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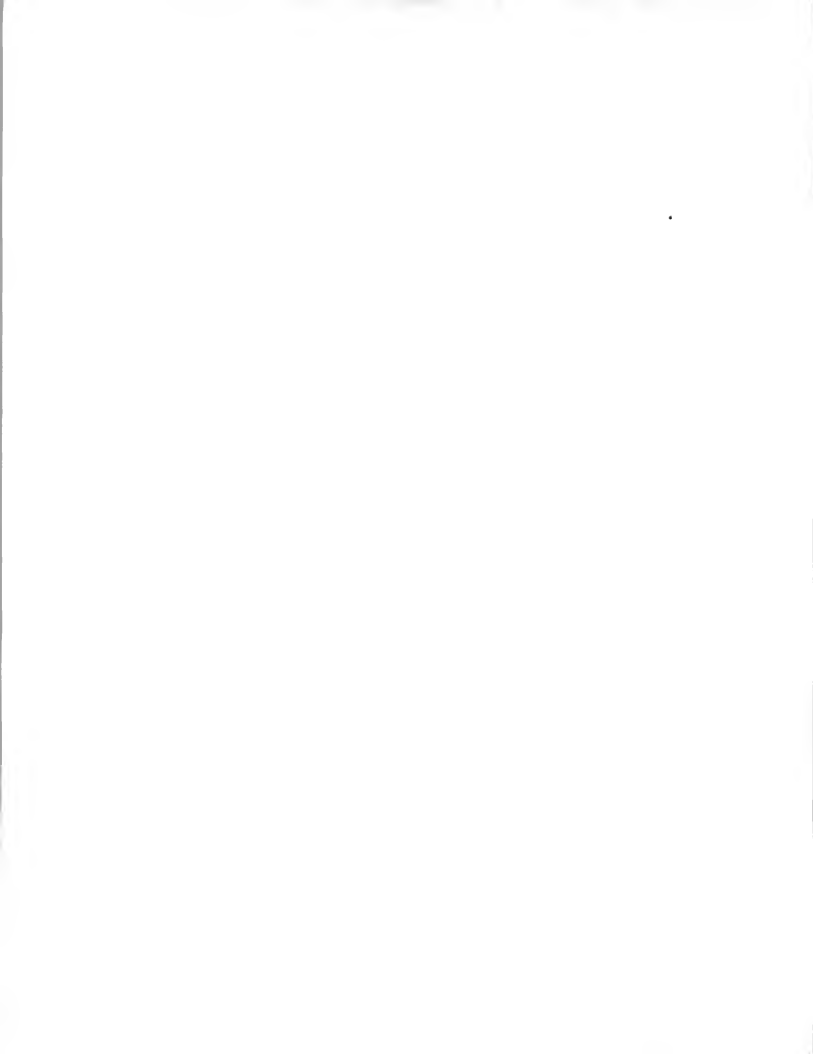
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OUTSOURCING DESKTOP SERVICES
EUROPE, 1992-1997

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Piccadilly House, 33/37 Regent Street, London SW1Y 4NF, U.K.
24, avenue de Recteur Poincaré, 75016 Paris, France
Sudetenstrasse 9, D-6306 Langgöns-Niederkleen, Germany

+44 71 493 9335
+33 1 46 47 65 65
+49 6447 7229



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INPUT
Piccadilly House
33/37 Regent Street
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Europe, 1992-1997*

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Abstract

This report analyses the emerging market for outsourced desktop services in Europe. It discusses the reasons why users choose to outsource their desktop support and the range of services typically required. The desktop services market is being strongly developed by the leading personal computer dealerships, and the report considers the strategies, strengths and weaknesses of a number of European dealers and contrasts their approaches to the market with those of the established systems operations vendors. The report provides market forecasts for the major country markets in Europe and identifies the most attractive industry sectors for the development of outsourced desktop services. It also considers the delivery mechanisms used by vendors to provide their services to users.



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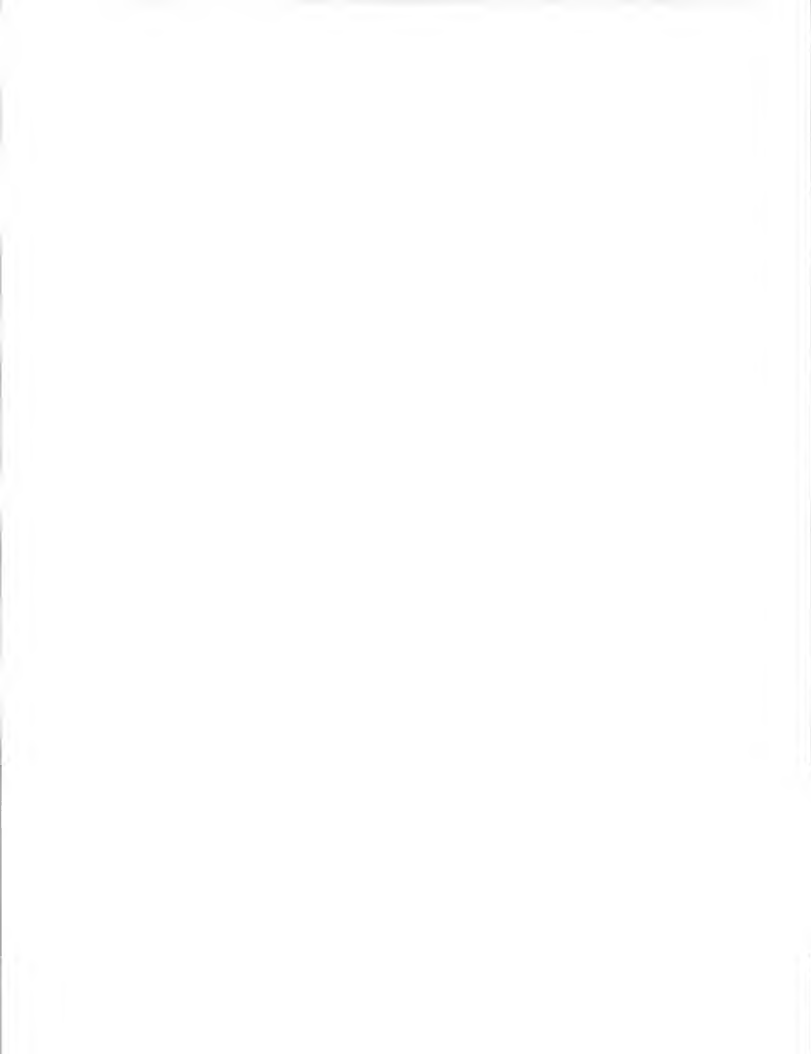


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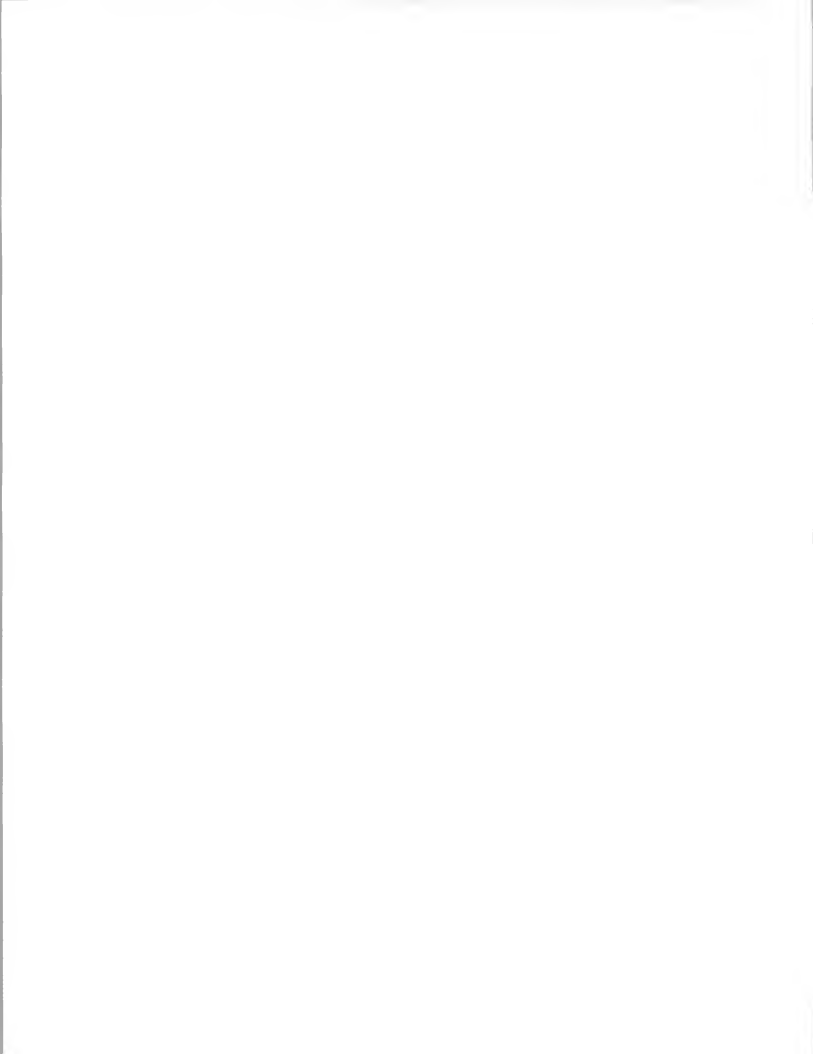


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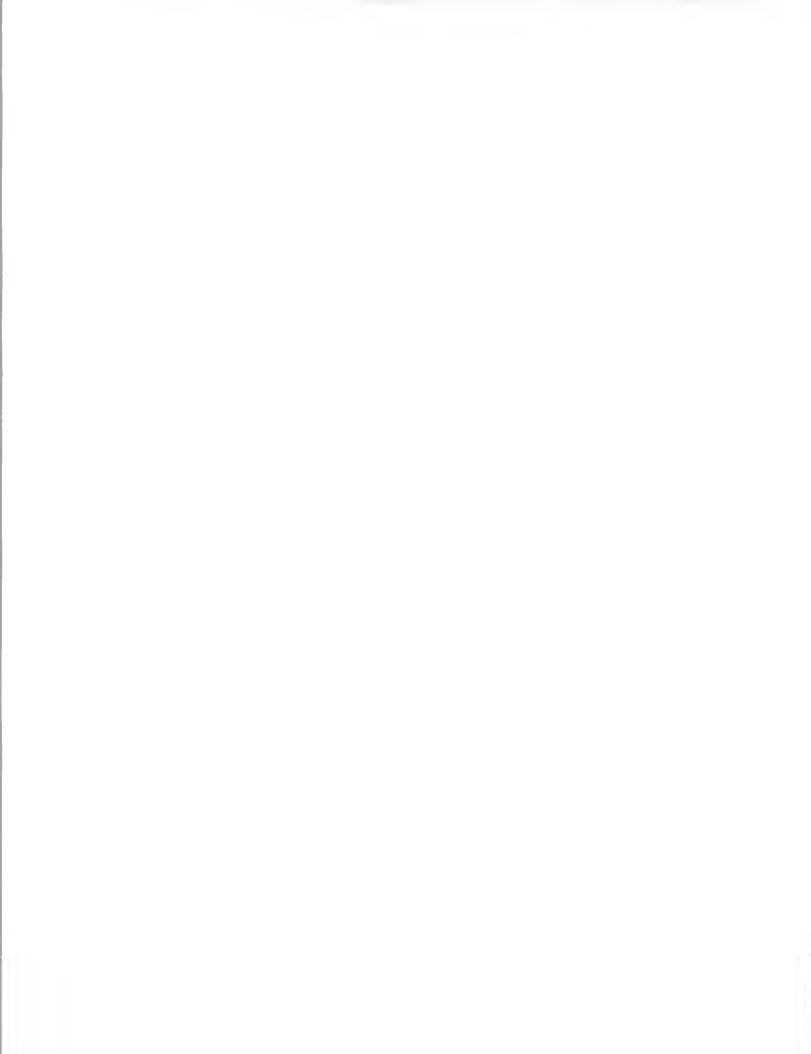
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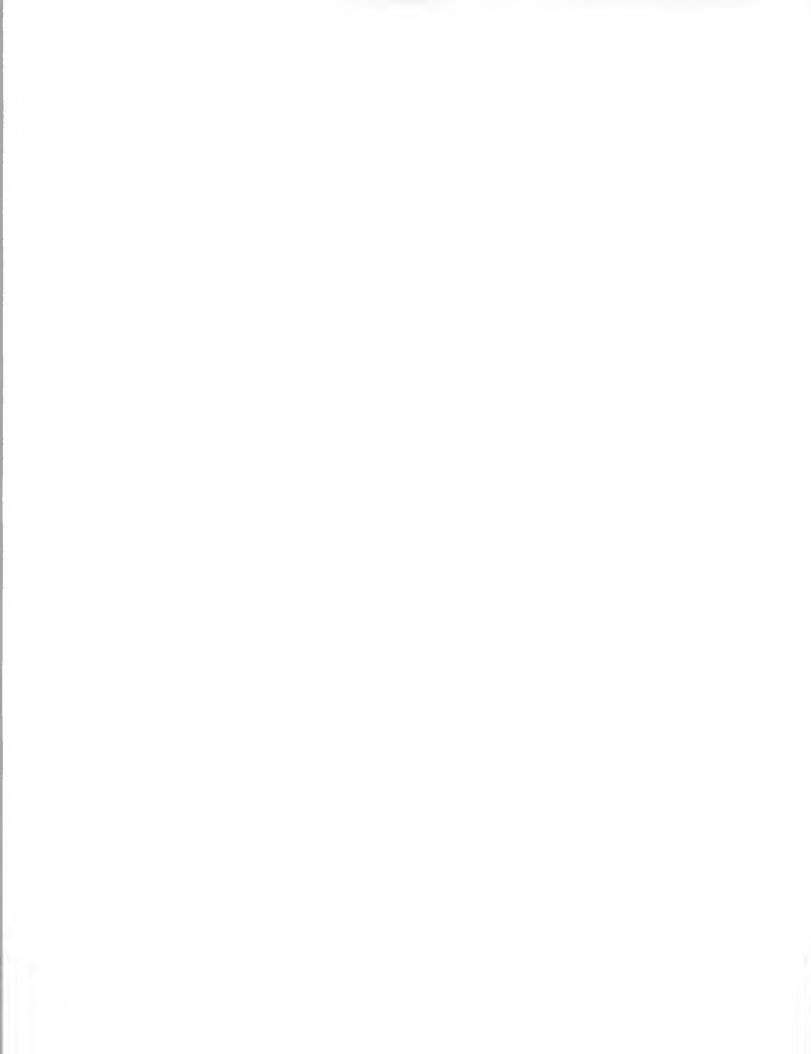
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I Introduction

A

Purpose

The purpose of this report is to analyse the emerging market for outsourcing desktop services in Europe.

Desktop services is defined as a management contract for the day-to-day management and support of an organisation's personal computer/local area network infrastructure. It includes value added services other than equipment supply and maintenance and potentially includes:

- Equipment and software product purchasing consultancy
- Supply of equipment and software products
- Equipment maintenance
- System implementation
- Local area network management
- Help desk services covering the support of systems software and application software products
- User training.

The principal objectives of the report are:

- To forecast the size of the European desktop services market
- To identify users' motivations for outsourcing desktop services
- To identify the major players in the market for desktop services and the strategies they are using to develop their presence in the market
- To identify the critical success factors in the market for outsourced desktop services
- To identify the mechanisms used to deliver desktop services
- To identify the nature of the relationship between systems operations and desktop services.



B

Scope and Methodology

This report is concerned primarily with the activities of professional services vendors - the established leaders in the outsourcing market - and personal computer dealers in the desktop services market. A separate report, entitled "The impact of downsizing on customer services organisations" and published within INPUT's Customer Services programme, will focus on the activities of the major equipment vendors and independent third party maintenance companies. The geographical scope of the study is Europe.

Building upon INPUT's extensive research programme into the outsourcing market, an additional fifteen key vendors - consisting of professional services vendors already established in the systems operations market or personal computer dealers believed to be targeting desktop services - were interviewed by a combination of face-to-face meetings and telephone interviews in order to profile their specific offerings aimed at the outsourcing of desktop services. Key users were also interviewed to ascertain their attitude towards, and need for, outsourced desktop services.

C

Report Structure

Section II consists of the Executive Overview which is a summary of the key findings of the study.

Section III is an overall analysis of the opportunity presented by users' outsourcing of desktop services. This section provides market forecasts, identifies the most attractive industry sectors, considers pricing and delivery mechanisms, and endeavours to identify the critical success factors for vendors targeting desktop services.

Section IV is an analysis of user behaviour including the identification of the factors motivating users to outsource desktop services, the services required, and their purchasing patterns.

Section V analyses the strategies being adopted by vendors targeting the desktop services market. It considers the strategies, strengths and weaknesses of two professional services vendors who are amongst the most active in the desktop services market and two of the major personal computer dealerships who are extending their services into this area.



II Executive Overview

A

Desktop Services - A Key Outsourcing Opportunity

Desktop systems are playing an increasing critical role in the IS environment. Personal computers are no longer used solely as isolated personal productivity tools covering standalone applications such as word processing and spreadsheets. Instead they are now often linked into large departmental or corporate networks covering vital business functions. While such applications are accessed by non-expert end users, the software is becoming more and more complex.

Accordingly, the support of desktop services is becoming increasingly important, and users must ask themselves how they can support their end users most effectively.

One solution is to outsource desktop services, and in the last few months, three major organisations - ICI, Unilever, and TSB - have outsourced their desktop support in what appears to be a major new development in the outsourcing market.

This summary addresses three key questions concerning the outsourcing of desktop services:

- What is the size of the opportunity?
- Who are the key market participants?
- How should vendors, and particularly systems operations vendors, approach this opportunity?



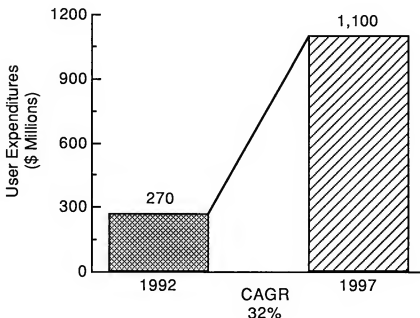
Desktop services is defined as a management contract involving the day-to-day management and support of an organisation's personal computer/local area network information systems infrastructure. It includes value added services other than equipment supply and maintenance and potentially includes:

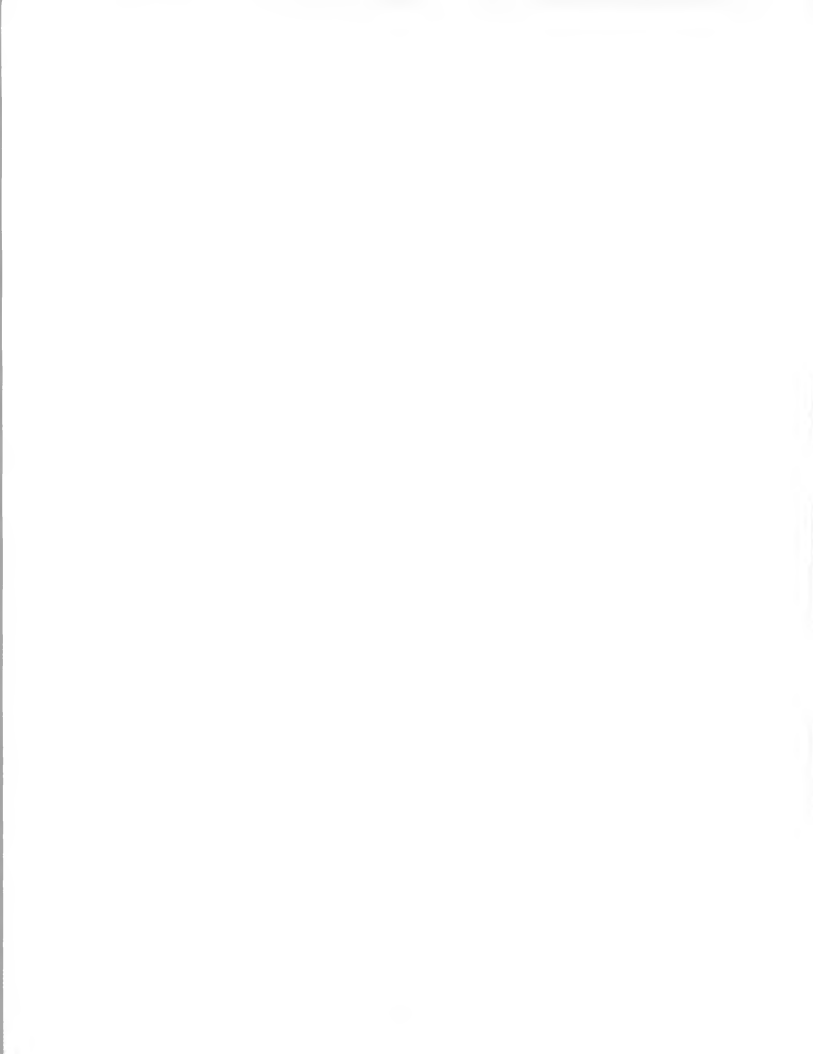
- Equipment and software product purchasing consultancy
- Supply of equipment and software products
- Supply of equipment and software products
- System implementation
- Local area network management
- Help-desk services covering the support of systems software and application software products
- User training.

INPUT's forecast for the growth of the desktop services market is shown in Exhibit 1.

EXHIBIT II-1

Desktop Services Market—Europe



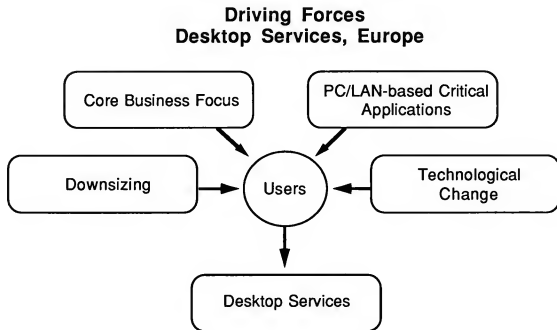


This forecast includes the revenues for each of the services listed above with the exception of equipment supply and maintenance which are excluded. The implication of this rate of growth is that the market for outsourcing desktop services will be approximately equal to 50% of the market for platform operations in Europe by 1997. Accordingly this is an opportunity that the established systems operations vendors cannot afford to ignore.

The European market for desktop services is most advanced in the United Kingdom, but there are also significant developments taking place in Germany, the Netherlands, France, and Sweden. One example is Raet's contract with Rabobank.

Exhibit 2 identifies the driving forces which are producing this high level of market growth.

EXHIBIT II-2

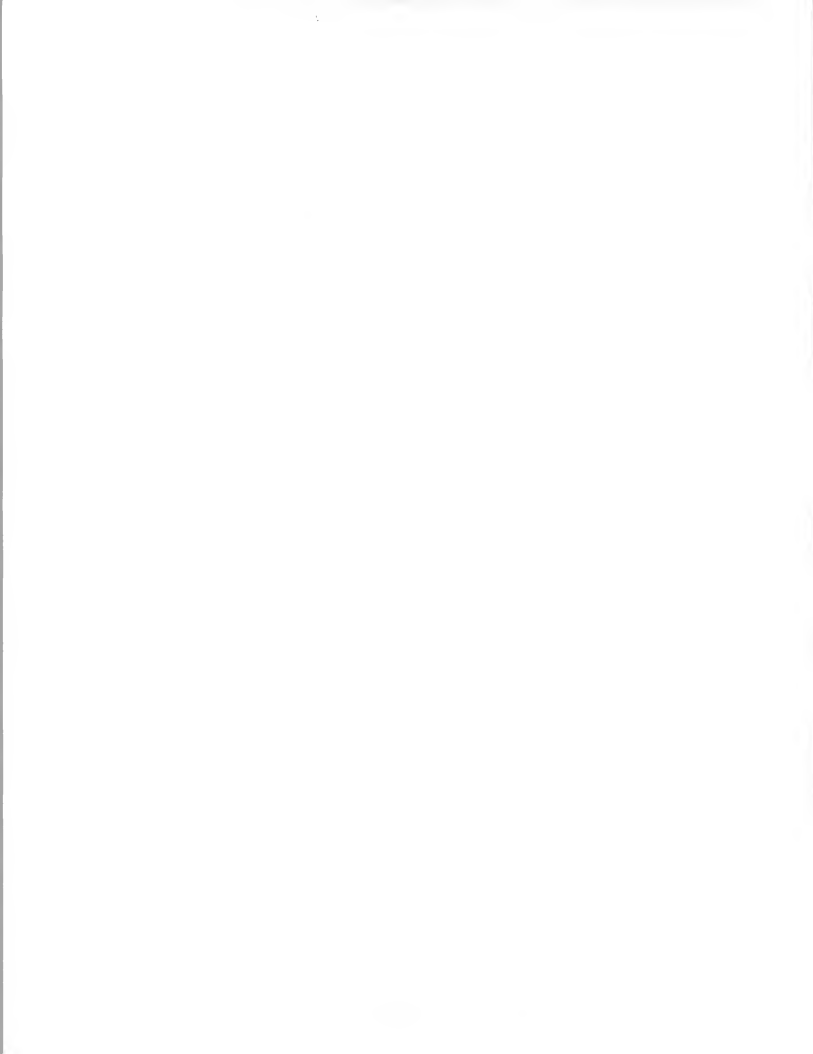


The major motivation for adoption of desktop services by major organisations such as ICI and Unilever is a desire to simplify the management of their organisation by outsourcing secondary business activities. Such companies potentially have the in-house expertise to provide their own support services but choose not to do so.

On the other hand, there are a multitude of medium-sized companies which lack the size of support organisation necessary to maintain up-to-date knowledge across the range of networking software and application software products used. As downsizing leads to a greater proportion of corporate and departmental applications being implemented via personal computers and local area networks, so support for these products becomes more critical to ensure the smooth-running of the organisation's business processes. In such instances, IS managers are increasingly prepared to outsource management of their local area network and end user support.

While the traditional systems operations vendors are having some success in providing local area network implementation and support services to IS management in the medium-sized companies, the major contracts are currently being won by the major personal computer dealerships such as P&P and members of International Computer Group, like Raet and Computacenter. It is likely that the success of these organisations in the desktop services market will continue, since they offer users a breadth and depth of application software product support capability which the professional services vendors have difficulty in matching given their traditional emphasis on proprietary mainframe and mid-range technologies and on custom software development. In addition, if the user is also seeking a single source of product supply and support, the dealers have a significantly stronger product supply capability. For example, in addition to providing support services, P&P has been nominated as a preferred supplier to ICI for personal computer products.

Indeed the desktop services market will be a very competitive one, since, in addition to the activities of the dealers and professional services vendors, this opportunity will also be targeted by third-party maintenance organisations such as Computeraid and equipment manufacturers such as Digital, Unisys, ICL and Bull.



The emergence of outsourcing of desktop services will lead to significant re-alignment within the outsourcing industry. The traditional outsourcing vendors with their mainframe and proprietary mid-range capabilities need access to the personal computer and open systems capabilities of the dealerships. Similarly the dealerships recognise that many major outsourcing deals require both desktop and large system capabilities to provide a full service capability to the client. So far the major desktop services contracts have been awarded separately from any mainframe or mid-range contracts. However there is clearly a major opportunity for any vendors who can effectively combine these offerings.

INPUT recommends that vendors adopt a joint venture or acquisition policy to meet this opportunity. Already Data Sciences is working in conjunction with Computeraid to provide full service capability, and P&P has been seeking a suitable systems operations partner. A suitable partner would be one of the major professional services vendors with a high-level of proprietary system capability such as CGS, EDS, or Sema Group.

On the other hand, vendors such as Raet and AT&T Istel which already own separate subsidiaries acting as personal computer dealers and systems operations vendors are well placed to target desktop services provided they can combine these offerings to meet users' needs.

B

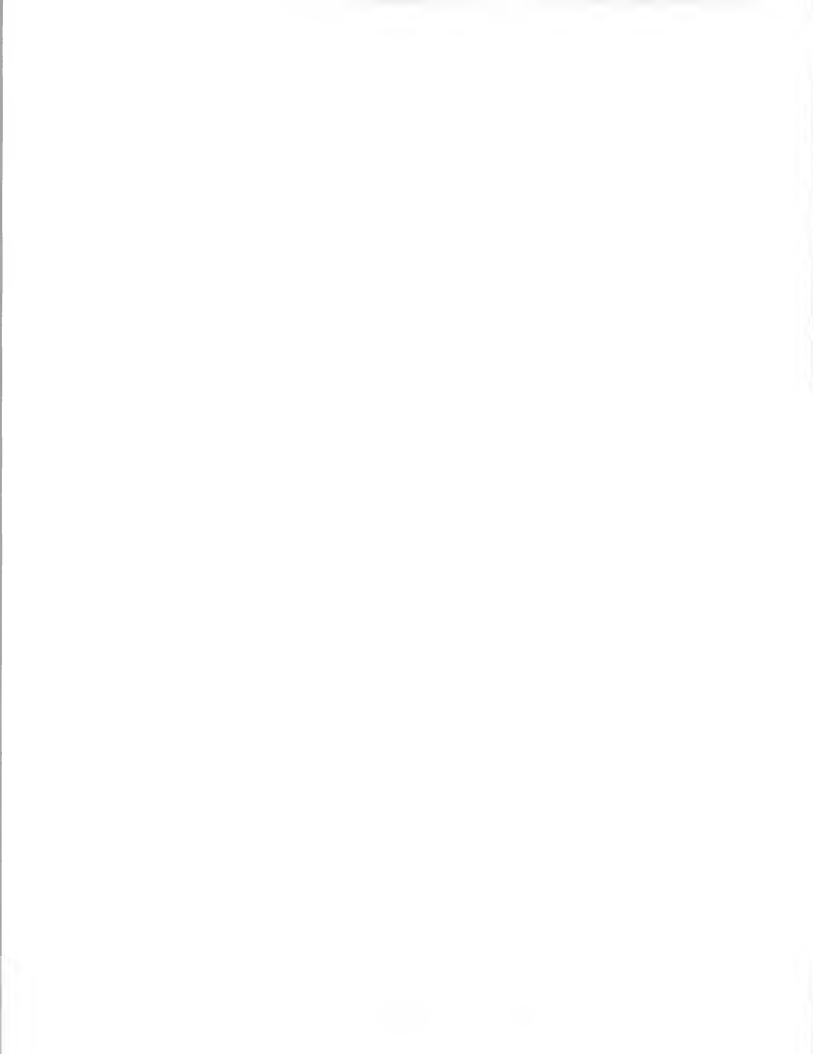
Medium-Sized Organisations lack skills to support desktop users

Exhibit II-3 outlines the distinctions between the two major segments of the desktop services market.

EXHIBIT II-3

The Decision Process Desktop Services, Europe

Size of Organisation	Level of in-house capability	Outsourcing Decision maker
Large organisations	High	Senior executives
Medium-sized organisations	Low	IS Management



Large organisations typically have in-house support organisations of a sufficient size to maintain up-to-date technical skills across a range of technologies such as local area networks and key application software products. For example, the ICI support group transferred to P&P consisted of 90 personnel. However senior executives within a number of large companies, particularly in the United Kingdom, are deciding to outsource such non-core services so as to simplify company management and introduce greater levels of corporate flexibility. This is leading to the award of some very large contracts, and more are expected particularly within the financial services sector. Although particularly evident in the UK this trend is expected to extend to other European countries.

However the best target for many vendors may be the medium-sized companies. Many medium-sized companies have significant difficulties in implementing local area networks and maintaining high levels of support for both the network and for end users. Many IS departments are finding it an increasing challenge to keep in-house technical staff up-to-date given the high rate of technological change. It is also difficult for small IS departments to develop the critical mass of skills necessary. Accordingly IS managers in medium-sized companies increasingly see desktop support as a problem area to be outsourced. Users typically outsource network implementation and second-line support, but an increasing proportion of companies are prepared to outsource desktop services in its entirety.

Exhibit II-4 shows the current state of development of the European desktop services market for the four most developed markets.

EXHIBIT II-4

Major Country Markets, 1992 Desktop Services, Europe

Country	1992 Revenues (\$ Millions)
United Kingdom	120
Germany	40
France	30
Netherlands	25



Systems operations vendors have in the past carried out a low level of desktop services - up to 5% of their systems operations revenues - as part of their support of platform operations or application operations contracts. However desktop services is now emerging as a separate activity in its own right.

The United Kingdom has the most highly developed desktop services market in Europe. Here, in addition to the demand from medium-sized companies, contracts have recently been placed by a number of major corporations such as ICI, Unilever, and TSB and further contacts from large companies, particularly in the finance sector, are expected.

In addition, the market for desktop services is developing in Germany, France, and the Netherlands. Raet, in the Netherlands, has announced a major contract with Rabobank, and is well placed to take advantage of the desktop services market since the company combines both systems operations and extensive personal computer-based expertise.

The desktop services market so far appears to show little sign of activity in Italy and Spain.

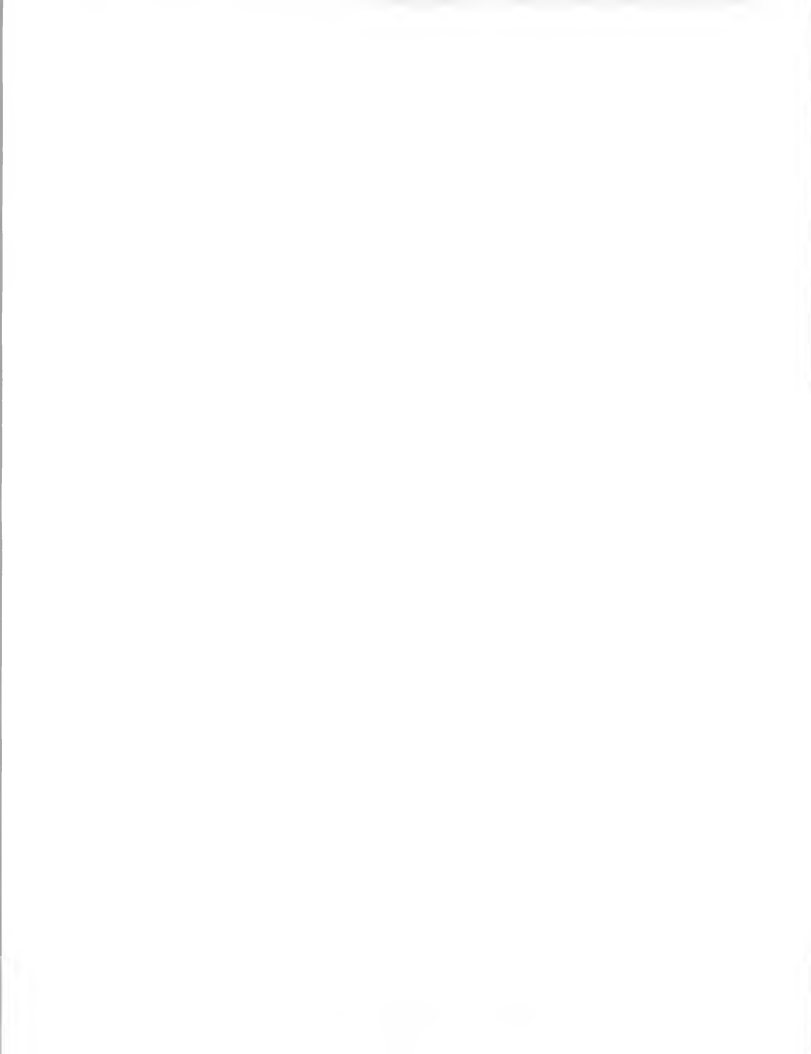
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Personal Computer Dealers are the Pioneers

Desktop services represents both a significant opportunity and a major challenge to the traditional European systems operations vendors. Firstly the desktop services market is expected to grow rapidly stimulated by downsizing and decentralisation of computer facilities. Accordingly desktop services rather than mainframe platform operations may eventually become the dominant form of infrastructure outsourcing.

However desktop services requires a different range of skills from traditional systems operations and is likely to be strongly targeted by the major personal computer dealerships, the equipment manufacturers, and third-party maintenance organisations in addition to the professional services vendors.

Much of the initial success in the market has been achieved by the personal computer dealers such as P&P Corporate, and members of the International Computer Group (ICG) such as Computacenter, Compunet, and Raet.



The strengths and weaknesses of these vendors are summarised in Exhibit II-5.

 EXHIBIT II-5

Strengths & Weaknesses: Personal Computer Dealers Desktop Services, Europe

Strengths	Weaknesses
<ul style="list-style-type: none"> • Full desktop services capability • Breadth & depth of product knowledge • Vendor independence 	<ul style="list-style-type: none"> • Lack of mainframe & mid-range capability • Pan-European capabilities still embryonic

Firstly the major personal computer dealerships have a full desktop services capability and can offer the full range of services required by users from purchasing consultancy and supply, and network implementation, through to network management and application software product support of end-users. Secondly the major vendors have evaluated, and actively market, thousands of software and hardware products. This provides them with a breadth and depth of product knowledge, particularly in supporting application software products, which other vendor groups will struggle to equal. Thirdly the dealers offer a high level of vendor independence, which may be perceived as very desirable by users in cases where they wish to outsource purchasing consultancy and product supply. Certainly P&P regard this vendor independence as one of their major unique selling propositions.

One weakness of the personal computer dealers is their current lack of pan-European capability. However vendors such as Compnet (Germany), Random (France), and Computacenter (UK) are addressing this issue with the formation of ICG. Other personal computer dealers, while recognising this issue, are typically not as advanced as ICG in developing their pan-European capability.



The personal computer dealers also recognise that desktop services can frequently be just one component of a wider outsourcing requirement additionally encompassing proprietary mid-range and mainframe operations. To address this wider opportunity, some vendors such as P&P are endeavouring to establish a partnership with a traditional systems operations vendor such as Hoskyns, or the Sema Group.

In some cases, the professional services vendors have been comparatively slow to recognise the desktop services opportunity, regarding it as an undesirable, low-margin activity. However these vendors are now increasingly aware of the need to develop their capabilities in this area.

The current strengths and weaknesses of the professional service vendors in targeting desktop services are summarised in Exhibit II-6.

EXHIBIT II-6

Strengths and Weaknesses: Professional Services Vendors Desktop Services, Europe

Strengths	Weaknesses
<ul style="list-style-type: none"> • Networking capability • Synergy with systems operations • Access to large accounts 	<ul style="list-style-type: none"> • Lack of supply capability • Lack of depth & breadth of software product knowledge • Lack of recognition of opportunity/need

Major strengths of the professional services vendors are their technical capabilities and experience in implementing and managing local area networks. Several professional services vendors such as Sema Group and iTNet initially entered the desktop services market via their network implementation activities. However the major challenge for these organisations is to develop beyond these skills to offer a full service offering similar to those offered by the major personal computer dealers. The professional services vendors tend to lack the ability to offer a comprehensive product supply service. In addition, their capability in supporting personal computer-based application software products is comparatively weak since they often lack both the breadth and depth of product knowledge required.

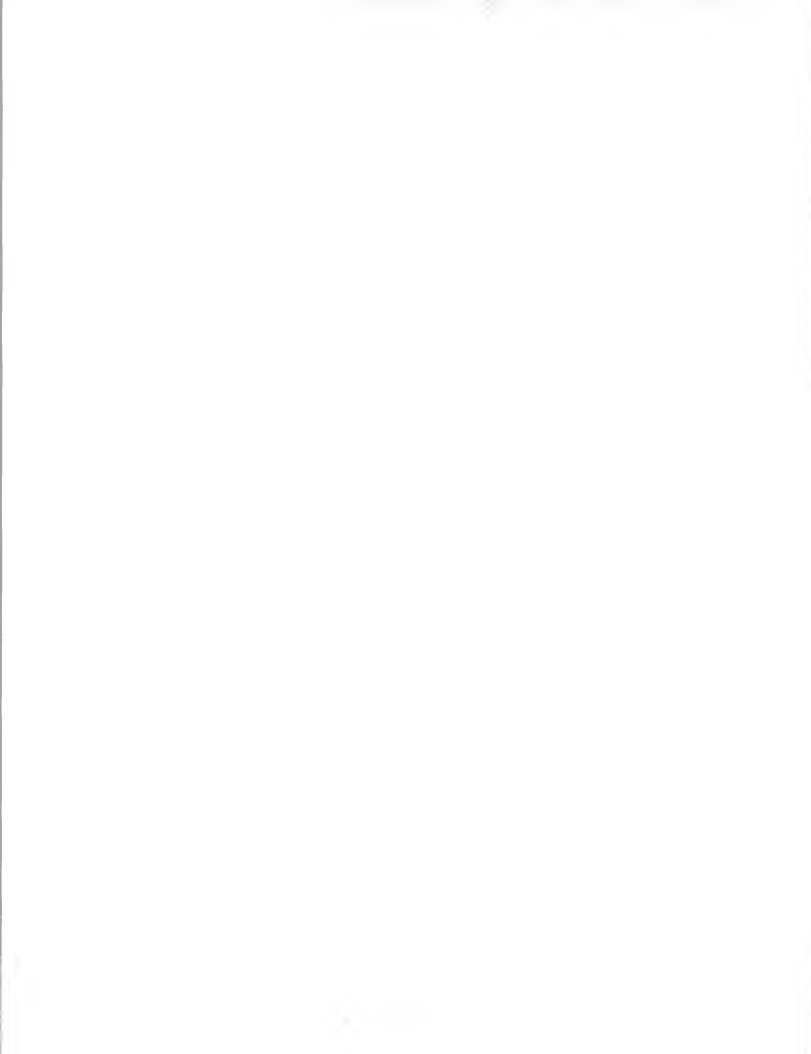


However the professional services vendors have high levels of awareness for their outsourcing services, and desktop services will increasingly become just one component of a wider outsourcing requirement.

While the professional services vendors have so far lagged behind the major personal computer dealerships in offering outsourced desktop services, this situation will clearly change in the next twelve months as organisations such as EDS, Hoskyns, and Systemhouse enter the market. EDS already provides outsourcing of desktop services in the U.S. and many well perceive that the time is now right to introduce these services to Europe. Hoskyns has recently re-organised its systems operations offerings and now has a specific "desktop services" service line within its outsourcing division in the U.K.

It is also probable that the major equipment vendors such as Digital, Unisys, ICL, Olivetti and Bull will begin to develop their presence in the market. Digital, for example, already offers over 100 separate service lines relevant to outsourced desktop services but needs to integrate these into a coherent offering capable of providing full-service outsourcing of desktop services. Olivetti has a major contract to maintain Barclay's personal computers regardless of make, which is the type of contract which could readily be converted into a full-service outsourcing agreement.

Major independent maintenance organisations (IMO's) will also become more active in the market. Thorn EMI Computeraid has already won a number of outsourcing contracts including a large contract with Sedgwick's, while Granada Computer Services is in the process of restructuring its Microcare division.



D**Full Service Capability is a major challenge for Professional Services vendors**

The principal challenges facing vendors seeking a major role in the desktop services market are listed in Exhibit II-7.

EXHIBIT II-7

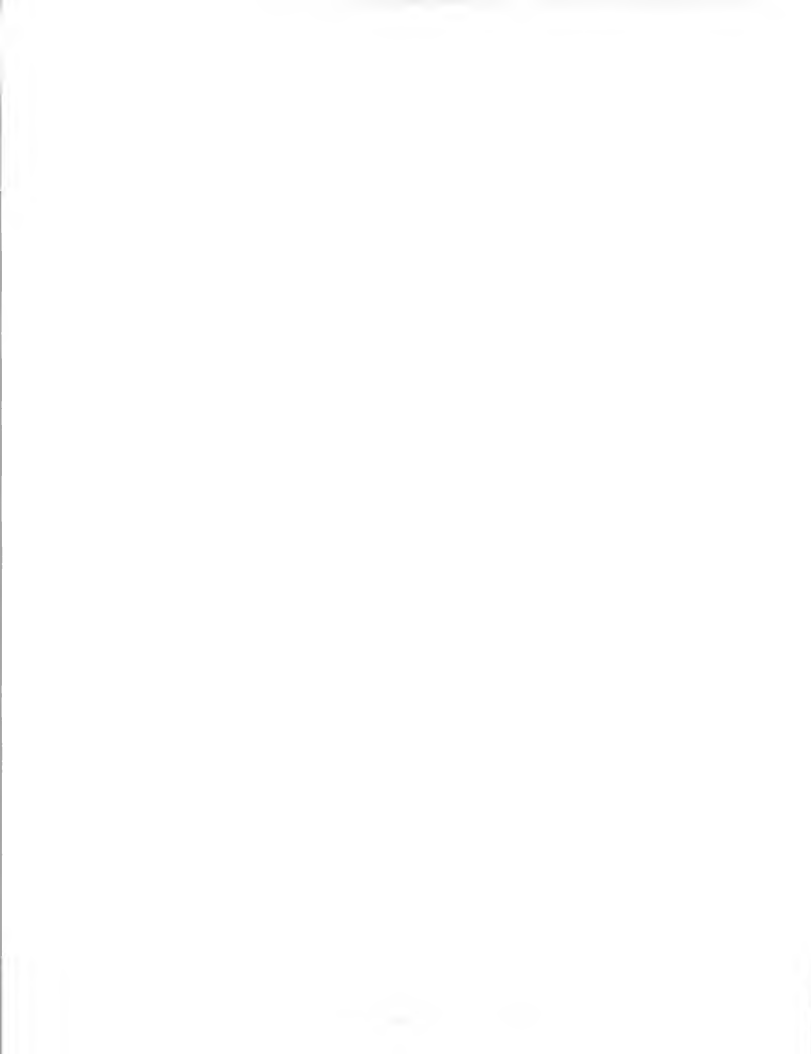
**Vendor Challenges
Desktop Services, Europe**

- Independence of supply
- Full service capability
- Breadth of software product support capability
- Up-to-date technical skills
- Pan-European coverage

At present, the personal computer dealerships are having a degree of success in marketing desktop services as a standalone service to major corporations. With the exception of the need to further develop their pan-European capability to satisfy the needs of multinationals and to take advantage of opportunities arising across Europe, the dealers largely meet the criteria identified in Exhibit II-7. However they recognise that a wider outsourcing capability than just desktop services is required and that they could lose market share to vendors offering a broad outsourcing capability across the spectrum of equipment platforms.

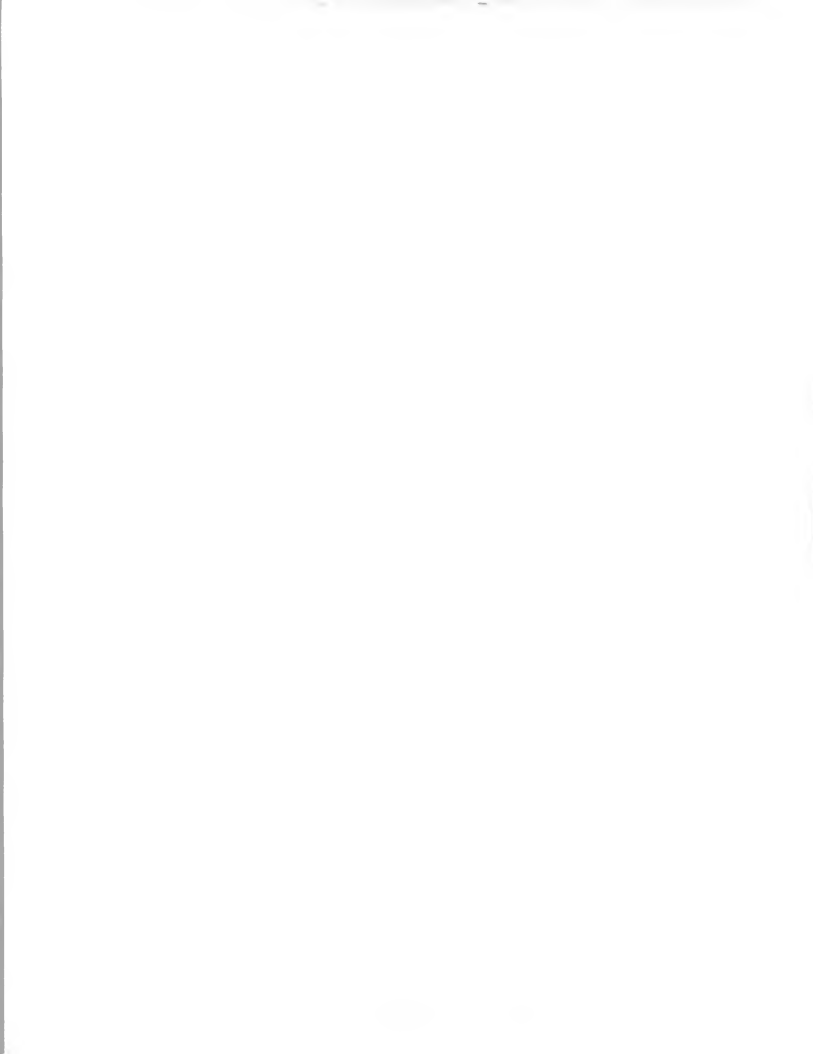
The professional services vendors have the outsourcing skills required on proprietary mid-range and mainframe equipment, but typically lack a full services capability within desktop services.

Accordingly it is likely that a number of partnerships or mergers will occur over the next few years between these two groups of vendors as they position themselves to address the full range of outsourcing needs and protect their markets from the major equipment vendors who will become increasingly active in the outsourcing market.



The major challenges for the major equipment vendors such as Digital, Unisys, and Hewlett-Packard are to overcome their perceived lack of independence in the procurement consultancy elements of the service and to differentiate clearly their outsourcing services from the numerous other services they offer at the desktop level. At present, there is often a high level of fragmentation between these offerings.

The major challenges facing the independent maintenance organisations (IMOs) such as Granada Computer Services are to develop their sales capability outside the MIS function and to overcome their perceived lack of application software product expertise.



III The Opportunity for Desktop Services

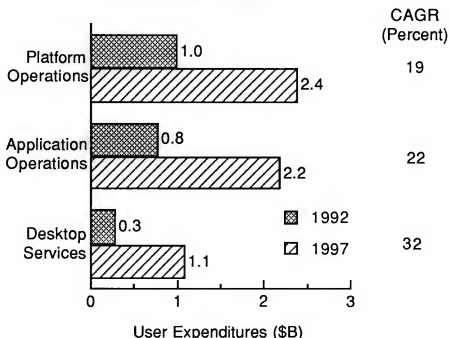
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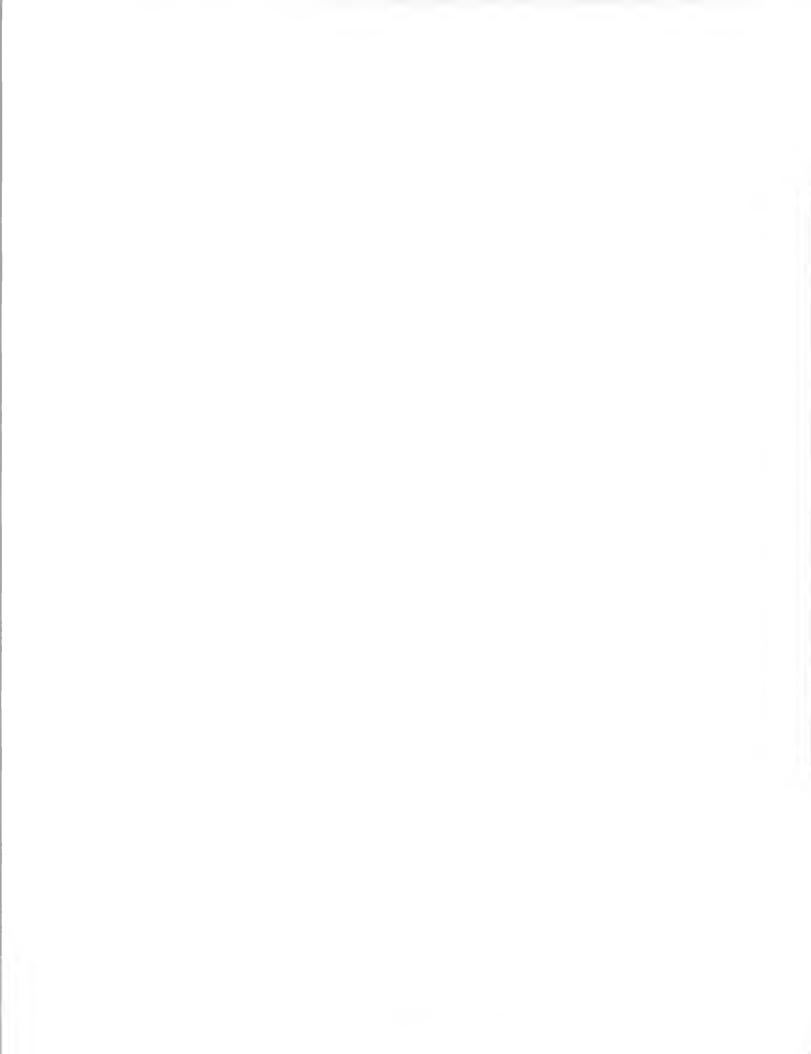
Outsourcing of Desktop Services will grow faster than Platform Operations

Exhibit III-1 provides INPUT's forecast of the desktop services market between 1992 and 1997, which predicts a faster rate of growth for desktop services than for the systems operations market overall.

EXHIBIT III-1

Systems Operations Market, Europe 1992-1997





This figure excludes equipment supply and maintenance, but includes installation support, LAN management, and technical support services.

Exhibit III-2 shows the size of the desktop market by region in \$ and Exhibit III-3 provides the same forecast in ECU's.

EXHIBIT III-2

Comparative Country Markets Desktop Services, Europe

Region	1992 Market Size (\$ Millions)	1992-1997 CAGR (Percent)	1997 Market Size (\$ Millions)
France	30	28	100
Germany	40	34	175
United Kingdom	120	35	540
Italy	10	25	30
Scandinavia	20	30	75
Netherlands	25	32	100
Belgium	10	30	35
Rest of Europe	15	25	45
TOTAL	270	32	1,100

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, Unilever, and TSB.

After the United Kingdom, the market is starting to develop in Germany, the Netherlands, Sweden, and France. So far, there has been little apparent activity in the desktop services market in Italy and Spain.

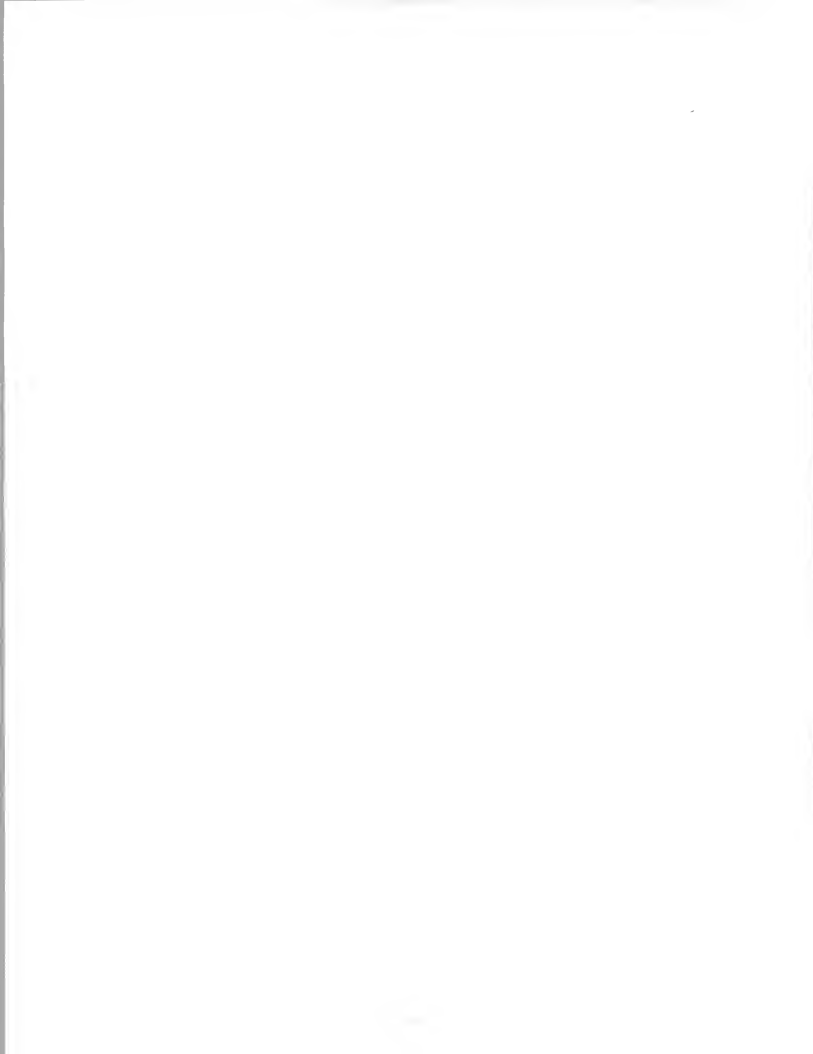
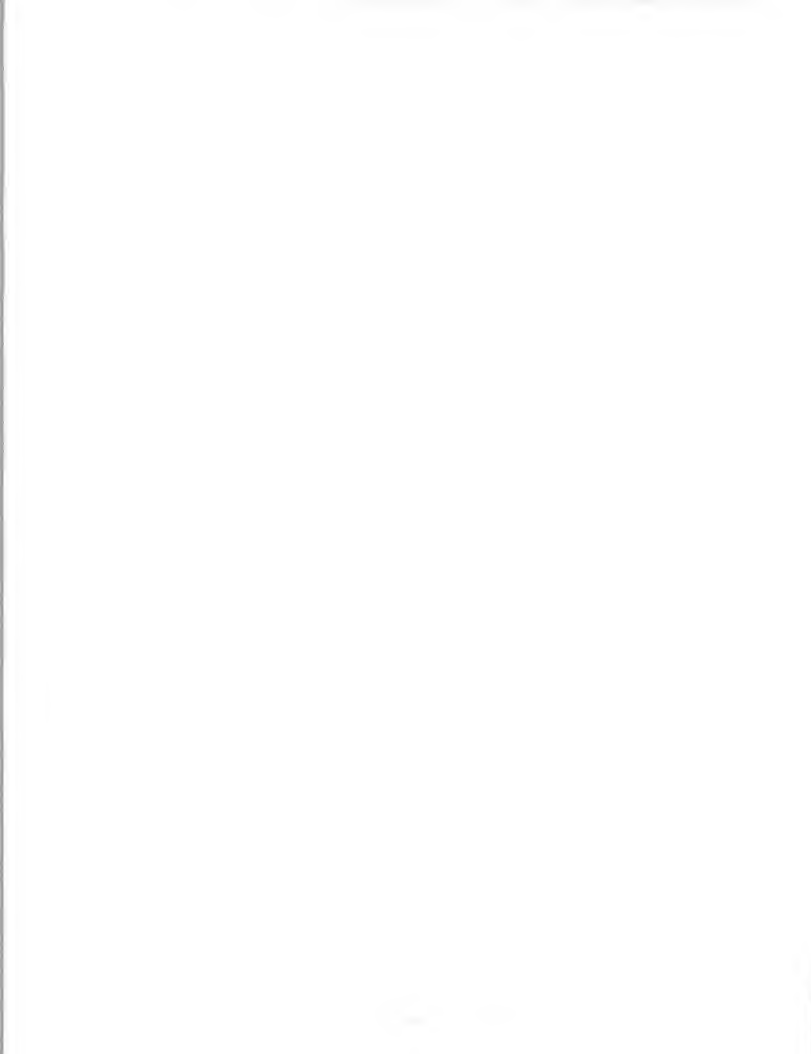


EXHIBIT III-3

Comparative Country Markets Desktop Services, Europe

Region	1992 Market Size (ECU Millions)	1992-1997 CAGR (Percent)	1997 Market Size (ECU Millions)
France	22	28	75
Germany	30	34	130
United Kingdom	90	35	400
Italy	7	25	22
Scandinavia	15	30	55
Netherlands	18	32	75
Belgium	7	30	25
Rest of Europe	10	25	33
TOTAL	200	32	815



B**Strong Growth Expected in Financial Services**

The breakdown of the desktop services market by industry sector is provided in Exhibit III-4, and Exhibit III-5 shows vendor perceptions of the attractiveness of the market by industry sector.

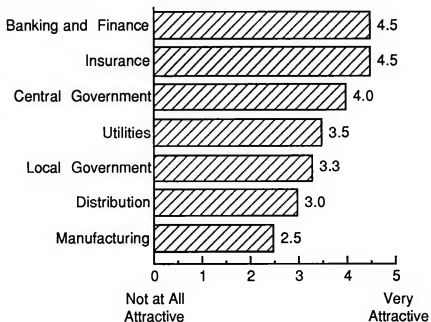
EXHIBIT III-4

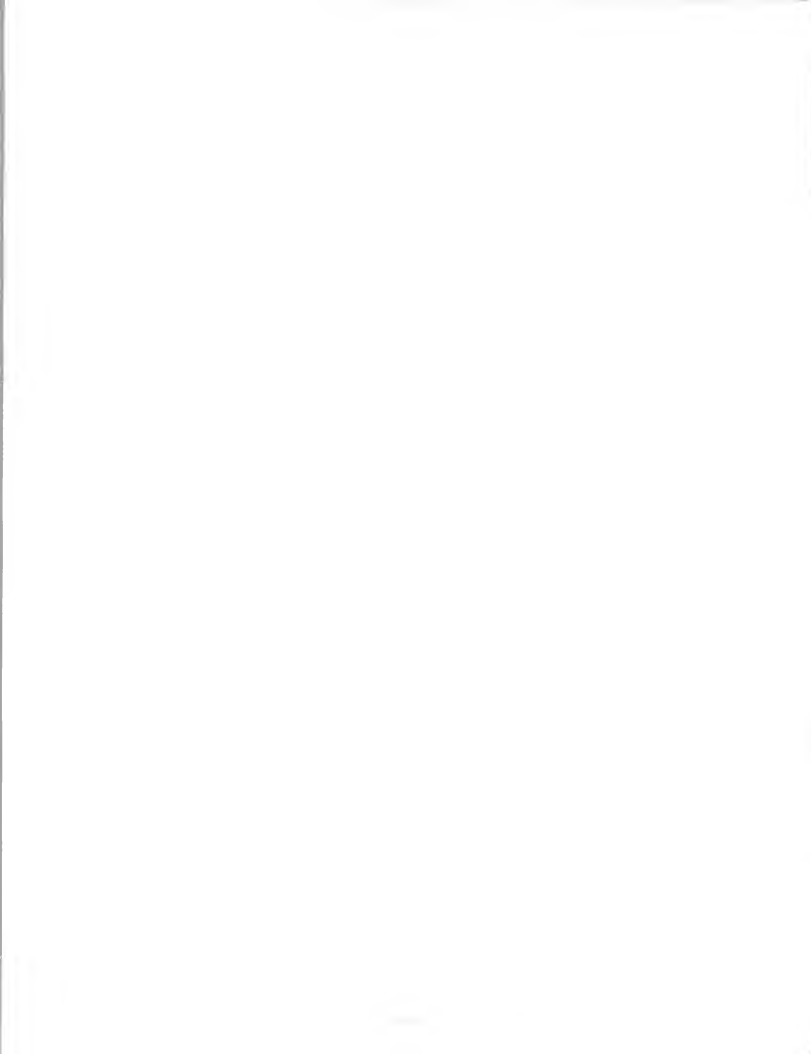
**Major Industry Markets, 1992
Desktop Services, Europe**

Industry Sector	Market Size (\$ Millions)	Percent
Financial Services	110	40
Government	70	25
Manufacturing	50	20
Other	40	15
TOTAL	270	100

EXHIBIT III-5

**Attractiveness of Industry Sectors
Desktop Services, Europe**





While the process manufacturing sector has made a significant contribution to the market so far with large contracts placed by Unilever and ICI, the financial services sector remains the favourite target sector for vendors. There is a high level of interest in desktop services amongst the major banks, and both Computacenter and P&P Corporate are actively targeting this sector in the UK. In the Netherlands, Raet has also announced a major contract in the banking sector.

Central government is also considered a target market with high potential, and although local government was rated less highly by vendors, it is clear that some companies have been successful in targeting both local authorities and the health sector.

The manufacturing sector was not thought to be a prime target for desktop services by vendors. However while this may apply to much of the discrete manufacturing sector, there would appear to be major potential for desktop services within the oil and gas sector in companies such as Shell and BP, and perhaps more widely amongst the major corporations in the consumer goods and pharmaceuticals sectors.

Some of the major contracts for desktop services in Europe so far are listed in Exhibit III-6.

EXHIBIT III-6

Major Contracts Desktop Services, Europe

Company	Vendor	Contracts Value (p.a.) (\$ Millions)
ICI	P&P Corporate	20
Unilever	P&P Corporate	2
TSB	Computacenter	5*
Unitel	ComputerAid	1*
Birmingham City Council	iTNet	1*

* estimated

Vendors' perceptions of the potential for desktop services by size of user organisation are shown in Exhibit III-7.

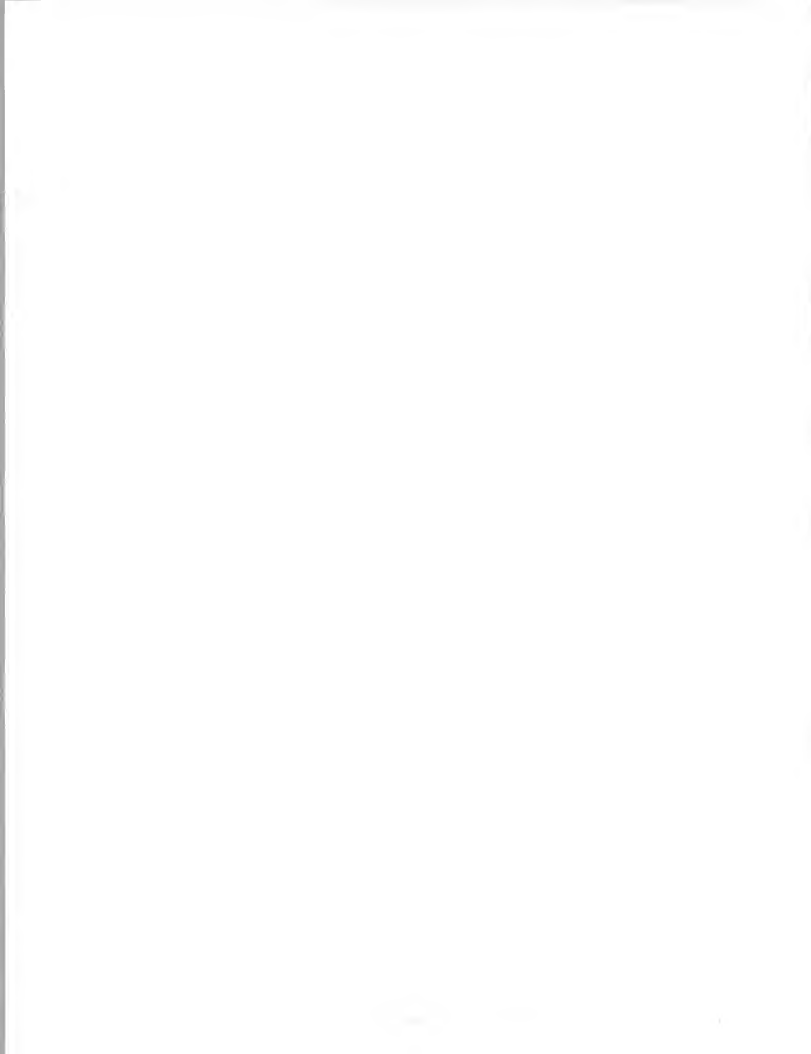
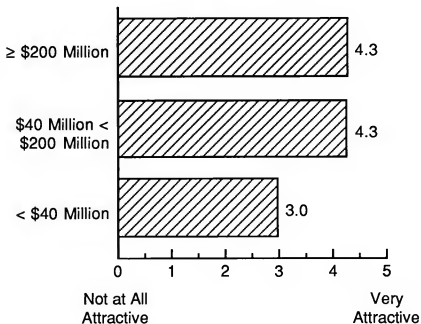


EXHIBIT III-7

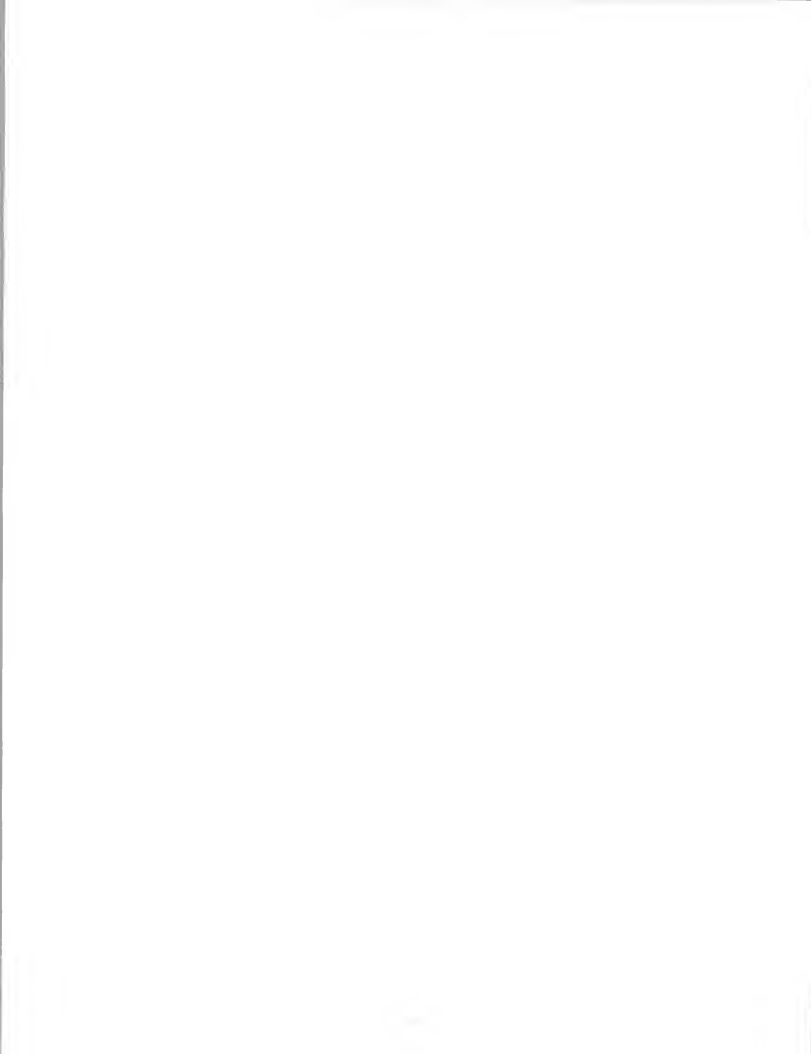
Attractiveness Rating by Company Size Desktop Services, Europe



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.



C**Vendors Prefer Remote Service Delivery**

Exhibit III-8 summarises the use of on-site versus remote services in delivering the support services components of desktop services. Essentially vendors show a preference for remote delivery of support services, since this enables them to share personnel between clients and achieve some economies of scale. However once the number of users/personal computers being supported exceeded 400-500, then vendors recognised the necessity of putting a small team of support staff at the user's site.

EXHIBIT III-8**Use of On-site vs Remote Support Services
Desktop Services, Europe**

- On-site support common in large contracts
- User personnel often acquired in large contracts
- Vendors prefer remote delivery
- Second-line support only a common option

In the case of the very large contracts, it is common for the vendor to transfer the user's former support personnel into their own organisation in a similar manner to that practiced in traditional systems operations contracts. For example, ICI's adoption of desktop services involved the transfer of 90 staff, TSB's involved 23 staff, and Unilever transferred 12 support staff.

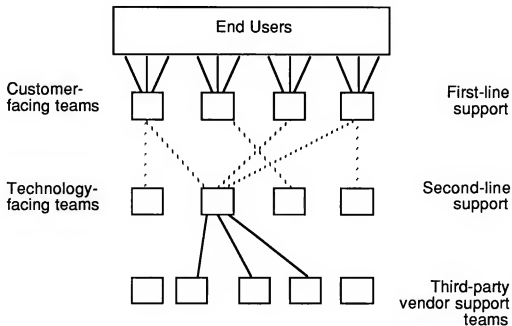
Many users are resisting the adoption of full desktop services by insisting that their own support personnel have a high level of business understanding combined with an adequate technical understanding to provide end users with first-line support. Accordingly a significant proportion of users - iTNet for example estimated that this applied to 60% of clients for whom it had implemented a local area network - have purchased second-line support only from an external vendor, and not a complete help-desk facility.

Exhibit III-9 illustrates a typical manner in which help desk services are implemented by vendors.



EXHIBIT III-9

Delivery of Help Desk Services Desktop Services, Europe



It is common practice for vendors to operate a two-tier level of help desk service. In the case of large installations, the first level of support is located on the user's premises; in the case of smaller installations, the support service is delivered remotely from a central help desk.

The procedures implemented by the first-level support team are critical in meeting the service level agreement negotiated with the client. Accordingly the procedures adopted by this team are commonly certified to the BS5750 quality standard. This is seen as a major selling point by a number of vendors. Also a number of vendors organise their first-line support into customer-specific teams so that their support staff develop relationships with particular clients and gain a better understanding of their business and the type of technical problem likely to arise.

In other cases, the first line support is not customer specific but has the responsibility for identifying the nature of the user's problem so that it can be passed to the appropriate technical expert. Invariably vendors' second line support teams are organised according to technology and these may in turn liaise with the support teams of the software product author where necessary.

The principal pricing mechanisms adopted by desktop services vendors are identified in Exhibit III-10.

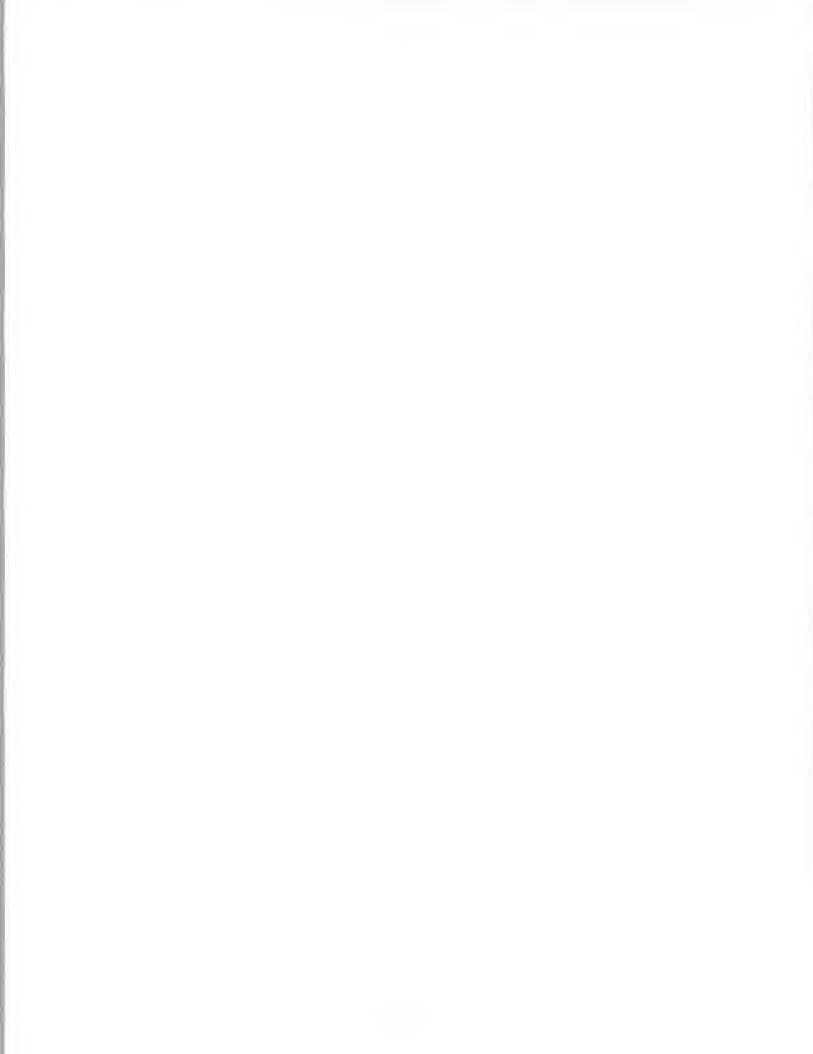


EXHIBIT III-10

Pricing Mechanisms Desktop Services, Europe

- Cost of on-site support plus mark-up
- Monthly usage of remote help desk
- Volume discounts

Where on-site user support is involved, then this component of the service is usually priced at cost plus a mark-up. Vendors tend to resist on-site support because of the difficulty of reducing costs to the client in these instances. While vendors will claim that their staff are technically more capable than the user's own support personnel, they may also be more highly paid. Also it will on occasion be necessary to continue to utilise the same support personnel since these will have transferred from the user to the vendor. For remote help desk services, most vendors charge per query, though this is sometimes disguised in the form of a fixed fee with a ceiling set on the number of queries allowed in a given time period. One vendor quoted an approximate charge of \$20 per query, though a higher figure would apply to networking queries. Some vendors give bulk discounts dependent on the user's commitment to a particular level of help desk usage.

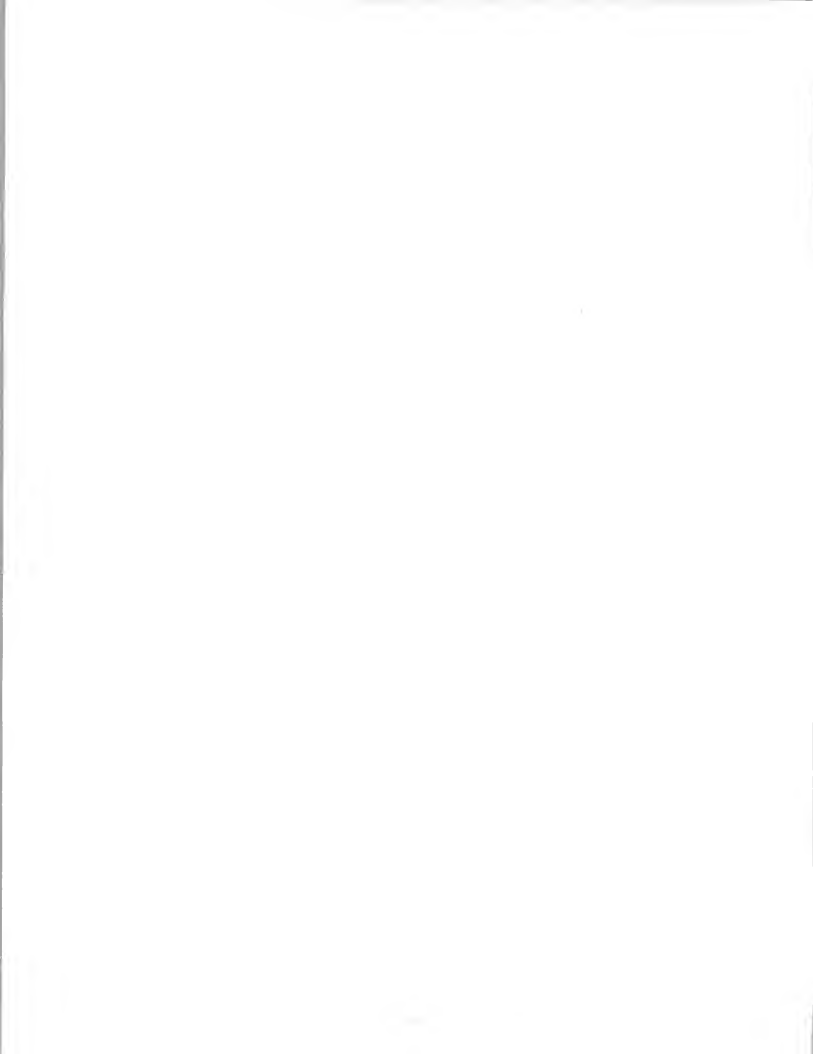
The relative profitability of the various components of desktop services are summarised in Exhibit III-11.

EXHIBIT III-11

Profitability by Service Component Desktop Services, Europe

Service Component	Relative Profitability
Equipment supply	Very low
Equipment maintenance	Low
Application Software product supply	Medium
Installation	Medium-High
LAN management	Medium-High
Help desk services	High

The relatively low profitability of equipment supply and maintenance is the motivation for personal computer dealerships to target desktop services and systems development activities which offer much higher margins.



This exhibit also explains the traditional systems operations vendors' reluctance to move into equipment supply and maintenance, while concentrating on activities such as local area network installation and support. However with users increasingly looking for a single source of supply to meet their desktop needs, it may be necessary for the professional services vendors to become involved in equipment supply so as to offer a full-service capability.

D

Strategic Assessment

1. Outsourcing Dominance of Professional Services Vendors is being Challenged

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 primarily 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 III-12, the equipment manufacturers themselves are also key advocates of desktop services for similar reasons.

EXHIBIT III-12

Leading Vendors, 1992

- International Computer Group (ICG)
- P&P Corporate
- JWP Businessland
- Olivetti Systems & Networks
- Unisys
- Computeraid
- Digital
- Prime
- Hewlett-Packard



The approaches adopted by a number of leading equipment manufacturers, such as Digital and Prime, and those adopted by leading independent maintenance organisations (IMO's) such as Computeraid and Data Logic are discussed in the INPUT report "The Impact of Downsizing on Customer Services Organisations".

In its 1992 market research INPUT has found major IMOs (principally in the U.K.), who are launching desktop services offerings:

- Granda Computer Services is restructuring its Microcare division.
- 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 III-13 summarises the strategies of the IMOs who are venturing into the desktop services arena.

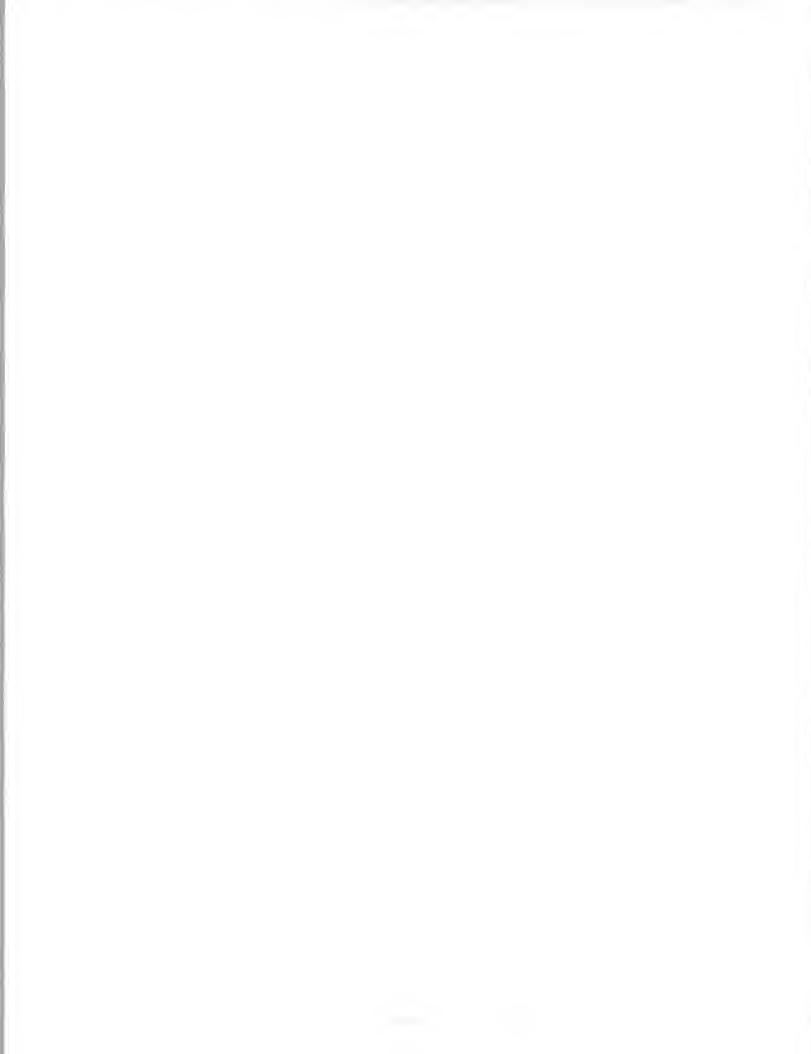
EXHIBIT III-13

Independent Maintainer Strategies

- Build from strengths
- Outsourcing
- Brand naming
 - Software maintenance
 - Badging

At present, many of the equipment vendors offer a fragmented approach to desktop services. For example, 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.



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

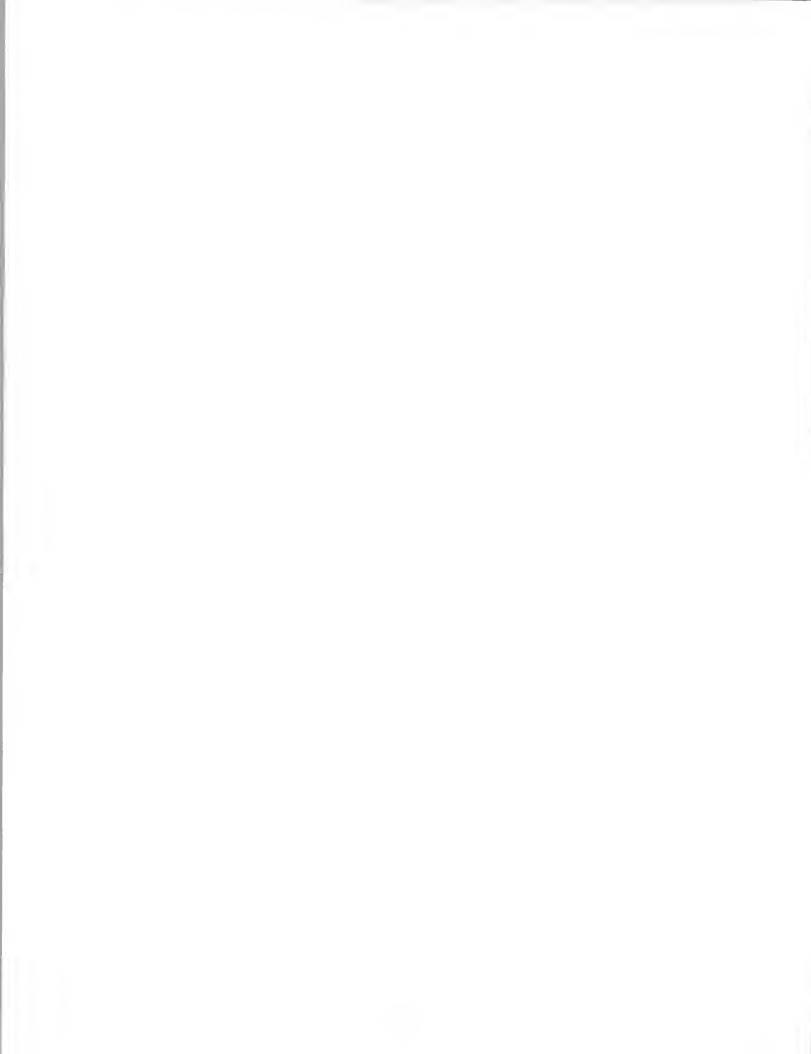
- Startup Services provide the physical installation of multi-vendor desktop equipment and software, plus configuration, testing and user familiarisation.
- Connectivity Services support the transition from a stand-alone to a networked desktop environment, including naturally multi-vendor LAN environments.
- 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, operations 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 maintenance and software systems are in working order, up-to-date in respect of licensed 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.

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.



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.

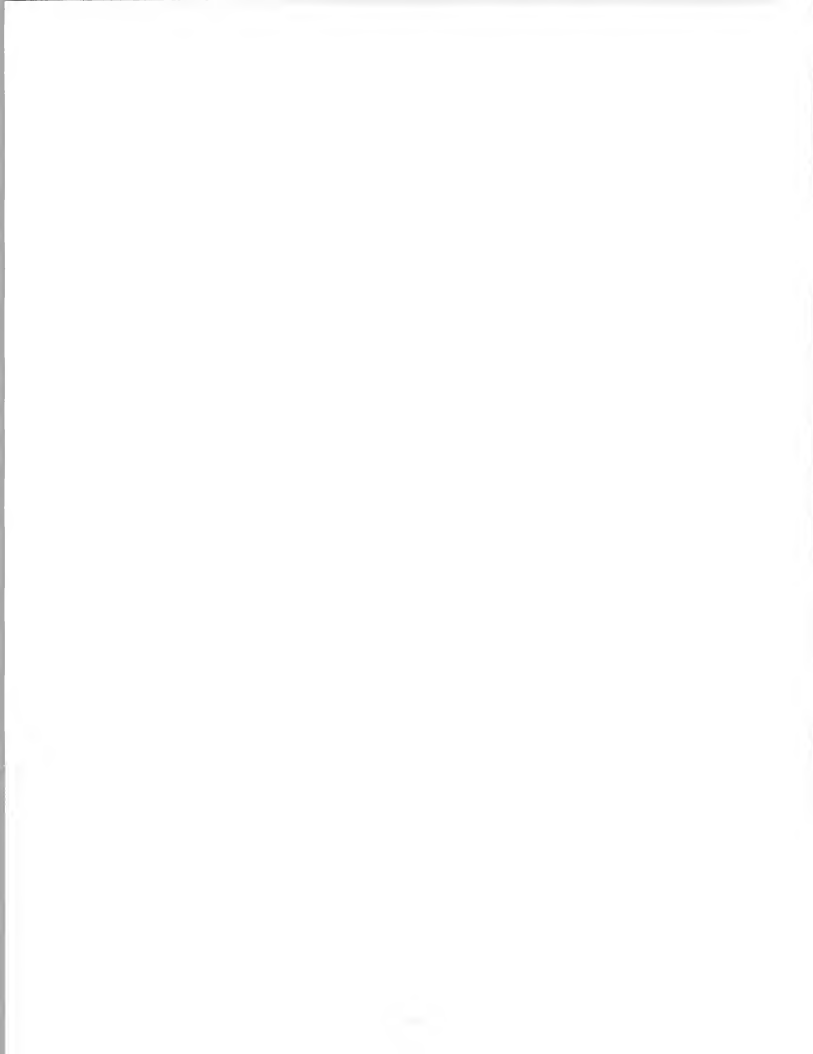
The threat comes from the growing importance of technologies such as local area networks, open systems, and client/server architectures. While these remained a minor proportion of the equipment installed base, the professional services vendors could afford to concentrate on selling outsourcing services 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 III-14 summarises the current delivery capabilities of professional services vendors and PC dealers/distributors involved in the desktop services market.

EXHIBIT III-14

Delivery Capability by Type of Vendor Desktop Services, Europe

Vendor Type	Professional Services Vendors	PC Dealers/Distributors
Service offering		
Equipment Selection consultancy	Medium	Strong
Equipment purchase	Medium	Strong
Equipment maintenance	Strong	Strong
Equipment Installation	Strong	Strong
LAN management	Strong	Strong
Help desk services		
- Systems software	Strong	Strong
- Applications	Medium	Strong



The leading personal computer dealers are well-positioned to succeed in the desktop services market since they have a high level of capability in each of the service components required from equipment selection consulting and purchase through to local area network installation and end user help desk services. While these organisations may have had a traditional weakness in their ability to integrate their offerings for users, many of the leading organisations, concerned to improve their profitability, are now keen to promote their systems integration capabilities in the personal computer and open systems arenas.

The capability profile of the professional services vendors is markedly different from that of the leading personal computer dealers and displays a number of significant shortfalls. Firstly users are often seeking a single vendor to combine equipment selection consultancy and equipment purchasing with the necessary support services.

Professional services vendors often lack this capability. Secondly the professional services vendors lack breadth and depth of knowledge of personal computer applications software products. This affects not only their ability to provide comprehensive support to end users across a wide range of applications, but may also have an impact on their ability to deliver local area network based solutions. The personal computer dealers are increasingly seeking systems development opportunities as a means of diversifying away from low value-added equipment supply.

Exhibit III-15 illustrates the relative dependence on partners shown by professional services vendors and personal computer dealers.

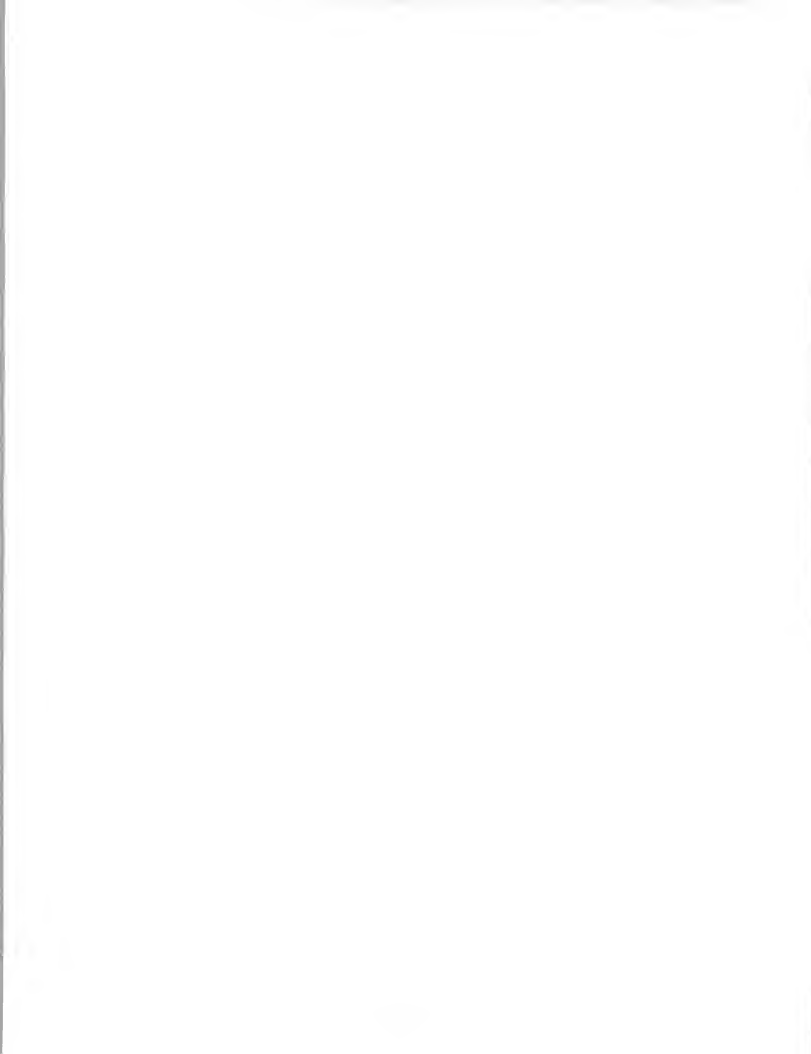


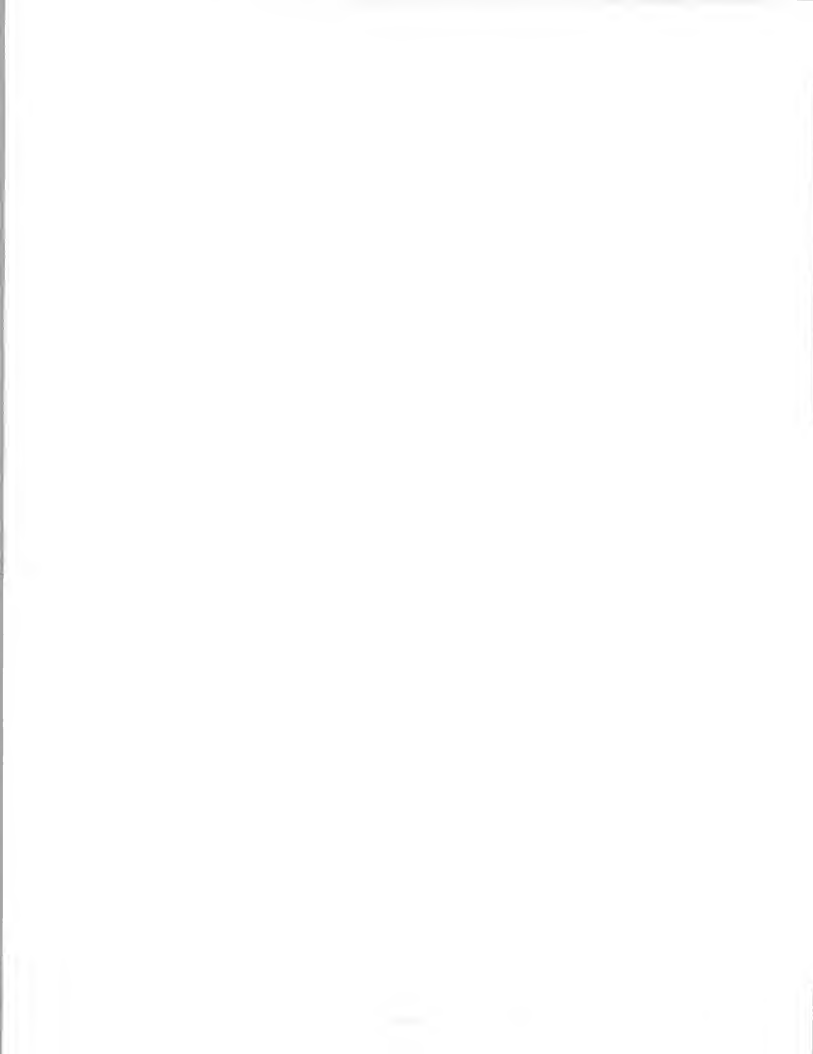
EXHIBIT III-15

Use of Partnerships by Type of Vendor Desktop Services, Europe

Vendor Type ----- Service offering	Professional Services Vendors	PC Dealers/ Distributors
Equipment Selection consultancy	Low	Low
Equipment purchase	Low-Medium	Low
Equipment maintenance	High	Low
Equipment Installation	Low	Low
LAN management	Low	Low
Help desk services		
- Systems software	Low	Low
- Applications	Medium	Low

Overall the major personal computer dealers have most of the capabilities need to deliver desktop services without resorting to partnerships. However they may use third parties for end user application training, and some vendors rely on third parties for equipment maintenance.

Professional services vendors have a high dependence on third parties for both equipment supply - where this service is offered - and equipment maintenance. Similarly professional services vendors are more reluctant to offer application software product support and, where this is offered, they show much higher levels of dependence on subcontracting this activity to third parties.



2. Professional Services Vendors target LAN Management

Exhibit III-16 summarises the current approaches of the professional services vendors to the desktop services market.

EXHIBIT III-16

Strategies : Professional Services Vendors Desktop Services, Europe

- Only targeting desktop services as part of wider offering
- Concentrating on network implementation & management
- Avoiding perceived low margin activities

The majority of the professional services vendors who have historically operated in the systems operations market are not yet actively targeting desktop services. Many still regard the support of end users with personal computers as a low value activity which has to be tolerated as part of a wider brief in some of the major contracts. Accordingly they often identify this activity with equipment maintenance and frequently subcontract it to associated equipment maintenance vendors.

However a minority of professional services vendors have identified this opportunity and are actively targeting it. Examples of such companies include iTNet and Sema Group. However even those companies targeting desktop services are often constrained by their lack of knowledge of personal computer application software products and so have tended to concentrate on marketing their local area network implementation and support skills to IS managers.

Although no major agreements have yet been signed, several of the major systems operations vendors recognise that they lack the in-house capability to offer a comprehensive desktop services service and that to take advantage of this opportunity some form of merger or joint venture with a major personal computer vendor is required.

The current strengths and weaknesses of the professional services vendors in offering desktop services are summarised in Exhibit III-17.



Strengths & Weaknesses: Professional Services Vendors Desktop Services, Europe

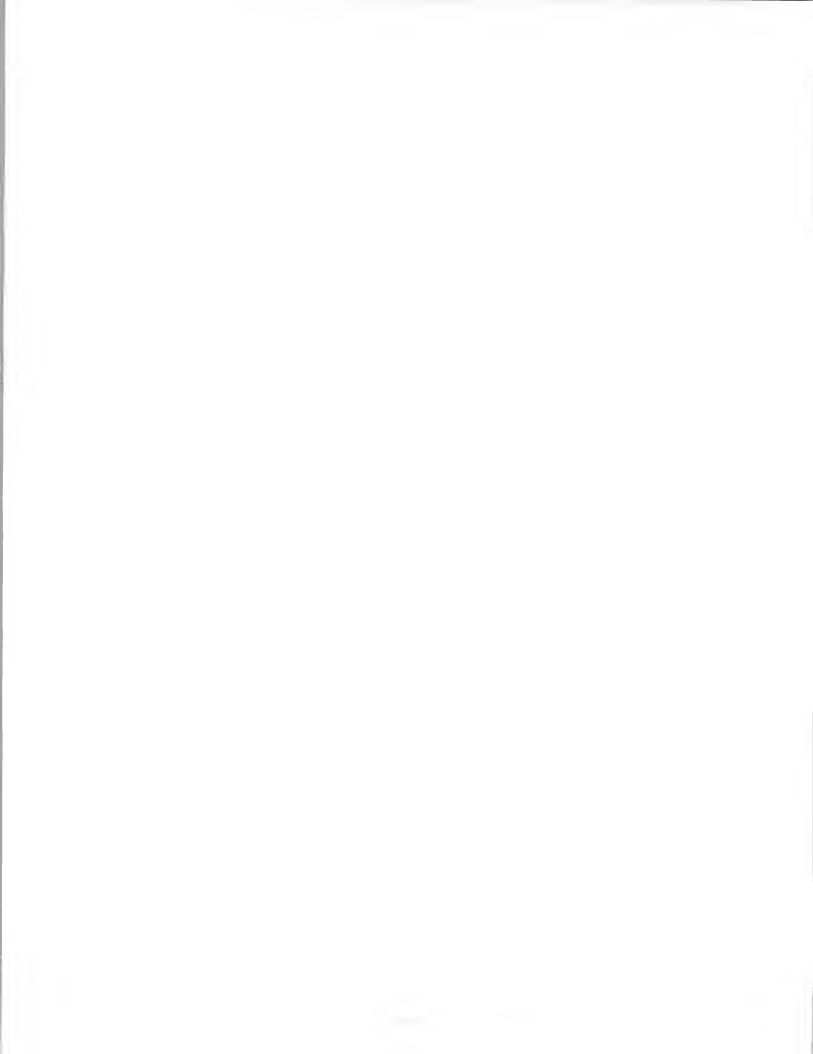
Strengths	Weaknesses
<ul style="list-style-type: none"> • Network management capabilities • Synergy with traditional systems operations services • Access to large accounts 	<ul style="list-style-type: none"> • Lack breadth of product knowledge • Lack of application software product knowledge • Not aggressively targeting desktop services • Inability to supply products

One of the major strengths of the established vendors is their existing market presence. These companies have a large number of clients already using their platform operations or transition management services. As these clients downsize or increase their usage of open systems and local area networks, so they are prime prospects for use of desktop services. If their existing vendors offer this service, then such prospects are likely to favour the vendor with whom they have already developed an established relationship. Secondly vendors with a strong outsourcing image are likely to attract invitations to tender from organisations requiring desktop services, and many of these large professional services vendors have solid experience in selling to major accounts.

Another strength of the professional services vendors is their system development capability, and, in particular, their expertise in implementing local area networks serving large numbers of end users.

3. Personal Computer Dealers offer Breadth and Depth of Application Software Product Knowledge

A number of the leading personal computer dealerships, for example P&P and ICG, are already more advanced than the traditional systems operations vendors in targeting desktop services. The principal components of their strategies for targeting desktop services are summarised in Exhibit III-18.



Dealer/Distributor Strategies Desktop Services, Europe

- Develop pan-European capability
- One-stop shopping
- Partnerships for proprietary capability
- Major opportunity to enter high-margin services business
- Targeting system development

The major dealerships are endeavouring firstly to diversify away from low profitability activities such as equipment supply and maintenance into higher value added activities such as services and systems development. In addition, one-stop shopping services such as desktop services offer the potential to establish long-term, typically 3-5 year, contracts with major organisations protecting both the vendor's profitability and its account control.

The major dealerships also perceive that in order to service the major accounts to a high standard, they require pan-European capability, enabling them to offer users identical services and standards of service across Europe via a single point of contact. International Computer Group (ICG), formed by Compunet (Germany), Random (France), and Computacenter (UK) is an example of a joint venture formed for this purpose, which has rapidly gained an excellent geographic coverage in Europe. These vendors are not restricted to personal computer products, and are typically developing strong capabilities in open systems. For example, many of the organisations within the ICG Group have divisions acting as value added resellers for the IBM RS/6000.

However P&P, for example, recognises that desktop services and indeed open systems capability meet only part of an organisation's outsourcing needs. Many organisations additionally wish to outsource activities or infrastructure based around proprietary mainframe or mid-range architectures.

Accordingly P&P is seeking a partnership with one of the leading systems operations vendors to form an organisation capable of servicing the whole of any prospect's outsourcing requirements.



The principal strengths and weaknesses of the dealers in offering desktop services are summarised in Exhibit III-19.

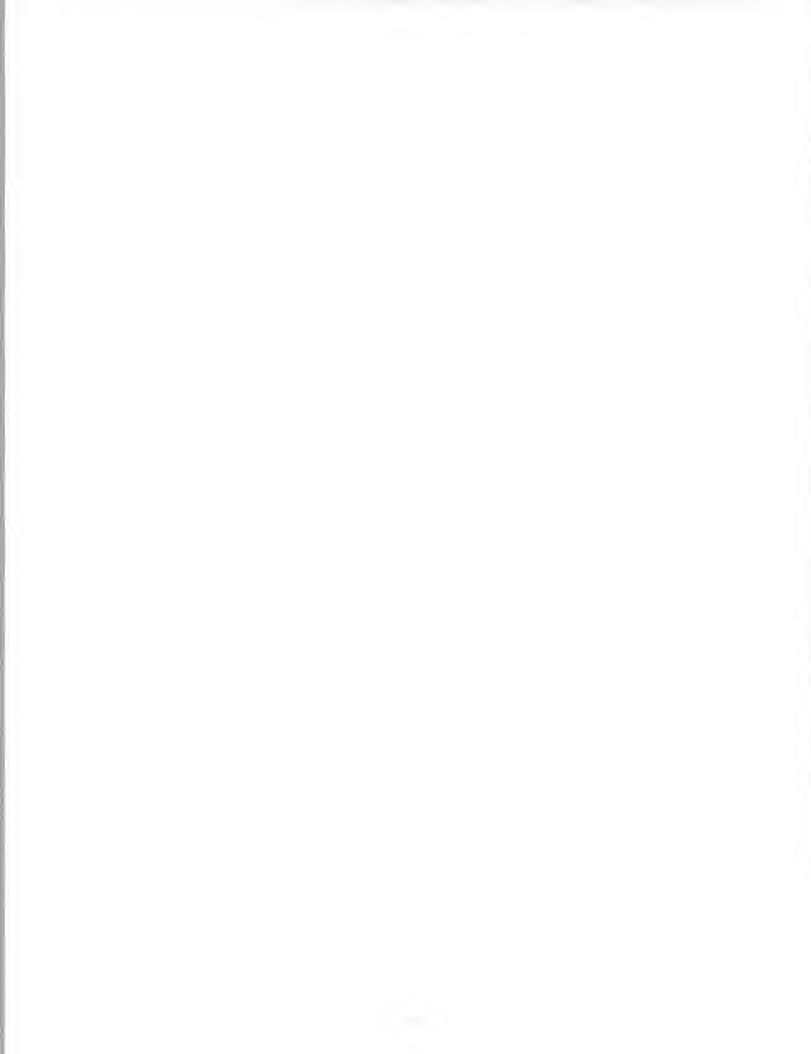
EXHIBIT III-19

Dealer/Distributor Strengths & Weaknesses Desktop Services, Europe

Strengths	Weaknesses
<ul style="list-style-type: none"> • Vendor independence • Scope & depth of product knowledge • Full service capability in PC/Workstations • Access to large accounts 	<ul style="list-style-type: none"> • Lack of mainframe & mid-range capability • Currently lack pan-European capability

Although ICG may be perceived by users to have a close relationship with IBM possibly affecting the company's impartiality, many dealers claim very high levels of vendor independence. For example, P&P estimates that it distributes 9,000 personal computer products, each of which it has assessed in some detail. Accordingly the company is very well positioned to offer independent purchasing consultancy to corporate users in the personal computer and open systems arenas. In terms of product knowledge and support capability, the company's weakness lies in its lack of mainframe and proprietary mid-range system expertise. However some large dealers, for example ICG, do offer IBM AS/400 capability in addition to their Unix based knowledge.

The large dealerships do now offer a full service capability covering personal computer and workstation products. Indeed their detailed capabilities in integrating and supporting such products exceeds those of the typical professional services vendor.



As suppliers of personal computer products, the dealerships also have good access to the major accounts. For example, P&P corporate was specifically established to target Times Top 100 organisations. As indicated by Unilever's contract with P&P for desktop services, organisations are prepared to outsource desktop services separately from other services and are prepared to evaluate a dealership's ability to support their personal computer based operations, even though they already use the outsourcing services of a professional services vendor. Potential desktop services opportunities are being put out to tender by users both as specific requests for desktop services and as a component of a wider outsourcing requirement. However it is probable that users will separately award a contract for desktop services where they perceive that this will result in a higher level of service.

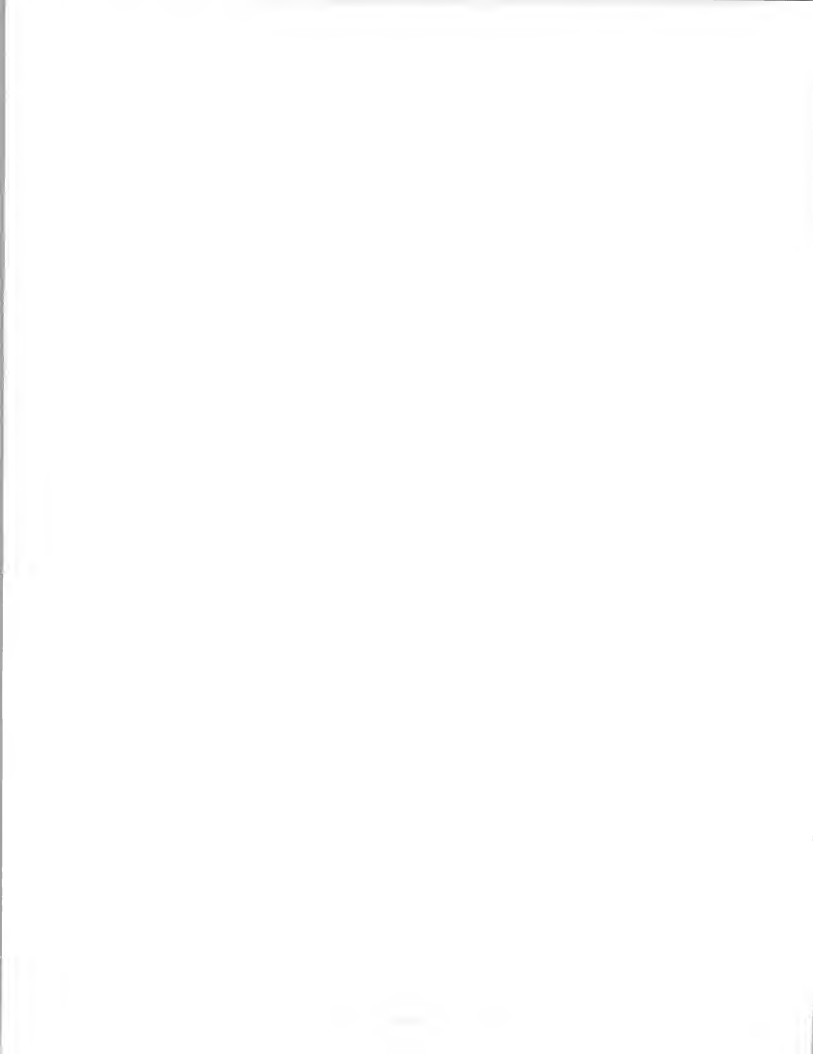
One potential weakness of the dealerships is their current overall level of pan-European capability. However, ICG has largely addressed this problem and a number of other dealership are starting to do so. The same criticism could be applied to the traditional professional services vendors, few of whom have developed a widespread outsourcing capability.

E

Professional Services Vendors need to develop Full Service Capability

As downsizing and the trend to open systems in Europe continue, desktop services is set to become one of the key outsourcing services of the future. At the moment, this opportunity is being largely addressed by the major personal computer dealerships as they seek to improve their account control and diversify into higher value added services. However this is not an opportunity that the traditional outsourcing vendors can afford to ignore.

Some of the key trends in the desktop services market are listed in Exhibit III-20.



Key Trends Desktop Services, Europe

- Downsizing producing substantial market growth
- Outsourcing ITTs* increasingly request Desktop Services
- Desktop Services also emerging as standalone service
- Could become dominant form of infrastructure management

* Invitation to Tender

Firstly downsizing is stimulating, and will continue to stimulate, substantial market growth in desktop services. As personal computers, local area networks, and distributed open systems become the basis for increasing numbers of mission critical systems, so the support and management of this infrastructure becomes of increasing importance to users. As a result, the last year has seen the award of a number of major contracts for desktop services from organisations such as ICI, Unilever, and TSB. Overall there is an increasing tendency for outsourcing invitations to tender to include a desktop services component alongside the more traditional request for management of proprietary mainframe and mid-range systems.

Indeed a number of outsourcing vendors are finding that the supply of transition management services is itself leading to subsequent requests for desktop services. Typically a user undertaking a transition management contract hands the management of mainframe operations to a vendor while new systems are developed. Downsizing is frequently involved. The user's intention is typically to manage the new systems in-house. However some users are finding that the technical management of downsized systems is also complex and so seek the assistance of an external vendor to provide IS infrastructure support and management.

Indeed as the move to downsizing continues, desktop services could become the dominant form of outsourcing in Europe. INPUT's current forecast growth rates for Europe imply that the market for outsourced desktop services will be equal to half the market for platform operations by 1997. As growth in the outsourcing of mainframe platform operations slows, so the relative importance of outsourced desktop services will further increase.

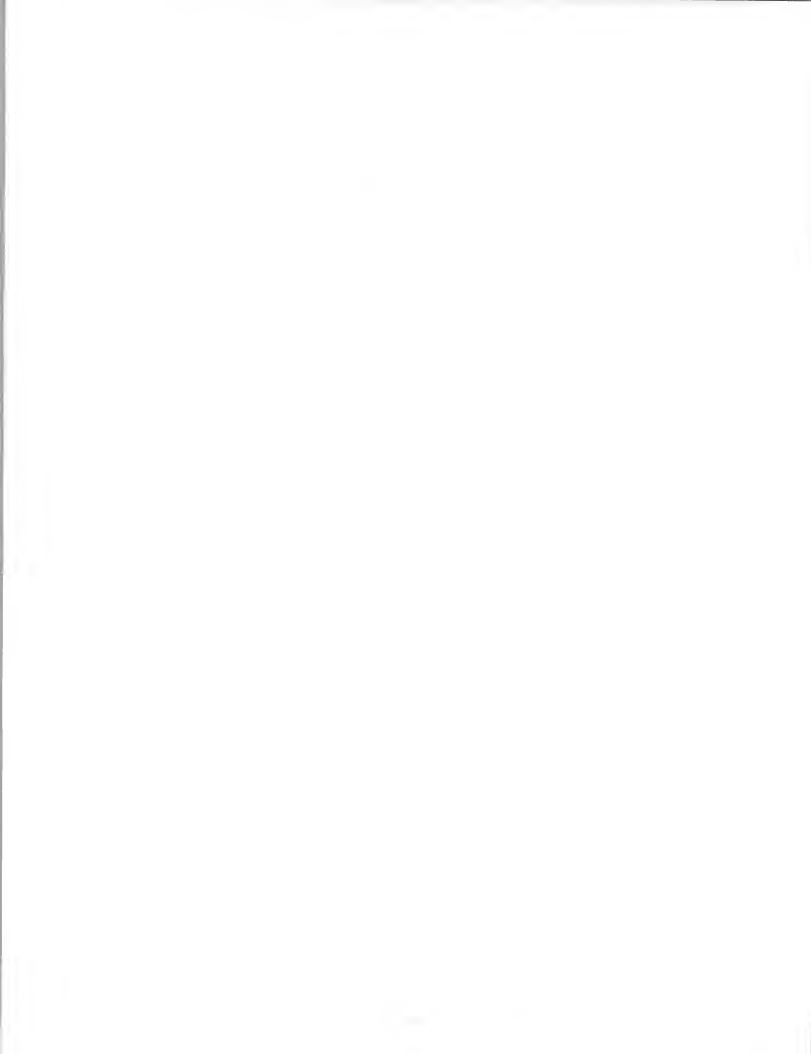


Exhibit III-21 lists some of the critical success factors required by vendors to succeed in the desktop services market.

EXHIBIT III-21

Critical Success Factors Desktop Services, Europe

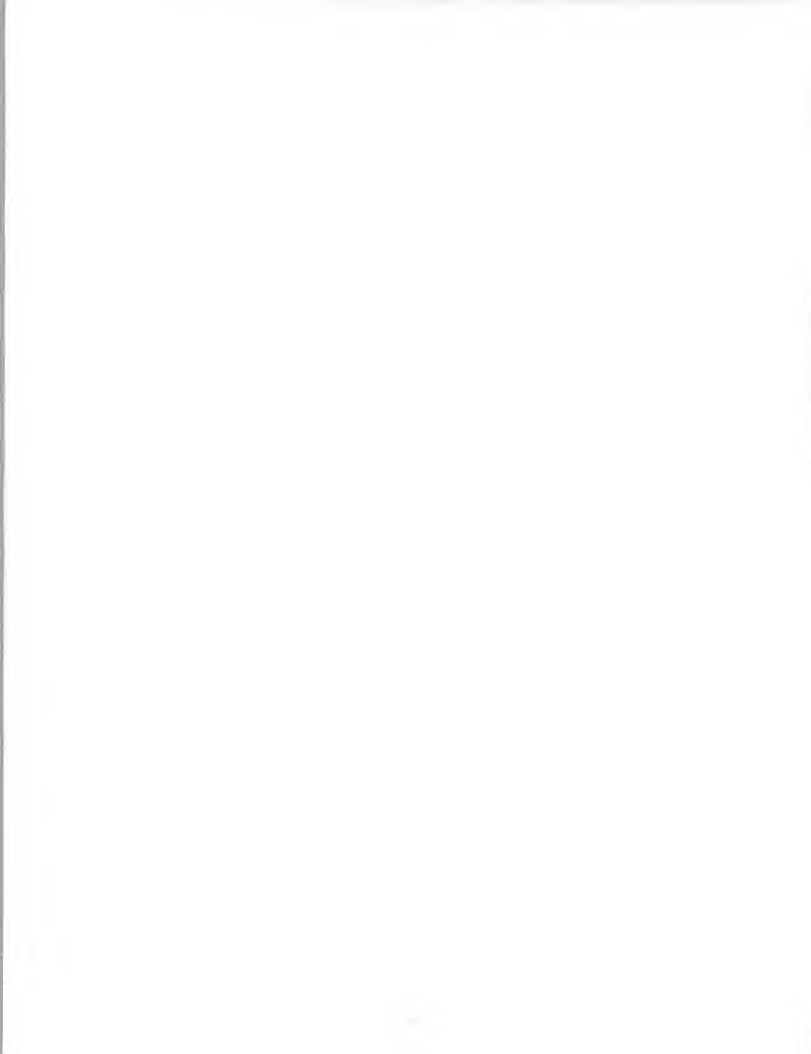
- Full service capability in PCs and LANs
- Broad geographic coverage
- Broad application software product support capability
- Up-to-date technical skills

Firstly vendors must establish a full service capability covering personal computers, local area networks, and open systems, ranging from the supply of equipment and software products through to user training and application software product support.

The vital skill which is currently lacked by the professional services vendors is application software product knowledge at the personal computer level. This skill must be acquired, probably by joint venture or merger with an existing personal computer dealership.

It is essential that the vendor can maintain the critical mass of personnel necessary to keep up-to-date with changes in personal computer products and technology. Users currently experience considerable difficulty in keeping up with new versions of products and understanding the intricacies of the latest versions. Similarly the day-to-day management of local area networks is a key skill. Both breadth and depth of product knowledge are essential and this level of expertise can only be maintained by vendors which establish a significant presence in the desktop services market. Coverage of a small range of software products is unlikely to be sufficient to enable a vendor to make a major impact on the desktop services market.

Vendors also need to develop a broad geographic coverage to enable them to service major corporations on a pan-European basis.



IV User Purchasing of Desktop Services

A

Large Companies Seek to Simplify Management

Both commercial and technological factors are combining to drive the market. Exhibits IV-1 and IV-2 summarise the driving forces behind the adoption of desktop services as perceived by leading vendors of these services.

In particular, a number of major 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 the organisation responsible for desktop services to P&P Corporate - a major dealer/distributor. The organisation concerned, ICI Computer Systems, employed 100 personnel who were transferred to P&P corporate. ICI has also recently announced formalised partnership agreements with Foster Wheeler and John Brown. The objectives of these agreements are to reduce tendering time and costs, reduce project scheduling time, and release engineering staff from policing and supervising contractors. Undoubtedly ICI hopes that similar benefits will accrue from outsourcing its desktop services to a preferred supplier.

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 IS costs, and where possible reduce them. 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 spread 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, TSB is transferring 23 staff to Computacenter.

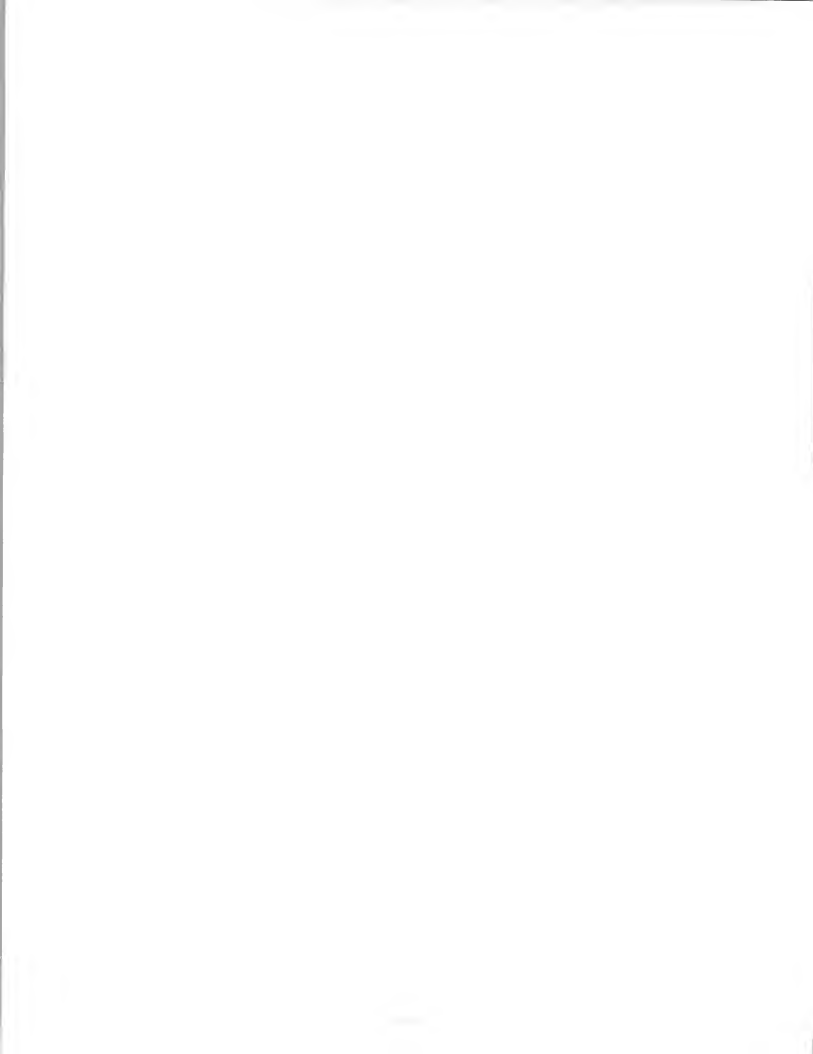


EXHIBIT IV-1

Driving Forces Desktop Services, Europe

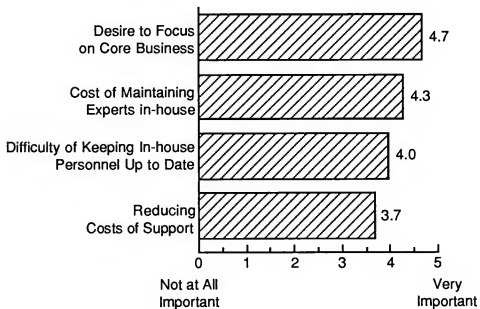
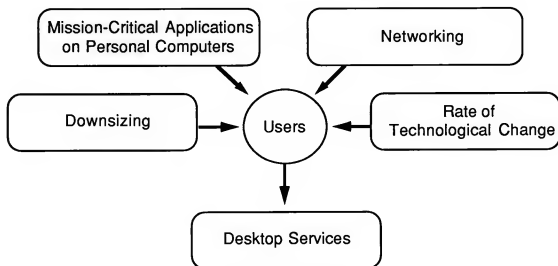


EXHIBIT IV-2

Technological Driving Forces Desktop Services, Europe





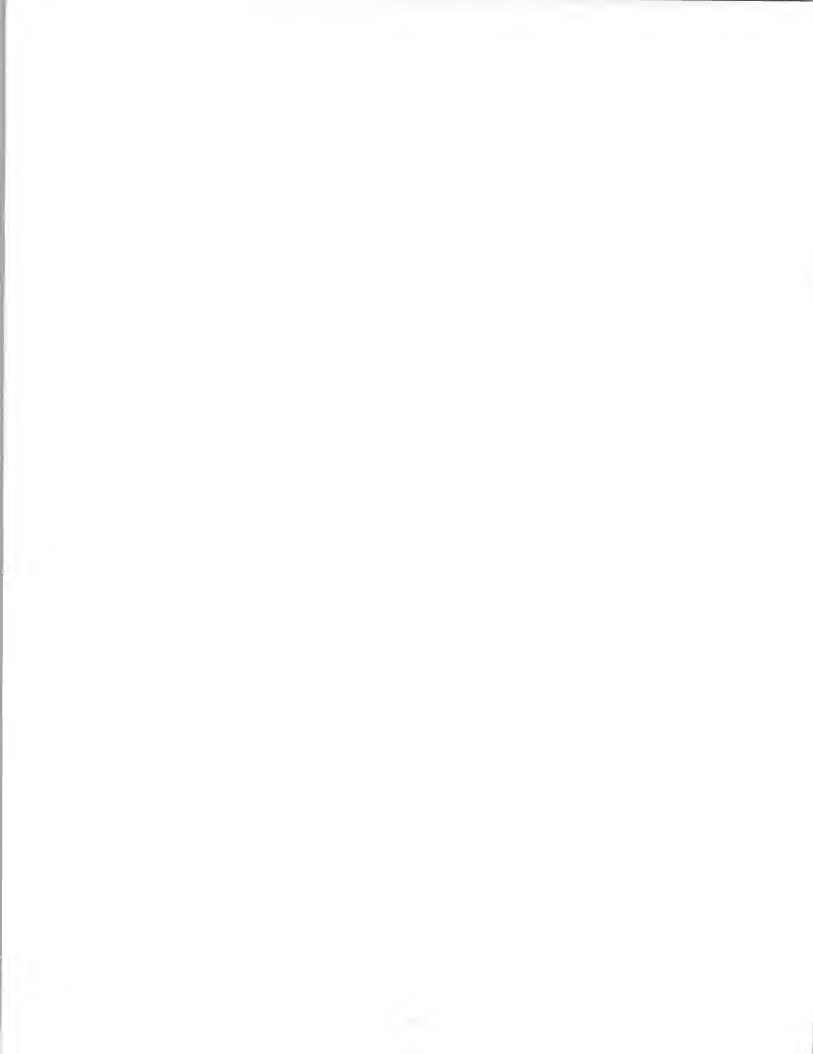
It can be difficult for the vendor of desktop services to achieve economies of scale from the functions, such as first-line support, carried out from the user's premises. In the case of large desktop services contracts, a number of staff are usually retained on the user's site. While vendors may argue 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. 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.

Some vendors such as iTNet are finding that users have a strong preference for providing first-line support to end-users in-house, and are content to outsource local area network implementation and second-line support. IS departments tend to justify this behaviour using 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.

The elements of desktop services which users choose to outsource obviously vary from client to client. The relative propensity of users to outsource each element of desktop services is shown in Exhibit IV-4.

Large companies such as ICI which have taken a policy decision to outsource desktop services typically outsource all of the components shown in Exhibit IV-4, including purchasing advice to end users. Indeed P&P Corporate has been nominated as the preferred supplier to ICI of personal computers and workstations.

At the other extreme are vendors such as iTNet which target primarily IS managers. iTNet does not supply personal computers and finds that in the majority of instances where the company has installed local area networks, the user only requests second-line support preferring to retain initial help desk services in-house.



A number of technological factors, as shown in Exhibit IV-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 individual personal productivity use. 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 support for the desktop 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.

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 to its growth as outlined in Exhibit IV-3.

EXHIBIT IV-3

Market Inhibitors Desktop Services, Europe

- Existing skill base in large companies
- Cost justification of on-site service
- Desire to run first-line support In-house

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 require a policy decision such as that adopted by ICI to bring about outsourcing of desktop services.

Secondly, it may be harder to cost-justify the outsourcing of desktop services compared to other outsourced services, 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.

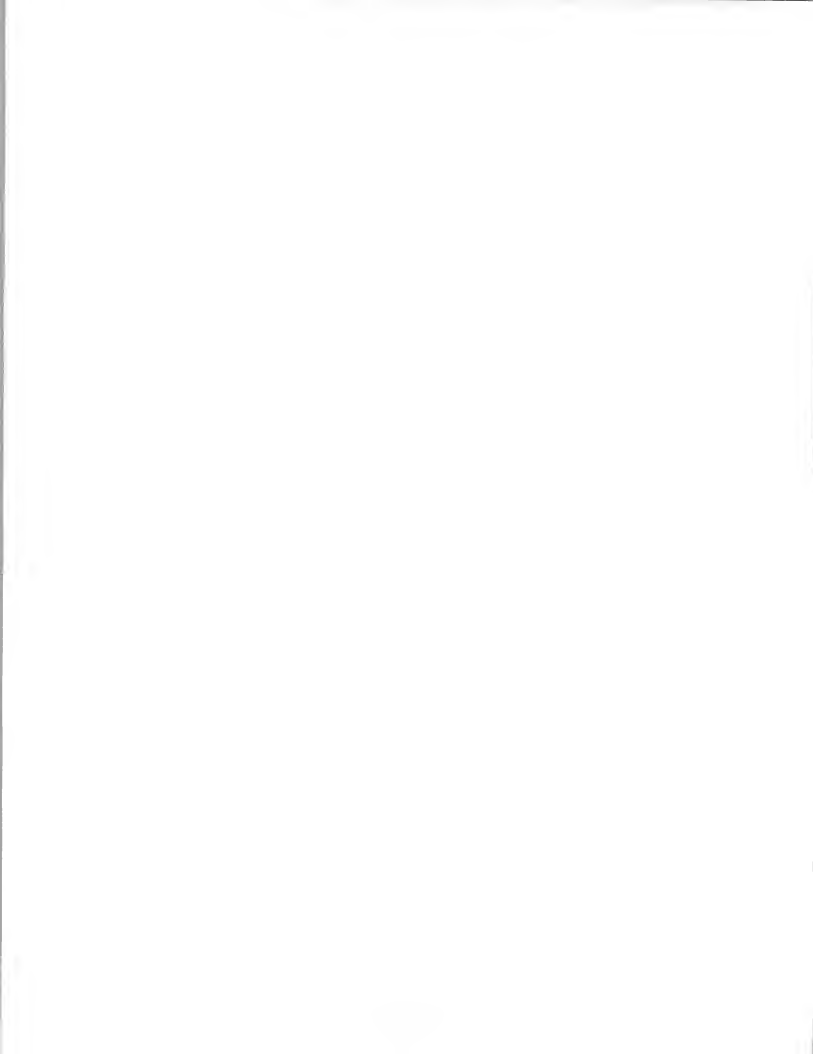


EXHIBIT IV-4

Degree of Outsourcing by Service Element Desktop Services, Europe

Service Element	Relative Level of Outsourcing by Users
Purchasing consultancy	Medium
Equipment purchase	Medium
Equipment maintenance	High
LAN/Equipment installation	High
LAN management	High
Help desk services	Medium-High
- systems software	Medium
- applications software	Medium
Second-line technical support	High

B

Medium Sized Companies lack Support Capability

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

For large companies to outsource desktop services they need to be culturally predisposed towards outsourcing at a senior management level. While supporting and maintaining local area networks, personal computers, and application software products can be a problem for IS management in the large corporates, these organisations 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/reduce the costs of IS infrastructure and end user support.

On the other hand, as outlined in Exhibit IV-5, 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.

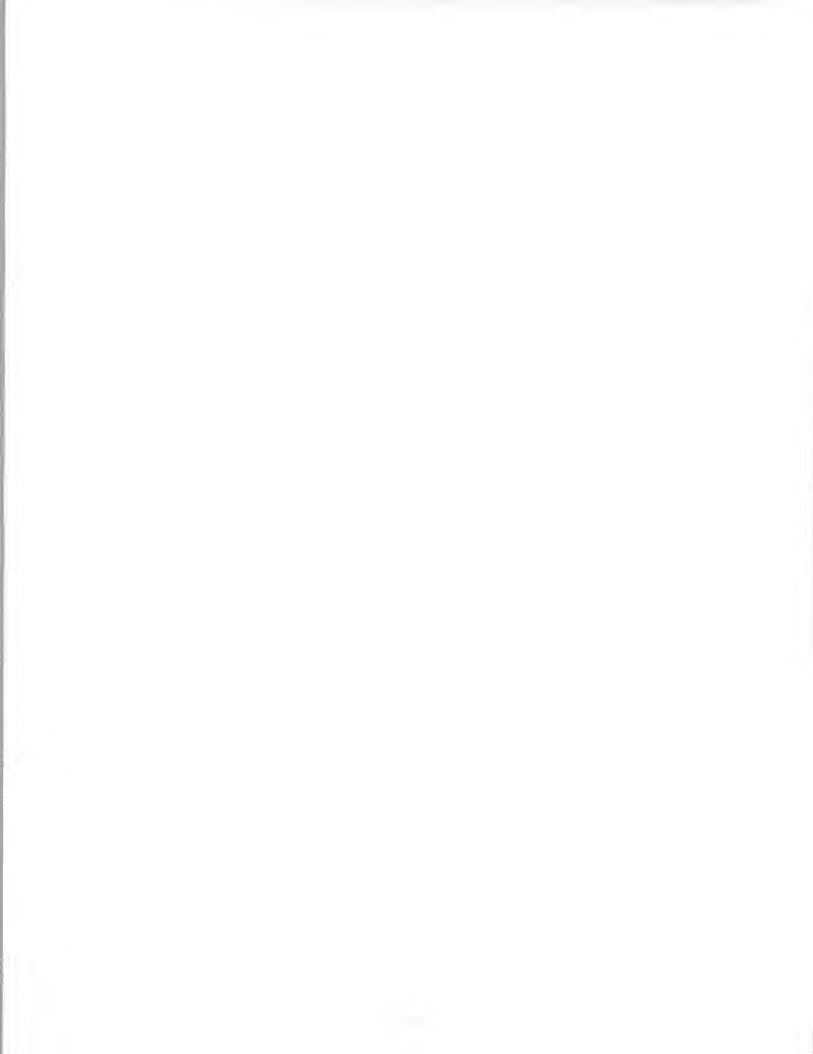


EXHIBIT IV-5

Buying Process Desktop Services, Europe

Factor	Company Size	
	Large 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 its entirety.

As shown in Exhibit IV-6, 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.

On the other hand, for the smaller contracts with typically less than 500 personal computers supported and 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.

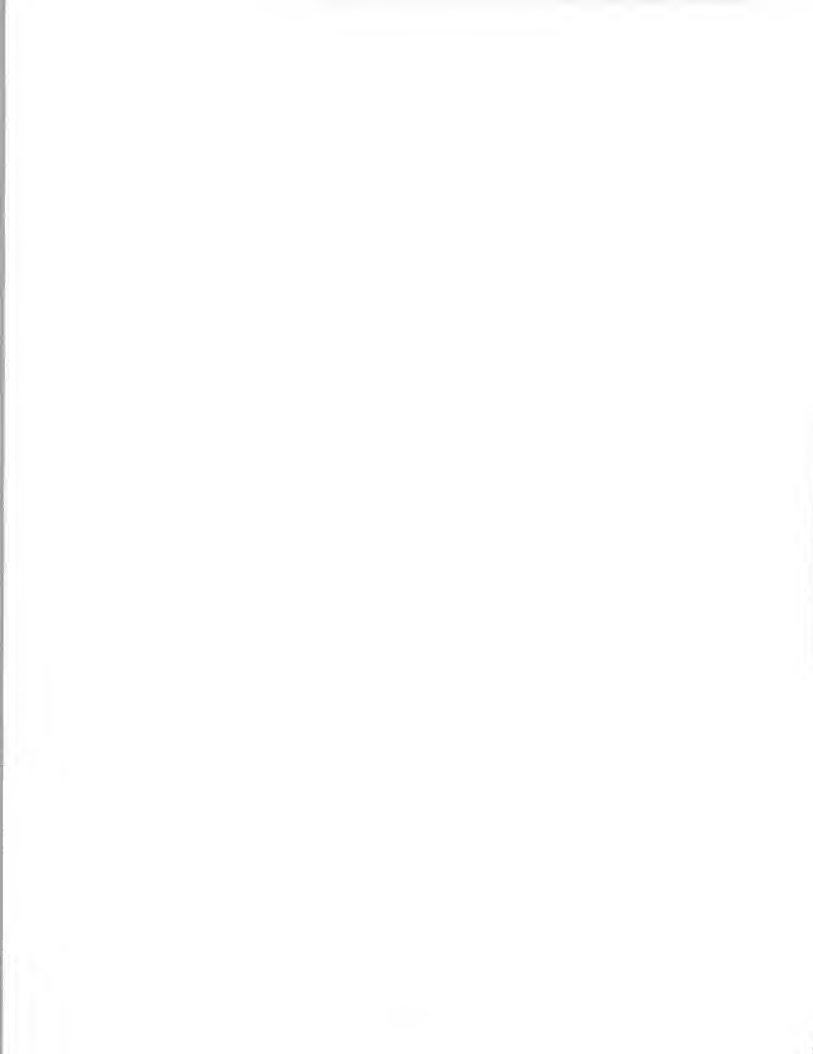


EXHIBIT IV-6

**Contract Length
Desktop Services**

- Large contracts mostly for 3-5 years
- Small & medium-sized contracts mostly for one year
- User uncertainty is a key factor

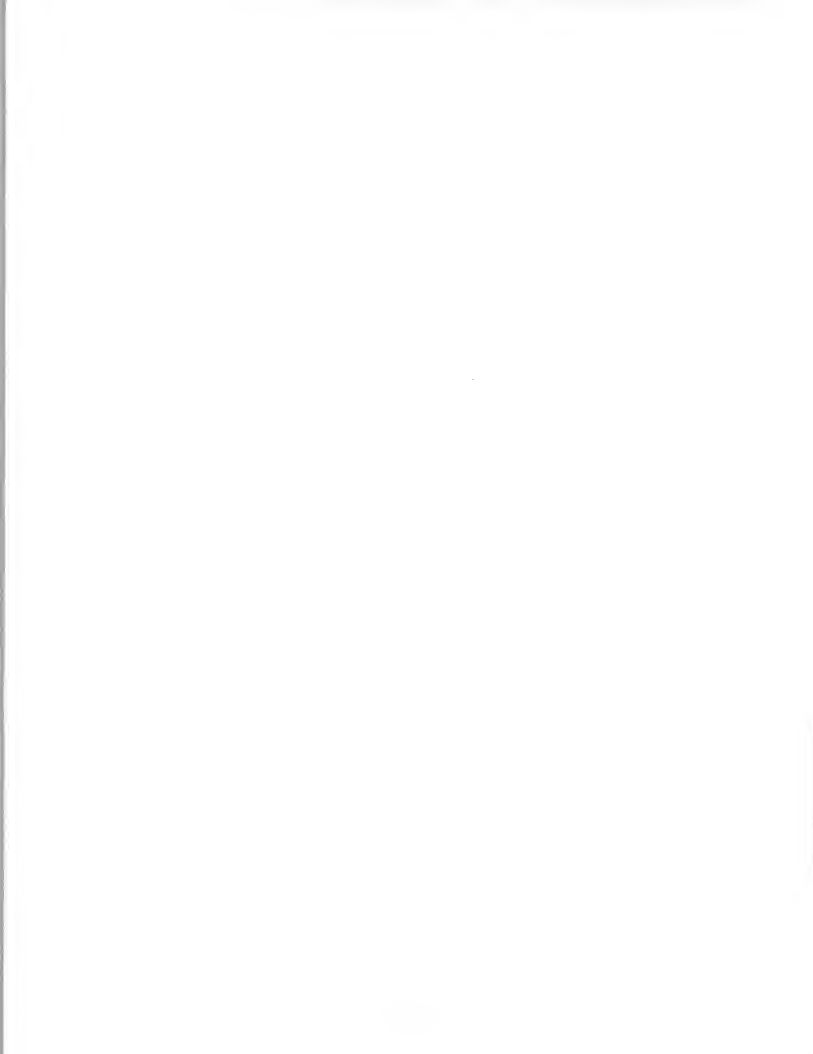
Exhibit IV-7 lists users' selection criteria in choosing a vendor of desktop services. Vendors may find it advantageous to include equipment and software product evaluation and supply within the scope of their services. One of the key criteria is the vendor's ability to take prime responsibility for 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 and user training to other vendors. However the overall service must appear seamless to the user. From the user's 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 9000 products for resale, each of which has been evaluated in depth. The company also claims to understand the quirks of each product and the ways in which application software products interact with each other in practice.

EXHIBIT IV-7

**Vendor Selection Criteria
Desktop Services, Europe**

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



Vendor independence is another factor. Many desktop services contracts will include purchasing consultancy 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.

The vendor also needs the appropriate geographic coverage to match the client's geographic presence. In many cases, only a 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.

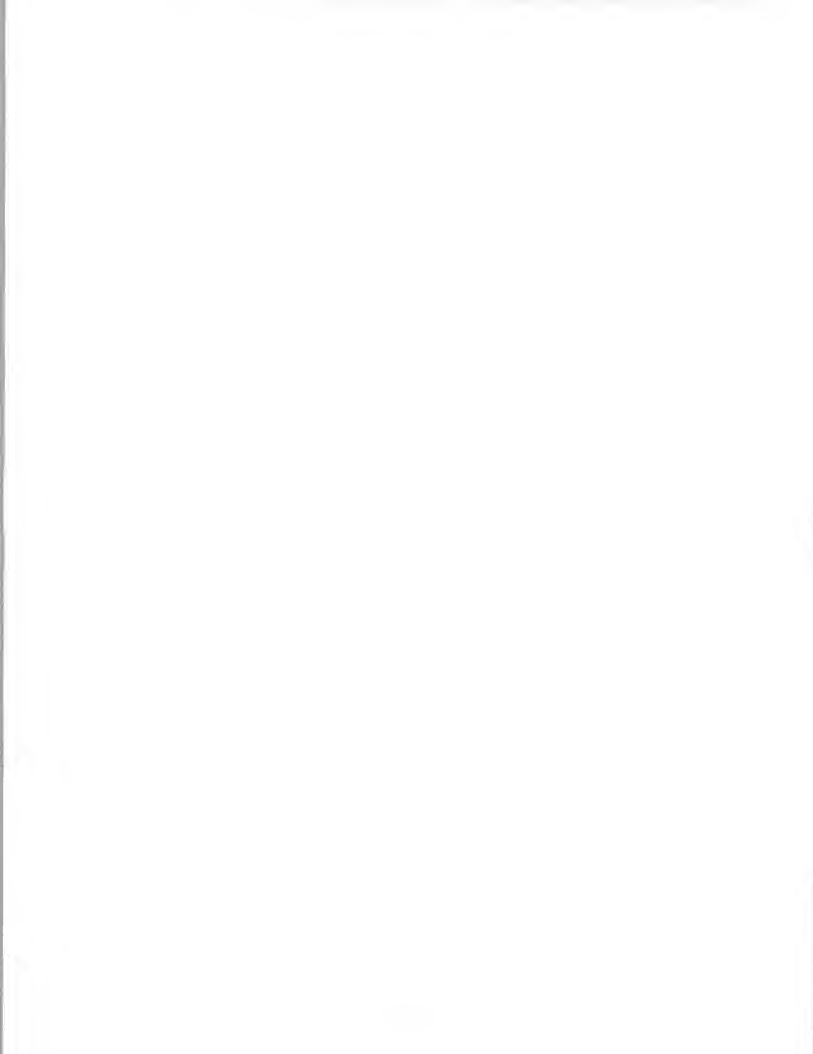
C

Standalone Contracts Account for Most of the Market

There is a growing trend for users to outsource the management of their IS infrastructures. Historically this has usually meant the outsourcing of mainframe computer operations, which in many instances has also included support for wide area networks and terminals linked to the mainframe. Accordingly the majority of the traditional European systems operations vendors such as Hoskyns, Data Sciences, Sema Group, EDS, and Andersen Consulting believe that a small element of desktop services is typically included within the scope of each of their outsourcing contracts. There is also evidence to suggest that an increasing proportion of major systems operations invitations to tender are including the requirement to support local area networks and support end users using personal computer based application software products.

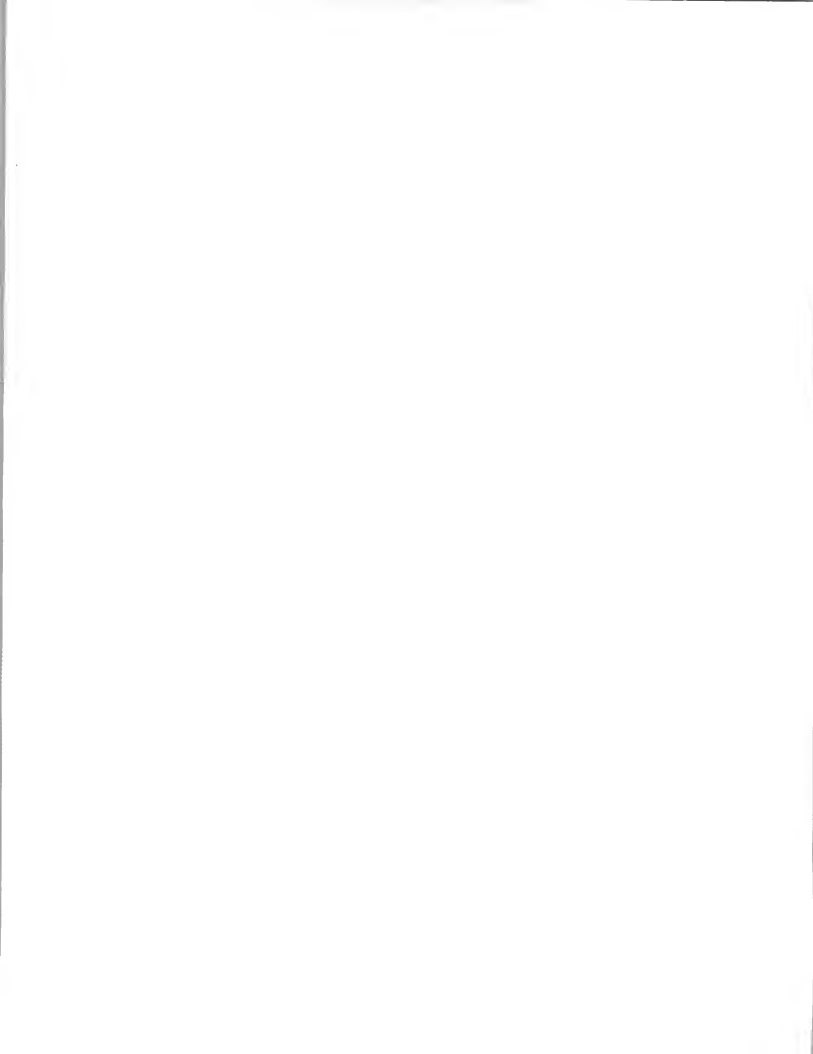
For these reasons, systems operations vendors are beginning to develop an interest in desktop services. Traditionally, it is an area in which they have had only a low level of interest.

However the large contracts for desktop services which have started to appear over the last twelve months, for example those involving ICI, Unilever and TSB, are not part of a wider systems operations contract.



These standalone contracts account for the bulk of the desktop services market at the present time.

Indeed it appears that even users who have existing systems operations contracts are prepared to independently outsource their desktop services. For example, Unilever, which is a client of EDS for systems management services, recently selected P&P Corporate to manage the organisation's desktop services.



V **Leading Desktop Services Vendors**

This section analyses the service offerings, delivery capabilities, and strengths and weaknesses of a number of vendors targeting the desktop services market.

The vendors analysed are two major equipment dealerships - International Computer Group and P&P Corporate - and two professional services vendors who have historically been active in the systems operations market - Sema Group and iTNet.

Overall many of the professional services vendors are still not seriously targeting desktop services. While these organisations recognise desktop services as a small - typically less than 5% - component of their existing systems operations activity, they are content to treat desktop services as a low value-added activity to be subcontracted where necessary. There sometimes appears to be a tendency to over-identify desktop services with equipment maintenance.

On the other hand, the major equipment dealerships see desktop services as a major opportunity to diversify away from low value added activities such as equipment sales and maintenance and into higher value-added support services.

Analyses of the capabilities and strategies of specific equipment vendors and independent maintenance organisations (IMO's) are contained in INPUT's report: "The Impact of Downsizing on Customer Services Organisations". Digital and Computeraid are among the vendors analysed in this report.



A**Equipment Dealers****1. P&P Corporate**

P&P was initially established as a distributor of microcomputer products, but subsequently established a dealership operation targeting the Times Top 100 companies in the UK, called P&P Corporate.

P&P Corporate is now strongly targeting desktop services as a further move to higher value-added services. Some of the features of P&P's desktop services offering are shown in Exhibit V-1.

EXHIBIT V-1

P&P : Service Offerings

- Contract Managed Support
- Dealer to Times Top 100
- Frequently takes-on user IS personnel
- Open relationship
- Tailored service

P&P is wary of using the term "facilities management" to describe its service since it believes this has negative connotations in the marketplace. Instead the company prefers to use the description "Contract Managed Support". P&P Corporate believes that the major corporations are the principal target for desktop services motivated by the sheer pace of change within the personal computer marketplace.

As in traditional outsourcing contracts, P&P Corporate are prepared to take on user support personnel as part of the deal. In the case of their contract with Unilever, P&P acquired 12 staff and 90 were taken on from ICI. Other clients cited by P&P include Eagle Star, British Aerospace, and Coopers & Lybrand Deloitte. P&P state a preference for fitting user personnel into the P&P career structure, and are prepared to forgo a contract if there are significant potential difficulties in integrating the user personnel to be acquired.



P&P Corporate claim to offer very open relationships to their clients inferring that the client is encouraged to monitor the margins that P&P is making on any business contract.

As in many large outsourcing contracts, P&P tailor the delivery of the service and the support organisation to the individual client's requirements. As shown in Exhibit V-2, P&P has considerable capability in each of the major service components required for desktop services.

EXHIBIT V-2

Delivery Capability : P&P Corporate

Service Element	Level of Capability
Purchasing Consultancy	High
Equipment Purchase	High
Equipment Maintenance	High
LAN/Equipment installation	High
LAN management	High
Help desk services	
- systems software	High
- applications software products	High
Second-line technical support	High

P&P Corporate believes that one of its major unique selling propositions compared to the equipment vendors or the professional services vendors is the organisation's high level of vendor independence. P&P estimates that it handles 9,000 software and hardware products within the personal computer and Unix environments, and that having evaluated each of these products in some depth, the company knows the true capabilities of the products and how to integrate groups of them successfully. Accordingly the company believes it has a position of high integrity as a purchasing consultancy.

For example, the contract with ICI nominated P&P as the exclusive supplier of personal computer products and as a preferred supplier of Unix-based systems.



The importance of equipment maintenance is played down by P&P, whereas the company emphasises its capability to install and support a wide range of equipment and software products.

In the case of large contracts, P&P tailors its support and help-desk services to the user's requirements. However it is likely that some element of on-site support will be used to support large companies.

However logging of all queries is critical whether or not on-site support is used and so P&P has established a national call control system to BS5750 standards. Although P&P prefers to offer both help-desk and second-line support to users, the company will sometimes provide just second-line support to the user's own help-desk. P&P is endeavouring to provide access to its own databases to assist users in fault diagnosis.

P&P Corporate's strengths and weaknesses are summarised in Exhibit V-3. The company's principal strengths are its established presence in major accounts and its breadth and depth of knowledge of personal computer products. The traditional competitors in outsourcing typically lack the breadth of software product knowledge which P&P has developed as part of its dealership capability.

However although the company is one of the market leaders in desktop services in the UK, it still has a number of potential weaknesses.

Firstly the company is still only in the early stages of establishing its pan-European capability, and is constrained by its present financial difficulties from developing its geographic coverage rapidly. P&P has established wholly owned subsidiaries in Belgium and Sweden, and is building associations with large dealerships in Germany and France. P&P's long-term objective is to establish operations in each European country market.



EXHIBIT V-3

P&P : Strengths and Weaknesses

Strengths	Weaknesses
<ul style="list-style-type: none"> • Targeting major corporations • Knowledge of 9000 PC products • Vendor independence 	<ul style="list-style-type: none"> • Lack of mainframe & proprietary systems operations capability • Lack of specific industry expertise • European coverage still embryonic

Another potential weakness is P&P's comparative lack of industry-specific expertise. While desktop services is predominantly a horizontal offering, it may still need to be sold portraying a high level of industry expertise. Also, as the application development content of contracts increases, which is a declared aim of P&P, so industry-specific capability becomes increasingly important.

Finally, P&P Corporate lacks capability in addressing prospects' mainframe and proprietary system based requirements. A significant trend in the outsourcing market is for prospects to issue invitations to tender requesting outsourcing of combined large systems and desktop computing. No vendor is well positioned to service these opportunities at present and P&P, recognising this opportunity, is actively seeking a partnership with one of the traditional outsourcing vendors. The Sema Group is rumoured to be the company's preferred partner at the present time.

2. International Computer Group

The International Computer Group (ICG) was founded in 1989 as a joint venture between three major national personal computer dealerships, namely:

- Computacenter (UK)
- Random (France)
- Compunet (Germany).



Since then ICG has expanded its European coverage to ten countries as shown in Exhibit V-4.

EXHIBIT V-4

International Computer Group : Members

Country	Member
France	Random
Germany	Compunet
United Kingdom	Computacenter
Italy	Sistex
Belgium	MCC
Denmark	Danadata
Norway	EDB
Netherlands	Raet
Spain	Logic Control
Greece	ABC

In 1990, the combined turnover of the ICG Group was \$1,600 million, and the ICG network included 175 outlets - 40 of which are IBM System Centres. ICG has strong links with IBM, and approximately 70% of all system units sold by ICG in 1990 were IBM. In 1991, ICG was appointed as a European Project Associate (EPA) for IBM.

In addition to their personal computer activities, ICG members are typically RS/6000 value-added resellers and hold AS/400 agency agreements.

ICG was formed by its members to cater for clients' needs for a pan-European service, and to provide a consistency of service throughout Europe from a single client interface. The local account manager remains the single point of contact for the client and any international requirements are co-ordinated through ICG's central co-ordination centre in Paris which includes multilingual account co-ordinators, a help desk, sales support, project management, and purchasing services. ICG's principal service offerings are shown in Exhibit V-5.



EXHIBIT V-5

ICG : Principal Offerings

- Help Desk
- International Account Management
- Consultancy Services
- PC Integration Services

Clients can receive proposals for installations, training and services for anywhere in Europe from the Help Desk. They can place their order through their local Account Manager, and the ICG Help Desk coordinates the delivery and installation process, communicating progress back to the Account Manager, or directly to the client. The Help Desk can also organise meetings between the ICG local country Account Manager and a client's overseas subsidiary.

The Help Desk is a service that allows orders, issuing from anywhere in Europe, to be processed as easily on an international scale as they are nationally.

The implementation of comprehensive problem management procedures means that customers using the Help Desk can be assured that their projects are constantly tracked, and any problems receive immediate action.

Clients can generally use the Help Desk facility for relatively small requirements, such as a PC and peripheral installation in two overseas branch offices, or a training programme for overseas employees. Client with regular and more complex requirements will need to use the International Account Management service.



Clients who have regular international technology procurement requirements are able to sign an international Account Service agreement with their local Account Manager. This contract agrees standard terms, conditions and discount levels for all services and equipment specified in the contract. All countries covered by the agreement may use the contract with their local ICG supplier. The client therefore benefits from the economies of scale of negotiating at the international level but keeps the flexibility of being able to order equipment using the same terms and conditions at the local level.

Clients with an International Account Service (IAS) agreement still work primarily through their local Account Manager. However, as part of the IAS agreement, an ICG Account Manager is appointed in each country and the account is co-ordinated centrally by ICG in Paris. All account managers dealing with the account have a copy of the contract and fully understand the client's central requirements, approved systems, software and services. Through ICG, the client receives regular reports of all orders placed in each country, a copy of system acceptance forms, a summary of hotline enquiries and maintenance interventions made in each country.

The IAS agreement can be used for procuring products and services ranging from small PC Network installations in a single overseas office to the implementation of communicating LAN and WAN solutions across the whole of Europe.

ICG is also endeavouring to position itself as a major systems integrator on personal computer and open systems platforms. The group offers the following services on a pan-European basis:

- IS planning
- IS platform selection
- Implementation
- Education programmes
- Systems operations
- Inter-company reporting procedures, including PC Audits.

The group is also actively targeting desktop services. The group member which is leading the development of these service is Computacenter in the UK. Computacenter estimates that it currently has ten clients using desktop services including TSB, where Computacenter is in the process of taking on 23 support staff from the bank's IS department.



The market for desktop services is less developed outside the UK. Random in France estimates that it has 2-3 medium-sized clients for its desktop services. However the component of desktop services which is growing most rapidly in France is hotline support for end users using application software packages such as Excel and Word. Random markets an end-user support service whereby users are invoiced monthly according to the time spent solving problems for end-users. Random estimates that the average time taken to answer a client's query is seven minutes.

ICG's overall strengths and weaknesses are summarised in Exhibit V-6.

 EXHIBIT V-6

ICG : Strengths & Weaknesses

Strengths	Weaknesses
<ul style="list-style-type: none"> • Pan-European coverage • Equipment supply & installation • Breadth of support capability 	<ul style="list-style-type: none"> • Industry-specific expertise • Lack of large-systems expertise • Lack of systems operations customer base

Overall ICG is at a more advanced stage in offering a pan-European service than its main competitor in the UK, P&P. ICG already has established members in ten countries and has associate members of the group in Sweden, Austria, Switzerland, Portugal, and Ireland. However there is considerable work needed in developing the market for desktop services across most of Europe.

The members of ICG, like P&P, offer the full range of services required to target the desktop services market and are particularly strong in equipment supply and installation. However ICG, given its strong dependence on IBM, may appear to users to be less vendor-independent than P&P.

ICG, like P&P, has expertise in a wide range of personal computer products and offers a breadth and depth of support capability which is beyond the capabilities of many of the professional services vendors.



To further develop their presence in the desktop services market, the members of ICG will need to strengthen their industry-specific knowledge and to develop systems operations capability targeted at mainframe and proprietary mid-range systems. This latter aim is probably best achieved via partnership with an existing systems operations vendor. Such an alliance would also give members of ICG access to an existing systems operations customer base.

B

Professional Services Vendors**1. Sema Group**

The Sema Group are one of the minority of traditional systems operations vendors who are actively targeting desktop services, but so far the company has only signed a small number of contracts.

Sema Group believes that while some clients are seeking to save money, this is not the primary motivation for users. The company identifies much of the opportunity in this marketplace coming from IS departments in medium to large organisations seeking to outsource a non-core activity which they have difficulty supporting internally.

The company recognises the importance of providing a single point of contact for users, and unlike a number of professional services vendors will support an agreed range of application software products such as WordPerfect. In other instances the company will subcontract second-line support of software products to the product's original author.

The Sema Group prefers to offer a remote, centralised help-desk service to users rather than an on-site service since only in this way can the company achieve economies of scale in software support.



EXHIBIT V-7

Service Offering : Sema Group Desktop Services, Europe

- Based on LAN expertise
- Will support agreed range of applications
- Single source support
- Preference for remote help-desk

However the company does utilise communications links to the user's systems to aid remote diagnostics. The company estimates that the break-even point for putting personnel on the user site comes at an installed base of approximately 500 personal computers.

Exhibit V-8 assesses Sema Group's delivery capability in each of the major service elements required for desktop services.

EXHIBIT V-8

Delivery Capability : Sema Group Desktop Services, Europe

Service Element	Level of Capability
Purchasing consultancy	Medium
Equipment purchase	Medium *
Equipment maintenance	Medium-High*
LAN/equipment installation	High
LAN management	High
Help desk services - systems software - applications software products	High Medium
Second-Line technical support	High

Note: * = via partner



The Sema Group, unlike many professional services vendors, does offer purchasing advice to users and will order personal computer products on their behalf through a third party. Equipment maintenance is also subcontracted to a third party.

Sema Group has a high level of networking capability and manages the implementation of local area networks itself together with any software integration required.

The company charges for its help-desk services by charging for a given rate of calls, for example up to 500 calls per month, thereby putting a limit on its commitment to the client.

Sema Group's major strengths and weaknesses in desktop services are summarised in Exhibit V-9.

EXHIBIT V-9

Strengths and Weaknesses : Sema Group Desktop Services, Europe

Strengths	Weaknesses
<ul style="list-style-type: none"> • LAN management capability • Willingness to support application software products • Single source support 	<ul style="list-style-type: none"> • Lack of breadth of PC application software product expertise

Sema Group, like many of its professional services rivals, has a high level of expertise in implementing and managing local area networks. The company also recognises the importance of offering a single source of contact to the client for all services from purchasing consultancy and equipment supply through to comprehensive end-user application support, and is willing to support a range of standard software products. However, the Sema Group's weaknesses include its dependence on partners for the supply and maintenance of equipment and, more importantly, its inexperience in supporting personal computer based application software products. It is extremely difficult for the Sema Group to match the detailed expertise of the main dealerships in standard application software products. The dealerships typically possess a more detailed knowledge of these products across a much wider product range.



2. iTNET

iTNet is one of the leading UK systems operations suppliers with particular expertise in the local government and process manufacturing sectors. iTNet is a wholly owned subsidiary of Cadbury Schweppes and has a turnover of £30m. The company's services include systems operations, Application Management, systems integration, project management, consultancy and recovery skills.

iTNet has also taken the initiative in targeting desktop services, though its offering - summarised in Exhibit V-10 - is significantly different from those marketed by the major dealerships.

EXHIBIT V-10

Service Offering : iTNET Desktop Services, Europe

- Led by LAN implementation
- Targeting IS management
- Mainly second-line support
- Local service only

iTNet's desktop services capability largely resides in the organisation's Network Solutions division, which has historically concentrated on the implementation of local area networks. The company believes that extensive experience is necessary to realise the full benefits of local area networks and that many networks have been poorly implemented in-house. Incorrectly implemented local area networks then require an unjustifiable level of support, and so the in-house department seeks external assistance.

However the software support provided by iTNet is essentially limited to systems software and office automation products such as Lotus Notes. Accordingly iTNet does not provide first-line support to end users in the majority of instances. The typical pattern for iTNet is network installation followed by second-line support for systems software.

iTNet also feels constrained in its geographic coverage by the need to provide 4-hour call-out times from its Birmingham office. Accordingly the majority of the company's clients are located in the West Midlands.



iTNet's delivery capability in desktop services is summarised in Exhibit V-11.

EXHIBIT V-11

Delivery Capability : iTNet Desktop Services, Europe

Service Element	Level of Capability
Purchasing Consultancy	Low
Equipment purchase	Low
Equipment Maintenance	Medium*
LAN/equipment installation	High
LAN Management	High
Help desk Services	Medium-High
- Systems software	
- Applications	
Software products	Low
Second-line technical support	Medium

Note: * = via partner

iTNet does not wish to be a supplier of personal computer products and the company's clients typically continue to source their own equipment. However the company does act as a value-added reseller for local area networks on a project by project basis.

For equipment maintenance, iTNet is endeavouring to build a relationship with a single partner. However in many instances, the client's existing maintenance company is retained.

iTNet's first-line support is composed of Customer Delivery Teams. These teams log all queries and ensure that any response is carried out in accordance with the service level agreement in operation between iTNet and the client. These Customer Delivery Teams operate to BS5750 standards. Most of these teams operate off-site though iTNet has personnel on the user's site in some instances.



While the first-line support is customer-oriented, iTNet's second-line support is organised into technology dependent teams.

Clients are typically charged a retainer fee for a certain level of help desk support. Any additional support or services are then subject to additional fees.

iTNet's overall strengths and weaknesses in the desktop services market are summarised in Exhibit V-12.

EXHIBIT V-12

Strengths and Weaknesses : iTNet Desktop Services, Europe

Strengths	Weaknesses
<ul style="list-style-type: none"> · LAN implementation expertise · Systems Operations customer base 	<ul style="list-style-type: none"> · Lack of support of standard application software packages · Geographic coverage

The company's major strengths are its presence in the systems operations market and its local area network support capability. iTNet's presence in the systems operation market should be a major advantage since many prospective users are seeking a combination of "large system" systems operations and desktop services. iTNet is also one of the few players in the systems operations market who are actively seeking desktop services contracts.

However the company is at a disadvantage in not offering extensive support of application software products to end users, and by its self-imposed geographical constraints. Geographical coverage should not be a problem in targeting large desktop services contracts since in these instances on-site support staff are normally required.



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 ☆.

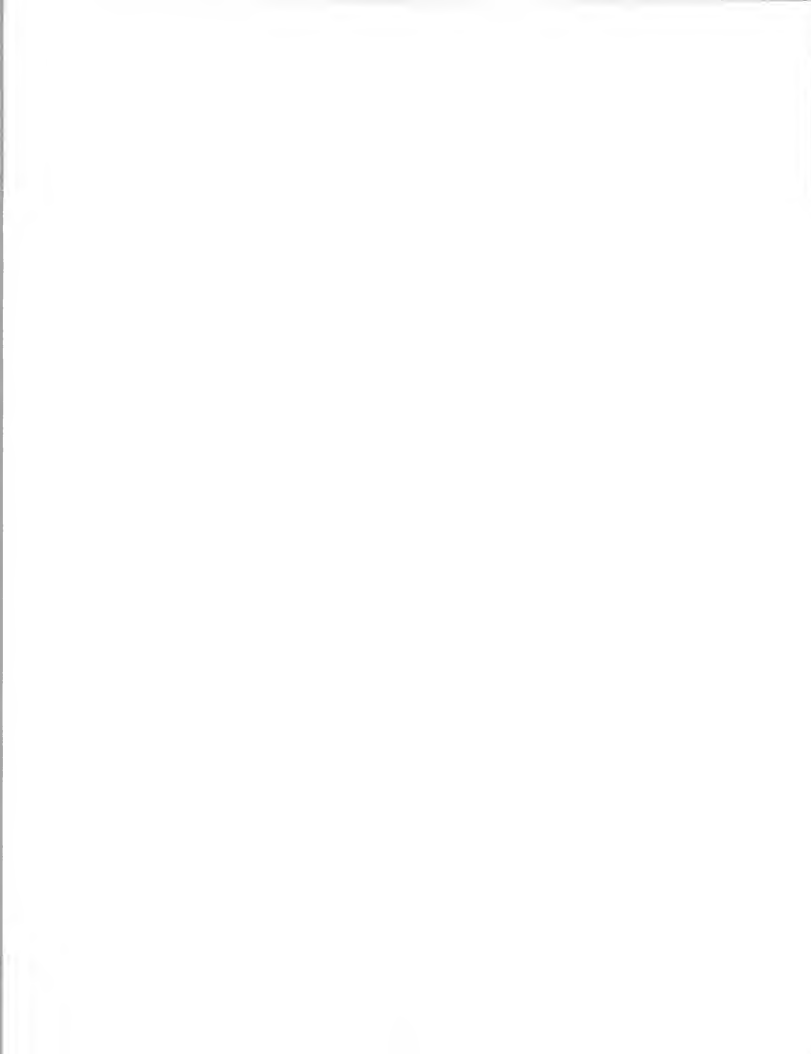
B

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*.

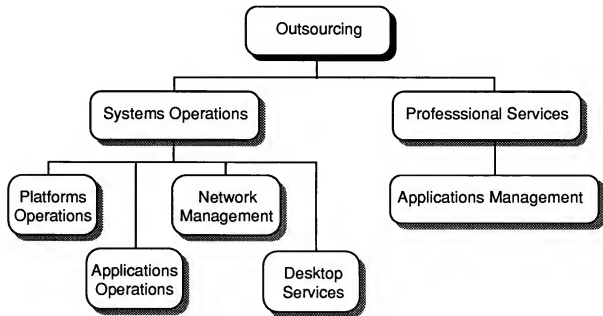
INPUT views outsourcing as a change in the form of the client/vendor relationship. Under an outsourcing relationship, all or a major portion of the information systems function is contracted to a vendor in a long-term relationship. The vendor is responsible for the performance of the function.

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.

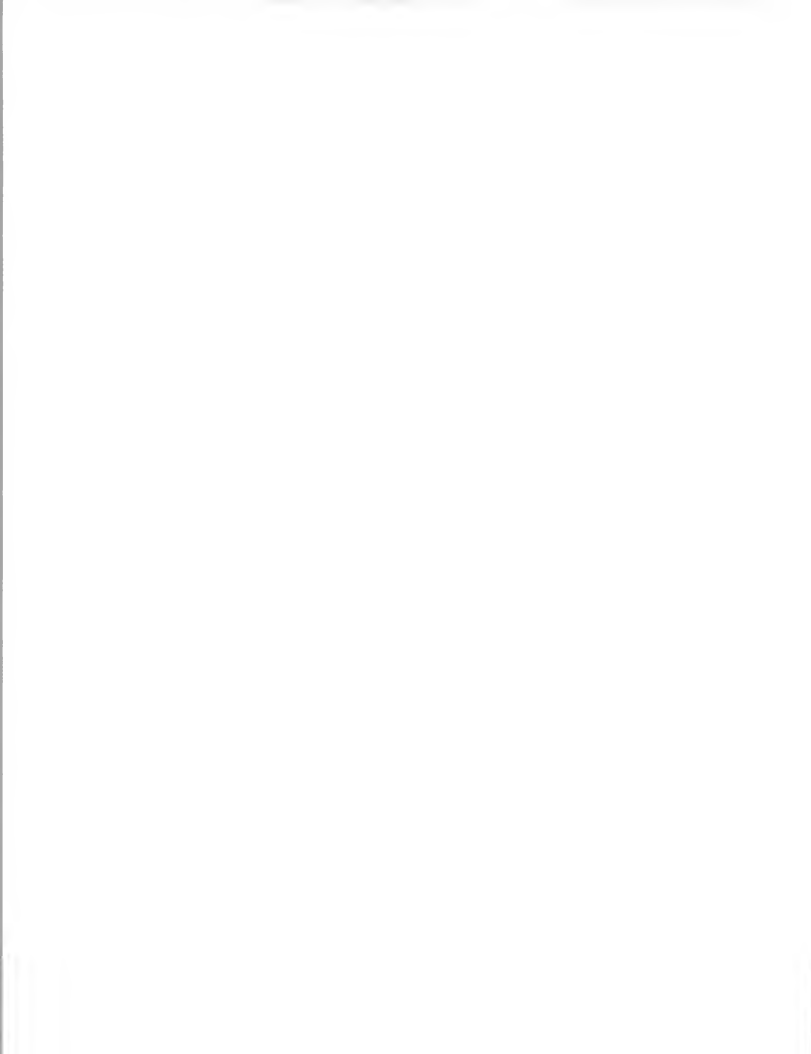


EXHIBIT A-1

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

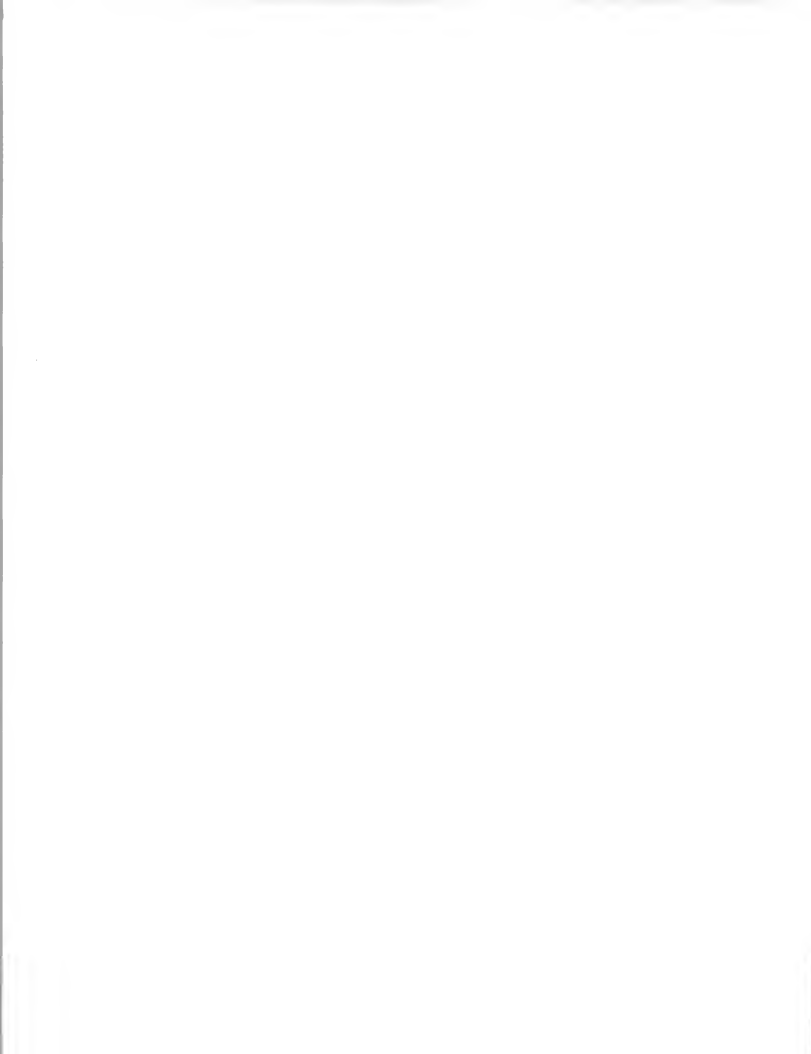
Delivery Modes and Submodes

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.

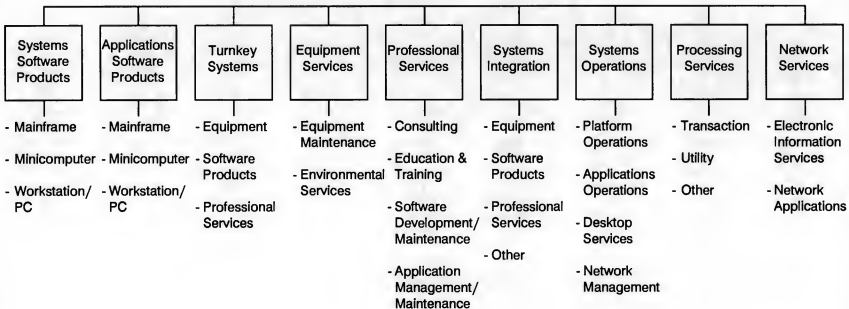
1. Software Products

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.



Information Services Industry Structure - 1992



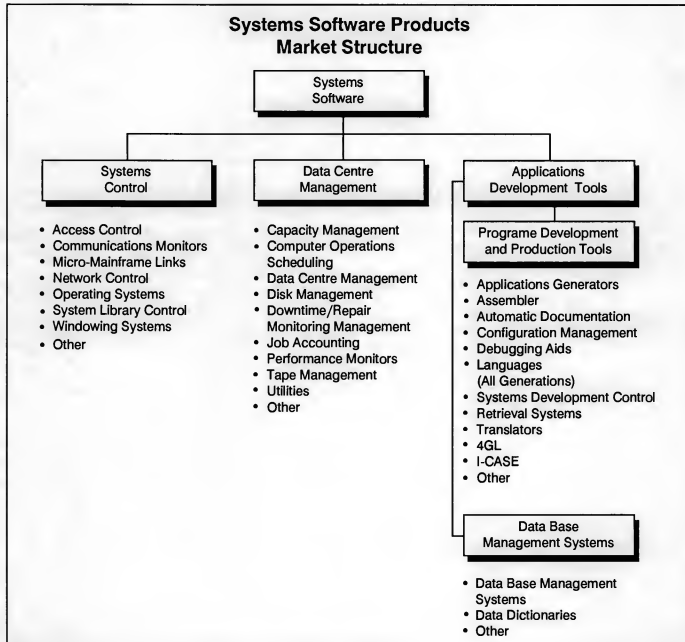
Source: INPUT



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

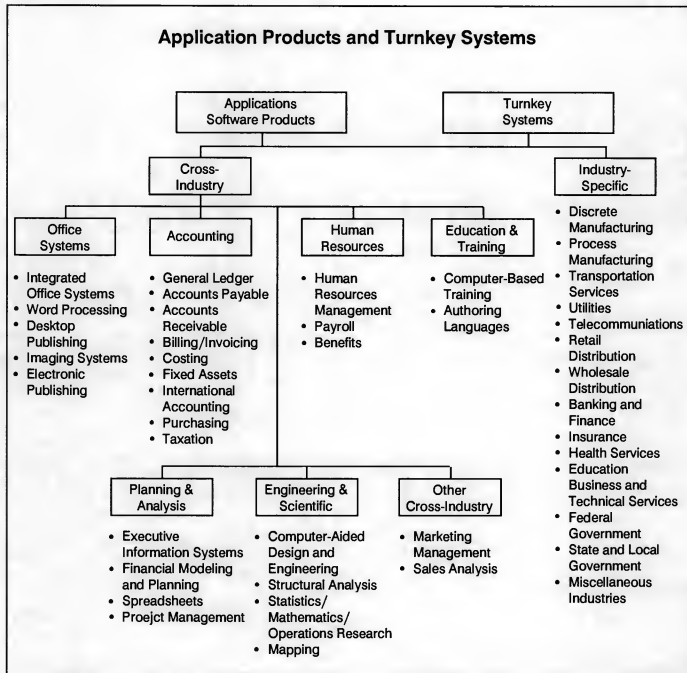
Applications software products enable a user or group of users to support an operational or administrative process within an organization. Examples include accounts payable, order entry, project management and office systems. INPUT categorizes applications software products into two groups of market 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





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.

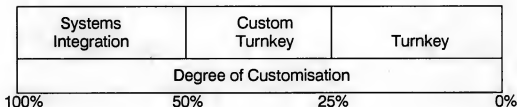
Turnkey systems have three components:

- 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

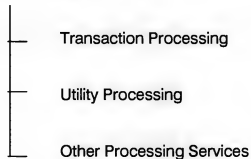
The Customisation Spectrum**3. Processing Services**

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

Processing Services



- *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

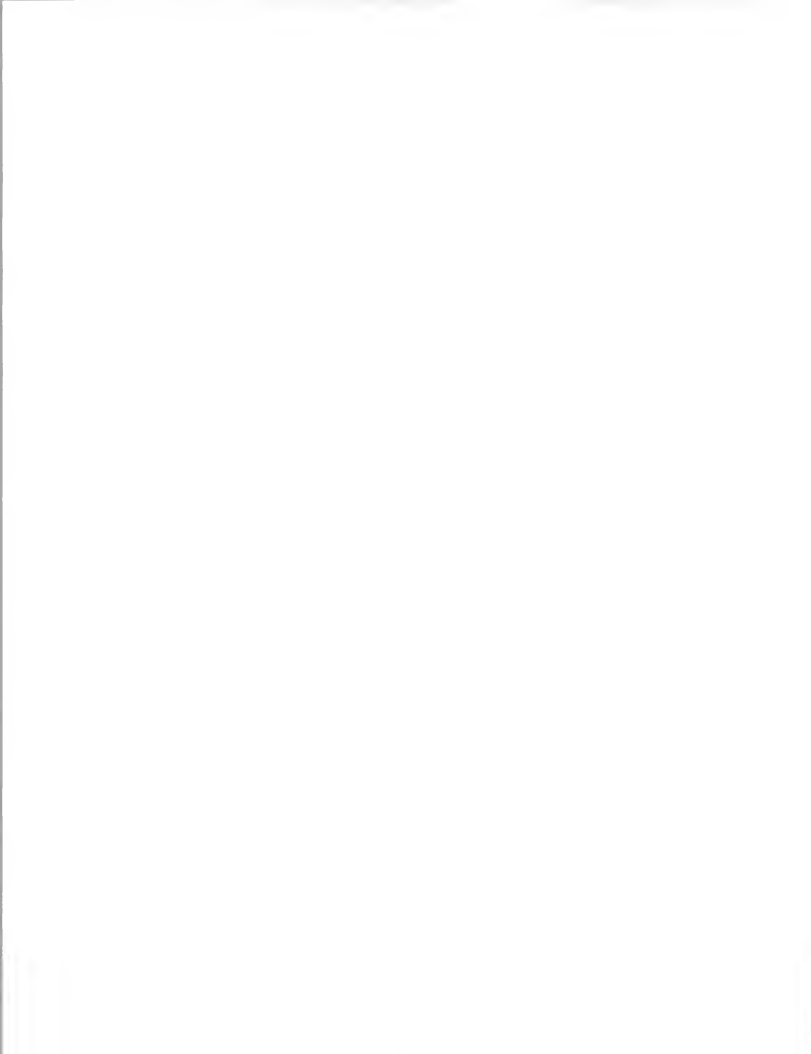
Systems operations as a delivery mode was introduced in the 1990 Market Analysis and Systems Operations programs. Previously called Facilities Management, this delivery mode was created by taking the Systems Operations submode out of both Processing Services and Professional Services. For 1992 the submodes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

<p style="text-align: center;"><i>Equipment</i></p> <ul style="list-style-type: none">· Information systems· Communications
<p style="text-align: center;"><i>Software Products</i></p> <ul style="list-style-type: none">· Systems software· Applications software
<p style="text-align: center;"><i>Professional Services</i></p> <ul style="list-style-type: none">· Consulting<ul style="list-style-type: none">- Feasibility and trade-off studies- Selection of equipment, network and software· Program/project management· Design/integration<ul style="list-style-type: none">- Systems design<ul style="list-style-type: none">- Installation of equipment, network, and software- Demonstration and testing· Software development<ul style="list-style-type: none">- Modification of software packages- Modification of existing software- Custom development of software· Education/training and documentation· Systems operations/maintenance
<p style="text-align: center;"><i>Other Miscellaneous Products/Services</i></p> <ul style="list-style-type: none">· 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.

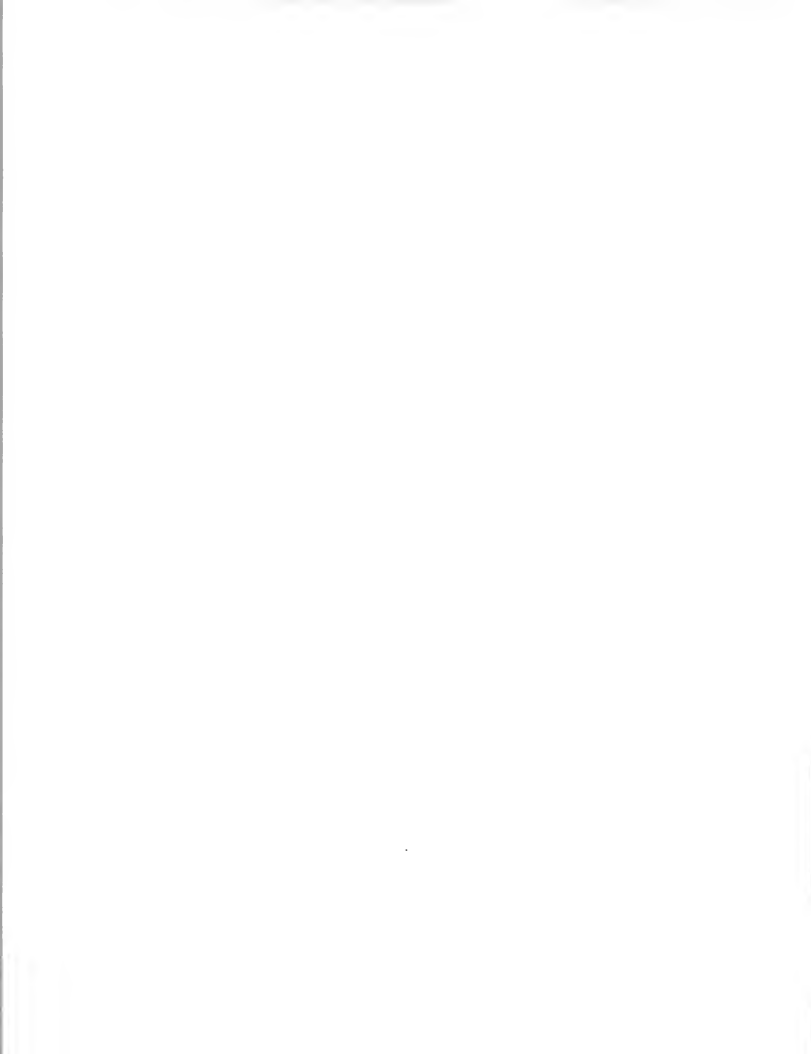
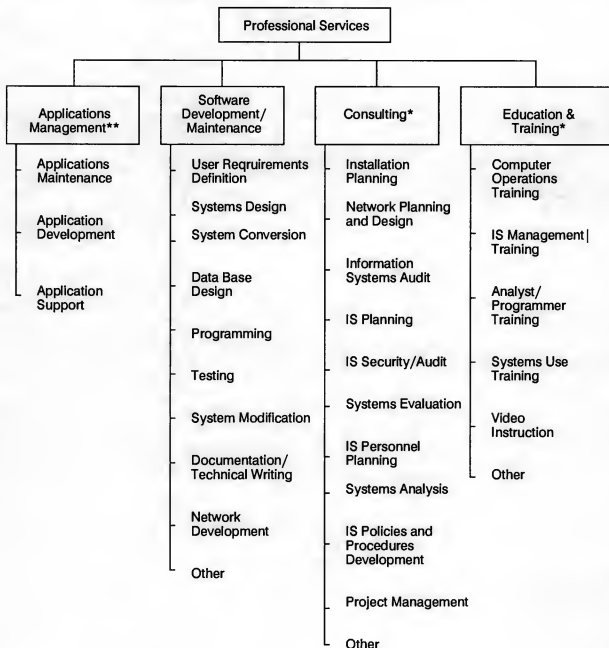


EXHIBIT A-8

Professional Services Market Structure



*Related to computer systems, topics, or issues

**Vendor assumes full responsibility on contracted longer term basis

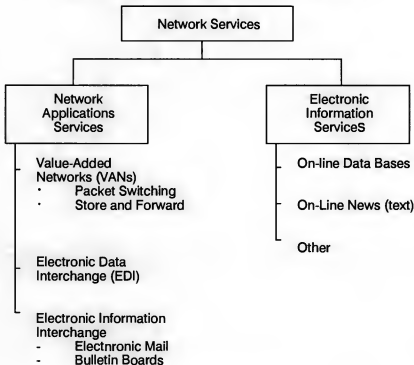


7. Network Services

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.



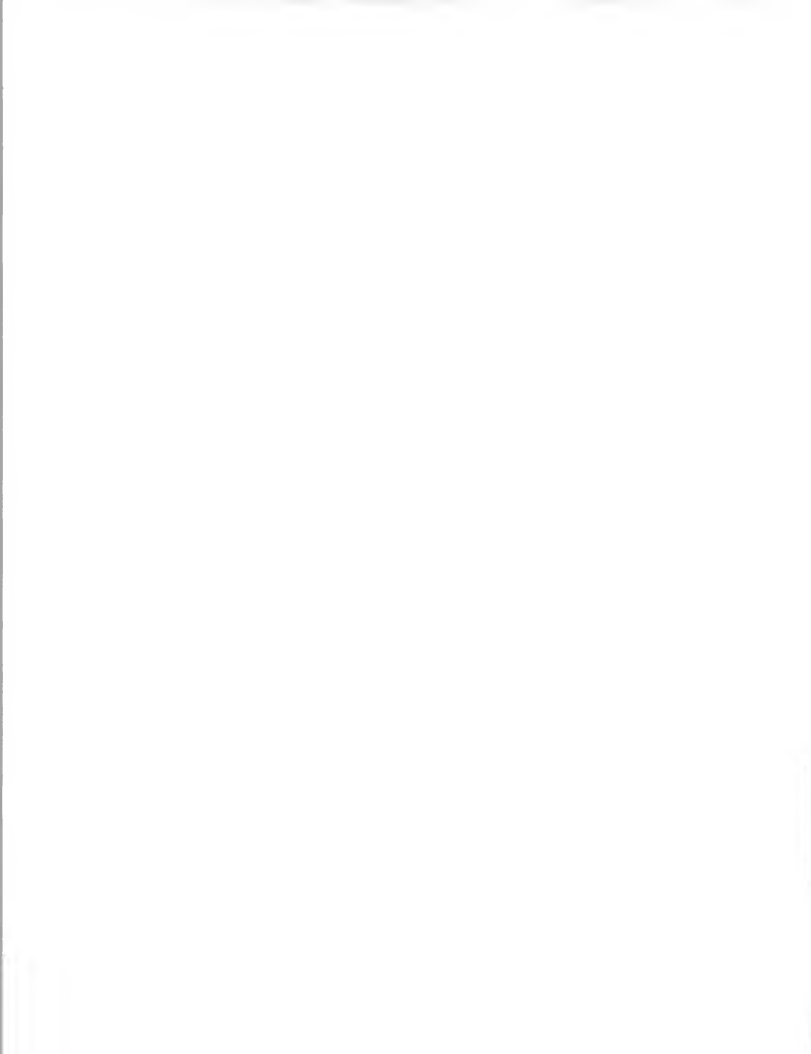
8. Equipment Services

- ☆ 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.

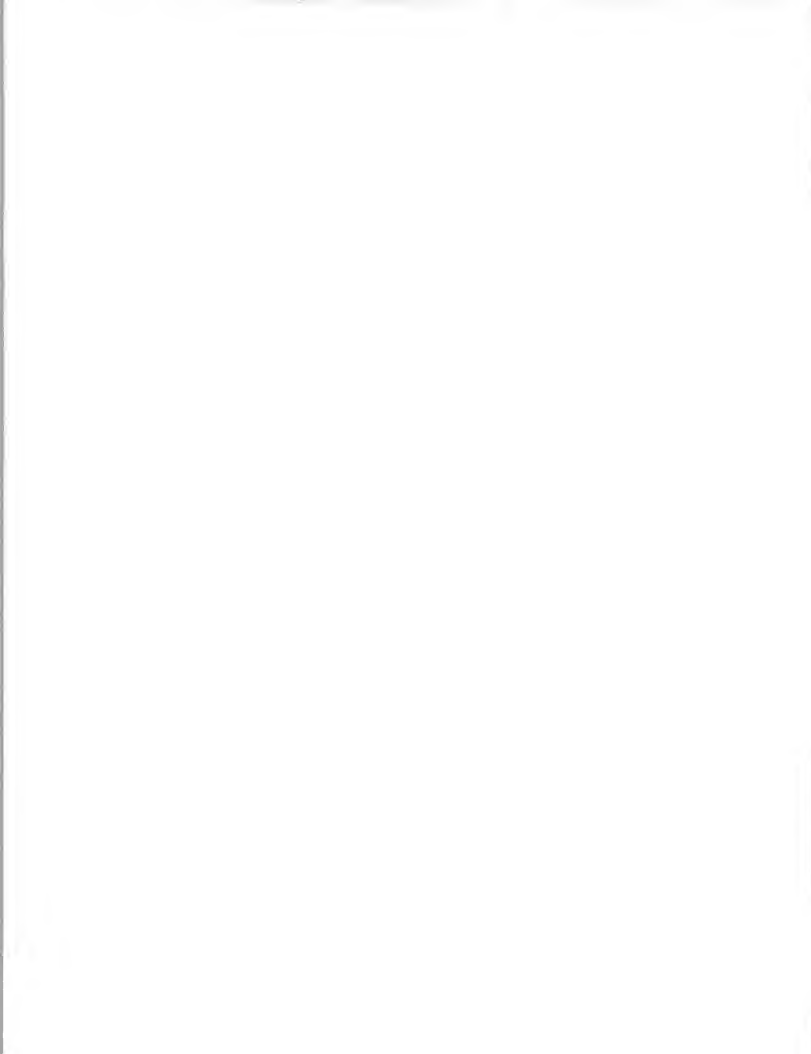


EXHIBIT A-10

Industry Sector Definitions

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

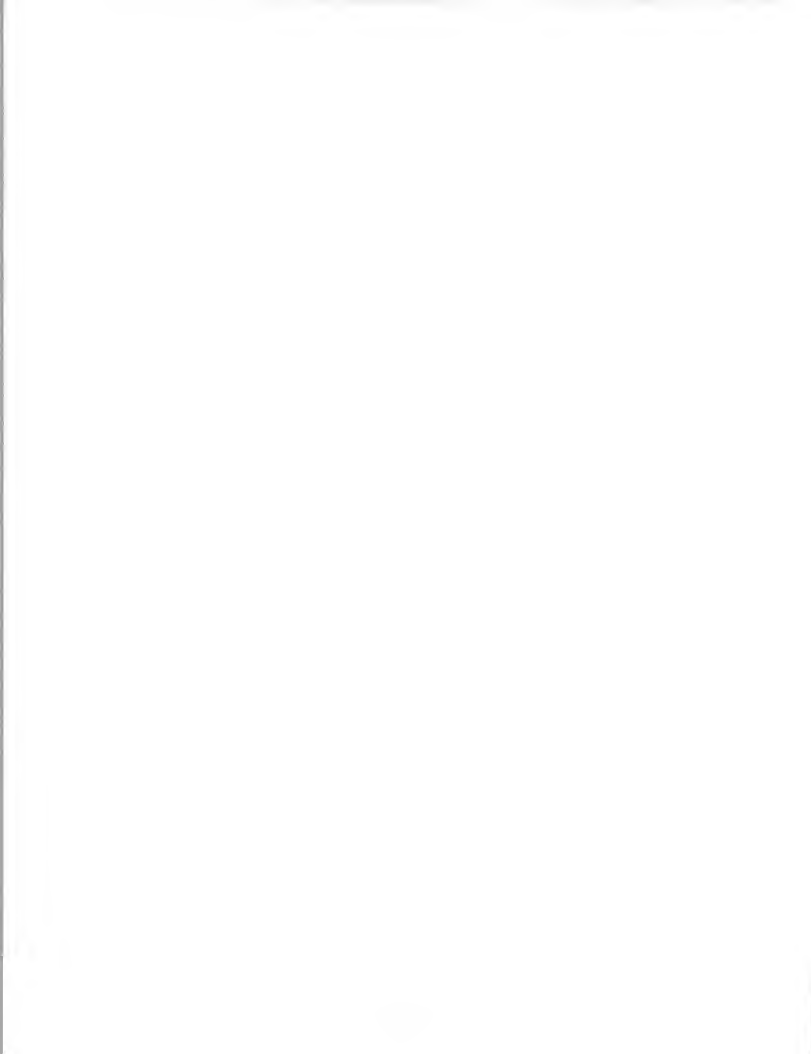


EXHIBIT A-10 (CONT.)

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	Depository institutions Nondepository 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

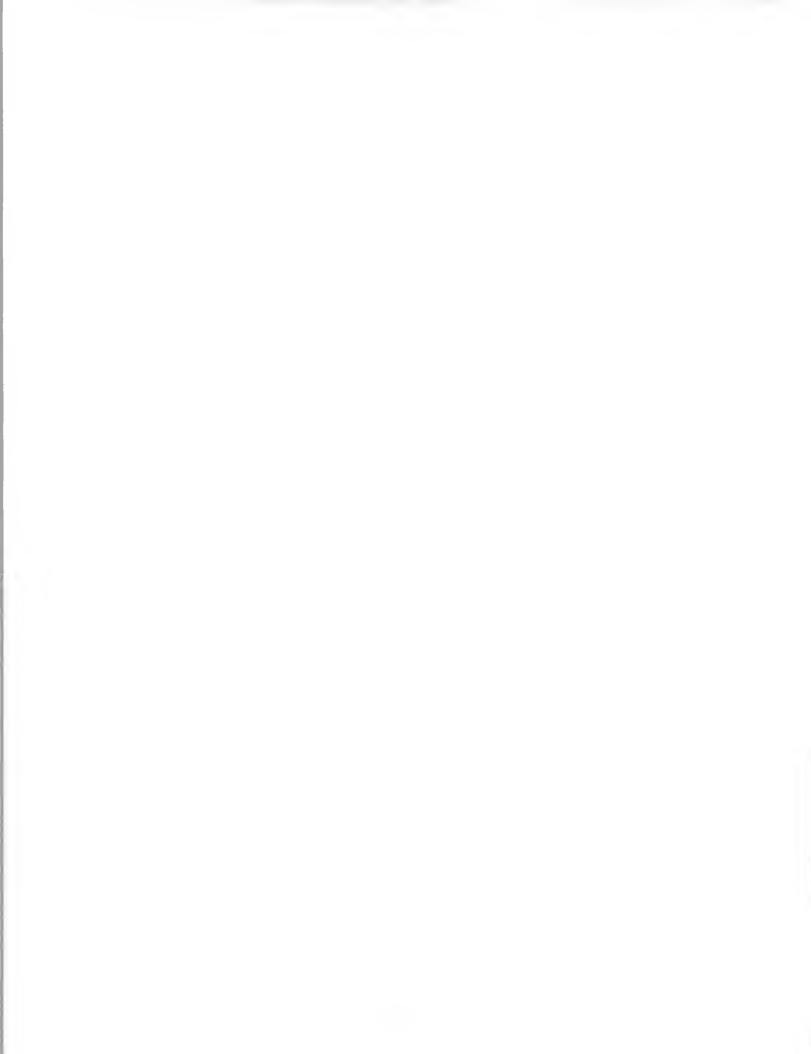
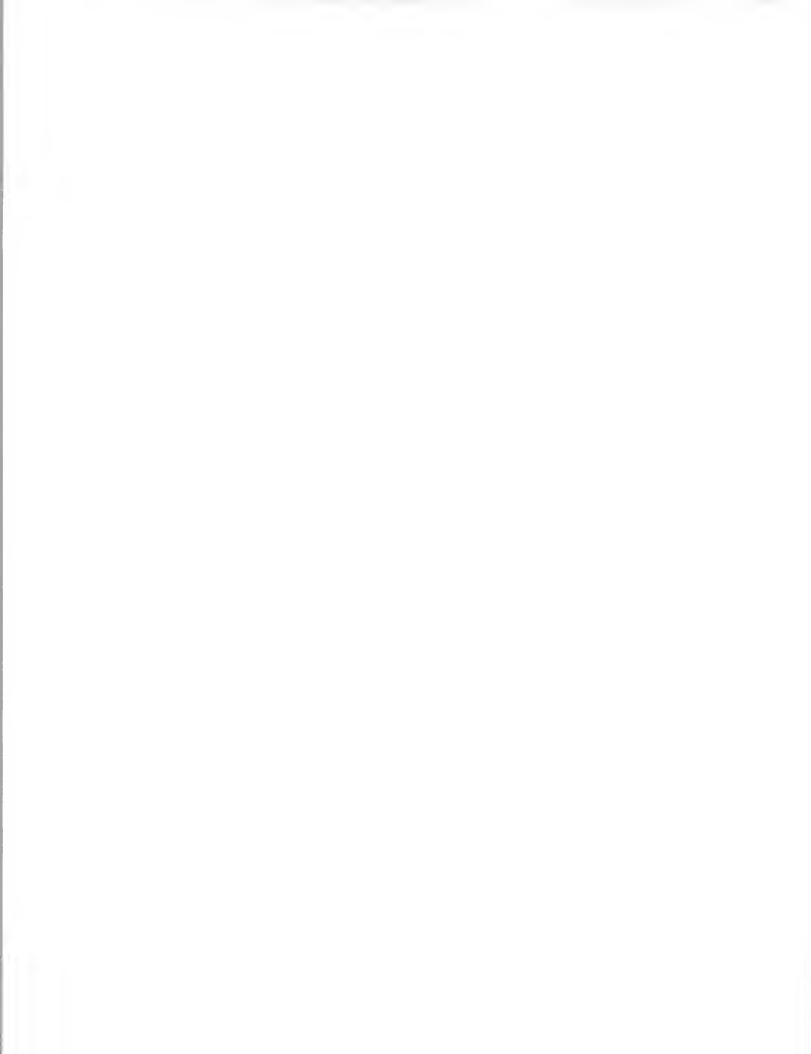


EXHIBIT A-10 (CONT.)

Industry Sector Definitions

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



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



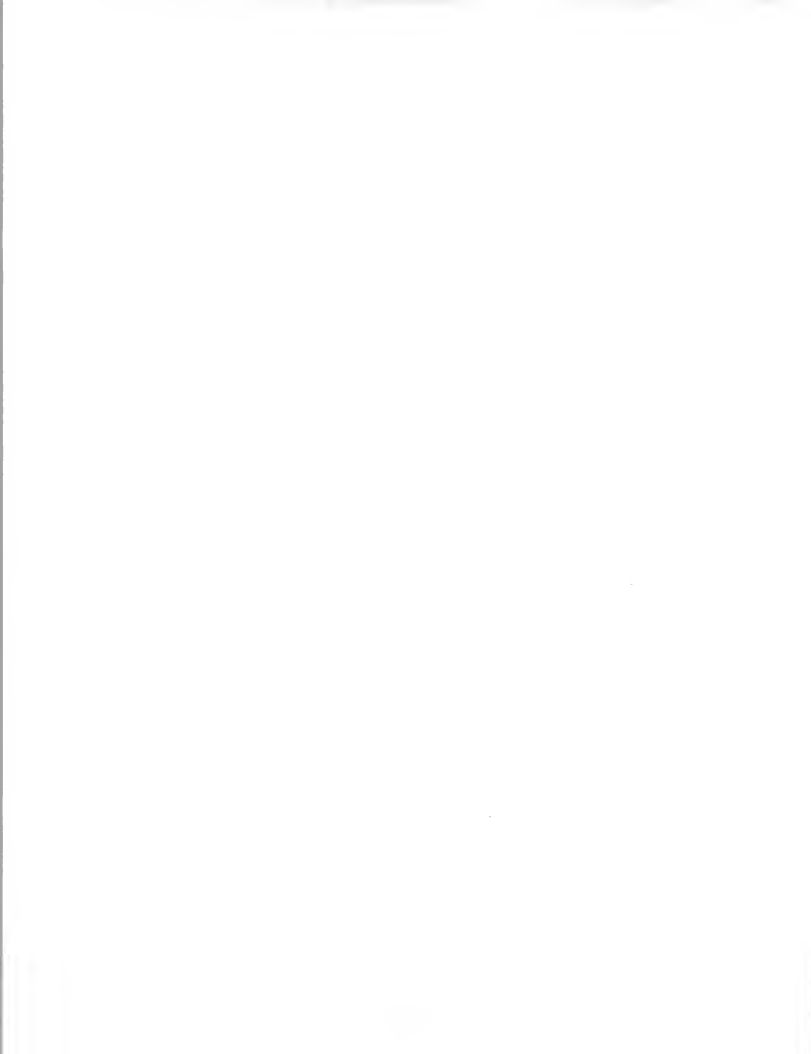
Education and Training - consists of education and training for information systems professionals and users of information systems delivered as a software product, turnkey system or through processing services. The market for computer-based training tools for the training of any employee on any subject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

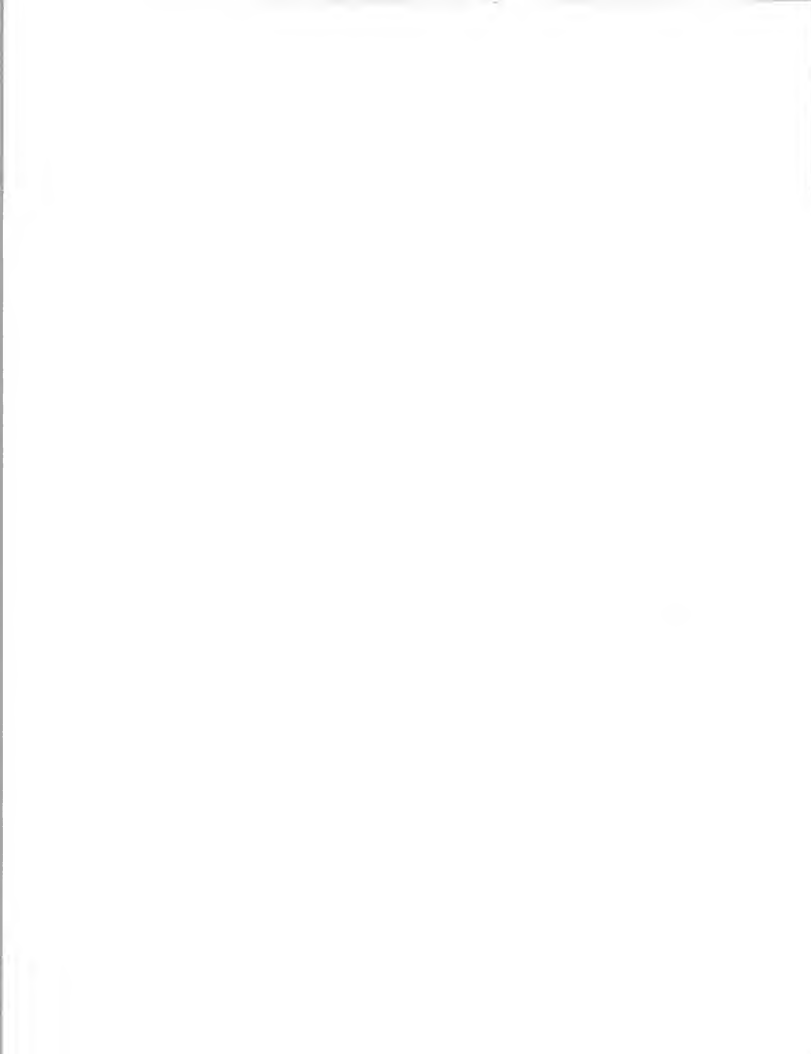
Other encompasses marketing/sales and electronic publishing application solutions.

- 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

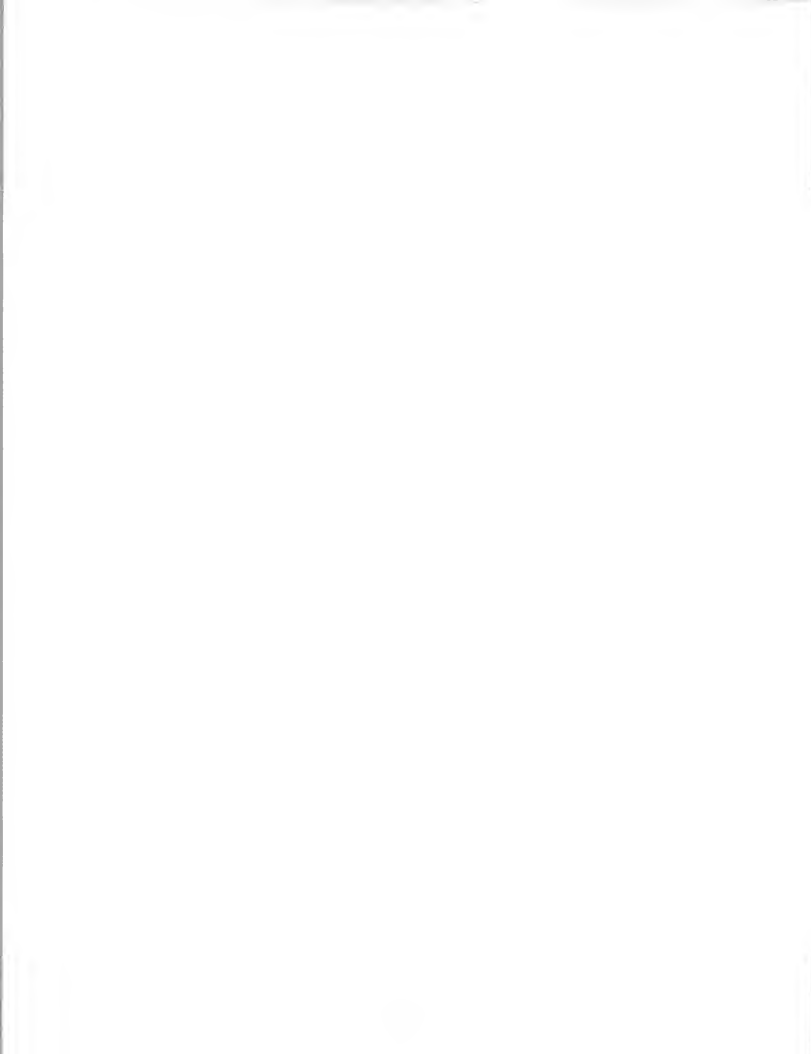
Delivery Mode versus Market Sector-Forecast Content

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

- *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 value 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.

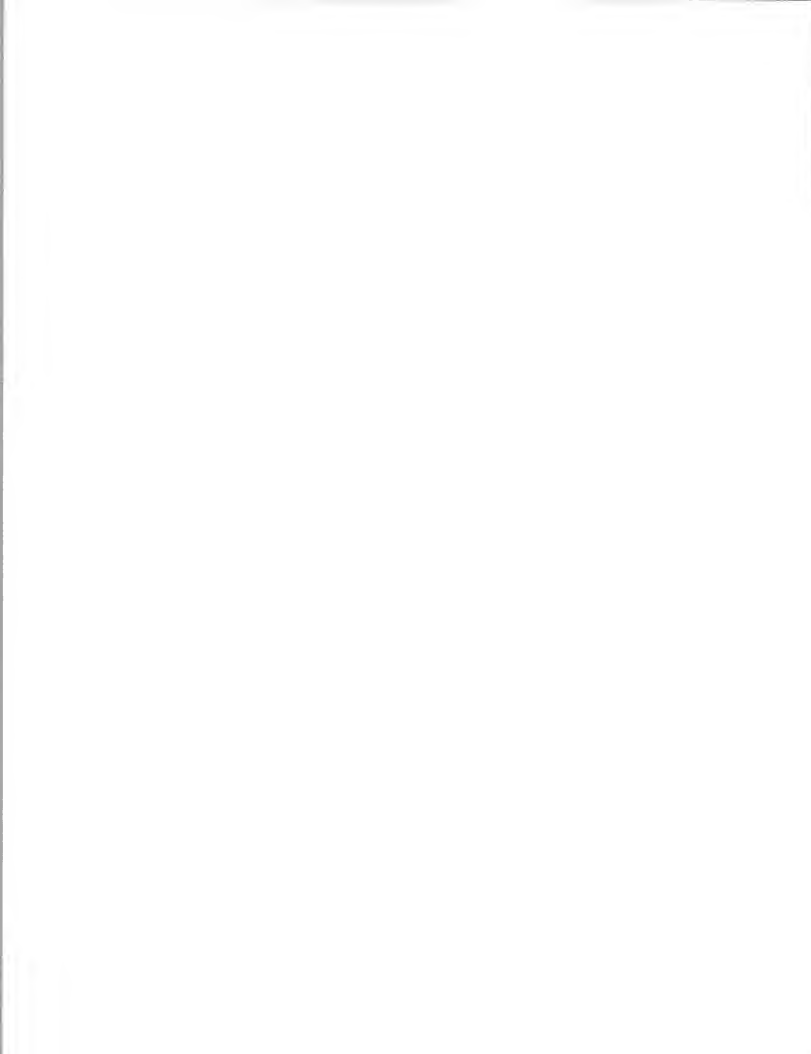
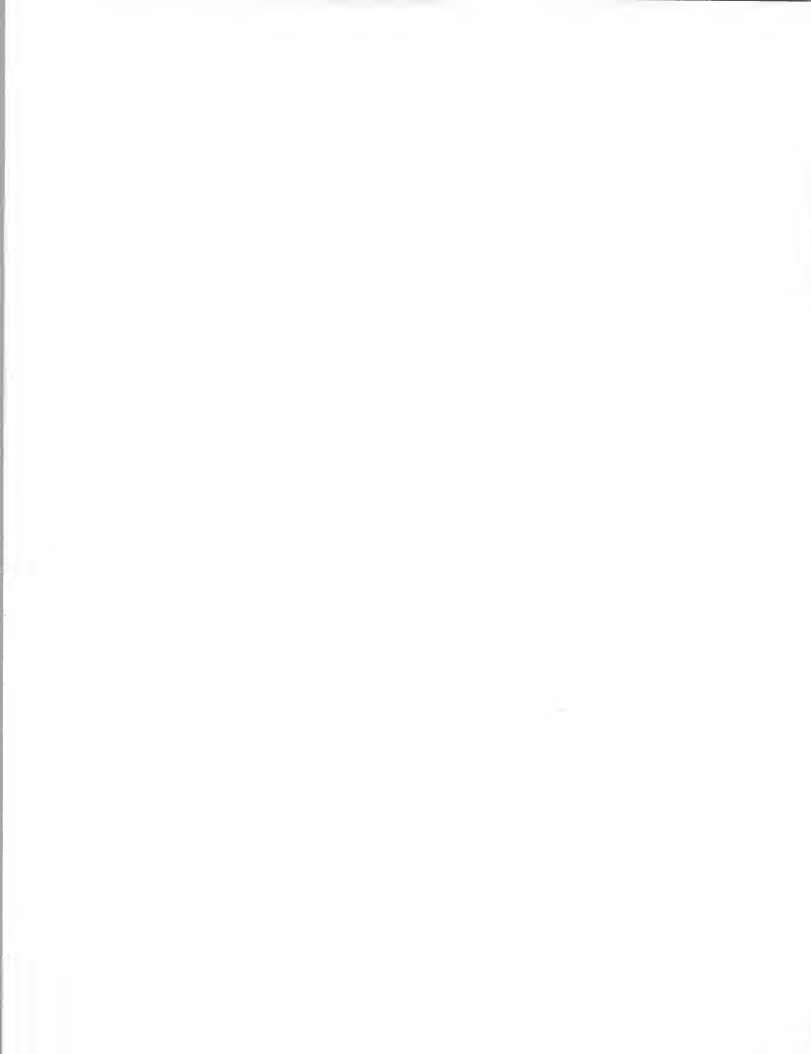


EXHIBIT A-12

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 use 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.

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	IRe	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)



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 : Desktop Services**

1. Does your company offer desktop services, i.e. end user support services, LAN management?

2. What is usually involved in desktop services?

3. How are users currently organised to handle their desktop support activities?

4. What type of company is considering using desktop services?



5. What elements of desktop services:

a) Do users wish to outsource?

b) Wish to retain in-house

6. Why are users considering adopting outsourcing of desktop services?

7. How do you believe the desktop services market is evolving? What are the major driving forces



8. Who are the principal purchasers of desktop services within user organisations? What motivates them to adopt desktop services?

9. What technological factors are having an impact on the market for desktop services?

10. What factors (including technological factors) are having an impact on the manner in which desktop services are delivered?

11. What are the major challenges facing vendors of desktop services?



12. What are the characteristics necessary to succeed in this market?

13. Do you see partnerships playing an important role in desktop services? If so, how?

14. What is the relationship between platform systems operations and outsourcing of desktop services?

15. What do you believe are the major opportunities for vendors offering desktop services?



16. How is your company organised to sell and deliver desk-top services?

17. What are your principal target markets?

18. On what basis do you price your desktop services?

19. Which of the following do you offer within desktop services?

- a) How are you organised to deliver each of these components?

- b) How would you rate your delivery capability in each of these areas? (Please rate on a scale of 1 to 5 where 1 is poor and 5 is excellent)



-
- c) Which services are the most challenging to deliver?

Why?

-
- d) How would you rate the profitability of each of these services? (Please rate on a scale of 1 to 5 where 1 is poor and 5 is very good)

-
- e) What is the scope of each of these services?

-
- f) What proportion of total contract revenues is contributed by each of these components?



20. What revenues are you achieving from desktop services? How rapidly are these growing? What is the length of a typical contract?

Thank you very much for your assistance



Potential Components of Desktop Services

Component	o f f e r e d	How Organised	Delivery Capability	Relative Profitability	Proportion of Contract Revenues	Scope of Service
Equipment supply PC Supply LAN Supply Workstation/Server Supply Equipment Maintenance PC LAN Server Installation PC LAN Server Application Software Network Management Application Software product supply Help desk services - initial end user training - end user support - equipment - applications - training Other						



D **Related Reports**

The impact of downsizing on customer services organisations.

Outsourcing systems operations

Outsourcing network management and operations.

Outsourcing Applications Management.

Information Systems Outsourcing Market Opportunities, 1992-1997.

Information Systems Outsourcing Competitive Analysis.

