CUSTOMER SERVICES MARKET

ANALYSIS AND FORECAST

WESTERN EUROPE

1991-1996

INPUT

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INPUT OFFICES

North America

San Francisco
1280 Villa Street
Mountain View, CA 94041-1194
Tel. (415) 961-3300 Fax (415) 961-3966

New York
Atrium at Glenpointe
400 Frank W. Burr Blvd.
Teaneck, NJ 07666
Tel. (201) 801-0050 Fax (201) 801-0441

Washington, D.C.
INPUT, INC.
1953 Gallows Road, Suite 560
Vienna, VA 22182
Tel. (703) 847-6870 Fax (703) 847-6872

International

London
INPUT LTD.
Piccadilly House
33/37 Regent Street
London SW1Y 4NF, England
Tel. (071) 493-9335 Fax (071) 629-0179

Paris
INPUT SARL
24, avenue du Recteur Poincaré
75016 Paris, France
Tel. (33-1) 46 47 65 65 Fax (33-1) 46 47 69 50

Frankfurt
INPUT LTD.
Sudetenstrasse 9
D-6306 Langgöns-Niederkleen, Germany
Tel. (0) 6447-7229 Fax (0) 6447-7327

Tokyo
INPUT KK
Saida Building, 4-6
Kanda Sakuma-cho, Chiyoda-ku
Tokyo 101, Japan
Tel. (03) 3864-0531 Fax (03) 3864-4114

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INPUT®

Piccadilly House, 33/37 Regent Street, London SW1Y 4NF, U.K. +44 71 493 9335
24, avenue du Recteur Poincaré, 75016 Paris, France +33 1 46 47 65 65
Sudetenstrasse 9, D-6306 Langgöns-Niederkleen, Germany +49 6447 7229

Researched and Published by
INPUT
Piccadilly House
33/37 Regent Street
London SW1Y 4NF
England

Customer Services Programme - Europe

Customer Services Market Analysis and Forecast
Western Europe, 1991-1996

CE-SM1 - 1991

Abstract

This study provides a forecast for the growth of user expenditure for customer services in Western Europe covering the five year period 1991 to 1996.

Market forecasts are provided for the growth of the customer services market in thirteen Western European Country markets. Country markets included are:

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

The forecasts include the activities of three types of vendor active within the customer services market:

- Customer Services Vendors
- Independent Software and Services Vendors
- Non-industry vendors.

Estimates for the customer services revenues of the leading twelve equipment vendors in 1990 are provided, segmented by service sector and country market.

Forecasts provided in this study are presented in local European currencies, US dollars and ECU's.

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Appendices

I

Introduction

I Introduction

A
Objectives and Scope

This study is produced by INPUT as part of its 1991 Customer Services Programme in Western Europe.

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 1991 to 1996.

Further objectives are to:

- Assess the size of and structure of the individual European country markets for customer services and provide a five-year growth forecast for each, for the period 1991 to 1996.
- 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 study was conducted using the following sources of information:

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

C
Economic Statistics

Details of the currency conversion rates and inflation assumptions used in the compilation of this study are contained in Volume 1 Section D of the Customer Services Programme Binder.

D
Structure

The remaining chapters of this study are structured as follows:

- Chapter II is an executive overview which provides a summary of the study.
- Chapter III provides details of the market definition and vendor delivery modes.
- Chapter IV provides an analysis of the overall customer services market in Western Europe.
- Chapter V provides an analysis of the customer services market in thirteen individual European country markets, expressed in local currency, for the five year period 1991 to 1995.
- Appendix A contains estimates for the customer services revenues of the leading twelve equipment vendors in Western Europe.
- Appendix B provides a reconciliation between this current market forecast and the previous market forecast made in 1990.

II

Executive Overview

II Executive Overview

A
Customer Services Market Proves Resistant to Economic Recession

Growth of user expenditure for customer services has proved to be relatively immune to the effects of economic recession in Western Europe. Market growth is forecast to remain relatively constant at about 7.5% over the period 1991 to 1996 at a time when other computer service markets, for example the software and services market, are exhibiting declining growth.

Against this background of constant market growth the hardware maintenance sector is progressively declining. The hardware maintenance sector of the market is forecast to grow at about 2.5% CAGR over the five year period 1991 to 1996, which after allowing for inflation content (about 4%) indicates a decline in real terms of about 1.5%.

Offsetting the declining growth of hardware maintenance, growth in the non-maintenance sectors of the market remain comfortably ahead of inflation levels. Non-maintenance sectors of the Western European customer services market are forecast to grow at about 13.0% CAGR between 1991 to 1996.

As a consequence of higher growth, the non-maintenance sectors of the market are balancing the decline in hardware maintenance revenues resulting in constant growth over the forecast period.

The independent maintenance sector of the market is forecast to grow at about 15% CAGR over the period 1991 to 1996. Therefore, market penetration by independent maintenance vendors will increase and in 1996 the equipment vendors will lose about $3.5 billion in hardware maintenance revenues to the independents.

Relatively substantial customer services revenues are being accrued by non-industry vendors. These revenues result from the provision of environmental services by specialist product companies, for example air conditioning or cabling specialists, and building/construction companies. It is estimated that these non-industry vendors currently retain about a 60% market share in the environmental services market.

The key characteristics of the customer services market are highlighted by Exhibit II-1.

Against this market background equipment vendors are recommended to pursue strategies that:

- Minimise losses of hardware maintenance revenues to independents by adopting competitive positions.
- Continue to develop value-added service products to maintain growth of non-maintenance revenues.
- Develop partnerships with users and non-industry vendors in order to maximise environmental services revenues and achieve higher levels of market penetration.

Exhibit II-1

Customer Services Market in Western Europe

Key characteristics

- Hardware maintenance revenue growth below inflation levels and slowly declining
- Non-maintenance revenues growing at over three times inflation rate
- Independent maintenance vendors will continue to increase market share
- Non-industry vendors accrue substantial customer services revenues

B
Customer Services Market Definition

The customer services market is segmented by INPUT into four service sectors. These four service sectors are identified by Exhibit II-2 and 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 Support; software maintenance activities relating to systems software (not applications), including associated support activities.

- Professional Services; this sector of the customer services market relates to the provision of professional services concerned with system platform operations. Examples are:

  - Environmental services
  - Network services
  - Consultancy services
  - Problem management services
  - Systems software evaluation.

- Training and Education; within the definition of customer services, this sector of the market relates to those elements of training and education concerned with system platform operations. Activities relate to computer equipment or systems software; for example operations training in the use of systems software.

Exhibit II-2

Customer Services Market Definition - Service Sector

- Hardware Service
- Systems Software Support
- Professional services
- Training and education

C
The Customer Services Market in Western Europe

1. Market Growth 1991 to 1996

Exhibit II-3 provides the forecast for the growth of user expenditure for customer services in Western Europe.

User expenditure for customer services in Western Europe is estimated at $27 billion in 1991 and forecast to grow at about 7.5% CAGR to reach almost $40 billion by 1996.

Included within this forecast are three categories of vendor:

- Customer services vendors:
  - Equipment vendors
  - Independent maintenance vendors
  - Dealers and distributors.
- Independent software and services vendors:
  - Customer Services revenues resulting from indirect equipment sales
  - Focussed activities, for example systems platform level training.
- Non-Industry vendors:
  - Specialist product companies, for example air conditioning suppliers who also provide installation services
  - Building and Construction companies providing environmental facilities dedicated to computer installation as part of major construction projects.

Market structure, in terms of contribution by service sector can be analysed as follows:

- Hardware maintenance services account for about 56% of user expenditure in 1991 reducing to about 44% by 1996.

- Systems software support accounts for about 7% of user expenditure in 1991 increasing to about 9% by 1996.

- Professional services account for about 32% of user expenditure in 1991 increasing to 41% by 1996.

- Training services account for about 5% of user expenditure in 1991 increasing slightly to 6% by 1996.

Exhibit II-3

Western European Customer Services Market Growth, 1991-1996 ($ Billions)

SERVICE SECTOR	1991	1996	CAGR (Percent)
Hardware Service	15.3	17.1	2.5
Systems Software Support	1.8	3.5	13.5
Professional Services	8.7	6.1	13.0
Training and Education	1.3	2.4	13.0
TOTAL (ROUNDED)	**27.0**	**39.0**	**7.5**

2. Market Growth by Vendor 1991 to 1996

Exhibit II-4 provides a forecast for the growth of user expenditure for customer services segmented by vendor type.

Industry vendors account for about 76% of user expenditure for customer services in Western Europe. The remainder of user expenditure being with non-industry vendors.

Market Structure, in 1991, in terms of contribution by vendor type is as follows:

- Industry Vendors
  - Equipment vendors account for about 69% of user expenditure.
  - Independent maintenance vendors account for about 6% of user expenditure.
  - Dealers and distributors account for about 1% of user expenditure.
  - Independent software and services vendors account for about 2% of user expenditure.

- Non-industry vendors:
  - Specialist product companies account for about 6% of user expenditure
  - Building and construction companies account for about 18% of user expenditure.

Exhibit II-4

Western European Customer Services - Market Sector Growth 1991 - 1996 ($ Billions)

MARKET SECTOR	1991	1996	CAGR (Percent)
Industry vendors	20.7	29.4	7.0
Non-industry vendors	6.3	9.6	9.0
TOTAL	**27.0**	**39.0**	**7.5**

D
Leading Equipment Vendor Customer Services Revenues

The 1990 customer services revenues of the leading five equipment vendors in Western Europe are listed in Exhibit II-5.

Exhibit II-5

Western European Customer Services - Leading Equipment Vendor Revenues 1990

VENDOR	1990 REVENUE ($ Millions)
IBM	3,450
DIGITAL	2,200
SIEMENS NIXDORF	1,475
BULL	1,110
NCR	1,000

The leading five equipment vendors between them account for about 35% of user expenditure for customer services in Western Europe.

Relating the revenues of the leading five equipment vendors to the industry vendor sector of the market, which is estimated about $20.7 billion, indicates a 45% market share in this sector.

The revenues of the leading three equipment vendors are presented in more detail by Exhibits II-6 to II-8 as follows:

- IBM - Exhibit II-6
- Digital - Exhibit II-7
- Siemens Nixdorf - Exhibit II-8.

These more detailed exhibits indicate the degree of dependency on hardware maintenance revenues that the equipment vendor customer services organisations still retain. Much progress has been made in developing non-maintenance revenue streams, but the dependency on hardware maintenance revenues remains. For example:

- IBM obtains about 83% of customer services revenues in Western Europe from hardware maintenance.
- Digital has been more successful at developing non-maintenance revenues, relying on maintenance for about 60% of customer services revenues.
- Siemens Nixdorf is more heavily dependent on hardware maintenance revenues than IBM obtaining about 87% of customer services revenues for this activity.

Exhibit II-6

IBM
1990 Western European Customer Services Revenues

SERVICE SECTOR	REVENUE ($ Millions)
Hardware Service	2,920
Systems Software Support	Bundled
Professional Services	465
Training and Education	155
TOTAL	**3,540**

Exhibit II-7

Digital
1990 Western European Customer Services Revenues

SERVICE SECTOR	REVENUE ($ Millions)
Hardware Service	1,320
Systems Software Support	365
Professional Services	370
Training and Education	145
TOTAL	**2,200**

Exhibit II-8

Siemens Nixdorf
1990 Western European Customer Services Revenues

SERVICE SECTOR	REVENUE ($ Millions)
Hardware Service	1,280
Systems Software Support	Bundled in 1990
Professional Services	108
Training and Education	87
TOTAL	**1,475**

E
Country Market Growth 1991 to 1996

Exhibit II-9 provides a forecast for the growth of user expenditure for customer services in the four largest country markets in Western Europe.

The combined effect of these four largest country markets accounts for almost 70% of user expenditure for customer services in Western Europe. The percentage accounted for by each country market individually is as follows:

- France - 16%
- Germany - 18%
- United Kingdom - 22%
- Italy - 12%.

IBM is the leading equipment vendor, in terms of customer services revenues, in three of the four largest country markets in Western Europe. The exception to IBM's market leadership is provided by the German market where, as a result of acquiring Nixdorf, Siemens Nixdorf relegate IBM to second place.

Exhibit II-9

Customer Services Country Market Growth, 1991-1996

($ Billions)

COUNTRY MARKET	1991	1996	CAGR (Percent)
France	4.4	6.0	6.5
Germany	4.9	6.7	6.0
United Kingdom	6.0	8.5	7.0
Italy	3.2	4.7	8.0
Rest of Europe	8.6	13.2	9.0
TOTAL	**27.0**	**39.0**	**7.5**

III

Market Structure and Delivery Modes

III Market Structure and Delivery Modes

A
Introduction

In forecasting the growth of the customer services market in Western Europe INPUT has previously focused this forecast exclusively on the revenues of customer services vendors and organisations.

However, the total customer services market is much larger that the portion represented by the customer services vendors. This research paper provides an assessment of the total customer services market for 1991 in Western Europe divided as follows:

- User expenditure for customer services sub-divided:
  - Customer Services Vendors
  - Non-Customer services vendors
- Captive market

Assessed in this manner the total customer services market in Western Europe is valued at approaching $30 billion in 1991.

As a consequence of this re-evaluation of the customer services market INPUT's previous restricted definitions have been extended to cover total user expenditure for customer services.

An assessment of the distribution of customer services revenues that result from the sale of equipment through indirect sales channels is also provided.

B
Market Definition

1. Market Definition

INPUT's definition of 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 supplies sales
- Sales of spare parts

Exhibit III-1

Hardware Products Market Structure

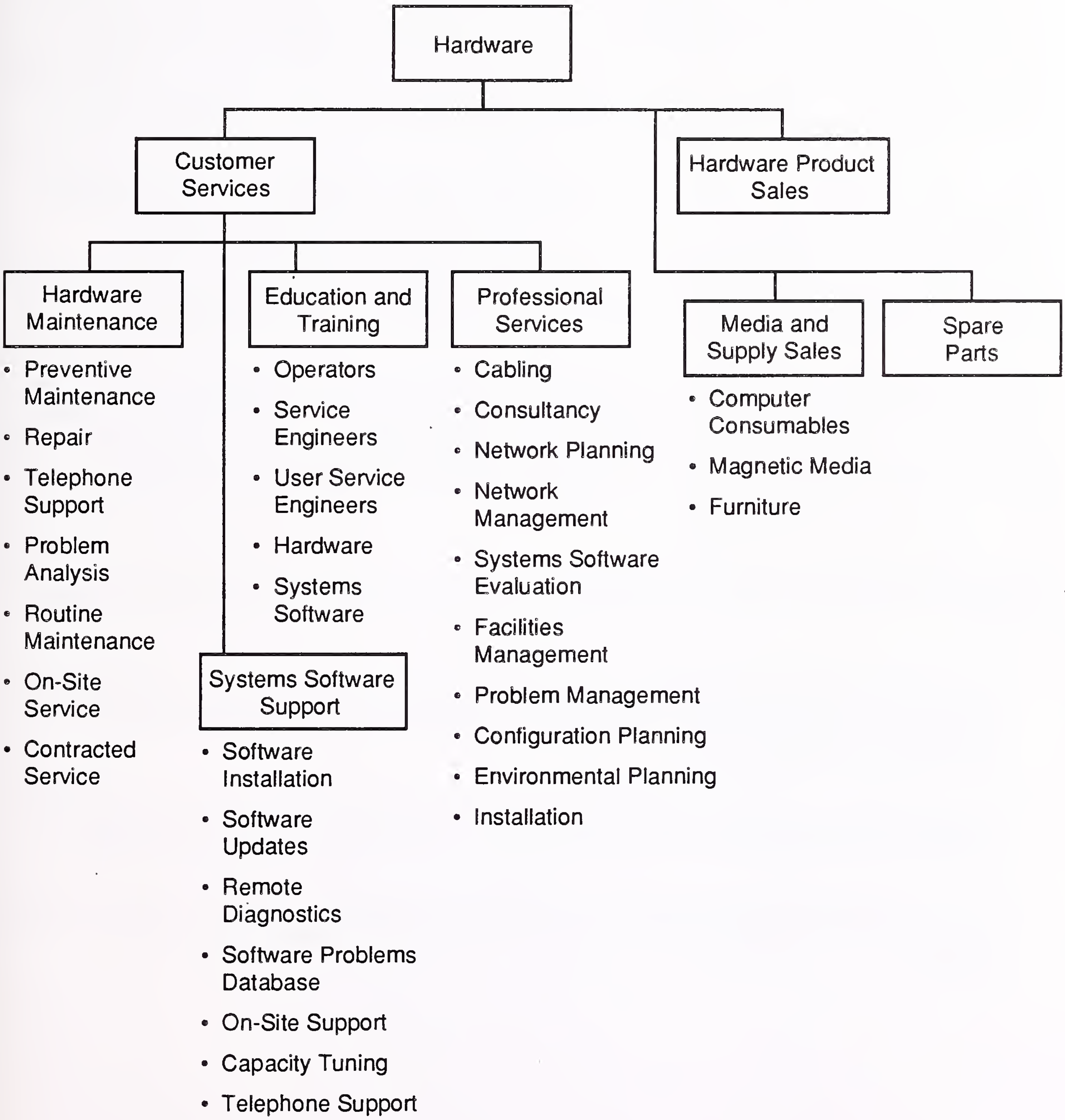


Exhibit III-1 indicates the principal activities undertaken within each of the four service sectors. In each service sector, INPUT's definition of user expenditure includes only those services provided to users by an external organization on a chargeable basis. Services provided by subsidiaries or internal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

Software support activities that are included in the customer services market are those activities related to support of systems software. Exhibit III-2 illustrates 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 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.

2. Service Vendor Definition

INPUT's definitions of the three primary categories of customer services vendor 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.
- Independent 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).

3. Service Sector Definition

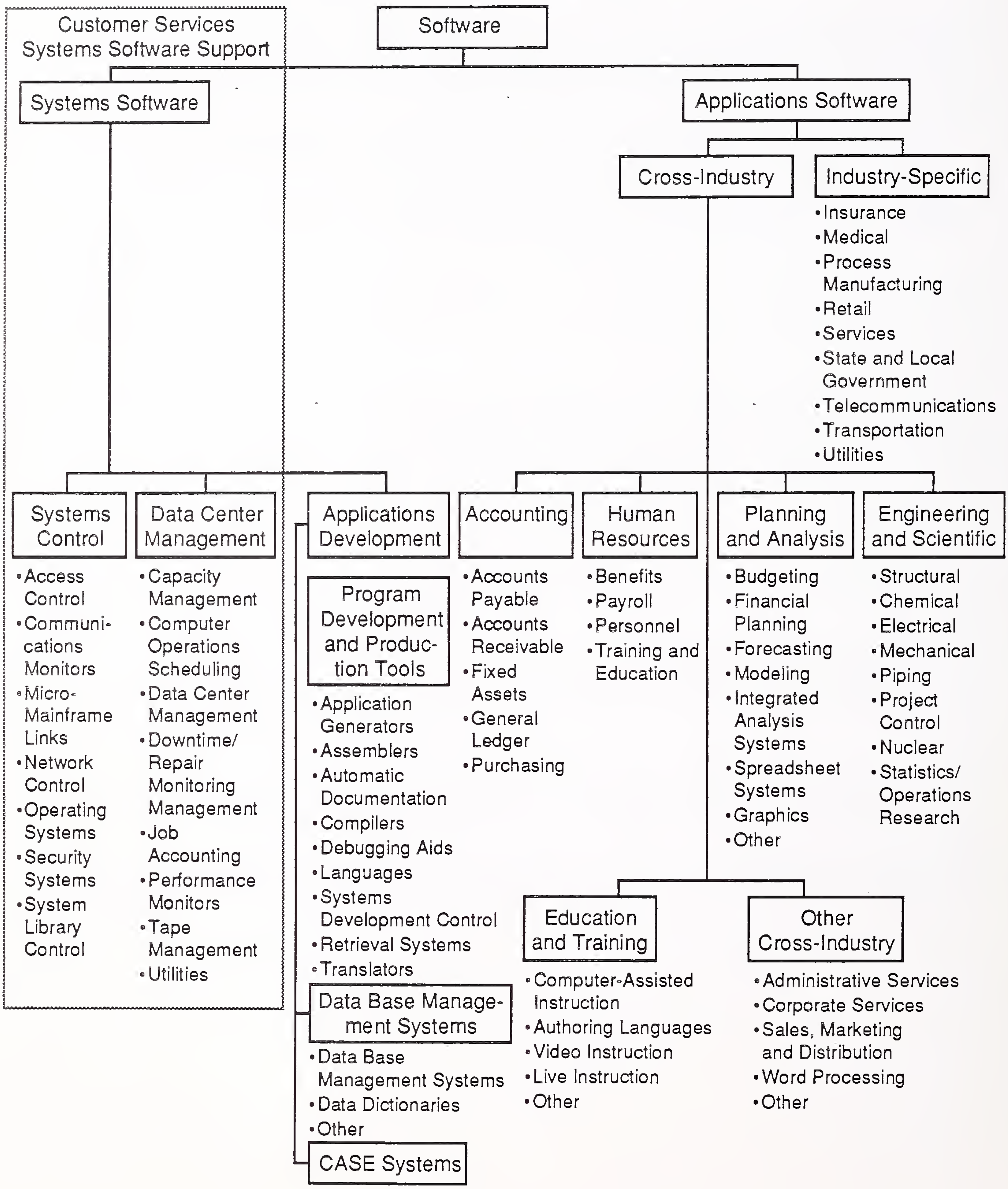
Service sectors are defined by INPUT as follows:

- 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.

Exhibit III-2

Software Products Market Structure



- Professional services: within the definition of customer services, this sector of the market refers to those elements of professional services that are concerned with the support of the systems platform and its operating environment for example:
  - 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 relate to the systems platform and its operation. 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.

C
Market Structure and Delivery Modes

1. Customer Services Revenue Streams

Exhibit III-3 provides a diagrammatic representation of the total customer services market. This model indicates the captive and non-captive revenue components of the total customer services market and the various revenue streams that combine to form the total market.

User expenditure for customer services forms that portion of the market where users are provided with vendor services for which they pay separately. This portion of the market sub-divides into two components:

- Customer services vendor revenues, this portion of the customer services market referring to vendors for whom customer services revenues are considered to be a primary revenue stream:

- Equipment Vendors
- Independent Maintenance Companies
- The dealer/distributor portion of the indirect equipment resellers market.

• Non-customer services vendor revenues refer to user expenditure, for customer services, with vendors for whom customer services revenues are not considered to be a primary source of revenue. These revenue streams result from the following activities:

  - The system integration and turnkey portion of the indirect equipment resellers market. In a minority of cases, about 20%, these vendors provide service and support for the system platform.

  - Software and services vendors whose primary source of revenue results from such items as custom software development will sometimes also provide systems support..

  - Non-industry vendors such as building/construction companies or specialist product companies that provide environmental services. Provision of these services is a secondary aspect to the vendors main line of business, for example a specialist air conditioning company would service many industry sectors.

The captive portion of the customer services market relates to the provision of services for which the user does not pay separately. For example:

• Systems software support charges that are bundled as part of the software license fee rather than paid for separately by the user. Equipment vendors who wholly or partly charge for systems software support in this way include IBM, ICL and Bull.

• Users who wholly or partly provide their own customer services from the use of in-house resources. In this case the charges for services are accrued as an in-house cost and therefore do not result in external expenditure.

• Customer services that are provided by systems operations (FM) vendors in support of their own computer operations that are providing a service to the user. In this case the systems operations vendor in fact substitutes for the original end user as a consequence of the systems operations contract. However, it is considered that the provision of customer services to systems operations vendors is mostly sub-contracted to either the vendor of the equipment or to an independent maintenance/service vendor.

2. Total Customer Services Market in Western Europe, 1991

An estimate for the size of the total customer services market for 1991 in Western Europe is provided by Exhibit III-4. This estimate includes both open market user expenditure for services paid for separately and the captive portion of the market.

Customer services vendor revenues provided in Exhibit III-4 are based in INPUT's 1990 forecasts and also on 1990 currency conversion rates and inflation assumptions. Therefore these estimates are at present provisional pending completion of INPUT's 1991 forecasts.

Exhibit III-3

Customer Services Revenue Streams

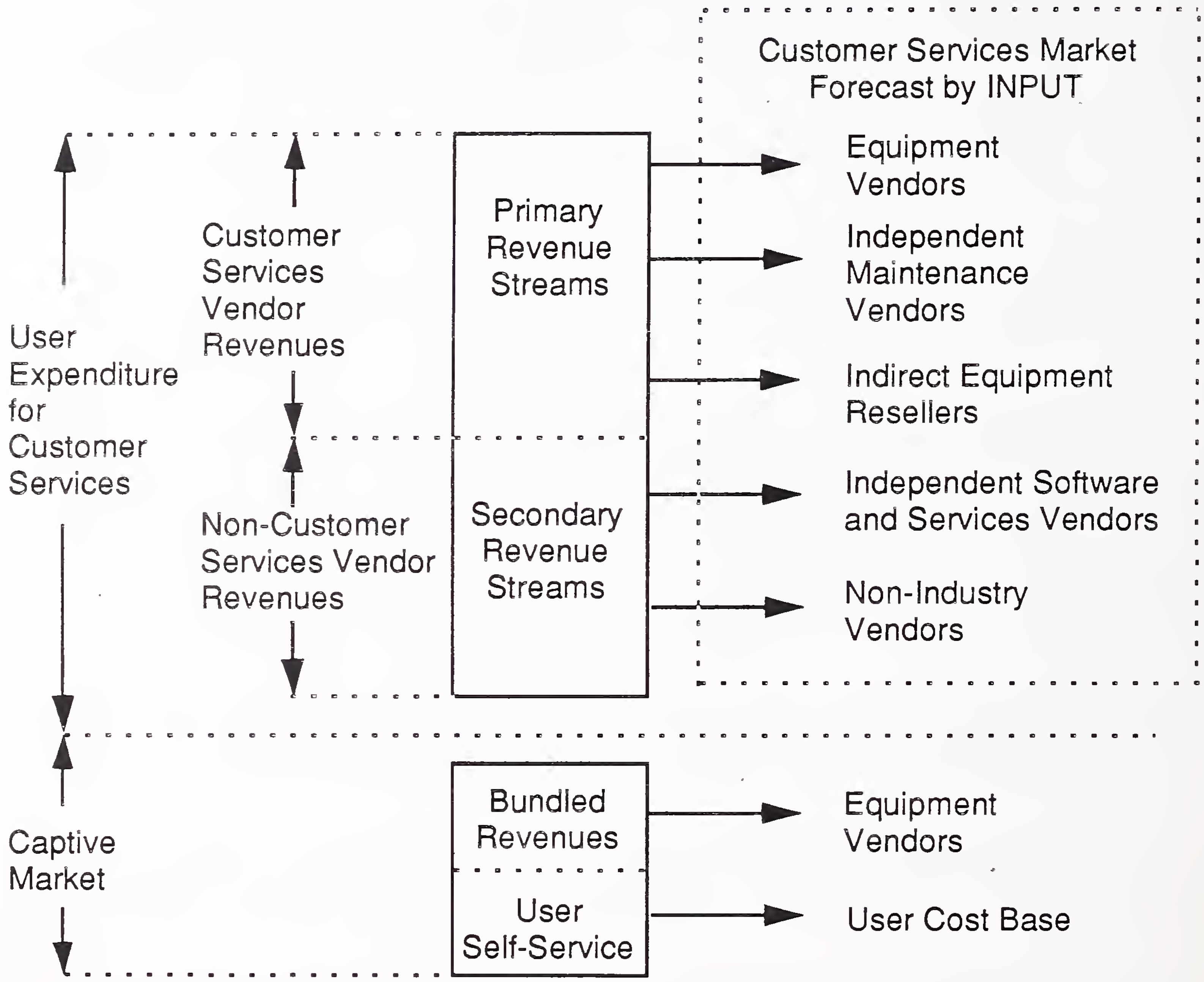


Exhibit III-4

Western Europe
Estimated Total Customer Services Market 1991
($ Millions)

Revenue Stream	Service Sector	Hardware Maintenance	Systems Software Support	Professional Services	Education and Training	Total
User Expenditure for Customer Services	Customer services vendor revenues	13,700	1,280	1,760	850	17,590
	Non-customer services vendor revenues					
	• Software and services vendors					
	- Revenue resulting from indirect equipment sales	70	5	10	5	470
	- Focused activities	-	225	-	155	
	• Non-industry vendors	-	-	5,700	-	5,700
	Total user expenditure	13,770	1,510	7,470	1,010	23,760
Captive Market	Bundled revenues	-	550	-	-	550
	User self-service	140	80	5,000	200	5,420
	Total captive market	140	630	5,000	200	5,970
Total Potential Market (rounded)		13,900	2,150	12,500	1,200	29,800

Note: Provisional estimates
Values based on INPUT's 1990 currency conversion rates

Exhibit III-4 indicates that in 1991 the total customer services market represented almost $30 billion. User expenditure for customer services represents about 80% of this total, the remaining 20% forming the captive portion of the market.

User expenditure for customer services in the open market, that is services paid for separately, totals about $23.7 billion. Of this amount about 74% of user expenditure is with customer services vendors, for whom customer services is considered a primary source of revenue. Remaining user expenditure is represented by just under 2% being accrued by software and services vendors as a by-product of their primary business activities, and about 24% with non-industry vendors.

User expenditure for customer services provided by non-industry vendors is for environmental services provided by building/construction companies and specialist product companies. These companies tend to provide environmental services to computer users as a secondary activity to their normal business activities.

The captive portion of the customer services market is in two parts. The first part is systems software support revenues, collected as an item which is bundled with the software licence fee, accounting for almost 10% of the captive market. The second and larger part of the captive portion of the customer services market results from user self service and the primary area in which this is effective in the in-house provision of professional services. User self service accounts for the remaining 90% of the captive portion of the market, of which over 90% is related to the provision of professional services.

The high professional services content of user self-service accounted for by in-house provide environmental services is estimated to represent about $4.9 billion.

In overall terms user expenditure for customer services comprises about:

- 58% for hardware maintenance
- 6% for systems software support
- 32% for professional services
- 4% for education and training.

Compared with the figure indicated for user expenditure the captive portion of the customer services market is made up as follows:

- 2% for hardware maintenance
- 11% for systems software support
- 86% for professional services
- 1% for education and training.

3. Indirect Sales Channels

Exhibit III-5 indicates an assessment of the distribution of customer services revenues that accrue as a result of equipment marketed through indirect sales channels.

Four primary indirect sales channels are illustrated by Exhibit III-5:

- Systems Integrators
- Turnkey Suppliers
- Dealers/Distributors
- OEM's

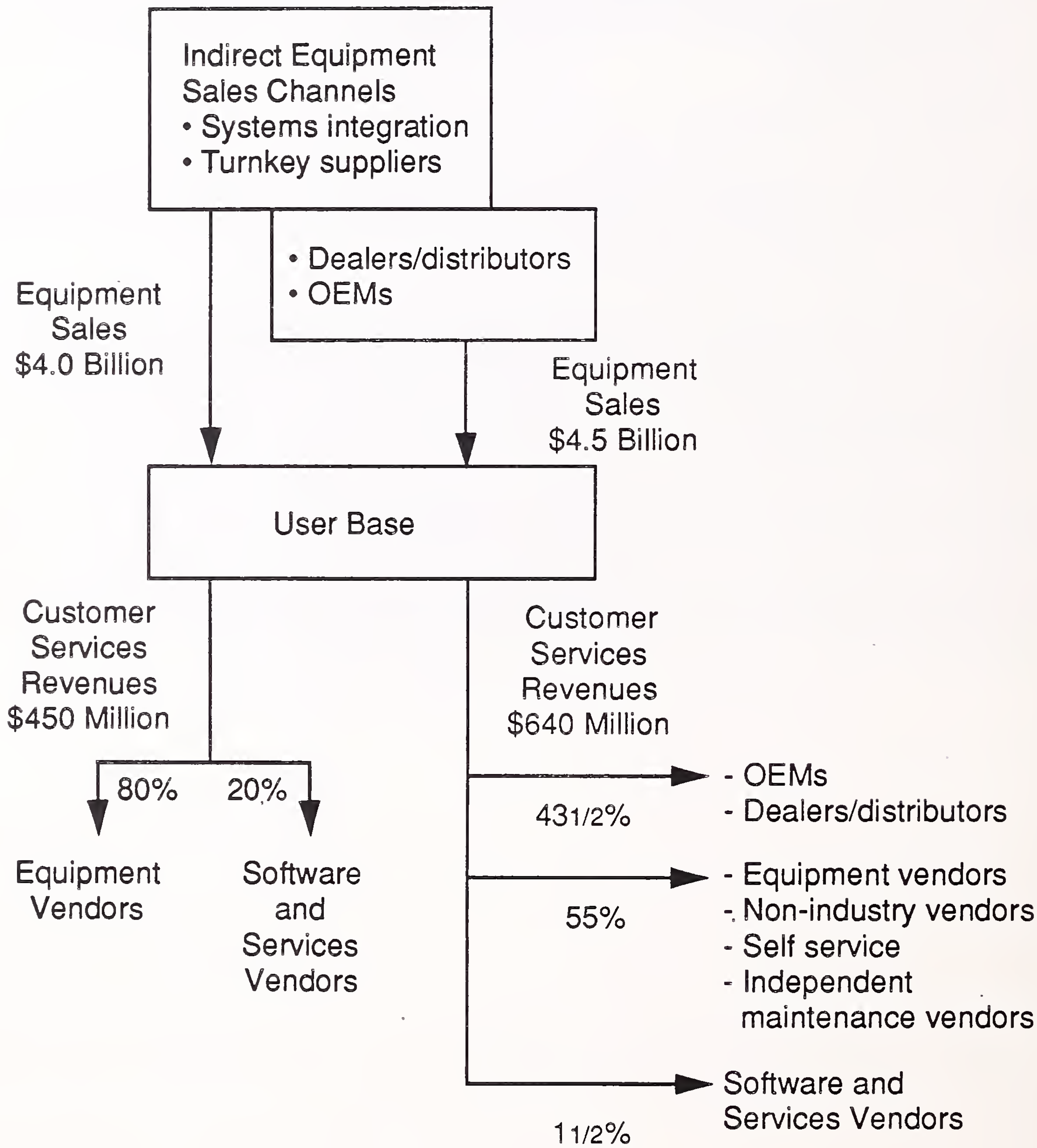
The total value of equipment sold through indirect sales channels in 1991 is estimated to be about $8.5 billion in Western Europe and the customer services revenues attributed to this level of sales is about $1.1 billion.

About 41% of the customer services revenues are the result of indirect sales through systems integrators or turnkey suppliers. The majority of these revenues, about 80%, are collected by equipment vendors due to a high percentage of indirect sales partners being non-servicing.

By comparison the percentage of customer services revenues that result from sales of equipment through dealers/distributors and OEM's that are collected by equipment vendors is much lower. most likely less than 10%. The larger portion of customer services revenues due to sales through these channels is accrued either directly by the equipment seller or by independent maintenance companies.

Exhibit III-5

Customer Services Revenues from Indirect Sales Channels



IV

Western European Customer Services Market, 1991-1996

IV Western European Customer Services Market, 1991-1996

A
Introduction

An overall forecast for the growth of user expenditure for customer services in Western Europe is presented in this section of the study. Forecasts are presented in US dollars and ECU's for both country market and service sector growth, converted from local currencies.

Details of the 1990 customer services revenues of the leading twelve equipment vendors are presented in US dollars, segmented by service sector.

B
Leading Equipment Vendor Customer Services Revenues

Estimates for the 1990 customer services revenues of the leading twelve equipment vendors in Western Europe are provided by Exhibit IV-1.

Comments relating to these customer services revenues are as follows:

- IBM; The IBM annual report contains a line item identified as maintenance. In IBM terminology maintenance relates to maintenance of the users system availability or maintaining the user's business. Therefore, this line item contains a mix of traditional hardware maintenance revenues and revenues resulting from the provision of non-maintenance services. On the basis of this understanding previous estimates for IBM customer services revenues have been revised to reflect a more accurate assessment of the revenue mix by service sector. Also, IBM still collect systems software support payments as an item bundled with the software support license fee, rather than as a separately identified payment.

- Siemens Nixdorf; In 1990 there were no unbundled systems software support revenues collected by Siemens Nixdorf. However, the bundled/unbundled approach by Siemens Nixdorf is likely to change in 1992 and a portion of system software support revenues may be unbundled and charged separately. Also, the total training revenues accrued by Siemens Nixdorf are substantially higher than the amount shown in Exhibit IV-1, the explanation is as follows:-

  - Training revenues related to applications have been excluded.

  - Siemens Nixdorf undertake a number of special vocational training courses as part of the German government scheme for the unemployed. These revenues are considered by INPUT not to form part of the IS training market and have therefore been excluded.

- A number of companies for example Bull, NCR, Unisys and Olivetti partially bundle system software support with the software licence fee or with the hardware maintenance contract. Therefore these aspects of service are not charged separately. Unisys however, are progressively unbundling system software support and have experienced relatively high growth in this area as a result.

- Bull; Training revenues accrued by Bull are not accounted for by the customer services division and have not been included in previous years estimates for customer services revenues (except for Italy). However, as part of INPUT's re-definition of the customer services market training revenues have now been included in estimates for the total customer services revenues of Bull.

- Unisys; accrue relatively substantial customer services revenues through their Professional Services Division, both professional services and training revenues. As part of INPUT's redefinition of the customer services market these revenues have now been included in estimates for the customer services revenues of Unisys. Previously Unisys professional services division revenues have been excluded from estimates. The portion of professional services division revenues included in estimates exclude any application related revenues.

- ICL; system software support is mainly bundled with the software license fee. The unbundled portion shown in estimates of ICL systems software support revenues relates primarily to value-added systems software support services in the United Kingdom market. Also, ICL accrue relatively substantial applications training revenues but these have been excluded from the estimates shown which relate solely to the customer services portion of these revenues.

- Olivetti; Estimates for the customer services revenues of Olivetti refer to the Olivetti Systems and Networks subsidiary. The Office Products subsidiary has been excluded.

Exhibit IV-1

Leading Equipment Vendor
Customer Services Revenues
1990

VENDOR	HARDWARE SERVICE	SYSTEMS SOFTWARE SUPPORT	PROFESSIONAL SERVICES	EDUCATION AND TRAINING	TOTAL
IBM	2,920	-	465	155	3,540
DIGITAL	1,320	365	370	145	2,200
SIEMENS NIXDORF	1,280	-	108	87	1,475
BULL	900	80	70	60	1,110
NCR	705	23	165	107	1,000
UNISYS	638	75	177	65	955
OLIVETTI	755	33	68	19	875
HEWLETT PACKARD	525	87	50	38	700
ICL	494	33	55	18	600
WANG	360	105	90	45	600
PRIME	300	116	102	52	570
PHILIPS	373	25	25	7	430

Note: Rounded Numbers

C
Customer Services Market in Western Europe

1. Country Market Growth 1991-1996

Exhibit IV-2 provides estimates for the growth of the customer services market in thirteen European country markets over the five year period 1991 to 1996, converted from local currencies.

The growth of the customer services market in Western Europe has proved relatively resistant to the effects of economic recession. Growth figures provided by Exhibit IV-2 include an allowance for inflation which at the overall European is calculated at about 4%, compared with the 5.5% figure used in 1990.

On the basis of a reduced inflation allowance an overall growth figure of about 6.5% CAGR would be anticipated. However, mainly as a result of including the non-industry vendor portion of the market, which is forecast to grow at about 9% CAGR, the overall market growth has increased by around 1% to the projected figure of about 7.5% CAGR.

The four largest country markets of France, Germany, the United Kingdom and Italy account for about 68% of user expenditure for customer services in Western Europe.

In overall Western Europe terms the customer services market is estimated at about $27 billion in 1991 and is forecast to grow at 7.5% CAGR to reach approximately $39 billion by 1996. One further characteristic of the market is that the decline in growth, noted in previous years, has levelled out and growth is forecast to remain constant over the forecast period 1991 to 1996.

Exhibit IV-3 provides a forecast for the growth of user expenditure for customer services in ECU's converted from local currency.

Exhibit IV-2

Country Market Growth of Customer Services 1991-1996 (US Dollars)

	User Expenditure ($ Millions)				
COUNTRY MARKET	1990	1991	GROWTH 1990-1991 (PERCENT)	1996	CAGR 1991-1996 (PERCENT)
France	4,100	4,360	6.5	6,030	6.5
Germany	4,600	4,900	6.5	6,650	6.0
United Kingdom	5,570	5,960	7.0	8,500	7.0
Italy	2,980	3,200	7.5	4,670	8.0
Sweden	1,080	1,170	9.0	1,780	8.5
Denmark	570	610	6.5	845	7.0
Norway	510	560	9.0	860	9.0
Finland	465	495	6.5	650	5.5
Netherlands	1,480	1,620	9.5	2,470	9.0
Belgium	605	660	9.0	990	8.0
Spain	1,170	1,300	11.0	2,100	10.0
Switzerland	1,150	1,270	10.5	2,000	9.5
Austria	450	490	9.0	710	8.0
Rest of Europe	460	510	10.5	840	10.5
TOTAL (ROUNDED)	**25,200**	**27,100**	**7.5**	**39,100**	**7.5**

Exhibit IV-3

Country Market Growth of Customer Services 1991-1996 (ECU's)

	User Expenditure (ECU Millions)				
COUNTRY MARKET	1990	1991	GROWTH 1990-1991 (PERCENT)	1996	CAGR 1991-1996 (PERCENT)
France	2,990	3,180	6.5	4,400	6.5
Germany	3,370	3,580	6.5	4,850	6.0
United Kingdom	4,250	4,360	7.0	6,200	7.0
Italy	2,170	2,340	7.5	3,400	8.0
Sweden	785	830	9.0	1,300	8.5
Denmark	415	445	6.5	615	7.0
Norway	370	405	9.0	625	9.0
Finland	340	360	6.5	475	5.5
Netherlands	1,080	1,180	9.5	1,800	9.0
Belgium	445	485	9.0	720	8.0
Spain	855	945	11.0	1,530	10.0
Switzerland	840	930	10.5	1,460	9.5
Austria	330	335	9.0	520	8.0
Rest of Europe	335	370	10.5	615	10.5
TOTAL (ROUNDED)	**18,600**	**19,800**	**7.5**	**28,500**	**7.5**

2. Service Sector Growth 1991-1996

Exhibit IV-4 provides a forecast for the growth of user expenditure for customer services in Western Europe segmented by service sector. Data presented in this exhibit has been converted to US dollars from local currencies.

The growth of the hardware maintenance in Western Europe is forecast at about 2.5% CAGR over the five year period 1991 to 1996. However, this growth figure includes an allowance for inflation of approximately 4% indicating that growth of the hardware maintenance market is declining in real terms, about 1.5% decline by 1996.

In 1991 user expenditure for hardware maintenance represented about 57% of the total customer services market. This figure is forecast to reduce to about 44% by 1996.

Growth in the non-maintenance service sectors remains relatively healthy and user expenditure in these sectors is forecast to grow at about 13% CAGR, a rate that is over three times the estimated rate of inflation overall in Western Europe.

The proportion of user expenditure for non-maintenance services is as follows:

- Systems software support; In 1991 user expenditure is estimated at about 7% of the total for customer services, growing to approximately 9% by 1996.
- Professional services; In 1991 user expenditure is estimated at about 32% of the total for customer services, growing to about 41% by 1996.
- Education and Training; In 1991 user expenditure is estimated at about 5% of the total for customer services, growing only slightly to approximately 6% by 1996.

Exhibit IV-5 provides a forecast for the growth of user expenditure for customer services expressed in ECU's. Data in this exhibit is segmented by service sector and has been converted to ECU's for local currency.

Exhibit IV-4

Western European Customer Services Market Service Sector Growth 1991-1996 (US Dollars)

	User Expenditure ($ Millions)				
COUNTRY MARKET	1990	1991	GROWTH 1990-1991 (PERCENT)	1996	CAGR 1991-1996 (PERCENT)
Hardware Service	14,800	15,300	3.5	17,100	2.5
Systems Software Support	1,610	1,840	14.5	3,470	13.5
Professional Services	7,600	8,690	14.5	16,100	13.0
Education and Training	1,160	1,310	13.0	2,400	13.0
TOTAL (ROUNDED)	**25,200**	**27,100**	**7.5**	**39,100**	**7.5**

Exhibit IV-5

Western European Customer Services Market Service Sector Growth 1991-1996 (ECU's)

	User Expenditure (ECU Millions)				
COUNTRY MARKET	1990	1991	GROWTH 1990-1991 (PERCENT)	1996	CAGR 1991-1996 (PERCENT)
Hardware Service	10,800	11,200	3.5	12,500	2.5
Systems Software Support	1,180	1,350	14.5	2,500	13.5
Professional Services	5,750	6,300	14.5	11,800	13.0
Education and Training	850	950	13.0	1,750	13.0
TOTAL (ROUNDED)	**18,600**	**19,800**	**7.5**	**28,500**	**7.5**

V

Western European Customer Services—Country Market Forecasts, 1991-1996

V Western European Customer Services - Country Market Forecasts, 1991-1996

A Introduction

This section of the study contains forecasts for the growth of customer services in thirteen individual Western European country markets and the remaining portion of Europe.

The forecasts are presented in local currency for each individual country market, structured as set of three exhibits:

- Market Structure in 1990; proving a estimate of total user expenditure for customer services. The structure of the market is segmented by service sector and identifies the revenues of the three primary vendors who are active in the market:
    - Customer Services Vendors
    - Independent Software and Services Vendors
    - Non-Industry Vendors.
- Estimates for the customer services revenues of the leading ten Equipment Vendors in Western Europe for 1990
- A five year forecast for the growth of user expenditure for customer services covering the period 1991 to 1996, and the base year of 1990. Each country market forecast is segmented by service sector:
    - Hardware Service
    - Systems Software Support
    - Professional Services
    - Education and Training.

The country markets included in the forecast are as follows:

- France; Exhibits V-1 to V-3
- Germany; Exhibits V-4 to V-6
- The United Kingdom; Exhibits V-7 to V-9
- Italy; Exhibits V-10 to V-12
- Sweden; Exhibits V-13 to V-15
- Denmark; Exhibits V-16 to V-18
- Norway; Exhibits V-19 to V-21
- Finland; Exhibits V-22 to V-24
- The Netherlands; Exhibits V-25 to V-27
- Belgium; Exhibits; V-28 to V-30
- Spain; Exhibits; V-31 to V-33
- Switzerland; Exhibits V-34 to V-36
- Austria; Exhibits V-37 to V-39
- Rest of Europe; Exhibits V-40 to V-42.

Exhibit V-1

France
1990 Customer Services Market Structure

	User Expenditure (FF Millions)				
Revenue Stream \ Service Sector	Equipment Maintenance	Systems Software Support	Professional Services	Education and Training	Total
Customer Services Vendor Revenues					
• Equipment Vendors	12,100	1,000	1,600	875	15,575
• Dealers and Distributors	200	4	4	4	212
• Independent Maintenance Vendors	1,815	14	27	14	1,870
Independent Software and Service Vendor Customer Services Revenues					
• Resulting from Indirect Equipment Sales	125	11	16	8	160
• Focused Activities	-	180	-	252	432
Non-Industry Vendor Customer Services Revenues	-	-	4,900	-	4,900
Total User Expenditure (Rounded)	14,200	1,200	6,550	1,150	23,100

Exhibit V-2

Leading Equipment Vendor Customer Services Revenues, 1990 France (FF Millions)

VENDOR	HARDWARE SERVICE	SYSTEMS SOFTWARE SUPPORT	PROFESSIONAL SERVICES	EDUCATION AND TRAINING	TOTAL (ROUNDED)
IBM	2,960	-	410	150	3,520
Bull	2,560	182	113	194	3,050
Digital	955	252	248	98	1,550
Unisys	622	57	305	76	1,060
NCR	690	18	160	102	970
Siemens Nixdorf	680	-	45	40	765
Wang	390	110	102	51	655
Olivetti	615	8	27	-	650
Hewlett-Packard	455	75	45	37	610
Prime	248	90	85	42	465

Exhibit V-3

France
Customer Services Market Growth, 1991-1996

Service Sector	User Expenditure (FF Millions)							CAGR 1991-1996 (Percent)
	1990	1991	1992	1993	1994	1995	1996	
Hardware Service	14,200	14,500	14,700	14,900	15,100	15,200	15,300	1.0
Systems Software Support	1,200	1,280	1,360	1,430	1,500	1,600	1,650	5.0
Professional Services	6,550	7,600	8,800	10,100	11,600	13,200	15,000	15.0
Education and Training	1,150	1,270	1,400	1,550	1,700	1,900	2,100	11.0
Total (Rounded)	23,100	24,700	26,300	28,000	30,000	32,000	34,000	6.5
Annual Growth (Percent)	-	7.0	6.5	6.5	6.5	6.5	6.5	-

Note: Numbers are rounded.

Exhibit V-4

Germany
1990 Customer Services Market Structure

	User Expenditure (DM Millions)				
Revenue Stream \ Service Sector	Equipment Maintenance	Systems Software Support	Professional Services	Education and Training	Total
Customer Services Vendor Revenues					
• Equipment Vendors	4,275	380	550	315	5,520
• Dealers and Distributors	140	1	1	1	143
• Independent Maintenance Vendors	175	1	3	1	180
Independent Software and Service Vendor Customer Services Revenues					
• Resulting from Indirect Equipment Sales	64	6	8	4	82
• Focused Activities	-	67	0	63	130
Non-Industry Vendor Customer Services Revenues	-	-	1,700	-	1,700
Total User Expenditure (Rounded)	4,650	455	2,260	385	7,750

Exhibit V-5

Leading Equipment Vendor Customer Services Revenues, 1990 Germany (DM Millions)

VENDOR	HARDWARE SERVICE	SYSTEMS SOFTWARE SUPPORT	PROFESSIONAL SERVICES	EDUCATION AND TRAINING	TOTAL (ROUNDED)
Siemens Nixdorf	1,175	-	85.0	70.0	1,330
IBM	1,047	-	145.0	58.0	1,250
Digital	357	102.0	103	46.4	610
NCR	217	6.7	51.8	33.6	310
Hewlett-Packard	136	24.0	13.6	11.6	185
Prime	98	37.6	33.6	16.1	185
Bull	128	13.8	16.5	6.4	165
Unisys	103	9.2	32.0	10.9	155
Philips	128	7.9	5.0	2.0	145
Olivetti	119	5.5	4.8	1.2	130

Exhibit V-6

Germany
Customer Services Market Growth, 1991-1996

Service Sector	User Expenditure (DM Millions)							CAGR 1991-1996 (Percent)
	1990	1991	1992	1993	1994	1995	1996	
Hardware Service	4,650	4,700	4,750	4,750	4,750	4,750	4,700	0.0
Systems Software Support	455	520	595	675	760	855	960	13.0
Professional Services	2,260	2,580	2,930	3,300	3,700	4,150	4,650	12.5
Education and Training	385	440	500	570	645	740	840	14.0
Total (Rounded)	7,750	8,250	8,800	9,300	9,850	10,500	11,200	6.0
Annual Growth (Percent)	-	6.5	6.5	6.0	6.0	6.5	6.5	-

Note: Numbers are rounded.

Exhibit V-7

United Kingdom
1990 Customer Services Market Structure

Revenue Stream \ Service Sector	Equipment Maintenance	Systems Software Support	Professional Services	Education and Training	Total
	User Expenditure (£ Millions)				
Customer Services Vendor Revenues					
• Equipment Vendors	1,310	175	225	110	1,820
• Dealers and Distributors	22	1	1	1	25
• Independent Maintenance Vendors	270	2	4	2	278
Independent Software and Service Vendor Customer Services Revenues					
• Resulting from Indirect Equipment Sales	17	2	2	1	22
• Focused Activities	-	68	-	13	81
Non-Industry Vendor Customer Services Revenues	-	-	640	-	640
Total User Expenditure (Rounded)	1,620	250	875	125	2,870

Exhibit V-8

Leading Equipment Vendor Customer Services Revenues, 1990 United Kingdom (£ Millions)

VENDOR	HARDWARE SERVICE	SYSTEMS SOFTWARE SUPPORT	PROFESSIONAL SERVICES	EDUCATION AND TRAINING	TOTAL (ROUNDED
IBM	230	-	63.5	13.5	305
Digital	185	51.0	38.6	16.0	290
ICL	190	13.2	23.0	7.3	235
Wang	85	26.0	20.0	11.0	140
Unisys	75	8.0	18.8	7.3	110
Hewlett-Packard	79	13.8	7.3	5.3	105
Prime	47	18.2	15.1	8.0	88
NCR	58	1.7	13.3	9.1	82
Bull	48	6.0	3.5	3.5	61
Olivetti	46	0.9	0.3	6.1	53

Exhibit V-9

United Kingdom
Customer Services Market Growth, 1991-1996

Service Sector	User Expenditure (£ Millions)							CAGR 1991-1996 (Percent)
	1990	1991	1992	1993	1994	1995	1996	
Hardware Service	1,620	1,700	1,780	1,870	1,950	2,000	2,070	4.0
Systems Software Support	250	285	325	370	425	490	570	15.0
Professional Services	875	945	1,020	1,100	1,200	1,320	1,470	9.0
Education and Training	125	140	155	170	190	215	245	11.0
Total (Rounded)	2,870	3,070	3,280	3,500	3,770	4,050	4,350	7.0
Annual Growth (Percent)	-	7.0	7.0	7.0	7.5	7.5	8.0	-

Note: Numbers are rounded.

Exhibit V-10

Italy
1990 Customer Services Market Structure

Revenue Stream \ Service Sector	User Expenditure (Lira Billions) Equipment Maintenance	Systems Software Support	Professional Services	Education and Training	Total
Customer Services Vendor Revenues					
• Equipment Vendors	2,030	158	270	125	2,583
• Dealers and Distributors	55	1	1	1	58
• Independent Maintenance Vendors	140	1	2	1	144
Independent Software and Service Vendor Customer Services Revenues					
• Resulting from Indirect Equipment Sales	11	1	1	1	14
• Focused Activities	-	28	-	11	39
Non-Industry Vendor Customer Services Revenues	-	-	825	-	825
Total User Expenditure (Rounded)	2,240	190	1,100	140	3,670

Exhibit V-11

Leading Equipment Vendor Customer Services Revenues, 1990 Italy (Lira Billions)

VENDOR	HARDWARE SERVICE	SYSTEMS SOFTWARE SUPPORT	PROFESSIONAL SERVICES	EDUCATION AND TRAINING	TOTAL (ROUNDED)
IBM	577	-	83.0	30.0	690
Olivetti	356	21.0	65.0	4.0	445
Digital	129	35.3	53.0	15.0	230
Bull	123	11.0	15.5	5.3	155
NCR	67	2.2	16.3	10.1	96
Siemens Nixdorf	80	-	6.2	6.5	93
Hewlett-Packard	66	10.3	6.4	4.1	87
Unisys	58	6.7	14.8	5.7	85
Prime	34	12.5	11.4	5.4	63
Wang	26	7.7	6.7	3.3	44

Exhibit V-12

Italy
Customer Services Market Growth, 1991-1996

Service Sector	User Expenditure (Lira Billions)							CAGR 1991-1996 (Percent)
	1990	1991	1992	1993	1994	1995	1996	
Hardware Service	2,240	2,300	2,350	2,400	2,440	2,470	2,500	1.5
Systems Software Support	190	215	245	275	305	340	380	12.0
Professional Services	1,100	1,290	1,500	1,740	2,000	2,300	2,650	15.5
Education and Training	140	150	160	175	190	210	230	9.0
Total (Rounded)	3,670	3,950	4,260	4,600	4,950	5,300	5,750	8.0
Annual Growth (Percent)	-	7.5	7.5	8.0	8.0	8.0	8.0	-

Note: Numbers are rounded.

Exhibit V-13

Sweden
1990 Customer Services Market Structure

User Expenditure (SK Millions)					
Revenue Stream \ Service Sector	Equipment Maintenance	Systems Software Support	Professional Services	Education and Training	Total
Customer Services Vendor Revenues					
• Equipment Vendors	3,080	350	445	255	4,130
• Dealers and Distributors	110	2	2	2	116
• Independent Maintenance Vendors	270	2	4	2	278
Independent Software and Service Vendor Customer Services Revenues					
• Resulting from Indirect Equipment Sales	23	2	3	2	30
• Focused Activities	-	62	-	33	95
Non-Industry Vendor Customer Services Revenues	-	-	1,380	-	1,380
Total User Expenditure (Rounded)	3,480	415	1,840	295	6,030

Exhibit V-14

Leading Equipment Vendor Customer Services Revenues, 1990 Sweden (SK Millions)

VENDOR	HARDWARE SERVICE	SYSTEMS SOFTWARE SUPPORT	PROFESSIONAL SERVICES	EDUCATION AND TRAINING	TOTAL (ROUNDE
IBM	682	-	56.0	37.0	775
Digital	380	107.0	129.0	45.2	660
Nokia	481	41.4	43.5	53.7	620
Unisys	180	26.9	39.3	18.5	265
Philips	155	16.8	47.1	5.6	225
NCR	155	4.8	36.5	22.4	220
Siemens Nixdorf	112	-	22.4	11.2	145
Wang	80	23.8	22.0	10.9	137
Norsk Data	63	24.3	13.1	12.1	113
Bull	75	10.6	6.2	5.7	98

Exhibit V-15

Sweden
Customer Services Market Growth, 1991-1996

Service Sector	User Expenditure (SK Millions)							CAGR 1991-1996 (Percent)
	1990	1991	1992	1993	1994	1995	1996	
Hardware Service	3,480	3,640	3,800	3,950	4,100	4,200	4,300	3.5
Systems Software Support	415	495	590	700	825	970	1,130	18.0
Professional Services	1,840	2,110	2,410	2,750	3,100	3,450	3,850	13.0
Education and Training	295	340	395	460	535	611	700	16.0
Total (Rounded)	6,030	6,600	7,200	7,850	8,550	9,250	10,000	8.5
Annual Growth (Percent)	-	9.0	9.0	9.0	9.0	8.0	8.0	-

Note: Numbers are rounded.

Exhibit V-16

Denmark
1990 Customer Services Market Structure

Revenue Stream \ Service Sector	User Expenditure (DK Millions)				
	Equipment Maintenance	Systems Software Support	Professional Services	Education and Training	Total
Customer Services Vendor Revenues					
• Equipment Vendors	1,890	170	290	140	2,490
• Dealers and Distributors	26	1	1	1	29
• Independent Maintenance Vendors	120	1	2	1	124
Independent Software and Service Vendor Customer Services Revenues					
• Resulting from Indirect Equipment Sales	19	2	3	1	25
• Focused Activities	-	30	-	8	38
Non-Industry Vendor Customer Services Revenues	-	-	930	-	930
Total User Expenditure (Rounded)	2,060	205	1,225	150	3,640

Exhibit V-17

Leading Equipment Vendor Customer Services Revenues, 1990 Denmark (DK Millions)

VENDOR	HARDWARE SERVICE	SYSTEMS SOFTWARE SUPPORT	PROFESSIONAL SERVICES	EDUCATION AND TRAINING	TOTAL (ROUNDED)
IBM	560	-	80.0	30.0	670
Digital	128	32.0	44.7	16.1	220
Olivetti	192	6.1	1.0	5.2	204
Siemens Nixdorf	102	-	6.4	22.6	131
ICL	120	-	5.8	3.8	130
Nokia	97	8.0	9.0	10.6	125
NCR	86	3.1	20.7	12.4	122
Unisys	77	9.6	17.3	8.3	112
Prime	56	23.1	19.1	10.1	108
Bull	49	8.3	30.7	5.2	93

Exhibit V-18

Denmark
Customer Services Market Growth, 1991-1996

Service Sector	User Expenditure (DK Millions)							CAGR 1991-1996 (Percen
	1990	1991	1992	1993	1994	1995	1996	
Hardware Service	2,060	2,050	2,030	2,000	1,960	1,910	1,850	-2.0
Systems Software Support	205	230	260	290	320	355	390	11.0
Professional Services	1,225	1,430	1,650	1,900	2,170	2,480	2,830	14.5
Education and Training	150	170	195	225	260	290	330	14.0
Total (Rounded)	3,640	3,880	4,140	4,410	4,700	5,030	5,400	7.0
Annual Growth (Percent)	-	6.5	6.5	6.5	6.5	7.0	7.0	-

Note: Numbers are rounded.

Exhibit V-19

Norway
1990 Customer Services Market Structure

Revenue Stream \ Service Sector	Equipment Maintenance	Systems Software Support	Professional Services	Education and Training	Total
	User Expenditure (NK Millions)				
Customer Services Vendor Revenues					
• Equipment Vendors	1,765	185	250	145	2,345
• Dealers and Distributors	18	-	-	-	18
• Independent Maintenance Vendors	82	1	1	1	85
Independent Software and Service Vendor Customer Services Revenues					
• Resulting from Indirect Equipment Sales	15	2	2	1	20
• Focused Activities	-	33	-	11	44
Non-Industry Vendor Customer Services Revenues	-	-	800	-	800
Total User Expenditure (Rounded)	1,880	220	1,050	160	3,310

Exhibit V-20

Leading Equipment Vendor Customer Services Revenues, 1990 Norway (NK Millions)

VENDOR	HARDWARE SERVICE	SYSTEMS SOFTWARE SUPPORT	PROFESSIONAL SERVICES	EDUCATION AND TRAINING	TOTAL (ROUNDE
Norsk Data	288	110.0	58.0	54.0	510
IBM	365	-	51.0	19.0	435
Digital	123	32.7	26.0	15.9	198
Nokia	115	9.8	10.4	12.9	148
Siemens Nixdorf	117	-	13.0	11.5	141
Olivetti	122	7.5	9.5	-	139
NCR	83	3.0	18.9	12.4	116
Bull	69	17.5	21.4	6.5	114
Prime	37	13.9	13.3	5.6	70
Wang	39	12.5	10.4	4.7	67

Exhibit V-21

Norway
Customer Services Market Growth, 1991-1996

Service Sector	User Expenditure (NK Millions)							CAGR 1991-1996 (Percent)
	1990	1991	1992	1993	1994	1995	1996	
Hardware Service	1,880	1,960	2,050	2,130	2,210	2,280	2,330	3.5
Systems Software Support	220	260	310	360	425	495	570	17.0
Professional Services	1,050	1,212	1,390	1,580	1,800	2,030	2,280	13.5
Education and Training	160	185	215	250	290	335	390	16.0
Total (Rounded)	3,310	3,620	3,950	4,300	4,700	5,150	5,600	9.0
Annual Growth (Percent)	-	9.0	9.0	9.0	9.0	9.0	9.0	-

Note: Numbers are rounded.

Exhibit V-22

Finland
1990 Customer Services Market Structure

	User Expenditure (FM Millions)				
Revenue Stream \ Service Sector	Equipment Maintenance	Systems Software Support	Professional Services	Education and Training	Total
Customer Services Vendor Revenues					
• Equipment Vendors	1,000	98	133	90	1,321
• Dealers and Distributors	12	-	-	-	12
• Independent Maintenance Vendors	49	-	1	-	50
Independent Software and Service Vendor Customer Services Revenues					
• Resulting from Indirect Equipment Sales	8	1	1	1	11
• Focused Activities	-	17	-	4	21
Non-Industry Vendor Customer Services Revenues	-	-	420	-	420
Total User Expenditure (Rounded)	1,070	115	555	95	1,835

Exhibit V-23

Leading Equipment Vendor Customer Services Revenues, 1990 Finland (FM Millions)

VENDOR	HARDWARE SERVICE	SYSTEMS SOFTWARE SUPPORT	PROFESSIONAL SERVICES	EDUCATION AND TRAINING	TOTAL (ROUNDED)
Nokia	357	28.9	31.3	37.4	455
Digital	130	37.4	40.6	13.9	220
IBM	165	-	22.0	8.0	195
Unisys	63	8.7	9.9	5.2	87
Siemens Nixdorf	71	-	7.2	2.2	81
NCR	25	0.6	5.9	4.0	36
Olivetti	25	0.1	0.6	-	26
ICL	15	3.6	2.8	0.4	22
Prime	11	4.1	3.9	1.8	21
Wang	6	2.3	1.3	0.5	10

Exhibit V-24

Finland
Customer Services Market Growth, 1991-1996

Service Sector	User Expenditure (FM Millions)							CAGR 1991-1996 (Percent)
	1990	1991	1992	1993	1994	1995	1996	
Hardware Service	1,070	1,100	1,140	1,170	1,190	1,210	1,220	2.0
Systems Software Support	115	127	140	155	165	180	195	9.0
Professional Services	555	620	690	760	835	910	980	10.0
Education and Training	95	105	115	125	140	155	170	10.0
Total (Rounded)	1,835	1,950	2,080	2,210	2,330	2,460	2,570	5.5
Annual Growth (Percent)	-	6.5	6.5	6.0	5.5	5.5	5.0	-

Note: Numbers are rounded.

Exhibit V-25

Netherlands
1990 Customer Services Market Structure

	User Expenditure (DFl Millions)				
Service Sector / Revenue Stream	Equipment Maintenance	Systems Software Support	Professional Services	Education and Training	Total
Customer Services Vendor Revenues					
• Equipment Vendors	1,200	120	190	90	1,600
• Dealers and Distributors	17	-	-	-	17
• Independent Maintenance Vendors	225	2	3	2	232
Independent Software and Service Vendor Customer Services Revenues					
• Resulting from Indirect Equipment Sales	10	1	1	1	13
• Focused Activities	-	21	-	24	45
Non-Industry Vendor Customer Services Revenues	-	-	590	-	590
Total User Expenditure (Rounded)	1,450	145	785	115	2,495

Exhibit V-26

Leading Equipment Vendor Customer Services Revenues, 1990 Netherlands (DFl Millions)

VENDOR	HARDWARE SERVICE	SYSTEMS SOFTWARE SUPPORT	PROFESSIONAL SERVICES	EDUCATION AND TRAINING	TOTAL (ROUNDE
IBM	277	-	39.0	14.0	330
Digital	158	44.7	44.8	21.1	270
Unisys	88	11.5	19.4	8.8	128
Philips	99	7.6	6.1	1.9	115
NCR	68	2.2	15.6	9.5	95
Bull	53	5.4	6.1	4.0	69
HEWLETT PACKARD	44	8.0	4.6	3.9	61
Siemens Nixdorf	50	-	3.4	3.4	57
Prime	28	10.4	9.5	4.6	53
Olivetti	40	1.2	1.8	1.2	44

Exhibit V-27

Netherlands
Customer Services Market Growth, 1991-1996

Service Sector	User Expenditure (DFl Millions)							CAGR 1991-1996 (Percent)
	1990	1991	1992	1993	1994	1995	1996	
Hardware Service	1,450	1,520	1,580	1,630	1,680	1,720	1,750	3.0
Systems Software Support	145	165	190	210	240	265	295	12.5
Professional Services	785	920	1,070	1,240	1,430	1,650	1,890	15.5
Education and Training	115	130	145	165	190	215	245	13.0
Total (Rounded)	2,495	2,740	2,990	3,250	3,540	3,850	4,180	9.0
Annual Growth (Percent)	-	9.5	9.0	9.0	9.0	8.5	8.5	-

Note: Numbers are rounded.

Exhibit V-28

Belgium
1990 Customer Services Market Structure

Revenue Stream \ Service Sector	User Expenditure (BF Millions)				
	Equipment Maintenance	Systems Software Support	Professional Services	Education and Training	Total
Customer Services Vendor Revenues					
• Equipment Vendors	10,800	1,100	1,510	750	14,160
• Dealers and Distributors	275	5	5	5	290
• Independent Maintenance Vendors	1,460	12	20	12	1,504
Independent Software and Service Vendor Customer Services Revenues					
• Resulting from Indirect Equipment Sales	105	9	14	7	135
• Focused Activities	-	195	-	138	333
Non-Industry Vendor Customer Services Revenues	-	-	4,570	-	4,570
Total User Expenditure (Rounded)	12,650	1,320	6,120	910	21,000

Exhibit V-29

Leading Equipment Vendor Customer Services Revenues, 1990 Belgium (BF Millions)

VENDOR	HARDWARE SERVICE	SYSTEMS SOFTWARE SUPPORT	PROFESSIONAL SERVICES	EDUCATION AND TRAINING	TOTAL (ROUNDED)
IBM	2,610	-	355	135	3,100
Digital	1,480	400	333	132	2,345
Siemens Nixdorf	1,592	-	177	77	1,846
Olivetti	1,190	84	19	47	1,340
Unisys	935	90	225	90	1,340
Bull	930	93	83	54	1,160
Hewlett-Packard	725	89	60	53	925
Philips	768	24	35	17	845
NCR	466	17	106	72	660
Wang	369	115	97	42	625

Exhibit V-30

Belgium
Customer Services Market Growth, 1991-1996

Service Sector	User Expenditure (BF Millions)							CAGR 1991-1996 (Percent)
	1990	1991	1992	1993	1994	1995	1996	
Hardware Service	12,650	13,300	13,900	14,400	14,900	15,400	15,800	3.5
Systems Software Support	1,320	1,530	1,770	2,040	2,330	2,650	3,000	14.5
Professional Services	6,120	7,050	8,050	9,100	10,300	11,600	13,100	13.0
Education and Training	910	1,050	1,220	1,420	1,640	1,910	2,200	16.0
Total (Rounded)	21,000	22,900	24,900	27,000	29,200	31,600	34,100	8.0
Annual Growth (Percent)	-	9.0	8.5	8.5	8.0	8.0	8.0	-

Note: Numbers are rounded.

Exhibit V-31

Spain
1990 Customer Services Market Structure

Revenue Stream \ Service Sector	Equipment Maintenance	Systems Software Support	Professional Services	Education and Training	Total
	User Expenditure (Pta Millions)				
Customer Services Vendor Revenues					
• Equipment Vendors	57,800	5,420	8,050	4,300	75,570
• Dealers and Distributors	945	15	15	15	990
• Independent Maintenance Vendors	7,945	35	85	35	8,100
Independent Software and Service Vendor Customer Services Revenues					
• Resulting from Indirect Equipment Sales	490	44	64	32	630
• Focused Activities	-	950	-	310	1,260
Non-Industry Vendor Customer Services Revenues	-	-	24,600	-	24,600
Total User Expenditure (Rounded)	67,200	6,500	32,800	4,700	111,200

Exhibit V-32

Leading Equipment Vendor Customer Services Revenues, 1990 Spain (Ptas Millions)

VENDOR	HARDWARE SERVICE	SYSTEMS SOFTWARE SUPPORT	PROFESSIONAL SERVICES	EDUCATION AND TRAINING	TOTAL (ROUNDED
IBM	13,100	-	1,800	700	15,600
NCR	6,350	225	1,500	975	9,050
Siemens Nixdorf	5,890	-	380	550	6,820
Digital	3,840	1,115	1,320	275	6,550
Hewlett-Packard	4,490	841	485	367	6,180
Unisys	3,900	620	850	370	5,740
Olivetti	4,640	196	278	31	5,150
Philips	2,945	133	124	57	3,260
Bull	2,650	380	66	136	3,230
Prime	1,305	555	445	225	2,530

Exhibit V-33

Spain
Customer Services Market Growth, 1991-1996

Service Sector	User Expenditure (Pta Millions)							CAGR 1991-1996 (Percent)
	1990	1990	1990	1990	1990	1990	1990	
Hardware Service	67,200	71,600	75,900	80,000	84,000	87,800	91,300	5.0
Systems Software Support	6,500	7,800	9,300	11,100	13,100	15,500	18,200	18.5
Professional Services	32,800	38,200	44,300	51,000	59,000	67,500	77,000	15.0
Education and Training	4,700	5,500	6,500	7,700	9,100	10,600	12,500	18.0
Total (Rounded)	111,200	123,000	136,000	150,000	165,000	181,000	200,000	10.0
Annual Growth (Percent)	-	11.0	10.5	10.5	10.0	10.0	10.0	-

Exhibit V-34

Switzerland
1990 Customer Services Market Structure

Revenue Stream \ Service Sector (User Expenditure (SF Millions))	Equipment Maintenance	Systems Software Support	Professional Services	Education and Training	Total
Customer Services Vendor Revenues					
• Equipment Vendors	710	75	125	65	975
• Dealers and Distributors	11	-	-	-	11
• Independent Maintenance Vendors	34	-	1	-	35
Independent Software and Service Vendor Customer Services Revenues					
• Resulting from Indirect Equipment Sales	8	1	1	1	11
• Focused Activities	-	13	-	9	22
Non-Industry Vendor Customer Services Revenues	-	-	405	-	405
Total User Expenditure (Rounded)	765	90	530	75	1,460

Exhibit V-35

Leading Equipment Vendor Customer Services Revenues, 1990 Switzerland (SF Millions)

VENDOR	HARDWARE SERVICE	SYSTEMS SOFTWARE SUPPORT	PROFESSIONAL SERVICES	EDUCATION AND TRAINING	TOTAL (ROUNDED)
Digital	116.0	32.2	42.6	13.3	205
NCR	115.0	3.6	26.5	17.5	163
Unisys	87.6	14.0	13.1	8.3	123
IBM	88	-	12.0	5.0	105
Siemens Nixdorf	63.5	-	7.1	5.1	76
Bull	28.9	3.1	0.9	1.8	35
Hewlett-Packard	24.4	3.7	3.2	1.4	33
Philips	20.6	1.3	0.9	0.5	23
Olivetti	20.3	0.9	0.2	-	21
Prime	8.6	3.3	3.2	1.4	17

Exhibit V-36

Switzerland
Customer Services Market Growth, 1991-1996

Service Sector	User Expenditure (SF Millions)							CAGR 1991-1996 (Percent)
	1990	1991	1992	1993	1994	1995	1996	
Hardware Service	765	805	840	875	905	930	955	3.5
Systems Software Support	90	105	123	142	165	190	215	15.5
Professional Services	530	615	705	805	915	1,040	1,180	14.0
Education and Training	75	90	105	120	140	165	190	17.0
Total (Rounded)	1,460	1,620	1,770	1,940	2,120	2,330	2,540	9.5
Annual Growth (Percent)	-	10.5	10.0	9.5	9.5	9.5	9.0	-

Note: Numbers are rounded.

Exhibit V-37

Austria
1990 Customer Services Market Structure

	User Expenditure (Sch Millions)				
Revenue Stream \ Service Sector	Equipment Maintenance	Systems Software Support	Professional Services	Education and Training	Total
Customer Services Vendor Revenues					
• Equipment Vendors	2,940	262	370	190	3,762
• Dealers and Distributors	66	1	1	1	69
• Independent Maintenance Vendors	217	3	4	3	227
Independent Software and Service Vendor Customer Services Revenues					
• Resulting from Indirect Equipment Sales	31	3	4	2	40
• Focused Activities	-	46	-	28	74
Non-Industry Vendor Customer Services Revenues	-	-	1,124	-	1,124
Total User Expenditure (Rounded)	3,260	315	1,500	225	5,300

Exhibit V-38

Leading Equipment Vendor Customer Services Revenues, 1990 Austria (Sch Millions)

VENDOR	HARDWARE SERVICE	SYSTEMS SOFTWARE SUPPORT	PROFESSIONAL SERVICES	EDUCATION AND TRAINING	TOTAL (ROUNDED
IBM	700	-	96.0	36.0	830
Siemens Nixdorf	531	-	33.0	59.0	625
Digital	280	74.0	64.0	29.0	445
Philips	372	37.8	17.7	7.1	434
Bull	141	15.3	28.3	8.5	195
Unisys	130	2.4	22.4	8.3	165
Hewlett-Packard	120	18.1	10.8	9.1	160
Prime	69	25.8	24.8	10.8	130
NCR	78	1.9	18.5	12.5	110
Wang	36	10.8	10.3	5.3	62

Exhibit V-39

Austria
Customer Services Market Growth, 1991-1996

Service Sector	User Expenditure (Sch Millions)							CAGR 1991-1996 (Percent)
	1990	1991	1992	1993	1994	1995	1996	
Hardware Service	3,260	3,400	3,500	3,600	3,700	3,780	3,840	2.5
Systems Software Support	315	360	410	465	525	595	665	13.0
Professional Services	1,500	1,740	2,000	2,300	2,630	3,000	3,400	14.5
Education and Training	225	255	285	325	370	430	500	14.5
Total (Rounded)	5,300	5,750	6,200	6,700	7,250	7,800	8,400	8.0
Annual Growth (Percent)	-	8.5	8.0	8.0	8.0	7.5	7.5	-

Note: Numbers are rounded.

Exhibit V-40

Rest of Europe
1990 Customer Services Market Structure

User Expenditure ($ Millions)					
Revenue Stream \ Service Sector	Equipment Maintenance	Systems Software Support	Professional Services	Education and Training	Total
Customer Services Vendor Revenues					
• Equipment Vendors	221	26	41	18	306
• Dealers and Distributors	3	-	-	-	3
• Independent Maintenance Vendors	15	-	-	-	15
Independent Software and Service Vendor Customer Services Revenues					
• Resulting from Indirect Equipment Sales	2	-	-	-	2
• Focused Activities	-	4	-	1	5
Non-Industry Vendor Customer Services Revenues	-	-	130	-	130
Total User Expenditure (Rounded)	240	30	170	20	460

Exhibit V-41

Leading Equipment Vendor Customer Services Revenues, 1990 Rest of Europe ($ Millions)

VENDOR	HARDWARE SERVICE	SYSTEMS SOFTWARE SUPPORT	PROFESSIONAL SERVICES	EDUCATION AND TRAINING	TOTAL (ROUNDED)
Digital	41.5	12.2	15.5	4.8	74
IBM	52.0	-	7.5	3.0	63
Siemens Nixdorf	42.0	-	4.0	1.6	48
NCR	11.0	2.0	2.8	2.2	18
Olivetti	3.5	0.8	0.7	-	15
Unisys	10.0	1.0	1.9	0.7	14
Prime	5.1	2.1	1.9	2.0	11
Wang	4.0	1.3	1.2	0.8	7
Hewlett-Packard	4.5	0.7	0.5	0.4	6
ICL	2.0	-	0.4	0.2	3

Exhibit V-42

Rest of Europe
Customer Services Market Growth, 1991-1996

Service Sector	User Expenditure ($ Millions)							CAGR 1991-1996 (Percent)
	1990	1991	1992	1993	1994	1995	1996	
Hardware Service	240	247	253	259	262	265	266	1.5
Systems Software Support	30	37	44	53	64	76	92	20.0
Professional Services	170	200	235	275	318	367	425	16.0
Education and Training	20	24	28	33	39	47	57	19.0
Total (Rounded)	460	508	560	620	685	755	840	10.5
Annual Growth (Percent)	-	10.5	10.0	10.0	10.5	10.5	11.0	-

Note: Numbers are rounded.

Appendices

A Leading Equipment Vendor Customer Services Revenues

Exhibit A-1

BULL
Customer Services Revenues, 1990
($ Millions)

COUNTRY	HARDWARE SERVICE	SYSTEMS SOFTWARE SUPPORT	PROFESSIONAL SERVICES	EDUCATION AND TRAINING	TOTAL
FRANCE	453.0	32.0	20.0	34.2	539.2
GERMANY	76.0	8.2	9.8	3.8	97.8
UNITED KINGDOM	93.0	11.7	6.8	6.8	118.3
ITALY	123.0	8.9	12.6	4.3	148.8
SWEDEN	13.3	1.9	1.1	1.0	17.3
DENMARK	7.6	1.3	4.8	0.8	14.5
NORWAY	10.6	2.7	3.3	1.0	17.6
FINLAND	-	-	-	-	-
NETHERLANDS	31.1	3.2	3.6	2.4	40.3
BELGIUM	26.9	2.7	2.4	1.6	33.6
SPAIN	27.8	4.0	0.7	1.4	33.9
SWITZERLAND	22.8	2.4	0.7	1.4	27.3
AUSTRIA	12.0	1.3	2.4	0.7	16.4
REST OF EUROPE	1.8	-	-	0.1	1.9
TOTAL (ROUNDED)	**900.0**	**80.0**	**70.0**	**60.0**	**1,110.0**

Exhibit A-2

DIGITAL
Customer Services Revenues, 1990
($ Millions)

COUNTRY	HARDWARE SERVICE	SYSTEMS SOFTWARE SUPPORT	PROFESSIONAL SERVICES	EDUCATION AND TRAINING	TOTAL
FRANCE	169.0	44.5	44.0	17.4	274.9
GERMANY	212.0	60.5	61.0	27.6	361.1
UNITED KINGDOM	362.0	99.0	75.0	31.3	567.3
ITALY	104.0	28.7	43.0	12.2	187.9
SWEDEN	67.8	19.1	23.0	8.1	118.0
DENMARK	20.1	5.0	7.0	2.5	34.6
NORWAY	18.8	5.0	4.0	2.5	30.3
FINLAND	32.8	9.5	10.3	3.5	56.1
NETHERLANDS	93.7	26.4	26.5	12.5	159.1
BELGIUM	42.7	11.6	9.6	3.8	67.7
SPAIN	40.5	11.8	13.9	2.6	69.1
SWITZERLAND	91.0	25.4	33.5	10.5	160.4
AUSTRIA	23.7	6.2	5.5	2.5	37.9
REST OF EUROPE	41.5	12.2	15.5	4.8	74.0
TOTAL (ROUNDED)	**1,320**	**365**	**370**	**145**	**2,200**

Exhibit A-3

HEWLETT-PACKARD
Customer Services Revenues, 1990
($ Millions)

COUNTRY	HARDWARE SERVICE	SYSTEMS SOFTWARE SUPPORT	PROFESSIONAL SERVICES	EDUCATION AND TRAINING	TOTAL
FRANCE	81.0	13.2	8.0	6.5	108.7
GERMANY	81.0	14.3	8.1	6.9	110.3
UNITED KINGDOM	153.0	26.8	14.2	10.3	204.3
ITALY	53.7	8.3	5.2	3.3	70.5
SWEDEN	11.9	1.6	0.8	0.7	15.0
DENMARK	7.6	1.0	0.5	0.4	9.5
NORWAY	4.9	0.8	0.3	0.2	6.2
FINLAND	1.3	-	-	-	1.3
NETHERLANDS	26.1	4.7	2.7	2.3	35.8
BELGIUM	20.9	2.6	1.7	1.5	26.7
SPAIN	47.3	8.9	5.1	3.9	65.2
SWITZERLAND	19.2	2.9	2.4	1.1	25.6
AUSTRIA	10.1	1.5	0.9	0.8	13.3
REST OF EUROPE	4.5	0.7	0.5	0.4	6.1
TOTAL (ROUNDED)	**525**	**87**	**50**	**38**	**700**

Exhibit A-4

IBM
Customer Services Revenues, 1990
($ Millions)

COUNTRY	HARDWARE SERVICE	SYSTEMS SOFTWARE SUPPORT	PROFESSIONAL SERVICES	EDUCATION AND TRAINING	TOTAL
FRANCE	524.0	-	73.0	26.2	623.2
GERMANY	623.0	-	87.0	34.2	744.2
UNITED KINGDOM	443.0	-	123.0	26.2	592.2
ITALY	467.0	-	67.0	23.9	557.9
SWEDEN	122.0	-	10.0	6.5	138.5
DENMARK	88.0	-	12.5	4.8	105.3
NORWAY	56.0	-	7.8	3.0	66.8
FINLAND	42.0	-	5.6	2.2	49.8
NETHERLANDS	164.0	-	23.0	8.5	195.5
BELGIUM	75.0	-	10.2	4.0	89.2
SPAIN	138.0	-	19.0	7.4	164.4
SWITZERLAND	69.0	-	9.5	3.9	82.4
AUSTRIA	59.0	-	8.1	3.1	70.2
REST OF EUROPE	52.0	-	7.5	3.0	62.5
TOTAL (ROUNDED)	**2,920**	**-**	**465**	**155**	**3,480**

Notes: 1. Systems software support bundled with software license fee

Exhibit A-5

ICL
Customer Services Revenues, 1990
($ Millions)

COUNTRY	HARDWARE SERVICE	SYSTEMS SOFTWARE SUPPORT	PROFESSIONAL SERVICES	EDUCATION AND TRAINING	TOTAL
FRANCE	34.8	1.1	0.9	0.9	37.7
GERMANY	11.4	-	0.7	0.1	12.2
UNITED KINGDOM	369.0	25.6	45.0	14.5	454.0
ITALY	7.9	0.2	0.2	-	8.3
SWEDEN	9.6	1.4	1.1	0.1	12.2
DENMARK	18.8	-	0.9	0.6	20.3
NORWAY	-	-	-	-	-
FINLAND	3.9	0.9	0.7	0.1	5.6
NETHERLANDS	17.7	2.7	2.0	0.6	23.0
BELGIUM	5.4	0.4	1.4	0.1	7.3
SPAIN	4.5	0.2	0.7	0.2	5.6
SWITZERLAND	6.1	-	0.7	0.1	6.9
AUSTRIA	2.7	-	0.2	0.1	3.0
REST OF EUROPE	2.0	-	0.4	0.2	2.6
TOTAL (ROUNDED)	**494**	**33**	**55**	**18**	**600**

Notes:

1. Revenues exclude applications related activities
2. No operations in Norway
3. Basic software support charges bundled with software license fee

Exhibit A-6

NCR
Customer Services Revenues, 1990
($ Millions)

COUNTRY	HARDWARE SERVICE	SYSTEMS SOFTWARE SUPPORT	PROFESSIONAL SERVICES	EDUCATION AND TRAINING	TOTAL
FRANCE	122.0	3.1	28.3	18.2	171.6
GERMANY	129.0	4.0	30.8	20.2	183.8
UNITED KINGDOM	112.0	3.3	25.8	17.7	158.8
ITALY	54.0	1.8	13.2	8.2	77.2
SWEDEN	27.6	0.8	6.5	4.0	38.9
DENMARK	13.5	0.5	3.2	2.1	19.3
NORWAY	12.5	0.5	2.9	1.9	18.1
FINLAND	6.3	0.2	1.5	1.0	9.0
NETHERLANDS	40.2	1.3	8.9	5.6	56.0
BELGIUM	13.5	0.5	3.1	2.1	19.2
SPAIN	66.8	2.4	15.8	10.3	95.3
SWITZERLAND	90.5	2.8	20.9	13.8	128.0
AUSTRIA	6.6	0.2	1.6	1.1	9.5
REST OF EUROPE	11.0	2.0	2.8	2.2	18.0
TOTAL (ROUNDED)	**705**	**23**	**165**	**107**	**1,000**

Notes: 1. Systems software support is mostly bundled with software license fee

Exhibit A-7

OLIVETTI
Customer Services Revenues, 1990
($ Millions)

COUNTRY	HARDWARE SERVICE	SYSTEMS SOFTWARE SUPPORT	PROFESSIONAL SERVICES	EDUCATION AND TRAINING	TOTAL
FRANCE	109.0	1.4	4.7	-	115.1
GERMANY	71.0	3.3	2.9	0.7	77.9
UNITED KINGDOM	89.0	1.8	0.6	11.8	103.2
ITALY	290.0	16.9	52.8	3.3	363.0
SWEDEN	5.3	0.2	-	-	5.5
DENMARK	30.0	1.0	0.2	0.8	32.0
NORWAY	18.7	1.2	1.5	-	21.4
FINLAND	6.4	-	0.2	-	6.6
NETHERLANDS	23.4	0.7	1.0	0.7	25.8
BELGIUM	34.3	2.4	0.6	1.4	38.7
SPAIN	48.9	2.1	2.9	0.3	54.2
SWITZERLAND	16.0	0.7	0.2	-	16.9
AUSTRIA	-	-	-	-	-
REST OF EUROPE	13.4	0.8	0.7	0.3	15.2
TOTAL (ROUNDED)	**755**	**33**	**68**	**19**	**875**

Notes:

1. Revenue data relates to Olivetti systems and networks subsidiary only. Office products are excluded.

2. Operations in Austria are handled via office products.

Exhibit A-8

PHILIPS
Customer Services Revenues, 1990
($ Millions)

COUNTRY	HARDWARE SERVICE	SYSTEMS SOFTWARE SUPPORT	PROFESSIONAL SERVICES	EDUCATION AND TRAINING	TOTAL
FRANCE	41.0	3.4	2.5	0.7	47.6
GERMANY	76.0	4.7	3.0	1.2	84.9
UNITED KINGDOM	46.0	2.1	2.0	0.8	54.9
ITALY	15.5	0.7	0.6	0.4	17.2
SWEDEN	27.5	3.0	8.4	1.0	39.9
DENMARK	2.0	0.1	0.1	-	2.2
NORWAY	2.6	0.2	0.2	-	3.0
FINLAND	1.7	0.1	0.1	-	1.9
NETHERLANDS	58.5	4.5	3.6	1.1	67.7
BELGIUM	22.2	0.7	1.0	0.5	24.4
SPAIN	31.0	1.4	1.3	0.6	34.3
SWITZERLAND	16.2	1.0	0.7	0.4	18.3
AUSTRIA	32.0	3.2	1.5	0.6	37.3
REST OF EUROPE	1.0	-	-	-	1.0
TOTAL (ROUNDED)	**373**	**25**	**25**	**7**	**430**

Exhibit A-9

PRIME
Customer Services Revenues, 1990
($ Millions)

COUNTRY	HARDWARE SERVICE	SYSTEMS SOFTWARE SUPPORT	PROFESSIONAL SERVICES	EDUCATION AND TRAINING	TOTAL
FRANCE	43.8	15.9	15.1	7.4	82.2
GERMANY	58.0	22.4	20.0	9.6	110.0
UNITED KINGDOM	91.0	35.4	29.1	15.5	171.0
ITALY	27.0	10.3	9.3	4.4	51.0
SWEDEN	9.1	3.7	3.0	1.7	17.5
DENMARK	8.7	3.6	3.0	1.6	16.9
NORWAY	5.6	2.2	2.1	0.9	10.8
FINLAND	2.7	1.0	1.0	0.4	5.1
NETHERLANDS	16.4	6.2	5.6	2.7	30.9
BELGIUM	5.9	2.3	2.2	0.9	11.3
SPAIN	13.7	5.6	4.7	2.4	26.4
SWITZERLAND	6.7	2.6	2.5	1.1	12.9
AUSTRIA	5.8	2.2	2.1	0.9	11.0
REST OF EUROPE	5.1	2.1	1.9	2.0	11.1
TOTAL (ROUNDED)	**300**	**116**	**102**	**52**	**570**

Exhibit A-10

SIEMENS NIXDORF
Customer Services Revenues, 1990
($ Millions)

COUNTRY	HARDWARE SERVICE	SYSTEMS SOFTWARE SUPPORT	PROFESSIONAL SERVICES	EDUCATION AND TRAINING	TOTAL
FRANCE	120	-	8.0	7.1	135.1
GERMANY	700	-	50.0	41.7	791.7
UNITED KINGDOM	50	-	12.0	4.1	66.1
ITALY	65	-	5.0	5.3	75.3
SWEDEN	20	-	4.0	2.0	26.0
DENMARK	16	-	1.0	3.5	20.5
NORWAY	18	-	2.0	1.8	21.8
FINLAND	18	-	2.0	0.6	20.6
NETHERLANDS	30	-	2.0	2.0	34.0
BELGIUM	46	-	5.1	2.2	53.3
SPAIN	62	-	4.0	5.6	71.6
SWITZERLAND	50	-	5.6	4.0	59.6
AUSTRIA	45	-	2.8	5.0	52.8
REST OF EUROPE	42	-	4.0	1.6	47.6
TOTAL (ROUNDED)	**1,280**	**-**	**108**	**87**	**1,475**

Notes:
1. All 1990 systems software support revenues bundled
2. Training revenues exclude applications
3. Training revenues exclude special government vocational courses (Germany)

Exhibit A-11

UNISYS
Customer Services Revenues, 1990
($ Millions)

COUNTRY	HARDWARE SERVICE	SYSTEMS SOFTWARE SUPPORT	PROFESSIONAL SERVICES	EDUCATION AND TRAINING	TOTAL
FRANCE	110.0	10.0	54.0	13.5	187.5
GERMANY	61.0	5.5	19.0	6.5	92.0
UNITED KINGDOM	145.0	15.5	36.5	14.2	211.2
ITALY	47.0	5.4	12.0	4.6	69.0
SWEDEN	32.0	4.8	7.0	3.3	47.1
DENMARK	12.0	1.5	2.7	1.3	17.5
NORWAY	5.0	1.0	1.8	0.7	8.5
FINLAND	16.0	2.2	2.5	1.3	22.0
NETHERLANDS	52.0	6.8	11.5	5.2	75.5
BELGIUM	27.0	2.6	6.5	2.6	38.7
SPAIN	41.0	6.5	9.0	3.9	60.4
SWITZERLAND	69.0	11.0	10.5	6.5	97.0
AUSTRIA	11.0	0.2	2.0	0.7	13.9
REST OF EUROPE	10.0	1.0	2.0	0.7	13.7
TOTAL (ROUNDED)	**638**	**75**	**177**	**65**	**955**

Notes:

1. Includes customer services division revenues and customer services revenues generated by the professional services division

2. Excludes revenues from media and supplies sales

Exhibit A-12

WANG
Customer Services Revenues, 1990
($ Millions)

COUNTRY	HARDWARE SERVICE	SYSTEMS SOFTWARE SUPPORT	PROFESSIONAL SERVICES	EDUCATION AND TRAINING	TOTAL
FRANCE	69.0	19.4	18.1	9.0	115.5
GERMANY	33.8	10.1	8.8	4.5	57.2
UNITED KINGDOM	166.0	50.2	38.7	21.4	276.3
ITALY	21.0	6.2	5.4	2.7	35.3
SWEDEN	14.2	4.2	3.9	1.9	24.2
DENMARK	4.8	1.4	1.2	0.8	8.2
NORWAY	6.0	1.9	1.6	0.7	10.2
FINLAND	1.6	0.6	0.3	0.1	2.6
NETHERLANDS	10.1	2.8	2.5	1.3	16.7
BELGIUM	10.7	3.3	2.8	1.2	18.0
SPAIN	8.5	2.6	2.3	1.1	14.5
SWITZERLAND	3.5	1.1	1.0	0.6	6.2
AUSTRIA	3.0	0.9	0.9	0.5	5.3
REST OF EUROPE	4.0	1.3	1.2	0.8	7.3
TOTAL (ROUNDED)	**360**	**105**	**90**	**45**	**600**

B Market Forecast Reconciliation

In 1990 and previous years INPUT's forecast for the customer services market in Western Europe focused on user expenditure with customer services vendors. For example:

- Equipment vendors
- Independent Maintenance Vendors
- Dealers and Distributors.

Further, previous market forecasts focused specifically on user expenditure with the customer services organisations of customer services vendors. Other parts of vendor organisations providing customer services were excluded.

In 1991 market definitions have been changed to more accurately focus on the total customer services market and provide a forecast for total user expenditure for customer services. Therefore, all vendors and organisations have been included in INPUT's 1991 forecasts. For example:

- Customer Services vendors
- Independent Software and Services vendors
- Non-industry vendors
- All organisations within a vendor's company that accrue customer services revenues.

The major impact that the new market definitions have had on 1991 forecasts is as follows:

- The size of the professional services sector has increased substantially, mainly as a consequence of including non-industry vendors.
- The growth forecast for the professional services sector has decreased substantially. Non-industry vendors are forecast to grow their professional services revenues at about 9% CAGR compared with industry vendors whose professional services revenues are forecast to grow at about 23% CAGR. The net growth for the combined activities of these two types of vendor is about 13% CAGR.

Exhibit B-1

Customer Services Market Forecast Reconciliation - Service Sectors

SERVICE SECTOR	1990 FORECAST OF 1990 MARKET	1991 FORECAST OF 1990 MARKET	CAGR FORECAST IN 1990 REPORT 1990-1995 (PERCENT)	CAGR FORECAST IN 1991 REPORT 1991-1996 (PERCENT)
Hardware Service	13,060	14,800	4	2.5
Systems Software Support	1,110	1,610	15	13.5
Professional Services	1,400	7,600	25	13.0
Education and Training	730	1,160	16	13.0
TOTAL	**16,300**	**25,200**	**8**	**7.5**

Exhibit B-2

Customer Services Market Forecast Reconciliation - Country Markets

COUNTRY MARKET	1990 FORECAST OF 1990 MARKET	1991 FORECAST OF 1990 MARKET	CAGR FORECAST IN 1990 REPORT 1990-1995 (PERCENT)	CAGR FORECAST IN 1991 REPORT 1991-1996 (PERCENT)
FRANCE	FF 17,100 M	FF 23,100 M	6.0	6.5
GERMANY	DM 5,740 M	DM 7,750 M	5.5	6.0
UNITED KINGDOM	£ 2,070 M	£ 2,870 M	10.0	7.0
ITALY	LIRA 2,760 B	LIRA 3,670 B	8.0	8.0
SWEDEN	SK 4,470 M	SK 6,030 M	9.0	8.5
DENMARK	DK 2,620 M	DK 3,640 M	6.5	7.0
NORWAY	NK 2,480 M	NK 3,310 M	8.0	9.0
FINLAND	FM 1,370 M	FM 1,835 M	6.5	5.5
NETHERLANDS	Dfl 1,810 M	Dfl 2,495 M	8.0	9.0
BELGIUM	BF 15,550 M	BF 21,000 M	7.5	8.0
SPAIN	PTA 82,800 M	PTA 111,200 M	11.0	10.0
SWITZERLAND	SF 1,005 M	SF 1,460 M	10.0	9.5
AUSTRIA	AS 4,005 M	AS 5,300 M	7.5	8.0
REST OF EUROPE	$318 M	$460 M	11.0	10.5

NOTE: Rounded Numbers