-1	2	2
- Transaction Processing	1,700	1,650	-50	-3	1,860	1,790	-70	-4	2	2
- Utility Processing	70	70	0	0	59	62	3	5	-3	-2
- Other Processing	155	155	0	0	165	205	40	24	1	6
Network Services	785	785	0	0	1,530	1,435	-95	-6	14	13
- Electronic Info Svcs	610	620	10	2	900	995	95	11	8	10
- Network Applications	135	125	-10	-7	480	360	-120	-25	29	24
- Network Management	40	40	0	0	150	81	-69	-46	30	15
System Software	2,980	2,900	-80	-3	3,940	3,850	-90	-2	6	6
- Mainframe	1,300	1,250	-50	-4	1,230	1,180	-50	-4	-1	-1
- Minicomputer	970	940	-30	-3	1,300	1,430	130	10	6	9
- Workstation/PC	710	710	0	0	1,410	1,250	-160	-11	15	12
Application Software	2,000	1,950	-50	-3	3,750	3,550	-200	-5	13	13
- Mainframe	175	165	-10	-6	165	165	0	0	-1	0
- Minicomputer	580	580	0	0	880	930	50	6	9	10
- Workstation/PC	1,240	1,200	-40	-3	2,700	2,450	-250	-9	17	15
Turnkey Systems	3,850	3,710	-140	-4	6,440	5,760	-680	-11	11	9
- Equipment	1,905	1,800	-105	-6	2,805	2,545	-260	-9	8	7
- Application Software	735	735	0	0	1,480	1,490	10	1	15	15
- System Software	220	220	0	0	320	310	-10	-3	8	7
- Professional Services	990	950	-40	-4	1,830	1,410	-420	-23	13	8
Equipment Services	4,740	4,600	-140	-3	5,090	4,600	-490	-10	1	0
- Equipment Maintenance	3,110	2,950	-160	-5	3,260	2,470	-790	-24	1	-3
- Environmental Services	1,630	1,630	0	0	1,830	2,130	300	16	2	5
Grand Total	20,500	19,900	-600	-3	29,000	26,700	-2,300	-8	7	6

E

Leading Vendors in Local Currency (Sch Millions)

Exhibit L-6

Software and Services Leading Vendors
Austria, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Sch Millions)	Market Share (%)
1	IBM	U.S.	2,190	14.1
2	Siemens-Nixdorf	Germany	910	5.9
3	Digital	U.S.	880	5.7
4	Management Data	Austria	400	2.6
5	Computer Associates	U.S.	380	2.5
6	EDV	Austria	370	2.4
7	AI Infomatics	Austria	310	2.0
8	Microsoft	U.S.	290	1.9
9	Beko	Austria	275	1.8
10	GRZ Linz	Austria	250	1.6
	Total Listed		6,255	40.4
	Total Market		15,500	100.0

Exhibit L-7

Professional Services Leading Vendors Austria, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Sch Millions)	Market Share (%)
1	Management Data	Austria	400	11.4
2	EDV	Austria	370	10.6
3	IBM	U.S.	280	8.0
4	Beko	Austria	275	7.9
5	Digital	U.S.	250	7.1
6	GRZ Linz	Austria	250	7.1
7	AI Infomatics	Austria	205	5.9
8	Data-Service	Austria	185	5.3
9	Voest-Alpine	Austria	175	5.0
10	Siemens-Nixdorf	Germany	170	4.9
	Total Listed		2,560	73.1
	Total Market		3,500	100.0

Exhibit L-8

Systems Integration Leading Vendors Austria, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Sch Millions)	Market Share (%)
1	IBM	U.S.	125	28.4
2	CGS	France	40	9.1
3	EDS	U.S.	25	5.7
4	Unisys	U.S.	20	4.5
5	Digital	U.S.	10	2.3
	Total Listed		220	50.0
	Total Market		440	100.0

Exhibit L-9

Systems Operations Leading Vendors Austria, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Sch Millions)	Market Share (%)
1	Data Service	Austria	30	13.0
2	GRZ	Austria	25	10.9
3	Hewlett-Packard	U.S,	20	8.7
4	Management Data	Austria	15	6.5
5	IBM	U.S.	12	5.2
	Total Listed		102	44.3
	Total Market		230	100.0

Exhibit L-10

Processing Services Leading Vendors
Austria, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Sch Millions)	Market Share (%)
1	Telekurs	Switzerland	30	1.6
2	Raet	Netherlands	30	1.6
3	IBM	U.S.	20	1.1
4	Unisys	U.S.	15	0.8
5	GEIS	U.S.	5	0.3
6	HP	U.S.	5	0.3
7	Siemens-Nixdorf	Germany	5	0.3
	Total Listed		110	5.9
	Total Market		1,880	100.0

Exhibit L-11

Network Applications Leading Vendors
Austria, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Sch Millions)	Market Share (%)
1	IBM	U.S.	60	48.0
2	Infonet	Belgium	45	36.0
3	Digital	U.S.	20	16.0
4	GEIS	U.S.	10	8.0
5	Bull	France	5	4.0
6	Raet	Netherlands	5	4.0
	Total Listed		145	116.0
	Total Market		150	100.0

Exhibit L-12

Electronic Information Services Leading Vendors
Austria, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Sch Millions)	Market Share (%)
1	Reuters	U.K.	135	21.8
2	Telerate	U.S.	30	4.8
3	Telekurs	Switzerland	25	4.0
4	Dun & Bradstreet	U.S.	20	3.2
	Total Listed		210	33.9
	Total Market		620	100.0

Exhibit L-13

Systems Software Products Leading Vendors
Austria, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Sch Millions)	Market Share (%)
1	IBM	U.S.	1,145	39.5
2	Digital	U.S.	305	10.5
3	Siemens-Nixdorf	Germany	270	9.3
4	Computer Associates	U.S.	180	6.2
5	Microsoft	U.S.	165	5.7
6	Novell	U.S.	80	2.8
7	Software AG	Germany	80	2.8
8	Oracle	U.S.	75	2.6
9	Unisys	U.S.	65	2.2
10	HP	U.S.	60	2.1
	Total Listed		2,425	83.6
	Total Market		2,900	100.0

Exhibit L-14

Application Software Products Leading Vendors
Austria, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Sch Millions)	Market Share (%)
1	IBM	U.S.	160	8.2
2	SAP	Germany	140	7.2
3	Computer Associates	U.S.	135	6.9
4	Microsoft	U.S.	115	5.9
5	Siemens-Nixdorf	Germany	95	4.9
6	Wordperfect	U.S.	75	3.8
7	Lotus	U.S.	70	3.6
8	AI Infomatics	Austria	50	2.6
9	Data-Service	Austria	50	2.6
10	Digital	U.S.	20	1.0
	Total Listed		910	46.7
	Total Market		1,950	100.0

Exhibit L-15

Turnkey Systems Leading Vendors
Austria, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Sch Millions)	Market Share (%)
1	Siemens-Nixdorf	Germany	285	7.7
2	Digital	U.S.	145	3.9
3	IBM	U.S.	70	1.9
4	Intergraph	U.S.	30	0.8
5	Reuters	U.K.	15	0.4
6	AT&T	U.S.	10	0.3
7	Software AG	Germany	10	0.3
8	SAP	Germany	5	0.1
9	ComputerVision	U.S.	5	0.1
	Total Listed		575	15.5
	Total Market		3,710	100.0

Exhibit L-16

Equipment Maintenance Leading Vendors
Austria, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Sch Millions)	Market Share (%)
1	IBM	U.S.	750	25.4
2	Siemens-Nixdorf	Germany	400	13.6
3	Digital	U.S.	250	8.5
4	Unisys	U.S.	270	9.2
5	HP	U.S.	145	4.9
6	AT&T	U.S.	110	3.7
7	Bull	France	110	3.7
8	Comparex	Germany	70	2.4
9	ICL (Fujitsu)	U.K.	70	2.4
10	Thomainfor	France	50	1.7
	Total Listed		2,225	75.4
	Total Market		3,000	100.0

Exhibit L-17

Environmental Services Leading Vendors
Austria, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Sch Millions)	Market Share (%)
1	Siemens-Nixdorf	Germany	140	8.6
2	IBM	U.S.	105	6.4
3	Digital	U.S.	55	3.4
4	Unisys	U.S.	25	1.5
5	HP	U.S.	20	1.2
6	Bull	France	10	0.6
7	AT&T	U.S.	10	0.6
8	Rank Xerox	U.K.	5	0.3
9	Comparex	Germany	5	0.3
10	Sun Microsystems	U.S.	5	0.3
	Total Listed		380	23.3
	Total Market		1,630	100.0

Exhibit L-18

Information Services Leading Vendors
Austria, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Sch Millions)	Market Share (%)
1	IBM	U.S.	2,870	14.4
2	Siemens-Nixdorf	Germany	1,460	7.3
3	Digital	U.S.	1,230	6.2
4	Unisys	U.S.	480	2.4
5	Management Data	Austria	400	2.0
6	Computer Associates	U.S.	380	1.9
7	EDV	Austria	370	1.9
8	AI Infomatics	Austria	310	1.6
9	HP	U.S.	290	1.5
10	Microsoft	U.S.	290	1.5
	Total Listed		8,080	40.4
	Total Market		20,000	100.0

M

Information Services Industry Forecast Database, 1994-1999 Spain

A

Forecast Database in Local Currency (Ptas Millions)

Exhibit M-1

Top Level IT Expenditure, Spain

Sector	Ptas Millions								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR (%)
Total IT Spending	1,310,000	2	1,330,000	1,370,000	1,420,000	1,480,000	1,540,000	1,620,000	4
Equipment Sales	295,000	2	300,000	310,000	325,000	340,000	355,000	375,000	5
Mainframe	40,000	-15	34,000	30,000	26,000	23,000	20,000	18,000	-12
Minicomputer	100,000	-2	98,000	99,000	100,000	100,000	99,000	100,000	0
PC/Workstation	155,000	7	166,000	182,000	200,000	218,000	235,000	259,000	9
Equipment Services	113,000	2	115,500	118,500	120,500	121,500	121,500	121,000	1
Software Products	85,000	7	91,200	98,600	107,900	120,200	133,800	150,100	10
Other Information Services	188,000	7	201,000	219,000	241,000	265,000	294,000	323,000	10
Data Communications	115,000	6	121,900	131,700	142,200	153,600	165,900	179,200	8
Facilities/Administration	125,000	-1	124,000	125,000	126,000	128,000	129,000	130,000	1
In-house Staff	390,000	-4	375,000	365,000	360,000	350,000	345,000	340,000	-2

Exhibit M-2

Information Services Market
Forecast by Delivery Mode and Submode
Spain, 1994-1999

Delivery Modes	Ptas Millions								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	304,000	7	325,000	352,000	385,000	424,000	469,000	516,000	10
Professional Services	87,000	5	91,000	97,000	105,000	114,000	124,000	134,000	8
- IS Consulting	12,500	12	14,000	16,000	18,500	21,500	24,500	28,000	15
- Education & Training	8,500	0	8,500	8,500	9,000	9,500	10,000	10,500	4
- Custom Software	65,000	5	68,000	72,000	77,000	82,000	88,000	94,000	7
- Application Management	500	20	600	750	950	1,200	1,500	1,900	26
Systems Integration	20,400	16	23,600	26,600	30,100	33,500	37,800	42,700	13
- Equipment	5,400	13	6,100	6,700	7,400	8,000	8,700	9,500	9
- Application Software	3,700	16	4,300	5,300	6,600	8,100	10,000	12,300	23
- System Software	1,400	36	1,900	2,100	2,300	2,500	2,750	3,000	10
- Professional Services	9,500	14	10,800	11,900	13,100	14,100	15,400	16,800	9
- Other	430	12	480	600	700	800	900	1,100	18
Systems Operations	5,300	21	6,400	7,500	8,800	10,500	12,700	15,200	19
- Platform Operations	2,600	15	3,000	3,350	3,700	4,150	4,700	5,250	12
- Application Operations	2,300	22	2,800	3,400	4,100	5,000	6,150	7,500	22
- Desktop Services	400	50	600	790	1,030	1,365	1,820	2,410	32
Processing Services	32,900	5	34,500	35,900	37,600	39,500	41,400	43,500	5
- Transaction Processing	28,000	5	29,400	30,600	32,100	33,700	35,400	37,200	5
- Utility Processing	2,100	2	2,150	2,150	2,200	2,250	2,300	2,350	2
- Other Processing	2,800	5	2,950	3,100	3,300	3,500	3,700	3,950	6
Network Services	19,300	13	21,800	25,600	29,800	35,200	41,400	47,000	17
- Electronic Info Svcs	12,500	10	13,800	15,400	17,200	19,400	21,800	23,500	11
- Network Applications	4,800	21	5,800	7,100	8,700	10,800	13,300	15,800	22
- Network Management	2,000	10	2,200	3,100	3,900	5,000	6,300	7,700	28
System Software	48,000	3	49,200	50,600	52,400	55,700	59,300	63,600	5
- Mainframe	19,500	-6	18,300	17,200	16,200	15,600	14,900	14,300	-5
- Minicomputer	17,000	5	17,900	18,700	19,600	21,000	22,400	24,000	6
- Workstation/PC	11,500	13	13,000	14,700	16,600	19,100	22,000	25,300	14
Application Software	37,000	14	42,000	48,000	55,500	64,500	74,500	86,500	16
- Mainframe	3,050	-3	2,950	2,850	2,800	2,750	2,700	2,650	-2
- Minicomputer	10,500	8	11,300	12,500	13,800	15,200	16,700	18,400	10
- Workstation/PC	23,500	17	27,500	32,700	38,900	46,300	55,100	65,600	19
Turnkey Systems	53,700	5	56,400	60,900	65,300	71,300	78,100	83,900	8
- Equipment	26,000	2	26,500	27,800	28,900	30,600	32,500	33,800	5
- Application Software	11,000	9	12,000	13,400	14,900	16,800	19,000	21,100	12
- System Software	3,200	3	3,300	3,500	3,700	3,950	4,250	4,450	6
- Professional Services	13,500	8	14,600	16,200	17,800	19,900	22,300	24,500	11
Equipment Services	113,000	2	115,500	118,500	120,500	121,500	121,500	121,000	1
- Equipment Maintenance	76,000	-1	75,200	74,400	72,900	70,700	67,900	64,500	-3
- Environmental Services	37,000	9	40,300	43,900	47,400	50,700	53,700	56,400	7
Grand Total Information Service Market	417,000	6	440,000	471,000	505,000	546,000	591,000	637,000	8

B

Forecast Database in U.S. Dollars

Exhibit M-3

Software and Services Market Forecast in Dollars
Spain, 1994-1999

Delivery Modes	U.S. $ Million (rounded)								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	2,125	7	2,275	2,465	2,695	2,965	3,280	3,610	10
Professional Services	610	5	635	680	735	800	870	940	8
- IS Consulting	88	12	98	112	130	151	172	196	15
- Education & Training	60	0	60	60	63	67	70	74	4
- Custom Software	455	5	475	505	540	575	615	660	7
- Application Management	4	20	4	5	7	8	11	13	26
Systems Integration	143	16	165	186	211	235	265	299	13
- Equipment	38	13	43	47	52	56	61	67	9
- Application Software	26	16	30	37	46	57	70	86	23
- System Software	10	36	13	15	16	18	19	21	10
- Professional Services	67	14	76	84	92	99	108	118	9
- Other	3	12	3	4	5	6	6	8	18
Systems Operations	37	21	45	53	62	74	89	107	19
- Platform Operations	18	15	21	24	26	29	33	37	12
- Application Operations	16	22	20	24	29	35	43	53	22
- Desktop Services	3	50	4	6	7	10	13	17	32
Processing Services	230	5	242	251	263	277	290	305	5
- Transaction Processing	196	5	206	214	225	236	248	261	5
- Utility Processing	15	2	15	15	16	16	16	17	2
- Other Processing	20	5	21	22	23	25	26	28	6
Network Services	135	13	153	179	209	247	290	329	17
- Electronic Info Svcs	88	10	97	108	121	136	153	165	11
- Network Applications	34	21	41	50	61	76	93	111	22
- Network Management	14	10	16	22	28	35	44	54	28
System Software	335	3	345	355	365	390	415	445	5
- Mainframe	137	-6	128	121	114	109	105	100	-5
- Minicomputer	119	5	125	131	137	147	157	168	6
- Workstation/PC	81	13	91	103	116	134	154	177	14
Application Software	260	14	295	335	390	450	520	605	16
- Mainframe	22	-3	21	20	20	19	19	19	-2
- Minicomputer	74	8	79	88	97	107	117	129	10
- Workstation/PC	165	17	190	230	270	325	385	460	19
Turnkey Systems	376	5	395	426	457	499	547	587	8
- Equipment	182	2	186	195	202	214	228	237	5
- Application Software	77	9	84	94	105	118	133	148	12
- System Software	22	3	23	25	26	28	30	31	6
- Professional Services	95	8	102	114	125	139	156	172	11
Equipment Services	790	2	810	830	845	850	850	845	1
- Equipment Maintenance	530	-1	525	520	510	495	475	450	-3
- Environmental Services	260	9	280	305	330	355	375	395	7
Grand Total Information Service Market	2,900	6	3,100	3,300	3,550	3,800	4,150	4,450	8

C

Forecast Database in ECUs

Exhibit M-4

Software and Services Market Forecast in ECUs
Spain, 1994-1999

Delivery Modes	ECU Millions (rounded)								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	1,910	7	2,040	2,210	2,415	2,660	2,945	3,240	10
Professional Services	545	5	570	610	660	715	780	840	8
- IS Consulting	79	12	88	101	116	135	154	176	15
- Education & Training	54	0	54	54	57	60	63	66	4
- Custom Software	410	5	425	450	485	515	550	590	7
- Application Management	3	20	4	5	6	8	10	12	26
Systems Integration	128	16	148	167	189	211	238	268	13
- Equipment	34	13	39	42	47	50	55	60	9
- Application Software	23	16	27	33	41	51	63	77	23
- System Software	9	36	12	13	14	16	17	19	10
- Professional Services	60	14	68	75	82	89	97	106	9
- Other	3	12	3	4	4	5	6	7	18
Systems Operations	34	21	40	47	55	66	80	96	19
- Platform Operations	17	15	19	21	23	26	30	33	12
- Application Operations	15	22	18	22	26	32	39	47	22
- Desktop Services	3	50	4	5	6	9	11	15	32
Processing Services	207	5	217	225	236	248	260	273	5
- Transaction Processing	176	5	185	192	202	212	222	234	5
- Utility Processing	13	2	14	14	14	14	15	15	2
- Other Processing	18	5	19	20	21	22	23	25	6
Network Services	121	13	137	161	187	221	260	295	17
- Electronic Info Svcs	79	10	87	97	108	122	137	148	11
- Network Applications	30	21	37	45	55	68	84	99	22
- Network Management	13	10	14	20	25	32	40	49	28
System Software	300	3	310	320	330	350	370	400	5
- Mainframe	123	-6	115	108	102	98	94	90	-5
- Minicomputer	107	5	113	118	123	132	141	151	6
- Workstation/PC	72	13	82	93	104	120	138	159	14
Application Software	230	14	265	300	350	405	470	545	16
- Mainframe	19	-3	19	18	18	18	17	17	-2
- Minicomputer	66	8	71	79	87	96	105	116	10
- Workstation/PC	148	17	173	206	244	291	346	412	19
Turnkey Systems	337	5	354	383	410	448	491	527	8
- Equipment	163	2	167	175	182	192	204	212	5
- Application Software	69	9	76	84	94	106	120	133	12
- System Software	20	3	21	22	23	25	27	28	6
- Professional Services	85	8	92	102	112	125	140	154	11
Equipment Services	710	2	725	745	755	765	765	760	1
- Equipment Maintenance	475	-1	470	465	460	445	425	405	-3
- Environmental Services	230	9	255	275	300	320	335	355	7
Grand Total Information Service Market	2,600	6	2,750	2,950	3,150	3,450	3,700	4,000	8

D

Information Services Forecast Reconciliation in Local Currency

Exhibit M-5

Forecast Reconciliation, Spain, 1993-1998

Currency: Ptas Millions	1993 Market				1998 Market				1993	1994
Delivery Mode	1993 Report (Fcst)	1994 Report (Act)	1993-1994 Variance (Amount)	(%)	1993 Report (Fcst)	1994 Report (Fcst)	1993-1994 Variance (Amount)	(%)	Report %CAGR (Fcst)	Report %CAGR (Fcst)
Software and Services Total (ex Equipment Services)	318,000	304,000	-14,000	-4	564,000	469,000	-95,000	-17	12	9
Professional Services	91,000	87,000	-4,000	-4	141,000	124,000	-17,000	-12	9	7
- IS Consulting	13,600	12,500	-1,100	-8	29,500	24,500	-5,000	-17	17	14
- Education & Training	8,800	8,500	-300	-3	11,100	10,000	-1,100	-10	5	3
- Custom Software	68,000	65,000	-3,000	-4	99,000	88,000	-11,000	-11	8	6
- Application Management	550	500	-50	-9	1,590	1,500	-90	-6	24	25
Systems Integration	24,000	20,400	-3,600	-15	65,100	37,800	-27,300	-42	22	13
- Equipment	6,500	5,400	-1,100	-17	13,700	8,700	-5,000	-36	16	10
- Application Software	4,300	3,700	-600	-14	23,400	10,000	-13,400	-57	40	22
- System Software	1,900	1,400	-500	-26	4,550	2,750	-1,800	-40	19	14
- Professional Services	10,800	9,500	-1,300	-12	21,400	15,400	-6,000	-28	15	10
- Other	480	430	-50	-10	2,000	900	-1,100	-55	33	16
Systems Operations	5,300	5,300	0	0	12,100	12,700	600	5	18	19
- Platform Operations	2,600	2,600	0	0	5,700	4,700	-1,000	-18	17	13
- Application Operations	2,350	2,300	-50	-2	5,250	6,150	900	17	17	22
- Desktop Services	375	400	25	7	1,150	1,820	670	58	25	35
Processing Services	33,400	32,900	-500	-1	44,100	41,400	-2,700	-6	6	5
- Transaction Processing	28,500	28,000	-500	-2	37,800	35,400	-2,400	-6	6	5
- Utility Processing	2,100	2,100	0	0	2,400	2,300	-100	-4	3	2
- Other Processing	2,800	2,800	0	0	3,850	3,700	-150	-4	7	6
Network Services	19,400	19,300	-100	-1	40,800	41,400	600	1	16	16
- Electronic Info Svcs	12,500	12,500	0	0	20,400	21,800	1,400	7	10	12
- Network Applications	4,900	4,800	-100	-2	14,200	13,300	-900	-6	24	23
- Network Management	2,000	2,000	0	0	6,200	6,300	100	2	25	26
System Software	50,900	48,000	-2,900	-6	79,800	59,300	-20,500	-26	9	4
- Mainframe	20,800	19,500	-1,300	-6	21,800	14,900	-6,900	-32	1	-5
- Minicomputer	18,000	17,000	-1,000	-6	30,400	22,400	-8,000	-26	11	6
- Workstation/PC	12,100	11,500	-600	-5	27,600	22,000	-5,600	-20	18	14
Application Software	38,500	37,000	-1,500	-4	82,000	74,500	-7,500	-9	16	15
- Mainframe	3,050	3,050	0	0	3,250	2,700	-550	-17	1	-2
- Minicomputer	11,000	10,500	-500	-5	18,400	16,700	-1,700	-9	11	10
- Workstation/PC	24,200	23,500	-700	-3	60,100	55,100	-5,000	-8	20	19
Turnkey Systems	55,700	53,700	-2,000	-4	99,300	78,100	-21,200	-21	12	8
- Equipment	27,000	26,000	-1,000	-4	41,700	32,500	-9,200	-22	9	5
- Application Software	11,400	11,000	-400	-4	23,900	19,000	-4,900	-21	16	12
- System Software	3,300	3,200	-100	-3	5,400	4,250	-1,150	-21	10	6
- Professional Services	14,000	13,500	-500	-4	28,300	22,300	-6,000	-21	15	11
Equipment Services	116,500	113,000	-3,500	-3	153,000	121,500	-31,500	-21	6	1
- Equipment Maintenance	78,900	76,000	-2,900	-4	95,000	67,900	-27,100	-29	4	-2
- Environmental Services	37,400	37,000	-400	-1	58,100	53,700	-4,400	-8	9	8
Grand Total	435,000	417,000	-18,000	-4	717,000	591,000	-126,000	-18	11	7

E

Leading Vendors in Local Currency (Pta Millions)

Exhibit M-6

Software and Services Leading Vendors Spain, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Pta Millions)	Market Share (%)
1	IBM	U.S.	32,510	10.7
2	Andersen Consulting	U.S.	21,000	6.9
3	Eritel	Spain	13,270	4.4
4	Microsoft	U.S.	7,880	2.6
5	Digital	U.S.	7,460	2.5
6	Sema Group	France	7,180	2.4
7	Reuters	U.K.	7,120	2.3
8	Siemens-Nixdorf	Germany	6,720	2.2
9	GEIS	U.S.	6,710	2.2
10	HP	U.S.	5,950	2.0
	Total Listed		115,800	38.1
	Total Market		304,000	100.0

Exhibit M-7

Professional Services Leading Vendors
Spain, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Pta Millions)	Market Share (%)
1	Andersen Consulting	U.S.	9,710	11.2
2	Eritel	Spain	9,555	11.0
3	IBM	U.S.	4,620	5.3
4	Logic Control	Spain	4,600	5.3
5	Sema Group	France	4,470	5.1
6	Iberimatica	Spain	3,300	3.8
7	Digital	U.S.	2,175	2.5
8	HP	U.S.	2,135	2.5
9	Cap Gemini Sogeti	France	1,835	2.1
10	AT&T	U.S.	1,810	2.1
	Total Listed		44,210	50.8
	Total Market		87,000	100.0

Exhibit M-8

Systems Integration Leading Vendors
Spain, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Pta Millions)	Market Share (%)
1	Andersen Consulting	U.S.	5,090	24.9
2	IBM	U.S.	2,730	13.4
3	Digital	U.S.	2,245	11.0
4	Page Iberica	Spain	1,650	2.1
5	EDS	U.S.	1,415	6.9
	Total Listed		13,130	64.3
	Total Market		20,400	100.0

Exhibit M-9

Systems Operations Leading Vendors
Spain, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Pta Millions)	Market Share (%)
1	GSI	France	1,700	32.1
2	EDS	U.S.	420	7.9
3	Eritel	Spain	400	7.5
4	IBM ISSC	U.S.	250	4.7
5	Thomainfor	France	200	3.8
	Total Listed		2,970	56.0
	Total Market		5,300	100.0

Exhibit M-10

Processing Services Leading Vendors Spain, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Pta Millions)	Market Share (%)
1	GEIS	U.S.	1,935	5.9
2	GSI	France	655	2.0
3	Eritel	Spain	530	1.6
4	Axime	France	430	1.3
5	IBM	U.S.	330	1.0
6	EDS	U.S.	300	0.9
7	HP	U.S.	260	0.8
8	Unisys	U.S.	205	0.6
9	Granada	U.K.	100	0.3
10	Safetynet	U.K.	95	0.3
	Total Listed		4,840	14.7
	Total Market		32,900	100.0

Exhibit M-11

Network Applications Leading Vendors Spain, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Pta Millions)	Market Share (%)
1	GEIS	U.S.	3,550	74.0
2	IBM	U.S.	995	20.7
3	Infonet	Belgium	770	16.0
4	GSI	France	395	8.2
5	Bull	France	175	3.6
6	Digital	U.S.	170	3.5
7	EDS	U.S.	65	1.4
8	Olivetti	Italy	45	0.9
9	SG2	France	40	0.8
10	Axime	France	30	0.6
	Total Listed		6,235	129.9
	Total Market		4,800	100.0

Exhibit M-12

Electronic Information Services Leading Vendors Spain, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Pta Millions)	Market Share (%)
1	Reuters	U.K.	5,480	43.8
2	Dun & Bradstreet	U.S.	1,530	12.2
3	Telerate	U.S.	1,305	10.4
	Total Listed		8,315	66.4
	Total Market		12,500	100.0

Exhibit M-13

Systems Software Products Leading Vendors
Spain, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Pta Millions)	Market Share (%)
1	IBM	U.S.	18,925	39.4
2	Microsoft	U.S.	4,585	9.6
3	Software AG	Germany	3,475	7.2
4	HP	U.S.	3,040	6.3
5	Computer Associates	U.S.	2,755	5.7
6	Novell	U.S.	2,655	5.5
7	Digital	U.S.	2,650	5.5
8	Siemens-Nixdorf	Germany	1,985	4.1
9	Oracle	U.S.	1,800	3.8
10	Bull	France	1,695	3.5
	Total Listed		43,565	90.8
	Total Market		48,000	100.0

Exhibit M-14

Application Software Products Leading Vendors
Spain, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Pta Millions)	Market Share (%)
1	Microsoft	U.S.	3,160	8.5
2	IBM	U.S.	2,655	7.2
3	Wordperfect	U.S.	2,160	5.8
4	Computer Associates	U.S.	2,050	5.5
5	Lotus	U.S.	1,375	3.7
6	Logic Control	Spain	1,000	2.7
7	AT&T	U.S.	965	2.6
8	Andersen Consulting	U.S.	955	2.6
9	Dun & Bradstreet	U.S.	870	2.4
10	SAP	Germany	860	2.3
	Total Listed		16,050	43.4
	Total Market		37,000	100.0

Exhibit M-15

Turnkey Systems Leading Vendors
Spain, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Pta Millions)	Market Share (%)
1	Siemens-Nixdorf	Germany	2,095	3.9
2	Intergraph	U.S.	2,000	3.7
3	Eritel	Spain	1,860	3.5
4	Digital	U.S.	1,240	2.3
5	IBM	U.S.	1,130	2.1
6	Reuters	U.K.	710	1.3
7	AT&T	U.S.	550	1.0
8	Software AG	Germany	430	0.8
9	Olivetti	Italy	410	0.8
10	Sema Group	France	395	0.7
	Total Listed		10,820	20.1
	Total Market		53,700	100.0

Exhibit M-16

Equipment Maintenance Leading Vendors
Spain, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Pta Millions)	Market Share (%)
1	IBM	U.S.	18,600	24.5
2	HP	U.S.	7,150	9.4
3	Digital	U.S.	6,300	8.3
4	AT&T	U.S.	6,275	8.3
5	Siemens-Nixdorf	Germany	5,505	7.2
6	Olivetti	Italy	5,000	6.6
7	Eltec	Spain	3,590	4.7
8	Bull	France	3,440	4.5
9	Unisys	U.S.	3,000	3.9
10	ICL (Fujitsu)	U.K.	2,535	3.3
	Total Listed		61,395	80.8
	Total Market		76,000	100.0

Exhibit M-17

Environmental Services Leading Vendors
Spain, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Pta Millions)	Market Share (%)
1	IBM	U.S.	4,350	11.8
2	Digital	U.S.	2,400	6.5
3	HP	U.S.	860	2.3
4	Siemens-Nixdorf	Germany	820	2.2
5	Bull	France	535	1.4
6	Eltec	Spain	450	1.2
7	AT&T	U.S.	430	1.2
8	Unisys	U.S.	410	1.1
9	Getronics	Netherlands	275	0.7
10	Olivetti	Italy	195	0.5
	Total Listed		10,725	29.0
	Total Market		37,000	100.0

Exhibit M-18

Information Services Leading Vendors
Spain, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Pta Millions)	Market Share (%)
1	IBM	U.S.	56,130	13.5
2	Andersen Consulting	U.S.	23,860	5.7
3	Digital	U.S.	16,510	4.0
4	HP	U.S.	14,480	3.5
5	Eritel	Spain	13,270	3.2
6	Siemens-Nixdorf	Germany	13,060	3.1
7	AT&T	U.S.	11,090	2.7
8	Microsoft	U.S.	7,900	1.9
9	Sema Group	France	7,860	1.9
10	Bull	France	7,660	1.8
	Total Listed		171,820	41.2
	Total Market		417,000	100.0

N

Information Services Industry Forecast Database, 1994-1999 Central and Eastern Europe

A

Forecast Database in Local Currency (USD Millions)

Exhibit N-1

Top Level IT Expenditure, Central and Eastern Europe

Sector	USD Millions								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR (%)
Total IT Spending	2,100	10	2,300	2,600	2,900	3,300	3,800	4,300	13
Equipment Sales	520	11	579	652	737	826	921	1,047	13
Mainframe	60	-2	59	59	59	58	57	57	-1
Minicomputer	100	6	106	113	121	128	134	143	6
PC/Workstation	360	15	414	480	557	640	730	847	15
Equipment Services	230	7	245	270	295	325	370	415	11
Software Products	138	17	161	190	223	263	311	369	18
Other Information Services	350	20	420	500	590	730	910	1,080	21
Data Communications	95	16	110	125	145	165	195	225	15
Facilities/Administration	135	4	140	140	145	150	155	160	3
In-house Staff	620	6	660	720	780	850	920	1,000	9

Exhibit N-2

Information Services Market
Forecast by Delivery Mode and Submode
Central and Eastern Europe, 1994-1999

Delivery Modes	USD Millions								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	585	19	695	820	965	1,165	1,435	1,690	19
Professional Services	62	15	71	79	89	102	115	127	12
- IS Consulting	2	0	2	2	2	2	2	2	0
- Education & Training	36	14	41	46	52	60	68	75	13
- Custom Software	24	17	28	31	35	40	45	50	12
- Application Management	0	0	0	0	0	0	0	0	0
Systems Integration	325	20	390	455	530	640	800	920	19
- Equipment	90	17	105	115	130	150	180	205	14
- Application Software	60	33	80	105	135	180	245	325	32
- System Software	25	20	30	35	40	45	55	65	17
- Professional Services	145	17	170	190	215	250	300	295	12
- Other	5	40	7	9	12	16	22	29	33
Systems Operations	14	-	20	26	35	46	61	81	32
- Platform Operations	7	29	9	11	14	17	21	26	24
- Application Operations	5	60	8	11	16	22	30	40	38
- Desktop Services	2	50	3	4	6	8	10	15	38
Processing Services	17	18	20	24	29	36	45	58	24
- Transaction Processing	9	11	10	12	14	16	18	21	16
- Utility Processing	5	20	6	6	6	7	8	9	8
- Other Processing	3	60	4	6	9	13	19	28	47
Network Services	5	40	7	10	14	20	28	41	42
- Electronic Info Svcs	1	0	1	1	2	2	3	3	43
- Network Applications	3	60	4	6	9	13	20	30	49
- Network Management	2	40	3	3	4	5	6	8	23
System Software	58	16	67	78	93	111	134	162	19
- Mainframe	15	0	15	15	15	15	16	16	1
- Minicomputer	18	17	21	25	30	36	43	52	20
- Workstation/PC	25	24	31	38	48	60	75	94	25
Application Software	80	18	94	112	130	152	177	207	17
- Mainframe	10	0	10	11	11	11	11	11	2
- Minicomputer	26	15	30	36	41	47	54	62	16
- Workstation/PC	44	23	54	65	78	94	112	134	20
Turnkey Systems	22	23	27	36	45	58	73	92	28
- Equipment	11	18	13	17	21	26	33	41	26
- Application Software	4	25	5	7	9	12	15	19	31
- System Software	1	0	1	2	2	3	3	4	32
- Professional Services	6	33	8	10	13	17	22	28	28
Equipment Services	230	7	245	270	295	325	370	415	11
- Equipment Maintenance	180	8	195	215	235	255	280	295	9
- Environmental Services	48	0	48	53	61	72	91	120	20
Grand Total Information Service Market	815	15	940	1,090	1,260	1,490	1,805	2,105	17

B

Forecast Database in U.S. Dollars

Exhibit N-3

Software and Services Market Forecast in Dollars
Central and Eastern Europe, 1994-1999

Delivery Modes	U.S. $ Million (rounded)								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	585	19	695	820	965	1,165	1,435	1,690	19
Professional Services	62	15	71	79	89	102	115	127	12
- IS Consulting	2	0	2	2	2	2	2	2	0
- Education & Training	36	14	41	46	52	60	68	75	13
- Custom Software	24	17	28	31	35	40	45	50	12
- Application Management	0	0	0	0	0	0	0	0	0
Systems Integration	325	20	390	455	530	640	800	920	19
- Equipment	90	17	105	115	130	150	180	205	14
- Application Software	60	33	80	105	135	180	245	325	32
- System Software	25	20	30	35	40	45	55	65	17
- Professional Services	145	17	170	190	215	250	300	295	12
- Other	5	40	7	9	12	16	22	29	33
Systems Operations	14	-	20	26	35	46	61	81	32
- Platform Operations	7	29	9	11	14	17	21	26	24
- Application Operations	5	60	8	11	16	22	30	40	38
- Desktop Services	2	50	3	4	6	8	10	15	38
Processing Services	17	18	20	24	29	36	45	58	24
- Transaction Processing	9	11	10	12	14	16	18	21	16
- Utility Processing	5	20	6	6	6	7	8	9	8
- Other Processing	3	60	4	6	9	13	19	28	47
Network Services	5	40	7	10	14	20	28	41	42
- Electronic Info Svcs	1	0	1	1	2	2	3	3	43
- Network Applications	3	60	4	6	9	13	20	30	49
- Network Management	2	40	3	3	4	5	6	8	23
System Software	58	16	67	78	93	111	134	162	19
- Mainframe	15	0	15	15	15	15	16	16	1
- Minicomputer	18	17	21	25	30	36	43	52	20
- Workstation/PC	25	24	31	38	48	60	75	94	25
Application Software	80	18	94	112	130	152	177	207	17
- Mainframe	10	0	10	11	11	11	11	11	2
- Minicomputer	26	15	30	36	41	47	54	62	16
- Workstation/PC	44	23	54	65	78	94	112	134	20
Turnkey Systems	22	23	27	36	45	58	73	92	28
- Equipment	11	18	13	17	21	26	33	41	26
- Application Software	4	25	5	7	9	12	15	19	31
- System Software	1	0	1	2	2	3	3	4	32
- Professional Services	6	33	8	10	13	17	22	28	28
Equipment Services	230	7	245	270	295	325	370	415	11
- Equipment Maintenance	180	8	195	215	235	255	280	295	9
- Environmental Services	48	0	48	53	61	72	91	120	20
Grand Total Information Service Market	820	15	940	1,090	1,260	1,490	1,810	2,110	17

C

Forecast Database in ECUs

Exhibit N-4

Software and Services Market Forecast in ECUs
Central and Eastern Europe, 1994-1999

Delivery Modes	ECU Millions (rounded)								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	525	19	623	735	865	1,045	1,287	1,516	19
Professional Services	56	15	64	71	80	91	103	114	12
- IS Consulting	2	0	2	2	2	2	2	2	0
- Education & Training	32	14	37	41	47	54	61	67	13
- Custom Software	22	17	25	28	31	36	40	45	12
- Application Management	0	0	0	0	0	0	0	0	0
Systems Integration	292	20	350	408	475	574	718	825	19
- Equipment	81	17	94	103	117	135	161	184	14
- Application Software	54	33	72	94	121	161	220	291	32
- System Software	22	20	27	31	36	40	49	58	17
- Professional Services	130	17	153	170	193	224	269	265	12
- Other	4	40	6	8	11	14	20	26	33
Systems Operations	13	-	18	23	31	41	55	73	32
- Platform Operations	6	29	8	10	13	15	19	23	24
- Application Operations	5	60	7	10	14	19	27	36	38
- Desktop Services	2	50	3	4	5	7	9	13	38
Processing Services	15	18	18	21	26	32	40	52	24
- Transaction Processing	8	11	9	11	13	14	16	19	16
- Utility Processing	5	20	5	5	5	6	7	8	8
- Other Processing	2	60	4	5	8	11	17	25	47
Network Services	5	40	6	9	13	18	25	37	42
- Electronic Info Svcs	0	0	0	1	1	2	2	3	43
- Network Applications	2	60	4	5	8	12	18	27	49
- Network Management	2	40	3	3	4	5	5	7	23
System Software	52	16	60	70	83	100	120	145	19
- Mainframe	14	0	14	14	14	14	14	14	1
- Minicomputer	16	17	19	22	27	32	39	47	20
- Workstation/PC	22	24	28	34	43	54	67	84	25
Application Software	72	18	84	100	117	136	159	186	17
- Mainframe	9	0	9	10	10	10	10	10	2
- Minicomputer	23	15	27	32	37	42	48	56	16
- Workstation/PC	40	23	48	58	70	84	100	120	20
Turnkey Systems	20	23	24	32	40	52	66	83	28
- Equipment	10	18	12	15	19	23	30	37	26
- Application Software	4	25	5	6	8	11	14	17	31
- System Software	1	0	1	2	2	3	3	4	32
- Professional Services	5	33	7	9	12	15	20	25	28
Equipment Services	206	7	220	242	265	291	332	372	11
- Equipment Maintenance	161	8	175	193	211	229	251	265	9
- Environmental Services	43	0	43	48	55	65	82	108	20
Grand Total Information Service Market	730	15	840	980	1,130	1,340	1,620	1,890	17

D

Information Services Forecast Reconciliation in Local Currency

Exhibit N-5

Forecast Reconciliation, Central and Eastern Europe, 1993-1998

Currency: USD Millions	1993 Market				1998 Market				1993	1994
Delivery Mode	1993 Report (Fcst)	1994 Report (Act)	1993-1994 Variance (Amount)	1993-1994 Variance (%)	1993 Report (Fcst)	1994 Report (Fcst)	1993-1994 Variance (Amount)	1993-1994 Variance (%)	Report %CAGR (Fcst)	Report %CAGR (Fcst)
Software and Services Total (ex Equipment Services)	585	585	0	0	1,670	1,435	-235	-14	23	20
Professional Services	62	62	0	0	139	115	-24	-17	18	13
- IS Consulting	2	2	0	0	2	2	0	0	0	0
- Education & Training	36	36	0	0	80	68	-12	-15	17	14
- Custom Software	24	24	0	0	57	45	-12	-21	19	13
- Application Management	0	0	0	0	0	0	0	0	0	0
Systems Integration	325	325	0	0	880	800	-80	-9	22	20
- Equipment	90	90	0	0	185	180	-5	-3	16	15
- Application Software	60	60	0	0	315	245	-70	-22	39	32
- System Software	25	25	0	0	60	55	-5	-8	19	17
- Professional Services	145	145	0	0	295	300	5	2	15	16
- Other	5	5	0	0	25	22	-3	-12	38	34
Systems Operations	14	14	0	0	95	61	-34	-36	47	34
- Platform Operations	7	7	0	0	35	21	-14	-40	38	25
- Application Operations	5	5	0	0	50	30	-20	-40	58	43
- Desktop Services	2	2	0	0	10	10	0	0	38	38
Processing Services	17	17	0	0	79	45	-34	-43	36	21
- Transaction Processing	9	9	0	0	21	18	-3	-14	18	15
- Utility Processing	5	5	0	0	8	8	0	0	10	10
- Other Processing	3	3	0	0	50	19	-32	-63	82	49
Network Services	5	5	0	0	33	28	-5	-15	46	41
- Electronic Info Svcs	1	1	0	0	4	3	-1	-29	48	38
- Network Applications	3	3	0	0	19	20	1	3	50	51
- Network Management	2	2	0	0	10	6	-4	-40	38	25
System Software	58	58	0	0	208	134	-74	-36	29	18
- Mainframe	15	15	0	0	20	16	-4	-20	6	1
- Minicomputer	18	18	0	0	56	43	-13	-23	25	19
- Workstation/PC	25	25	0	0	132	75	-57	-43	39	25
Application Software	80	80	0	0	165	177	12	7	16	17
- Mainframe	10	10	0	0	11	11	0	0	2	2
- Minicomputer	26	26	0	0	48	54	6	13	13	16
- Workstation/PC	44	44	0	0	106	112	6	6	19	21
Turnkey Systems	22	22	0	0	72	73	1	1	27	27
- Equipment	11	11	0	0	33	33	0	0	25	25
- Application Software	4	4	0	0	13	15	2	15	27	30
- System Software	1	1	0	0	4	3	-1	-25	32	25
- Professional Services	6	6	0	0	22	22	0	0	30	30
Equipment Services	230	230	0	0	450	370	-80	-18	14	10
- Equipment Maintenance	180	180	0	0	330	280	-50	-15	13	9
- Environmental Services	48	48	0	0	120	91	-29	-24	20	14
Grand Total	815	815	0	0	2,120	1,805	-315	-15	21	17

E

Leading Vendors in Local Currency ($ Millions)

Exhibit N-6

Software and Services Leading Vendors Central and Eastern Europe, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue ($ Millions)	Market Share (%)
1	Unisys	U.S.	100	17.5
2	IBM	U.S.	30	5.1
3	Microsoft	U.S.	20	3.4
4	Siemens-Nixdorf	Germany	10	1.7
	Total Listed		165	28.2
	Total Market		585	100.0

Exhibit N-7

Information Services Leading Vendors Central and Eastern Europe, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue ($ Millions)	Market Share (%)
1	Unisys	U.S.	120	12.0
2	IBM	U.S.	60	6.0
3	Microsoft	U.S.	20	2.0
4	Siemens-Nixdorf	Germany	10	1.0
5	Digital	U.S.	10	1.0
6	ICL (Fujitsu)	U.K.	10	1.0
	Total Listed		240	24.0
	Total Market		1,000	100.0

O

Information Services Industry Forecast Database, 1994-1999 Portugal

A

Forecast Database in Local Currency (Esc Millions)

Exhibit O-1

Top Level IT Expenditure, Portugal

Sector	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR (%)
	Esc Millions								
Total IT Spending	170,000	8	184,000	200,000	218,000	239,000	252,000	270,000	8
Equipment Sales	45,000	7	48,000	52,000	56,000	61,000	63,000	68,000	7
Mainframe	8,000	-10	7,200	6,600	6,000	5,500	4,700	4,100	-11
Minicomputer	10,000	3	10,300	10,600	11,000	11,200	11,000	11,000	1
PC/Workstation	27,000	13	30,500	34,500	39,000	44,000	47,500	52,500	11
Equipment Services	17,000	4	17,700	18,600	19,500	20,400	20,600	21,600	4
Software Products	7,550	12	8,450	9,650	11,100	12,800	14,350	16,050	14
Other Information Services	17,100	15	19,600	22,700	26,300	30,800	35,000	39,800	15
Data Communications	14,000	14	16,000	17,500	19,500	22,000	24,000	26,000	10
Facilities/Administration	15,500	6	16,500	17,500	18,500	19,500	20,000	20,500	4
In-house Staff	54,000	7	58,000	62,000	67,000	72,000	75,000	78,000	6

Exhibit O-2

Information Services Market
Forecast by Delivery Mode and Submode
Portugal, 1994-1999

Delivery Modes	Esc Millions								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	27,700	14	31,500	36,200	41,700	48,600	54,900	61,900	14
Professional Services	7,300	12	8,200	9,200	10,300	11,600	12,600	13,900	11
- IS Consulting	990	18	1,170	1,370	1,610	1,890	2,170	2,500	16
- Education & Training	800	13	900	1,000	1,120	1,250	1,360	1,480	10
- Custom Software	5,100	12	5,700	6,300	6,950	7,700	8,300	8,950	9
- Application Management	400	15	460	534	619	718	815	925	15
Systems Integration	1,690	16	1,960	2,230	2,610	3,020	3,440	3,970	15
- Equipment	450	20	540	610	700	790	870	970	12
- Application Software	310	6	330	430	570	750	970	1,260	31
- System Software	140	21	170	190	220	250	275	305	12
- Professional Services	750	17	880	960	1,070	1,170	1,250	1,350	9
- Other	35	0	35	40	50	60	70	85	19
Systems Operations	1,100	21	1,330	1,590	1,925	2,340	2,810	3,285	20
- Platform Operations	350	16	405	465	540	630	725	810	15
- Application Operations	500	21	605	725	880	1,070	1,285	1,500	20
- Desktop Services	250	28	320	400	505	640	800	975	25
Processing Services	3,200	11	3,550	4,000	4,450	5,000	5,400	5,850	11
- Transaction Processing	2,800	11	3,100	3,450	3,850	4,300	4,650	5,000	10
- Utility Processing	130	8	140	150	160	170	170	180	5
- Other Processing	280	18	330	380	440	510	580	650	15
Network Services	1,400	25	1,750	2,200	2,850	3,700	4,500	5,400	25
- Electronic Info Svcs	920	22	1,120	1,400	1,760	2,210	2,610	3,030	22
- Network Applications	350	34	470	650	900	1,250	1,630	2,100	35
- Network Management	125	16	145	170	200	235	265	290	15
System Software	4,800	9	5,250	5,850	6,650	7,550	8,350	9,250	12
- Mainframe	2,050	2	2,100	2,150	2,250	2,350	2,350	2,350	2
- Minicomputer	1,650	12	1,850	2,150	2,500	2,900	3,250	3,650	15
- Workstation/PC	1,080	19	1,290	1,570	1,910	2,320	2,740	3,230	20
Application Software	2,750	16	3,200	3,800	4,450	5,250	6,000	6,800	16
- Mainframe	210	5	220	240	260	280	290	300	6
- Minicomputer	800	13	900	1,050	1,200	1,350	1,550	1,700	14
- Workstation/PC	1,750	20	2,100	2,500	3,000	3,600	4,150	4,800	18
Turnkey Systems	5,500	15	6,300	7,300	8,500	10,150	11,750	13,400	16
- Equipment	2,650	11	2,950	3,250	3,650	4,200	4,650	5,050	11
- Application Software	1,100	21	1,330	1,610	1,970	2,450	2,970	3,530	22
- System Software	290	14	330	380	440	520	590	660	15
- Professional Services	1,450	17	1,700	2,050	2,450	3,000	3,550	4,150	20
Equipment Services	17,000	4	17,700	18,600	19,500	20,400	20,600	21,600	4
- Equipment Maintenance	12,500	2	12,700	13,000	13,300	13,500	13,200	13,400	1
- Environmental Services	4,500	11	5,000	5,600	6,200	6,900	7,400	8,200	10
Grand Total Information Service Market	44,700	10	49,200	54,800	61,200	69,000	75,500	83,500	11

B

Forecast Database in U.S. Dollars

Exhibit O-3

Software and Services Market Forecast in Dollars Portugal, 1994-1999

Delivery Modes	U.S. $ Million (rounded)								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	157	14	178	205	236	275	311	350	14
Professional Services	41	12	46	52	58	66	71	79	11
- IS Consulting	6	18	7	8	9	11	12	14	16
- Education & Training	5	13	5	6	6	7	8	8	10
- Custom Software	29	12	32	36	39	44	47	51	9
- Application Management	2	15	3	3	4	4	5	5	15
Systems Integration	10	16	11	13	15	17	20	23	15
- Equipment	3	20	3	4	4	5	5	6	12
- Application Software	2	6	2	2	3	4	5	7	31
- System Software	1	21	1	1	1	1	2	2	12
- Professional Services	4	17	5	5	6	7	7	8	9
- Other	0	0	0	0	0	0	0	0	19
Systems Operations	6	21	8	9	11	13	16	19	20
- Platform Operations	2	16	2	3	3	4	4	5	15
- Application Operations	3	21	3	4	5	6	7	9	20
- Desktop Services	1	28	2	2	3	4	5	6	25
Processing Services	18	11	20	23	25	28	31	33	11
- Transaction Processing	16	11	18	20	22	24	26	28	10
- Utility Processing	1	8	1	1	1	1	1	1	5
- Other Processing	2	18	2	2	3	3	3	4	15
Network Services	8	25	10	13	16	21	26	31	25
- Electronic Info Svcs	5	22	6	8	10	13	15	17	22
- Network Applications	2	34	3	4	5	7	9	12	35
- Network Management	1	16	1	1	1	1	2	2	15
System Software	27	9	30	33	38	43	47	52	12
- Mainframe	12	2	12	12	13	13	13	13	2
- Minicomputer	9	12	11	12	14	16	18	21	15
- Workstation/PC	6	19	7	9	11	13	16	18	20
Application Software	16	16	18	22	25	30	34	38	16
- Mainframe	1	5	1	1	2	2	2	2	6
- Minicomputer	5	13	5	6	7	8	9	10	14
- Workstation/PC	10	20	12	14	17	20	23	27	18
Turnkey Systems	31	15	36	41	48	57	67	76	16
- Equipment	15	11	17	18	21	24	26	29	11
- Application Software	6	21	8	9	11	14	17	20	22
- System Software	2	14	2	2	2	3	3	4	15
- Professional Services	8	17	10	12	14	17	20	24	20
Equipment Services	96	4	100	105	110	115	117	122	4
- Equipment Maintenance	71	2	72	74	75	76	75	76	1
- Environmental Services	25	11	28	32	35	39	42	46	10
Grand Total Information Service Market	250	10	280	310	350	390	430	470	11

C

Forecast Database in ECUs

Exhibit O-4

Software and Services Market Forecast in ECUs
Portugal, 1994-1999

Delivery Modes	ECU Millions (rounded)								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	141	14	160	184	212	247	279	314	14
Professional Services	37	12	42	47	52	59	64	71	11
- IS Consulting	5	18	6	7	8	10	11	13	16
- Education & Training	4	13	5	5	6	6	7	8	10
- Custom Software	26	12	29	32	35	39	42	45	9
- Application Management	2	15	2	3	3	4	4	5	15
Systems Integration	9	16	10	11	13	15	18	20	15
- Equipment	2	20	3	3	4	4	4	5	12
- Application Software	2	6	2	2	3	4	5	6	31
- System Software	1	21	1	1	1	1	1	2	12
- Professional Services	4	17	5	5	5	6	6	7	9
- Other	0	0	0	0	0	0	0	0	19
Systems Operations	6	21	7	8	10	12	14	17	20
- Platform Operations	2	16	2	2	3	3	4	4	15
- Application Operations	3	21	3	4	5	5	7	8	20
- Desktop Services	1	28	2	2	3	3	4	5	25
Processing Services	16	11	18	20	23	25	27	30	11
- Transaction Processing	14	11	16	18	20	22	24	25	10
- Utility Processing	1	8	1	1	1	1	1	1	5
- Other Processing	1	18	2	2	2	3	3	3	15
Network Services	7	25	9	11	15	19	23	27	25
- Electronic Info Svcs	5	22	6	7	9	11	13	15	22
- Network Applications	2	34	2	3	5	6	8	11	35
- Network Management	1	16	1	1	1	1	1	2	15
System Software	24	9	27	30	34	38	42	47	12
- Mainframe	10	2	11	11	11	12	12	12	2
- Minicomputer	8	12	9	11	13	15	17	19	15
- Workstation/PC	6	19	7	8	10	12	14	16	20
Application Software	14	16	16	19	23	27	30	35	16
- Mainframe	1	5	1	1	1	1	2	2	6
- Minicomputer	4	13	5	5	6	7	8	9	14
- Workstation/PC	9	20	11	13	15	18	21	24	18
Turnkey Systems	28	15	32	37	43	52	60	68	16
- Equipment	13	11	15	17	19	21	24	26	11
- Application Software	6	21	7	8	10	12	15	18	22
- System Software	1	14	2	2	2	3	3	3	15
- Professional Services	7	17	9	10	12	15	18	21	20
Equipment Services	86	4	90	94	99	104	105	110	4
- Equipment Maintenance	63	2	64	66	67	68	67	68	1
- Environmental Services	23	11	25	28	31	35	38	42	10
Grand Total Information Service Market	230	10	250	280	310	350	380	420	11

D

Information Services Forecast Reconciliation in Local Currency

Exhibit O-5

Forecast Reconciliation, Portugal, 1993-1998

Currency: Esc Millions	1993 Market				1998 Market				1993	1994
Delivery Mode	1993 Report (Fcst)	1994 Report (Act)	1993-1994 Variance (Amount)	1993-1994 Variance (%)	1993 Report (Fcst)	1994 Report (Fcst)	1993-1994 Variance (Amount)	1993-1994 Variance (%)	Report %CAGR (Fcst)	Report %CAGR (Fcst)
Software and Services Total (ex Equipment Services)	27,600	27,700	100	0	65,600	54,900	-10,700	-16	19	15
Professional Services	7,200	7,300	100	1	14,800	12,600	-2,200	-15	16	12
- IS Consulting	990	990	0	0	2,450	2,170	-280	-11	20	17
- Education & Training	800	800	0	0	1,540	1,360	-180	-12	14	11
- Custom Software	5,400	5,100	-300	-6	10,800	8,300	-2,500	-23	15	10
- Application Management	0	400	400	N/A	0	815	815	N/A	0	15
Systems Integration	1,830	1,690	-140	-8	4,560	3,440	-1,120	-25	20	15
- Equipment	500	450	-50	-10	960	870	-90	-9	14	14
- Application Software	330	310	-20	-6	1,640	970	-670	-41	38	26
- System Software	150	140	-10	-7	320	275	-45	-14	16	14
- Professional Services	810	750	-60	-7	1,510	1,250	-260	-17	13	11
- Other	35	35	0	0	125	70	-55	-44	29	15
Systems Operations	330	1,100	770	233	780	2,810	2,030	260	19	21
- Platform Operations	140	350	210	150	315	725	410	130	18	16
- Application Operations	115	500	385	335	275	1,285	1,010	367	19	21
- Desktop Services	73	250	177	242	190	800	610	321	21	26
Processing Services	3,400	3,200	-200	-6	7,100	5,400	-1,700	-24	16	11
- Transaction Processing	2,950	2,800	-150	-5	6,100	4,650	-1,450	-24	16	11
- Utility Processing	140	130	-10	-7	230	170	-60	-26	10	6
- Other Processing	290	280	-10	-3	770	580	-190	-25	22	16
Network Services	1,500	1,400	-100	-7	6,300	4,500	-1,800	-29	33	26
- Electronic Info Svcs	960	920	-40	-4	3,390	2,610	-780	-23	29	23
- Network Applications	400	350	-50	-13	2,510	1,630	-880	-35	44	36
- Network Management	125	125	0	0	410	265	-145	-35	27	16
System Software	4,800	4,800	0	0	10,650	8,350	-2,300	-22	17	12
- Mainframe	2,050	2,050	0	0	3,100	2,350	-750	-24	9	3
- Minicomputer	1,650	1,650	0	0	4,050	3,250	-800	-20	20	15
- Workstation/PC	1,080	1,080	0	0	3,520	2,740	-780	-22	27	20
Application Software	2,750	2,750	0	0	7,300	6,000	-1,300	-18	22	17
- Mainframe	210	210	0	0	360	290	-70	-19	11	7
- Minicomputer	800	800	0	0	1,900	1,550	-350	-18	19	14
- Workstation/PC	1,750	1,750	0	0	5,050	4,150	-900	-18	24	19
Turnkey Systems	5,750	5,500	-250	-4	14,150	11,750	-2,400	-17	20	16
- Equipment	2,800	2,650	-150	-5	5,650	4,650	-1,000	-18	15	12
- Application Software	1,140	1,100	-40	-4	3,480	2,970	-510	-15	25	22
- System Software	300	290	-10	-3	710	590	-120	-17	19	15
- Professional Services	1,500	1,450	-50	-3	4,300	3,550	-750	-17	23	20
Equipment Services	17,000	17,000	0	0	26,000	20,600	-5,400	-21	9	4
- Equipment Maintenance	12,500	12,500	0	0	19,700	13,200	-6,500	-33	10	1
- Environmental Services	4,500	4,500	0	0	6,300	7,400	1,100	17	7	10
Grand Total	44,600	44,700	100	0	91,600	75,500	-16,100	-18	15	11

E

Leading Vendors in Local Currency (Esc Millions)

Exhibit O-6

Software and Services Leading Vendors Portugal, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Esc Millions)	Market Share (%)
1	IBM	U.S.	5,740	20.7
2	Andersen Consulting	U.S.	3,980	14.4
3	Digital	U.S.	2,780	10.0
4	Unisys	U.S.	1,890	6.8
5	Reuters	U.K.	1,260	4.5
6	GEIS	U.S.	1,190	4.3
7	Computer Associates	U.S.	930	3.4
8	HP	U.S.	890	3.2
9	Microsoft	U.S.	730	2.6
10	Intergraph	U.S.	520	1.9
	Total Listed		19,910	71.9
	Total Market		27,700	100.0

Exhibit O-7

Professional Services Leading Vendors Portugal, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Esc Millions)	Market Share (%)
1	Andersen Consulting	U.S.	1,840	25.2
2	Digital	U.S.	805	11.0
3	Unisys	U.S.	740	10.1
4	IBM	U.S.	735	10.1
5	HP	U.S.	320	4.4
6	Computer Associates	U.S.	165	2.3
7	Oracle	U.S.	160	2.2
8	AT&T	U.S.	105	1.4
9	Reuters	U.K.	100	1.4
10	Bull	France	65	0.9
	Total Listed		5,035	69.0
	Total Market		7,300	100.0

Exhibit O-8

Processing Services Leading Vendors Portugal, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Esc Millions)	Market Share (%)
1	GEIS	U.S.	340	10.6
2	Unisys	U.S.	155	4.8
3	IBM	U.S.	55	1.7
4	HP	U.S.	40	1.3
	Total Listed		590	18.4
	Total Market		3,200	100.0

Exhibit O-9

Network Applications Leading Vendors Portugal, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Esc Millions)	Market Share (%)
1	GEIS	U.S.	625	178.6
2	IBM	U.S.	160	45.7
3	Infonet	Belgium	95	27.1
4	Digital	U.S.	65	18.6
	Total Listed		945	270.0
	Total Market		350	100.0

Exhibit O-10

Electronic Information Services Leading Vendors Portugal, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Esc Millions)	Market Share (%)
1	Reuters	U.K.	970	105.4
2	Telerate	U.S.	230	25.0
3	Dun & Bradstreet	U.S.	160	17.4
4	Lotus	U.S.	5	0.5
	Total Listed		1,365	148.4
	Total Market		920	100.0

Exhibit O-11

Systems Software Products Leading Vendors Portugal, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Esc Millions)	Market Share (%)
1	IBM	U.S.	3,020	62.9
2	Digital	U.S.	985	20.5
3	Unisys	U.S.	670	14.0
4	HP	U.S.	455	9.5
5	Computer Associates	U.S.	435	9.1
6	Microsoft	U.S.	425	8.9
7	Bull	France	220	4.6
8	Novell	U.S.	220	4.6
9	Oracle	U.S.	165	3.4
10	Borland	U.S.	100	2.1
	Total Listed		6,695	139.5
	Total Market		4,800	100.0

Exhibit O-12

Application Software Products Leading Vendors Portugal, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Esc Millions)	Market Share (%)
1	IBM	U.S.	425	15.5
2	Computer Associates	U.S.	325	11.8
3	Microsoft	U.S.	295	10.7
4	Wordperfect	U.S.	210	7.6
5	Andersen Consulting	U.S.	180	6.5
6	Lotus	U.S.	165	6.0
7	Unisys	U.S.	135	4.9
8	Dun & Bradstreet	U.S.	90	3.3
9	Digital	U.S.	60	2.2
10	AT&T	U.S.	55	2.0
	Total Listed		1,940	70.5
	Total Market		2,750	100.0

Exhibit O-13

Turnkey Systems Leading Vendors Portugal, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Esc Millions)	Market Share (%)
1	Digital	U.S.	460	8.4
2	Intergraph	U.S.	410	7.5
3	IBM	U.S.	180	3.3
4	Reuters	U.K.	125	2.3
5	AT&T	U.S.	30	0.5
6	ComputerVision	U.S.	25	0.5
	Total Listed		1,230	22.4
	Total Market		5,500	100.0

Exhibit O-14

Equipment Maintenance Leading Vendors Portugal, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Esc Millions)	Market Share (%)
1	IBM	U.S.	2,400	19.2
2	Olivetti	Italy	1,750	14.0
3	Digital	U.S.	1,650	13.2
4	Unisys	U.S.	1,415	11.3
5	HP	U.S.	1,075	8.6
6	ICL (Fujitsu)	U.K.	600	4.8
7	Bull	France	450	3.6
8	Rank Xerox	U.K.	400	3.2
9	AT&T	U.S.	355	2.8
10	Tandem	U.S.	220	1.8
	Total Listed		10,315	82.5
	Total Market		12,500	100.0

Exhibit O-15

Environmental Services Leading Vendors
Portugal, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Esc Millions)	Market Share (%)
1	Digital	U.S.	655	14.6
2	IBM	U.S.	300	6.7
3	Unisys	U.S.	245	5.4
4	HP	U.S.	130	2.9
5	Bull	France	90	2.0
6	Rank Xerox	U.K.	50	1.1
7	AT&T	U.S.	25	0.6
8	ComputerVision	U.S.	20	0.4
9	Wang	U.S.	20	0.4
10	Sun Microsystems	U.S.	10	0.2
	Total Listed		1,545	34.3
	Total Market		4,500	100.0

Exhibit O-16

Information Services Leading Vendors
Portugal, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Esc Millions)	Market Share (%)
1	IBM	U.S.	7,970	17.7
2	Digital	U.S.	5,200	11.6
3	Andersen Consulting	U.S.	4,530	10.1
4	Unisys	U.S.	3,580	8.0
5	HP	U.S.	2,170	4.8
6	Olivetti	Italy	1,770	3.9
7	Reuters	U.K.	1,260	2.8
8	GEIS	U.S.	1,140	2.5
9	Bull	France	1,020	2.3
10	Computer Associates	U.S.	930	2.1
	Total Listed		29,570	65.7
	Total Market		45,000	100.0

Blank

P

Information Services Industry Forecast Database, 1994-1999 Greece

A

Forecast Database in Local Currency (Dra Millions)

Exhibit P-1

Top Level IT Expenditure, Greece

Sector	Dra Millions								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR (%)
Total IT Spending	275,000	5	290,000	305,000	325,000	345,000	370,000	395,000	6
Equipment Sales	56,000	5	59,000	63,000	68,000	73,000	78,000	85,000	8
Mainframe	8,400	-12	7,400	6,600	5,900	5,200	4,500	4,000	-12
Minicomputer	14,500	0	14,500	14,600	14,700	14,700	14,600	14,700	0
PC/Workstation	33,000	12	37,000	41,800	47,200	52,900	58,700	66,300	12
Equipment Services	9,300	-6	8,700	8,300	8,000	7,800	7,600	7,300	-3
Software Products	18,000	9	19,600	21,900	24,500	27,500	31,200	35,500	13
Other Information Services	39,500	10	43,500	47,500	53,500	59,500	67,000	74,000	11
Data Communications	25,500	6	27,000	28,700	30,400	32,200	34,200	36,300	6
Facilities/Administration	30,000	2	30,600	31,200	31,800	32,500	33,100	33,800	2
In-house Staff	97,000	4	101,000	105,000	109,000	114,000	118,000	123,000	4

Exhibit P-2

Information Services Market
Forecast by Delivery Mode and Submode
Greece, 1994-1999

Delivery Modes	Dra Millions								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	64,000	9	70,000	77,000	86,000	96,000	108,000	120,000	11
Professional Services	18,100	8	19,600	21,400	23,300	25,700	28,200	31,000	10
- IS Consulting	2,000	13	2,250	2,500	2,800	3,200	3,600	4,050	12
- Education & Training	1,700	5	1,780	1,870	1,960	2,090	2,220	2,350	6
- Custom Software	14,400	8	15,600	17,000	18,500	20,400	22,400	24,600	10
- Application Management	0	0	0	0	0	0	0	0	0
Systems Integration	1,550	10	1,700	2,000	2,300	2,600	3,000	3,400	15
- Equipment	415	11	460	520	590	655	735	815	12
- Application Software	275	24	340	430	540	660	820	1,010	24
- System Software	120	8	130	145	160	175	190	205	10
- Professional Services	680	10	750	850	950	1,050	1,150	1,250	11
- Other	35	14	40	50	60	70	85	100	20
Systems Operations	700	14	800	950	1,050	1,200	1,350	1,550	14
- Platform Operations	400	13	450	510	580	660	740	830	13
- Application Operations	260	12	290	330	370	420	470	530	13
- Desktop Services	60	17	70	85	105	130	155	190	22
Processing Services	9,350	9	10,150	10,950	11,900	12,950	14,100	15,350	9
- Transaction Processing	8,200	9	8,950	9,650	10,500	11,450	12,500	13,650	9
- Utility Processing	400	5	420	440	460	480	510	530	5
- Other Processing	740	8	800	860	920	1,000	1,080	1,160	8
Network Services	3,150	17	3,700	4,350	5,200	6,200	7,200	8,450	18
- Electronic Info Svcs	2,070	12	2,320	2,640	3,010	3,430	3,770	4,180	12
- Network Applications	950	25	1,190	1,510	1,920	2,440	3,000	3,720	26
- Network Management	130	27	165	210	270	345	425	530	26
System Software	11,100	5	11,600	12,500	13,600	14,800	16,200	17,900	9
- Mainframe	4,700	-5	4,450	4,350	4,200	4,050	3,950	3,850	-3
- Minicomputer	3,650	12	4,100	4,650	5,300	6,050	6,900	7,850	14
- Workstation/PC	2,710	13	3,060	3,520	4,050	4,660	5,360	6,160	15
Application Software	6,900	16	8,000	9,400	10,900	12,700	15,000	17,600	17
- Mainframe	610	-3	590	570	550	530	520	500	-3
- Minicomputer	1,800	14	2,050	2,400	2,750	3,150	3,650	4,200	15
- Workstation/PC	4,500	20	5,400	6,400	7,600	9,000	10,800	12,900	19
Turnkey Systems	12,800	9	14,000	15,500	17,400	19,800	22,500	25,200	12
- Equipment	6,100	6	6,450	6,900	7,450	8,200	9,000	9,700	9
- Application Software	2,550	14	2,900	3,350	3,900	4,600	5,450	6,300	17
- System Software	670	6	710	760	820	900	990	1,070	9
- Professional Services	3,500	13	3,950	4,500	5,200	6,100	7,100	8,150	16
Equipment Services	9,300	-6	8,700	8,300	8,000	7,800	7,600	7,300	-3
- Equipment Maintenance	8,500	-7	7,910	7,440	7,070	6,790	6,520	6,190	-5
- Environmental Services	760	5	800	850	910	980	1,060	1,130	7
Grand Total Information Service Market	73,000	7	78,000	85,000	94,000	104,000	115,000	128,000	10

B

Forecast Database in U.S. Dollars

Exhibit P-3

Software and Services Market Forecast in Dollars
Greece, 1994-1999

Delivery Modes	U.S. $ Million (rounded)								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	257	9	281	309	345	385	433	481	11
Professional Services	73	8	79	86	93	103	113	124	10
- IS Consulting	8	13	9	10	11	13	14	16	12
- Education & Training	7	5	7	8	8	8	9	9	6
- Custom Software	58	8	63	68	74	82	90	99	10
- Application Management	0	0	0	0	0	0	0	0	0
Systems Integration	6	10	7	8	9	10	12	14	15
- Equipment	2	11	2	2	2	3	3	3	12
- Application Software	1	24	1	2	2	3	3	4	24
- System Software	0	8	1	1	1	1	1	1	10
- Professional Services	3	10	3	3	4	4	5	5	11
- Other	0	14	0	0	0	0	0	0	20
Systems Operations	3	14	3	4	4	5	5	6	14
- Platform Operations	2	13	2	2	2	3	3	3	13
- Application Operations	1	12	1	1	2	2	2	2	13
- Desktop Services	0	17	0	0	0	1	1	1	22
Processing Services	38	9	41	44	48	52	57	62	9
- Transaction Processing	33	9	36	39	42	46	50	55	9
- Utility Processing	2	5	2	2	2	2	2	2	5
- Other Processing	3	8	3	3	4	4	4	5	8
Network Services	13	17	15	17	21	25	29	34	18
- Electronic Info Svcs	8	12	9	11	12	14	15	17	12
- Network Applications	4	25	5	6	8	10	12	15	26
- Network Management	1	27	1	1	1	1	2	2	26
System Software	45	5	47	50	55	59	65	72	9
- Mainframe	19	-5	18	17	17	16	16	15	-3
- Minicomputer	15	12	16	19	21	24	28	32	14
- Workstation/PC	11	13	12	14	16	19	22	25	15
Application Software	28	16	32	38	44	51	60	71	17
- Mainframe	2	-3	2	2	2	2	2	2	-3
- Minicomputer	7	14	8	10	11	13	15	17	15
- Workstation/PC	18	20	22	26	30	36	43	52	19
Turnkey Systems	51	9	56	62	70	79	90	101	12
- Equipment	25	6	26	28	30	33	36	39	9
- Application Software	10	14	12	13	16	18	22	25	17
- System Software	3	6	3	3	3	4	4	4	9
- Professional Services	14	13	16	18	21	25	29	33	16
Equipment Services	37	-6	35	33	32	31	30	29	-3
- Equipment Maintenance	34	-7	32	30	28	27	26	25	-5
- Environmental Services	3	5	3	3	4	4	4	5	7
Grand Total Information Service Market	290	7	310	340	380	420	460	510	10

C

Forecast Database in ECUs

Exhibit P-4

Software and Services Market Forecast in ECUs
Greece, 1994-1999

Delivery Modes	ECU Millions (rounded)								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	229	9	250	275	307	343	386	429	11
Professional Services	65	8	70	76	83	92	101	111	10
- IS Consulting	7	13	8	9	10	11	13	15	12
- Education & Training	6	5	6	7	7	8	8	8	6
- Custom Software	51	8	56	61	66	73	80	88	10
- Application Management	0	0	0	0	0	0	0	0	0
Systems Integration	6	10	6	7	8	9	11	12	15
- Equipment	2	11	2	2	2	2	3	3	12
- Application Software	1	24	1	2	2	2	3	4	24
- System Software	0	8	0	1	1	1	1	1	10
- Professional Services	2	10	3	3	3	4	4	5	11
- Other	0	14	0	0	0	0	0	0	20
Systems Operations	3	14	3	3	4	4	5	6	14
- Platform Operations	1	13	2	2	2	2	3	3	13
- Application Operations	1	12	1	1	1	2	2	2	13
- Desktop Services	0	17	0	0	0	0	1	1	22
Processing Services	33	9	36	39	42	46	50	55	9
- Transaction Processing	29	9	32	35	38	41	45	49	9
- Utility Processing	1	5	2	2	2	2	2	2	5
- Other Processing	3	8	3	3	3	4	4	4	8
Network Services	11	17	13	16	19	22	26	30	18
- Electronic Info Svcs	7	12	8	9	11	12	14	15	12
- Network Applications	3	25	4	5	7	9	11	13	26
- Network Management	1	27	1	1	1	1	2	2	26
System Software	40	5	41	45	49	53	58	64	9
- Mainframe	17	-5	16	16	15	15	14	14	-3
- Minicomputer	13	12	15	17	19	22	25	28	14
- Workstation/PC	10	13	11	13	15	17	19	22	15
Application Software	25	16	29	34	39	45	54	63	17
- Mainframe	2	-3	2	2	2	2	2	2	-3
- Minicomputer	6	14	7	9	10	11	13	15	15
- Workstation/PC	16	20	19	23	27	32	39	46	19
Turnkey Systems	46	9	50	55	62	71	80	90	12
- Equipment	22	6	23	25	27	29	32	35	9
- Application Software	9	14	10	12	14	16	20	23	17
- System Software	2	6	3	3	3	3	4	4	9
- Professional Services	13	13	14	16	19	22	25	29	16
Equipment Services	33	-6	31	30	29	28	27	26	-3
- Equipment Maintenance	30	-7	28	27	25	24	23	22	-5
- Environmental Services	3	5	3	3	3	4	4	4	7
Grand Total Information Service Market	260	7	280	300	340	370	410	460	10

D

Information Services Forecast Reconciliation in Local Currency

Exhibit P-5

Forecast Reconciliation, Greece, 1993-1998

Currency: Dra Millions	1993 Market				1998 Market				1993	1994
Delivery Mode	1993 Report (Fcst)	1994 Report (Act)	1993-1994 Variance (Amount)	1993-1994 Variance (%)	1993 Report (Fcst)	1994 Report (Fcst)	1993-1994 Variance (Amount)	1993-1994 Variance (%)	Report %CAGR (Fcst)	Report %CAGR (Fcst)
Software and Services Total (ex Equipment Services)	64,000	64,000	0	0	136,000	108,000	-28,000	-21	16	11
Professional Services	18,100	18,100	0	0	37,600	28,200	-9,400	-25	16	9
- IS Consulting	2,000	2,000	0	0	3,950	3,600	-350	-9	15	12
- Education & Training	1,700	1,700	0	0	2,460	2,220	-240	-10	8	5
- Custom Software	14,400	14,400	0	0	31,200	22,400	-8,800	-28	17	9
- Application Management	0	0	0	0	0	0	0	0	0	0
Systems Integration	1,650	1,550	-100	-6	3,800	3,000	-800	-21	18	14
- Equipment	445	415	-30	-7	800	735	-65	-8	12	12
- Application Software	300	275	-25	-8	1,350	820	-530	-39	35	24
- System Software	130	120	-10	-8	270	190	-80	-30	16	10
- Professional Services	740	680	-60	-8	1,250	1,150	-100	-8	11	11
- Other	35	35	0	0	110	85	-25	-23	26	19
Systems Operations	700	700	0	0	1,450	1,350	-100	-7	16	14
- Platform Operations	400	400	0	0	800	740	-60	-8	15	13
- Application Operations	260	260	0	0	500	470	-30	-6	14	13
- Desktop Services	60	60	0	0	170	155	-15	-9	23	21
Processing Services	9,500	9,350	-150	-2	15,650	14,100	-1,550	-10	10	9
- Transaction Processing	8,350	8,200	-150	-2	13,900	12,500	-1,400	-10	11	9
- Utility Processing	410	400	-10	-2	560	510	-50	-9	6	5
- Other Processing	740	740	0	0	1,180	1,080	-100	-8	10	8
Network Services	3,250	3,150	-100	-3	8,800	7,200	-1,600	-18	22	18
- Electronic Info Svcs	2,070	2,070	0	0	3,890	3,770	-120	-3	13	13
- Network Applications	1,060	950	-110	-10	4,470	3,000	-1,470	-33	33	26
- Network Management	130	130	0	0	455	425	-30	-7	28	27
System Software	11,100	11,100	0	0	22,200	16,200	-6,000	-27	15	8
- Mainframe	4,700	4,700	0	0	6,250	3,950	-2,300	-37	6	-3
- Minicomputer	3,650	3,650	0	0	7,700	6,900	-800	-10	16	14
- Workstation/PC	2,710	2,710	0	0	8,260	5,360	-2,900	-35	25	15
Application Software	6,900	6,900	0	0	19,100	15,000	-4,100	-21	23	17
- Mainframe	610	610	0	0	780	520	-260	-33	5	-3
- Minicomputer	1,800	1,800	0	0	3,900	3,650	-250	-6	17	15
- Workstation/PC	4,500	4,500	0	0	14,400	10,800	-3,600	-25	26	19
Turnkey Systems	12,800	12,800	0	0	27,400	22,500	-4,900	-18	16	12
- Equipment	6,100	6,100	0	0	11,100	9,000	-2,100	-19	13	8
- Application Software	2,550	2,550	0	0	6,400	5,450	-950	-15	20	16
- System Software	670	670	0	0	1,210	990	-220	-18	13	8
- Professional Services	3,500	3,500	0	0	8,650	7,100	-1,550	-18	20	15
Equipment Services	9,800	9,300	-500	-5	12,500	7,600	-4,900	-39	5	-4
- Equipment Maintenance	9,030	8,500	-530	-6	11,520	6,520	-5,000	-43	5	-5
- Environmental Services	760	760	0	0	970	1,060	90	9	5	7
Grand Total	74,000	73,000	-1,000	-1	149,000	115,000	-34,000	-23	15	10

E

Leading Vendors in Local Currency (Dra Millions)

Exhibit P-6

Software and Services Leading Vendors Greece, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Dra Millions)	Market Share (%)
1	IBM	U.S.	8,100	12.7
2	Andersen Consulting	U.S.	5,620	8.8
3	Digital	U.S.	3,920	6.1
4	Reuters	U.K.	1,770	2.8
5	GEIS	U.S.	1,670	2.6
6	Computer Associates	U.S.	1,310	2.0
7	HP	U.S.	1,260	2.0
8	Microsoft	U.S.	1,030	1.6
9	Intergraph	U.S.	735	1.1
10	Bull	France	635	1.0
	Total Listed		26,050	40.7
	Total Market		64,000	100.0

Exhibit P-7

Professional Services Leading Vendors Greece, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Dra Millions)	Market Share (%)
1	Andersen Consulting	U.S.	2,600	14.4
2	Digital	U.S.	1,140	6.3
3	IBM	U.S.	1,040	5.7
4	HP	U.S.	450	2.5
5	Computer Associates	U.S.	235	1.3
6	Oracle	U.S.	225	1.2
7	AT&T	U.S.	150	0.8
8	Reuters	U.K.	140	0.8
9	Bull	France	90	0.5
10	ComputerVision	U.S.	70	0.4
	Total Listed		6,140	33.9
	Total Market		18,100	100.0

Exhibit P-8

Processing Services Leading Vendors
Greece, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Dra Millions)	Market Share (%)
1	GEIS	U.S.	480	5.1
2	IBM	U.S.	75	0.8
3	HP	U.S.	55	0.6
	Total Listed		610	6.5
	Total Market		9,350	100.0

Exhibit P-9

Network Applications Leading Vendors
Greece, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Dra Millions)	Market Share (%)
1	GEIS	U.S.	885	93.2
2	IBM	U.S.	225	23.7
3	Infonet	Belgium	135	14.2
4	Digital	U.S.	90	9.5
	Total Listed		1,335	140.5
	Total Market		950	100.0

Exhibit P-10

Electronic Information Services Leading Vendors
Greece, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Dra Millions)	Market Share (%)
1	Reuters	U.K.	1,365	65.9
2	Telerate	U.S.	325	15.7
3	Dun & Bradstreet	U.S.	225	10.9
	Total Listed		1,920	92.8
	Total Market		2,070	100.0

Exhibit P-11

Systems Software Products Leading Vendors
Greece, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Dra Millions)	Market Share (%)
1	IBM	U.S.	4,260	38.4
2	Digital	U.S.	1,390	12.5
3	HP	U.S.	645	5.8
4	Computer Associates	U.S.	615	5.5
5	Microsoft	U.S.	600	5.4
6	Bull	France	315	2.8
7	Novell	U.S.	310	2.8
8	Oracle	U.S.	235	2.1
9	Borland	U.S.	140	1.3
10	Andersen Consulting	U.S.	140	1.3
	Total Listed		8,650	77.9
	Total Market		11,100	100.0

Exhibit P-12

Application Software Products Leading Vendors Greece, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Dra Millions)	Market Share (%)
1	IBM	U.S.	600	8.7
2	Computer Associates	U.S.	460	6.7
3	Microsoft	U.S.	415	6.0
4	Wordperfect	U.S.	300	4.3
5	Andersen Consulting	U.S.	255	3.7
6	Lotus	U.S.	230	3.3
7	Dun & Bradstreet	U.S.	125	1.8
8	Digital	U.S.	80	1.2
9	AT&T	U.S.	80	1.2
10	HP	U.S.	70	1.0
	Total Listed		2,615	37.9
	Total Market		6,900	100.0

Exhibit P-13

Turnkey Systems Leading Vendors Greece, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Dra Millions)	Market Share (%)
1	Digital	U.S.	650	5.1
2	Intergraph	U.S.	580	4.5
3	IBM	U.S.	255	2.0
4	Reuters	U.K.	175	1.4
5	AT&T	U.S.	45	0.4
6	ComputerVision	U.S.	35	0.3
	Total Listed		1,740	13.6
	Total Market		12,800	100.0

Exhibit P-14

Equipment Maintenance Leading Vendors Greece, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Dra Millions)	Market Share (%)
1	IBM	U.S.	3,350	39.4
2	Olivetti	Italy	2,500	29.4
3	Digital	U.S.	2,350	27.6
4	HP	U.S.	1,515	17.8
5	ICL (Fujitsu)	U.K.	850	10.0
6	Bull	France	635	7.5
7	Rank Xerox	U.K.	560	6.6
8	AT&T	U.S.	520	6.1
9	Data General	U.S.	315	3.7
10	Tandem	U.S.	315	3.7
	Total Listed		12,910	151.9
	Total Market		8,500	100.0

Exhibit P-15

Environmental Services Leading Vendors
Greece, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Dra Millions)	Market Share (%)
1	Digital	U.S.	930	122.4
2	IBM	U.S.	420	55.3
3	HP	U.S.	180	23.7
4	Bull	France	125	16.4
5	Rank Xerox	U.K.	70	9.2
6	AT&T	U.S.	35	4.6
7	ComputerVision	U.S.	30	3.9
8	Wang	U.S.	25	3.3
9	Sun Microsystems	U.S.	10	1.3
10	Tandem	U.S.	10	1.3
	Total Listed		1,835	241.4
	Total Market		760	100.0

Exhibit P-16

Information Services Leading Vendors
Greece, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (Dra Millions)	Market Share (%)
1	IBM	U.S.	11,250	15.4
2	Digital	U.S.	7,340	10.1
3	Andersen Consulting	U.S.	6,390	8.8
4	HP	U.S.	3,070	4.2
5	Olivetti	Italy	2,490	3.4
6	Reuters	U.K.	1,770	2.4
7	GEIS	U.S.	1,610	2.2
8	Bull	France	1,440	2.0
9	Computer Associates	U.S.	1,310	1.8
10	Microsoft	U.S.	1,030	1.4
	Total Listed		37,700	51.6
	Total Market		73,000	100.0

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Q

Information Services Industry Forecast Database, 1994-1999 Ireland

A

Forecast Database in Local Currency (IP Millions)

Exhibit Q-1

Top Level IT Expenditure, Ireland

Sector	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR (%)
	IP Millions								
Total IT Spending	1,120	1	1,130	1,140	1,160	1,190	1,210	1,240	2
Equipment Sales	325	0	325	320	320	320	315	320	0
Mainframe	65	0	65	50	44	39	34	30	-14
Minicomputer	85	-4	82	80	78	75	72	70	-3
PC/Workstation	175	3	180	190	200	205	210	220	4
Equipment Services	71	-1	70	69	68	67	66	63	-2
Software Products	108	3	112	116	122	130	135	143	5
Other Information Services	195	5	205	220	240	260	285	315	9
Data Communications	68	6	72	77	82	87	93	99	7
Facilities/Administration	79	-1	78	77	76	75	74	73	-1
In-house Staff	275	-2	270	260	250	250	240	230	-3

Exhibit Q-2

Information Services Market
Forecast by Delivery Mode and Submode
Ireland, 1994-1999

Delivery Modes	IP Millions								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	350	4	365	385	415	445	480	520	7
Professional Services	92	2	94	99	103	112	122	132	7
- IS Consulting	11	0	11	12	12	13	14	15	6
- Education & Training	9	0	9	9	9	10	10	11	3
- Custom Software	72	3	74	78	82	89	98	106	7
- Application Management	0	0	0	0	0	0	0	0	0
Systems Integration	7	8	7	8	9	9	10	11	9
- Equipment	2	5	2	2	2	2	3	3	7
- Application Software	1	20	1	2	2	2	3	3	23
- System Software	0	11	1	1	1	1	1	1	8
- Professional Services	3	7	3	3	4	4	4	4	6
- Other	0	0	0	0	0	0	0	0	0
Systems Operations	7	29	9	11	14	18	23	29	26
- Platform Operations	4	25	5	6	8	10	12	15	25
- Application Operations	2	50	3	4	5	7	9	11	28
- Desktop Services	1	0	1	1	2	2	3	4	30
Processing Services	39	-3	38	38	37	38	38	38	0
- Transaction Processing	29	-3	28	27	26	26	25	25	-2
- Utility Processing	1	0	1	1	1	1	1	1	0
- Other Processing	9	6	9	10	10	11	12	12	6
Network Services	12	8	13	15	18	20	23	27	16
- Electronic Info Svcs	7	15	8	9	10	11	12	14	13
- Network Applications	4	13	5	6	7	8	9	11	20
- Network Management	1	0	1	1	2	2	2	2	17
System Software	59	-1	59	59	60	62	63	64	2
- Mainframe	27	-7	25	24	22	21	20	18	-6
- Minicomputer	18	3	19	19	20	21	22	22	4
- Workstation/PC	14	7	15	17	18	20	22	24	9
Application Software	49	8	53	57	62	68	72	79	8
- Mainframe	5	0	5	4	4	4	3	3	-10
- Minicomputer	12	4	13	14	15	16	16	17	6
- Workstation/PC	32	9	35	39	43	48	53	59	11
Turnkey Systems	85	6	90	100	110	120	130	140	9
- Equipment	44	6	46	49	51	53	56	58	5
- Application Software	16	16	19	21	24	28	31	35	14
- System Software	3	0	3	3	3	3	3	3	0
- Professional Services	21	15	24	27	30	34	38	43	13
Equipment Services	71	-1	70	69	68	67	66	63	-2
- Equipment Maintenance	50	-4	48	46	44	42	40	37	-5
- Environmental Services	21	5	22	23	24	25	26	27	4
Grand Total Information Service Market	420	4	435	455	480	515	545	585	6

B

Forecast Database in U.S. Dollars

Exhibit Q-3

Software and Services Market Forecast in Dollars
Ireland, 1994-1999

Delivery Modes	U.S. $ Million (rounded)								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	493	4	514	542	585	627	676	732	7
Professional Services	130	2	132	139	145	158	172	186	7
- IS Consulting	16	0	16	16	17	18	20	21	6
- Education & Training	13	0	13	13	13	13	14	15	3
- Custom Software	101	3	104	110	115	125	138	149	7
- Application Management	0	0	0	0	0	0	0	0	0
Systems Integration	9	8	10	11	12	13	14	16	9
- Equipment	3	5	3	3	3	3	4	4	7
- Application Software	1	20	2	2	3	3	4	5	23
- System Software	1	11	1	1	1	1	1	1	8
- Professional Services	4	7	5	5	5	5	6	6	6
- Other	0	0	0	0	0	0	0	0	0
Systems Operations	10	29	13	16	20	25	32	41	26
- Platform Operations	6	25	7	9	11	13	17	21	25
- Application Operations	3	50	4	6	7	9	12	15	28
- Desktop Services	1	0	1	2	2	3	4	5	30
Processing Services	55	-3	54	54	52	54	54	54	0
- Transaction Processing	41	-3	39	38	37	37	35	35	-2
- Utility Processing	1	0	1	1	1	1	1	1	0
- Other Processing	12	6	13	13	14	16	16	17	6
Network Services	17	8	18	21	25	28	32	38	16
- Electronic Info Svcs	9	15	11	12	13	16	17	20	13
- Network Applications	6	13	6	8	9	11	13	16	20
- Network Management	1	0	1	2	2	2	3	3	17
System Software	83	-1	82	83	85	87	88	89	2
- Mainframe	38	-7	35	33	31	30	28	25	-6
- Minicomputer	25	3	26	27	28	30	30	31	4
- Workstation/PC	20	7	21	23	25	28	30	33	9
Application Software	69	8	75	80	87	96	101	111	8
- Mainframe	7	0	7	6	6	6	4	4	-10
- Minicomputer	17	4	18	19	20	22	23	24	6
- Workstation/PC	45	9	49	55	61	68	75	83	11
Turnkey Systems	120	6	127	141	155	169	183	197	9
- Equipment	61	6	65	68	71	75	78	82	5
- Application Software	23	16	26	30	34	39	44	49	14
- System Software	4	0	4	4	4	4	4	4	0
- Professional Services	29	15	33	37	42	48	54	61	13
Equipment Services	100	-1	99	97	96	94	93	89	-2
- Equipment Maintenance	70	-4	68	65	62	58	56	51	-5
- Environmental Services	30	5	31	32	34	35	37	37	4
Grand Total Information Service Market	590	4	610	640	680	730	770	820	6

C

Forecast Database in ECUs

Exhibit Q-4

Software and Services Market Forecast in ECUs
Ireland, 1994-1999

Delivery Modes	ECU Millions (rounded)								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	442	4	461	487	525	563	607	657	7
Professional Services	116	2	119	125	130	142	154	167	7
- IS Consulting	14	0	14	15	15	16	18	19	6
- Education & Training	11	0	11	11	11	12	13	13	3
- Custom Software	91	3	94	99	104	113	124	134	7
- Application Management	0	0	0	0	0	0	0	0	0
Systems Integration	8	8	9	10	11	11	13	14	9
- Equipment	2	5	3	3	3	3	3	3	7
- Application Software	1	20	2	2	2	3	4	4	23
- System Software	1	11	1	1	1	1	1	1	8
- Professional Services	4	7	4	4	5	5	5	5	6
- Other	0	0	0	0	0	0	0	0	0
Systems Operations	9	29	11	14	18	23	29	37	26
- Platform Operations	5	25	6	8	10	12	15	19	25
- Application Operations	3	50	4	5	6	8	11	13	28
- Desktop Services	1	0	1	2	2	3	4	5	30
Processing Services	49	-3	48	47	47	48	47	48	0
- Transaction Processing	37	-3	35	34	33	33	32	32	-2
- Utility Processing	1	0	1	1	1	1	1	1	0
- Other Processing	11	6	11	12	13	14	15	15	6
Network Services	15	8	16	19	23	25	29	34	16
- Electronic Info Svcs	8	15	10	11	12	14	15	18	13
- Network Applications	5	13	6	7	8	10	11	14	20
- Network Management	1	0	1	2	2	2	2	3	17
System Software	75	-1	74	75	76	78	79	80	2
- Mainframe	34	-7	32	30	28	27	25	23	-6
- Minicomputer	23	3	23	24	25	27	27	28	4
- Workstation/PC	18	7	19	21	23	25	27	30	9
Application Software	62	8	67	72	78	86	91	100	8
- Mainframe	6	0	6	5	5	5	4	4	-10
- Minicomputer	15	4	16	17	18	20	20	22	6
- Workstation/PC	41	9	44	49	54	61	67	75	11
Turnkey Systems	108	6	114	126	139	152	164	177	9
- Equipment	55	6	58	61	64	67	70	73	5
- Application Software	20	16	23	27	30	35	39	44	14
- System Software	4	0	4	4	4	4	4	4	0
- Professional Services	26	15	30	34	38	43	48	54	13
Equipment Services	90	-1	88	87	86	85	83	80	-2
- Equipment Maintenance	63	-4	61	58	56	52	50	46	-5
- Environmental Services	27	5	28	29	30	32	33	34	4
Grand Total Information Service Market	530	4	550	580	610	650	690	740	6

D

Information Services Forecast Reconciliation in Local Currency

Exhibit Q-5

Forecast Reconciliation, Ireland, 1993-1998

Currency: IP Millions	1993 Market				1998 Market				1993	1994
Delivery Mode	1993 Report (Fcst)	1994 Report (Act)	1993-1994 Variance (Amount)	1993-1994 Variance (%)	1993 Report (Fcst)	1994 Report (Fcst)	1993-1994 Variance (Amount)	1993-1994 Variance (%)	Report %CAGR (Fcst)	Report %CAGR (Fcst)
Software and Services Total (ex Equipment Services)	355	350	-5	-1	545	480	-65	-12	9	7
Professional Services	95	92	-3	-3	142	122	-20	-14	8	6
- IS Consulting	11	11	0	0	15	14	-1	-3	6	5
- Education & Training	9	9	0	0	13	10	-3	-20	7	2
- Custom Software	75	72	-3	-4	115	98	-17	-15	9	6
- Application Management	0	0	0	0	0	0	0	0	0	0
Systems Integration	7	7	0	0	16	10	-6	-38	20	9
- Equipment	2	2	0	0	3	3	0	-7	8	7
- Application Software	1	1	0	0	6	3	-3	-53	43	23
- System Software	0	0	0	0	1	1	0	-7	11	9
- Professional Services	3	3	0	0	6	4	-2	-37	16	6
- Other	0	0	0	0	0	0	0	0	0	0
Systems Operations	5	7	2	40	17	23	6	35	28	27
- Platform Operations	4	4	1	14	10	12	2	20	23	25
- Application Operations	2	2	1	33	5	9	4	89	25	34
- Desktop Services	0	1	1	150	3	3	0	4	48	24
Processing Services	39	39	0	0	37	38	1	3	-1	-1
- Transaction Processing	29	29	0	0	25	25	0	0	-3	-3
- Utility Processing	1	1	0	0	1	1	0	0	0	0
- Other Processing	9	9	0	0	11	12	1	5	5	6
Network Services	12	12	0	0	29	23	-6	-21	19	14
- Electronic Info Svcs	7	7	0	0	12	12	1	4	12	13
- Network Applications	4	4	0	0	15	9	-6	-38	29	18
- Network Management	1	1	0	0	3	2	-1	-42	27	14
System Software	62	59	-3	-4	83	63	-21	-25	6	1
- Mainframe	29	27	-2	-7	25	20	-6	-22	-3	-6
- Minicomputer	19	18	-1	-3	28	22	-6	-22	8	4
- Workstation/PC	14	14	0	0	31	22	-9	-30	17	9
Application Software	51	49	-2	-4	98	72	-26	-27	14	8
- Mainframe	5	5	0	0	5	3	-2	-40	0	-10
- Minicomputer	13	12	-1	-8	19	16	-3	-16	8	6
- Workstation/PC	33	32	-1	-3	74	53	-21	-28	18	11
Turnkey Systems	85	85	0	0	125	130	5	4	8	9
- Equipment	44	44	0	0	54	56	2	4	4	5
- Application Software	16	16	0	0	31	31	1	2	14	14
- System Software	3	3	0	0	3	3	0	0	0	0
- Professional Services	21	21	0	0	37	38	2	4	12	13
Equipment Services	63	71	8	13	66	66	0	0	1	-1
- Equipment Maintenance	42	50	8	19	42	40	-3	-6	0	-5
- Environmental Services	21	21	0	0	24	26	2	8	3	4
Grand Total	420	420	0	0	615	545	-70	-11	8	5

E

Leading Vendors in Local Currency (IR £ Millions)

Exhibit Q-6

Software and Services Leading Vendors
Ireland, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (IR £ Millions)	Market Share (%)
1	IBM	U.S.	30	9.9
2	Digital	U.S.	20	5.7
3=	Reuters	U.K.	10	2.9
3=	Microsoft	U.S.	10	2.9
3=	Unisys	U.S.	10	2.9
3=	Andersen Consulting	U.S.	10	2.9
3=	HP	U.S.	10	2.9
8=	ACT Group	U.K.	5	1.4
8=	Novell	U.S.	5	1.4
	Total Listed		110	31.4
	Total Market		350	100.0

Exhibit Q-7

Professional Services Leading Vendors
Ireland, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (IR £ Millions)	Market Share (%)
1	Digital	U.S.	5	5.4
2	IBM	U.S.	5	5.4
3	Andersen Consulting	U.S.	5	5.4
4	Unisys	U.S.	5	5.4
	Total Listed		20	21.7
	Total Market		92	100.0

Exhibit Q-8

Information Services Leading Vendors
Ireland, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue (IR £ Millions)	Market Share (%)
1	IBM	U.S.	50	11.9
2	Digital	U.S.	40	9.5
3	Unisys	U.S.	20	4.8
4=	HP	U.S.	10	2.4
4=	Reuters	U.K.	10	2.4
4=	Microsoft	U.S.	10	2.4
4=	ICL (Fujitsu)	U.K.	10	2.4
4=	Andersen Consulting	U.S.	10	2.4
4=	Siemens-Nixdorf	Germany	10	2.4
4=	AT&T	U.S.	10	2.4
	Total Listed		180	45.1
	Total Market		420	100.0

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R

Forecast Database, 1994-1999 Europe

A

Market Forecast

Exhibit R-1

Top Level IT Expenditure, Europe

Sector	US$ Million								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR (%)
Equipment Sales	48,000	-4	46,000	45,000	45,000	45,000	44,000	44,000	-1
Mainframe	9,000	-11	8,000	7,000	6,000	5,500	4,500	4,000	-13
Minicomputer	12,000	0	12,000	11,000	11,000	11,000	10,000	10,000	-4
PC/Workstation	26,000	0	26,000	27,000	28,000	28,000	29,000	30,000	3
Equipment Services	19,400	-1	19,200	19,200	19,300	19,200	19,200	19,100	0
Software Products	21,100	6	22,300	23,600	25,200	27,100	29,300	31,600	7
Other Information Services	44,000	7	47,000	50,000	54,000	58,000	63,500	69,000	8
Data Communications	17,000	6	18,000	19,000	21,000	22,000	23,000	25,000	7
Facilities/Administration	24,000	-4	23,000	22,000	22,000	22,000	21,000	21,000	-2
In-house Staff	78,000	-5	74,000	71,000	69,000	66,000	64,000	63,000	-3
IT Budget Total	251,000	0	250,000	251,000	254,000	259,000	266,000	273,000	2

Exhibit R-2

Information Services Market

Forecast by Delivery Mode and Submode

Europe, 1994-1999

Delivery Modes	US$ Million								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	71,600	6	76,000	80,900	86,600	93,100	101,000	109,600	8
Professional Services	20,500	2	21,000	22,000	22,500	23,000	24,000	25,000	4
- IS Consulting	3,000	8	3,250	3,550	3,900	4,300	4,700	5,200	10
- Education & Training	2,300	4	2,400	2,500	2,600	2,750	2,850	3,000	5
- Custom Software	15,300	0	15,300	15,400	15,600	15,700	15,900	16,100	1
- Application Management	165	27	210	265	330	415	525	665	26
Systems Integration	4,100	12	4,600	5,100	5,700	6,400	7,100	8,000	12
- Equipment	1,100	9	1,200	1,300	1,400	1,500	1,650	1,750	8
- Application Software	750	19	890	1,110	1,390	1,740	2,170	2,680	25
- System Software	330	9	360	390	420	460	500	540	8
- Professional Services	1,850	11	2,050	2,250	2,350	2,500	2,600	2,850	7
- Other	80	19	95	110	130	150	175	210	17
Systems Operations	2,550	25	3,200	3,800	4,600	5,450	6,450	7,650	19
- Platform Operations	750	24	930	1,040	1,160	1,280	1,400	1,600	11
- Application Operations	1,500	23	1,850	2,250	2,750	3,350	4,000	4,750	21
- Desktop Services	300	33	400	510	650	830	1,040	1,300	27
Processing Services	7,300	4	7,600	7,700	8,000	8,300	8,700	9,000	3
- Transaction Processing	6,300	2	6,400	6,500	6,700	6,900	7,100	7,300	3
- Utility Processing	250	0	250	245	245	245	245	250	0
- Other Processing	790	9	860	950	1,040	1,150	1,260	1,390	10
Network Services	4,900	14	5,600	6,400	7,400	8,500	10,000	11,600	16
- Electronic Info Svcs	3,100	10	3,400	3,800	4,100	4,500	4,900	5,200	9
- Network Applications	1,400	18	1,650	2,050	2,600	3,300	4,200	5,350	27
- Network Management	410	20	490	570	650	760	880	1,010	16
System Software Product	11,800	3	12,200	12,600	13,000	13,400	13,900	14,500	4
- Mainframe	5,200	-2	5,100	4,800	4,600	4,300	4,000	3,600	-7
- Minicomputer	3,700	5	3,900	4,100	4,300	4,500	4,750	4,950	5
- Workstation /PC	2,900	12	3,250	3,700	4,150	4,650	5,250	5,900	13
Application Software Product	9,300	9	10,100	11,000	12,200	13,700	15,300	17,200	11
- Mainframe	840	-7	780	740	700	670	640	610	-5
- Minicomputer	2,750	2	2,800	3,000	3,300	3,650	4,000	4,300	9
- Workstation /PC	5,800	12	6,500	7,300	8,200	9,400	10,700	12,200	13
Turnkey Systems	11,100	5	11,700	12,300	13,200	14,300	15,500	16,600	7
- Equipment	5,600	2	5,700	5,900	6,100	6,400	6,600	6,900	4
- Application Software	2,150	9	2,350	2,550	2,850	3,200	3,600	4,050	12
- System Software	640	3	660	700	740	790	830	870	6
- Professional Services	2,800	7	3,000	3,250	3,550	3,950	4,400	4,900	10
Equipment Services	19,400	-1	19,200	19,200	19,300	19,200	19,200	19,100	0
- Equipment Maintenance	12,700	-5	12,100	11,700	11,300	10,700	10,300	9,700	-4
- Environmental Services	6,700	6	7,100	7,500	8,000	8,400	8,900	9,400	6
Grand Total Information Service Market	91,000	4	95,000	100,000	106,000	112,000	120,000	129,000	6

B

Forecast Database in ECUs

Exhibit R-3

Forecast Database in ECUs
Europe, 1994-1999

Delivery Modes	ECU Millions (rounded)								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Software and Services Total (ex. Equipment Services)	64,400	5	68,000	72,200	77,500	83,700	90,600	98,300	8
Professional Services	18,500	2	18,900	19,500	20,200	20,900	21,700	22,500	4
- IS Consulting	2,670	10	2,930	3,200	3,510	3,860	4,260	4,700	10
- Education & Training	2,070	4	2,160	2,240	2,340	2,440	2,570	2,680	4
- Custom Software	13,700	0	13,700	13,800	14,100	14,200	14,400	14,600	1
- Application Management	140	25	175	225	280	360	460	585	27
Systems Integration	3,700	11	4,100	4,600	5,100	5,750	6,400	7,100	12
- Equipment	990	8	1,070	1,130	1,210	1,320	1,420	1,510	7
- Application Software	670	17	785	945	1,150	1,400	1,710	2,060	21
- System Software	290	10	320	350	375	405	445	480	8
- Professional Services	1,670	12	1,870	2,070	2,270	2,490	2,690	2,870	9
- Other	70	21	85	95	115	135	160	190	17
Systems Operations	2,200	25	2,750	3,300	3,950	4,700	5,600	6,700	19
- Platform Operations	680	25	850	970	1,110	1,280	1,490	1,760	16
- Application Operations	1,280	23	1,580	1,910	2,330	2,790	3,330	3,950	20
- Desktop Services	240	31	315	405	515	645	805	1,005	26
Processing Services	6,550	4	6,800	6,950	7,250	7,550	7,900	8,250	4
- Transaction Processing	5,650	2	5,750	5,850	6,050	6,250	6,450	6,600	3
- Utility Processing	220	0	220	220	220	220	220	225	0
- Other Processing	700	11	780	870	980	1,100	1,240	1,390	12
Network Services	4,400	14	5,000	5,700	6,600	7,700	8,900	10,400	16
- Electronic Info Svcs	2,800	9	3,060	3,360	3,700	4,030	4,380	4,710	9
- Network Applications	1,240	19	1,470	1,840	2,310	2,930	3,740	4,760	26
- Network Management	370	20	445	515	605	710	825	950	16
System Software Product	10,600	3	10,900	11,300	11,600	12,000	12,500	12,900	3
- Mainframe	4,680	-3	4,520	4,310	4,100	3,810	3,520	3,160	-7
- Minicomputer	3,310	5	3,470	3,660	3,840	4,040	4,250	4,460	5
- Workstation /PC	2,600	12	2,920	3,290	3,700	4,150	4,690	5,300	13
Application Software Product	8,400	7	9,000	9,800	10,900	12,300	13,700	15,400	11
- Mainframe	745	-6	700	655	625	595	575	550	-5
- Minicomputer	2,440	3	2,510	2,670	2,960	3,280	3,560	3,870	9
- Workstation /PC	5,150	13	5,800	6,500	7,350	8,400	9,600	10,950	14
Turnkey Systems	10,000	5	10,500	11,000	11,900	12,800	13,900	15,000	7
- Equipment	4,990	2	5,090	5,260	5,470	5,710	5,960	6,190	4
- Application Software	1,910	9	2,090	2,270	2,550	2,860	3,220	3,630	12
- System Software	570	4	595	625	660	700	745	775	5
- Professional Services	2,490	8	2,690	2,910	3,200	3,560	3,960	4,380	10
Equipment Services	17,300	-1	17,200	17,100	17,100	17,100	17,000	17,000	0
- Equipment Maintenance	11,300	-4	10,800	10,400	10,000	9,600	9,100	8,700	-4
- Environmental Services	6,000	6	6,350	6,700	7,100	7,500	7,850	8,250	5
Grand Total Information Service Market	82,000	4	85,000	89,000	95,000	101,000	108,000	115,000	6

C

Information Services Forecast Reconciliation

Exhibit R-4

Forecast Reconciliation, Europe, 1993-1998

Currency: US$ Million	1993 Market				1998 Market				1993	1994
Delivery Mode	1993 Report (Fcst)	1994 Report (Act)	1993-1994 Variance (Amount)	1993-1994 Variance (%)	1993 Report (Fcst)	1994 Report (Fcst)	1993-1994 Variance (Amount)	1993-1994 Variance (%)	Report %CAGR (Fcst)	Report %CAGR (Fcst)
Software and Services Total (ex Equipment Services)	82,600	71,600	-11,000	-13	127,400	101,000	-26,400	-21	9	8
Professional Services	23,900	20,500	-3,400	-14	29,000	24,000	-5,000	-17	4	4
- IS Consulting	3,460	3,000	-460	-13	5,410	4,700	-710	-13	9	10
- Education & Training	2,620	2,300	-320	-12	3,430	2,850	-580	-17	6	5
- Custom Software	17,700	15,300	-2,400	-14	19,500	15,900	-3,600	-18	2	1
- Application Management	170	165	-5	-3	725	525	-200	-28	34	26
Systems Integration	4,750	4,100	-650	-14	11,550	7,100	-4,450	-39	19	12
- Equipment	1,280	1,100	-180	-14	2,440	1,650	-790	-32	14	8
- Application Software	855	750	-105	-12	4,150	2,170	-1,980	-48	37	25
- System Software	380	330	-50	-13	800	500	-300	-38	16	8
- Professional Services	2,150	1,850	-300	-14	3,830	2,600	-1,230	-32	12	7
- Other	90	80	-10	-11	340	175	-165	-49	30	17
Systems Operations	2,650	2,550	-100	-4	6,600	6,450	-150	-2	20	19
- Platform Operations	1,340	750	-590	-44	3,030	1,400	-1,630	-54	18	11
- Application Operations	1,040	1,500	460	44	2,760	4,000	1,240	45	22	21
- Desktop Services	275	300	25	9	800	1,040	240	30	24	27
Processing Services	8,450	7,300	-1,150	-14	10,500	8,700	-1,800	-17	4	3
- Transaction Processing	7,250	6,300	-950	-13	8,550	7,100	-1,450	-17	3	3
- Utility Processing	275	250	-25	-9	280	245	-35	-13	0	0
- Other Processing	900	790	-110	-12	1,670	1,260	-410	-25	13	10
Network Services	5,500	4,900	-600	-11	12,300	10,000	-2,300	-19	17	16
- Electronic Info Svcs	3,470	3,100	-370	-11	4,700	4,900	200	4	6	9
- Network Applications	1,610	1,400	-210	-13	6,300	4,200	-2,100	-33	31	27
- Network Management	460	410	-50	-11	1,350	880	-470	-35	24	16
System Software	13,600	11,800	-1,800	-13	18,100	13,900	-4,200	-23	6	4
- Mainframe	6,000	5,200	-800	-13	4,880	4,000	-880	-18	-4	-7
- Minicomputer	4,230	3,700	-530	-13	5,630	4,750	-880	-16	6	5
- Workstation/PC	3,360	2,900	-460	-14	7,630	5,250	-2,380	-31	18	13
Application Software	10,700	9,300	-1,400	-13	19,000	15,300	-3,700	-19	12	11
- Mainframe	945	840	-105	-11	770	640	-130	-17	-4	-5
- Minicomputer	3,080	2,750	-330	-11	4,510	4,000	-510	-11	8	9
- Workstation/PC	6,650	5,800	-850	-13	13,750	10,700	-3,050	-22	16	13
Turnkey Systems	13,000	11,100	-1,900	-15	20,300	15,500	-4,800	-24	9	7
- Equipment	6,490	5,600	-890	-14	8,190	6,600	-1,590	-19	5	4
- Application Software	2,900	2,150	-750	-26	5,580	3,600	-1,980	-35	14	12
- System Software	350	640	290	83	490	830	340	69	7	6
- Professional Services	3,240	2,800	-440	-14	6,040	4,400	-1,640	-27	13	10
Equipment Services	22,500	19,400	-3,100	-14	24,000	19,200	-4,800	-20	1	0
- Equipment Maintenance	14,900	12,700	-2,200	-15	14,100	10,300	-3,800	-27	-1	-4
- Environmental Services	7,600	6,700	-900	-12	9,950	8,900	-1,050	-11	6	6
Grand Total	105,000	91,000	-14,000	-13	151,000	120,000	-31,000	-21	8	6

D

Delivery Mode Country Comparisons

Exhibit R-5

Software and Services Country Comparisons, Europe

Country	US$ Million								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Total (rounded)	72,000	6	76,000	81,000	87,000	93,000	100,000	110,000	8
France	17,500	4	18,500	19,000	19,500	20,500	22,000	24,000	5
Germany	14,500	6	15,500	16,500	18,000	19,500	21,500	23,500	8
United Kingdom	11,500	9	12,500	14,000	15,000	16,500	18,000	19,000	8
Italy	6,700	4	7,000	7,300	7,800	8,400	9,100	9,800	7
Sweden	2,700	5	2,850	3,000	3,300	3,700	4,000	4,400	9
Denmark	1,800	5	1,900	2,000	2,100	2,250	2,350	2,450	5
Norway	1,500	4	1,550	1,600	1,700	1,800	1,900	2,000	5
Finland	1,050	2	1,050	1,100	1,150	1,250	1,350	1,450	6
Netherlands	4,300	5	4,500	4,700	5,100	5,400	5,900	6,400	8
Belgium	2,400	5	2,500	2,650	2,800	3,000	3,300	3,500	7
Switzerland	2,750	5	2,900	3,100	3,300	3,700	4,000	4,400	9
Austria	1,250	6	1,350	1,450	1,550	1,700	1,800	1,900	7
Spain	2,150	7	2,250	2,450	2,700	2,950	3,300	3,600	10
Portugal	155	14	180	205	235	275	310	350	14
Greece	255	9	280	310	350	390	430	480	11
Ireland	490	4	510	540	590	630	680	730	7
Eastern Europe	590	19	700	820	970	1,150	1,450	1,700	19

Exhibit R-6

Professional Services Country Comparisons, Europe

Country	US$ Million								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Total (rounded)	20,500	2	21,000	22,000	22,500	23,000	24,000	25,000	4
France	6,500	2	6,600	6,700	6,700	6,800	6,900	7,000	1
Germany	2,950	2	3,000	3,100	3,200	3,300	3,300	3,300	2
United Kingdom	2,850	2	2,900	2,950	3,000	3,100	3,100	3,100	1
Italy	2,000	-1	2,000	2,000	2,100	2,150	2,250	2,350	3
Sweden	1,200	3	1,200	1,300	1,400	1,500	1,650	1,750	8
Denmark	430	3	450	480	510	540	570	600	6
Norway	390	0	390	390	400	410	420	430	2
Finland	280	1	280	290	300	320	340	370	6
Netherlands	1,500	5	1,550	1,650	1,750	1,850	2,050	2,300	8
Belgium	800	2	810	840	850	880	910	930	3
Switzerland	680	2	700	730	770	840	910	990	7
Austria	285	4	300	320	330	340	350	350	3
Spain	610	5	640	680	740	800	870	940	8
Portugal	41	12	46	52	58	66	71	79	11
Greece	73	8	79	86	93	105	115	125	10
Ireland	130	2	130	140	145	160	170	185	7
Eastern Europe	62	15	71	79	89	100	115	125	12

Exhibit R-7

Systems Integration Country Comparisons, Europe

Country	US$ Million								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Total (rounded)	4,100	12	4,600	5,100	5,700	6,400	7,100	8,000	12
France	860	8	930	1,000	1,100	1,200	1,300	1,550	11
Germany	600	10	660	750	830	950	1,050	1,150	12
United Kingdom	1,150	13	1,300	1,450	1,600	1,800	2,000	2,200	11
Italy	285	9	310	340	380	420	470	520	10
Sweden	73	5	77	86	97	110	120	135	12
Denmark	57	8	61	68	77	85	94	100	11
Norway	37	11	41	47	53	59	66	73	12
Finland	48	7	52	58	66	75	86	105	15
Netherlands	190	7	205	220	240	270	300	340	11
Belgium	130	9	145	160	175	200	225	250	12
Switzerland	175	13	195	210	235	255	275	295	9
Austria	36	14	41	46	52	58	66	73	12
Spain	145	16	165	185	210	235	265	300	13
Portugal	10	16	11	13	15	17	19	22	15
Greece	6	10	7	8	9	10	12	14	15
Ireland	9	8	10	11	12	13	14	15	9
Eastern Europe	330	20	390	460	530	640	800	920	19

Exhibit R-8

Systems Operations Country Comparisons, Europe

Country	US$ Million								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Total (rounded)	2,550	25	3,200	3,800	4,600	5,500	6,500	7,700	19
France	640	18	760	860	1,000	1,150	1,350	1,650	17
Germany	220	26	275	340	410	490	580	680	20
United Kingdom	870	34	1,150	1,450	1,750	2,100	2,400	2,800	19
Italy	205	23	250	295	350	430	520	630	20
Sweden	170	23	205	250	300	370	450	550	22
Denmark	27	22	32	40	49	59	69	81	20
Norway	29	18	35	41	49	58	68	82	19
Finland	36	19	43	50	58	66	77	92	16
Netherlands	125	21	150	180	215	260	310	380	21
Belgium	74	18	88	105	125	150	180	225	20
Switzerland	61	21	74	89	105	125	150	175	19
Austria	14	20	17	21	25	29	35	41	19
Spain	37	21	45	52	62	73	89	105	19
Portugal	6	21	8	9	11	13	16	19	20
Greece	3	14	3	4	4	5	5	6	14
Ireland	10	29	13	15	20	25	32	41	26
Eastern Europe	14	0	20	26	35	46	61	81	32

Exhibit R-9

Processing Services Country Comparisons, Europe

	US$ Million								
Country	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Total (rounded)	7,300	4	7,600	7,700	8,000	8,300	8,700	9,000	3
France	1,500	1	1,500	1,500	1,500	1,550	1,600	1,700	2
Germany	1,400	10	1,500	1,600	1,750	1,900	2,000	2,150	7
United Kingdom	780	8	840	870	920	950	1,000	1,050	4
Italy	690	-2	680	680	690	710	720	740	2
Sweden	340	0	340	340	340	340	340	340	0
Denmark	440	-2	440	430	420	410	400	380	-2
Norway	440	0	440	440	440	440	440	440	0
Finland	170	-4	165	160	160	160	160	155	-1
Netherlands	500	6	530	560	590	620	660	690	5
Belgium	215	-2	210	210	210	210	210	205	-1
Switzerland	330	7	350	370	400	420	450	480	7
Austria	155	1	155	160	160	165	170	165	1
Spain	230	5	240	250	265	275	290	300	5
Portugal	18	11	20	23	25	28	31	33	11
Greece	37	9	41	44	48	52	57	62	9
Ireland	55	-3	54	54	52	54	54	54	0
Eastern Europe	17	18	20	24	29	36	45	58	24

Exhibit R-10

Network Services Country Comparisons, Europe

Country	US$ Million								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Total (rounded)	4,900	14	5,600	6,400	7,400	8,500	10,000	11,500	16
France	1,300	9	1,400	1,600	1,800	2,050	2,400	2,900	15
Germany	890	16	1,000	1,200	1,450	1,700	2,000	2,400	19
United Kingdom	1,300	16	1,500	1,750	2,000	2,300	2,600	2,950	15
Italy	380	14	430	500	570	670	770	900	16
Sweden	105	13	120	140	160	190	215	250	16
Denmark	90	10	99	115	130	145	160	175	12
Norway	57	7	61	66	75	85	95	110	12
Finland	47	11	52	59	67	74	85	97	13
Netherlands	225	14	260	300	350	420	490	580	18
Belgium	135	13	150	170	190	215	245	270	13
Switzerland	175	10	190	225	260	300	350	400	16
Austria	64	11	72	81	92	105	120	135	13
Spain	135	13	155	180	210	245	290	330	17
Portugal	8	25	10	12	16	21	25	31	25
Greece	13	17	15	17	21	25	29	34	18
Ireland	17	8	18	21	25	28	32	38	16
Eastern Europe	5	40	7	10	14	20	28	41	42

Exhibit R-11

System Software Country Comparisons, Europe

Country	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
	US$ Million								
Total (rounded)	12,000	3	12,000	12,500	13,000	13,500	14,000	14,500	4
France	2,650	2	2,700	2,700	2,750	2,800	2,900	3,000	2
Germany	2,950	4	3,000	3,200	3,300	3,300	3,400	3,600	3
United Kingdom	1,750	5	1,850	1,900	2,000	2,050	2,150	2,200	4
Italy	1,350	4	1,400	1,450	1,500	1,600	1,650	1,700	4
Sweden	275	1	275	285	295	310	320	330	4
Denmark	250	6	265	270	285	300	310	320	4
Norway	185	2	190	195	205	215	225	240	5
Finland	145	-6	135	135	135	135	140	140	1
Netherlands	620	-1	620	620	630	650	660	660	1
Belgium	380	4	400	410	430	450	460	470	4
Switzerland	540	1	550	550	580	600	640	670	4
Austria	240	5	250	265	280	300	320	320	5
Spain	340	3	340	350	370	390	420	450	5
Portugal	27	9	30	33	38	43	47	52	12
Greece	45	5	47	50	55	59	65	72	9
Ireland	83	-1	82	83	85	87	88	89	2
Eastern Europe	58	16	67	78	93	110	135	160	19

Exhibit R-12

Applications Software Country Comparisons, Europe

Country	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
	US$ Million								
Total (rounded)	9,300	9	10,000	11,000	12,000	13,500	15,500	17,000	11
France	2,450	3	2,550	2,600	2,750	3,000	3,300	3,600	7
Germany	1,950	9	2,150	2,350	2,750	3,200	3,700	4,400	15
United Kingdom	1,100	12	1,200	1,350	1,500	1,700	1,900	2,050	11
Italy	1,150	10	1,250	1,350	1,500	1,700	1,850	2,100	11
Sweden	265	13	300	340	380	430	490	550	13
Denmark	215	10	235	260	285	320	350	380	10
Norway	175	10	195	215	240	270	310	340	12
Finland	140	7	150	165	185	205	225	255	11
Netherlands	600	5	630	660	690	730	760	800	5
Belgium	370	11	410	460	520	580	650	710	12
Switzerland	350	10	380	420	480	530	590	660	12
Austria	160	13	180	200	230	255	290	320	12
Spain	260	14	295	340	390	450	520	610	16
Portugal	16	16	18	22	25	30	34	38	16
Greece	28	16	32	38	44	51	60	71	17
Ireland	69	8	75	80	87	96	100	110	8
Eastern Europe	80	18	94	110	130	150	175	205	17

Exhibit R-13

Turnkey Systems Country Comparisons, Europe

Country	US$ Million								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Total (rounded)	11,000	5	11,500	12,500	13,000	14,500	15,500	16,500	7
France	1,800	4	1,850	1,950	2,050	2,200	2,400	2,600	7
Germany	3,700	5	3,900	4,100	4,500	4,800	5,200	5,600	8
United Kingdom	1,900	5	2,000	2,100	2,250	2,400	2,550	2,750	7
Italy	610	3	630	670	710	770	830	880	7
Sweden	295	6	310	330	360	400	440	470	9
Denmark	300	6	320	340	360	380	390	400	5
Norway	210	4	220	225	235	245	260	275	5
Finland	165	5	175	180	190	200	210	225	5
Netherlands	520	3	530	550	570	610	670	730	6
Belgium	275	7	295	310	330	360	380	400	6
Switzerland	420	7	450	500	540	600	670	730	10
Austria	300	9	330	370	400	430	470	490	8
Spain	380	5	400	430	460	500	550	590	8
Portugal	31	15	36	41	48	57	66	76	16
Greece	51	9	56	62	70	79	90	100	12
Ireland	120	6	125	140	155	170	185	195	9
Eastern Europe	22	23	27	36	45	58	73	92	28

Exhibit R-14

Equipment Services Country Comparisons, Europe

Country	US$ Million								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Total (rounded)	19,500	-1	19,000	19,000	19,500	19,000	19,000	19,000	0
France	3,500	-3	3,400	3,400	3,400	3,300	3,300	3,300	-1
Germany	4,100	-3	4,000	3,900	3,800	3,800	3,800	3,700	-1
United Kingdom	3,500	-1	3,500	3,500	3,500	3,400	3,300	3,300	-1
Italy	2,050	2	2,100	2,100	2,100	2,100	2,100	2,100	0
Sweden	680	3	700	730	760	780	810	830	4
Denmark	440	2	450	450	460	470	460	450	0
Norway	390	-2	380	400	400	400	410	410	1
Finland	280	0	280	285	285	285	290	290	1
Netherlands	1,250	0	1,250	1,250	1,300	1,300	1,300	1,300	1
Belgium	550	0	550	550	550	540	530	520	-1
Switzerland	960	2	980	1,000	1,000	1,050	1,050	1,050	2
Austria	380	1	380	380	390	380	380	370	-1
Spain	790	2	810	830	840	850	850	850	1
Portugal	96	4	100	105	110	115	115	120	4
Greece	37	-6	35	33	32	31	30	29	-3
Ireland	100	-1	99	97	96	94	93	89	-2
Eastern Europe	230	7	245	270	295	330	370	420	11

Exhibit R-15

Information Services Country Comparisons, Europe

Country	US$ Million								
	1993	93-94 (%)	1994	1995	1996	1997	1998	1999	94-99 CAGR(%)
Total (rounded)	91,000	4	95,000	100,000	105,000	110,000	120,000	130,000	6
France	21,000	2	21,500	22,500	23,000	24,000	25,500	27,000	5
Germany	18,500	5	19,500	20,500	22,000	23,500	25,000	27,000	7
United Kingdom	15,000	7	16,500	17,500	18,500	19,500	21,000	22,500	7
Italy	8,800	3	9,100	9,400	9,900	10,500	11,000	12,000	6
Sweden	3,400	5	3,500	3,800	4,100	4,400	4,800	5,200	8
Denmark	2,200	7	2,350	2,500	2,500	2,650	2,800	2,950	5
Norway	1,900	2	1,950	2,000	2,100	2,200	2,300	2,400	4
Finland	1,300	1	1,350	1,400	1,450	1,500	1,600	1,750	5
Netherlands	5,500	5	5,800	6,000	6,300	6,700	7,200	7,800	6
Belgium	2,950	4	3,000	3,200	3,400	3,600	3,800	4,000	6
Switzerland	3,700	5	3,800	4,100	4,400	4,700	5,100	5,500	7
Austria	1,650	6	1,750	1,850	1,950	2,050	2,200	2,250	5
Spain	2,900	6	3,100	3,300	3,500	3,800	4,100	4,500	8
Portugal	255	10	280	310	350	390	430	470	11
Greece	295	7	310	340	380	420	460	510	10
Ireland	590	4	610	640	680	730	770	820	6
Eastern Europe	820	15	940	1,100	1,250	1,500	1,800	2,100	17

E

Leading Vendors ($ Millions)

Exhibit R-16

Software and Services Leading Vendors
Europe, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue ($ Millions)	Market Share (%)
1	IBM	U.S.	7,370	10.3
2	Digital	U.S.	1,940	2.7
3	Siemens-Nixdorf	Germany	1,760	2.5
4	Cap Gemini Sogeti	France	1,710	2.4
5	Reuters	U.K.	1,430	2.0
6	Microsoft	U.S.	1,380	1.9
7	ICL (Fujitsu)	U.K.	1,020	1.4
8	Andersen Consulting	U.S.	950	1.3
9	EDS	U.S.	860	1.2
10	Finsiel	Italy	855	1.2
11	Computer Associates	U.S.	820	1.1
12	Olivetti	Italy	800	1.1
13	Bull	France	745	1.0
14	Sema Group	France	735	1.0
15	Oracle	U.S.	710	1.0
16	AT&T	U.S.	665	0.9
17	Unisys	U.S.	570	0.8
18	Datev	Germany	540	0.8
19	HP	U.S.	540	0.8
20	SAP	Germany	460	0.6
21	GSI	France	425	0.6
22	Sligos	France	425	0.6
23	Novell	U.S.	415	0.6
24	Debis Systemhaus	Germany	395	0.6
25	ICG	France	365	0.5
26	Dun & Bradstreet	U.S.	350	0.5
27	Raet	Netherlands	330	0.5
28	Lotus	U.S.	325	0.5
29	Axime	France	320	0.4
30	Syseca	France	310	0.4
	Total Listed		29,520	41.2
	Total Market		71,600	100.0

Exhibit R-17

Professional Services Leading Vendors
Europe, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue ($ Millions)	Market Share (%)
1	IBM	U.S.	1,080	5.3
2	Cap Gemini Sogeti	France	895	4.4
3	Finsiel	Italy	595	2.9
4	Digital	U.S.	515	2.5
5	Sema Group	France	395	1.9
6	Andersen Consulting	U.S.	385	1.9
7	ICL (Fujitsu)	U.K.	365	1.8
8	Siemens-Nixdorf	Germany	335	1.6
9	Oracle	U.S.	330	1.6
10	Olivetti	Italy	285	1.4
	Total Listed		5,180	25.3
	Total Market		20,500	100.0

Exhibit R-18

Systems Integration Leading Vendors
Europe, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue ($ Millions)	Market Share (%)
1	IBM	U.S.	800	19.5
2	Andersen Consulting	U.S.	430	10.5
3	Cap Gemini Sogeti	France	335	8.2
4	Digital	U.S.	250	6.1
5=	ICL (Fujitsu)	U.K.	220	5.4
5=	Bull	France	220	5.4
5=	EDS	U.S.	220	5.4
8	Sema Group	France	185	4.5
9	Siemens-Nixdorf	Germany	155	3.8
10	Logica	U.K.	120	2.9
	Total Listed		2,935	71.6
	Total Market		4,100	100.0

Exhibit R-19

Systems Operations Leading Vendors
Europe, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue ($ Millions)	Market Share (%)
1	EDS	U.S.	400	15.7
2	Cap Gemini Sogeti	France	270	10.6
3	Sema Group	France	210	8.2
4	IBM	U.S.	150	5.9
5	Digital	U.S.	140	5.5
6	ICL (Fujitsu)	U.K.	125	4.9
7	CSC	U.S.	95	3.7
8=	AT&T	U.S.	90	3.5
8=	GSI	France	90	3.5
10	Finsiel	Italy	85	3.3
	Total Listed		1,695	66.5
	Total Market		2,550	100.0

Exhibit R-20

Processing Services Leading Vendors Europe, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue ($ Millions)	Market Share (%)
1	Datev	Germany	380	5.2
2	Sligos	France	175	2.4
3	Axime	France	155	2.1
4	Telekurs	Switzerland	140	1.9
5	IBM	U.S.	110	1.5
6	Raet	Netherlands	100	1.4
7	Fiducia	Germany	85	1.2
8	GSI	France	85	1.2
9	Debis Systemhaus	Germany	80	1.1
10	EDS	U.S.	80	1.1
	Total Listed		1,390	19.0
	Total Market		7,300	100.0

Exhibit R-21

Network Applications Leading Vendors Europe, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue ($ Millions)	Market Share (%)
1	IBM	U.S.	200	11.0
2	Infonet	Belgium	180	9.9
3	GEIS	U.S.	110	6.1
4	AT&T	U.S.	85	4.7
5	BT	U.K.	80	4.4
6	GSI	France	50	2.8
7	Digital	U.S.	45	2.5
8	FTLIS [Telecom]	France	45	2.5
9	Deutsche Bundespost Teleko	Germany	40	2.2
10	Sligos	France	40	2.2
	Total Listed		875	48.3
	Total Market		1,800	100.0

Exhibit R-22

Electronic Information Services Leading Vendors Europe, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue ($ Millions)	Market Share (%)
1	Reuters	U.K.	1,095	35.3
2	Telerate	U.S.	260	8.4
3	Dun & Bradstreet	U.S.	180	5.8
4	Telekurs	Switzerland	115	3.7
5	Citicorp	U.S.	95	3.1
6	DAFSA	France	75	2.4
7	Extel	U.K.	70	2.3
8	Mead	U.S.	55	1.8
9	ADP Financial	U.S.	50	1.6
10	FTLIS [Telecom]	France	45	1.5
	Total Listed		2,040	65.8
	Total Market		3,100	100.0

Exhibit R-23

Systems Software Products Leading Vendors Europe, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue ($ Millions)	Market Share (%)
1	IBM	U.S.	4,190	35.5
2	Microsoft	U.S.	800	6.8
3	Digital	U.S.	660	5.6
4	Siemens-Nixdorf	Germany	520	4.4
5	Novell	U.S.	415	3.5
6	Computer Associates	U.S.	385	3.3
7	Oracle	U.S.	345	2.9
8	Bull	France	320	2.7
9	HP	U.S.	255	2.2
10	Software AG	Germany	245	2.1
	Total Listed		8,135	68.9
	Total Market		11,800	100.0

Exhibit R-24

Application Software Products Leading Vendors Europe, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue ($ Millions)	Market Share (%)
1	IBM	U.S.	590	6.3
2	Microsoft	U.S.	555	6.0
3	Lotus	U.S.	295	3.2
4	Computer Associates	U.S.	285	3.1
5	SAP	Germany	285	3.1
6	Wordperfect	U.S.	240	2.6
7	Siemens-Nixdorf	Germany	185	2.0
8	ICG	France	150	1.6
9	Olivetti	Italy	135	1.5
10	ICL (Fujitsu)	U.K.	125	1.3
	Total Listed		2,845	30.6
	Total Market		9,300	100.0

Exhibit R-25

Turnkey Systems Leading Vendors Europe, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue ($ Millions)	Market Share (%)
1	Siemens-Nixdorf	Germany	545	4.9
2	Digital	U.S.	255	2.3
3	IBM	U.S.	250	2.3
4	Intergraph	U.S.	235	2.1
5	Olivetti	Italy	145	1.3
6	Reuters	U.K.	140	1.3
7	McDonnell Douglas	U.S.	105	0.9
8	Sligos	France	85	0.8
9	AT&T	U.S.	75	0.7
10	Cap Gemini Sogeti	France	75	0.7
	Total Listed		1,910	17.2
	Total Market		11,100	100.0

Exhibit R-26

Equipment Maintenance Leading Vendors
Europe, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue ($ Millions)	Market Share (%)
1	IBM	U.S.	2,500	19.7
2	Siemens-Nixdorf	Germany	1,300	10.2
3	Digital	U.S.	1,050	8.3
4	Olivetti	Italy	705	5.6
5	Bull	France	695	5.5
6	ICL (Fujitsu)	U.K.	640	5.0
7	HP	U.S.	560	4.4
8	Unisys	U.S.	525	4.1
9	AT&T	U.S.	515	4.1
10	ICG	France	300	2.4
	Total Listed		8,790	69.2
	Total Market		12,700	100.0

Exhibit R-27

Environmental Services Leading Vendors
Europe, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue ($ Millions)	Market Share (%)
1	IBM	U.S.	400	6.0
2	Digital	U.S.	275	4.1
3	Siemens-Nixdorf	Germany	85	1.3
4	Unisys	U.S.	85	1.3
5	HP	U.S.	70	1.0
6	Olivetti	Italy	70	1.0
7	Bull	France	50	0.7
8	Getronics	Netherlands	50	0.7
9	ICL (Fujitsu)	U.K.	40	0.6
10	AT&T	U.S.	35	0.5
	Total Listed		1,160	17.3
	Total Market		6,700	100.0

Exhibit R-28

Information Services Leading Vendors
Europe, 1993

Rank	Vendor	Country of Origin	Estimated Sector Revenue ($ Millions)	Market Share (%)
21	Getronics	Netherlands	460	0.5
22	SAP	Germany	460	0.5
23	Sligos	France	440	0.5
24	GSI	France	420	0.5
25	Novell	U.S.	420	0.5
26	Debis Systemhaus	Germany	400	0.4
27	Intergraph	U.S.	370	0.4
28	Dun & Bradstreet	U.S.	350	0.4
29	Raet	Netherlands	350	0.4
30	ComputerVision	U.S.	330	0.4
	Total Listed		4,000	4.4
	Total Market		91,000	100.0

S

Economic Assumptions

There follow some notes on the methodology INPUT uses in making forecasts and judging how reasonable they are.

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 data-base of information relating to the information services industry. This covers for example INPUT's customer services programme data: results of INPUT's research into the hardware maintenance market which includes its diversification into the software and services market.

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 and if necessary revisited. For example we satisfactorily tested the question: Will predicted user budgets for information systems support the predicted growth rates in software and services?

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 1994 studies.

A
European Exchange Rates

The following table, Exhibit S-1, shows the standard exchange rates used throughout the 1994 programme to consolidate country market data for overall European forecasts and vendor market shares.

Exhibit S-1

US Dollar and ECU Exchange Rates 1994

Country	Currency	US Dollar	ECU
Europe	$	1	1.266
France	FF	5.90	6.59
Germany	DM	1.74	1.94
United Kingdom	PS	0.676	0.753
Italy	Lira (K)	1.71	1.90
Sweden	Sek	8.34	9.32
Denmark	DK	6.79	7.56
Norway	NK	7.52	8.39
Finland	FM	5.79	6.35
Netherlands	Dfl	1.94	2.17
Belgium	BF	36.15	40.41
Switzerland	SF	1.39	1.65
Austria	Sch	12.19	13.82
Spain	Ptas	142.92	159.30
Ireland	IP	0.71	0.791
Portugal	Esc	176.7	197.10
Greece	Dra	249.35	280.00

Source: Financial Times January 1994

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 a calendar year, unless specified otherwise.

Exhibit S-2

Inflation Assumptions 1993 and 1994

Country	Assumption 1993-1998	Assumption 1994-1999	Change
France	2.3	1.9	-0.4
Germany	4.0	2.9	-1.1
United Kingdom	2.0	3.0	1.0
Italy	3.8	3.2	-0.6
Sweden	2.3	2.0	-0.3
Denmark	1.6	2.6	1.0
Norway	2.2	1.5	-0.7
Finland	0.2	2.0	1.8
Netherlands	1.9	2.0	0.1
Belgium	3.0	2.2	-0.8
Switzerland	2.3	1.7	-0.6
Austria	3.8	2.8	-1.0
Spain	4.5	3.4	-1.1
Portugal	5.8	4.8	-1.0
Greece	13.2	11.2	-2.0
Ireland	2.7	3.3	0.6
Eastern Europe	-	-	-
European Average	3.1	2.8	-0.3

Source: OECD December 1993

The economic growth measurements and predictions from the OECD, referred to in the text for each country, are listed in Exhibit S-3.

Exhibit S-3

GDP Growth Rate Assumptions;

Country	1992 (%)	1993 (%)	1994 (%) Forecast	1995 (%) Forecast
Austria	1.6	-0.3	1.8	2.7
Belgium	1.4	-1.3	1.5	2.6
Denmark	1.2	1.2	4.0	3.5
Finland	-3.8	-2.6	1.9	4.7
France	1.2	-0.9	1.8	2.9
Germany	2.1	-1.3	1.8	2.6
Greece	0.9	-0.1	1.0	1.6
Ireland	4.9	2.3	4.1	4.5
Italy	0.7	-0.7	1.5	2.6
Netherlands	1.4	0.2	1.4	2.8
Norway	3.4	2.2	4.3	2.9
Portugal	1.1	-0.5	1.2	2.3
Spain	0.8	-1.0	1.2	2.7
Sweden	-1.9	-2.1	2.7	2.9
Switzerland	-0.1	-0.6	1.5	2.5
United Kingdom	-0.6	1.9	2.8	3.2
EC	1.0	-0.4	1.9	2.8

Source: OECD 1994

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T

Forecast Reconciliation Summary

No changes were made in INPUT's *Definition of Terms* between 1993 and 1994.

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 within the country specific Appendices A through Q, and for Europe in Appendix R.

Forecast reconciliations are in local currency for each country market, and are the 5th exhibit in each specific country appendix.

For Europe as a whole the forecast reconciliation is contained in Exhibit R-4 and is 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 1993.

In overall terms these changes reduce the European market, measured in US dollars, by approximately thirteen percent.

The impact on some country markets is considerable, notably for Sweden (33.6%), Portugal (27.8%) and Italy (25.7%).

Exhibit T-1

Impact of US Dollar Exchange Rate Changes, 1993-1994

Country	Currency	Percentage decrease in market measured in US dollars from exchange rate changes
France	FF	12.2
Germany	DM	12.2
United Kingdom	PS	6.6
Italy	Lira (K)	25.7
Sweden	SEK	33.6
Denmark	DK	13.5
Norway	NK	17.3
Finland	FM	16.7
Netherlands	Dfl	11.5
Belgium	BF	13.3
Switzerland	SF	—
Austria	Sch	11.9
Spain	Ptas	29.0
Ireland	IP	20.5
Portugal	Esc	27.8
Greece	Dra	23.2

Source: Financial Times January 1994

U

Analysis of Vendor Research Sample

Interviews are conducted annually with a wide cross-section of computer software and service vendors, with the specific objective to obtain quantitative data on their financial performance and the sources of their revenues. Exhibit U-1 shows an analysis of the research sample by country.

Exhibit U-1

Vendor Research Sample

Country Market	Number of Vendors Analysed
France	105
Germany	110
United Kingdom	108
Italy	85
Nordic Region	110
Benelux	120
Rest of Europe	150

Source: INPUT

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V

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. It is used for all U.S. programs. The structure defined in Exhibit V-1 is also used in Europe and for the worldwide forecast.

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*)

1 • 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 or markets 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 re-engineering, not just companies but the value chain or *Trading Communities* in which these companies operate. This re-engineering 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 noncommercial — 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.

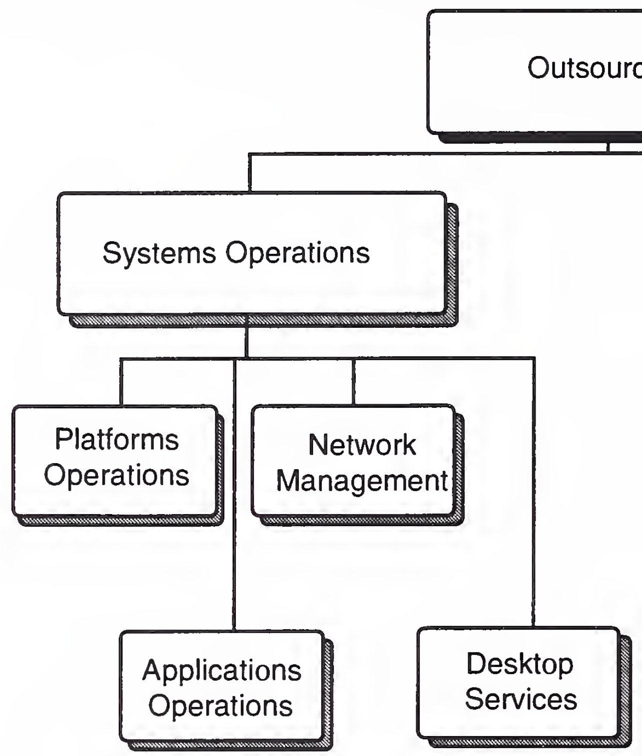
- *Platform Systems Operations* — The vendor is responsible for managing and operating the client's computer systems.

- *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.

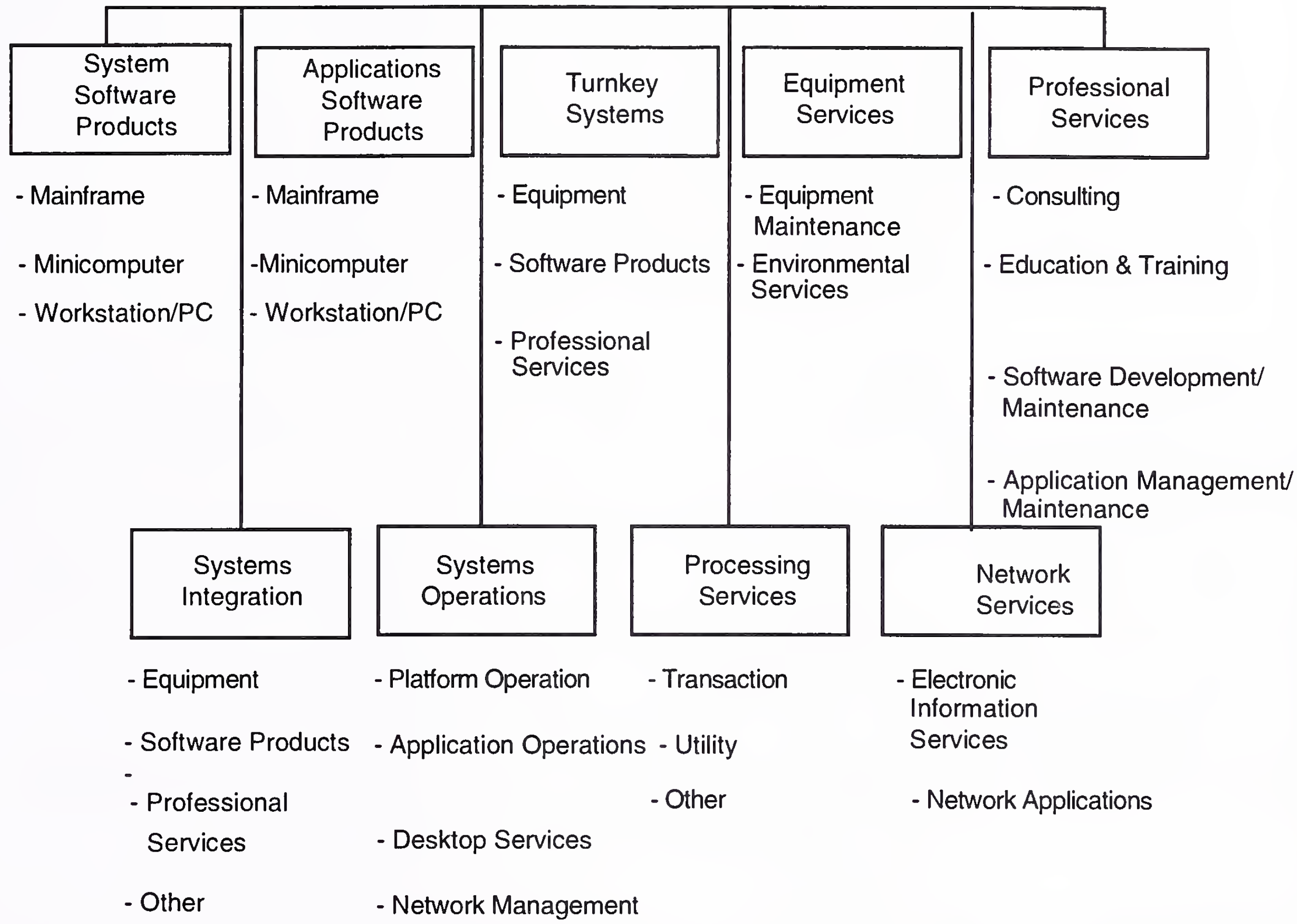
- *Systems Control Products* — Software programs that manage computer system resources and control the execution of programs. These products include operating systems, emulators, network control, library control, windowing, access control and spoolers.

- *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.

Exhibit V-2

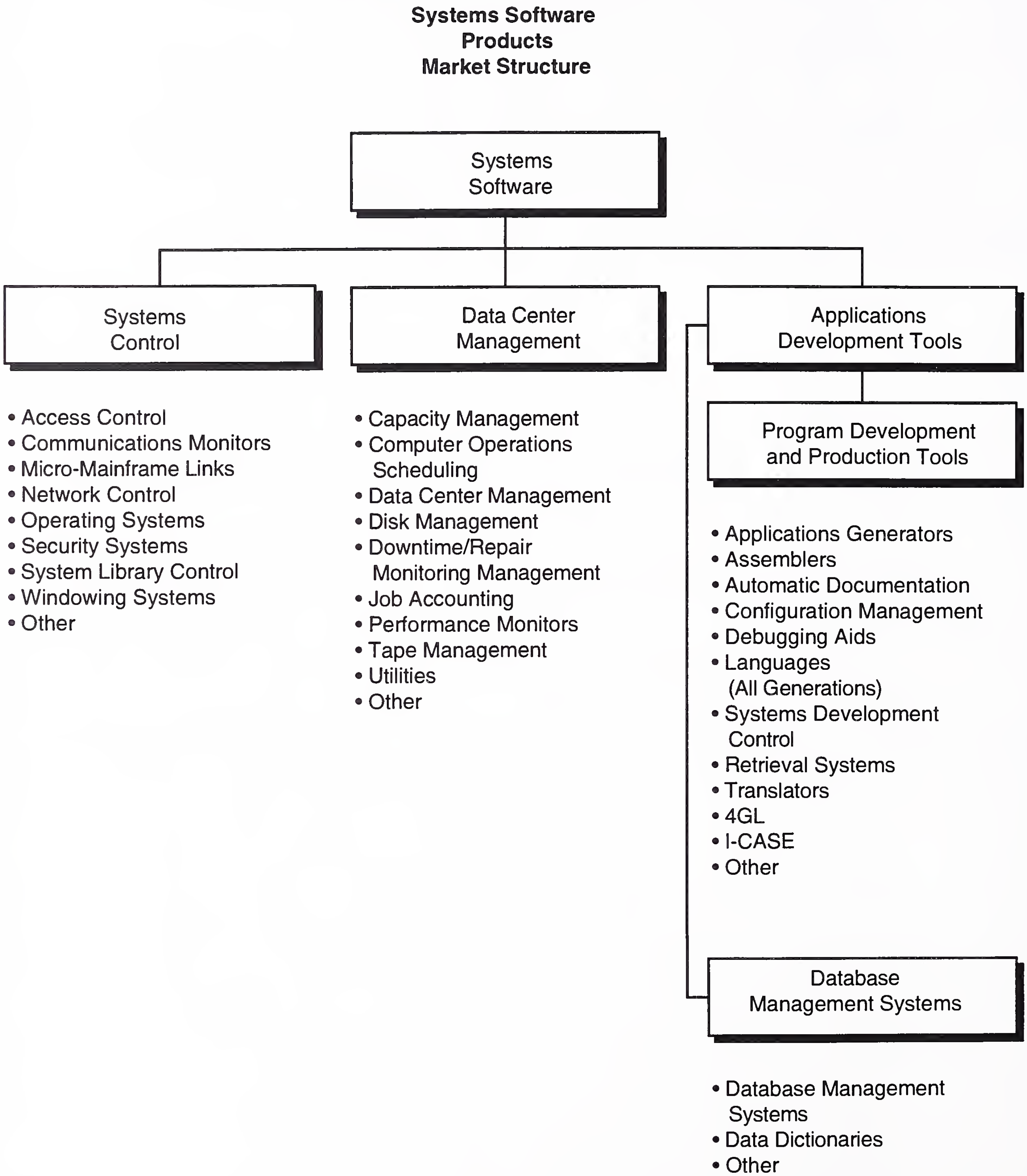
Information Services Industry Structure



Source: INPUT

Exhibit V-3

Systems Software Products Market Structure



Source: INPUT

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

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.

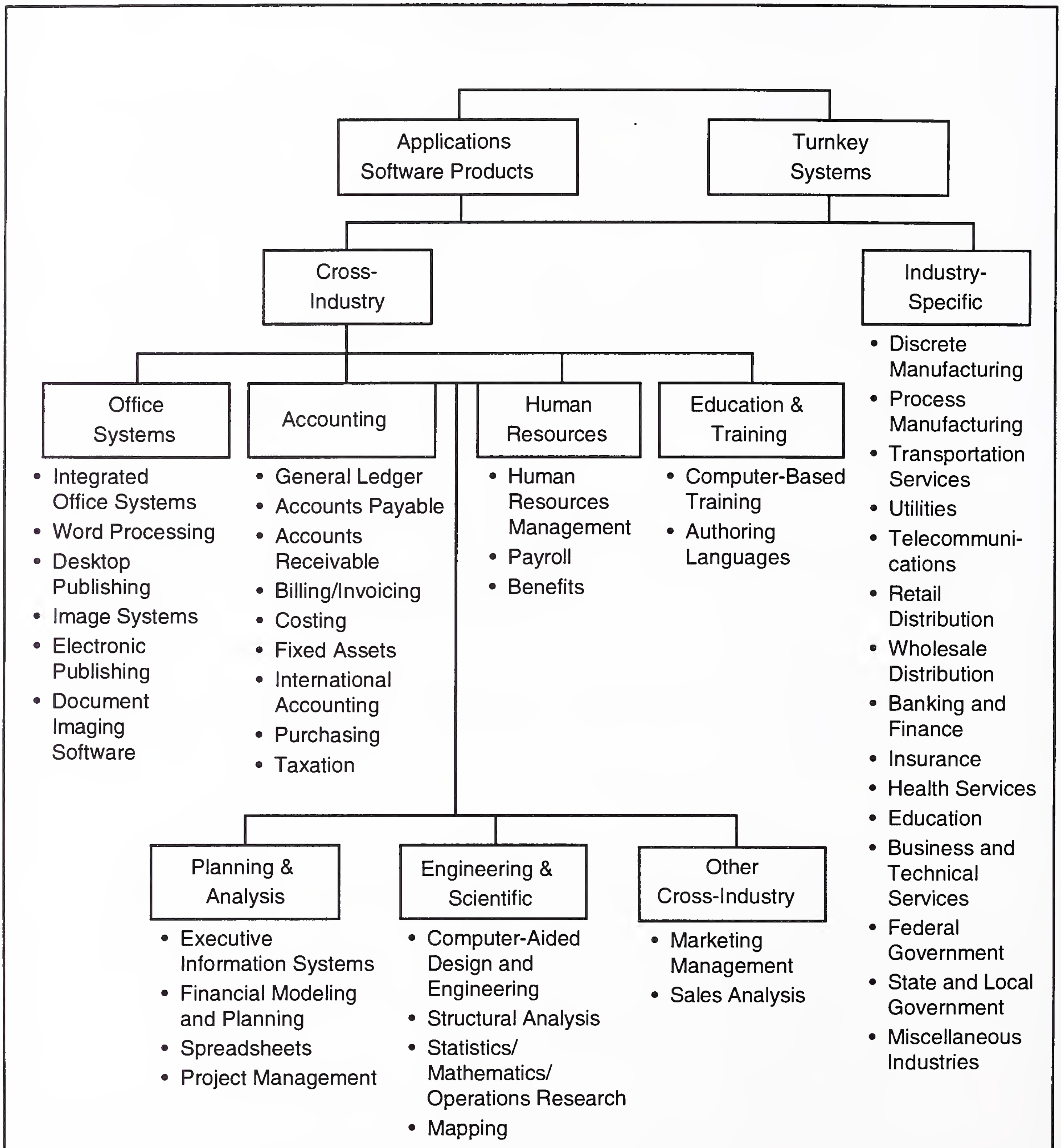
2. Turnkey Systems

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.

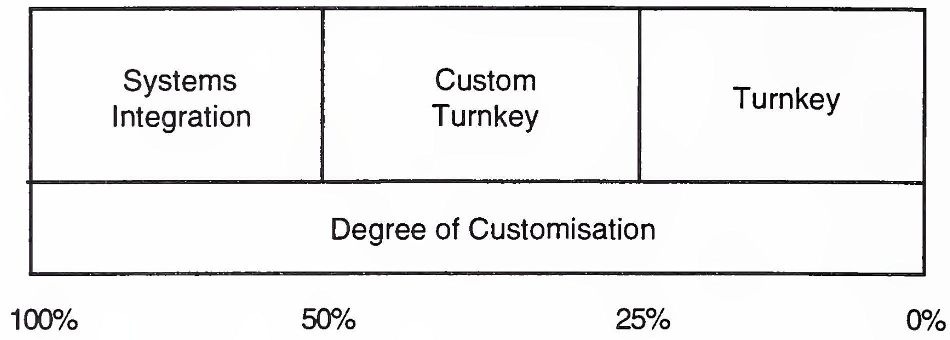
Turnkey systems have three components:

- 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

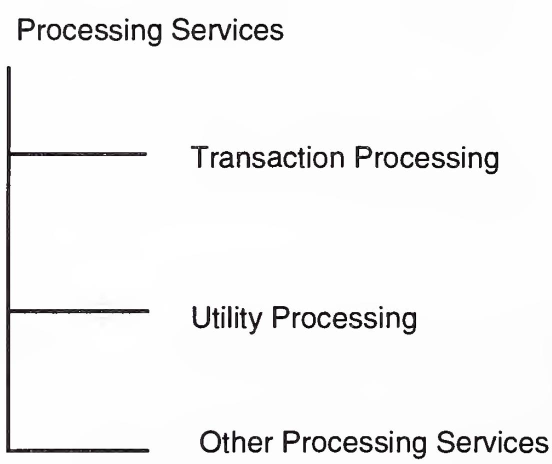
The Customisation Spectrum



Source: INPUT

Exhibit A-6

Processing Services Market 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 programs. Previously called Facilities Management, this delivery mode was created by taking the Systems Operations submode out of both Processing Services and Professional Services. For 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 center 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 re-engineering, 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.

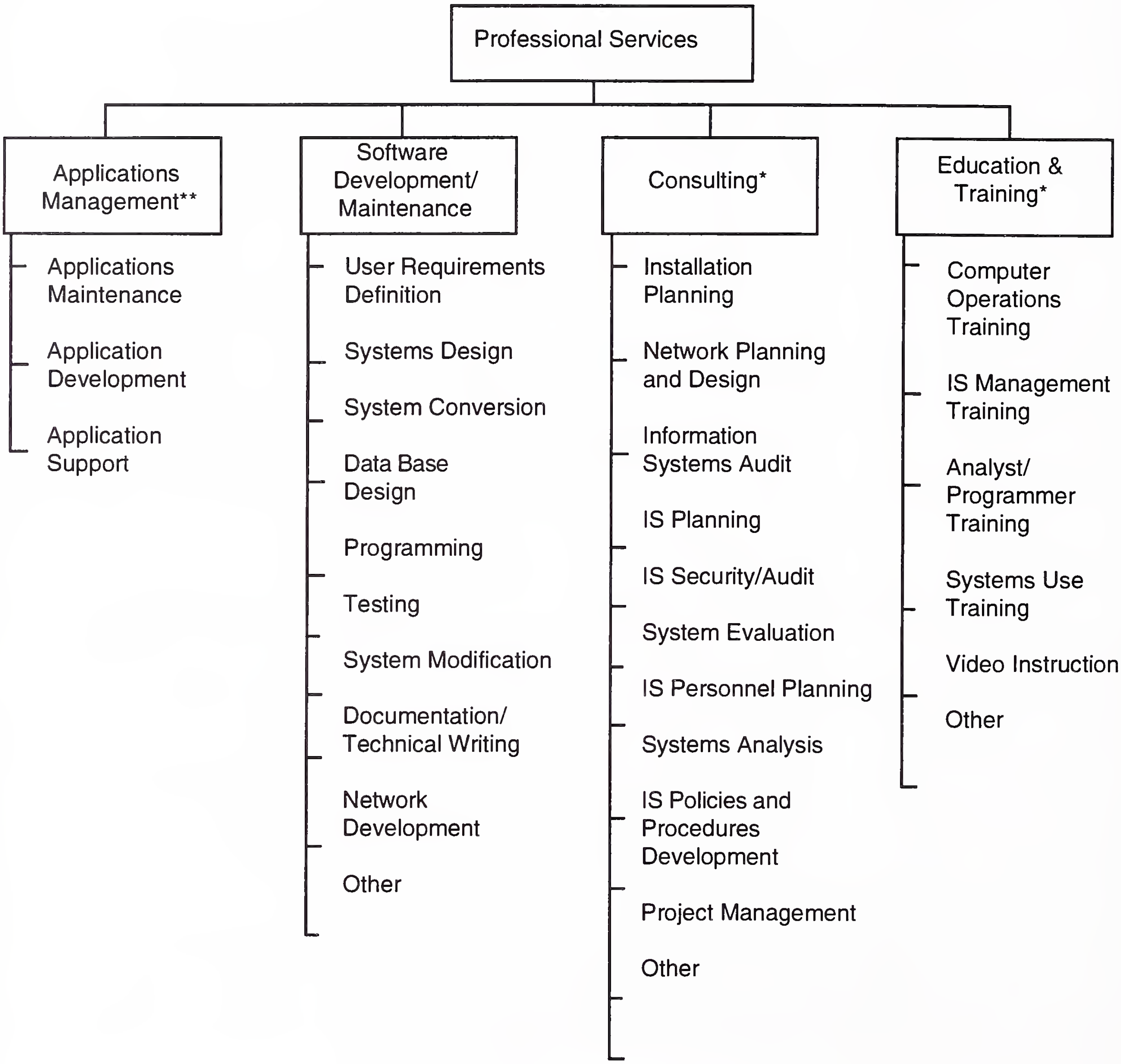
- *Applications Management*: The vendor has full responsibility for maintaining and upgrading some or all of the application systems that a client uses to support business operations and may develop and implement new application systems for the client.

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

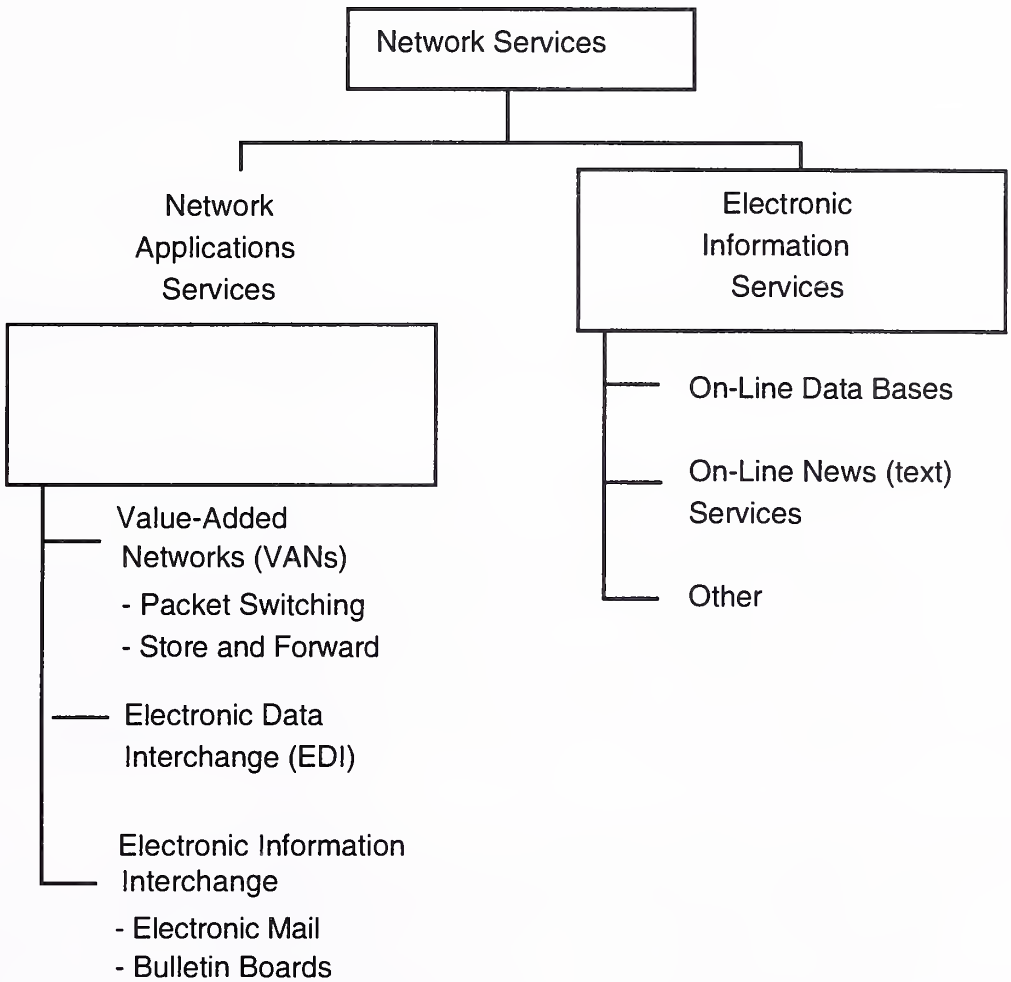
Source: INPUT

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, 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 center 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 nonmetalic 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	U.S. Postal Service
	44xx	Water transportation
	45xx	Air transportation (including airline reservation services in 4512)
	46xx	Pipelines, except natural gas
	47xx	Transportation services (including 472x, arrangement of passenger transportation)

Exhibit V-10 (Cont'd)

Industry Sector Definitions (Cont'd)

Industry Sector	SIC Code	Description
Telecommunications	48xx	Communications
Utilities	49xx	Electric, gas and sanitary services
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 - nondurable goods
Banking and Finance	60xx 61xx 62xx 67xx	Depository institutions Nondepository 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

Exhibit V-10 (Cont'd)

Industry Sector Definitions (Cont'd)

Industry Sector	SIC Code	Description
Business Services	65xx	Real estate
	70xx	Hotels, rooming houses, camps, and other lodging places
	72xx	Personal services
	73xx	Business services (except hotel reservation services in 7389)
	7389x	Hotel reservation services
	75xx	Automotive repair, services and parking
	76xx	Miscellaneous repair services
	78xx	Motion pictures
	79xx	Amusement and recreation services
	81xx	Legal services
	83xx	Social services
	84xx	Museums, art galleries, and botanical/zoological gardens
	86xx	Membership organizations
	87xx	Engineering, accounting, research, management, and related services
	89xx	Miscellaneous services
Federal Government	9xxx	
State and Local Government	9xxx	
Miscellaneous Industries	01xx	Agricultural production - crops
	02xx	Agricultural production - livestock/animals
	07xx	Agricultural services
	08xx	Forestry
	09xx	Fishing, hunting and trapping
	15xx	Building construction - general contractors, operative builders
	16xx	Heavy construction - contractors
	17xx	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.

- Sales and marketing includes:
  - 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 market in 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	Market Sectors: Cross-Industry Sectors	Market Sectors: General
Processing Services	Transaction	X	X	
	Utility			X
	Other			X
Turnkey Systems		X	X	
Applications Software Products		X	X	
Systems Operations	Platform	X		
	Applications	X		
Systems Integration		X		
Professional Services		X		
Network Services	Network Applications	X		
	Electronic Information Services	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 markup 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