THE IMPACT OF DOWNSIZING ON CUSTOMER SERVICES ORGANISATIONS

INPUT

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EUROPE 1992

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Abstract

Downsizing is affecting the Computer Services Industry at all levels and in all sectors. Equipment suppliers are expected to provide capabilities equivalent to their traditional central hosts by using multiple small systems organised in co-operative networks, field service organisations are required to maintain multi-site, multi-vendor networks (with equivalent or superior grades of service contract to those for the systems they replace) on progressively lower budgets; software producers are expected to provide open systems products and applications at prices which match the levels set by the downward pressures of new technology.

INPUT's report on the Impact of Downsizing on Customer Services Organisations examines the strategic moves by vendors to supplement their traditional maintenance and support services with new services which address a number of new areas. In Europe a major new service sector is opening up to provide services to the desktop end user. Both systems and equipment vendors, and the independent maintainers are developing services for this market-place. This report describes those efforts and the strategies behind them. The opportunity is sized and forecast for five years ahead. The strengths and weaknesses of offerings from selected vendors researched are also discussed. Vendor recommendations are made to enable clients to plan their market entry programmes.

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I
Introduction

This report has been produced by INPUT as part of its 1992 Customer Services Programme in Europe.

A
Objectives and Scope

In this report INPUT examines the need for Customer Services vendors in Europe to develop new, non-traditional services to counter the impact of downsizing on their traditional markets. One of the important emerging sectors which is finding favour with a number of different types of vendor is the market for desktop services. This report describes the opportunities in the desktop sector from the perspective of customer services organisations in:

- Equipment suppliers
- Independent maintenance organisations (IMOs).

Downsizing can be considered from two standpoints:

- The technologies of computing and telecommunications are driving down the unit costs of computing, data storage and information transmission by as much as 30-40% per annum. This puts pressures on IS directors and their managements to replace their older centralised machines by the newest PC-LAN based client-server systems. This is technological downsizing.

- The need to contain business costs in the increasingly competitive environment of the 1990s puts pressures on general management and their financial directors to cut IS budgets in traditional areas and to examine the possibilities of outsourcing all non-core business areas like IT. This is the aspect of downsizing which is particularly fierce in its impact on the traditional hardware maintenance sector, which, at over 55% of 1991 customer services revenues, remains the single largest revenue component of the business.

The emerging sector for desktop services is proposed by INPUT as the short- to medium-term answer to these major challenges.

The scope of our report covers the following countries and groups of countries in Europe:

- Germany
- France
- UK
- Italy
- Netherlands
- Belgium
- Nordic region/including Denmark, Finland, Norway and Sweden)
- The Rest of Europe (including Austria, Greece, Ireland, Portugal, Spain, Switzerland and Eastern Europe).

B

Methodology

The report has been based upon face-to-face and telephone interviews with equipment suppliers and independent maintainers (16 interviews), and telephone interviews with desktop users (4 interviews) in Europe. In addition it has been compiled in parallel with another INPUT report which examined the activities of professional services vendors and PC dealers and distributors in this same field. This report is called *Outsourcing Desktop Services Europe, 1992-1997* and appears in our European Outsourcing programme.

INPUT's database of European computing services markets and secondary research from trade associations and publications were both used as traditional sources of information. Chapter III draws on U.S. user and vendor research into the development of new services.

C

Definitions

INPUT has reworked its formal definitions covering all aspects of the information systems and services markets for its European and US programmes in 1992. The full definition for the customer services market includes:

- Equipment Maintenance
- Environmental Services
- System Software Support (part of INPUT's System Software Products sector)
- Education and Training (part of the Professional Services sector).

This is the traditional customer services market. Enhanced or non-traditional market sectors are now emerging but these markets will entail competition with other types of vendors from different backgrounds - both within and outside the IT industry.

The full description of INPUT's new set of definitions is given in Appendix A.

D

Report Structure

The remaining chapters of this report are organised as follows:

- Chapter II is an Executive Overview which highlights the major findings of the report.
- Chapter III outlines the areas in which new services are appearing provided by customer services organisations in parallel with their traditional offerings.
- Chapter IV outlines the component elements of the desktop services business.
- Chapter V describes the user requirements for desktop services and examines the current vendor selection process.
- Chapter VI profiles six vendors with various types of background describing how they have put together desktop service portfolios or are in the process of doing so.
- Chapter VII outlines the market opportunity for desktop services, giving a current market sizing and five-year forecasts. It also examines strategies and success factors.
- Appendix A contains INPUT's new full set of definitions.
- Appendix B contains the Economic Assumptions and Exchange Rates used in INPUT's 1992 forecasts.
- Appendix C is the Vendor Questionnaire.
- Appendix D is the User Questionnaire.

II
Executive Overview

A
Users Squeeze Traditional Services

Customer services organisations have grown into significant revenue earners for their parent companies. From being at the start of the 1980s large cost centres dedicated to the diagnosis and repair of hardware faults, they have developed in a little over a decade into sophisticated operations managing a whole range of tasks and using some of the most advanced methods and equipment available in any industry today. The director of a customer services organisation in the early 1990s must be a combination of:

- Sophisticated technician
- Consummate salesman
- Skilled manager of human and other resources.

However, even by deploying this wide range of attributes, this executive will not be able to avoid the clear challenges of the 1990s:

- How to grow the operation in the face of downwards pressures on its equipment maintenance revenues - still the major percentage of the overall revenue.

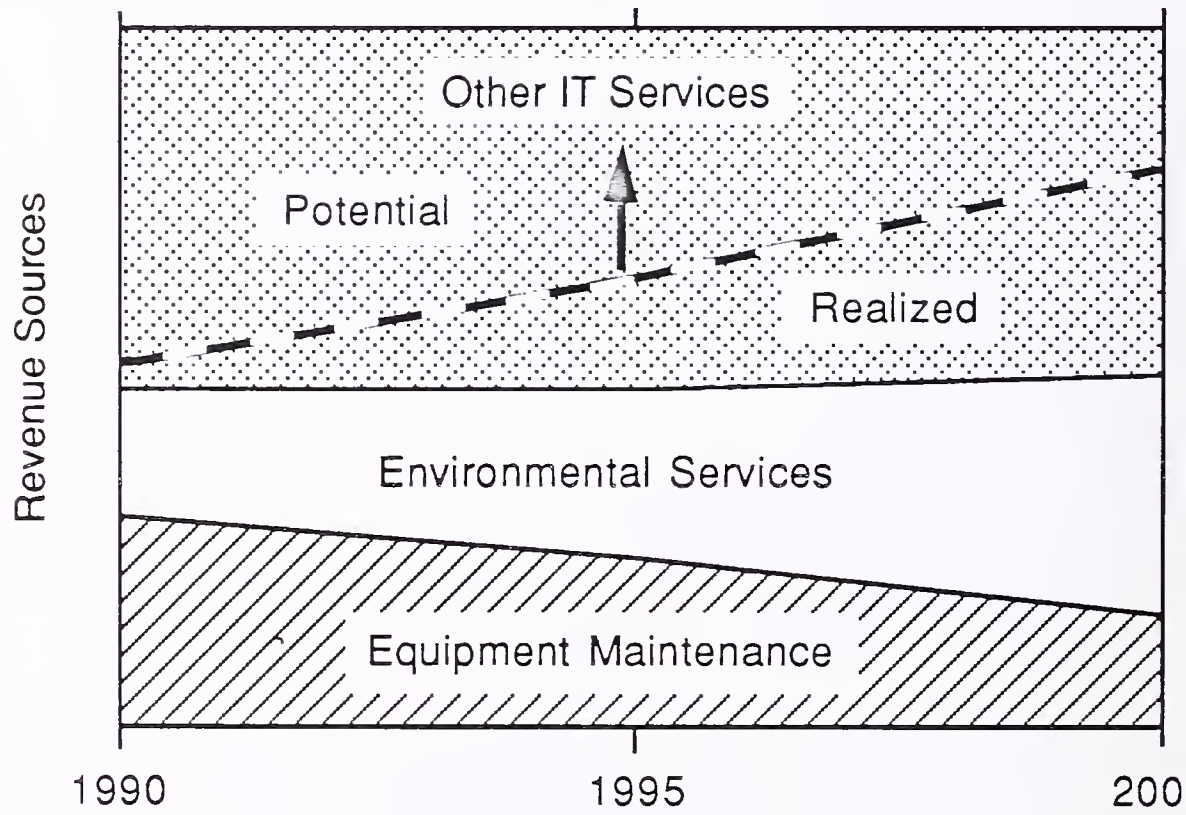
- How to maintain the quality of traditional maintenance and other support activities while at the same time developing the extended services required for the survival of the operation and that of the parent company.

INPUT summarises this strategic dilemma for the management of any customer services operation in the conceptual diagram embodied in Exhibit II-1:

- Traditional services consisting of equipment maintenance and environmental services of all sorts (from operating system support through computer room furnishing to network installation and cabling) will at best only maintain revenues on a plateau in terms of real growth.

- New and extended services will be required to break-out of the current strait-jacket represented by the pressures inherent in the market situation. Development of new services will inevitably bring customer services into contention with other competitors besides the independent maintainers and software product companies which have been their traditional rivals.

EXHIBIT II-1



B
Users Demand Desktop Services

In order to remain competitive in the current industry climate customer services directors must confront this challenge by:

- Putting in place a programme to develop new services on a continual and regular basis, and to monitor progress as volatile market conditions dictate.

- Understanding the windows of opportunity which will open and shut with frightening rapidity as different types of vendor from different backgrounds compete to establish market entry to new service sectors in these tight timeframes.

This report, INPUT's report on the impact of downsizing on customer services organisations, fulfils two objectives:

- It demonstrates to what extent customer services vendors have understood the impact of these market pressures and how users are responding to the new services which are on offer - a measure of the current rate of change.

- It selects one, new opportunity window which is currently opening - the emerging sector for desktop services - and shows how this sector is being approached by customer services organisations in Europe.

Downsizing is defined as:

- The continual increase year by year in the price/performance ratio of processors and of data transmission services which creates an undercurrent of continually increasing value for money in the expectations of users - whether purchasing equipment, software or services.

Under the economy pressures of an increasingly competitive global economy, companies in all industries are becoming more cost-conscious and inspecting their IT budgets more keenly.

Downsizing as a concept encapsulates these market forces by insinuating the assumption that tomorrow's IT requirements will be fulfilled on smaller and cheaper machines with smaller overall budgets. As a panacea for all of today's IT problems, this concept evokes fierce debate from proponents and opponents alike. INPUT's report Putting Downsizing into Perspective, published in January 1992, brings a strong sense of sanity into this debate.

It is clear that downsizing in the sense of "power" moving to the desktop, is already well advanced in Europe. INPUT believes that under the pressure of the Open Systems market initiative organised through the European Commission and supported by the European national governments, Europe is further advanced in downsizing than is the USA, where the power of the

large corporations (the Fortune 500) tends to prolong the supremacy of the massive centralised mainframe. Power is moving inexorably, however, to the desktop in two senses:

- The power of high-end PCs today rivals that of the technical workstations of five years ago.

- The purchasing decisions depend increasingly on satisfactory applications being available to the desktop user who is no longer merely using his PC as a personal productivity tool but is now starting to derive his day-to-day operational functionality from it by sharing data and information with his fellow workers and their managements.

In terms of customer services organisations desktop services represents an important new market sector whose characteristics make it of potential interest to a range of market players:

- Systems vendors
- Independent maintainers
- Dealers and distributors
- Professional services companies.

Exhibit II-2 summarises the key characteristics of the Desktop Services sector in its emerging phase:

- Downsizing of systems to the departmental level and the spread of PCs to the desktop is the principal driver of the sector, aided by the move, which is especially strong in Europe when compared to the USA, towards adopting an open systems IS strategy.

- In its early, pioneering phase the desktop service sector is emerging as an opportunity for outsourcing among large and medium-sized organisations where the number of existing desktop devices is large enough to require considerable IS management effort. This is an irritant to IS managers and directors who are more interested in systems activities at the corporate and business unit levels which is where the main impact of downsizing is currently being felt.

- Different vendors are taking different approaches, principally dictated by their backgrounds. Typically this means that:

  - The outsourcing option is attractive to vendors from the PC distributor and independent maintainer communities

  - A stand-alone set of services is the option chosen naturally by equipment vendors

  - Offering ad hoc services is the preferred approach among the professional services vendors.

EXHIBIT II-2

Key Characteristics of Desktop Services

- Downsizing Driver
- Emerging as Outsourcing
- Multiple approaches
- Standard software products
- Network delivery

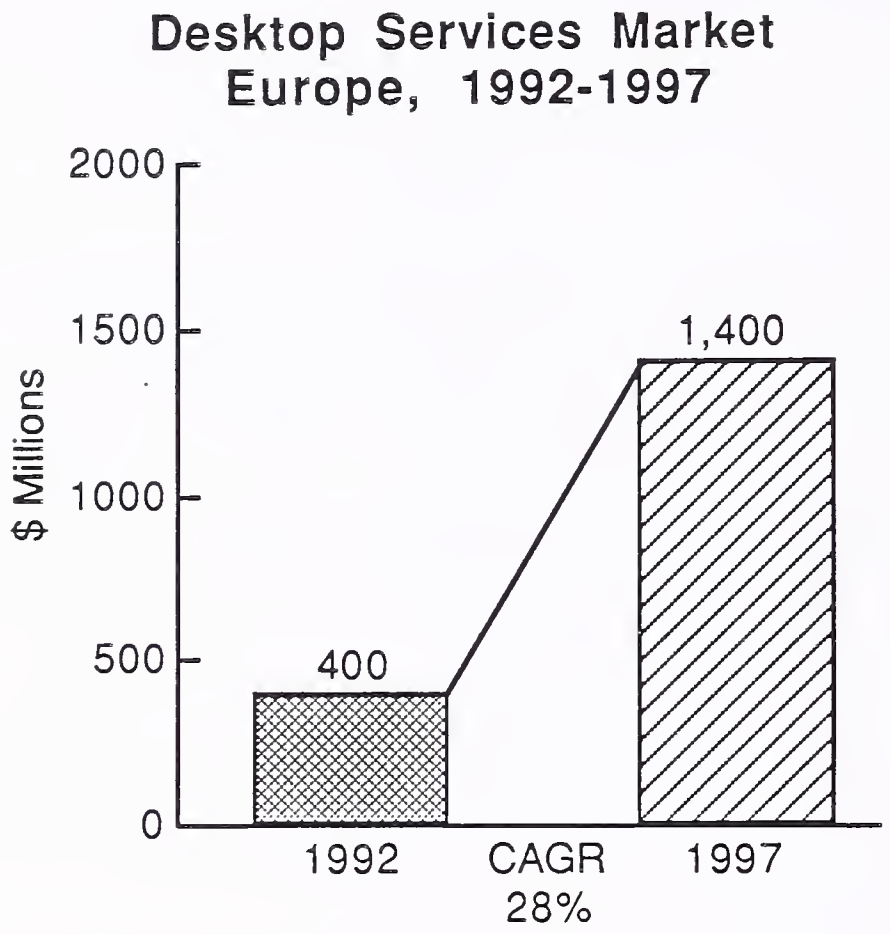
INPUT's report on Desktop Services in Europe, 1992-1997, published as part of our European Outsourcing subscription programme, examines the roles of the professional services vendors and of the PC dealers and distributors. This report concentrates on the activities of the systems vendors and of the independent maintenance organisations (IMOs).

Key to success in this sector is knowledge of standard software products for the desktop and their evaluation, integration and support. Finally, the ability to deliver service through a network opens up a range of possibilities not open to the vendor who sees his role more in the area of service delivery through personnel.

The market for these desktop services is forecast to reach $400 million in Europe in 1992 rising to $1,400m in 1997. This growth of 28% CAGR is shown in Exhibit II-3 for the whole sector including all services from device and network installation to support and maintenance, but excluding the equipment supply itself. This overall growth rate is lower than that for the component of non-maintenance services which is set to grow at 32% p.a. over the same period. The non-maintenance component focuses on software product supply and support, as well as the activities of implementing, upgrading and supporting LANs.

The U.K. is the largest country market at $175 million followed by Germany and France with $66 million and $45 million respectively. Fourth largest market is the Netherlands with $30 million.

EXHIBIT II-3



C

The Challenge to Equipment Suppliers

Equipment suppliers have to re-examine their customer services strategies in the face of the downsizing trend. Delivery of quality support service is increasingly taken as a high priority purchasing criterion for new or replacement systems. Provisions of quality support is recognised by all the vendors as necessary to the defence of their existing installed bases. To this end vendors must have a clear understanding of the resources needed to provide the traditional services of:

- Systems maintenance
- System software support.

Sales of new or extended services in their entirety are the challenge to the systems vendors:

- Systems integration
- Network integration
- Building integration services
- Business continuity services
- Facilities management (systems operations) for networks and computing platforms
- Unattended (lights out) computing operations.

Desktop Services are emerging as an outsourcing market for the management of PCs and their networks, a task traditionally set aside to an Information Centre or other manager responsible in the IS department for the coordination and administration of end user computing. Its requirements include any or all of:

- PC evaluation, selection and/or supply
- Network installation or upgrade
- Software product supply and/or support
- Hardware maintenance
- Help desk system selection and/or management
- Billing and administration
- Application development and/or maintenance.

Equipment vendors are responding with a growing portfolio of productised service lines which can be picked and mixed from a comprehensive catalogue of traditional and new services. Digital for instance markets over 100 separate services in four categories, including:

- Consultancy
- Education & Training
- Support & Maintenance
- Bespoke (ie. Customised) services.

Among this last category there are four services targeted specifically at the desktop and its network of PCs.

Other vendors are responding by redefining new structures within their customer services organisations to cope with new types of service aimed at PC users. Hewlett-Packard has formed two new sections to handle network installation and support, and to deal with support of PC dealers/distributors.

Two factors are key to the responses of the systems and equipment vendors:

- New services must be clearly packaged, labelled and priced as such if they are to be viable as stand-alone, unbundled service lines.

- The advent of desktop services shifts the emphasis in the organisation as a whole away from pure product supply and towards a service company image.

Exhibit II-4 summarises the strategies of the equipment suppliers.

EXHIBIT II-4

Equipment Supplier Strategies

- The portfolio of service offerings
- Stand-alone service products allow all sizes of users to purchase
- Packaging services into individual contracts
- Restructuring Customer Services organisations
- Service image can be reinforced

D
The Challenge to Independent Maintainers

The independent maintenance organisations (IMOs) have begun to restructure in order to achieve consistent profit in a more mature marketplace. The IMOs have been through a series of challenging phases since their appearance in the market-place:

- Firstly they were faced (during the second half of the 1980s) with the considerable counter-attack of the equipment vendors who entered the multi-vendor maintenance market as a means of defence of their installed maintenance bases.

- Then the IMOs responded by forming larger units by merger and acquisition. This led however to a harmful dilution of management effort and overstretching of company resources, and some independent vendors had to face the stark choice between growth and profit; they have mostly chosen profit.

- No sooner had this phase of rationalisation and consolidation got under way, when a more lasting threat arose from the sudden onset of the shrinking maintenance market. INPUT had been signalling this future problem for several years; nevertheless it has come up so rapidly that many vendors have still to assess their long-term positions.

Options available include:

- Retreat into specialist hardware maintenance niche positions.

- Diversification within maintenance or alternatively into new service areas.

The desktop services market has therefore arisen at a strategic juncture for this type of vendor. It offers an opportunity to diversify away from reliance on hardware maintenance into some of the major markets created by the trend to outsource systems operations and private networks for data and voice. Downsizing of systems operations to the desktop brings these contracts within the area covered by the IMO's skill sets:

- Many IMOs have concentrated on maintaining PCs, desktop printers and local networking devices.

- Several of the larger IMOs have software development and software product skills within their parent group or within other divisions.

The incentives for IMOs to diversify into desktop services (either by offering individual services in stand-alone mode or by tendering for complete contracts) are surely present in today's marketplace. There are also considerable inhibitors in the form of the strongly technical culture of traditional maintenance operations and its lesser focus on application software skills.

In its 1992 market research INPUT has found major IMOs, who are launching desktop service offerings:

- Granada Computer Services is restructuring its PC based activities and rationalising its Microcare associate subsidiary

- Thorn EMI Computeraid has won a large contract with Sedgwicks, one of Europe's largest insurance brokers

- Data Logic, part of the worldwide Raytheon group, is designing a branded service combining its skills in hardware and software maintenance, to be launched in 1992.

All these initiatives attempt to build outwards from existing strengths into the new outsourcing markets - with key components of service retained in-house and partners used for areas in which the IMO does not currently have the capability within its own resources. Exhibit II-5 summarises the strategies of the IMOs who are venturing into the desktop services arena.

EXHIBIT II-5

Independent Maintainer Strategies

- Build from strengths in PC supply and support
- Outsourcing tenders are increasingly common
- Brand naming of service line
  - Software maintenance
  - Badging of the service line mark

E
Threats from Other Vendors

The other key players in this market have been mentioned earlier:

- PC dealers and distributors
- Professional services vendors.

PC dealers and distributors are unique among the four classes of background which INPUT has researched, in so far as they have the key skills in evaluation, supply and support of industry standard application software products for the desktop. All other vendors have tended to concentrate their software skills on minicomputer and mainframe platforms.

Professional services vendors are now also realising that the market for desktop services is a separate one in its own right. However their current activities amount in most cases to little more than treating the sector as an additional service area which they are willing to support on behalf of their major clients. INPUT expects a much more serious attack on this market to be made soon by the professional services companies.

EXHIBIT II-6

Recommendations

- Prime contractor status must be accepted
- Specialisation due to wide range of resources required
- Key skills selected and purchased if not already in-house
- Marketing entry is a strategic decision

INPUT's vendor recommendations are listed in Exhibit II-6:

- Because of the wide range of services and skills in demand to support user desktop requirements, vendors must be ready to accept the prime contractor role.

- Most vendors will not have sufficient resources nor a wide enough range of skills to be able to support all components of the desktop service contract. They will therefore have to choose which to specialise in themselves and which to subcontract to partners. Profit considerations should play a large part in this decision.

- Building up key skills to be successful in this sector should include the skills required to support application products in an open systems environment.

- Desktop services promises to be a major, if not the predominant, method of providing the IT infrastructure in the mid- and late- 1990s. For this reason vendors must regard market entry as a long-term, strategic venture and build their positions on solid foundations. This is not a purely opportunistic, short-term venture.

III
Repositioning for Non-Traditional, Non-Maintenance Services

A
Market Shape

Service organisations are developing capabilities beyond the traditional definitions of maintenance and repair in order to offer users a variety of new products. These service products are based upon:

- The restructuring of the existing service/product mix. The competitive assumption is that expansion in traditional services has slowed to zero, and that market share must now be taken, and, conversely, well defended. This strategy emphasises the needs and requirements of the customer base and the concurrent requirement for the vendor to maintain profitability and overall market position.

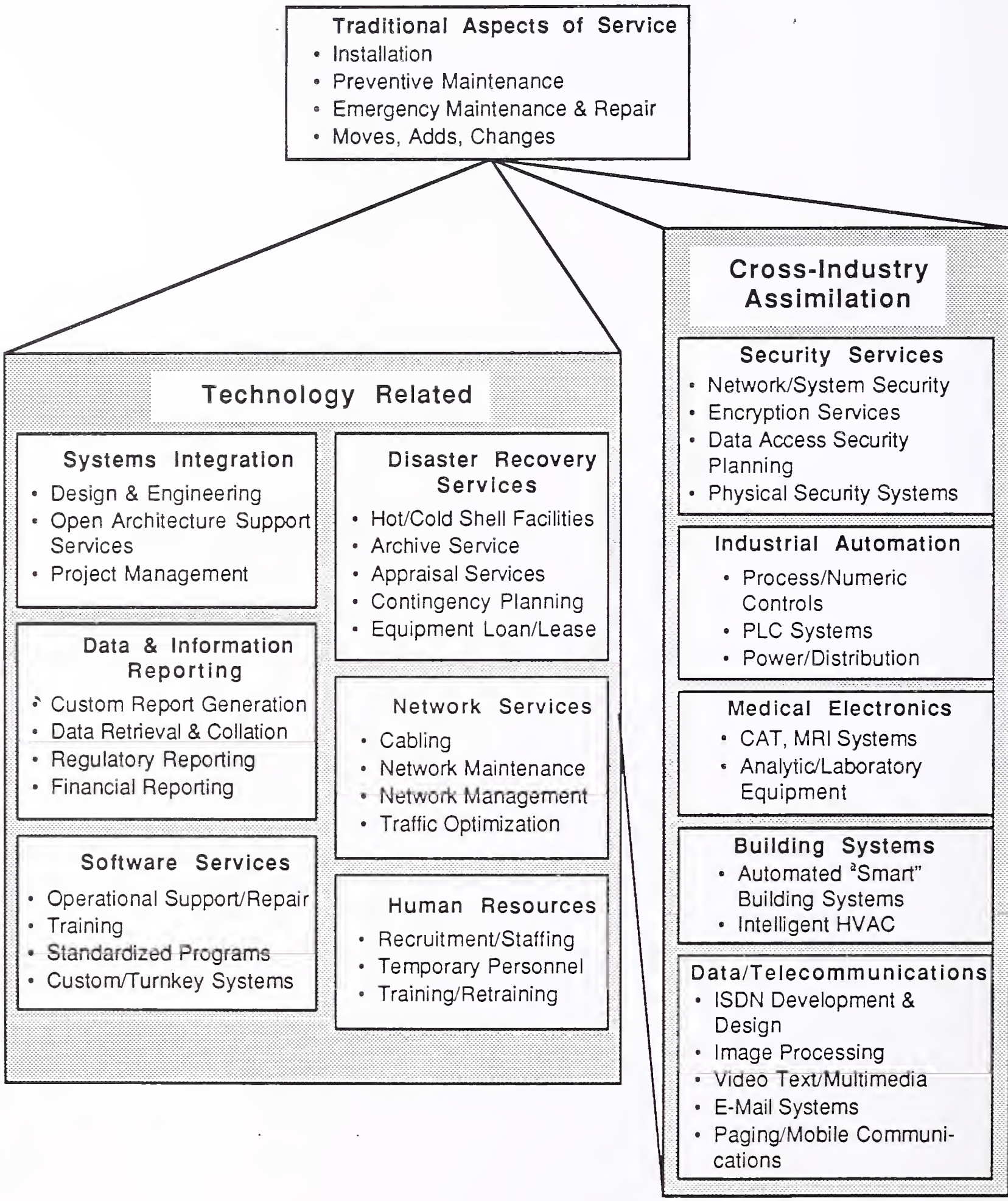
- Services and products leveraged from expertise in new technologies and other areas of practice such as systems planning, network management and general consulting services. This development of extended/non-traditional service products is based on a climate of expansion. The decision to proceed accepts that there is less risk involved in developing and offering a new type of service in an expanding market than in battling for market share in a relatively flat market with well-established competitors.

Exhibit III-1 illustrates the current, broadly defined extended/non-traditional services market.

This report is designed to investigate one particular family of extended/non-traditional services being offered by some service organisations and by competitors from other backgrounds. Is this a help toward the redefinition of the customer service company; are independent service organisations (ISOs) or independent maintenance organisations (IMOs) expanding their product portfolios in this area; and are service divisions within the equipment suppliers beginning to develop broader functions?

EXHIBIT III-1

Status of Current Extended/Non-Traditional Services Marke



More precisely, this report is designed to examine the following questions:

1. What new products and services are being implemented by computer and information services companies? How far from the traditional aspects of maintenance and repair are these new services?

2. In what extended service area(s) do customer service organisations have the greatest potential for success?

B

Changes in the Installed Base for Maintenance

Exhibit III-2 shows the distribution of the user segment by equipment class in number of units, $ value and percentage breakdown. Over the next 5 years mainframe maintenance will lose two percentage points to the PC/Workstation segment as desktop systems proliferate and major data centres shrink in number under the influence of concentration (upsizing) forces. Mid-Range system segment retains its leading share as server systems are introduced to more sites.

EXHIBIT III-2

Changing Distribution of User Installed Base by Equipment Class, 1992-1997

	1992		1997		Percentage of Market Sector	
Type/Class of Equipment	No. of sites/units	Value $M	No. of sites/units	Value $M	1992	1997
Mainframe	15,000	2,900	12,000	3,000	18	16
Mid-Range	300,000	8,500	500,000	9,900	54	54
PC/Workstation	6,000,000	4,400	10,000,000	5,600	28	30
TOTAL	**6,315,000**	**15,800**	**10,512,000**	**18,500**	**100**	**100**

SOURCE: INPUT estimates

The smaller user, though from a larger user population, has an installed base that uses roughly the same mix of processing technologies as the larger user.

The results of recent INPUT U.S. research show that users attribute considerable value to products that, whether marketed as innovative and new or made available as a commodity maintenance service, contribute to overall system integrity and uptime. Traditionally defined maintenance and support services represent a basic and very important requirement for all classes of users, independent of the availability of extended/non-traditional services.

Virtually all (95.5%) users researched received some extended or or extended non-traditional services from their normal service vendors.

An important consideration in the assessment of non-traditional or extended services is illustrated in Exhibit III-3, which shows the overall mean importance rating of both traditional and extended/non-traditional services. This rating is based on a 1-5 scale. This exhibit provides a ranking of both types of service for the overall, large-user, and small-user segments.

EXHIBIT III-3

Perceived Importance of Traditional and Non-Traditional Services to Users

		End-User Ranking of Services by Level of Importance		
Type of Service	Mean Rating of Importance	Overall	Large User	Small User
Traditionally Defined Service Feature				
4-Hour Guaranteed Response	4.7	1	1	1
On-site Field Engineer	4.7	2	3	2
Uptime Guarantee	4.5	3	4	3
1-Hour Guaranteed Response	4.5	4	5	4
2-Hour Guaranteed Response	4.5	5	6	5
7-Day/24-Hour Service	4.2	6	8	6
Unlimited Service Calls	4.2	7	9	7
Loaner/Replacement Units	4.1	10	10	8
Preventative Maintenance	4.1	11	11	9
Telephone Support	3.9	13	13	11
Depot Service	3.6	14	15	14
Install/Moves/Adds	3.4	16	16	16
Extended/ Non-Traditional Services (By Category)				
Network Services	4.1	8	7	15
Disaster Recovery	4.1	9	2	12
Security Services	4	12	12	10
Software Services	3.5	15	14	17
Planning & Design Services	3.2	17	18	13
Human Resources	2.5	18	17	18

C

Satisfying Emerging User Requirements

Vendors clearly indicate consensus that traditional services are perceived as having a low potential for continued growth. Vendor perceptions are that delivery of non-traditional services is key to market expansion.

Considering this strong emphasis on non-traditional services, it is notable that, on average, 83% of business done by the service organisation is still comprised of traditional services, as shown in Exhibit III-4.

EXHIBIT III-4

Service Business Attributable to New Offerings

Percent Business Attributable to Extended/Non-Traditional Services	Percent Distribution of Vendor Sample
4 - 10	50
11 - 20	25
21 - 25	8
26 - 40	17

The primary vendor activity in delivering extended services is in the network services and disaster recovery categories. Exhibit III-5 illustrates that roughly 65% of vendors researched currently delivers some network operation services and disaster recovery services, and that an additional 20% or more have indicated they are in the process of developing such services.

EXHIBIT III-5

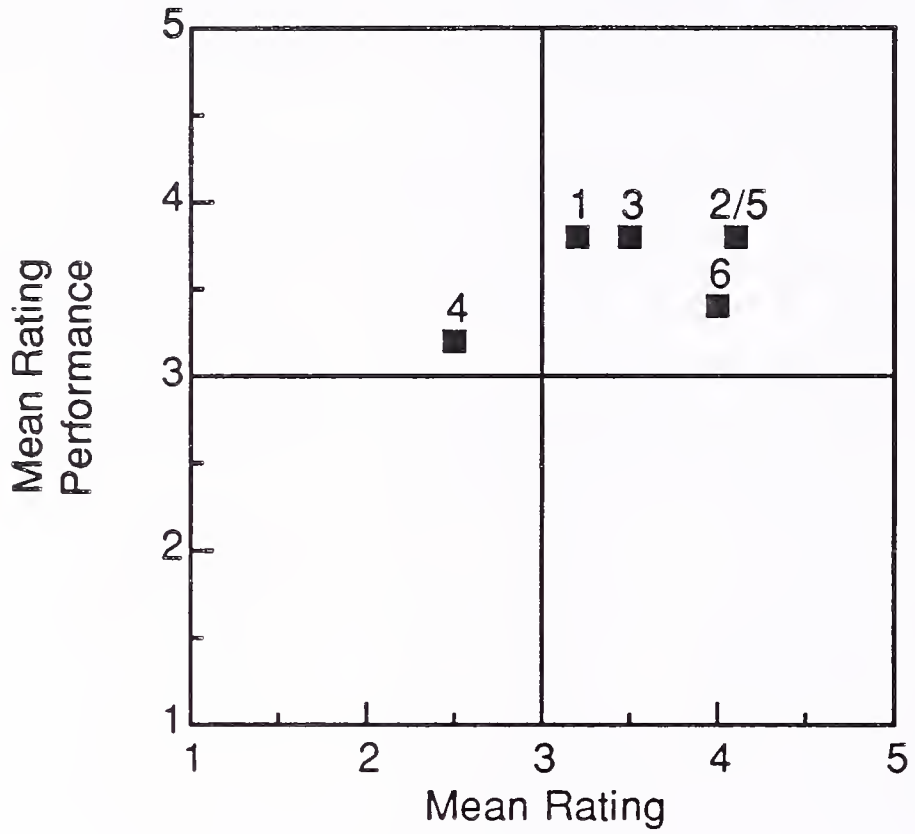
Vendor Product Innovation and Roll-Out

	Percent of Vendors			
Extended Service/ Product Category	Offers	Currently Adding	Planning to Add	Does Not Offer/ Consider
Planning & Design Services				
Design & Engineering	62	-	-	38
Site Planning	77	-	-	23
Purchase Consultation	69	-	-	31
Network Operation Services				
Cabling	69	15	8	8
Configuration Management	69	15	8	8
Capacity Planning	69	15	15	-
Network Maintenance	62	15	15	8
Network Management	69	15	15	-
Software & Services				
Applications Training	85	-	-	15
Standard Software Products	77	-	-	23
Custom Software Development	53	-	8	46
Disaster Recovery Services	69	8	15	8
Security Services				
Network Security	38	8	-	54
Security Planning	38	-	8	54
Human Resources				
Recruitment/Staffing	15	-	-	85
Temporary Personnel	23	-	-	77

Vendor performance in delivering extended services to the user is so far reported to be generally good (with an overall mean rating of 3.8). Exhibit III-6 assesses the performance ratings for each extended services category against users' perceptions of each category's importance. The resulting graph gives a relative indication of how well vendors' services are being received in the user community.

EXHIBIT III-6

Assessment of Vendor Performance Compared to User Rating of Category Importance



Rating: 1 = No Importance/Low Performance
5 = Extreme Importance/Excellent Performance

Legend: 1 = Planning & Design
2 = Network Services
3 = Software Services
4 = Human Resources
5 = Disaster Recovery
6 = Security Services

Only Human Resources has a below average perceived importance rating.

D

Vendor Performance

The market emphasis on maintenance technologies and on the design of information management systems, together with the shift away from the more basic requirements of the underlying platform infrastructure have created many new opportunities as well as risks for the service vendor.

The response-sensitive nature of the traditionally defined service operation is well-suited to act as a foundation for development of new service products focused on maintaining system integrity and availability.

Investments necessary when targeting to offer network or software services in a maintenance and support role are in training, test/diagnostic equipment, and inventory maintenance. Within these specific categories, profitability still resides in using short service visits, and in managing the terms of the service contract.

The traditionally defined service operation is geared to work profitably in this response-sensitive type of business. INPUT's 1991 USA issue report from the CSP programme, *Impacts of New Support Technologies,* investigates the large body of knowledge and technologies available to refine the service delivery infrastructure to better respond to user service demands.

The greatest threats are from competitors from industry segments that have established practices in project-oriented solutions or in applications development.

It is INPUT's general recommendation that the vendor conduct a systematic audit of its core business components and current operational effectiveness prior to any serious consideration of a new service offering. It will be necessary to build a carefully considered feasibility determination, to assess the role of traditional services, and then establish an actionable and profitable balance between the delivery of hard and soft new services.

- If there are gaps or inconsistencies in the operational aspects of the vendor delivery infrastructure, these should be investigated and resolved in an effort to produce the greatest profits from existing operations.

- Identify current users who may serve as a base for moving into extended/non-traditional service categories. Incorporate measures to retain current user loyalties, that have potential for bundling new services with high value traditional services.

IV
Components of a Desktop Service

Downsizing can be applied right the way across the spectrum of information systems from the largest to the smallest systems and from those targeted to the corporate headquarters to those used to assist the average clerical or factory worker:

- Mainframe systems can be downsized to newer, more capable mid-range systems such as IBM's recently announced E-series of AS/400s
- Mid-range systems can be replaced by linked networks of PC or workstations
- Workstations can give way to top-end PCs based on the latest standard chip.

The primary drivers in European downsizing are:

- Information systems budget trimming
- Desire to embrace open systems technologies
- Networking strategies for infrastructure and for group working.

Desktop services are already widespread among many vendors but only sometimes are they known as such and only infrequently are they marketed as a family desktop services.

This chapter describes the components of a family of desktop services which may be offered by customer service organisations as a non-traditional service aimed at benefiting from the trend in Europe to downsize. These service lines may be marketed as individual services or as a selection to suit a particular user's needs or as a complete package amounting to an outsourcing or facilities management exercise for the desktop.

A

Equipment and Network Supply and Maintenance

The principal components of end-user computing remain the personal computer (PC) and its separate peripherals, chief among which is the printer - these days typically a laser printer for office systems although bubble-jet printers are increasing in popularity for the single executive or professional worker. The ability to supply these devices has typically been the province of the PC dealer and many major equipment suppliers have relinquished the control of their low end accounts to their dealer distribution chains. Use of catalogue-based and direct mail selling techniques are a way in which equipment suppliers such as Digital, Bull or Unisys are retaining or recapturing end-user contact, at least within their traditional proprietary user bases.

Moving up to a network of office, departmental or company workstations is often the second stage for many medium-sized or fast growing small organisations. The supply of a network server and network operating system and the integration of the new and the existing equipment into a working whole, has become a growth area for many new systems companies. It is also becoming of interest to the larger manufacturers, such as Digital whose Enterprise Service family is aimed at small and medium-sized enterprises (SME). Here again equipment suppliers and their distribution channels are starting to converge on the middle ground.

Both types of supply, for the PCs and peripherals as stand-alone units, and for the network installation to convert users into having a multi-user system, need to be supported by equipment maintenance contracts. In past research INPUT has found that as few as 20% of small businesses with PC-based systems have bothered to take out a standard maintenance contract, preferring one of the apparently cheaper options such as returning units for repair or calling out local service engineers only when a critical fault occurs. As more desktop units become linked into enterprise networks which support day to day operations, these systems will become more mission-critical to their owners and the risk of not having on-site on-call cover at the cheapest rate will cause the penetration of standard contracts to increase.

B

Installation and Training

Many users expect an amount of up-front support in the areas of installation and training. Although simple free-standing units are normally user installed, network installation usually requires on-site vendor assistance. As an element of desktop service there are a number of ways in which this potentially loss-making component can be marketed with profit:

- User installed units can be sold with installation as an optional extra
- Installation of networks should be priced to include basic installation as free-of-charge up to an agreed level of commissioning, with more elaborate implementation, including handholding and parameter changing or user data testing, being able to attract additional fees.

Training is a more easily marketed service since the requirements for subject coverage are vast in the increasingly complex arena created by the possible combinations of multi-vendor platforms, software products and applications. It remains true that even with the vast array of training courses on the market, supplied by equipment vendors, independent professional services companies and training specialists, any one individual user will perceive himself in need of education tailored to his unique situation. Standard and customised courses both have their place in this environment.

Exhibit IV-1 summarises the traditional components of desktop service to which custom service organisations should address their offerings.

EXHIBIT IV-1

Traditional Desktop Services

- Equipment (PC) supply
- Network (server) supply and installation
- PC and printer maintenance
- Installation services
- Training

C

Supply and Support of Application Software

Application software for the desktop consists largely of standard products fulfilling the basic productivity needs of the office or professional user:

- Word processors
- Graphics packages
- Desktop publishing
- Spreadsheets
- Database handlers
- Integrated products providing a selection of these basic functions.

Accounting suites are also very common on both stand-alone and networked desktop systems. There are literally tens of thousands of MSDOS-based products currently available including shareware products, which can be purchased cheaply but without any commercial support.

One of the key elements in the new or non-traditional family of desktop service products will be application software product expertise in:

- Product selection
- Product interfacing
- Product supply
- Product support
- System maintenance for systems containing a high proportion of interacting standard products.

INPUT expects expertise in this functional area to be a key differentiator and one of the critical success factors, characteristic of winners in this emerging sector.

D

Help Desk Services

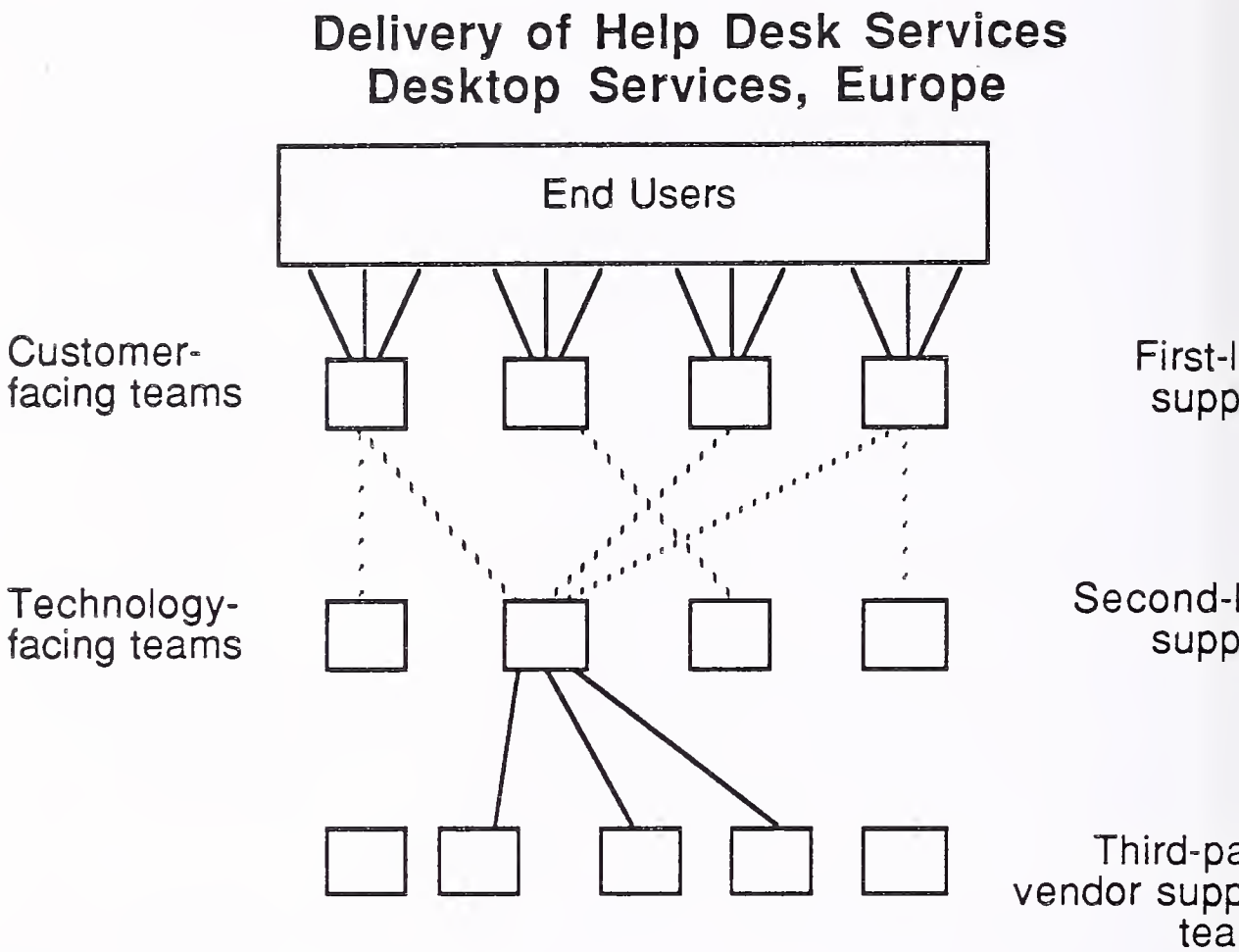
Help desks are, since the 1980s, common in a vast range of service industries in which customers can 'phone in to make enquiries or complaints and to seek help; eg.

- Banking
- Catering
- Health care
- Insurance
- Mail order
- Tourism and travel
- Telecomms
- Utilities.

Help desk technology has developed into a niche market in its own right and is now threatening to impact all types of business from an internal perspective. As an internal function, help desks already support user groups in the U.K. and Germany. As users of increasingly intelligent, networked systems start to deal with greater complexity in the work environments, the supply of help desk expertise, systems and service will become a subject for outsourcing. Purely because of the numbers of systems required throughout industry and commerce, help desks are rapidly becoming commodity products. It will become less cost-effective to try to run help desks through internal resources. External expertise already present in the forms of consultancy and software systems will extend more into the areas of desktop operations with the help desk being seen as one element in a full range of desktop services.

Exhibit IV-2 illustrates the interfaces between users and vendors in the networking of user help desks.

EXHIBIT IV-2



E

Planning and Administration

Large users of PCs and workstations become all too easily embroiled in the admin-intensive areas associated with the inventory, accounting, user invoicing, and future planning for these systems. Because of the 'low technology' status of PCs in the eyes of many IS departments, there has been a tendency to form a separate administrative unit to look after the desktop and its end-users. This can often grow into being an alternative IS department causing organisational conflict and a slowing down in the rate of absorption of new software technology, much of which is aimed at desktop users.

There is a service requirement for the administration of existing services and the planning of future ones. This can be a free-standing service or a component of a total service package depending on the needs of individual users. External vendors can often bring to the planning process expertise which is not available in-house concerning the strategic directions of vendor policies.

F
Network Enhancement

Many users in large organisations have been involved with LAN developments at the building, campus or site level. Linking PCs and workstations requires cabling, network operating system and environmental services skills many of which reside in the traditional customer services organisations. Since the advent of bridges, routers, brouters and intelligent hubs the local area network (LAN) has become potentially a unit in the wider networking scene with TCP/IP, Decnet, SNMP and OSI leading the way as interconnection protocols, with varying degrees of openness and standardisation. This latest chapter in the networking business - LANs challenging the role of wide-area networks - (WANs) - is moving many CS organisations into unknown territory in which the business considerations are even more important than the technical aspects of problems.

This challenge to the innovativeness of vendors points to desktop services as in need of this extra component of networking enhancement, as a separate service including consultancy, design, implementation and operational phases.

G
Application Development

This is probably the most difficult area of the desktop services requirement because of profitability factors. The need is to make available to the desktop-based end-user a range of analysis and programming expertise so that applications can be tailored to individual organisations. It has been customary with each succeeding generation of computing technology to announce the demise of programming. In spite of this the need remains to develop applications even with the most basic of software products:

- Spreadsheet formulae must be designed for Lotus 1-2-3 or Supercalc
- Desktop Publishing benefits from professional layout guidance and parameter building
- Database records need specification and design
- Graphics packages require careful design if the correct messages are to be transmitted at a key presentation
- Good output layouts improve all these program products.

All these activities have both an application and a product aspect:

- Knowing what the business information needs are

- Knowing how best to achieve this within the constraints of product and operating environment.

These are essentially programming activities which in a networked open systems environment are even more complex to handle than they were under earlier generations of technology. Good training can raise the standard of 'programming' produced by end-users, but systems and application development will always be able to derive added-value from the expertise of IS professionals, particularly once the system moves from being a personal to a departmental one in which sharing of information is key.

The challenge to vendors with applications development expertise to market to the desktop user, is how to make that expertise available in a cost-effective manner. INPUT believes that the keys to profitable delivery of such services lies in two areas:

- Delivery of expertise via the network
- Development of dialoguing technology to support the end-user to IS professional requirement specification dialogue.

These areas are to date undeveloped in terms of desktop services, making application development the last stage of the business to emerge into maturity.

Exhibit IV-3 lists the newer services which are required at the desktop and which match the requirement of the customer services organisation to develop extended/non-traditional offerings to boost both revenue and profit.

EXHIBIT IV-3

Extended/Non-Traditional Components of Desktop Services

- Application Software Product Supply and Maintenance
- Help Desk system selection and supply
- Problems management
- Service planning and administration
- Network upgrades
- Application development

H
Outsourcing

Desktop services can be sold in three levels of packaging:

- Individual components marketed as separate services from a portfolio
- Selected packages of services put together to meet individual needs, possibly after a short requirement specification stage
- Outsourcing of the whole requirement on a systems operations contract.

At the current stage of development of the sector most functions are still undertaken with in-house resources. Exhibit IV-4 illustrates in tabular form the likelihood of individual components of service being purchased from an external service vendor. Possibilities for total outsourcing contracts are more abundant in medium-sized companies than in large organisations, although several large-scale contracts have been awarded by major industrial concerns intent on concentrating on core business.

EXHIBIT IV-4

Degree of Outsourcing by Service Element

Service Element	Relative Level of Outsourcing by Users
Purchasing consultancy	Medium
Equipment procurement	Medium
Equipment maintenance	High
Application Software Product (ASP) procurement	Low
LAN/equipment installation	High
LAN management products	High
Application development	Low
Help desk services - systems services - applications software	 Medium-High Medium
Application maintenance	Low
Second-line technical support	High

V
User Requirements for Desktop Services

A
Driving Forces

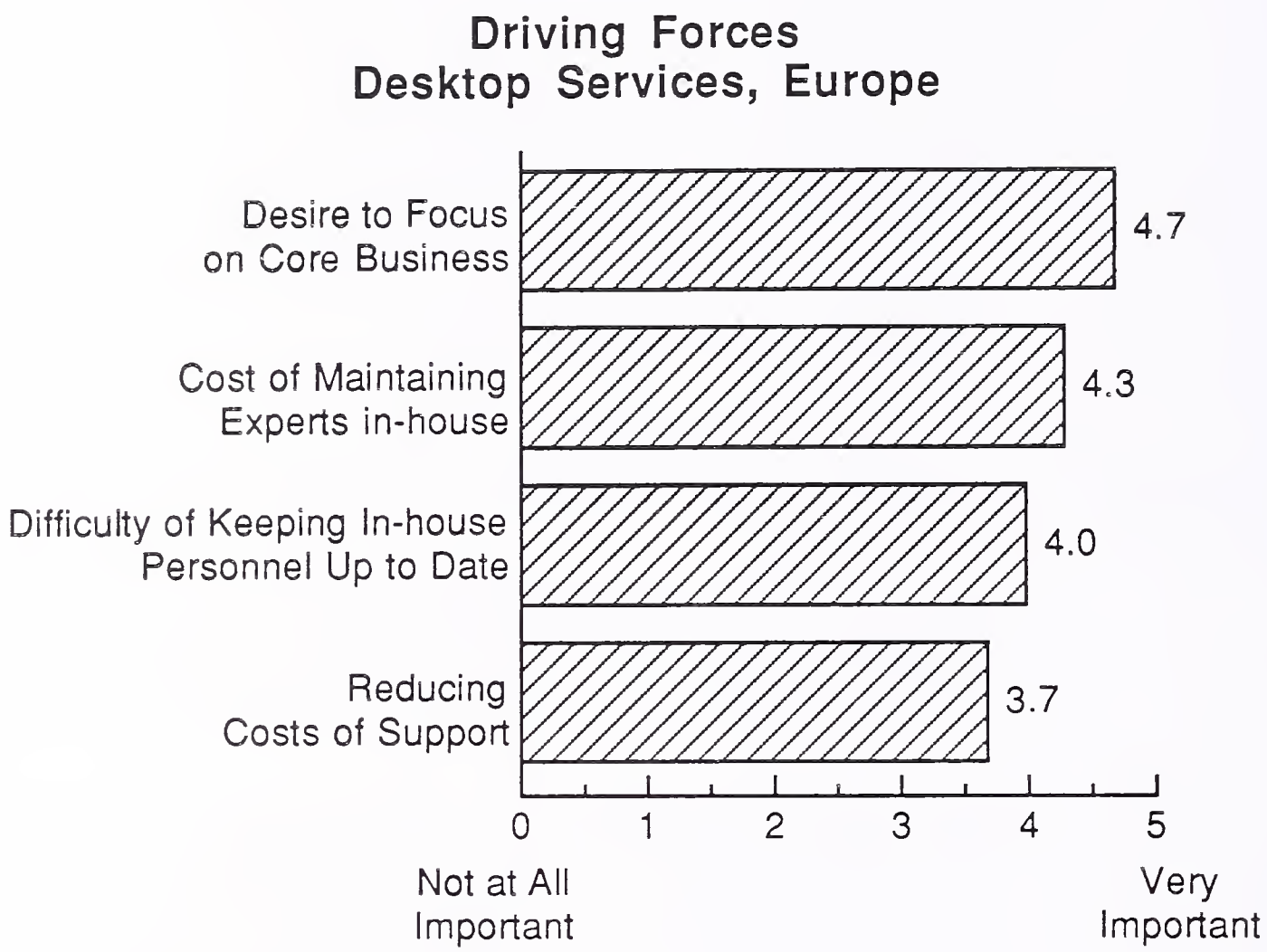
Exhibit V-1 summarises the driving forces behind the adoption of desktop services as perceived by leading vendors of these services. Both commercial and technological factors are combining to drive the market.

In particular, a number of multi-national corporations which have traditionally had the expertise to manage desktop services in-house such as ICI and BP, have taken the decision to focus on their core activities and to divest their non-core activities. In addition to divesting a number of low value-added petrochemical concerns, ICI also sold its organisation responsible for desktop services to P&P Corporate - a major U.K. PC dealer/distributor. At the time the organisation concerned, ICI Computer Systems, employed 100 personnel who were transferred to this vendor's payroll.

In the current economic climate, many companies, particularly in the financial services sector, are investigating cost saving schemes throughout their organisations.

Accordingly another driving force is the desire to remove the uncertainty from, and where possible reduce, IS costs. From an internal IS department viewpoint, these costs are exacerbated by the need to maintain a critical mass of expertise, which a third-party vendor might be able to spend over a broader range of clients. The expense of maintaining an in-house desktop support capability is also increased by the rapid rate of technological change and the need to keep in-house personnel up-to-date with the technology. In a bid to reduce these support costs, Trustee Savings Bank (TSB) is transferring 23 staff to Computacenter, another important dealer in the U.K.

EXHIBIT V-1

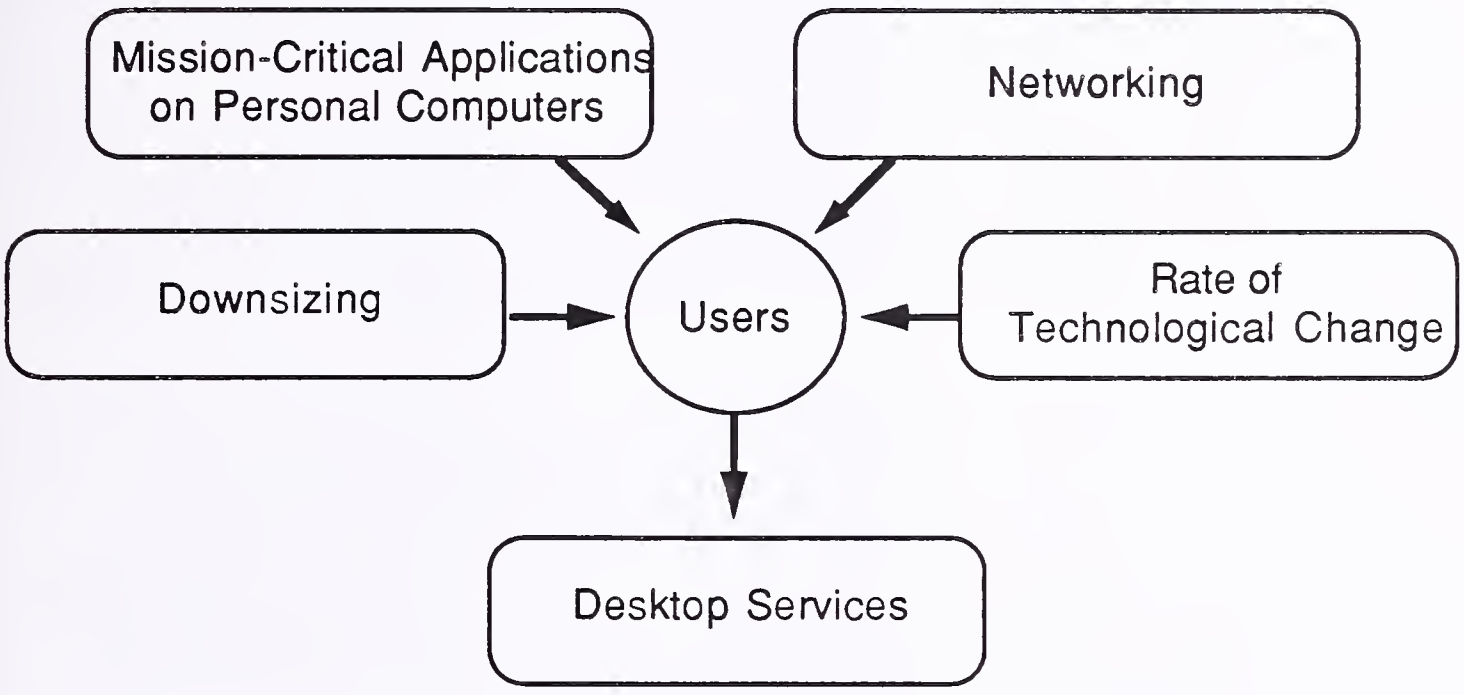


Standard error = 0.3

A number of technological factors, as shown in Exhibit V-2, are also increasing the demand for desktop services. Downsizing is increasing the importance of the role played by personal computers, local area networks, and client/server based open systems. As mission-critical applications become increasingly implemented in these technologies, so the need for high-quality end-user support becomes more critical than when personal computer use was restricted to the role of an individual personal productivity tool. The spread and complexity of local area networks is also a major driver in users' adoption of desktop services, with many vendors finding that in-house IS departments are ill-equipped to implement and support local area networks. Accordingly a number of vendors are discovering that desktop services is a follow-on service from the initial implementation of local area networks given the scarcity of in-house skills in this area and the rapid rate of technological change.

EXHIBIT V-2

Technological Driving Forces
Desktop Services, Europe



However despite the rapid growth apparent in the desktop services market at the present time, the market is still in its infancy and there are a number of significant inhibitors outlined in Exhibit V-3.

EXHIBIT V-3

Market Inhibitors

- Existing skill base in large companies
- Cost justification of on-site service
- In-house desire to run first-line support
- Poor vendor networking infrastructures

Firstly many companies, particularly very large organisations, do have considerable in-house expertise in local area network implementation and management. Where this exists, it may take a policy decision such as that adopted by ICI to bring about outsourcing of desktop services.

Secondly it may be harder to cost-justify desktop services compared to, for example, mainframe platform operations. In mainframe platform operations, there are significant economies of scale which can be introduced by transferring the equipment to the vendor's data centre where both

technical and management expertise can be shared between a number of clients. In effect, the whole of the service can be administered remotely.

However, in the case of desktop services contracts, a number of staff may need to be retained on the user's site. While vendors may argue that their on-site staff are more productive than user personnel, they may also be more highly remunerated. In other instances, the on-site support staff will be those personnel who have transferred from the user's organisation to the vendor's organisation. In either case, it can be difficult for the vendor of desktop services to achieve economies of scale from the functions, such as first-line support, carried out from the user's premises. Of course, the vendor should still be able to achieve some economies of scale from the second-line support which is typically centralised to cover a range of clients.

Thirdly, some vendors, such as iTNet, the UK computer services vendor which was formed out of the IS department of Cadbury Schweppes, are finding that users have a strong preference for providing first-line support to end-users in-house, but are happy to outsource local area network implementation and second-line support. IS departments tend to justify this behaviour with the rationale that while they may lack detailed technical expertise, they do understand the end users' business requirement and culture better than an external supplier.

Lastly, many smaller vendors do not have the networking infrastructures in place to be able to deliver desktop services over a network and are therefore restricted to on-site services provided by scarce manpower resources. This does not apply to the large equipment suppliers, who are in any event already providing desktop service to end-users but as part of the standard maintenance contract.

B
The Vendor Selection Process

The motivation for purchasing desktop services varies between large and medium-sized companies, as does the relative influence on the purchasing decision of senior corporate executives and IS management.

While supporting and maintaining local area networks, personal computers, and application software products can be a hassle for IS management in the large corporates, they will typically have a high-level of in-house capability with which to provide these services. Accordingly the decision to outsource is more likely to come from senior executives and to be based on a decision to concentrate on core businesses only or to fix or reduce the costs of the IS infrastructure and end user support. Hence for large companies to adopt desktop services they need to be culturally in favour of outsourcing at a senior management level.
On the other hand, as outlined in Exhibit V-4, medium-sized companies are likely to have lower levels of in-house capability in areas such as the implementation and management of local area networks and the support of

end users. In particular, they may lack the resources to maintain a critical mass of technical skills and to keep up with changes in technology.

EXHIBIT V-4

Buying Process

Company Size / Factor	Large Companies	Medium-sized Companies
Level of in-house resources	High	Medium
Influence on buying decision of:		
Senior executives	High	Medium
IS management	Medium	High

Accordingly IS managers in medium-sized organisations will in some cases recognise their department's difficulties in providing a support service and choose to outsource these activities themselves. While initially a significant proportion of companies may choose to outsource only implementation and second-line support, others will outsource desktop services in their entirety.

As mentioned in Exhibit V-5, the length of the initial contract for desktop services varies according to the scope of the service provided. In the case of large contracts where the user is outsourcing all of the key elements of desktop services from equipment purchasing, through installation, to on-site help desk services, contracts are typically signed for a period of three to five years. A long contract period is particularly probable where staff have been transferred between the user and vendor.

EXHIBIT V-5

Contract Length

- Large contracts mostly for 3-5 years
- Small & medium-sized contracts mostly for one year
- Influence of vendor type

On the other hand, for the small contracts where vendors encourage the user to adopt remote help desk services only, contracts are typically of one year's duration. In some instances, a one-year contract was attributed to the user's need to gain familiarity with the service and not commit themselves to a lengthy contract at an early stage in their evaluation process.

For many equipment suppliers' desktop services are currently targeted at the IS department as stand-alone service products, in several cases covering only hardware maintenance. Independent maintenance organisations (IMOs) such as Computeraid Services, which is part of the UK's Thorn EMI engineering group, are looking much more widely at the desktop area and are targeting large groups and sizeable contracts with a customised approach.

Exhibit V-6 lists users' selection criteria in choosing a vendor of desktop services.

EXHIBIT V-6

Vendor Selection Criteria

- Networking expertise
- Use of single supplier
- Up-to-date expertise
- Vendor independence
- Pan-European capability

Networking expertise is key to achieving success in this sector. It is the prime critical success factor.

Another key criterion is the vendor's ability to take prime responsibility for all elements of the service and to provide a single point of contact to satisfy the end user's request. Many vendors of desktop services will themselves subcontract components of the service such as equipment maintenance, help desk and user training to other vendors, or to other skill centres within their own organisations. However, the overall service must appear seamless to the user. For this reason, vendors will find it advantageous to include equipment and software product evaluation and supply within the scope of their services. From the users' perspective, their management of the desktop environment is greatly simplified if the supplier of desktop services is also the preferred equipment and software supplier. This arrangement has been adopted by ICI in its contract with P&P Corporate.

Up-to-date expertise is also critical. The vendor must have both breadth and depth of expertise in supporting the products. Experience in the use of local area networks and personal computer software products is essential. For example, P&P claims that it handles 9,000 products for resale, each of which has been evaluated in depth. The company also claims to understand the quirks of each product and ways in which application software products interact in practice. By contrast Digital's typical support centre, such as those at Valbonne in France and Basingstoke in the UK, may have to field questions based on over 5,000 VMS and Ultrix third-party software products, quite apart from Digital's own hardware and layered software products.

Vendor independence is another factor. Many desktop services contracts will include purchasing both consulting and the supply of desktop equipment and software products. Accordingly it is important that the vendor has experience of a wide range of products and is relatively impartial in its evaluation of these products' capabilities. Broad product knowledge and perceived expertise are probably more important vendor attributes than whether or not the vendor manufactures its own products. For example, Barclays Bank has outsourced its personal computer management in the United Kingdom to Olivetti Systems and Networks, despite the fact that Olivetti only supplies a minor proportion of the equipment used.

Thus being perceived as an equipment supplier is no bar to success so long as the expertise can be applied across multi-vendor platforms and in the most cost-effective way for the user.

The vendor also needs the appropriate geographic coverage to match the client's geographic presence. In many cases, only limited geographic support capability is required. However, in order to successfully target major corporations, a high level of national, if not pan-European coverage is required. Users typically wish to maintain a single source of support across all their operations, and require a standard level of service independent of location. The leading dealers/distributors of personal computer equipment and software are endeavouring to set up pan-European operations to supply equipment and support services internationally to the largest European users.

Similarly the independent maintainers have formed EUROSERV for the same reason to cover their pan-European activities.

VI
Vendor Profiles

This chapter contains short profiles of the desktop services offerings of six vendors, three major equipment suppliers with pan-European support coverage, two independent maintenance companies with national coverage in the UK and aspirations to extend their operations throughout Europe, and finally one professional services vendor specialising in network provision and implementation.

A
Digital

Digital markets a catalogue of service lines, principally to its installed customer base but increasingly to allcomers. The catalogue contains over 100 separate service lines and these are structured into four groups:

- Consultancy
- Education and Training Services
- Support and Maintenance Services
- Bespoke Services.

These services are centred on Digital's life-cycle model for IT systems, called PDIM.

- Plan
- Design
- Implement
- Manage.

Services in any of the four groups are theoretically applicable at each or any of the four life-cycle stages, but in practice services in certain groups are more useful in one stage than in another eg. Support and Maintenance belong most appropriately in the Manage stage of the cycle.

Digital includes four Desktop Services within the category of Bespoke Services:

- Startup Services provide the physical installation of multi-vendor desktop equipment and software, plus configuration, testing and user familiarisation.

- Connectivity Services support the transition from a stand-alone to a networked desktop environment, including naturally multi-vendor LAN environments.

- Maintenance Services cover maintenance of desktop equipment including PCs, terminals, printers and network devices, again on a multivendor basis. The usual range of Digital maintenance options are available.

- Advisory Services provide comprehensive multivendor support to desktop users for the problems related to applications software, operating systems and networks. This set of services can be supplied remotely via a customer support centre or through user-site help desks. They are designed to supplement users' own support services where a joint resource approach is part of the user organisation's policy.

In addition to this set of service lines which can be combined, or "mix and matched" with other Digital service elements, Digital sells through its DECdirect PC, Integration & Applications catalogue a number of similar service lines, named End-User Computing (EUC) Services:

- EUC System Maintenance and Management aims to ensure that desktop hardware and software systems are in working order, up-to-date in respect of licensed software packages and with the desktop inventory under a regular audited reporting service.

- End-user Support Services provide training and the usual range of maintenance and start-up services.

In addition Digital is setting up Multivendor Expertise Centres in which desktop specialists have a range of hardware available on which they can recreate problems reported by users calling in to the Customer Support Centres. Exhibit VI-1 summarises the key points of the Digital offerings. Exhibit VI-2 shows INPUT's assessment of the vendor's strengths and weaknesses in this sector.

EXHIBIT VI-1

Digital's Service Offerings

- Comprehensive Catalogue
- Desktop part of Bespoke Services
- Four standard service lines
  - Startup
  - Connectivity
  - Maintenance
  - Advisory
- Can customise or 'mix and match'
- Services sold by
  - Direct sales force
  - DECdirect PC services catalogue

EXHIBIT VI-2

Digital : Strengths & Weaknesses

Strengths	Weaknesses
· Major name in the industry	- Name associated with hardware, not services
· Comprehensive catalogue includes Desktop	- Offerings are numerous and can be confusing to purchase or to sell
· Networking skills	- Not considered impartial
· 1-stop shop, includes mulitivendor capability	- Desktop not especially differentiated nor highlighted

B

Hewlett-Packard

Hewlett-Packard (HP) prides itself on the quality of its service and the organisation of its third-party channels. Both these factors will need to be carefully husbanded during the transition to a desktop service environment since:

- Service quality will become more dependant on the management of multi-vendor services.

- Equipment suppliers will come into contention with their own third-party distribution channels as downsizing becomes more prevalent, and vendors compete for static or shrinking hardware expenditures.

HP operates with two types of dealer in the sales of PCs, peripherals and small units - ie. all its low-end sales:

- The first type of supplier is called a reseller. It is effectively an agent for the selling of HP equipment, software and services, but may of course also sell parts of a system or whole systems from other suppliers. A reseller takes service contracts for HP and HP delivers the service. It cannot undertake hardware maintenance or system software support on HP products.

- The second type of supplier is called a remarketer and is capable of adding more types of value than a reseller. Remarketers are trained by HP in the businesses of providing hardware maintenance and software support on HP's systems and applications software product. Like resellers they will also add their own unique value by providing software from independent software vendors (ISVs) or by producing tailored or customised products of their own manufacture. Remarketers offer what is essentially a one-stop shopping outlet to the user organisation.

In the case of the reseller, users with problems will contact the HP Response Centre for diagnosis and help; while remarketers will be expected to provide their own help desk to cope with at least the first level of problem. HP provides second-level support to its remarketers via the Dealer Group in the Response Centres.

Dealers can choose which type of organisation they wish to be - reseller or remarketer. In specific deals the type can be reversed if the situation requires it. In a few cases the system works with two tiers, the first tier acting as a non-exclusive reseller distributing standard products and systems while the second is selling HP products, possibly more on an exclusive basis, and can be either a reseller or a remarketer.

HP desktop services are not differentiated so clearly from its overall service offerings as are those for Digital. This has advantages as well as disadvantages. The major advantage is that the desktop offerings are organised to draw on all the standard HP resources and so suffer no potential diminution of quality:

- Desktops are serviced from the HP Response Centres.

- Response centres are reforming to have separate groups for Network Operations support, for PCs/Dealer support and for total support.

- Workstations, PCs and terminals draw on the same block of support contracts as other larger systems, although some of the options are not available to desktop devices.

The disadvantages are that HP may miss out on opportunities to develop a large service revenue stream in the sector due to:

- Opportunities being presented to the distribution chain rather than to the centre

- Opportunities for outsourcing contracts by-passing HP because the budget control is with the user management and not the central IS management.

Exhibits VI-3 and VI-4 analyse the offerings, strengths and weaknesses of HP in this sector.

EXHIBIT VI-3

Hewlett-Packard's Service Offerings

- Standard contracts for hardware and software product support
- Multi-vendor capability
  - Hardware maintenance
  - PCs, peripherals, PC-LAN operating system
  - Third-party software support ie. Oracle, Ingres, etc.
- Open Software Environment (OSE)
- Consultancy Services
- Network Operations group
- PC Dealer support
- Service customisation

EXHIBIT VI-4

Hewlett-Packard : Strengths & Weaknesses

Strengths	Weaknesses
· Premier quality support service provider	- Desktop services not differentiated
· Consistently placed no.1 in independent services surveys	- Technical orientation of much of the company's service offerings
· Tailored service contracts	- Weak capability for Systems Operations
· Strong networking capability	
· Third-party software products supported on own and multi-vendor platforms	

C

PrimeService

PrimeService is the Customer Service organisation of Prime Computer which supplies integrated system solutions to certain selected end-user markets:

- Prime Computervision is the supplier of integrated CAE/CAD/CAM solutions with an installed base of more than 150,000 seats worldwide. It claims to be the world's largest supplier of design technology to the automotive, aerospace, mechanical engineering and consumer electronics industries.

- Prime Computer Systems has a significant position in marketing commercial mini-computers and is a leading supplier of Pick-compatible data management software.

PrimeService looks after standard maintenance but also provides:

- Power and environmental services
- Network design, installation and management
- Disaster recovery services.

Throughout Europe, PrimeService employs over 800 people and in 1991 accounted for some $300 million of revenues.

Services offered in addition to standard maintenance include a number of services which have been recently added to the portfolio and which contribute to the support of desktop users:

1. Network Planning and Design

In this service line PrimeService works with users to assess data communications needs and to consider the physical conditions imposed by the building into which the system will be installed. The service covers:

- A complete installation service, to give clients a single source of support when establishing a network. Using a single installer is considered valuable in hybrid networks, where the network is made up of components from several different manufacturers.

- A range of support services is available to clients with existing networks. Network support covers:

  - Diagnosing problems
  - Providing components
  - Carrying out the necessary maintenance and repair work, if required.

- Remote diagnosis which is used wherever possible to speed fault identification. The diagnosis service is also available to clients who may have separate repair and maintenance arrangements with other suppliers.

- Network audits are designed to analyse how effectively a network is performing its different functions and to indicate where improvements might be made.

2. Multi-Vendor Services

PrimeService has a multivendor service called 'ONE-CALL' which provides a single point of contact for all technical and logistic support services. A PrimeService representative takes responsibility for the task of co-ordinating an integrated support service. With 'ONE-CALL' each contract is tailor-made to suit the client company's needs.

3. Desktop Services

'DESKTOP' is the PrimeService solution to the problems associated with running a large number of desktop devices. It is claimed to bring a total service approach to desktop equipment repair and maintenance.

Designed as a single-source support contract for all business equipment 'DESKTOP' operates through a combination of audits, network data flow management, planned purchasing and a helpdesk for users. The support available includes maintenance and repair services, supply and installation of new equipment.

PrimeService will also carry out a full audit of existing desktop equipment. Areas examined are:- the type of equipment, its age, its configuration, data applications and software, the condition of networks, and existing maintenance arrangements. Proposals can then be developed for rationalisation.

Like the other two equipment vendors whom we have profiled, Prime's offering suffers from being too fragmented to be yet called a comprehensive desktop offering. Most of the major elements are in place but the service is not marketed as a total service solution.

INPUT expects many equipment suppliers to move swiftly from this fragmented service approach to fielding a comprehensive but modular portfolio of desktop services within the next 12 months.

Exhibit VI-5 and VI-6 list the offering summary, and the strengths and weaknesses respectively of this vendor.

EXHIBIT VI-5

PrimeService : Desktop Offerings

- Network planning and design
- Single-source 'Desktop' contract
- Standard supply and maintenance
- Multivendor 'One-Call' - combines elements

EXHIBIT VI-6

Prime : Strengths & Weaknesses

Strengths	Weaknesses
· Software skills - System level - Applications	- Specialist technical background
· Integration skills - Proprietary - Open Systems	- Little presence in mainstream commercial systems
· Networking skills	- Marketing 'clout' low
· Multivendor capability	- Weak 'Systems Operations' capability

D

THORN EMI Computeraid

THORN EMI Computeraid (Computeraid) is the independent maintenance organisation in the Engineering Division of the U.K.-based THORN EMI group, famous internationally for its music recording activities but also active in lighting, defence and general engineering industries among other things. Computeraid was retained within the parent group when THORN EMI divested itself of its other computer services operations in 1991 by means of a management buy-out (The new entity formed now trades as Data Sciences).

Computeraid's 1991 revenues were approximately £24 million, achieved with over 500 staff almost 300 of whom are professional service engineers working in the field or in workshops. The engineers may be trained on hardware, on software or be dual trained on both. The company has grown steadily at over 15% per annum and maintained this growth until the 1991 recession caused a virtually nil growth over 1990. The portfolio of equipment serviced is clearly centred on PCs and EPOS/EFTPOS terminals.

Vendors whose equipment is serviced include IBM, Apple, Compaq, Toshiba, Dell and other compatibles. Computeraid also offer a range of non-maintenance services:

- Applications support
- Network operating system support
- Network facilities management
- Disaster recovery
- Environmental services
- Performance consultancy.

These services currently account for only 5% of revenues but policy is to grow this revenue base as fast as possible to counter the threat of falling maintenance revenues.

Computeraid's strategy in entering the desktop services arena is to go for the longer-term outsourcing business, in which companies will contract out the whole area of desktop supply, maintenance and support on a facilities management contract. The size of company targeted is with an annual IT budget of at least £½ million. This size of company will be most likely to have a plethora of desktop devices to manage but no in-house skills to be able to allocate to the supposedly routine, 'low-tech' tasks associated with desktop devices. This view is in accord with INPUT's findings that this type of resource is more likely to be found in the large and very large companies, although even they will outsource desktop services if there is a business culture which is generally favourable to outsourcing.

Computeraid recently announced a three-year contract to manage the desktop devices for the Sedgwick group, one of Europe's largest insurance brokers. This will include putting 15 personnel in various Sedgwick sites round the UK as well as linking the sites remotely to the Computeraid helpdesk function via the THORN EMI network.

Exhibit VI-7 summarises the strengths and weaknesses of this independent maintenance organisation in amplifying its service portfolio by diversification into desktop services.

EXHIBIT VI-7

THORN EMI Computeraid : Strengths & Weaknesses

Strengths	Weaknesses
· In-depth hardware maintenance skills in PCs/desktop devices	- Perceived software product expertise
· Networking skills	- Maintenance culture
· Helpdesk skills	
· Sales track record with MIS function	- No pan-European status
· Large company financial strength	- Little expertise in selling to end-user/departmental user
· Clear strategy	

E

Data Logic

Data Logic is one of the UK's medium-sized professional services companies. It is a subsidiary of the US Raytheon corporation which is active in defence electronics and systems integration markets in the USA. Data Logic expanded in the early 1980s in the provision of financial dealing room turnkey systems but became overstretched after the 1987 stock exchange crash and retrenched by selling its financial systems division to Digital Equipment Corporation (Digital).

Data Logic now consists of two divisions, the larger of which, Professional Services, had revenues of approximately £20 million in 1991, and the smaller Customer Services Division (CSD) which had revenues of £8 million. CSD is responsible for hardware and software maintenance activities. Originally set up to service the company's own financial dealing systems hardware, it has grown to become a small independent maintainer with hardware maintenance revenues of £6 million per annum, and software and other services activities amounting to £2 million.

At the present time the company is putting together a strategy for desktop services which will include all the service components discussed in this report. The accent will be on managing all elements of the service. Some components will be outsourced, such as PC supply and software product supply. The majority, including installation, network design, implementation or upgrade, hardware maintenance, helpdesk, administration etc., will be delivered using Data Logic's own resources.

The objective is to be able to offer a comprehensive service portfolio under a brand name to be launched in 1992. Exhibit VI-8 summarises Data Logic's strengths and weaknesses.

EXHIBIT VI-8

Data Logic : Strengths & Weaknesses

Strengths	Weaknesses
· Part of an international group	- Uneven track record in company growth
· Hardware and software skills mix	- Little PC software products expertise
· Focused and branded service intentions	- No pan-European capability to date
· Independent	

F

Information Systems Networks Limited (ISN)

ISN is a specialist network systems provider operating from a base in Abingdon, Oxfordshire, UK. It employs 40 people and has revenues of over £2 million. As a result of its work in supplying and installing software systems based on PC networking, using 286 and 386 based servers from a number of suppliers, ISN has developed a range of skills which make it able to market desktop services to its client base and to other companies to whom it has not previously installed a system. ISN's capability includes:

· PC and server hardware supply and installation
· Network supply, maintenance and upgrade
· Standard software product supply
· Tailored software development
· Help desk services
· Help desk system installation.

Areas of service which it does not cover are:

- Hardware maintenance
- Planning and administration services.

ISN's main area of current involvement in Desktop Services is in the area of the help desk. ISN's help desk can support the following software packages:

- 386 Max Professional
- Crosstalk
- DOS
- Harvard Graphics
- MacDraw
- Mac Write
- MS Excel
- Multimate
- Pagemaker
- PC Manager
- Wang Menu Services
- Windows.
- Carbon Copy
- Dataease
- Freelance
- Lotus 1-2-3
- Macintosh System Software
- Mountain Software
- MS Word
- Norton Utilities
- Wang IWP
- Wang VS Connect
- WordPerfect

It offers these services to its own client base and to other clients who have PC-based LANs or wide-area networks. Its approach to this part of its business is typical of many smaller professional services companies in which the scarce resources of skilled personnel are more likely to be used in initial implementations than in supplying ongoing services to larger corporations with general-purpose desktop service requirements. INPUT believes that this type of company is most likely to miss out on the significant opportunities for regular contracted services to the already installed PC users.

VII
The Opportunity

A
The Market Size and Growth

Exhibit VII-1 provides INPUT's forecast of the desktop services market between 1992 and 1997, which predicts a high level of growth at 28% per annum overall with total outsourced contracts including LAN and application software support and maintenance growing even faster at 32% pa. The smaller segment of hardware maintenance contracts is expected to grow at the slower pace of 18% pa.

These figures exclude equipment supply, but include hardware maintenance, installation support, LAN management, and technical support services.

EXHIBIT VII-1

Desktop Services Market by Hardware and Software Categories—Europe, 1992-1997

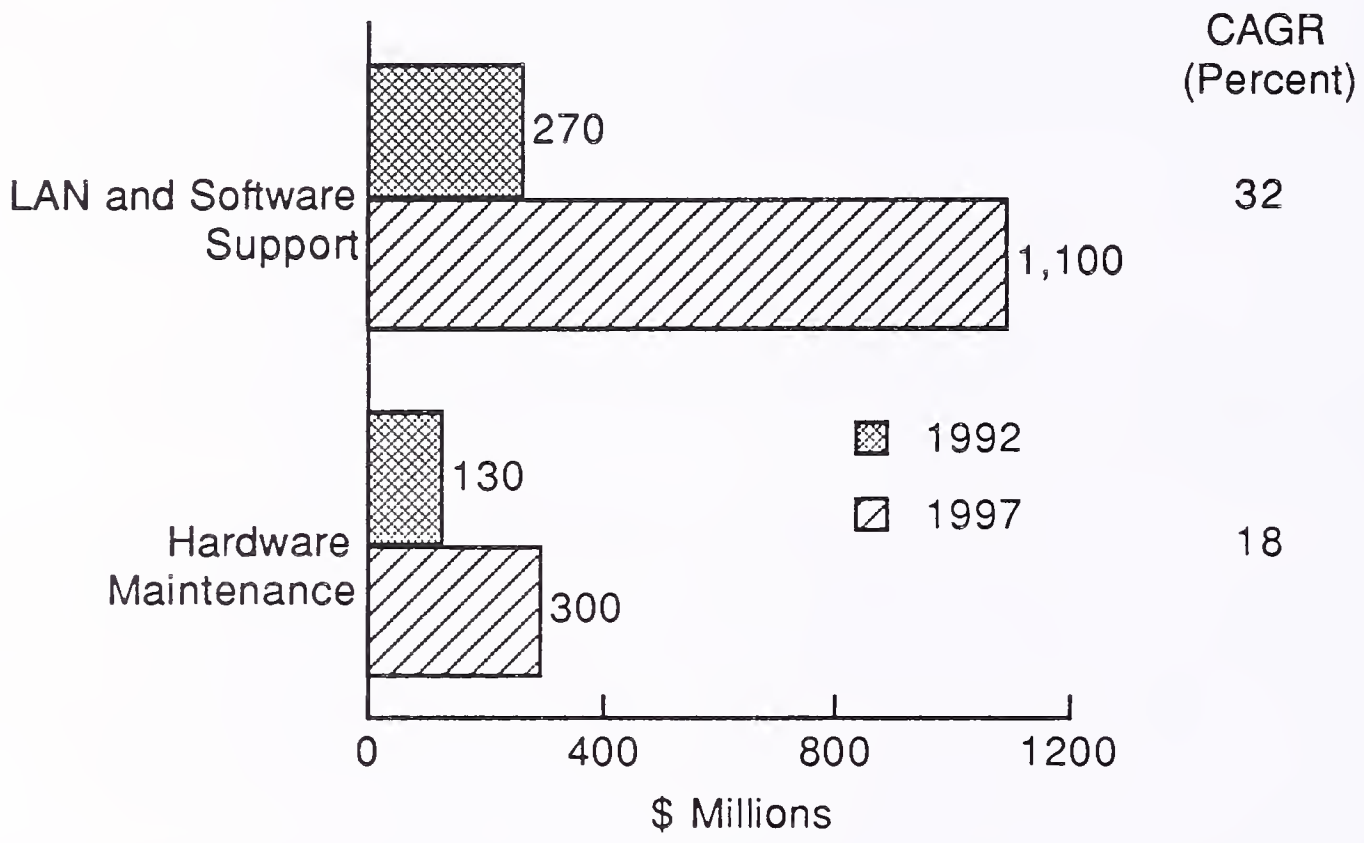


Exhibit VII-2 shows the size of the European desktop market by region/country.

EXHIBIT VII-2

Comparative Country Markets
Desktop Services, Europe

Region	1992 ($ Millions)	1992-1997 CAGR (Percent)	1997 ($ Millions)
France	45	23	125
Germany	60	30	225
United Kingdom	175	30	650
Italy	25	25	75
Scandinavia	30	26	95
Netherlands	30	32	120
Belgium	15	25	45
Rest of Europe	25	21	65
TOTAL	**400**	**28**	**1,400**

The desktop services market is most highly developed in the United Kingdom where contracts have been placed recently by a number of major corporations such as ICI and Unilever, and by important nationally based companies such as the UK's Sedgwicks and TSB.

After the United Kingdom, the market is starting to develop in Germany, the Netherlands, Sweden and France, though these countries still lag behind the United Kingdom in their adoption of desktop services. So far, there has been little apparent activity in the desktop services market in Italy and Spain.

The breakdown of the desktop services market by industry sector is provided in Exhibit VII-3, and Exhibit VII-4 shows vendor perceptions of the attractiveness of the market by industry sector.

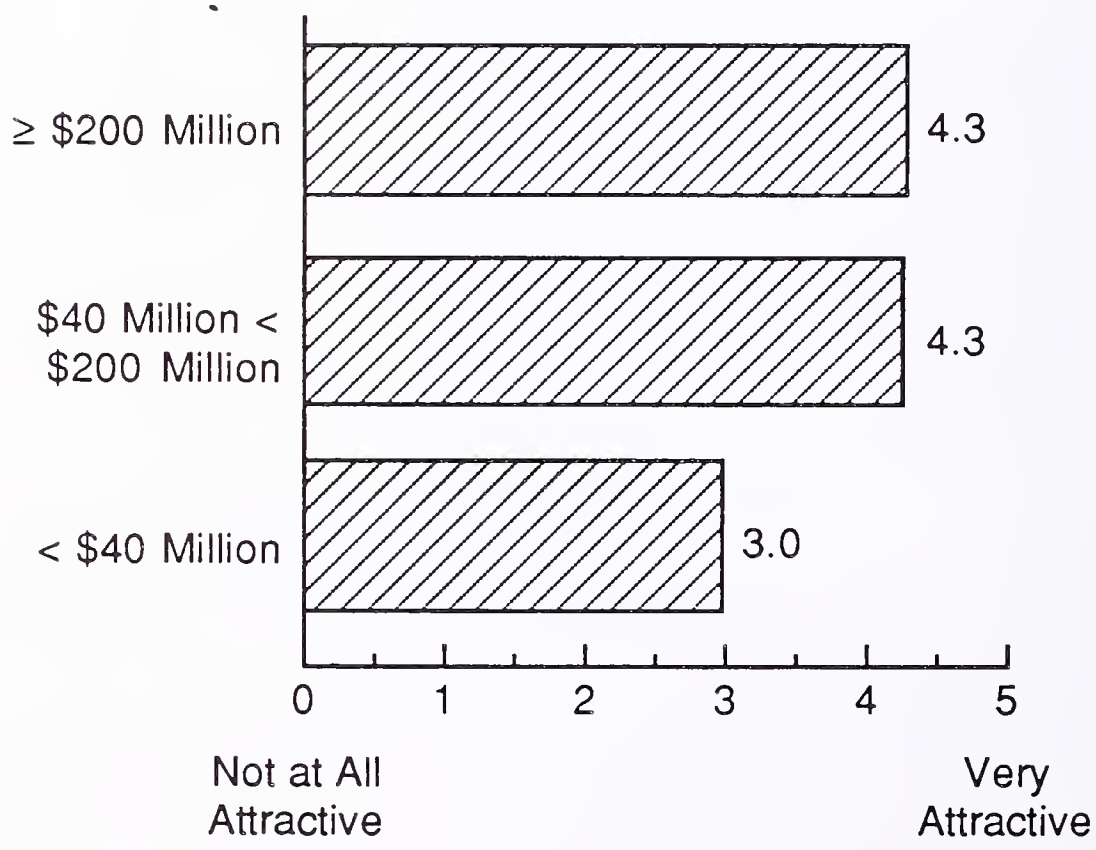
EXHIBIT VII-3

Principal Industry Sector Markets, 1992

Industry Sector	Market Size ($ Millions)	Percent
Financial Services	160	40
Government	100	25
Manufacturing	70	17.5
Other	70	17.5
TOTAL	**400**	**100**

EXHIBIT VII-4

Attractiveness Rating by Company Size Desktop Services, Europe



Standard error = 0.3

There are potentially two distinct market segments for desktop services. Firstly there are the major corporations who have the resources to manage their desktop services in-house but where a policy decision has been taken by senior executives to outsource non-core activities. In these cases,

exemplified by ICI, Unilever, and TSB, those employees previously engaged on personal computer/local area network support are typically transferred to the vendor organisation.

Secondly there are the medium-sized companies, which typically lack the in-house resources to support their end users' usage of personal computers/local area networks. Such organisations will always have difficulty in developing a critical mass of skills to support these activities and will experience problems in keeping their knowledge up-to-date. Accordingly it will be difficult for in-house IS departments to maintain a high level of service to their internal clients and, rather than provide an unsatisfactory level of service, IS managers may choose to outsource this service. This segment of the market is possibly masked by the major contracts awarded in the United Kingdom, but may emerge as the major opportunity elsewhere in Europe, such as in France.

B
Principal Vendor Strategies

The market for desktop services is being created largely by the activities of the major dealers in personal computer equipment such as the members of International Computer Group, P&P Corporate, and JWP Businessland. These organisations are motivated to target outsourcing in order to decrease their dependence on areas of low margin such as equipment supply and maintenance.

As shown in Exhibit VII-5, the equipment manufacturers themselves are also very keen advocates of desktop services for similar reasons, as are also the independent maintenance organisations (IMOs). So far the professional services vendors who have traditionally dominated the outsourcing market - such as Hoskyns, EDS, and Data Sciences - have shown comparatively little interest in desktop services. However this is now likely to change since the activities of vendors such as ICG and P&P Corporate pose a very real threat to their long-term dominance of the outsourcing market.

EXHIBIT VII-5

Leading Vendors, 1992

- International Computer Group (ICG)
- P&P Corporate
- JWP Businessland
- Olivetti Systems & Networks
- Unisys
- Computeraid
- Digital
- PrimeService
- H-P

The threat comes from the growing importance of technologies such as local area networks, open systems, and client-server architectures. While these remained a minor proportion of the equipment installed base, the professional services vendors could afford to concentrate on selling outsourcing services based upon their proprietary mainframe and mid-range capabilities. However this is no longer the case, and the future of IS infrastructure outsourcing increasingly requires desktop services capability.

Exhibit VII-6 summarises the current delivery capabilities of the equipment suppliers and independent maintainers (IMOs) who are involved in the desktop services market. A similar chart detailing the same parameters for the professional services vendors and the PC dealers/distributors can be found in INPUT's other 1992 report on desktop services issued in the European Outsourcing programme and entitled, Desktop Services in Europe, 1992-1997.

EXHIBIT VII-6

Delivery Capability by Type of Vendor
Desktop Services, Europe

Vendor Type / Service Offerings	Equipment Suppliers	Independent Maintainers
Equipment Selection consultancy	Medium	Low
Equipment supply	High	Medium
Equipment maintenance	High	High
Equipment Installation	Medium	High
LAN management	High	Medium
Help desk services - systems software - applications	High Medium-Low	High-Medium Low

Exhibit VII-7 summarises the strengths and weaknesses of the two groups of customer services organisations:

- The strategy which the equipment suppliers are adopting is to develop a portfolio of individual services from which users can select a set which is appropriate to their own needs. This strategy runs the risk of being too slow to implement leaving the initial large outsourced contracts to be picked up by the smaller organisations such as the large dealer chains.

- The strategy of the independent maintenance vendors is to aim for project management of large desktop service contracts, subcontracting to other vendors the components such as software support for which they do not have adequate skills.

An interesting example of where the two types of supplier have come together in an alliance is afforded by the case of Dell Computer (Dell) and Sorbus (in which ICL now has a stake).

EXHIBIT VII-7

Strengths & Weaknesses by Type of Vendor

Strengths	Weaknesses
A. Equipment Suppliers	
• Wide range of expertise	• Product orientation
• Large installed customer bases	• Overstretched resources
• Financial Strength	• Channel contention
• Customer Service organisations	• Slow to adopt new strategies
	• Not perceived as impartial
B. Independent Maintainers	
• Considerable expertise in PCs and networking	• Financial weakness
• Incentive to diversify	• Few software skills
• Independent	• Strong maintenance cultures

Dell supplies desktop and portable computers, including peripherals such as printers and plotters, as well as the usual range of storage devices. Dell has adopted a strategy of direct selling to user organisations cutting out the middleman dealer or distributor. This strategy of direct telephone selling has been so successful in re-establishing the personal contact between supplier and user, which older manufacturers lost at the time of introduction of their desktop devices by going into alternative distribution channels, that Dell is now fast approaching the $1 billion revenues mark in under 7 years of growth from start-up.

Dell's service strategy is to build upon the direct customer contact policy which it has adopted for sales by integrating all its customer contacts into the one telephone-based operation. Hence the customer support activities are being handled from the same integrated customer database, which is used to record each initial sale. This strategy has enabled Dell to benefit from keeping close personal contact throughout the lifetime of a product at the same time as being able to offer competitive prices by cutting out the intermediaries.

Dell's relationship with Sorbus is close and involves Sorbus in handling all of Dell's field service warranty and maintenance calls, both on desktop and portable units. Dell is determined to have a strong perceived service image. Two important planks of this policy are:

- On-site service during the first 12-months warranty
- Field call-out to service portable units from calls to any one of nine world-wide customer response centres irrespective of country of purchase of the failing unit - a truly global service.

Although there are obvious grips in Dell's overall desktop service eg. application products supply is not yet part of the offering, Dell's reliance on an integrated networked system tracking customers from first enquiry onwards through sales and service life-times indicates the way in which desktop and mobile units will be managed in future from 'cradle to grave'.

Exhibit VII-8 lists the use of alliance partners and subcontractors by the two vendor types being described in detail in this report. Similar analysis of Professional Service vendors, and PC dealers and distributors is available in the sister report mentioned earlier.

EXHIBIT VII-8

Use of Partnerships by Type of Vendor

Vendor Type / Service Offerings	Equipment Suppliers	Independent Maintainers
Equipment Selection consulting	Low	Low
Equipment purchase	Low	Medium
Equipment maintenance	Medium	High
Cabling	High	Medium
Equipment Installation	Medium	Low
LAN management	Low	Low
Help desk services		
- systems software	Low	Low
- applications	High	High

C
Critical Success Factors

Many companies in the industry with all sorts of backgrounds are present in the desktop sector, quite often without seeing themselves as fulfilling the role of a total contractor:

- Equipment suppliers are putting together comprehensive portfolios of desktop services, normally marketed as a series of individual service lines.
- Independent maintenance organisations are seeking to diversify their portfolios to include more networking and software services components.
- PC dealers and distributors have awoken to the fact that their expertise in selection and integration of PC based hardware and software products is extremely valuable to end-users and may be unique in the marketplace.

- Professional service vendors are often reluctant participants in the desktop sector often seeing more profit in mainframe and minicomputer based systems and services.

Exhibit VII-9 summarises the key ingredients for success in the fast-growing desktop sector. Companies that are going to succeed must realise the importance of each of these key factors. Failure to do so will mean lack of flexibility in the offering and inability on the part of the sales force to come up with innovative concepts which have sound reasoning behind them and which make business sense.

EXHIBIT VII-9

Critical Success Factors

- Full service capability in PCs and LANs
- Broad geographic coverage
- Broad application software product support capability
- Up-to-date technical skills

Exhibit VII-10 lists the main challenges facing all types of company, including their own.

EXHIBIT VII-10

Vendor Challenges in Desktop Services in Europe

- Outsourcing ITTs increasingly request Desktop Services
- Desktop Services also emerging as standalone service products
- Set to become dominant form of infrastructure management
- Downsizing requires vendors to rethink their standard support contracts
- Essentially an unbundling/rebundling exercise

A
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 A-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.

For 1992 INPUT has added one delivery mode and three new submodes to its Information Services Industry Structure:

- *Equipment Services* has been added as the ninth delivery mode. INPUT has forecasted the hardware maintenance and related services market through its Customer Services Programs for a number of years. Starting in 1992, such services will be included in the total information services industry as defined by INPUT.

- Two submodes have been added to the *Systems Operations* delivery mode - *desktop services* and *network management.* They are defined on pages 5 and 6.

- A fourth submode has been added to the Professional Services delivery mode - *applications management.* This change reflects a shift in the way some software development and maintenance services are purchased. A complete definition is provided on page 6.

A series of definitions for computer equipment have also been added.

Changes from the 1991 INPUT *Definitions of Terms* are indicated with a ☆.

B
Overall Definitions and Analytical Framework

1. Information Services

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

- Use of vendor-provided computer processing services to develop or run applications or provide services such as disaster recovery or data entry (called *Processing Services*)

- A combination of computer equipment, packaged software and associated support services which will meet an application systems need (called *Turnkey Systems*)

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

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

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

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

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

- Services that support the access and use of public and proprietary information such as on-line data bases 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 categorized 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.

Non-captive 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 analyzed 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 data base 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 interorganizational electronic systems facilitate the business processes of the trading community.

- A trading community is the group or organizations-commercial and non-commercial-involved in producing a good or services.

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

6. Outsourcing

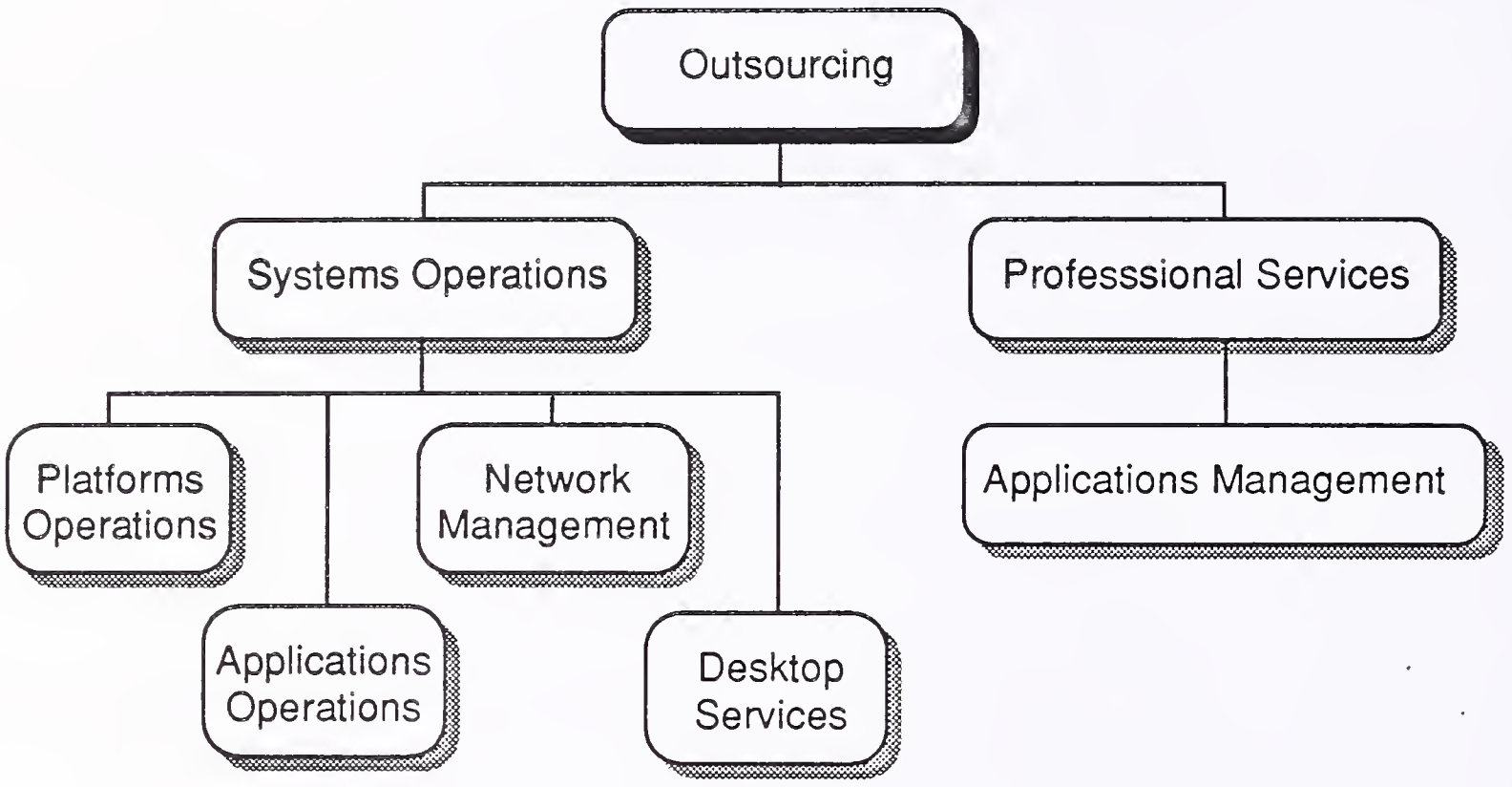
Over the past few years a major change has occurred in the way clients are buying some information services. The shift has been labeled *outsourcing*.

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 A-1. Complete definitions are provided in Section C of this document. INPUT provides these forecasts as part of the corresponding delivery modes.

EXHIBIT A-1

Outsourcing Components
INPUT's View



- *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.

☆ *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 organization. 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 A-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.

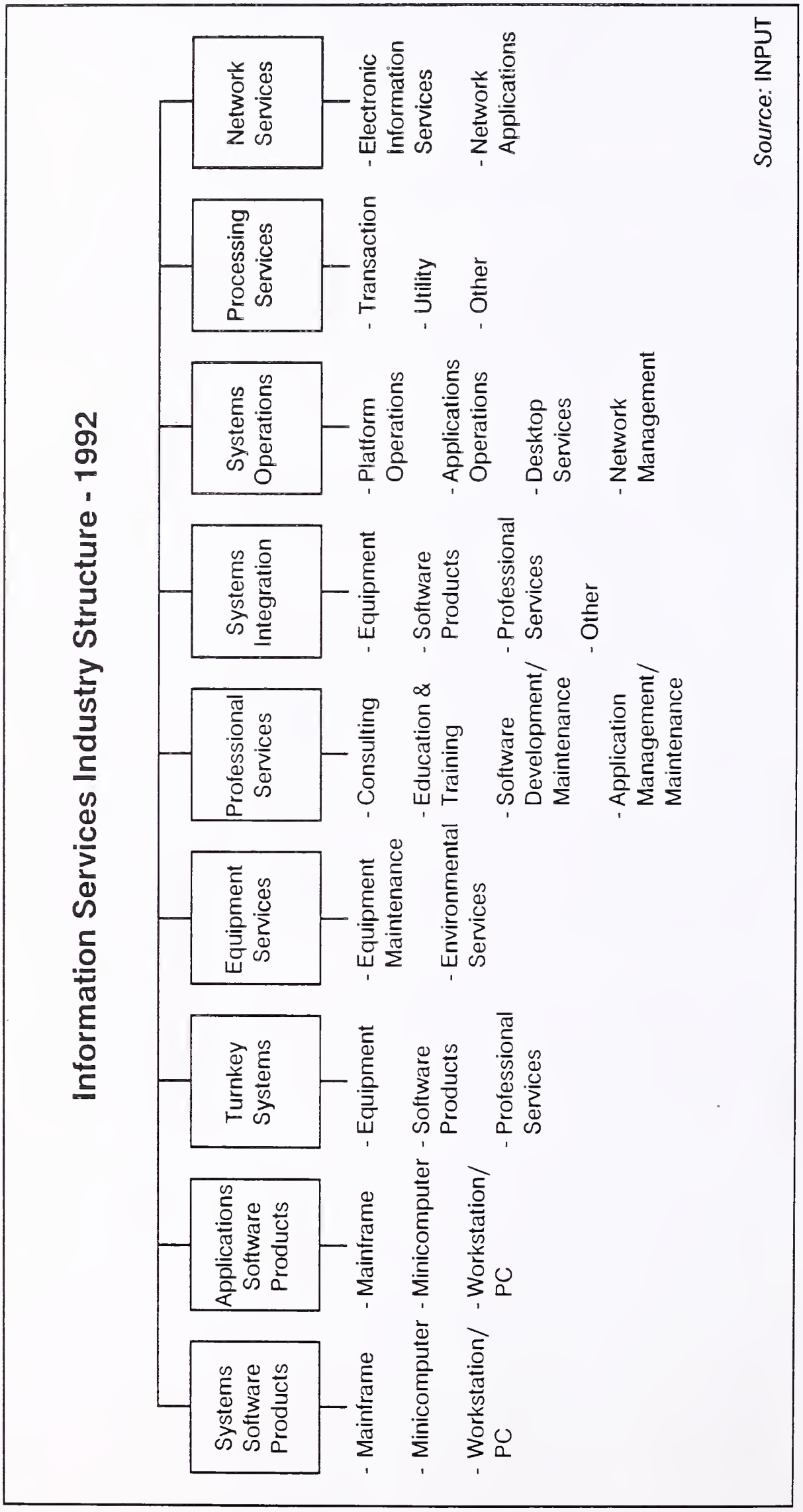
1. Software Products

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 organizations 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.

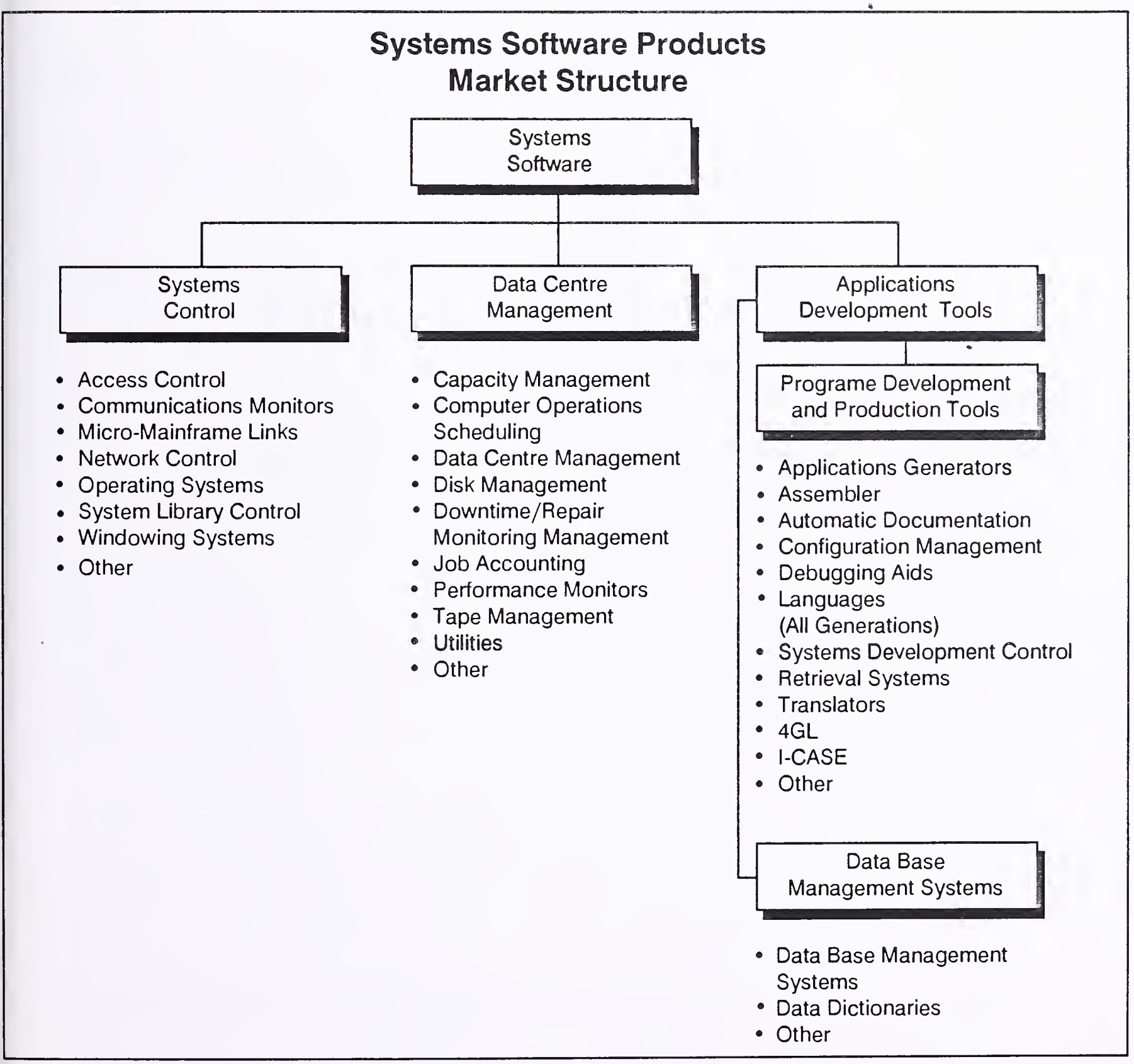
EXHIBIT A-2



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 A-3.

EXHIBIT A-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, data base management systems, report writers, project control systems, CASE systems and other development productivity aids.

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 organization. Examples include accounts payable, order entry, project management and office systems. INPUT categorizes applications software products into two groups of market sectors. (See Exhibit A-4.)

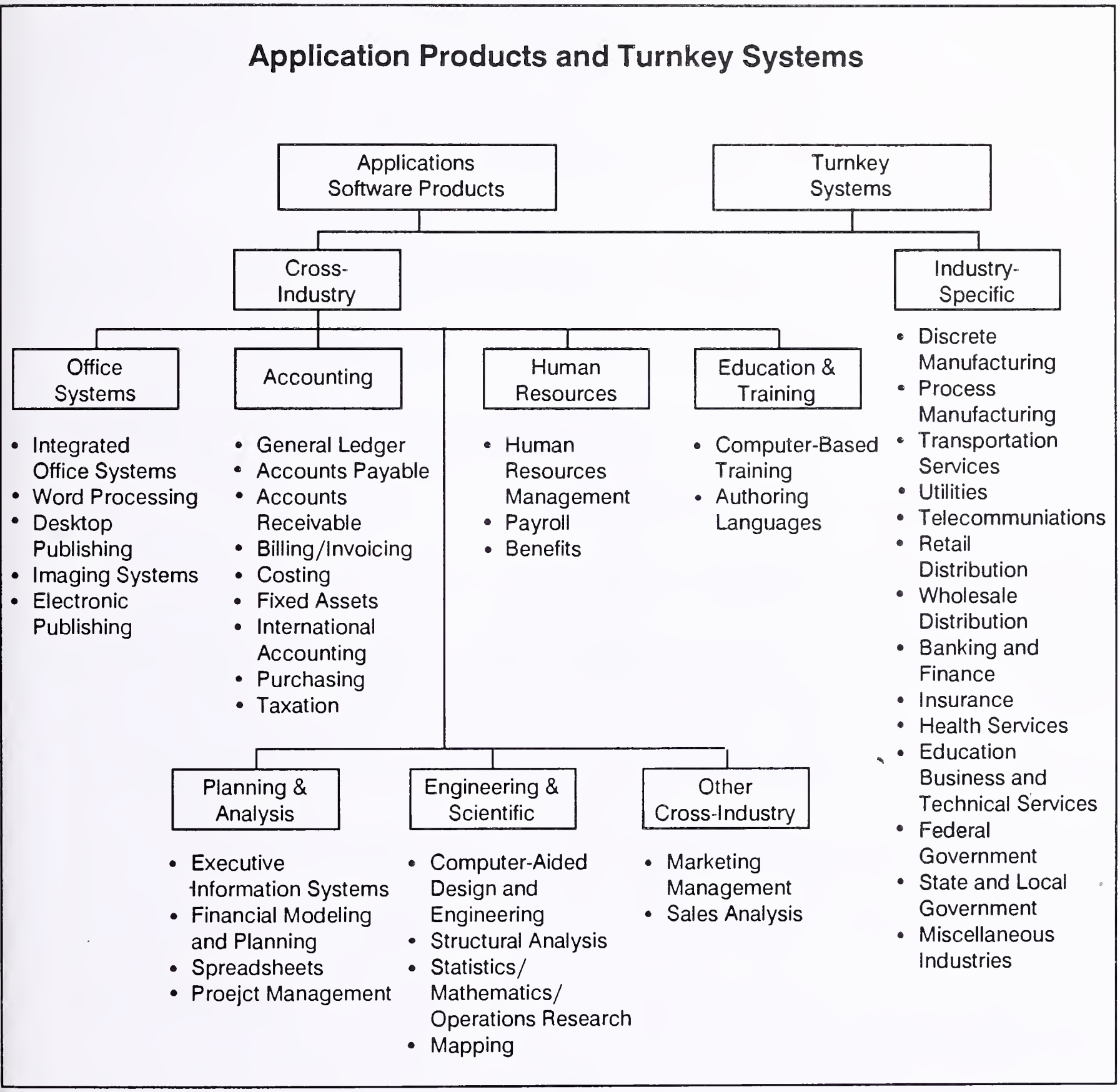
- *Industry Applications Software Products* - Software products that perform functions related to fulfilling business or organizational needs unique to a specific industry (vertical) market and sold to that market only. Examples include demand deposit accounting, MRPII, medical record keeping, automobile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

EXHIBIT A-4

Application Products and Turnkey Systems



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 categorizes turnkey systems into two groups of market sectors as it does for applications software products. (See Exhibit A-4.)

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

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

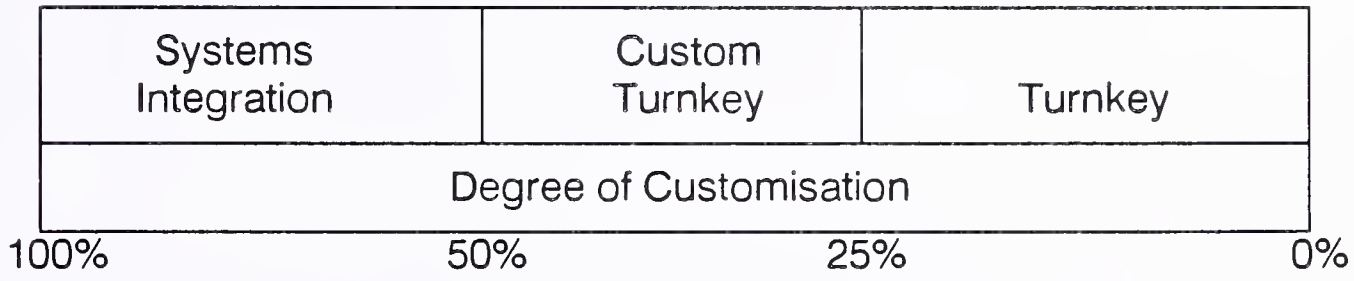
- Software products - prepackaged systems and applications software products

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

Exhibit A-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 A-5

The Customisation Spectrum

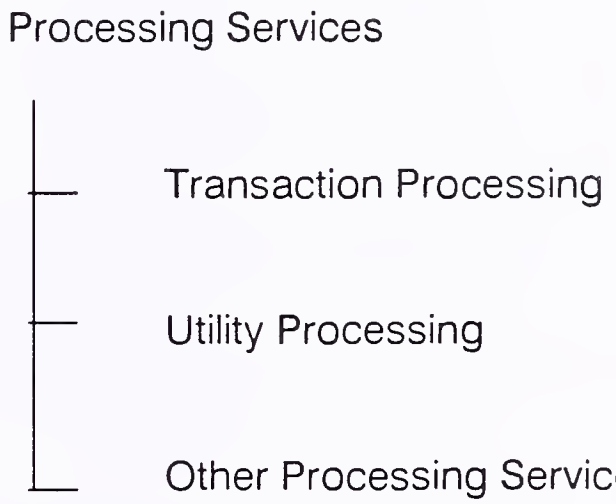


3. Processing Services

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

EXHIBIT A-6

Processing Services Market Structure



- *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 data bases. 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 two 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 organization. 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 A-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* - prepackaged 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 A-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

6. Professional Services

This category includes four submodes: consulting, education and training, software development, and applications management. Exhibit A-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 are 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.

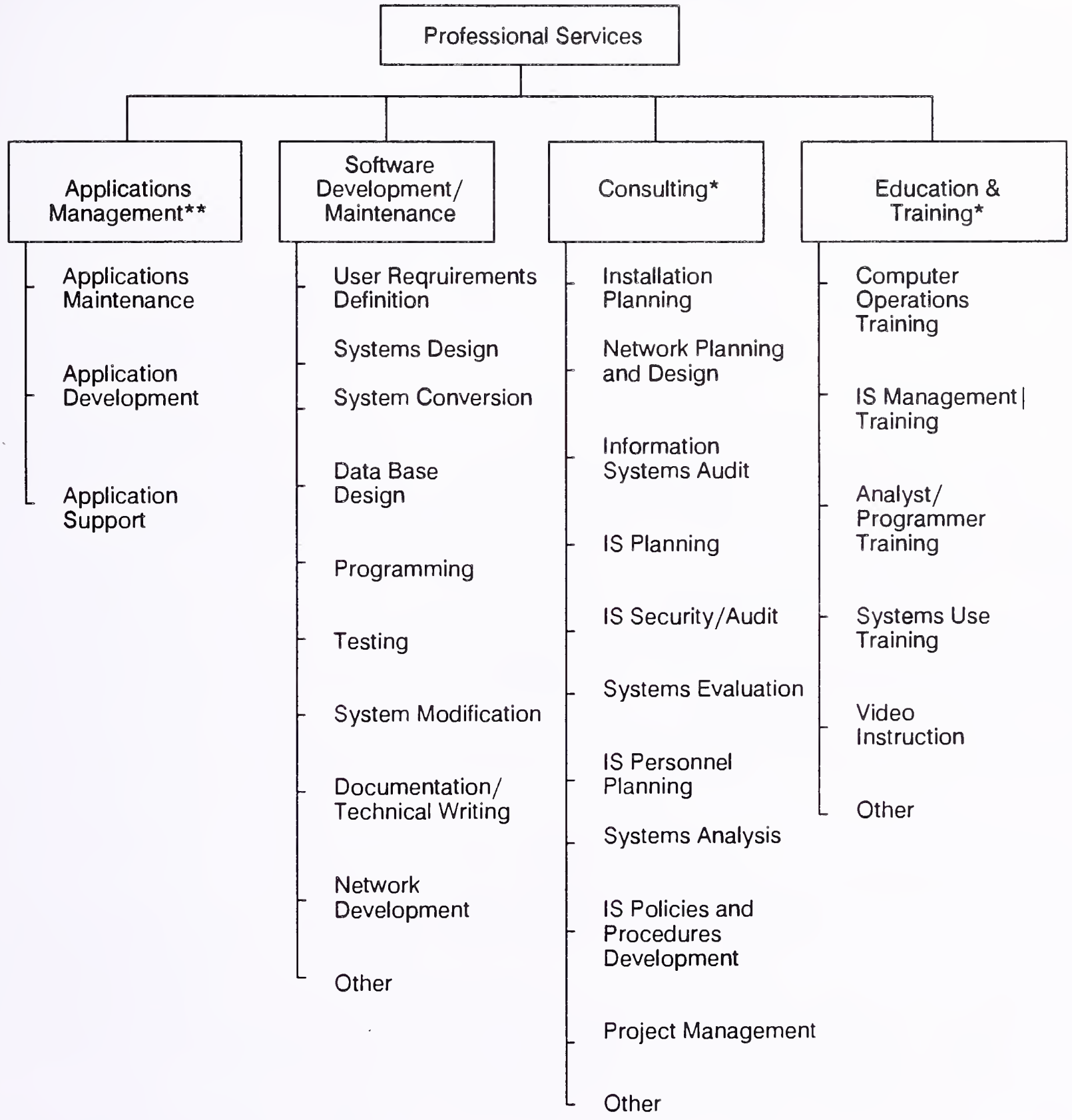
☆ *Applications Management*: The vendor has full responsibility for maintaining and upgrading some or all of the application systems that a client uses to support business operations and may develop and implement new application systems for the client.

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 A-8

Professional Services Market Structure



*Related to computer systems, topics, or Issues

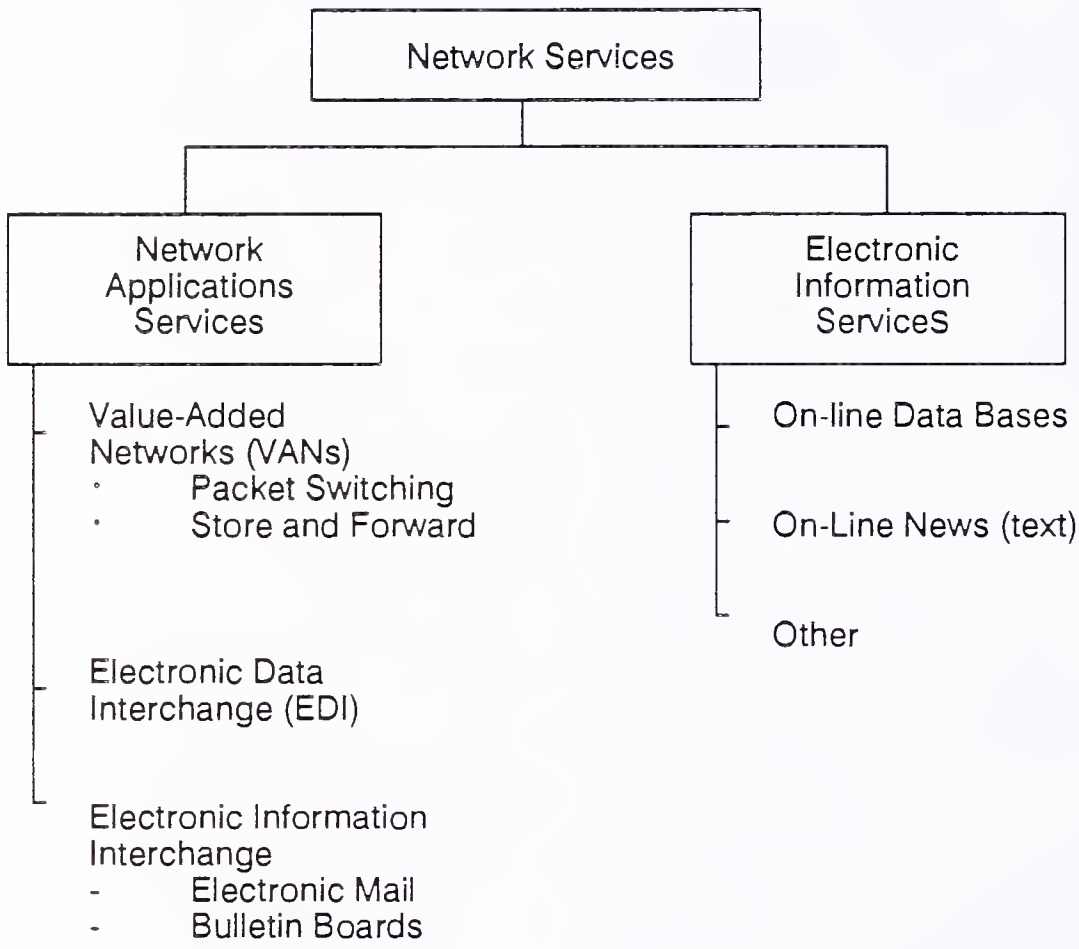
**Vendor assumes full responsibility on contracted longer term basis

7. Network Services

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

EXHIBIT A-9

Network Services Market Structure



a. Electronic Information Services

Electronic information services are data bases 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 data bases. 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 data bases. 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 Data Bases* - 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 specialized 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 analog-to-digital converters.

☆ *Output Devices* - Includes printers, CRTs, projection television screens, micrographics 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 data base 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.

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 A-10.

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

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

EXHIBIT A-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 transport 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/optional 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 business
	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 A-10 (CONT.)

Industry Sector Definitions

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	Depositary institutions Nondepositary 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 A-10 (CONT.)

Industry Sector Definitions

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 organisations
	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

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.

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:

- Integrated office systems (IOS)
- Word processing
- Desktop publishing
- Electronic publishing
- Image systems

- IOSs-such as IBM's OfficeVision, HP's NewWave Office and DEC's All-In-1-typically include the following core functions, all of which are accessed from the same desktop: electronic mail, decision support systems, time management and filing systems.

- Office systems graphics include presentation graphics (which represent the bulk of office systems graphics), paint and line art, page description languages, and electronic form programs.

- The fundamental difference between electronic publishing and desktop publishing (within the office systems sector) 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-whereas desktop publishing is a personal productivity tool and is generally a lower end product residing on a personal computer.

- Electronic or computer publishing systems that are sold strictly and specifically to commercial publishers, printers, and typesetters are excluded from cross-industry consideration and are included in the discrete manufacturing industry.

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 modeling 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 A-11 summarizes 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.

EXHIBIT A-11

Delivery Mode versus Market Sector-Forecast Content

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

- *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.

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 A-12 summarizes 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 A-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

B
Economic Assumptions

There follow some notes on the methodology INPUT uses in making forecasts and judging of 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 300 interviews with prominent software and services vendors across Europe. This research assesses their attributable revenues in each country by delivery made 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 1990 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 software and 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 oil prices on forecast software and services growth rates. In summary this showed that falling real growth was largely counterbalanced by increases in inflation, resulting in continued high dollar growth forecasts for the market.

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 1992 studies.

A

European Exchange Rates

The following table, Exhibit B-1, shows the standard exchange rates used throughout the 1992 programme to consolidate country market data for overall Western European forecasts and vendor market shares.

EXHIBIT B-1

US Dollar and ECU Exchange Rates 1992

Country	Currency	US Dollar	ECU
France	FF	5.18	6.96
Germany	DM	1.52	2.04
United Kingdom	£	0.532	0.715
Italy	Lira	1,150	1,544
Sweden	Sek	5.54	7.45
Denmark	DK	5.89	7.93
Norway	NK	5.98	8.03
Finland	FM	4.15	5.51
Netherlands	Dfl	1.71	2.29
Belgium	BF	31.26	41.94
Switzerland	SF	1.35	1.81
Austria	Sch	10.63	14.33
Spain	Ptas	96.2	129.6
Portugal	Esc	134.9	181.0
Greece	Dra	174.0	234.8
Ireland	IR£	0.57	0.765
	$	1	1.34

Source: Financial Times 30 December 1991

Exhibit B-2 shows the standard exchange rates used throughout the 1991 programme to consolidate country market data for overall Western European forecasts and vendor market shares.

EXHIBIT B-2

US Dollar and ECU Exchange Rates 1991

Country	Currency	US Dollar Exchange Rate	ECU Exchange Rate
France	FF	5.65	7.74
Germany	DM	1.68	2.30
United Kingdom	£	0.515	0.704
Italy	Lira	1,233.0	1,689.0
Sweden	Sek	5.61	7.69
Denmark	DK	6.39	8.75
Norway	NK	6.49	8.89
Finland	FM	3.96	5.43
Netherlands	Dfl	1.69	2.32
Belgium	BF	34.60	47.40
Switzerland	SF	1.27	1.74
Austria	Sch	11.80	16.17
Spain	Ptas	95.0	130.12
Portugal	Esc	132.5	182.0
Greece	Dra	153.3	210.7
Ireland	IR£	0.51	0.771
	$	1	1.37

Source: Barclays Bank (Q4 1990)

B

European Inflation Rates

Exhibit B-3 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 B-3

Inflation Assumptions 1991 and 1992

Country	Assumption 1991-1996	Assumption 1992-1997	Change
France	3.0	2.7	-0.3
Germany	2.7	3.9	+1.2
United Kingdom	4.8	3.7	-1.1
Italy	4.4	5.2	+0.8
Sweden	6.3	4.0	-2.3
Denmark	2.7	2.4	-0.3
Norway	4.9	3.4	-1.5
Finland	5.0	1.4	-3.6
Netherlands	2.4	3.3	+0.9
Belgium	3.3	3.2	-0.1
Switzerland	3.3	3.5	+0.2
Austria	2.6	3.2	+0.6
Spain	4.7	5.0	+0.3
Portugal	8.0	12.5	+4.5
Greece	12.0	11.0	-1.0
Ireland	3.0	3.0	0.0
European Average	4.0	4.2	+0.2

Sources: OECD Forecasts Q4 1991

Exhibit B-4 shows the inflation assumptions for both the 1990 and 1991 research programmes.

EXHIBIT B-4

Inflation Assumptions 1990 and 1991

Country	Assumption 1990-1995	Assumption 1991-1996	Change
France	4.5	3.0	-1.5
Germany	4	2.7	-1.3
United Kingdom	7	4.8	-2.2
Italy	7	4.4	-2.6
Sweden	7	6.3	-0.7
Denmark	5	2.7	-2.3
Norway	5	4.9	-0.1
Finland	6	5.0	-1.0
Netherlands	3	2.4	-0.6
Belgium	4	3.3	-0.7
Switzerland	5	3.3	-1.7
Austria	4	2.6	-1.3
Spain	6.5	4.7	-1.8
Portugal	-	8.0	N/A
Greece	-	12.0	N/A
Ireland	-	3.0	N/A
European Average	5.5	4.0	-1.5

Sources: OECD 1991 Forecast
IMF 1989

C
Vendor Questionnaire

Impact of Downsizing on Customer Services Organisations

1. Do you offer desktop services?

   _____

2. Within desktop services?

   - How do you segment the market
   - What are your major offerings/combinations of offerings
   - Do you do each of the following activities within your service offerings:
     - hardware supply and installation
     - hardware maintenance
     - network supply and maintenance
     - software product supply
     - application development
     - help desk services
     - planning and admin.

3. For each component of service

   - What is the scope of service
     eg. help desk covers which application software products
   - How is company organised to deliver this service
   - What is basis for pricing
   - What are user requirements
   - What are critical success factors (CSFs)

4. Overall

   - How organised to offered desktop services
   - Target market (e.g. platform, company size)
   - Strengths
   - Use of partnerships
   - How see market developing/driving forces
   - What are four company's strengths
   - How profitable overall
   - Which are most profitable elements of desktop services

5. Are desktop services covered by current contacts/SLAs - impact of client/server offerings.

6. Type of organisational structure - by Reg'l/Central call, engineer location, no. of offices etc.

7. Amount of value-added/revenue at different stages.

   - Warranty }
   - Preventative }
   - Telephone help }
   - On-site visits }
   - Repair/refurbishments }
   - Outsourced functions }
   - Spares }

8. Relationship with distributors, agents, VARs etc.

   - How they view it - partnership vs. competition
   - Are they potential customers.

9. Relationship to adoption of overall services approach.

D
User Questionnaire

1. Why adopted desktop services?
   - Which element used

2. How satisfied?
   - Overall and by component
   - What like and dislike

3. Who used?
   - Why chosen?
   - What were overall selection criteria?
   - Who else considered?

4. What type of vendor felt most suitable?
   - Why?

5. Basis on which charged?

6. How will extend use of desktop services?
   - How would like to extend use.
   - Impact of client/server.

Report Quality Evaluation

To our clients:
To ensure that the highest standards of report quality are maintained, INPUT would appreciate your assessment of this report. Please take a moment to provide your evaluation of the usefulness and quality of this study. When complete, simply fold, staple, and drop in the post.

Thank You.

1. Report title: ***The Impact of Downsizing on Customer Services Organisations*** (CEDT2)

2. Please indicate your reason for reading this report:
   - ☐ Required reading
   - ☐ Area of high interest
   - ☐ Area of general interest
   - ☐ New product development
   - ☐ Business/market planning
   - ☐ Product planning
   - ☐ Future purchase decision
   - ☐ Systems planning
   - ☐ Other _____

3. Please indicate extent report used and overall usefulness:

	Extent		Usefulness (1=Low, 5=High)				
	Read	Skimmed	1	2	3	4	5
Executive Overview	☐	☐	☐	☐	☐	☐	☐
Complete report	☐	☐	☐	☐	☐	☐	☐
Part of report (_____ %)	☐	☐	☐	☐	☐	☐	☐

4. How useful were:

	1	2	3	4	5
Data presented	☐	☐	☐	☐	☐
Analyses	☐	☐	☐	☐	☐
Recommendations	☐	☐	☐	☐	☐

5. How useful was the report in these areas:

	1	2	3	4	5
Alert you to new opportunities or approaches	☐	☐	☐	☐	☐
Cover new areas not covered elsewhere	☐	☐	☐	☐	☐
Confirm existing ideas	☐	☐	☐	☐	☐
Meet expectations	☐	☐	☐	☐	☐
Other _____	☐	☐	☐	☐	☐

6. Which topics in the report were the most useful? Why?_____

_____

7. In what ways could the report have been improved? _____

_____

8. Other comments or suggestions: _____

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Thank you for your time and cooperation.

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