WESTERN EUROPEAN CUSTOMER SERVICES

MARKET ANALYSIS AND FORECAST

1990 - 1995

INPUT

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Customer Service Programme—Europe

Western European Customer Services Market Analysis and Forecast, 1990-1995

CESMO • 539 • 1990

Abstract

This report contains an analysis of user expenditure for customer services in Western Europe and provides a five-year forecast for the growth of user expenditures on customer services over the period 1990 to 1995.

The report provides estimates of user expenditure for customer services in thirteen Western European country markets, with growth forecasts for the period 1990 to 1995. Country markets included are:

Austria	The Netherlands
Belgium	Norway
Denmark	Spain
France	Sweden
Finland	Switzerland
Germany	The United Kingdom
Italy	

Forecasts provided in this report are presented in individual European currencies, U.S. dollars and ECUs.

INPUT estimates for the customer services revenues of the leading fifteen equipment vendors in 1989 are provided, segmented by service sector and country market.

This report contains 76 pages, including 65 exhibits.

Table of Contents

Table of Contents (Continued)

Exhibits

Exhibits (Continued)

Exhibits (Continued)

I

Introduction

I

Introduction

This report is produced by INPUT as part of its 1990 Customer Service Programme in Western Europe.

A

Objectives and Scope

The objectives of this report are to provide an analysis of user expenditure for customer services in Western Europe, an estimate of the market size and a five-year growth forecast for the period 1990 to 1995.

Further objectives are to:

- Assess the size of the individual country markets for customer services and provide a five-year growth forecast for each, for the period 1990 to 1995.
- Provide forecasts for four service sectors of the customer services market in Western Europe.
- Estimate the customer services revenues of the leading equipment vendors, segmented by service sector and country market.

B

Methodology

INPUT approached the leading equipment vendors for details and confirmation of company customer services revenues. A high proportion of vendors cooperated by providing data to INPUT.

Research to provide additional data contained within this report was conducted using the following sources of information:

- Vendor annual reports
- Company press releases
- Specialized data published by the computer market trade press

C

Economic Statistics

Exhibit I-1 provides a list of the U.S. dollar exchange rates and inflation assumptions used in this report.

Exhibit I-2 provides a list of the ECU conversion rates used for compilation of the ECU market forecast presented in Appendix C.

Conversion to U.S. dollars is used in this report for consolidation and comparative purposes.

The forecasts presented in this report, in keeping with INPUT's standard practice, are all expressed in current (1990) currencies and therefore include an allowance for inflation.

EXHIBIT I-1

Comparative Economic Statistics

Country	Currency	U.S. Dollar Exchange Rate	1990 Inflation Assumptions (Percent)
Austria	Sch	12.77	+4.0
Belgium	BF	38.06	+4.0
Denmark	DK	7.05	+5.0
France	FF	6.17	+4.5
Finland	FM	4.21	+6.0
Germany	DM	1.81	+4.0
Italy	Lira	1,366.00	+7.0
Netherlands	Dfl	2.05	+3.0
Norway	NK	6.85	+5.0
Spain	Pta	115.80	+6.5
Sweden	SK	6.39	+7.0
Switzerland	SF	1.61	+5.0
United Kingdom	£	0.63	+7.0

Source: Exchange Rates—IMF (average rates for fourth quarter 1989)

EXHIBIT I-2

ECU Exchange Rates

Country	Currency	ECU Exchange Rate
Austria	Sch	14.39
Belgium	BF	42.29
Denmark	DK	7.80
France	FF	6.87
Finland	FM	4.84
Germany	DM	2.05
Italy	Lira	1502
Netherlands	Dfl	2.30
Norway	NK	7.94
Spain	Pta	129.7
Sweden	SK	7.41
Switzerland	SF	1.80
United Kingdom	£	0.74
Rest of Europe	$	0.83

Source: Exchange Rates—IMF (average rates for fourth quarter 1989)

D

Report Structure

The remaining chapters of this report are as follows:

- Chapter II is an executive overview which provides a summary of the report.
- Chapter III provides details of INPUT's definitions of the customer services market.
- Chapter IV provides an analysis of the market in Western Europe for customer services and forecasts for thirteen individual European country markets, expressed in local currency, for the five-year period 1990-1995.

- Appendix A contains INPUT's estimates of user expenditure for customer services in thirteen individual Western European country markets during 1989.

- Appendix B gives INPUT's estimate of the 1989 customer services revenues of the leading fifteen equipment vendors in Western Europe, as well as those of other prominent equipment vendors.

- Appendix C contains a market forecast for thirteen Western European country markets, and Western Europe overall, expressed in ECUs.

- Appendix D provides a reconciliation between this current market forecast and INPUT's previous market forecast made in 1989.

II

Executive Overview

II

Executive Overview

A

More Favourable Market Growth Prospects For Customer Services Vendors

Declining growth of the customer services market in Western Europe is forecast to level off over the five-year period 1990 to 1995. Following this five-year period, INPUT predicts that growth of the customer services market is likely to experience a slight uplift. This prediction should be welcomed by customer services vendors, following as it does a period of over five years in which growth has declined in a market currently valued at over $16.0 billion.

Up to 1985, the customer services market in Western Europe was growing at about 16% per annum. However, in the following period, growth of the market progressively declined to about 8% per annum by 1989. INPUT forecasts that decline of growth in the customer services market in Western Europe has now levelled off and is likely to remain relatively constant over the forecast period from 1990 to 1995 (close to the 8% per annum level). In projecting growth of the customer services market beyond 1995, indications are that market growth could experience a small recovery, gaining perhaps a 1% improvement by the end of the decade, to reach about 9% per annum.

The reasons behind this levelling of customer services market growth and subsequent recovery are:

- The decline in growth of user expenditure for hardware maintenance services has slowed. This factor is a primary influence on the levelling effect.

- Relatively high levels of growth in user expenditure for non-maintenance services, such as professional services, are compensating for the continuing slow decline in the growth of the hardware maintenance market.

- Eventually, non-maintenance services will replace hardware maintenance as the primary item of user expenditure—thus, non-maintenance services will likely become a primary source of revenue.

INPUT's long-term predictions for growth in the customer services market are dependent on a number of assumptions. The major assumption is that it is unlikely that there will be any revolutionary changes occurring in the market, for example:

- Hardware maintenance, although declining, will continue to be required.

- Growth of non-maintenance services will continue at the current rate.

In overall terms, the customer services market is evolutionary rather than revolutionary. As a consequence of being relatively mature, the market is unlikely to experience any unexpected changes of direction.

Although growth of the customer services market is forecast to level off over the period 1990 to 1995, the growth of user expenditure for hardware maintenance will remain below inflation levels. A compound annual growth rate (CAGR) of 4% is forecast for user expenditure on hardware maintenance over the five-year period 1990 to 1995, compared with the current level of inflation in Western Europe, which is estimated at 5.5%.

Compared with the forecast 4% CAGR for hardware maintenance, user expenditure for non-maintenance services is forecast to grow overall at about a 20% CAGR, which is almost 15% above current levels of Western European inflation, over the same period.

Therefore, vendor success in marketing non-maintenance services is a key element in deciding the long-term growth pattern of the customer services market in Western Europe.

INPUT forecasts that the customer services market will grow at a CAGR of about 8%, to reach almost $24 billion by 1995.

Exhibit II-1 lists the key factors that INPUT believes will characterise the customer services market in Western Europe in the 1990s.

User expenditure for hardware maintenance is forecast to grow at about a 4% CAGR over the period 1990 to 1995. This level of growth is below the overall rate of inflation in Western Europe, which is currently above 5% per annum. Therefore, revenue from hardware maintenance services will decline in real terms. The effect of below-inflation-level growth in the hardware maintenance sector results in a reduction in market size, in real terms, of almost $1.3 billion by 1995.

EXHIBIT II-1

Customer Services Market in the 1990s

- Maintenance growth below inflation
- Independent vendors increasing market share
- Competitive pressure
- Potential for long-term growth

Over the period 1990 to 1995, independent maintenance vendors are forecast to increase their share of the customer services market from the current 8% to about 11% by 1995. This increase in market share is a consequence of the independent maintenance vendor sector of the customer services market growing at an estimated 15% CAGR, compared with 8% CAGR overall. User research has provided sufficient support for achievement of this increased market share, in that overall in Western Europe, an additional 6% of users would consider independent maintenance for a price reduction of up to 20%. One-half of these users defecting to independent maintenance would be required for those vendors to achieve the 11% market share forecast by 1995.

The customer services market in the 1990s is likely to become increasingly competitive due to two primary factors:

- Independent maintenance vendors competing aggressively for market share, mainly on the basis of price
- Pressure from users for reduced service prices as part of an attempt to reduce operating costs, and hence improve the competitiveness of the user's business
- Independent service vendors competing for non-maintenance business.

However, provided that the hardware maintenance market does not suffer any further negative influences and vendors are successful in marketing non-maintenance services, the customer services market will likely experience a slight recovery in growth during the second half of the decade.

B

Market Definition

INPUT's categorisation of the four service sectors of the customer services is given Exhibit II-2.

EXHIBIT II-2

Customer Services Market Definition—Service Sector

- Hardware maintenance
- Systems software support
- Professional services
- Training and education

These service sectors are defined as follows:

- Hardware Maintenance: the repair or routine preventive maintenance of computer systems or associated hardware, including associated support activities. This sector includes communications processors but excludes PABX equipment.

- Systems Software Service/Support: software maintenance activities relating to systems software (not applications), including associated support activities.

- Professional Services: the sector of the customer services market relating to those elements of professional services that are delivered and revenued by the customer services organisation. Examples are:

  - Environmental services
  - Network services
  - Consultancy services
  - Problem management services

- Education and Training: within the definition of customer services, this sector of the market relates to those elements of education and training that are delivered and revenued by the customer services organisation. Activities relate to computer equipment or systems software; for example, operator training related to use of equipment or systems software.

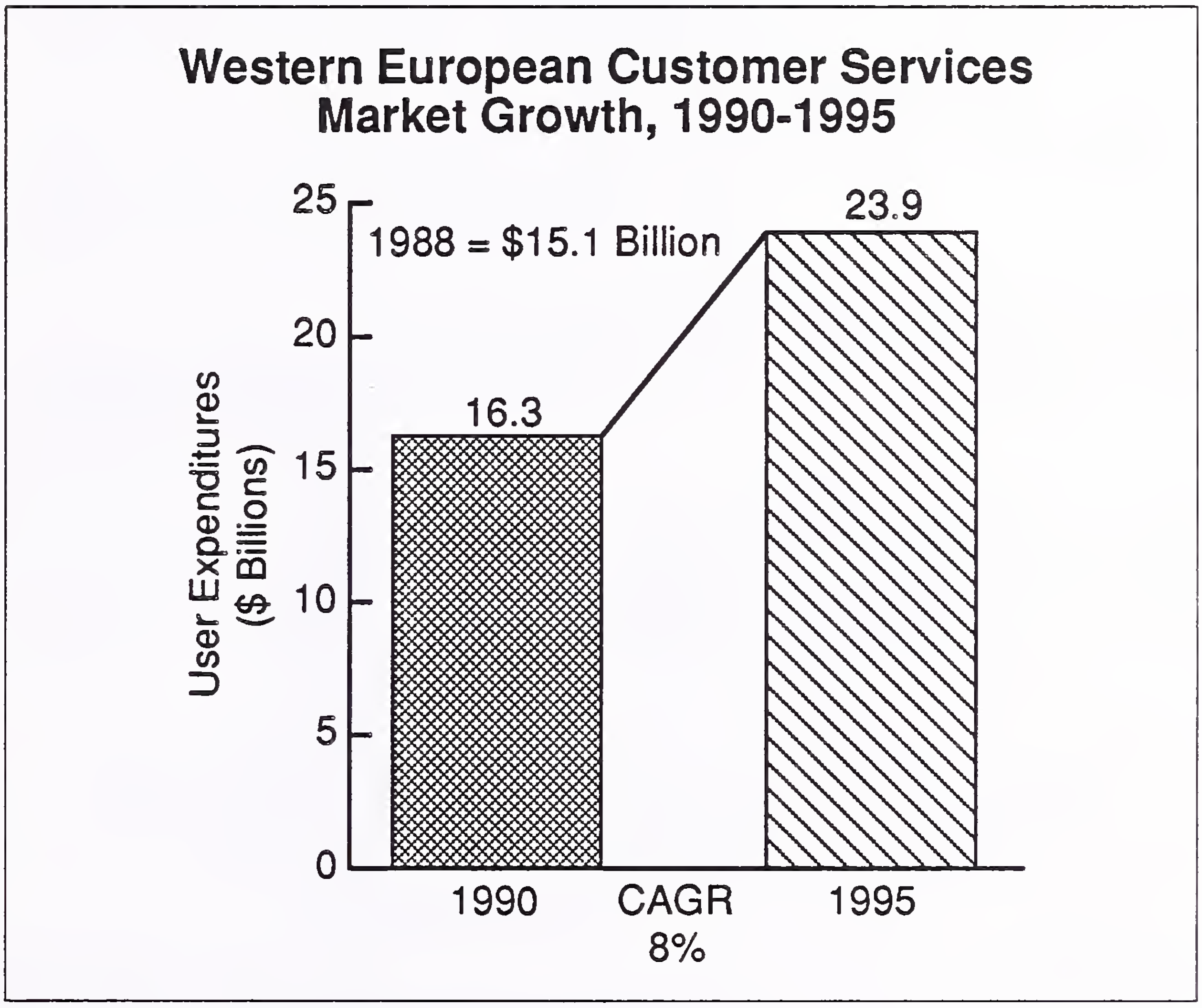
A more detailed definition of the customer services market is provided in Chapter III of this report.

C

Market Growth, 1990-1995

INPUT's forecast for the overall growth of the customer services market in Western Europe is provided by Exhibit II-3.

EXHIBIT II-3



Overall growth of the customer services market is forecast at an 8% CAGR over the five-year period 1990 to 1995. This level of growth is about 2.5% above the overall level of Western European inflation—currently about 5.5%—indicating that user expenditure for customer services is growing in real terms.

The net effect of market growth that is about 2.5% higher than overall inflation levels is that in real terms, the customer services market in Western Europe will grow by about $2.6 billion by 1995.

The origins of positive real growth of user expenditure for customer services in Western Europe results from the relatively high growth forecast for non-maintenance services. Overall, non-maintenance services are forecast to grow at about a 20% CAGR between 1990 and 1995, a growth rate almost 15% above the average rate of inflation in Western Europe. The effect of this relatively high rate of growth is to contribute about $3.9 billion of real growth from the non-maintenance sector of the market in 1995.

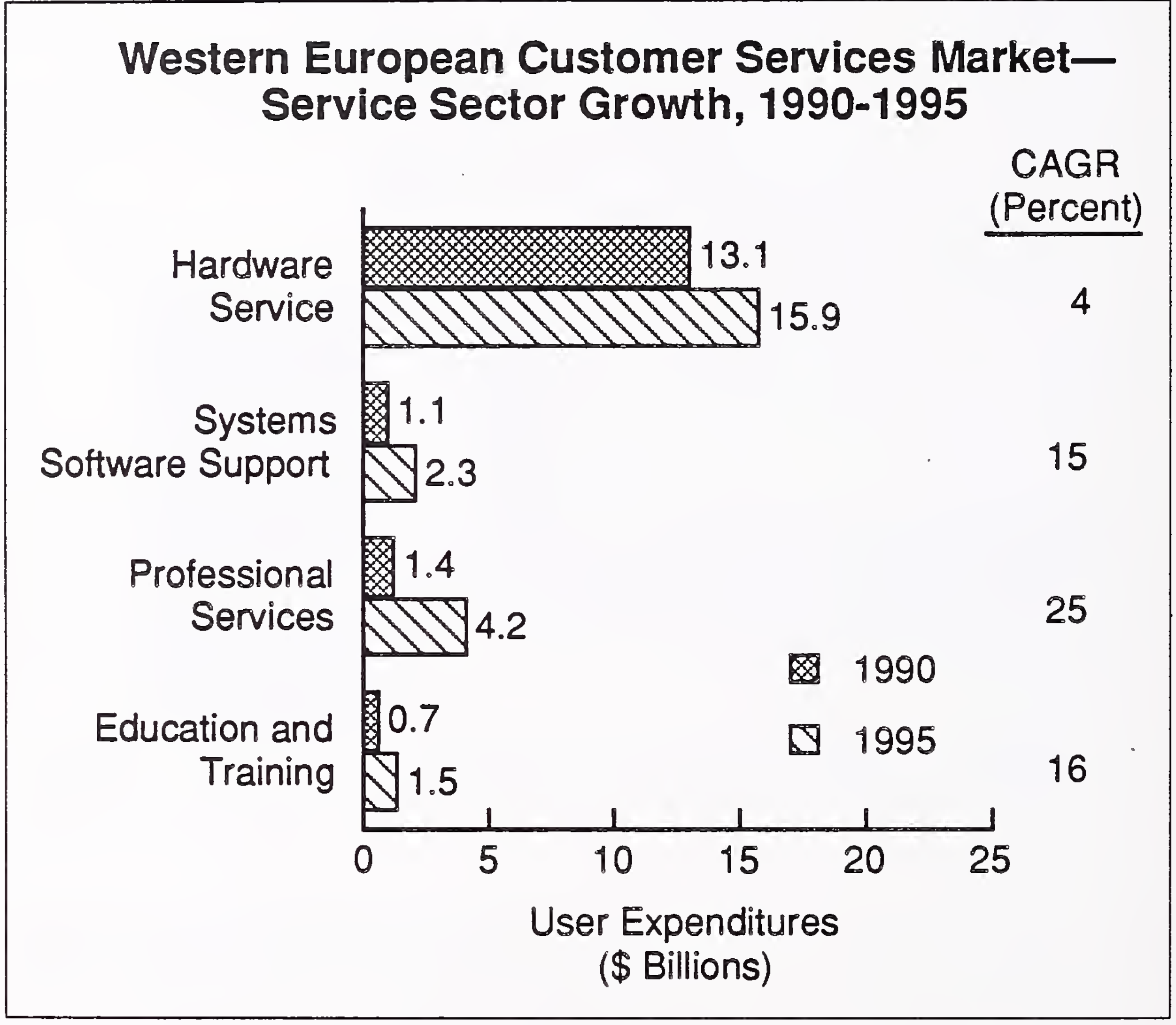
The real growth contribution of non-maintenance services more than offsets the negative real growth of hardware maintenance. This decline is equivalent to a reduction in user expenditure for hardware maintenance of about $1.3 billion in real terms by 1995.

D

Service Sector Growth, 1990-1995

Exhibit II-4 provides INPUT's forecast for the growth of user expenditure for customer services in Western Europe, segmented into four service sectors.

EXHIBIT II-4



Declining growth of hardware maintenance revenues has been a continuing concern for equipment vendors. This sector of the customer services market generates the larger proportion of customer services revenues—for example, in 1990, user expenditure for hardware maintenance accounted for about 80% of the Western European market for customer services.

Although INPUT forecasts that decline in the growth of hardware maintenance revenues will continue, the decline is relatively slow—about 2% over the forecast period 1990 to 1995.

Hardware maintenance as a primary source of customer services revenues is decreasing. By 1995, user expenditure for hardware maintenance is forecast to account for a smaller proportion of customer services revenues, decreasing to about 67%. The reason for this decreasing significance of hardware maintenance revenues is the relatively high growth of non-maintenance services. In 1990, non-maintenance services accounted for about 20% of customer services revenues, a proportion that is forecast to increase to approximately 33% by 1995. The sector of the market primarily responsible for the decreased significance of hardware maintenance revenues is professional services. User expenditure in the professional services sector is forecast to triple between 1990 and 1995, and will account for about 18% of the total market.

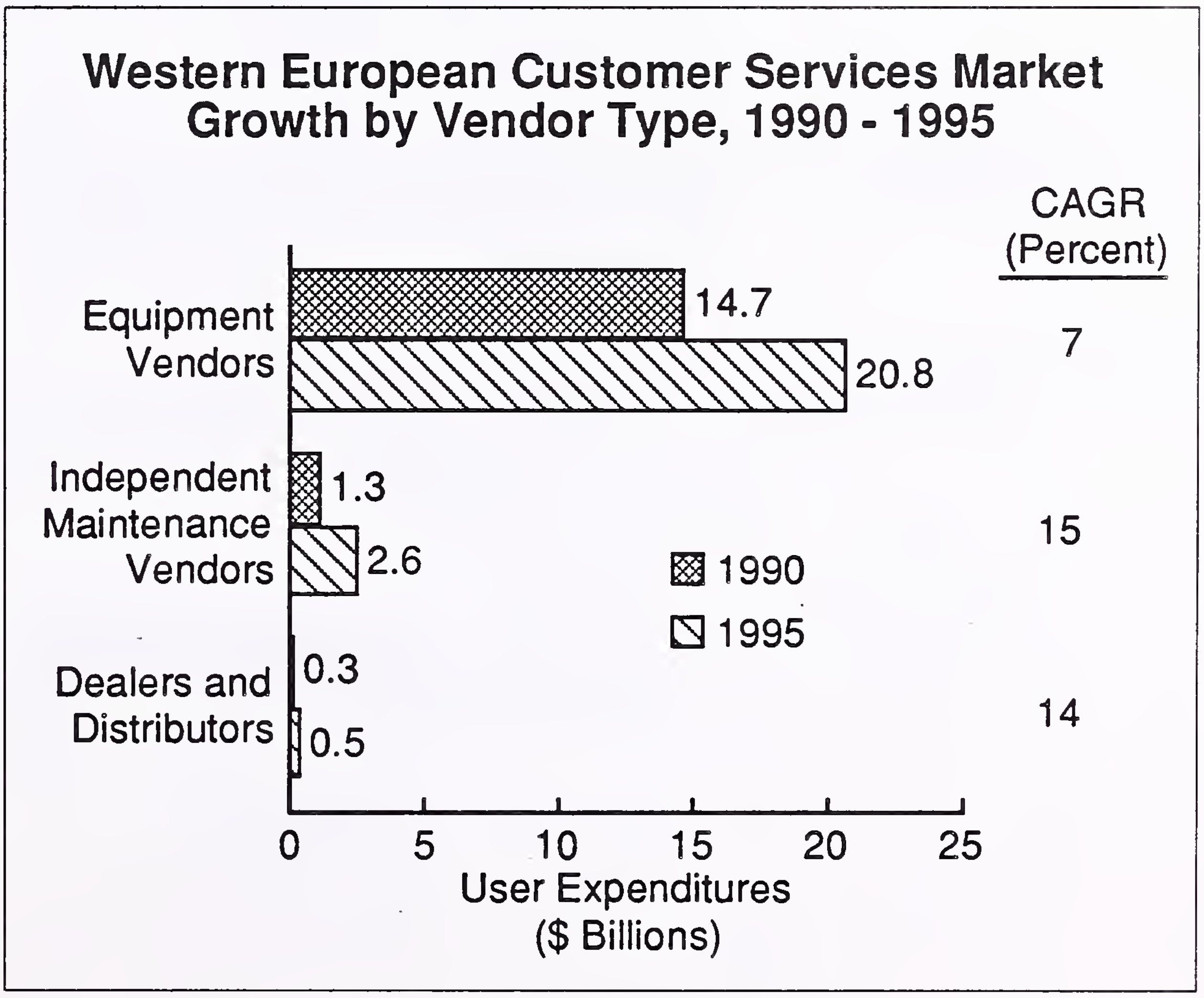
Analysis of data indicates that the previously forecast growth of systems software support revenues is not being realised. INPUT's forecast for the 1990-1995 period reflects this by forecasting a lower level of growth in this market sector.

E

Market Growth by Vendor Type, 1990-1995

INPUT defines the customer services market as having three vendor type segments. Exhibit II-5 provides INPUT's forecast for the growth of user expenditure for customer services, for each type of vendor.

EXHIBIT II-5



The largest proportion of user expenditure for customer services in Western Europe is with equipment vendors, who currently retain a market share in the region of 90%. However, this market share will decline slightly (by about 3%) by 1995 as a consequence of higher growth in the other vendor sectors of the market.

Independent maintenance vendors are forecast to experience the highest level of revenue growth, at a 15% CAGR over the five-year period. As a consequence of this higher growth forecast, independent maintenance vendors will increase their market share from about 8% in 1990 to about 11% by 1995. Evidence supporting this growth of market share by independent maintenance vendors is provided by user data, which indicates that approximately 6% more users in Western Europe would consider changes to independent maintenance for a price reduction of less than 20%. In order to achieve an 11% market share by 1995, independent maintenance vendors would require success with only one-half of those users expressing a willingness to change.

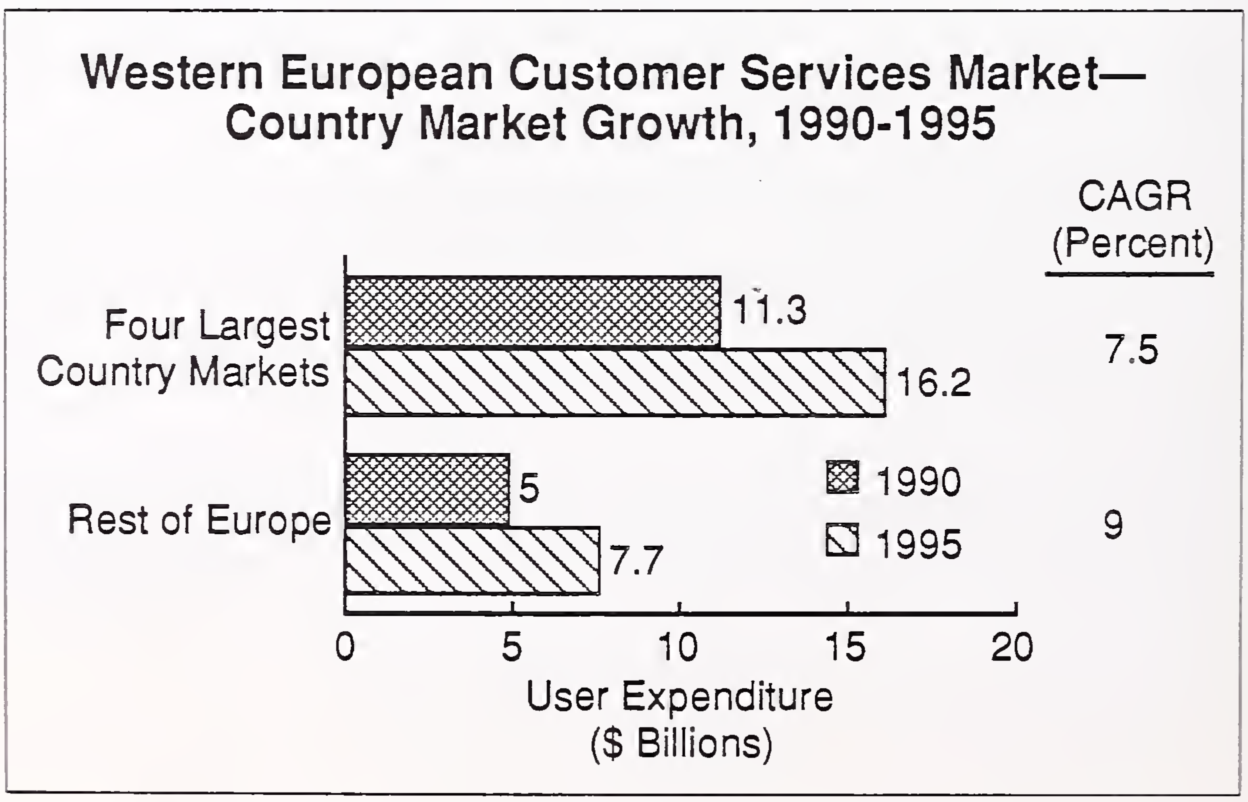
Growth in the dealer and distributor sector of the market is subject to constraint. Although there is an increasing trend for equipment to be sold through third-party channels, the equipment to be sold through third-party channels is primarily PCs, which are very reliable. Therefore, much equipment sold through dealer channels is not subject to a maintenance contract after expiration of the warranty period. A high proportion of PC users—an estimated 60%—are willing to rely on "ad hoc" service in the unlikely event of equipment failure.

F

Country Market Growth, 1990-1995

Exhibit II-6 provides INPUT's forecast for the growth of user expenditure for customer services in individual country markets in Western Europe over the five-year period 1990-1995.

EXHIBIT II-6



One characteristic of the customer services market in Western Europe is that the four largest country markets account for almost 70% of user expenditure. The four largest country markets in Western Europe are:

- France, where user expenditure for customer services is estimated to total almost $2.8 billion for 1990. The market in France is forecast to grow at a 6% CAGR to reach almost $3.7 billion in 1995.

- Germany, where user expenditure for customer services totalled an estimated $3.2 billion in 1990, and is forecast to grow at a 5.5% CAGR to reach about $4.1 billion in 1995.

- Italy, where in 1990, user expenditure for customer services totalled an estimated $2.1 billion and is forecast to grow at an 8% CAGR to reach about $3.0 billion in 1995.

- The United Kingdom, where user expenditure for customer services is estimated to total $3.3 billion in 1990. The market in the U.K. is forecast to grow at a 10% CAGR to reach $5.4 billion in 1995.

The highest growth market for customer services is forecast to be the market in Spain, where user expenditure is estimated to total $0.7 billion for 1990. The market in Spain is forecast to grow at an 11% CAGR to reach about $1.2 billion in 1995.

G

Leading Equipment Vendor Customer Services Revenues

Exhibit II-7 gives INPUT's estimates for the customer services revenues of the leading five equipment vendors in Western Europe for 1989.

EXHIBIT II-7

Leading Western European Equipment Vendor Customer Services Revenues

Vendor	Estimated 1989 Customer Services Revenues ($ Millions)	1989 Market Share (Percent)
IBM	3,100	21
Digital	1,770	12
Olivetti	980	12
Siemens	890	6
Bull	850	6

The customer services market is dominated by the leading fifteen equipment vendors in terms of market share:

- The leading five equipment vendors account for about 50% of user expenditure for customer services in Western Europe.
- The leading fifteen equipment vendors in total account for over 80% of user expenditure for customer services in Western Europe.
- Remaining user expenditure for customer services is distributed amongst the remaining vendors, and the independent maintenance vendors who command an estimated 8% market share.

The customer services revenues listed in Exhibit II-7 for Groupe Bull include the revenues of Bull SA and Bull HN in Italy and the United Kingdom.

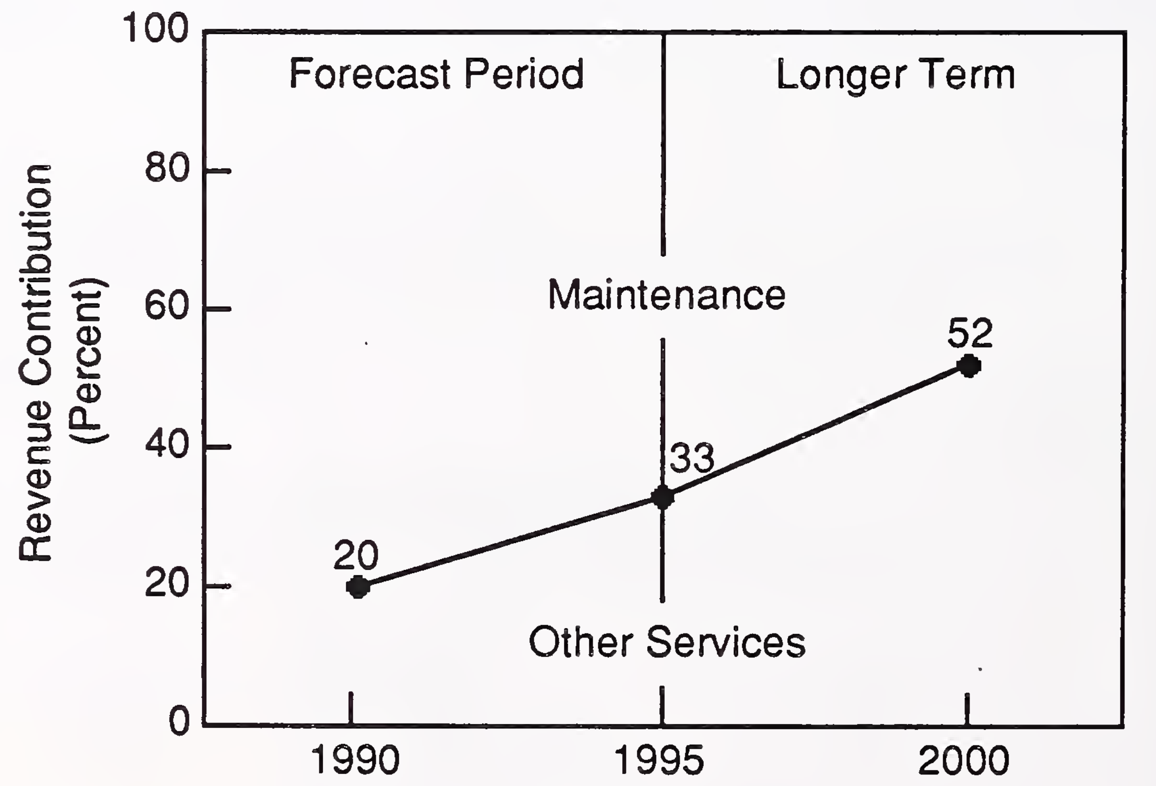
H Long-Term Trends

1. Changing Emphasis

The degree to which customer services organisations are dependent on hardware maintenance as a primary source of revenue is changing. Exhibit II-8 illustrates the level of change that is occurring.

EXHIBIT II-8

Customer Services—Changing Emphasis



Currently about 80% of customer services revenues are derived from hardware maintenance, and it has been this dependency on hardware maintenance that has been primarily responsible for declining growth in the customer services market. However, this relatively high level of reliance on hardware maintenance as a revenue source is now decreasing.

Over the five-year period 1990 to 1995, the relatively high growth of non-maintenance services is projected to reduce customer services reliance on hardware maintenance as a source of revenue. By 1995, revenue from non-maintenance services is estimated to have increased to a level at which it will contribute almost 35% of overall customer services revenues.

The primary reason for this increased contribution from non-maintenance services is the relatively high growth of professional services revenues, which are forecast to grow at about a 25% CAGR between 1990 and 1995.

Provided that similar conditions continue to exist in the customer services market long term (it should be noted that the market is relatively mature, and evolutionary rather than revolutionary), the growth of other services should continue beyond 1995. Should these conditions prevail, then by the year 2000 non-maintenance services will account for over 50% of customer services revenues.

It is most likely that any changes in market conditions that do occur will accelerate the growth of non-maintenance service revenues.

2. Long-Term Growth Prospects

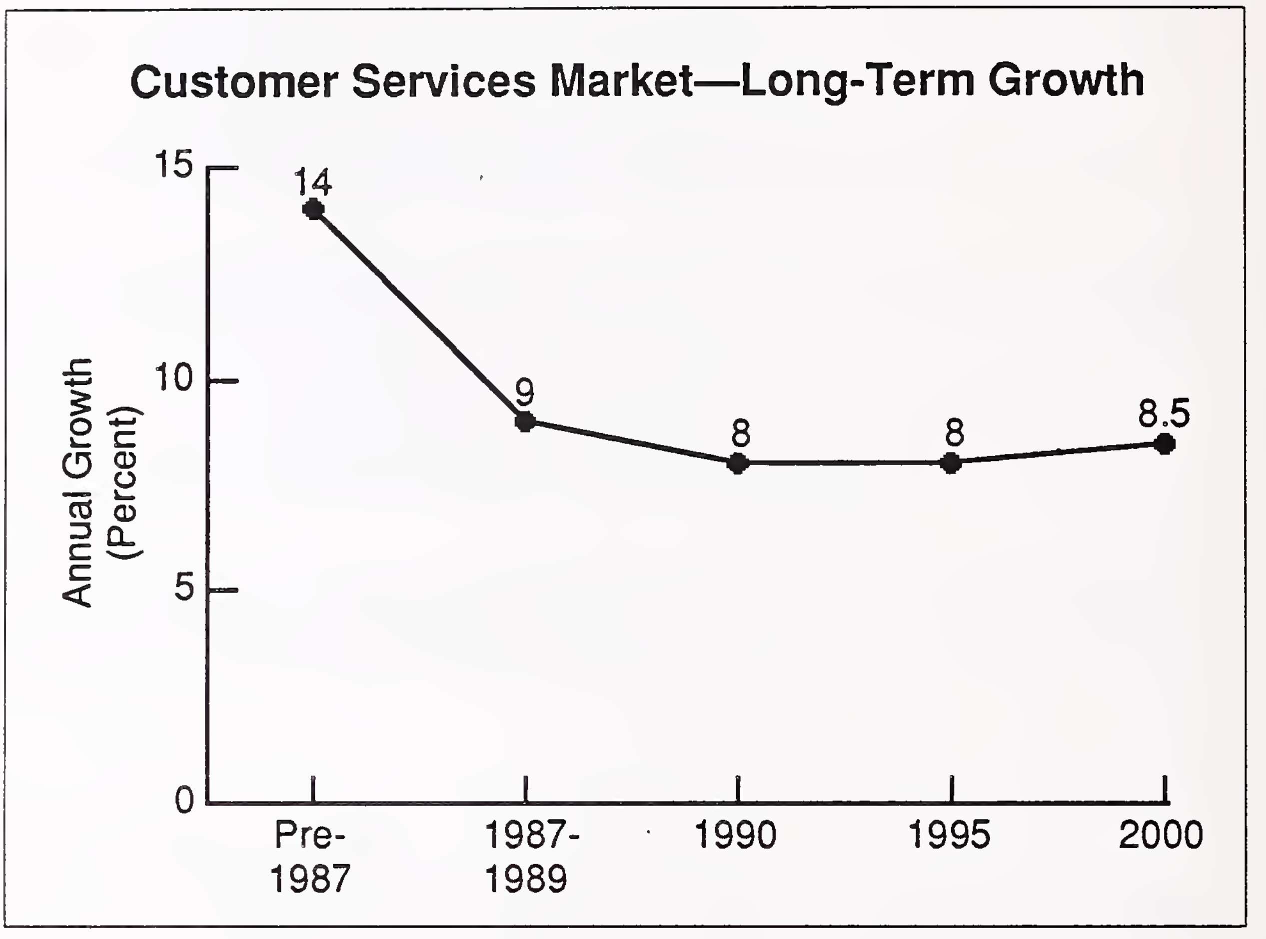
Exhibit II-9 illustrates the historical and potential growth of the customer services market, projected forward for a ten-year period.

Indications are that the declining growth of the customer services market has reached a plateau—growth will remain relatively constant between 1990 and 1995.

The primary reason for this levelling of growth is the decline of hardware maintenance revenues, which have slowed to a point where the positive growth of non-maintenance services is acting as a compensating factor.

Based on the assumption that long-term conditions in the customer services market will remain relatively stable, the relatively high growth of non-maintenance services will likely be responsible for a slight recovery of growth. Taking a relatively conservative view of this growth recovery, INPUT projects that by the end of the decade, growth of the customer services market will have increased by between 0.5% and 1%.

EXHIBIT II-9



The key to customer services market growth is the ability of service vendors to successfully market non-maintenance services. Vendors are therefore urged to treat the growth of non-maintenance services as a matter of priority.

In the event that the growth of non-maintenance revenues can be accelerated, the result will make for an earlier and more positive recovery of growth rates.

III

Customer Services Market Definitions

III

Customer Services Market Definitions

This section of the report contains INPUT's definition of the customer services market and explains how customer services relate to the overall information services market.

A Market Definition

NPUT's definition of the customer services market is illustrated in schematic form in Exhibit III-1. This exhibit also illustrates the structure of the hardware products market and the relationship between customer services and the hardware products market.

Included within INPUT's definition of customer services are four service sectors:

- Hardware maintenance
- Systems software support
- Professional services
- Education and training

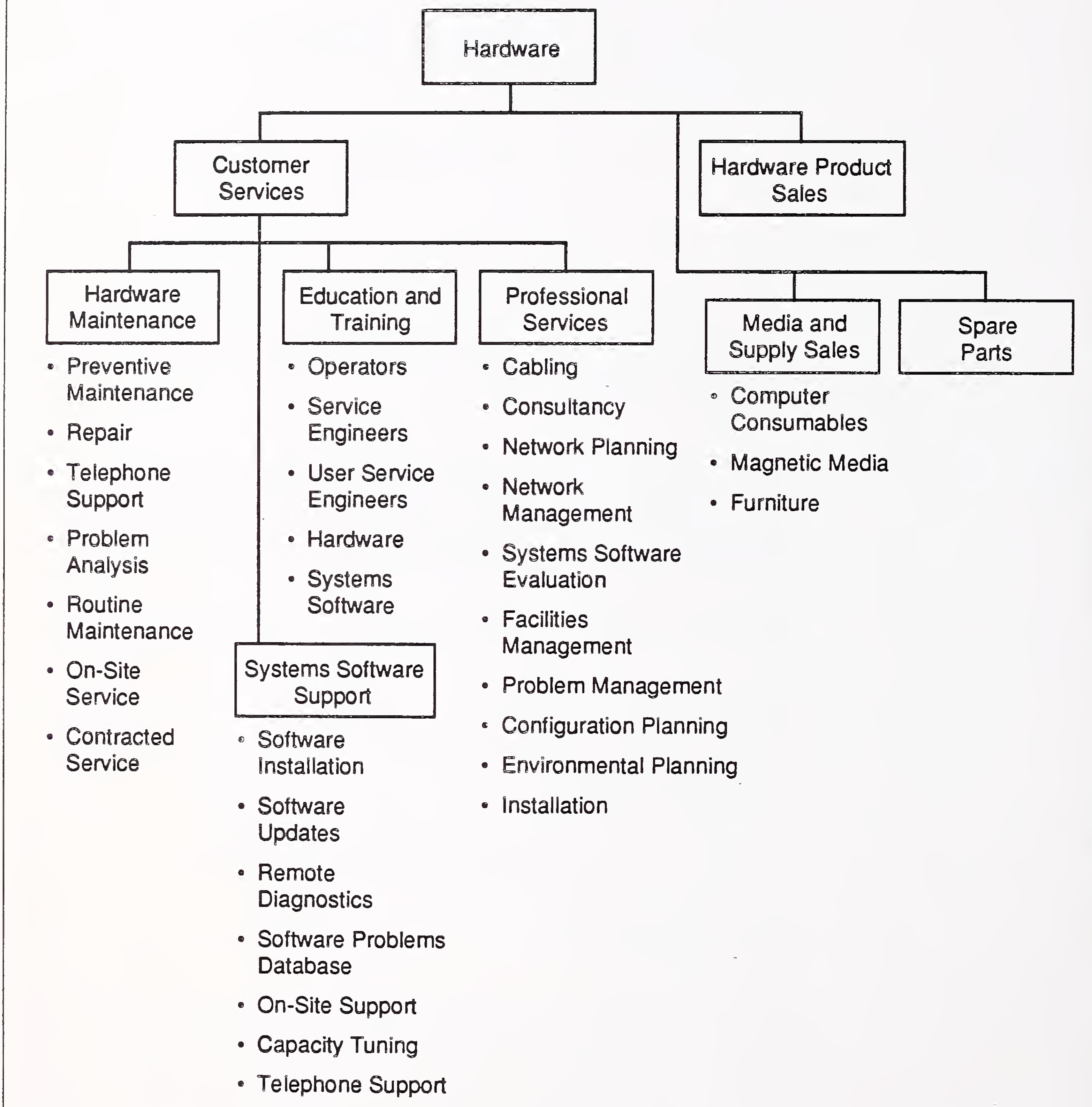
Excluded from INPUT's definition of the customer services market are:

- Hardware product sales
- Media and supply sales
- Sales of spare parts

Exhibit III-1 indicates the principal activities undertaken within each of the four service sectors. In each service sector, INPUT's definition of user expenditure includes only those services provided to users by an external organization on a chargeable basis. Services provided by subsidiaries or internal resources are considered unavailable for open tender and are therefore excluded from estimates.

EXHIBIT III-1

Hardware Products Market Structure



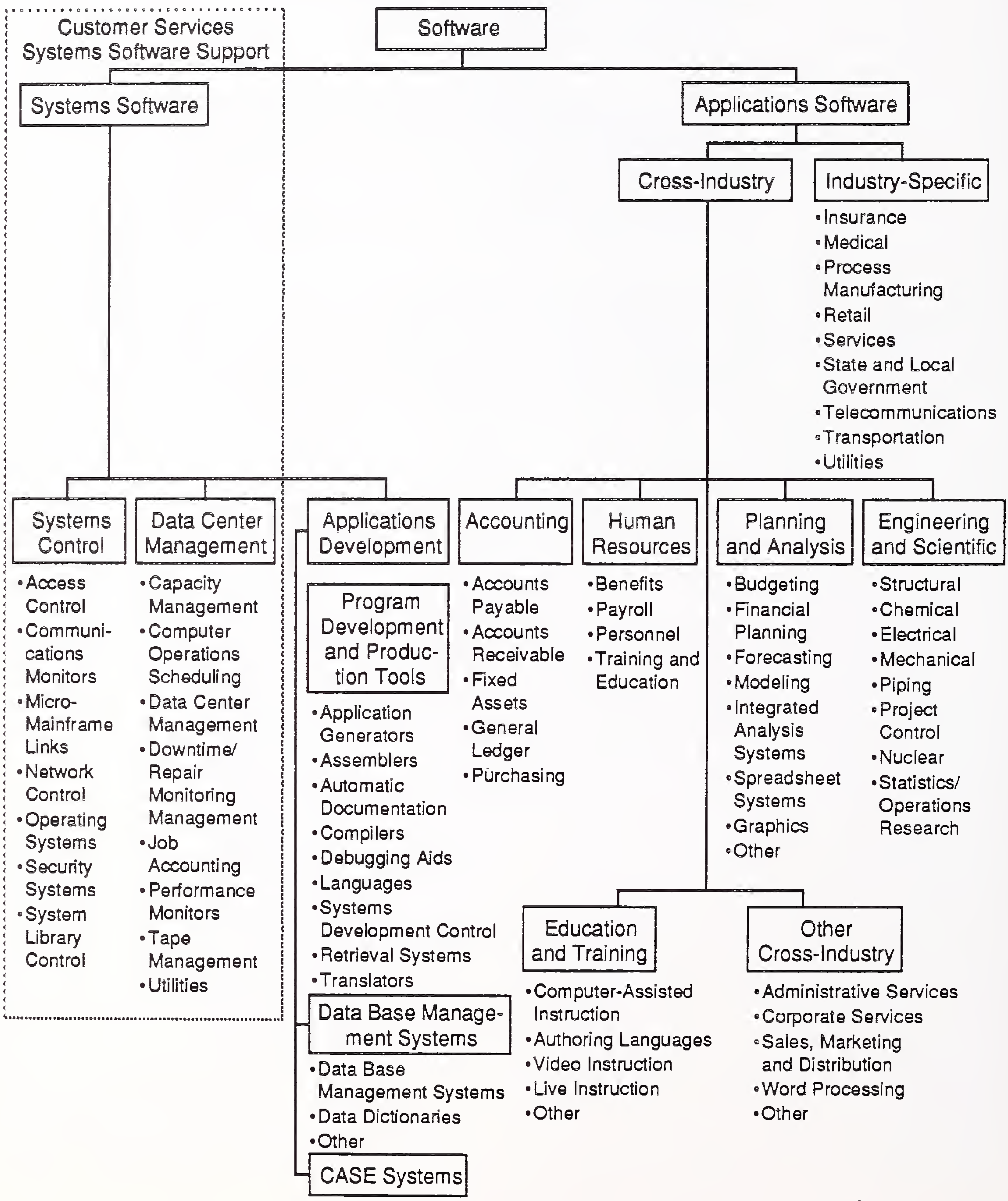
Software support activities included in the customer services market are those activities related to support of the systems software. Exhibit III-2 gives INPUT's definition of the software products market. Aspects of software support included in the customer services market are restricted to those areas highlighted in Exhibit III-2 relating to system control and data centre management.

The areas of professional services and education and training are both parts of more widely defined computer services markets. Only those professional services or education and training services directly associated with the support of hardware operations and operating systems software are included as part of the customer services market. The principal activities related to these areas are listed in Exhibit III-1.

Distribution of user expenditure for customer services can be categorized in a number of ways. INPUT defines revenue sources under two headings: the first defines three market segments dependent on the type of vendor providing the service; the second is based on four service sectors dependent on the type of activity that generates the revenue.

EXHIBIT III-2

Software Products Market Structure



B

Service Vendor Definition

INPUT's definitions of the three types of customer services vendors is as follows:

- Equipment vendors are defined as companies that manufacture computer hardware equipment and may service equipment manufactured by themselves or other equipment manufacturers.

- Third-party maintenance vendors are defined as companies that service computer equipment independent of the manufacturer or agent who sold the equipment.

- Dealers and distributors are defined as vendors that service equipment that is sold by them, either as an agent of the equipment vendor or as a value-added reseller (VAR).

C

Service Sector Definitions

Service sectors are defined by INPUT as follows:

- Hardware maintenance: the repair or routine preventive maintenance of computer systems hardware or hardware components. Included are associated support activities such as telephone support, problem analysis and remote diagnostics.

- Systems software service/support: software maintenance activities that relate to systems software (not applications software). Included are associated support activities such as telephone support, problem analysis and software diagnostics. Exhibit III-2 provides a schematic illustration of INPUT's definition.

- Professional services: within the definition of customer services, this sector of the market refers to those elements of professional services that are delivered and revenued exclusively as a customer services activity. Examples of customer services professional services are:

  - Cabling
  - Consultancy
  - Network planning
  - Network management
  - System software evaluation
  - Systems operations (Facilities management)
  - Problem management
  - Configuration planning
  - Environmental planning
  - Installation

- Education and training: within the definition of customer services, this sector of the market refers to those elements of education and training that are delivered and taken as revenue by a customer services organisation. Education and training activities are defined as those related to computer hardware or operating systems software (not applications). These aspects of customer service would normally include:

  - User hardware maintenance training, housekeeping and support training

  - User operating systems software maintenance training, housekeeping and support training

  - Operator training related to the use of hardware or operating systems software

IV

The Customer Services Market in Western Europe, 1990-1995

IV

The Customer Services Market in Western Europe, 1990-1995

This section of the report contains:

- Data supporting INPUT's estimates of the 1989 customer services revenues of the leading fifteen equipment vendors in Western Europe
- An estimate of customer services revenues segmented by product type
- INPUT's forecast for the growth of user expenditure for customer services overall in Western Europe over the five-year period 1990 to 1995
- INPUT's forecast for the growth of user expenditure for customer services in thirteen individual country markets in Western Europe

A
Customer Services Revenues

1. Leading Equipment Vendors' Customer Services Revenues

Exhibit IV-1 provides INPUT's estimates for the 1989 customer services revenues of the fifteen leading equipment vendors in Western Europe.

These leading fifteen equipment vendors' combined revenues accounted for about 80% of total user expenditure for customer services in Western Europe, with the leading five between them accounting for about 50%, in 1989.

Independent maintenance vendors' revenues accounted for about 8% of user expenditure for customer services in Western Europe in 1989. The largest independent maintenance vendor in Western Europe is Granada Computer Services with 1989 revenues of about $260 million. Compared with the leading fifteen equipment vendors, Granada would rank in fourteenth position behind Nokia.

The revenues listed in Exhibit IV-1 for Bull are the estimated combined revenues of Bull SA and Bull HN in Italy and the United Kingdom.

EXHIBIT IV-1

Leading Equipment Vendor Customer Services Revenues—Western Europe, 1989

Vendor	$ Millions				
	Hardware Service	Systems Software Support	Professional Services	Education and Training	Total
IBM	2,850	(a)	130	120	3,100
Digital	1,115	280	266	110	1,770
Olivetti	810	70	60	40	980
Siemens	740	60	50	40	890
Bull	780	45	20	5(b)	850
NCR	595	20(a)	115	80	810
Unisys	600	50	85	(b)	735
Hewlett-Packard	430	55	35	30	550(d)
ICL	400	20(a)	60	15	495
Wang	300	85	65	35	485
Prime	255	90	75	40	460
Philips	325	25	15	5	370
Nixdorf	359	(a)	1	(b)	360
Nokia	235	20	20	25	300
Rank Xerox	160	1	2	2	165

Notes: Rounded Numbers

(a) SW support bundled or partly bundled with software license fee

(b) Not generally CS revenue

(c) SW support revenues not separated

(d) HP revenues include Apollo

2. Customer Services Revenue Stream by Product Type

Exhibit IV-2 provides estimates of the source of customer services revenues by product type for the leading fifteen equipment vendors and the independent maintenance vendor sector of the customer services market.

EXHIBIT IV-2

Customer Services Revenue By Product Type

Customer Services Market 1990—$16.3 Billion

Leading IS Equipment Vendors	Other Vendors	Independent Maintenance Vendors
76%	16%	8%

Leading IS Equipment Vendors:

- Mainframe - 20%
- Minicomputers and Workstations - 28%
- PCs - 8%
- Peripherals - 34%
- Other - 10%

Other Vendors and Independent Maintenance Vendors:

- Mainframe - 17%
- Minicomputers - 30%
- PCs - 23%
- Peripherals - 23%
- Other - 7%

The primary source of customer services revenues is derived from the servicing of peripherals, which covers the total range of system sizes. Peripherals tend to be the least reliable items of computer equipment.

If revenue derived from the servicing of peripherals is redistributed across the range of computer equipment, then:

- About 30% of customer services revenue is derived from the servicing of large systems or mainframes.
- Approximately 45% of customer services revenue is derived from the servicing of medium-sized systems.

- About 25% of customer services revenue is derived from the servicing of small systems, including PCs.

Service revenues listed in the category of other revenues in Exhibit IV-2 include revenues derived from the servicing of communications equipment, excluding PABX equipment.

B

Customer Services Market Forecast, 1990-1995

Exhibit IV-3 provides a five-year forecast for the growth of user expenditure for customer services overall in Western Europe between 1990 and 1995.

EXHIBIT IV-3

Western European Customer Services Market Forecast, 1990-1995

Service Sector	User Expenditures ($ Millions)							CAGR 1990-1995 (Percent)
	1989	1990	1991	1992	1993	1994	1995	
Hardware Service	12,410	13,060	13,700	14,300	14,900	15,400	15,900	4
Systems Software Support	950	1,110	1,280	1,480	1,700	1,950	2,250	15
Professional Services	1,110	1,400	1,760	2,210	2,750	3,420	4,220	25
Education and Training	620	730	850	990	1,150	1,330	1,530	16
Total	15,090	16,300	17,590	18,980	20,500	22,100	23,900	8
Annual Growth (Percent)	-	8.0	8.0	8.0	8.0	8.0	8.0	-

Note: Numbers are rounded.

The growth of user expenditure for hardware maintenance services is forecast at about a 4% CAGR over the period 1990 to 1995. This growth rate is about 1.5% below the overall rate of Western European inflation, indicating a negative growth in real terms, equivalent to a market decline of about $1.3 billion by 1995.

The growth of user expenditure for non-maintenance services such as systems software support, professional services and education and training is forecast to average about a 20% CAGR between 1990 and 1995. This level of growth is almost 15% above the overall level of inflation in Western Europe, and therefore represents a level of real growth equivalent to a market expansion in real terms of about $3.6 billion by 1995.

The net effect of negative growth in hardware maintenance services, combined with positive growth in non-maintenance services, is real growth in user expenditure for customer services of about 2.5%. Inclusive of inflationary effects, the growth of user expenditure for customer services in Western Europe is forecast to remain relatively constant over the period 1990 to 1995 at about 8% per annum.

C

Western European Country Market Growth, 1990-1995

Exhibit IV-4 shows INPUT's forecast for the growth of user expenditure for customer services in thirteen individual European country markets. These forecasts are expressed in U.S. dollars to allow comparisons.

One of the key characteristics of the customer services market in Western Europe is that a relatively high proportion of user expenditure occurs in the four largest country markets. The four largest country markets are those in France, Italy, Germany and the United Kingdom which, between them, account for almost 70% of user expenditure.

The highest growth is forecast for the market in Spain, which is also the fastest developing market in Western Europe for computer products. Growth of user expenditure for customer services in the Spanish market is forecast to grow at about 11% CAGR over the period 1990 to 1995.

By 1995, the market for customer services in the United Kingdom is forecast to be the largest country market in Western Europe. The reason for the emergence of the United Kingdom as the largest country market in Western Europe for customer services is a relatively high growth rate (10% CAGR) as a consequence of relatively high levels of inflation.

EXHIBIT IV-4

Country Market Growth, 1990-1995

Country Market	User Expenditures ($ Millions)				
	1989	1990	1989-1990 Growth (Percent)	1995	1990-1995 CAGR (Percent)
Austria	290	315	8.5	455	7.5
Belgium	380	410	8.0	590	7.5
Denmark	350	370	6.0	515	6.5
France	2,600	2,770	6.0	3,690	6.0
Finland	305	325	7.5	450	6.5
Germany	3,000	3,170	5.5	4,130	5.5
Italy	1,910	2,060	7.5	3,020	8.0
Netherlands	820	880	8.0	1,290	8.0
Norway	335	360	8.5	540	8.0
Spain	640	715	11.5	1,220	11.0
Sweden	640	700	9.0	1,070	9.0
Switzerland	570	625	10.0	1,010	10.0
United Kingdom	2,960	3,280	11.0	5,380	10.0
Rest of Europe	290	320	10.0	540	12.0
Total	15,090	16,300	8	23,900	8

Note: Numbers are rounded.

D

Western European Country Market Forecasts, 1990-1995

Exhibits IV-5 to IV-18 provide INPUT's forecasts for the growth of user expenditure for customer services in thirteen individual country markets in Western Europe and, additionally, a forecast for the rest of Europe. The forecasts are expressed in local currencies, and include an allowance for individual countries' levels of inflation.

EXHIBIT IV-5

Austria
Customer Services Market Growth, 1990-1995

Service Sector	User Expenditures (Sch. Millions)							CAGR 1990-1995 (Percent)
	1989	1990	1991	1992	1993	1994	1995	
Hardware Service	3,095	3,265	3,430	3,580	3,730	3,860	3,970	4.0
Systems Software Support	226	263	302	350	400	450	520	14.5
Professional Services	248	315	400	502	630	790	980	25.5
Education and Training	138	162	188	218	250	290	330	15.5
Total	3,707	4,005	4,320	4,650	5,010	5,390	5,800	7.5
Annual Growth (Percent)	-	8.0	8.0	7.5	7.5	7.5	7.5	-

Note: Numbers are rounded.

EXHIBIT IV-6

Belgium
Customer Services Market Growth, 1990-1995

Service Sector	User Expenditures (BF Millions)							CAGR 1990-1995 (Percent)
	1989	1990	1991	1992	1993	1994	1995	
Hardware Service	11,910	12,560	13,190	13,800	14,300	14,870	15,270	4.0
Systems Software Support	938	1,100	1,280	1,480	1,720	1,970	2,260	15.5
Professional Services	1,020	1,280	1,600	1,990	2,470	3,050	3,750	24.0
Education and Training	515	610	710	830	960	1,110	1,270	16.0
Total	14,383	15,550	16,780	18,100	19,450	21,000	22,550	7.5
Annual Growth (Percent)	-	8.0	8.0	7.5	7.5	7.5	7.5	-

Note: Numbers are rounded.

EXHIBIT IV-7

Denmark
Customer Services Market Growth, 1990-1995

Service Sector	User Expenditures (DK Millions)							CAGR 1990-1995 (Percent)
	1989	1990	1991	1992	1993	1994	1995	
Hardware Service	2,018	2,060	2,090	2,110	2,120	2,120	2,100	0.5
Systems Software Support	150	172	200	225	255	290	325	13.5
Professional Services	198	260	337	435	560	710	890	28.0
Education and Training	107	128	153	180	215	250	285	17.5
Total	2,473	2,620	2,780	2,950	3,150	3,370	3,600	6.5
Annual Growth (Percent)	-	6.0	6.0	6.5	6.5	7.0	7.5	-

Note: Numbers are rounded.

EXHIBIT IV-8

France
Customer Services Market Growth, 1990-1995

Service Sector	User Expenditures (FF Millions)							CAGR 1990-1995 (Percent)
	1989	1990	1991	1992	1993	1994	1995	
Hardware Service	13,576	14,120	14,610	15,050	15,430	15,740	15,960	2.5
Systems Software Support	934	1,010	1,080	1,160	1,240	1,310	1,380	6.5
Professional Service	1,071	1,370	1,735	2,195	2,765	3,470	4,330	26.0
Education and Training	532	600	675	755	845	940	1,030	11.5
Total	16,113	17,100	18,100	19,160	20,280	21,460	22,700	6.0
Annual Growth (Percent)	-	6.0	6.0	6.0	6.0	6.0	6.0	-

Note: Numbers are rounded.

EXHIBIT IV-9

Finland
Customer Services Market Growth, 1990-1995

Service Sector	User Expenditures (FM Millions)							CAGR 1990-1995 (Percent)
	1989	1990	1991	1992	1993	1994	1995	
Hardware Service	1,023	1,074	1,125	1,165	1,210	1,245	1,280	3.5
Systems Software Support	88	99	110	125	140	152	170	11.0
Professional Services	97	118	143	175	210	250	300	20.5
Education and Training	69	79	92	105	120	133	150	13.5
Total	1,277	1,370	1,470	1,570	1,680	1,780	1,900	6.5
Annual Growth (Percent)	-	7.5	7.0	7.0	6.5	6.5	6.5	-

Note: Numbers are rounded.

EXHIBIT IV-10

Germany
Customer Services Market Growth, 1990-1995

Service Sector	User Expenditures (DM Millions)							CAGR 1990-1995 (Percent)
	1989	1990	1991	1992	1993	1994	1995	
Hardware Service	4,493	4,605	4,700	4,765	4,815	4,840	4,840	1
Systems Software Support	328	380	435	500	570	650	730	14
Professional Services	382	475	590	730	895	1,100	1,340	23
Education and Training	239	280	325	375	430	490	560	15
Total	5,442	5,740	6,050	6,370	6,710	7,080	7,470	5.5
Annual Growth (Percent)	-	5.5	5.5	5.5	5.5	5.5	5.5	-

Note: Numbers are rounded.

EXHIBIT IV-11

Italy
Customer Services Market Growth, 1990-1995

Service Sector	User Expenditures (Lira Billions)							CAGR 1990-1995 (Percent)
	1989	1990	1991	1992	1993	1994	1995	
Hardware Service	2,139	2,250	2,360	2,465	2,565	2,650	2,730	4.0
Systems Software Support	136	158	185	210	240	275	310	14.5
Professional Services	179	232	300	385	490	625	800	28.0
Education and Training	108	120	135	150	165	180	200	10.5
Total	2,562	2,760	2,980	3,210	3,460	3,730	4,040	8.0
Annual Growth (Percent)	-	7.5	8.0	8.0	8.0	8.0	8.0	-

Note: Numbers are rounded.

EXHIBIT IV-12

The Netherlands
Customer Services Market Growth, 1990-1995

Service Sector	User Expenditures (Dfl Millions)							CAGR 1990-1995 (Percent)
	1989	1990	1991	1992	1993	1994	1995	
Hardware Service	1,376	1,450	1,510	1,570	1,630	1,670	1,716	3.5
Systems Software Support	106	120	140	155	175	200	234	13.0
Professional Services	127	165	210	270	345	435	552	27.5
Education and Training	65	75	85	95	110	125	138	13.0
Total	1,674	1,810	1,945	2,090	2,260	2,430	2,640	8.0
Annual Growth (Percent)	-	8.0	7.5	7.5	7.5	8.0	8.5	-

Note: Numbers are rounded.

EXHIBIT IV-13

Norway
Customer Services Market Growth, 1990-1995

Service Sector	User Expenditures (NK Millions)							CAGR 1990-1995 (Percent)
	1989	1990	1991	1992	1993	1994	1995	
Hardware Service	1,838	1,930	2,020	2,100	2,170	2,235	2,290	3.5
Systems Software Support	157	190	230	272	320	375	435	18.0
Professional Services	180	228	285	356	440	550	680	24.5
Education and Training	110	132	155	182	210	240	275	16.0
Total	2,285	2,480	2,690	2,910	3,140	3,400	3,680	8.0
Annual Growth (Percent)	-	8.5	8.5	8.0	8.0	8.0	8.0	-

Note: Numbers are rounded.

EXHIBIT IV-14

Spain
Customer Services Market Growth, 1990-1995

Service Sector	User Expenditures (Pta Millions)							CAGR 1990-1995 (Percent)
	1989	1990	1991	1992	1993	1994	1995	
Hardware Service	61,310	66,500	71,800	77,200	82,600	88,000	93,300	7.0
Systems Software Support	4,446	5,440	6,600	7,970	9,600	11,500	13,800	20.5
Profes-sional Services	5,413	6,980	8,970	11,500	14,650	18,600	23,500	27.5
Education and Training	3,163	3,880	4,730	5,730	6,950	8,400	10,000	21.0
Total	74,332	82,800	92,100	102,400	113,800	126,500	140,600	11.0
Annual Growth (Percent)	-	11.5	11.5	11.0	11.0	11.0	11.0	-

Note: Numbers are rounded.

EXHIBIT IV-15

Sweden
Customer Services Market Growth, 1990-1995

Service Sector	User Expenditures (SeK Millions)							CAGR 1990-1995 (Percent)
	1989	1990	1991	1992	1993	1994	1995	
Hardware Service	3,316	3,500	3,670	3,840	3,990	4,140	4,260	4.0
Systems Software Support	286	355	435	530	645	770	920	21.0
Professional Services	307	390	495	610	765	940	1,150	24.0
Education and Training	187	225	270	320	380	450	520	18.5
Total	4,096	4,470	4,870	5,300	5,780	6,300	6,850	9.0
Annual Growth (Percent)	-	9.0	9.0	9.0	9.0	9.0	9.0	-

Note: Numbers are rounded.

EXHIBIT IV-16

Switzerland
Customer Services Market Growth, 1990-1995

Service Sector	User Expenditures (SF Millions)							CAGR 1990-1995 (Percent)
	1989	1990	1991	1992	1993	1994	1995	
Hardware Service	719	766	810	857	895	940	980	5.0
Systems Software Support	64	75	90	105	125	145	165	17.0
Professional Service	86	112	141	180	225	280	345	25.5
Education and Training	42	52	64	78	95	115	140	22.0
Total	911	1,005	1,105	1,220	1,340	1,480	1,630	10.0
Annual Growth (Percent)	-	10.0	10.0	10.0	10.0	10.0	10.0	-

Note: Numbers are rounded.

EXHIBIT IV-17

The United Kingdom
Customer Services Market Growth, 1990-1995

Service Sector	User Expenditures (£ Millions)							CAGR 1990-1995 (Percent)
	1989	1990	1991	1992	1993	1994	1995	
Hardware Service	1,501	1,636	1,780	1,915	2,060	2,200	2,360	7.5
Systems Software Support	136	162	193	230	270	315	370	18.0
Professional Services	147	179	215	260	310	375	445	20.0
Education and Training	78	93	112	135	160	190	225	19.0
Total	1,862	2,070	2,300	2,540	2,800	3,080	3,400	10.0
Annual Growth (Percent)	-	11.0	11.0	10.5	10.5	10.0	10.0	-

Note: Numbers are rounded.

EXHIBIT IV-18

Rest of Europe
Customer Services Market Growth, 1990-1995

Service Sector	User Expenditures ($ Millions)							CAGR 1990-1995 (Percent)
	1989	1990	1991	1992	1993	1994	1995	
Hardware Service	228	240	250	260	268	277	284	3.5
Systems Software Support	21	26	32	40	49	60	72	22.5
Professional Services	28	37	49	64	84	108	137	30.0
Education and Training	12	15	19	23	29	35	42	23.0
Total	289	318	350	387	430	480	535	11.0
Annual Growth (Percent)	-	10.0	10.0	10.5	11.0	11.5	11.5	-

Note: Numbers are rounded.

Appendixes

A

1989 Country Market Revenue Data

EXHIBIT A-1

Austria—Customer Services Revenues, 1989

Vendor	Sch Millions				
	Hardware Service	Systems Software Support	Professional Services	Education and Training	Total
Bull	118.4	8.2	12.9	(c)	139.5
Digital	268.0	64.0	51.0	25.5	408.5
Hewlett-Packard	114.5	13.1	8.6	8.0	144.2
IBM	745.0	(a)	33.5	31.5	810.0
ICL	28.1	(a)	8.9	1.3	38.3
NCR	74.5	1.6	14.7	11.0	101.8
Nixdorf	166.0	(a)	Neg.	(c)	166.0
Nokia		-	-	-	(d)
Olivetti	107.5	9.6	8.4	4.7	130.2
Philips	338.0	38.3	17.9	7.7	401.9
Prime	66.0	22.4	19.7	9.5	117.6
Rank Xerox	65.0	(b)	Neg.	Neg.	65.0
Siemens	258.0	21.2	18.4	13.8	311.4
Unisys	149.6	2.7	8.2	(c)	160.5
Wang	36.4	9.6	8.4	4.7	59.1
Other Vendors	300.0	32.0	33.0	16.0	381.0
Independent Maintenance	200.0	2.3	3.4	3.3	209.0
Dealers and Distributors	60.0	1.0	1.0	1.0	63.0
Total	3,095.0	226.0	248.0	138.0	3,707.0

Notes: (a) SW support mainly bundled with SW license fee
(b) SW support revenues not separated
(c) Not CS revenue
(d) Use agents, therefore no CS revenue

EXHIBIT A-2

Belgium—Customer Services Revenues, 1989

Vendor	BF Millions				
	Hardware Service	Systems Software Support	Professional Services	Education and Training	Total
Bull	804	53.0	39.0	(c)	896.0
Digital	1,408	343.0	266.0	114.0	2,131.0
Hewlett-Packard	345	38.0	24.0	23.0	430.0
IBM	2,755	(a)	125.0	118.0	2998.0
ICL	156	(a)	30.5	3.8	190.3
NCR	448	14.0	85.0	62.0	609.0
Nixdorf	288	(a)	Neg.	(c)	288.0
Nokia	-	-	-	-	(d)
Olivetti	610	44.0	46.0	33.0	733.0
Philips	590	22.8	19.0	15.2	647.0
Prime	197	67.3	60.2	27.7	352.2
Rank Xerox	201	(b)	Neg.	Neg.	201.0
Siemens	279	24.0	20.0	14.0	337.0
Unisys	891	72.9	105.1	(c)	1,069.0
Wang	358	100.4	80.0	37.1	575.5
Other Vendors	1,110	144.0	100.0	47.0	1,401.0
Independent Maintenance	1,230	11.4	16.8	16.8	1,275.0
Dealers and Distributors	240	3.2	3.4	3.4	250.0
Total	11,910	938.0	1,020.0	515.0	14,383.0

Notes: (a) SW support mainly bundled with SW license fee
(b) SW support revenues not separated
(c) Not CS revenue
(d) Use agents, therefore no CS revenue

EXHIBIT A-3

Denmark—Customer Services Revenues, 1989

Vendor	DK Millions				
	Hardware Service	Systems Software Support	Professional Services	Education and Training	Total
Bull	42.6	4.5	14.4	(c)	61.5
Digital	127.0	28.2	35.2	14.0	204.4
Hewlett-Packard	48.0	4.8	2.5	2.4	57.7
IBM	617.0	(a)	28.3	26.7	672.0
ICL	119.9	4.2	26.0	4.9	155.0
NCR	85.5	2.7	16.3	11.5	116.0
Nixdorf	30.7	(a)	Neg.	(c)	30.7
Nokia	96.6	7.1	7.1	9.2	120.0
Olivetti	173.5	14.4	12.4	9.7	210.0
Philips	16.9	0.7	-	-	17.6
Prime	55.3	20.4	15.0	8.8	99.5
Rank Xerox	37.9	(b)	Neg.	Neg.	37.9
Siemens	104.5	9.6	7.5	5.2	126.8
Unisys	60.2	7.5	6.0	(c)	73.7
Wang	30.4	7.9	6.6	4.3	49.2
Other Vendors	235.0	36.0	18.7	8.3	298.0
Independent Maintenance	113.0	1.0	1.0	1.0	116.0
Dealers and Distributors	24.0	1.0	1.0	1.0	27.0
Total	2,018.0	150.0	198.0	107.0	2,473.0

Notes: (a) SW support mainly bundled with SW license fee
(b) SW support revenues not separated
(c) Not CS revenue
(d) Use agents, therefore no CS revenue

EXHIBIT A-4

France—Customer Services Revenues, 1989

Vendor	FF Millions: Hardware Service	Systems Software Support	Professional Services	Education and Training	Total
Bull	2,540	170.0	35.0	(c)	2,745.0
Digital	926	235.0	197.0	86.0	1,444.0
Hewlett-Packard	443	58.0	36.0	32.0	569.0
IBM	3,197	(a)	138.0	130.0	3,465.0
ICL	191	8.0	14.8	4.9	218.7
NCR	669	16.0	127.0	90.0	902.0
Nixdorf	267	(a)	Neg.	(c)	267.0
Nokia	28	2.5	2.5	1.9	34.9
Olivetti	492	41.5	34.6	25.4	593.5
Philips	222	18.5	14.7	3.7	258.9
Prime	240	84.0	67.9	36.1	428.0
Rank Xerox	230	(b)	1.6	0.9	232.5
Siemens	136	10.7	9.7	7.6	164.0
Unisys	629	32.7	190.0	(c)	851.7
Wang	383	105.5	84.4	45.3	618.2
Other Vendors	1,253	137.0	97.5	47.5	1,535.0
Independent Maintenance	1,550	11.0	17.0	17.0	1,595.0
Dealers and Distributors	180	3.6	3.7	3.7	191.0
Total	13,576	934.0	1,071.4	532.0	16,113.4

Notes: (a) SW support mainly bundled with SW license fee
(b) SW support revenues not separated
(c) Not CS revenue

EXHIBIT A-5

Finland—Customer Services Revenues, 1989

Vendor	FM Millions				
	Hardware Service	Systems Software Support	Professional Services	Education and Training	Total
Bull	-	-	-	-	-
Digital	126.0	33.7	33.7	12.6	206.0
Hewlett-Packard	4.8	-	-	-	4.8
IBM	178.0	(a)	8.3	7.7	194.0
ICL	12.6	(a)	6.7	0.4	19.7
NCR	24.2	0.5	4.9	3.6	33.2
Nixdorf	57.6	(a)	Neg.	(c)	57.6
Nokia	347.0	26.0	26.0	34.0	433.0
Olivetti	34.5	3.1	2.6	1.6	41.8
Philips	8.4	-	-	-	8.4
Prime	10.3	3.7	3.2	1.6	18.8
Rank Xerox	18.5	(b)	0.5	0.5	19.5
Siemens	7.2	0.5	0.5	0.5	8.7
Unisys	64.8	7.8	3.9	(c)	76.5
Wang	6.3	2.1	1.1	0.5	10.0
Other Vendors	68.2	10.9	5.1	4.8	89.0
Independent Maintenance	44.6	Neg.	1.2	1.2	47.0
Dealers and Distributors	10.0	Neg.	Neg.	Neg.	10.0
Total	1,023.0	88.3	97.7	69.0	1,278.0

Notes: (a) SW support mainly bundled with SW license fee
(b) SW support revenues not separated
(c) Not CS revenue

EXHIBIT A-6

Germany—Customer Services Revenues, 1989

Vendor	DM Millions				
	Hardware Service	Systems Software Support	Professional Services	Education and Training	Total
Bull	59.4	7.5	7.6	(c)	74.5
Digital	353.0	89.0	83.0	40.0	565.0
Hewlett-Packard	134.5	17.5	11.0	10.0	173.0
IBM	1,152.0	(a)	52.5	49.5	1,254.0
ICL	19.0	(a)	2.5	0.2	21.7
NCR	215.3	5.9	41.8	29.0	292.0
Nixdorf	227.0	(a)	Neg.	(c)	227.0
Nokia	32.6	2.5	2.5	3.1	40.7
Olivetti	116.0	9.7	8.2	6.1	140.0
Philips	127.0	8.2	4.5	1.8	141.5
Prime	96.0	33.0	27.1	13.9	170.0
Rank Xerox	59.0	2.4	0.5	0.5	62.4
Siemens	1,034.0	84.0	73.0	56.0	1,247.0
Unisys	113.0	7.3	15.4	(c)	135.7
Wang	56.2	15.3	12.3	6.7	90.5
Other Vendors	424.0	43.9	38.1	20.0	526.0
Independent Maintenance	150.0	1.0	1.0	1.0	153.0
Dealers and Distributors	125.0	1.0	1.0	1.0	128.0
Total	4,493.0	328.2	382.0	238.8	5,442.0

Notes: (a) SW support mainly bundled with SW license fee
(b) SW support revenues not separated
(c) Not CS revenue

EXHIBIT A-7

Italy—Customer Services Revenues, 1989

Vendor	Lira Billions				
	Hardware Service	Systems Software Support	Professional Services	Education and Training	Total
Bull	148.0	(c)	1.4	3.6	153.0
Digital	125.0	31.0	41.5	13.5	211.0
Hewlett-Packard	64.3	7.5	5.0	3.7	80.5
IBM	623.0	(a)	29.5	26.5	679.0
ICL	8.7	(a)	0.5	0.1	9.3
NCR	64.8	1.9	12.8	9.1	88.6
Nixdorf	20.8	(a)	Neg.	(c)	20.8
Nokia	-	-	-	-	(d)
Olivetti	513.0	43.5	38.0	27.5	622.0
Philips	19.4	0.8	0.7	0.5	21.4
Prime	32.0	11.0	9.0	4.9	56.9
Rank Xerox	7.2	(b)	Neg.	0.2	7.4
Siemens	39.2	3.2	3.0	2.4	47.8
Unisys	59.2	4.2	7.1	(c)	70.5
Wang	25.4	6.9	5.5	3.0	40.8
Other Vendors	225.0	24.0	23.0	11.0	283.0
Independent Maintenance	119.0	1.0	1.0	1.0	122.0
Dealers and Distributors	45.0	1.0	1.0	1.0	48.0
Total	2,139.0	136.0	179.0	108.0	2,562.0

Notes: (a) SW support mainly bundled with SW license fee
(b) SW support revenues not separated
(c) Not CS revenue
(d) Use agents, therefore no CS revenue

EXHIBIT A-8

The Netherlands—Customer Services Revenues, 1989

Vendor	Hardware Service (Dfl Millions)	Systems Software Support	Professional Services	Education and Training	Total
Bull	49.6	3.3	3.1	(c)	56.0
Digital	151.5	39.0	35.0	18.5	244.0
Hewlett-Packard	42.2	5.8	3.6	3.4	55.0
IBM	294.0	(a)	13.4	12.6	320.0
ICL	30.2	1.2	11.1	1.0	43.5
NCR	64.2	1.9	12.2	8.3	86.6
Nixdorf	35.2	(a)	Neg.	(c)	35.2
Nokia	13.9	1.0	1.0	1.4	17.3
Olivetti	82.6	6.8	5.8	4.2	99.4
Philips	103.5	9.2	6.4	1.9	121.0
Prime	26.2	9.1	7.4	4.0	46.7
Rank Xerox	19.2	(b)	0.3	0.5	20.0
Siemens	15.1	1.3	1.1	0.7	18.2
Unisys	100.0	8.5	9.8	(c)	118.3
Wang	16.5	4.3	3.4	2.0	26.2
Other Vendors	122.0	13.0	11.0	4.5	150.5
Independent Maintenance	195.0	1.3	2.4	2.3	201.0
Dealers and Distributors	15.0	Neg.	Neg.	Neg.	15.0
Total	1,375.9	105.7	127.0	65.3	1,673.9

Notes: (a) SW support mainly bundled with SW license fee
(b) SW support revenues not separated
(c) Not CS revenue

EXHIBIT A-9

Norway—Customer Services Revenues, 1989

Vendor	NK Millions				
	Hardware Service	Systems Software Support	Professional Services	Education and Training	Total
Bull	56.7	9.1	9.9	(c)	75.7
Digital	116.5	27.4	20.5	13.6	178.0
Hewlett-Packard	30.2	3.6	1.4	1.2	36.4
IBM	387.0	(a)	17.5	16.5	421.0
ICL	-	-	-	-	-
NCR	80.0	2.5	14.9	10.6	108.0
Nixdorf	71.7	(a)	Neg.	(c)	71.7
Nokia	109.6	8.2	8.2	11.0	137.0
Olivetti	105.0	8.4	7.8	5.8	127.0
Philips	30.8	2.1	0.7	0.7	34.3
Prime	35.0	11.7	10.5	4.8	62.0
Rank Xerox	32.7	1.2	0.9	0.8	35.6
Siemens	49.1	4.2	3.5	2.5	59.3
Unisys	35.0	5.6	4.9	(c)	45.5
Wang	37.7	11.0	8.7	4.1	61.5
Other Vendors	572.0	61.0	69.6	37.4	740.0
Independent Maintenance	73.0	1.0	1.0	1.0	76.0
Dealers and Distributors	16.0	Neg.	Neg.	Neg.	16.0
Total	1,838.0	157.0	180.0	110.0	2,285.0

Notes: (a) SW support mainly bundled with SW license fee
(b) SW support revenues not separated
(c) Not CS revenue

EXHIBIT A-10

Spain—Customer Services Revenues, 1989

Vendor	Pta Millions				
	Hardware Service	Systems Software Support	Professional Services	Education and Training	Total
Bull	2,529	231	29	(c)	2,789
Digital	3,590	926	1,042	232	5,790
Hewlett-Packard	4,197	582	381	308	5,468
IBM	13,594	(a)	636	587	14,817
ICL	359	(a)	58	12	429
NCR	5,930	183	1,175	822	8,110
Nixdorf	1,652	(a)	Neg.	(c)	1,652
Nokia	1,587	116	116	151	1,970
Olivetti	3,642	321	271	205	4,439
Philips	2,837	127	116	46	3,126
Prime	1,219	443	349	190	2,201
Rank Xerox	889	(b)	31	29	949
Siemens	2,591	214	191	147	3,143
Unisys	4,356	448	315	(c)	5,119
Wang	768	214	175	89	1,246
Other Vendors	5,820	612	477	294	7,203
Independent Maintenance	4,950	22	43	43	5,058
Dealers and Distributors	800	7	8	8	823
Total	61,310	4,446	5,413	3,163	74,332

Notes: (a) SW support mainly bundled with SW license fee

(b) SW support revenues not separated

(c) Not CS revenue

EXHIBIT A-11

Sweden—Customer Services Revenues, 1989

Vendor	Sek Millions				
	Hardware Service	Systems Software Support	Professional Services	Education and Training	Total
Bull	67.0	6.0	3.1	(c)	76.1
Digital	364.0	89.5	102.2	38.3	594.0
Hewlett-Packard	63.7	6.1	3.7	3.5	77.0
IBM	725.0	(a)	33.0	31.0	789.0
ICL	56.2	(a)	3.8	0.6	60.6
NCR	149.0	4.0	29.0	19.0	201.0
Nixdorf	61.1	(a)	Neg.	(c)	61.1
Nokia	460.5	34.5	34.5	45.5	575.0
Olivetti	98.2	8.0	7.5	5.5	119.2
Philips	169.0	19.2	9.0	3.8	201.0
Prime	48.7	17.1	13.3	7.9	87.0
Rank Xerox	47.6	(b)	0.8	0.8	49.2
Siemens	46.6	4.0	3.3	2.4	56.3
Unisys	236.0	24.0	17.0	(c)	277.0
Wang	77.4	20.7	18.0	9.4	125.5
Other Vendors	296.0	50.0	25.4	15.6	387.0
Independent Maintenance	250.0	1.2	2.4	2.4	256.0
Dealers and Distributors	100.0	1.3	1.4	1.3	104;0
Total	3,316.0	285.6	307.4	187.0	4,096.0

Notes: (a) SW support mainly bundled with SW license fee
(b) SW support revenues not separated
(c) Not CS revenue

EXHIBIT A-12

Switzerland—Customer Services Revenues, 1989

Vendor	SF Millions				
	Hardware Service	Systems Software Support	Professional Services	Education and Training	Total
Bull	28.8	2.0	0.4	(c)	31.2
Digital	111.0	27.4	33.8	11.3	183.5
Hewlett-Packard	23.2	2.6	2.5	1.2	29.5
IBM	93.0	(a)	4.3	4.2	101.5
ICL	8.5	(a)	1.8	0.2	10.5
NCR	109.0	3.0	21.0	14.8	147.8
Nixdorf	37.6	(a)	Neg.	(c)	37.6
Nokia	4.8	0.4	0.4	0.5	6.1
Olivetti	51.2	4.2	3.6	2.8	61.8
Philips	20.9	1.6	1.1	0.5	24.1
Prime	8.1	2.8	2.5	1.2	14.6
Rank Xerox	6.1	(b)	Neg.	Neg.	6.1
Siemens	31.5	2.6	2.1	1.4	37.6
Unisys	103.7	11.2	7.1	(c)	122.0
Wang	4.3	1.2	1.0	0.6	7.1
Other Vendors	35.3	4.7	3.7	2.3	46.0
Independent Maintenance	32.0	Neg.	1.0	1.0	34.0
Dealers and Distributors	10.0	Neg.	Neg.	Neg.	10.0
Total	719.0	63.7	86.3	42.0	911.0

Notes: (a) SW support mainly bundled with SW license fee
(b) SW support revenues not separated
(c) Not CS revenue

EXHIBIT A-13

The United Kingdom—Customer Services Revenues, 1989

Vendor	£ Millions				
	Hardware Service	Systems Software Support	Professional Services	Education and Training	Total
Bull	46.5	4.0	Neg.	(c)	50.5
Digital	177.5	44.7	33.3	14.5	270.0
Hewlett-Packard	74.8	10.1	6.3	4.8	96.0
IBM	271.0	(a)	12.8	12.2	296.0
ICL	182.0	12.2	23.0	8.8	226.0
NCR	56.0	1.5	11.5	8.2	77.2
Nixdorf	19.7	(a)	1.4	(c)	21.1
Nokia	4.3	0.3	0.3	0.4	5.3
Olivetti	49.1	3.2	2.6	2.0	56.9
Philips	23.6	1.3	1.1	0.4	26.4
Prime	45.6	16.0	13.0	7.2	81.8
Rank Xerox	18.7	(b)	0.3	0.2	19.2
Siemens	4.2	0.4	0.3	0.2	5.1
Unisys	75.0	6.1	10.4	(c)	91.5
Wang	82.9	23.3	17.8	10.0	134.0
Other Vendors	115.1	10.4	9.4	5.1	140.0
Independent Maintenance	235.0	1.0	2.5	2.5	241.0
Dealers and Distributors	20.0	1.0	1.0	1.0	23.0
Total	1,501.0	150.0	147.0	77.5	1,861.0

Notes: (a) SW support mainly bundled with SW license fee
(b) SW support revenues not separated
(c) Not CS revenue

EXHIBIT A-14

Rest of Europe—Customer Services Revenues, 1989

Vendor	$ Millions				
	Hardware Service	Systems Software Support	Professional Services	Education and Training	Total
Bull	1.4	Neg.	Neg.	(c)	1.4
Digital	40.0	10.0	12.0	4.0	66.0
Hewlett-Packard	4.3	0.5	0.4	0.3	5.5
IBM	56.0	(a)	2.6	2.4	61.0
ICL	2.2	(a)	2.4	0.2	4.8
NCR	10.0	1.6	2.2	1.8	15.6
Nixdorf	27.0	(a)	Neg.	(c)	27.0
Nokia	-	-	-	-	-
Olivetti	14.1	1.2	0.4	0.4	16.1
Philips	-	-	-	-	-
Prime	5.0	1.7	1.5	0.7	8.9
Rank Xerox	2.5	(c)	Neg.	Neg.	2.5
Siemens	3.3	0.4	0.4	0.2	4.3
Unisys	20.0	2.1	2.6	(c)	24.7
Wang	3.9	1.1	1.0	0.7	6.7
Other Vendors	23.3	2.5	2.5	1.2	29.5
Independent Maintenance	13.0	Neg.	Neg.	Neg.	13.0
Dealers and Distributors	2.0	Neg.	Neg.	Neg.	2.0
Total	228.0	21.1	28.0	11.9	289.0

Notes: (a) SW support mainly bundled with SW license fee
(b) SW support revenues not separated
(c) Not CS revenue

B

1989 Equipment Vendor Revenue Data

EXHIBIT B-1

Bull
Customer Services Revenues, 1989

Country	$ Millions				
	Hardware Service	Systems Software Support	Professional Services	Education and Training	Total
Austria	9.3	0.6	1.0	(a)	10.9
Belgium	21.2	1.4	1.0	(a)	23.6
Denmark	6.1	0.6	2.0	(a)	8.7
France	412.0	27.6	5.7	(a)	445.3
Finland	-	-	-	-	-
Germany	59.5	4.1	4.1	(a)	67.7
Italy	111.0	(a)	1.0	3.6	115.6
Netherlands	24.2	1.6	1.5	(a)	27.3
Norway	8.3	1.3	1.4	(a)	11.0
Spain	21.8	2.0	0.3	(a)	24.1
Sweden	10.5	0.9	0.5	(a)	11.9
Switzerland	17.9	1.2	0.3	(a)	19.4
United Kingdom	73.8	6.4	0.4	(a)	80.6
Rest of Europe	1.4	-	-	(a)	1.4
Total	777.0	47.7	19.2	3.6	847.5

Note: (a) Not CS revenue.

EXHIBIT B-2

Digital
Customer Services Revenues, 1989

Country	$ Millions				
	Hardware Service	Systems Software Support	Professional Services	Education and Training	Total
Austria	21	5	4	2	32
Belgium	37	9	7	3	56
Denmark	18	4	5	2	29
France	150	38	32	14	234
Finland	30	8	8	3	49
Germany	195	49	46	22	312
Italy	93	23	31	10	157
Netherlands	74	19	17	9	119
Norway	17	4	3	2	26
Spain	31	8	9	2	50
Sweden	57	14	16	6	93
Switzerland	69	17	21	7	114
United Kingdom	282	71	53	23	429
Rest of Europe	40	10	12	4	66
Total	1,114	279	264	109	1,766

EXHIBIT B-3

Hewlett-Packard
Customer Services Revenues, 1989

Country	$ Millions				
	Hardware Service	Systems Software Support	Professional Services	Education and Training	Total
Austria	9.0	1.0	0.7	0.6	11.3
Belgium	9.1	1.0	0.7	0.6	11.4
Denmark	6.8	0.7	0.4	0.3	8.2
France	71.8	9.4	5.8	5.2	92.2
Finland	1.1	-	-	-	1.1
Germany	74.2	9.6	6.1	5.5	95.4
Italy	48.0	5.6	3.8	3.7	61.1
Netherlands	20.6	2.9	1.8	1.7	27.0
Norway	4.4	0.5	0.2	0.2	5.3
Spain	36.3	5.0	3.3	2.7	47.3
Sweden	10.0	1.0	0.7	0.6	12.3
Switzerland	14.4	1.5	1.5	0.7	18.1
United Kingdom	119.0	16.1	10.1	7.7	152.9
Rest of Europe	4.3	0.5	0.4	0.2	5.4
Total	429.0	54.8	35.5	29.7	549.0

Note: Includes Apollo.

EXHIBIT B-4

IBM
Customer Services Revenues, 1989

Country	$ Millions				
	Hardware Service	Systems Software Support	Professional Services	Education and Training	Total
Austria	58.4	(a)	2.6	2.5	63.5
Belgium	72.5	(a)	3.3	3.2	79.0
Denmark	87.5	(a)	4.0	3.5	95.0
France	518.0	(a)	22.0	21.0	561.0
Finland	42.3	(a)	2.0	1.8	46.1
Germany	636.0	(a)	29.0	27.0	692.0
Italy	465.0	(a)	21.5	19.5	506.0
Netherlands	143.5	(a)	6.5	6.0	156.0
Norway	56.6	(a)	2.4	2.2	61.2
Spain	117.4	(a)	5.5	5.1	128.0
Sweden	114.0	(a)	5.0	5.0	124.0
Switzerland	57.8	(a)	2.8	2.6	63.2
United Kingdom	430.0	(a)	20.5	19.5	470.0
Rest of Europe	56.0	(a)	2.5	2.5	61.0
Total	2,855.0	(a)	129.6	121.4	3,106.0

Note: (a) Systems software support mostly bundled with software license fee.

EXHIBIT B-5

ICL
Customer Services Revenues, 1989

Country	Hardware Service	Systems Software Support	Professional Services	Education and Training	Total
	$ Millions				
Austria	2.2	-	0.7	0.1	3.0
Belgium	4.1	-	0.8	0.1	5.0
Denmark	17.0	0.6	3.7	0.7	22.0
France	31.0	1.3	2.4	0.8	35.5
Finland	3.0	-	1.6	0.1	4.7
Germany	10.5	-	1.4	0.1	12.0
Italy	6.5	-	0.4	0.1	7.0
Netherlands	14.8	0.6	5.4	0.5	21.3
Norway	-	-	-	-	-
Spain	3.1	-	0.5	0.1	3.7
Sweden	8.8	-	0.6	0.1	9.5
Switzerland	5.3	-	1.1	0.1	6.5
United Kingdom	290.0	19.5	36.5	14.0	360.0
Rest of Europe	2.2	-	2.4	0.2	4.8
Total	398.5	22.0	57.5	17.0	495.0

Note: Systems software support is mostly bundled with the license fee.

EXHIBIT B-6

NCR
Customer Services Revenues, 1989

Country	$ Millions				
	Hardware Service	Systems Software Support	Professional Services	Education and Training	Total
Austria	5.9	0.1	1.2	0.9	8.1
Belgium	11.8	0.4	2.2	1.6	16.0
Denmark	12.1	0.4	2.3	1.6	16.4
France	108.6	2.5	20.5	14.5	146.1
Finland	5.8	0.1	1.2	0.9	8.0
Germany	119.0	3.3	23.1	16.0	161.4
Italy	48.5	1.4	9.3	6.8	66.0
Netherlands	31.3	0.9	5.9	4.0	42.1
Norway	11.6	0.4	2.2	1.6	15.8
Spain	51.2	1.6	10.2	7.1	70.1
Sweden	23.3	0.6	4.6	3.0	31.5
Switzerland	67.9	1.9	13.0	9.2	92.0
United Kingdom	89.0	2.4	18.3	13.1	122.8
Rest of Europe	10.0	1.6	2.3	1.8	15.7
Total	596.0	17.6	116.3	82.1	812.0

Note: Systems software support is mostly bundled with the license fee.

EXHIBIT B-7

Nixdorf
Customer Services Revenues, 1989

Country	$ Millions				
	Hardware Service	Systems Software Support	Professional Services	Education and Training	Total
Austria	13.0	(a)	Neg.	(b)	13.0
Belgium	7.6	(a)	Neg.	(b)	7.6
Denmark	4.4	(a)	Neg.	(b)	4.4
France	43.2	(a)	Neg.	(b)	43.2
Finland	13.7	(a)	Neg.	(b)	13.7
Germany	126.0	(a)	Neg.	(b)	126.0
Italy	15.5	(a)	Neg.	(b)	15.5
Netherlands	17.2	(a)	Neg.	(b)	17.2
Norway	10.5	(a)	Neg.	(b)	10.5
Spain	14.3	(a)	Neg.	(b)	9.6
Sweden	9.6	(a)	Neg.	(b)	23.3
Switzerland	23.3	(a)	Neg.	(b)	32.7
United Kingdom	31.3	(a)	1.4	(b)	32.7
Rest of Europe	27.0	(a)	Neg.	(b)	27.0
Total	356.6	(a)	1.4	(b)	358.0

Notes: (a) Systems software support bundled with software license fee.
(b) Not CS revenue.

EXHIBIT B-8

Nokia
Customer Services Revenues, 1989

Country	$ Millions				
	Hardware Service	Systems Software Support	Professional Services	Education and Training	Total
Austria	-	-	-	-	(a)
Belgium	-	-	-	-	(a)
Denmark	13.7	1.0	1.0	1.3	17.0
France	4.6	0.4	0.4	0.3	5.7
Finland	82.5	6.2	6.2	8.1	103.0
Germany	18.0	1.4	1.4	1.7	22.5
Italy	-	-	-	-	(a)
Netherlands	6.8	0.5	0.5	0.7	8.5
Norway	16.0	1.2	1.2	1.6	20.0
Spain	13.7	1.0	1.0	1.3	17.0
Sweden	72.1	5.4	5.4	7.1	90.0
Switzerland	3.0	0.2	0.3	0.3	3.8
United Kingdom	6.8	0.5	0.5	0.7	8.5
Rest Of Europe	-	-	-	-	-
Total	237.2	17.8	17.9	23.1	296.0

Note: (a) Use agents, therefore no CS revenue.

EXHIBIT B-9

Olivetti
Customer Services Revenues, 1989

Country	Hardware Service	Systems Software Support	Professional Services	Education and Training	Total
	$ Millions				
Austria	8.4	0.8	0.7	0.4	10.3
Belgium	16.0	1.2	1.2	0.9	19.3
Denmark	24.6	2.0	1.8	1.4	29.8
France	79.9	6.8	5.7	4.2	96.6
Finland	8.2	0.7	0.7	0.4	10.0
Germany	64.1	5.4	4.5	3.3	77.3
Italy	383.0	32.4	28.1	20.5	464.0
Netherlands	40.3	3.4	2.9	2.1	48.7
Norway	15.4	1.2	1.2	0.8	18.6
Spain	31.5	2.8	2.3	1.8	38.4
Sweden	15.4	1.3	1.2	0.9	18.8
Switzerland	31.8	2.6	2.2	1.7	38.3
United Kingdom	78.3	5.2	4.1	3.2	90.8
Rest of Europe	14.1	1.2	0.4	0.4	16.1
Total	811.0	67.0	57.0	42.0	977.0

EXHIBIT B-10

Philips
Customer Services Revenues, 1989

Country	$ Millions				
	Hardware Service	Systems Software Support	Professional Services	Education and Training	Total
Austria	26.5	3.0	1.4	0.6	31.5
Belgium	15.5	0.6	0.5	0.4	17.0
Denmark	2.4	0.1	-	-	2.5
France	36.0	3.0	2.4	0.6	42.0
Finland	2.0	-	-	-	2.0
Germany	70.0	4.5	2.5	1.0	78.0
Italy	14.5	0.6	0.5	0.4	16.0
Netherlands	50.5	4.5	3.1	0.9	59.0
Norway	4.5	0.3	0.1	0.1	5.0
Spain	24.5	1.1	1.0	0.4	27.0
Sweden	26.5	3.0	1.4	0.6	31.5
Switzerland	13.0	1.0	0.7	0.3	15.0
United Kingdom	37.5	2.0	1.8	0.7	42.0
Rest of Europe	2.0	-	-	-	2.0
Total	325.4	23.7	15.4	6.0	370.5

EXHIBIT B-11

Prime
Customer Services Revenues, 1989

Country	$ Millions				
	Hardware Service	Systems Software Support	Professional Services	Education and Training	Total
Austria	5.2	1.8	1.5	0.7	9.2
Belgium	5.2	1.8	1.6	0.7	9.3
Denmark	7.8	2.9	2.1	1.3	14.1
France	38.8	13.6	11.1	5.9	69.4
Finland	2.5	0.9	0.8	0.4	4.6
Germany	53.3	18.3	15.1	7.8	94.5
Italy	23.9	8.3	6.7	3.7	42.6
Netherlands	12.8	4.5	3.6	1.9	22.8
Norway	5.1	1.7	1.5	0.7	9.0
Spain	10.5	3.8	3.0	1.7	19.0
Sweden	7.6	2.7	2.1	1.2	13.6
Switzerland	5.0	1.7	1.6	0.7	9.0
United Kingdom	72.3	25.3	21.0	11.4	130.0
Rest of Europe	5.0	1.7	1.5	0.7	8.9
Total	255.0	89.0	73.2	38.8	456.0

EXHIBIT B-12

Rank Xerox
Customer Services Revenues, 1989

Country	Hardware Service	Systems Software Support	Professional Services	Education and Training	Total
	$ Millions				
Austria	5.1	(a)	Neg.	Neg.	5.1
Belgium	5.3	(a)	Neg.	Neg.	5.3
Denmark	5.4	(a)	Neg.	Neg.	5.4
France	37.3	(a)	0.27	0.13	37.7
Finland	4.4	(a)	0.15	0.15	4.7
Germany	32.5	1.3	0.26	0.24	34.3
Italy	5.4	(a)	0.13	0.12	5.65
Netherlands	9.3	(a)	0.12	0.23	9.65
Norway	4.8	0.2	0.13	0.12	5.25
Spain	7.7	(a)	0.26	0.24	8.2
Sweden	7.5	(a)	0.13	0.12	7.75
Switzerland	3.8	(a)	Neg.	0.1	3.9
United Kingdom	29.7	(a)	0.5	0.4	30.6
Rest of Europe	2.5	(a)	Neg.	Neg.	2.5
Total	160.7	1.5	1.95	1.85	166.0

Note: (a) Systems software support not separated.

EXHIBIT B-13

Siemens
Customer Services Revenues, 1989

Country	$ Millions				
	Hardware Service	Systems Software Support	Professional Services	Education and Training	Total
Austria	20.3	1.7	1.4	1.1	24.5
Belgium	7.3	0.6	0.5	0.4	8.8
Denmark	14.8	1.4	1.1	0.8	18.1
France	22.0	1.7	1.6	1.2	26.5
Finland	1.7	0.1	0.1	0.1	2.0
Germany	571.0	46.2	40.1	30.7	688.0
Italy	29.3	2.4	2.3	1.8	35.8
Netherlands	7.4	0.7	0.5	0.4	9.0
Norway	7.2	0.6	0.5	0.4	8.7
Spain	23.2	1.9	1.6	1.3	28.0
Sweden	7.3	0.6	0.5	0.4	8.8
Switzerland	19.6	1.6	1.3	0.9	23.4
United Kingdom	6.6	0.6	0.5	0.4	8.1
Rest of Europe	3.3	0.4	0.4	0.2	4.3
Total	741.0	60.5	52.4	40.1	894.0

EXHIBIT B-14

Unisys
Customer Services Revenues, 1989

Country	$ Millions				
	Hardware Service	Systems Software Support	Professional Services	Education and Training	Total
Austria	11.7	0.2	0.6	-	12.5
Belgium	23.4	1.9	2.8	-	28.1
Denmark	8.6	1.1	0.9	-	10.6
France	102.0	5.2	30.8	-	138.0
Finland	15.4	1.9	0.9	-	18.2
Germany	62.3	4.1	8.5	-	74.9
Italy	44.2	3.2	5.3	-	52.7
Netherlands	49.0	4.2	4.8	-	58.0
Norway	5.1	0.8	0.7	-	6.6
Spain	37.6	3.9	2.7	-	44.2
Sweden	36.9	3.8	2.7	-	43.4
Switzerland	64.4	7.0	4.4	-	75.8
United Kingdom	119.0	9.7	16.5	-	145.2
Rest of Europe	19.0	2.1	2.7	-	23.8
Total	598.6	49.1	84.3	(a)	732.0

Note: (a) Not CS revenue.

EXHIBIT B-15

Wang
Customer Services Revenues, 1989

Country	$ Millions				
	Hardware Service	Systems Software Support	Professional Services	Education and Training	Total
Austria	2.9	0.8	0.7	0.4	4.8
Belgium	9.3	2.6	2.1	1.0	15.0
Denmark	4.3	1.1	0.9	0.6	6.9
France	61.9	17.1	13.6	7.4	100.0
Finland	1.5	0.5	0.3	0.1	2.4
Germany	31.0	8.5	6.8	3.7	50.0
Italy	18.9	5.2	4.1	2.3	30.5
Netherlands	8.0	2.1	1.7	1.0	12.8
Norway	5.5	1.6	1.3	0.6	9.0
Spain	6.6	1.8	1.5	0.8	10.7
Sweden	12.1	3.3	2.8	1.5	19.7
Switzerland	2.6	0.8	0.7	0.4	4.5
United Kingdom	132.0	37.0	28.2	15.8	213.0
Rest of Europe	3.9	1.1	1.0	0.7	6.7
Total	300.5	83.5	65.7	36.3	486.0

EXHIBIT B-16

Other Vendors' Western European Customer Services Revenues, 1989

Vendor	$ Millions				
	Hardware Service	Systems Software Support	Professional Services	Education and Training	Total
Memorex	121	11	14	9	155
Data General	117	11	7	(a)	135
Norsk Data	79	25	12	12	128
Amdahl	94	16	3	7	120
Tandem	92	11	10	7	120
Storage Tek	56	6	6	5	73
Sun Micro	53	6	6	4	69
Cray	40	4	4	3	51
CDC	29	4	5	2	40
Concurrent	22	3	2	2	29
HDS	18	2	2	1	23

Note: (a) Included in professional services.

C

Western European Customer Services Market—Country Market Growth Forecast, 1990-1995 in ECUs

EXHIBIT C-1

Western European Customer Services Market Growth, 1990-1995

Service Sector	User Expenditures (ECU Millions)							CAGR 1990-1995 (Percent)
	1989	1990	1991	1992	1993	1994	1995	
Hardware Service	11,030	11,580	12,150	12,700	13,230	13,650	14,100	4
Systems Software Support	845	985	1,130	1,310	1,510	1,730	2,000	15
Professional Services	985	1,240	1,560	1,960	2,440	3,040	3,750	25
Education and Training	550	645	760	880	1,020	1,180	1,350	16
Total	13,410	14,450	15,600	16,850	18,200	19,600	21,200	8
Annual Growth (Percent)	-	8	8	8	8	8	8	-

Note: Numbers are rounded.

EXHIBIT C-2

Western European Customer Services Country Market Growth, 1990 - 1995

Country	User Expenditures (ECU Millions)							CAGR 1990-1995 (Percent)
	1989	1990	1991	1992	1993	1994	1995	
Austria	260	280	300	325	350	375	405	7.5
Belgium	340	370	395	430	460	495	535	7.5
Denmark	315	335	355	380	405	430	465	6.5
France	2,345	2,490	2,630	2,790	2,950	3,120	3,310	6.0
Finland	265	285	305	325	345	370	390	6.5
Germany	2,660	2,790	2,950	3,110	3,280	3,450	3,630	5.5
Italy	1,705	1,830	1,980	2,140	2,310	2,480	2,690	8.0
Netherlands	730	785	840	910	980	1,060	1,150	8.0
Norway	290	310	340	365	395	430	465	8.0
Spain	575	640	710	790	880	975	1,085	11.0
Sweden	555	605	655	715	780	850	920	9.0
Switzerland	505	560	616	675	745	820	930	10.0
United Kingdom	2,515	2,790	3,105	3,430	3,800	4,170	4,580	10.0
Rest of Europe	350	380	420	465	520	575	645	11.0
Total	13,410	14,450	15,600	16,850	18,200	19,600	21,200	8.0

Note: Numbers are rounded.

D

Market Forecast Reconciliation

EXHIBIT D-1

Customer Services Market Forecast Reconciliation— Service Sectors

Service Sector	1989 Forecast of 1989 Market	1990 Forecast of 1989 Market	CAGR Forecast in 1989 Report 1989-1994 (Percent)	CAGR Forecast in 1990 Report 1990-1995 (Percent)
Hardware Service	12,100	12,410	4	4
Systems Software Support	970	950	20	15
Professional Services	1,060	1,110	24	25
Education and Training	600	620	18	16
Total	14,730	15,090	8	8

Note: Rounded numbers.

EXHIBIT D-2

Customer Services Market Forecast Reconciliation—Country Markets

Service Sector	1989 Forecast of 1989 Market	1990 Estimate of 1989 Market	CAGR Forecast in 1989 Report 1989-1994 (Percent)	CAGR Forecast in 1990 Report 1990-1995 (Percent)
Austria	AS 3540m	AS 3710m	8.0	7.5
Belgium	BF 14990m	BF 14400m	8.0	7.5
Denmark	DK 2490m	DK 2470m	6.0	6.5
France	FF 16300m	FF 16100m	7.0	6.0
Finland	FM 1250m	FM 1280m	6.0	6.5
Germany	DM 5520m	DM 5440m	6.0	5.5
Italy	Lira 2890b	Lira 2560b	13.0	8.0
Netherlands	DFR 1740m	DFR 1670m	6.0	8.0
Norway	NK 1680m	NK 2280m	6.0	8.0
Spain	Pta 79900m	Pta 74300m	16.0	11.0
Sweden	SeK 3670m	SeK 4090m	8.0	9.0
Switzerland	SF 970m	SF 910m	6.0	10.0
United Kingdom	£ 1780m	£ 1860m	7.0	10.0
Rest of Europe	$ 330m	$ 290m	8.0	11.0

Note: Rounded numbers.