EUROPEAN ENVIRONMENTAL SERVICES

OPPORTUNITIES IN CUSTOMER SERVICES

1991-1996

INPUT

About INPUT

INPUT provides planning information, analysis, and recommendations for the information technology industries. Through market research, technology forecasting, and competitive analysis, INPUT supports client management in making informed decisions.

Subscription services, proprietary research/consulting, merger/acquisition assistance, and multiclient studies are provided to users and vendors of information systems and services. INPUT specializes in the software and services industry which includes software products, systems operations, processing services, network services, systems integration, professional services, turnkey systems, and customer services. Particular areas of expertise include CASE analysis, information systems planning, and outsourcing.

Many of INPUT's professional staff members have more than 20 years' experience in their areas of specialization. Most have held senior management positions in operations, marketing, or planning. This expertise enables INPUT to supply practical solutions to complex business problems.

Formed as a privately held corporation in 1974, INPUT has become a leading international research and consulting firm. Clients include more than 100 of the world's largest and most technically advanced companies.

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

ENVIRONMENTAL SERVICES OPPORTUNITIES IN WESTERN EUROPEAN CUSTOMER SERVICES

1991-1996

INPUT®

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

Published by
INPUT
1280 Villa Street
Mountain View, CA 94041-1194
U.S.A.

Customer Service Programme—Europe

Environmental Services Opportunities in
Western European Customer Services,
1991-1996

CEES1 • 1991

Abstract

This research study highlights the opportunities available to customer services vendors in the environmental services market. Opportunities identified include those available immediately and those available in the longer term but that will likely require extensive marketing programmes.

The report provides a forecast for the growth of the environmental services market overall in Western Europe and for thirteen individual country markets over the period 1991 to 1996. Market shares of three individual categories of service vendor are quantified and the growth of these three vendors' market shares identified over the same five-year period.

The report defines four individual sectors of the environmental services market and four levels of service that can be provided by vendors.

User requirements for environmental planning and cabling services and user attitudes towards equipment vendor services are analysed. Vendor challenges that result from the market environment are indicated, together with identification of the key issues in the environmental services market.

Digitized by the Internet Archive
in 2015

Table of Contents

Table of Contents (Continued)

Table of Contents (Continued)

Exhibits

Exhibits (Continued)

Exhibits (Continued)

Introduction

These research papers are produced by INPUT as part of the 1991 Customer Services Programme for Western Europe.

A

Objectives

The objective of these research papers is to identify the opportunities available to vendors in the provision of environmental services. The research papers will:

- Identify the key issues and challenges facing vendors in the environmental services market.

- Quantify the level of market opportunities available for vendors, in terms of those available immediately and also potential longer term opportunities that are consequent on successful market programmes.

- Provide a market forecast for the growth of environmental services in Western Europe overall and in thirteen country markets over the period 1991-1996.

- Identify the categories of vendor active in the environmental services market and quantify the market shares of these vendors.

B

Methodology

Research data used in the analysis presented in these research papers was compiled from the following sources:

- Focussed telephone, or face-to-face, interviews with ten equipment vendors carried out at either the headquarters or subsidiary level during the first half of 1991.

- INPUT's ongoing programme of vendor and user research.

1990 User Interview Programme
User Sample by Vendor

Vendor	System Range			
	Large	Medium	Small	Total
Amdahl	105	-	-	105
Bull	7	38	37	82
Digital	31	31	29	91
Hewlett-Packard	-	71	10	81
IBM	66	148	43	257
ICL	45	107	46	198
NCR	7	29	-	36
Philips	-	63	16	79
Siemens	5	17	3	25
Stratus	-	40	-	40
Unisys	18	42	17	77
Wang	21	28	33	82
Other Vendors	19	24	15	58
Total	324	638	249	1,211

EXHIBIT I-2

1990 User Interview Programme
User Sample by Country

Vendor	System Range			
	Large	Medium	Small	Total
Belgium	15	23	8	46
France	34	94	55	183
Germany	39	93	22	154
Italy	44	50	24	118
Netherlands	16	54	17	87
Norway	7	10	7	24
Spain	22	52	16	90
Sweden	13	51	18	82
United Kingdom	102	164	70	336
Other European Countries	32	47	12	91
Total	324	638	249	1,211

C
Scope

The scope of these research papers covers the environmental services market across the whole of Western Europe.

D
Structure

The research papers that comprise this study are organised as follows:

- Section II is an executive overview that provides a concise summary of the whole study and the findings that emerge.

- Section III provides identification of the structure of the environmental services market and a market forecast for three categories of vendor and for thirteen Western European country markets.

- Section IV provides identification of the opportunities available to vendors and also the key issues and challenges facing vendors.

- Section V provides an analyses of user requirements for environmental planning services and cabling services.
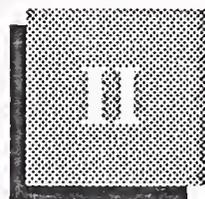
Executive Overview

A

Equipment Vendors' Share of the Environmental Services Market Is Set for Growth

Equipment vendors with a full range of environmental services offerings have the opportunity to gain an increasing share of a market that is forecast to grow at 12% per annum to reach over $12 billion in Western Europe by 1996.

Equipment vendor environmental services revenues are forecast to achieve an 18% compound annual growth rate (CAGR) over the period 1991 to 1996. As a consequence of this higher growth rate, the equipment vendors are forecast to increase their current market share, from an estimated 20% in 1991, to over 25% by 1996.

However, one major issue is that the market is very fragmented between three basic vendor types:

- Equipment vendors
- Building/construction companies
- Independent vendors

Compared with the level of growth forecast for equipment vendors, the other two types of vendor are forecast to achieve lower growth rates and hence will lose market share. The environmental services revenues of building/construction companies and independent vendors are forecast to grow at 10% CAGR and 8% CAGR respectively over the period 1991 to 1996.

The major factors responsible for driving the growth of the environmental services market can be expressed in terms of two related trends:

- An increasing user trend towards integrated computer systems and the integration of computer systems with those used for communication, security and fire protection/prevention.

- The increasing implementation of workplace technology and networking. For example, the growth of network equipment is forecast at almost 35% CAGR between 1991 and 1996.

The growth of environmental services, as a result of these two key trends, relates to satisfying a need for creating the correct workplace environment, provision of power and cabling systems, and installation/de-installation services.

Environmental services were historically based on a requirement to provide a tightly controlled environment to meet the operational needs of computer equipment. However, as a result of the trend towards decentralised systems and less stringent environmental needs of computer systems, the need for environmental services is evolving towards provision of an acceptable environment for computer operations and operators.

The key findings that emerge from this study are listed in Exhibit II-1.

EXHIBIT II-1

Environmental Services—Key Findings

- Equipment vendor portion of market growing at an 18% CAGR

- Integrating systems and workplace technology is key driving force

- Need for vendor service not identified by 45% of users

- Market fragmentation is a key issue

The equipment vendor portion of the environmental services market is forecast to achieve a higher rate of growth than rates of other vendors. As the growth of the hardware maintenance market declines, equipment vendors are striving to compensate for this factor by focusing on the development of nonmaintenance services, including environmental services. Cabling services comprise up to 75%, by value, of the environmental services market and equipment vendors are specifically developing building cabling services aimed at satisfying user requirements for integrated systems—for example, structured or saturated wiring systems. The increasing importance of cabling services will likely play a key role in enabling equipment vendors to increase their market share from the current estimated 20% to about 25% by 1996.

An industry trend towards decentralising computer systems and integrating decentralised systems through networking is a key factor driving the growth of the environmental services market. Related factors include the integration of computer systems with other systems such as security and communications and the implementation of on-desk, or workplace, technology. Decentralisation is creating a need for cabling services to satisfy the interconnection needs of systems, and workplace technology is creating a need for office ergonomics to ensure both a tidy and safe working environment for people.

One key characteristic of the environmental services market is that about 45% of users do not indicate a need for external services. This factor suggests that in order to lift the potential restriction on market size imposed by this characteristic, an extensive promotional and marketing campaign will likely be required to stimulate market awareness and user interest.

The market for environmental services is highly fragmented in terms of the supply chain, which includes a wide range of vendors. These vendors range from large construction/building companies to small subcontractors. Between these extremes are equipment vendors and specialist vendors that supply and install environmental facilities—for example, cabling, air-conditioning, power systems that include noninterruptable power supplies (UPS), raised flooring and dropped ceilings, and partitioning.

B
Market Environment

1. Competitive Environment

One key issue in the environmental services market is that the competitive environment has resulted in a highly fragmented market. Exhibit II-2 provides an illustration of how the three main categories of vendor are interacting with three key elements of the market. These interacting factors illustrate the relatively complex nature of the market.

Equipment vendors tend to provide environmental services as part of the overall range of professional services available from their customer services organisations. However, the range of services available varies widely. While some equipment vendors do not provide any environmental services, others—such as ICL, Digital and Unisys, for example—offer full project management services and even implementation services using subcontract resources where needed.

EXHIBIT II-2

Environmental Services Competitive Environment

Fragmented Market

- Equipment vendors
- Independent vendors
- Building/construction companies

⟷

- Technology driven
- Business driven
- Non-computer elements
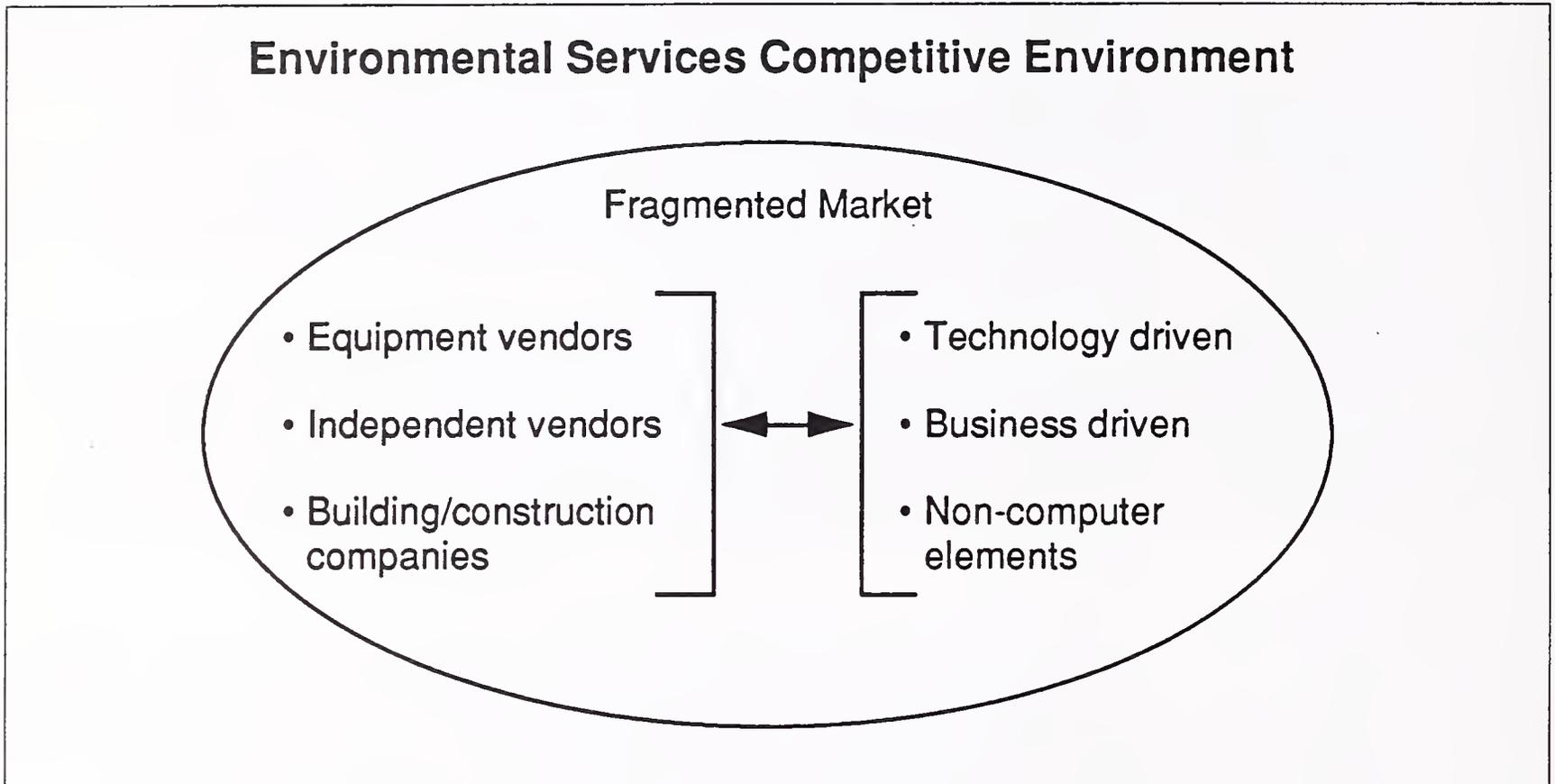
Independent vendors include both independent maintenance/service companies and companies that offer the installation of environmental facilities as an aid to sales of specialist equipment such as air conditioning, often subcontracting the installation. These specialist product companies also include those providing power stabilisation equipment, fire protection systems and specialised flooring/partitioning.

Large building and construction companies primarily focus on the provision of general-purpose buildings. But, increasingly, during the course of design and construction these companies incorporate a basic structure of services aimed at computer systems and communications. However, because many buildings are constructed speculatively, the basic core of services incorporated will most likely need considerable customisation to meet the needs of the eventual occupant, a factor that is influenced by the lack of standards for cabling systems, etc.

One further part of market fragmentation is that a high proportion, about 70%, of the environmental services market is satisfied by non-computer-industry-dedicated vendors. This factor excludes basic building expenditures.

Major driving forces in the market are the result of industry trends towards decentralisation of computer facilities, integration of systems and networking. These trends are inter-related with, and in part a consequence of, a business trend towards increasing need for information and a globalisation of companies and information requirements.

2. Equipment Vendor Environmental Services

Exhibit II-3 illustrates the most common delivery mode adopted by equipment vendors, which is to provide environmental services as part of the overall range of professional services supplied by the customer services organisation. This exhibit also identifies the primary range of services provided and the elements that these services subdivide into.

EXHIBIT II-3

Equipment Vendor Environmental Services

Customer Services Professional Services

Environmental Services	Other Professional Services

- Consultancy
- Design
- Project management
- Implementation

- Computer room
- Cabling
- Power
- Installation
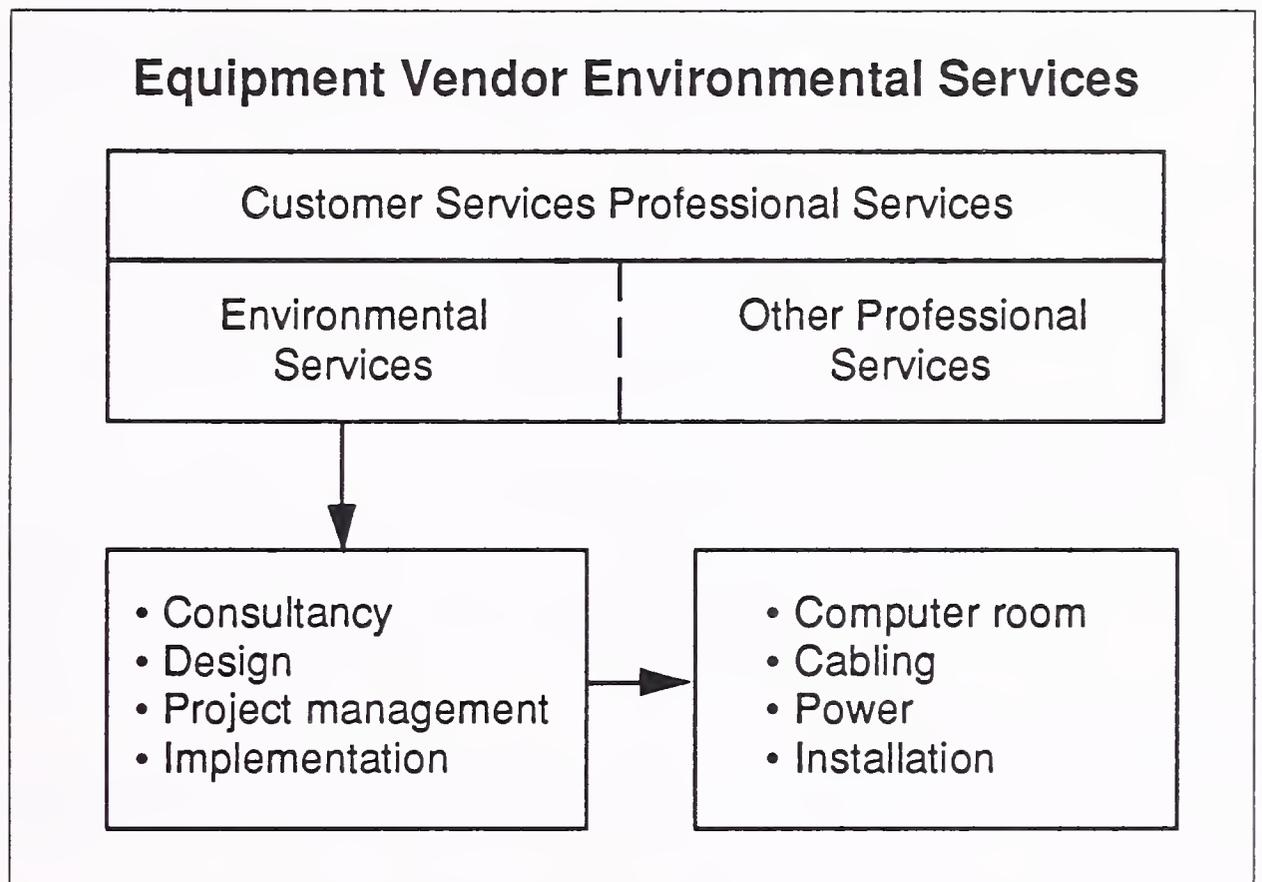
Services provided by equipment vendors can include:

- Consultancy; to assist users to ensure that the correct environmental facilities are provided for the vendor's computer systems.

- Design; related to one or more of the primary environmental systems—for example, power stabilisation systems.

- Project Management; of the various contractors installing the environmental systems, on behalf of the end user.

- Implementation; of one or more of the primary environmental systems—for example, a saturated wiring system in a building.

The primary environmental systems that are included within the scope of services provided by equipment vendors can be categorised as follows:

- Computer room; the provision of air conditioning, raised flooring and dropped ceilings, fire protection and security systems. Or, alternatively, ergonomic office facilities to house workplace technology.

- Cabling; the provision of interconnecting cabling systems for centralised or decentralised computer systems, networks and communications.

- Power; the provision of power systems—including power stabilisation and transient suppression and emergency systems such as uninterruptable power supplies (UPS).

- Installation; installing the computer system on the user site, or the moving and subsequent re-installation of the system.

Although an equipment vendor may not be able to provide a full range of services using in-house resources, the opportunity exists for undertaking the role of primary contractor to the user and sub-contracting where needed to supplement in-house resources. This opportunity results in additional revenues for the equipment vendor.

3. Market Challenges

The current status of the environmental services market is provided by Exhibit II-4. This exhibit also identifies the opportunities available to vendors and the challenges that vendors currently face.

EXHIBIT II-4

Environmental Services Market Challenges

	Market Percentage
Potential growth sector ➞	15
Need for missionary marketing ➞	45
Current market penetration ➞	40
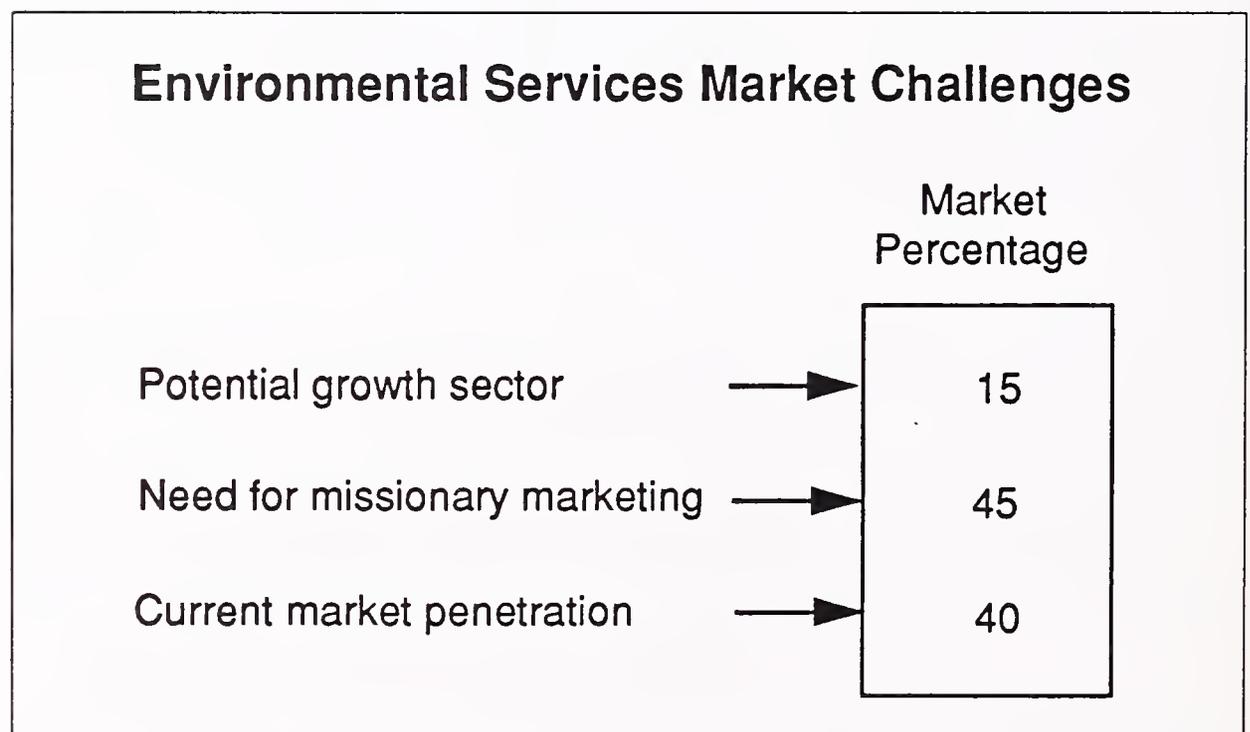
Market penetration is currently assessed at about 40%. This figure has been established from user research involving a sample of 1211 user interviews conducted throughout Western Europe in 1990. Results of the survey indicated that about 40% of users currently claim to have access to vendor-contracted services.

The potential growth sector identified in Exhibit II-4 is based on the fact that about 15% of users surveyed in 1990 express a requirement for vendor-contracted services. However, the levels of interest in vendor-

contracted services indicated by user are rated generally as moderate, suggesting that further marketing by vendors will be required to take advantage of the opportunity offered.

The market for environmental services is not only highly fragmented but is also relatively undeveloped in terms of vendor-contracted services. This fact is derived from user data, which indicated that about 45% of the user sample does not identify a need for vendor-contracted services. In order to open up this significant proportion of the market, an extensive promotion and marketing programme will be needed in order to:

• Increase levels of user awareness to the availability and benefits that can be gained from vendor services

• Stimulate user interest in vendor provided services

In addition to the survey of 1,211 users conducted in 1990, 30 in-depth interviews were conducted. These in-depth interviews confirmed that levels of interest and awareness of vendor services are not very high. Signs of indifference and resistance were also encountered.

C

The Environmental Services Market in Western Europe

1. Market Drivers

Exhibit II-5 lists the primary factors that are driving the growth of the environmental services market in Western Europe.

EXHIBIT II-5

Environmental Services Market Drivers

• Growth of workplace technology

• Trends towards integrated systems

• User outsourcing trends

The primary factor driving growth of the environmental services market is the increasing implementation of workplace technology such as on-desk access to computing power, distributed systems and networking. For example, the growth of network equipment in Western Europe is forecast at about 35% CAGR over the five year period 1991-1996. One aspect of this decentralisation of computer systems is to generate significant need and growth in the cabling sector of the environmental services market as a result of a requirement for interconnection between terminals and systems. Cabling services are estimated to account for up to 75% of the environmental services market.

An industry trend towards integrated computer systems, and towards integrating computer systems with other systems, such as communication and security systems, is also a primary factor driving growth of the environmental services market. This factor is in turn being driven by improved connectivity between systems. One specific area where these trends are having an impact is cabling systems.

However, as the interconnection between systems becomes increasingly complex, users will likely find themselves lacking the expertise and resources to undertake the necessary work. This lack will stimulate a growth in external vendor services as users seek to satisfy their needs by outsourcing.

An economic trend whereby companies are seeking to improve competitiveness in their own business specialisation is also stimulating growth in outsourcing, as a result of these companies reducing internal overhead costs. Many supporting activities previously undertaken by in-house resources will be contracted to external vendors.

2. Market Inhibitor

Factors inhibiting growth of the environmental services market are listed in Exhibit II-6.

EXHIBIT II-6

Environmental Services Market Inhibitors

- Use of user in-house resources

- Downgrading of equipment requirements

- Lack of user awareness

The use of in-house resources by companies that retain the required skill and expertise is a major factor limiting growth of the environmental services market. During in-depth interviews with computer users, a frequently encountered response from the larger companies was that these companies prefer to undertake the provision of environmental systems using their own resources. Many users interviewed considered that equipment vendors in particular could not compete in terms of price with in-house resources or independent vendors. Further comments indicate that some users have doubts concerning the environmental services capability of equipment vendors.

Computer technology is becoming significantly less environmentally sensitive, whereas historically the provision of a tightly controlled environment was a prerequisite of computer systems. The result is a reduction in the need for traditional environmental services. However, balancing this trend, in part, is a need to dissipate the heat generated by concentrations of workplace technology in order to make the environment acceptable to operators.

Lack of user awareness of the availability and need for environmental services and systems is a further key factor inhibiting the growth of the environmental services market. About 45% of the 1211 users surveyed in 1990 failed to indicate a need for external vendor-contracted services. Further, in-depth user interviews indicate very low awareness is part of the reason for this lack of need.

3. The Growth of Environmental Services in Western Europe, 1991-1996

Exhibit II-7 provides a forecast for growth of the environmental services market in Western Europe. This exhibit indicates that the market will grow at about 12% CAGR to reach over $12 billion by 1996.

EXHIBIT II-7

Market Growth of Environmental Services in Western Europe, 1991-1996
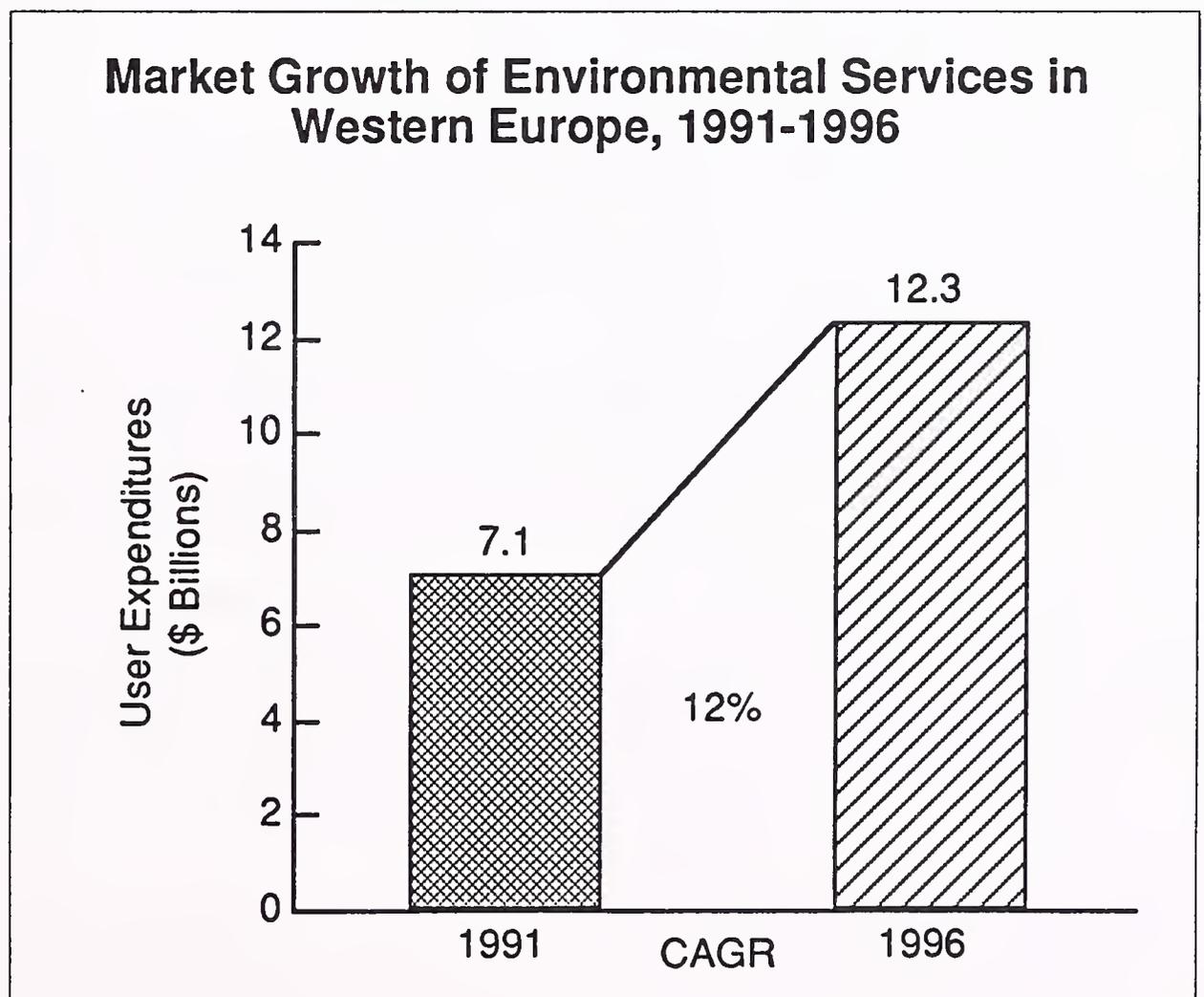
Included within this forecast for growth of the environmental services market are the three revenue streams attributed to the activities of equipment vendors, independent vendors and building/construction companies.

The basis on which the growth forecast for environmental services in Western Europe has been established is as follows:

- Included within the forecast are:

  - Special-purpose computer room facilities, including any special-purpose environmental requirements such as air conditioning, raised flooring and dropped ceilings, and partitions

  - Provision of power systems, including UPS, where these are specific to computer installation requirements

  - Provision of specific computer and network interconnecting cabling systems

  - Installation and de-installation of computer systems and networks

  - Related consultancy services.

- Excluded from the forecast are:

  - Costs part of general building, construction and architectural design

  - In-house user expenditure, which is estimated to add about $4.7 billion dollars to the forecast for market size in 1991

Although, based on user research, the market penetration appears to be about 40%, this figure may be an underestimate. The reason is that a relatively high level of subcontracting is likely transparent to computer users; therefore, true market penetration is closer to 50%.

4. Country Market Growth, 1991-1996

Exhibit II-8 illustrates the estimated growth of the environmental services market in the four larger country markets in Western Europe—France, Germany, the United Kingdom and Italy. These four markets account for about 65% of user expenditure for environmental services in Western Europe.

EXHIBIT II-8

Country Market Growth of Environmental Services

CAGR (Percent)

Country Market

Country Market	1991	1996	CAGR (Percent)
France	1.1	2.1	13
Germany	1.3	2.1	10
United Kingdom	1.4	2.0	8
Italy	0.9	1.8	15
Rest of Europe	2.4	4.3	13

☒ 1991
☑ 1996

User Expenditures ($ Billions)
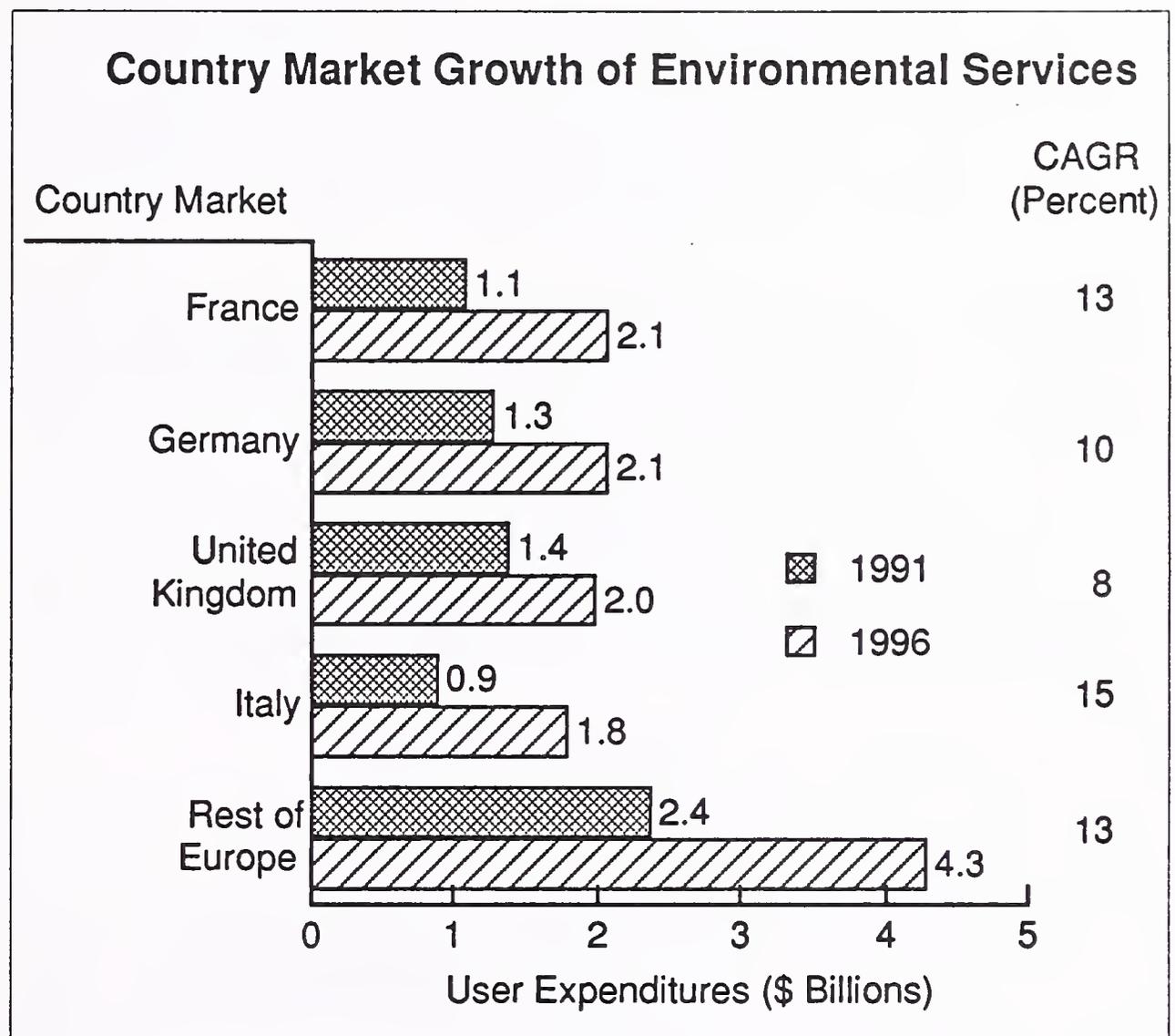
The market in the United Kingdom is likely to experience the lowest growth rate of the four larger country markets. The reason for this lower level of growth in the United Kingdom is partly a result of lower levels of interest expressed by users in vendor services. These levels of interest are about 4.0 in a scale of 0 - 10. In France levels of interest were about 5.0, and in Spain about 5.3. In-depth discussions with users in the United Kingdom confirm a general low level of interest in vendor services, and this is particularly noticeable in larger organisations with access to considerable in-house resources.

Countries with hotter climates—for example, Italy and Spain—are likely to experience a higher growth of environmental services due to the increased need for temperature-controlled environments. Also, these two country markets are subject to a higher growth of computer equipment due to their being less developed markets relative to other European countries.

The German market tends to be more of a mainframe/supermini environment. The implementation of workplace technology in terms of office and point-of-sales systems has yet to develop to the same extent as in other European countries. Therefore the growth of environmental services in the German market may be constrained until the high-growth sectors, such as network cabling, develop.

5. Market Growth by Vendor Segment

The environmental services market can be segmented by the activities of three primary types of vendor. Exhibit II-9 indicates the growth rate forecast for each primary type of vendor in the environmental services market in Western Europe.

EXHIBIT II-9

Western Europe Environmental Services Market Growth by Vendor Type

CAGR (Percent)

Vendor Type	1991	1996	CAGR (Percent)
Equipment vendors	1.4	3.2	18
Independent vendors	1.4	2.1	8
Building/construction companies	4.3	7.0	10

User Expenditures ($ Billions)
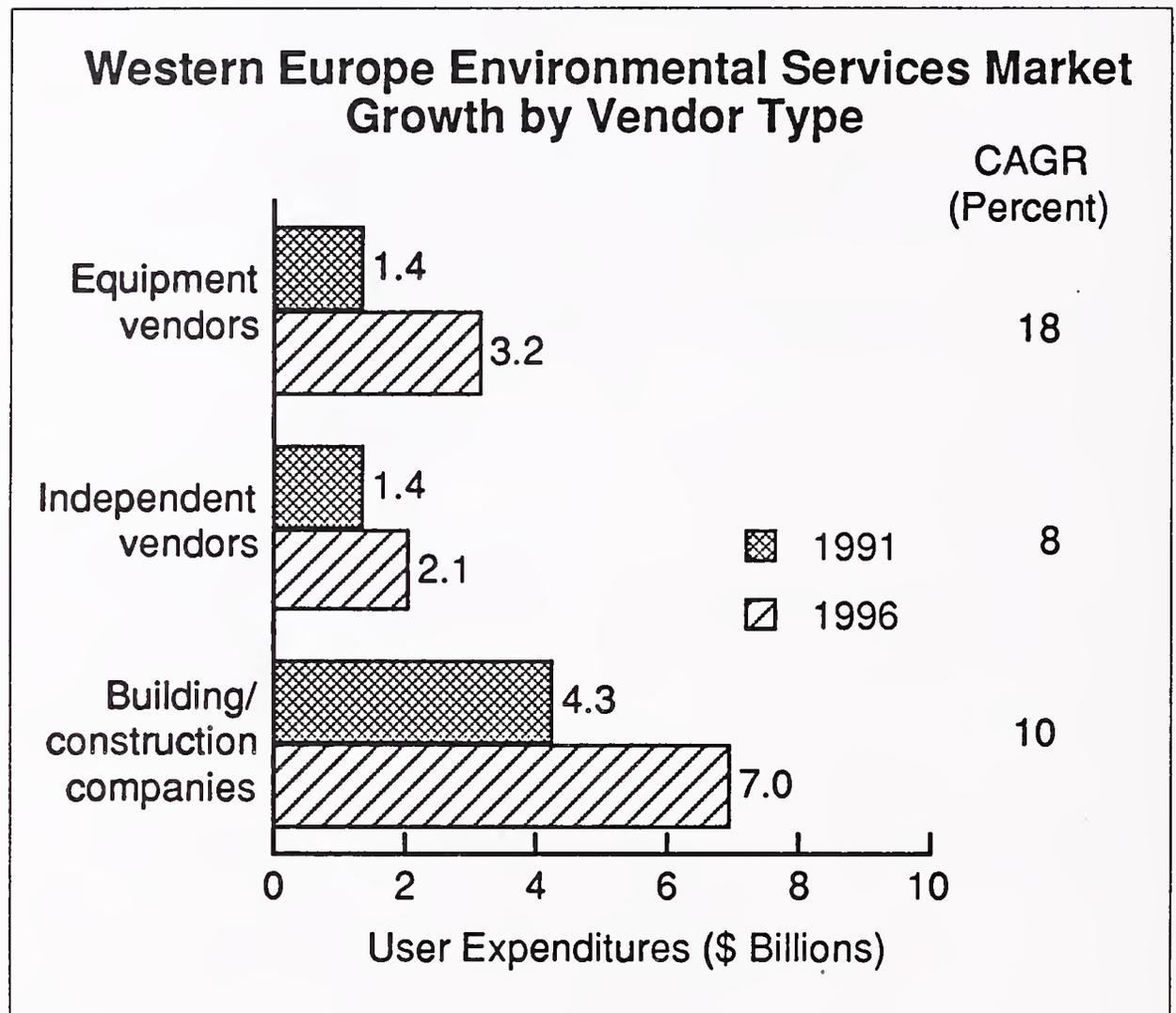
The largest market share is attributable to the building/construction companies. The building/construction companies, or their subcontractors, will normally undertake (or sub contract) the installation of computer system environmental requirements either at the time the buildings are being erected, or when modifications to existing buildings are required. The market share of these vendors is estimated to be about 60% currently.

The market share of the equipment vendors and the independent vendors is currently estimated at about 20% each. However, a number of factors are likely to combine to increase the market share of the equipment vendors:

- Due to increasing complexity of modern buildings and the integration of computer and communications facilities, independent vendors will increasingly find themselves in the role of sub-contractor to either building/construction companies or equipment vendors. Therefore, the independent vendor market share will reduce to an estimated 17% by 1996.

- Equipment vendors are trying to increase revenues from nonmaintenance services. This is partly as a consequence of reducing growth of the hardware maintenance market and partly of an increasing orientation towards total service solutions. Further, a number of equipment vendors are developing structured or saturated wiring products. As a consequence of these activities, equipment vendors will likely undertake an increasing role in the environmental services market, either directly or in the role of prime contractor. As a result of this activity, equipment vendors are forecast to increase their market share to about 25% by 1996.

D
Market Opportunities

1. System Range Sector

Exhibit II-10 indicates the percentage of users claiming to have a requirement for vendor-contracted environmental services. This data is presented by system range.

EXHIBIT II-10

Environmental Services
System Range Opportunities

System Range	Users Requiring Vendor Service (Percent)
Large Systems	10
Medium Systems	18
Small Systems	17

Overall, about 15% of users in Western Europe surveyed in 1991 indicated a requirement for vendor-contracted environmental services. This percentage of users indicates the most likely immediate opportunity for vendors to gain contracts. About 45% of the user sample did not indicate a requirement for vendor-contracted services and although the existence

of contracted services may be transparent to a proportion of these users, this percentage of users is likely a more difficult portion of the market to penetrate in the short term. Nonetheless, this more difficult section of the market still presents an opportunity but will need to be stimulated by marketing and promotional programmes.

It may appear that the midrange and small systems sectors offer the best opportunities—it is in these sectors that the highest percentage of users expresses a requirement for vendor-contracted services. However, it is likely that the value of contracts in the large-systems sector will balance the opportunities to a degree.

One factor that is showing a marginal degree of significance in user surveys is that the midrange sector is becoming more critical in terms of user requirements. This fact may indicate a slightly increased level of opportunities for vendors in this sector.

2. Country Market Sector

Exhibit II-11 indicates the three country markets that are considered to provide the best opportunities for vendors seeking to gain revenues from environmental services.

EXHIBIT II-11

Environmental Services
Country Market Opportunities

Country Market	Users Requiring Vendor Service (Percent)	Level of Interest
1. France	24	Medium
2. Germany	31	Low
3. Spain	14	High

The market in France is rated as the best opportunity for vendors to gain environmental services contracts. In this market about 24% of users indicate a requirement for both environmental planning services and cabling services. Interest levels areabout 5.0 in both cases on a scale of 0 - 10.

Germany is the country market rated as offering the second-best opportunity for vendor environmental services. However, although about 31% of users indicate a requirement for environmental planning services, the level of interest expressed was relatively low, about 2.3 on a scale of 0 - 10. German user interest levels expressed for cabling services are higher at 4.0, but the percentage of users indicating a requirement for vendor contracted cabling services is lower at about 19%.

Levels of interest in environmental services expressed by Spanish users were relatively high for both environmental planning and cabling services—about 5.3 and 6.2 respectively.

3. Industry Sector

Exhibit II-12 indicates the three industry sectors in Western Europe that are considered to offer the best vendor opportunities for environmental services contracts.

EXHIBIT II-12

Environmental Services
Industry Sector Opportunities

Industry Sector	Users Requiring Vendor Service (Percent)	Level of Interest
1. Distribution	25	Medium/High
2. Government	23	High
3. Transportation	21	Medium/Low

In the distribution sector about 25% of users indicate a requirement for vendor-contracted environmental planning services and express a level of interest of 4.3 on a scale of 0 - 10. By comparison, the percentage of users in this sector indicating a need for vendor cabling services is lower—about 21%—but the level of interest expressed by those users is about 5.5.

User data related to the government sector indicates that about 23% have a requirement for vendor environmental planning services and that these users express a relatively high level of interest of about 6.0 on a scale of 0 - 10. The percentage of users in this sector indicating a need for vendor cabling services is much lower at about 9%; however, the level of interest expressed by these users is relatively high at about 5.7.

In the transportation sector the percentage of users indicating a need for vendor services is also relatively high. About 21% of users indicate a need for vendor environmental planning services and about 17% for vendor cabling services; however, levels of interest expressed are only moderate at about 4.7 and 4.3 respectively.

4. Installed Base Sector

Exhibit II-13 indicates the best opportunities for vendor environmental services categorised by vendor installed base.

Environmental Services
Installed Base Opportunities

Vendor Installed Base	Users Requiring Vendor Service (Percent)	Level of Interest
1. Digital	20	Medium/High
2. Unisys	23	Medium/Low
3. NCR	28	Low

The installed base of Digital users is the best opportunity for vendors seeking to gain environmental services contracts. About 20% of Digital users indicate a requirement for vendor environmental planning services and express an interest level of about 5.2 on a scale of 0 - 10. By comparison, the percentage of Digital users indicating a requirement for vendor cabling services is about 14%, but the level of interest expressed by these users is higher at about 5.9.

Within the Unisys installed base about 23% of users indicate a requirement for vendor-contracted environmental planning services; however, the level of interest expressed by these users is only moderate—about 4.3 on a scale of 0 - 10. The percentage of Unisys users indicating a requirement for vendor cabling services is lower—about 16%—but the level of interest expressed is higher at about 5.3.

Although the percentage of NCR users indicating a need for environmental services is relatively high, the levels of interest expressed by these users is low. About 28% of NCR users indicate a requirement for vendor environmental planning services; the level of interest is 3.5. Comparative figures for vendor cabling services are 19% and 4.0.

E

Vendor Opportunities and Challenges

1. Vendor Challenges

The major challenges presented to equipment vendors in the environmental services market are illustrated by Exhibit II-14. These challenges are given a weighting factor to indicate their level of importance.

EXHIBIT II-14

Environmental Services Vendor Challenges

Challenge	Weighting Factor
Building Inadequacy	8
Workplace Technology	6
Competitive Market	4
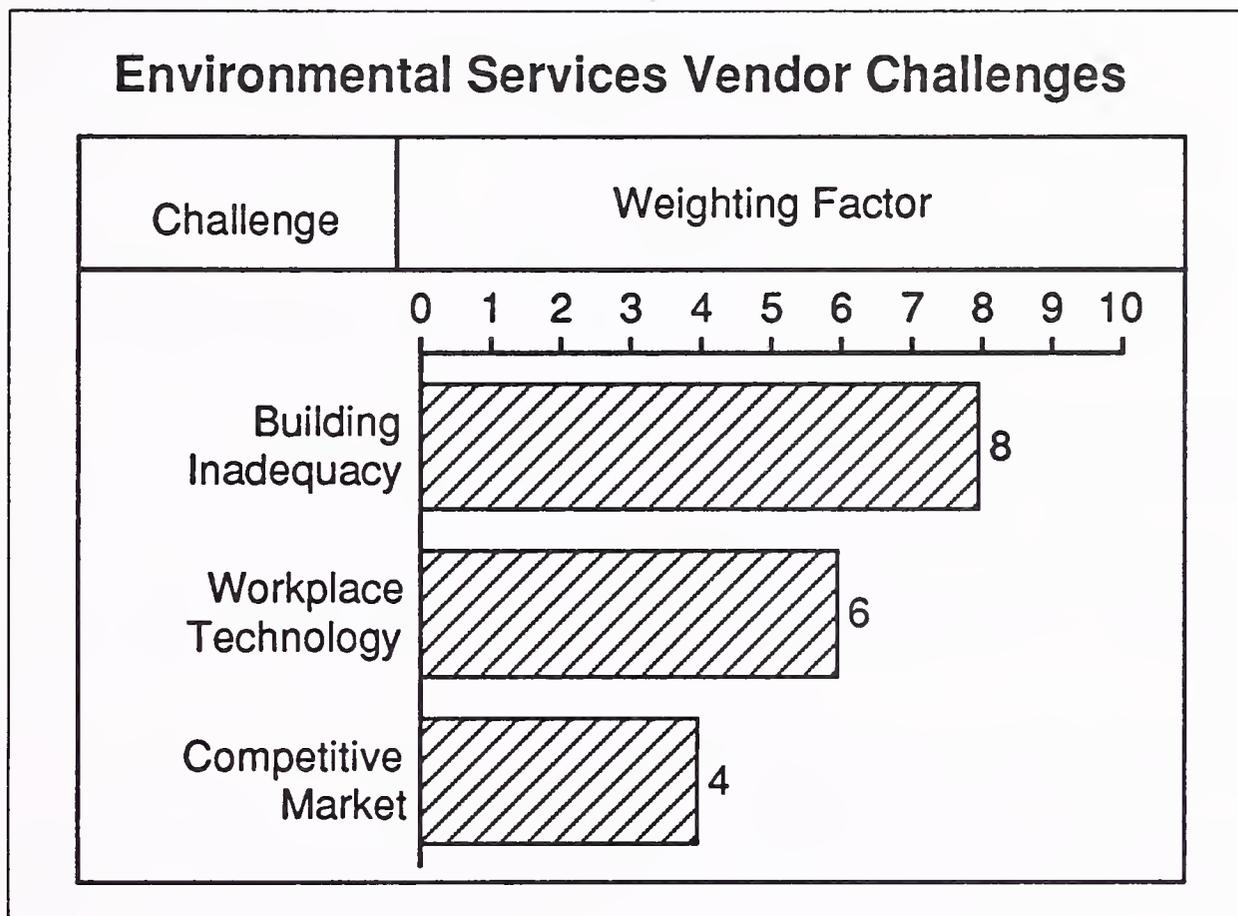
The major challenge indicated relates to the inadequacy of buildings and their suitability for the installation of computer systems and networks. Although modern buildings appear to be constructed with a basic infrastructure in place to accept the installation of computer systems, networks and communications discussion with equipment vendors raised doubts concerning this factor. Many modern buildings are constructed speculatively and require extensive customisation to satisfy the requirements of the eventual occupant. Also, in many buildings the ceiling height is considered inadequate in the event that raised flooring and dropped ceilings are necessary to allow the installation of cabling and additional air conditioning. Installations in older buildings present even more problems in terms of restrictions related to the installation of air conditioning and cabling.

A further challenge is presented by the implementation of workplace technology. As this trend increases it becomes increasingly necessary to ensure standards of tidiness and safety are maintained as concentrations of equipment, power systems and cabling increase. Although computer systems are now much less environmentally sensitive, the heat generated must be dissipated so that the environment is acceptable to operators. Although presenting a challenge to vendors, the successful implementation of office and workplace environmental systems is also an opportunity.

Convincing user management of the need for expenditure on operator working environments may prove a major challenge, especially in countries where less emphasis is placed on working conditions.

The challenge presented by the competitive environment is due to the wide range of vendors active in the environmental services market and also the need to compete with users' in-house resources—the true cost of these resources may not always be fully exposed.

2. Key Issues

Exhibit II-15 illustrates the key issues raised by equipment vendors related to the environmental services market and also indicates the relative importance of these issues.

EXHIBIT II-15

Environmental Services—Key Issues

Issue

Importance Rating

Fragmented market and lack of standards → 8

User-installable equipment →

10

6

4

2

0
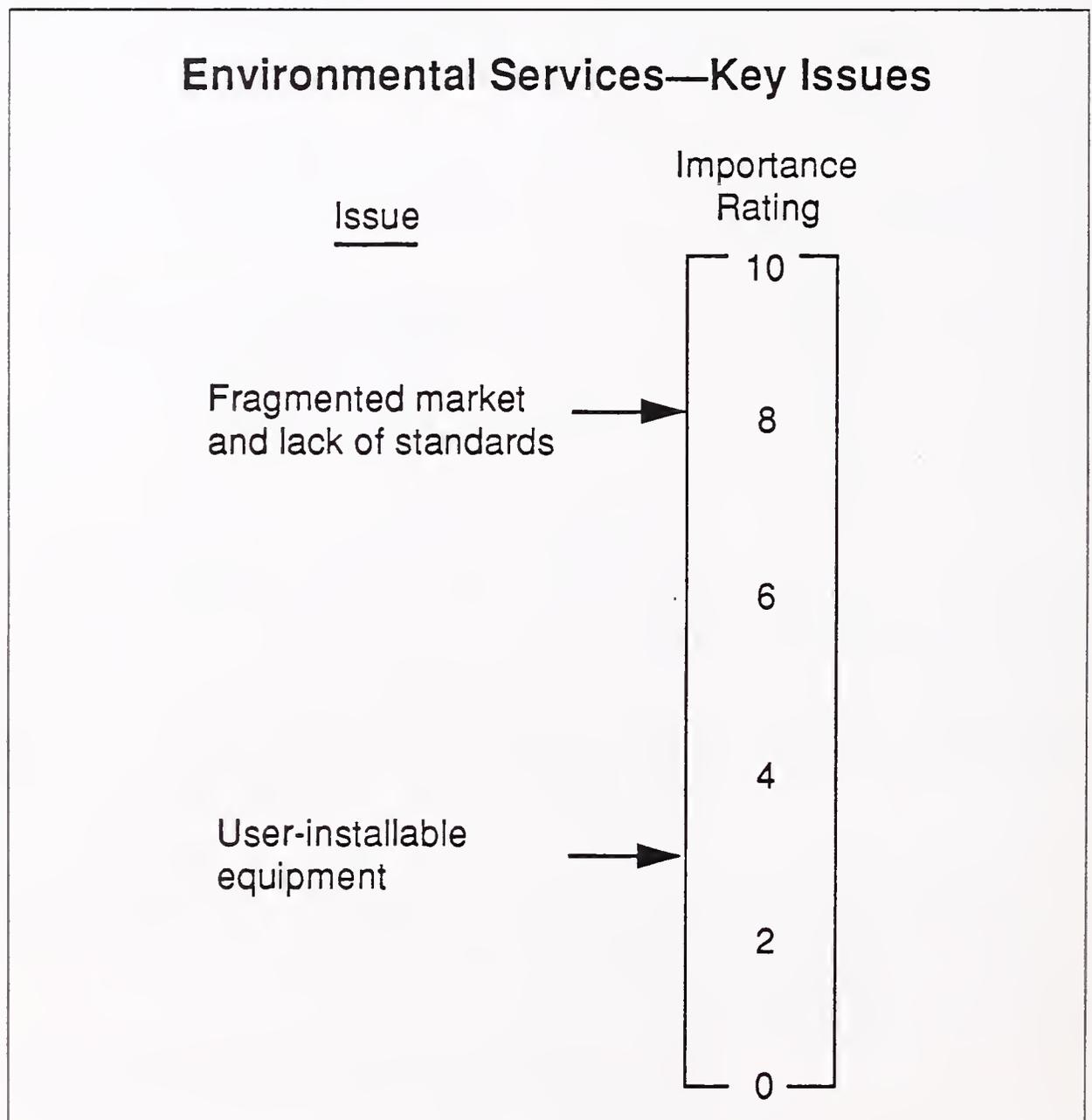
Examples of market fragmentation can be provided by:

• The speculative construction of basic building "shells" lacks sufficient thought applied to the needs of computer systems and networks likely to be installed by potential occupants. Even though these shells contain an apparent infrastructure of facilities, in many cases the facilities provided are considered inadequate by equipment vendors.

• Often small subcontracting companies, whose area of specialisation is construction, view the provision of computer facilities as just another facet of buildings. Many of these companies operate with relatively low overheads and are claimed, by equipment vendors, not to have the required level of capability and skills for the specialised requirements of computer systems.

There is a claimed lack of standards related to the quality of work carried out by the wide range of vendors providing environmental facilities, and lack of standards related to aspects such as cabling. There appears to be no one standard for cabling systems. For example, there is a relatively wide range of "standard" cabling systems and often interfacing between them can be problematic.

One trend at the lower end of the market is the implementation of user-installable computer equipment. The issue created by this trend is a conflict between the equipment vendors' requirement for environmental services revenues from installation services and a user demand for equipment that can be self-installed.

3. Primary Opportunities

The primary opportunities that are presented to equipment vendors by environmental services are indicated by Exhibit II-16. These opportunities are also given a rating to reflect their relative importance.

The major opportunity that emerged from discussions with equipment vendors was that environmental services, apart from offering incremental revenue opportunities, are an important element of total solution services. Previous research has indicated that about 90% of equipment vendors are structuring a total-solution approach to service as a means of improving their competitive position and as a means of developing programmes related to total customer care.

A further opportunity is the industry trend towards integrated systems. One particular area of opportunity is the relatively high growth (34% CAGR) in the installation of network equipment and the cabling requirements of networks. Cabling systems are estimated to account for up to 75% of the environmental services market, by value.

EXHIBIT II-16

Environmental Services
Primary Opportunities

Importance
Rating

Opportunity

10

Total Solution Component → 8

Integrated Systems → 6

Office Ergonomics →

4

2

0
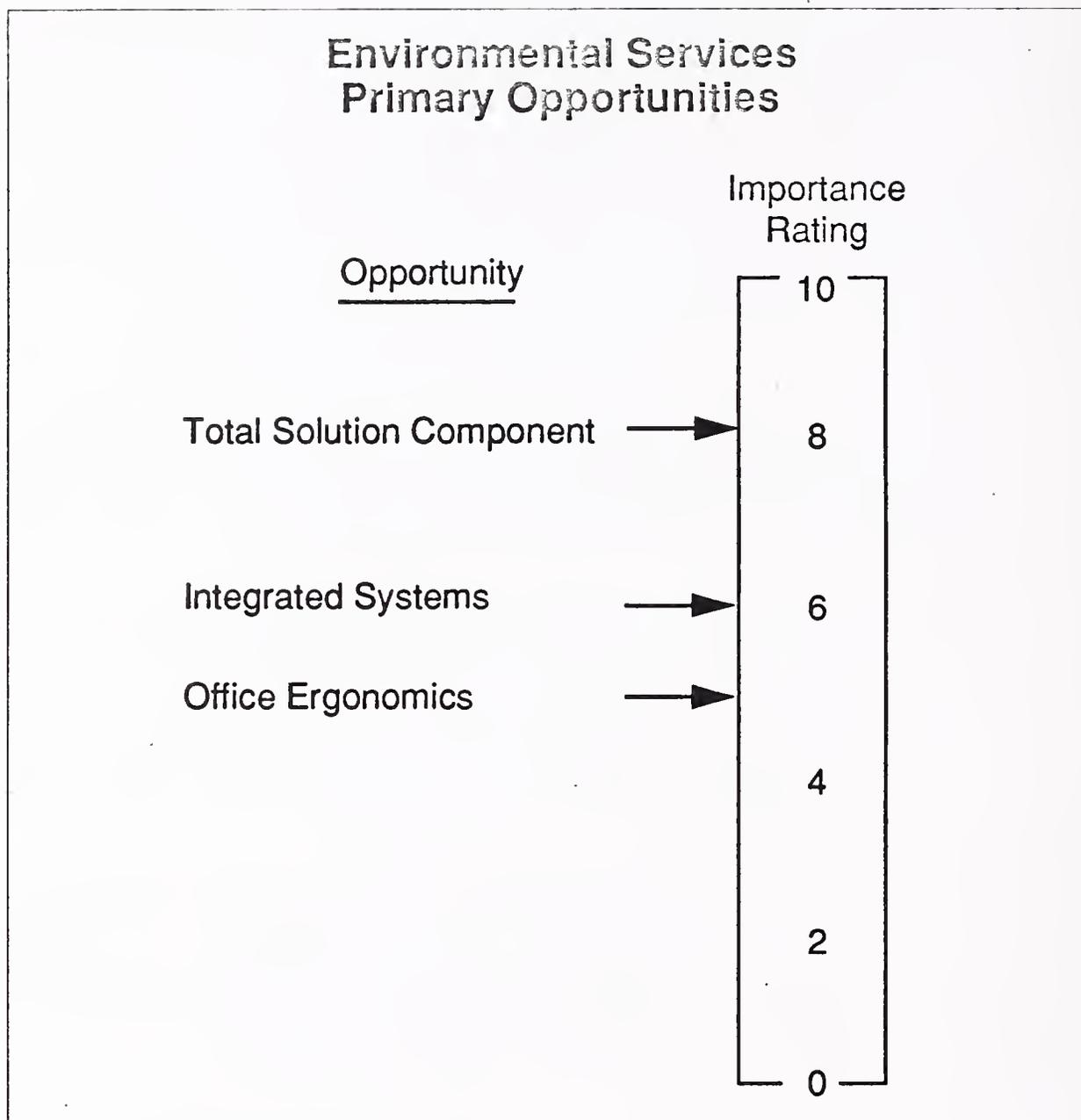
As the implementation of workplace technology increases, an opportunity is presented by the need for ergonomic office design and layout. This opportunity arises as a result of two factors:

• The need to satisfy the logistics requirements of information flow and availability/accessibility/security in terms of system layout and hence cabling and power systems.

• The need to create an acceptable working environment for operators—not only workplace requirements but also comfort, hygiene and tidiness. Vendors that succeed in the development and packaging of workplace technology installations could be well positioned to take advantage of user needs in this area.

4. Revenue Opportunities

Exhibit II-17 illustrates the potential revenue contribution that can be achieved from environmental services expressed as a proportion of the capital cost of computer equipment.

EXHIBIT II-17

Environmental Services—Potential Revenue Contribution as Percentage of Hardware Cost

Percentage

Typical Contribution   Range of Contribution

100

80

60

Large Systems

Networks ———→ 40

Computer Systems ———→ 20

Small Systems

0
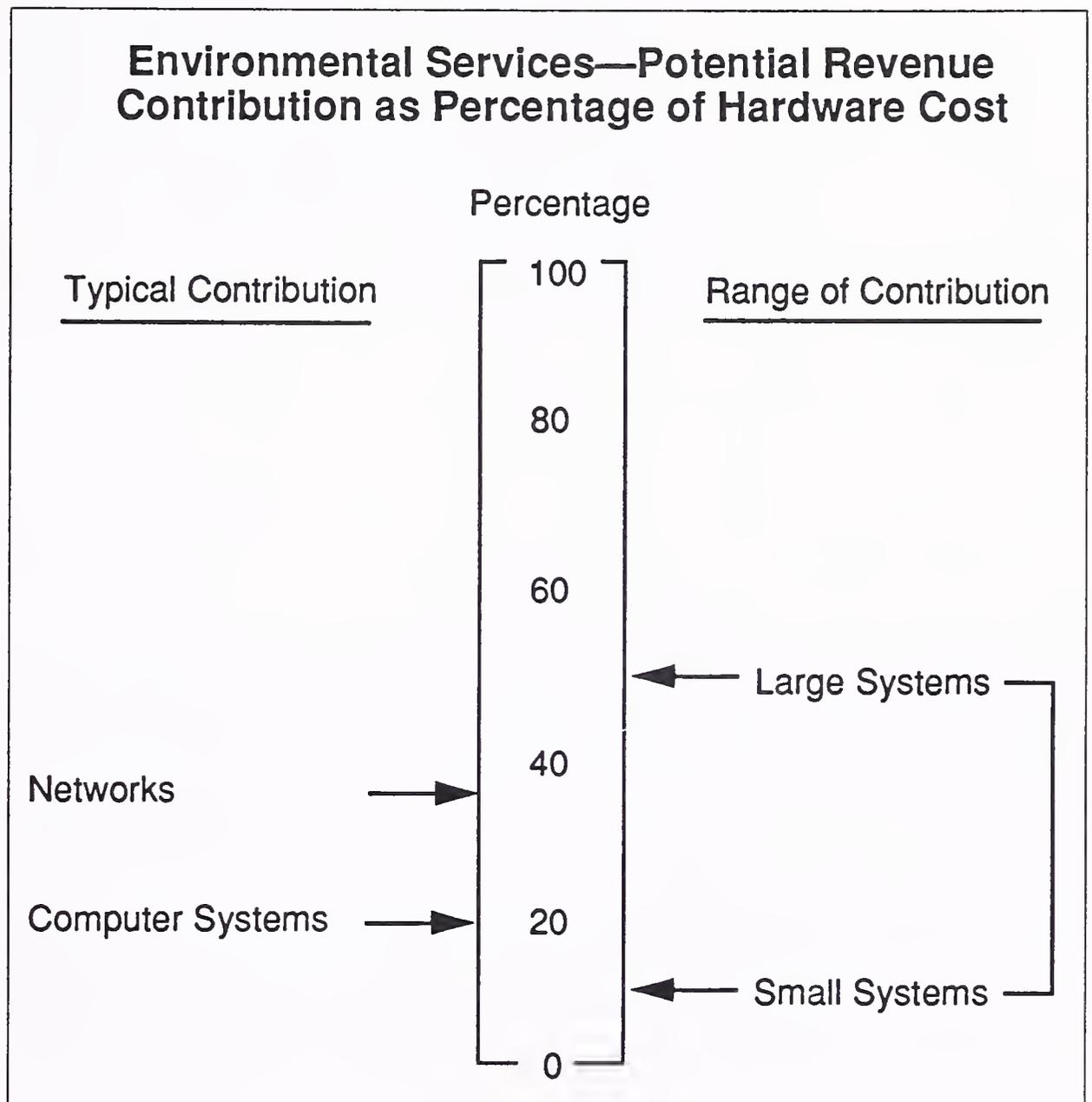
The range of user expenditure on environmental services ranges between 10% of capital cost for a small system to as much as 50% for a large, complex mainframe installation. This latter figure includes extensive user expenditure related to the provision of a specially built computer facility and the associated environmental systems.

In more-typical cases, on average, a new computer installation results in the user being required to spend about 20% of the capital cost on environmental facilities and services. The average figure for re-installation of a computer system is much lower—an estimated 10%. The majority of this expenditure relates to cabling systems, which are estimated to account for up to 75% of the costs for environmental facilities and services, but is typically much lower in the case of re-installation.

In the case of new network installations, the proportional cost of environmental facilities and services is a significantly higher proportion of the capital cost. This is due to a much higher level of costs involved in cabling systems. Installations of new networks involve about 35% of the capital spent by the user on environmental facilities and services, of which over 85% is due to cabling systems.

Assuming that 1991 shipments of all computer equipment in Western Europe are in the region of $60 billion, then the maximum potential market for environmental services and facilities is about $12 billion. Currently equipment vendor environmental services revenues are estimated at about $1.4 billion, equating to just over 10% of the maximum potential market.

III
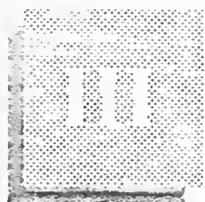
The Market for Environment Services in Western Europe

A
Introduction

The market for environmental services within the computer industry is very fragmented—services are provided by an exceptionally wide range of vendors. These vendors range from very large project management and construction companies to almost the "odd job" type of back-street organisations.

The provision of environmental services comprises the services required for the environment in which the user's computer system, or network, is installed. These services refer to system cabling, air conditioning, and power requirements, for example—and include design, consultancy, project management and implementation of user requirements.

One major factor that emerges from research is that there is a general lack of user awareness of the need for environmental services, the complexity of environmental requirements, and the benefits from vendor-contracted services. This factor indicates a need for marketing and promotional campaigns to stimulate user awareness and needs.

B
Market Segmentation

1. Competitive Environment

The environmental services market has a relatively complex structure. Exhibit III-1 illustrates the overall complexity of the market in terms of the factors related to the competitive environment and the wide range of vendors in the market.

EXHIBIT III-1
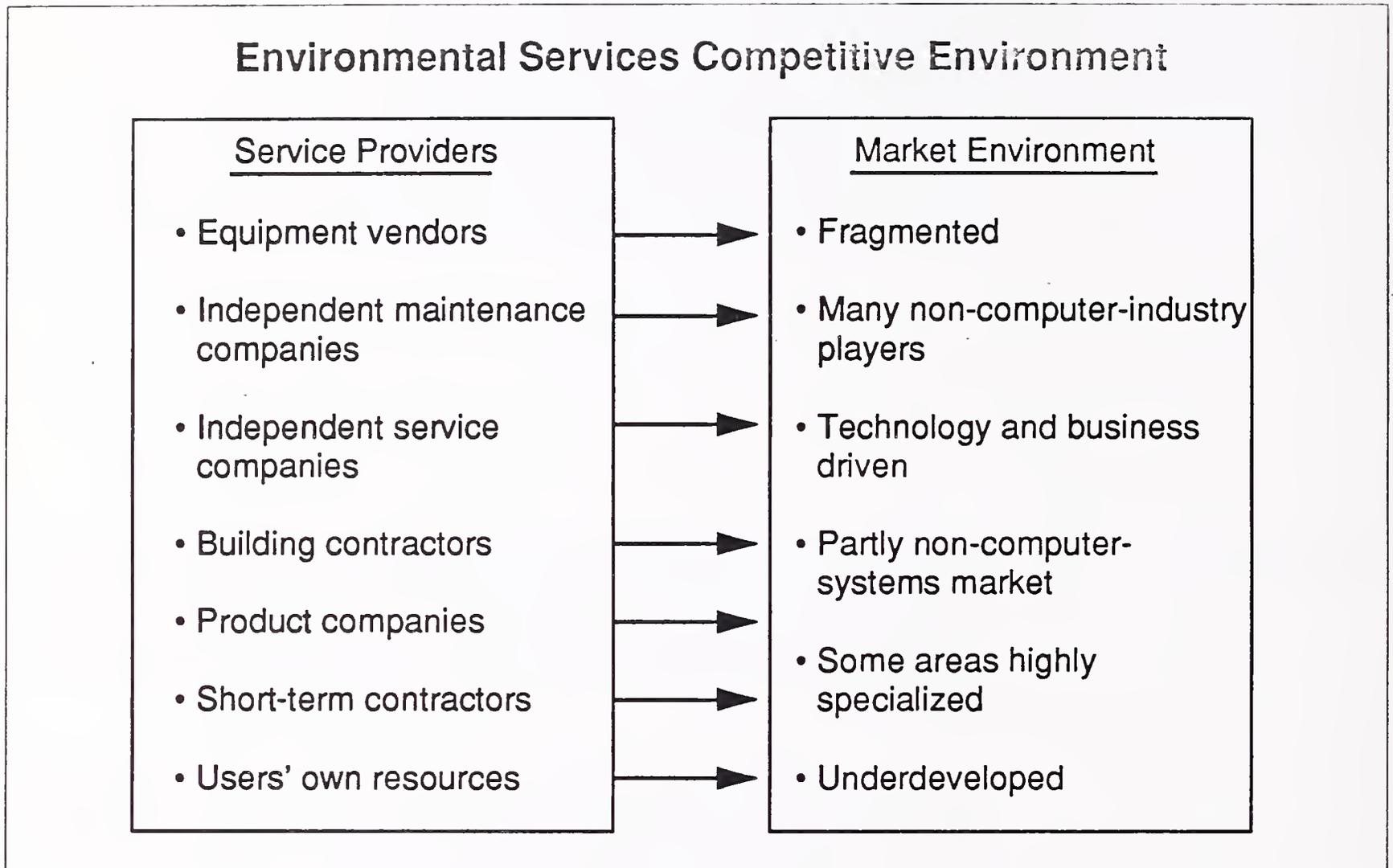
Environmental Services Competitive Environment

Service Providers	Market Environment
• Equipment vendors	• Fragmented
• Independent maintenance companies	• Many non-computer-industry players
• Independent service companies	• Technology and business driven
• Building contractors	• Partly non-computer-systems market
• Product companies	• Some areas highly specialized
• Short-term contractors	
• Users' own resources	• Underdeveloped

Equipment vendors tend to provide environmental services as part of the overall range of professional services available from their customer services organisation. The range of services varies considerably from one vendor to another. For example, Unisys and ICL offer full project management services, including subcontracting to other vendors, while some equipment vendors do not provide any significant environmental services offerings.

Independent maintenance companies, as part of their drive to reduce reliance on pure maintenance services, are also providing environmental services. The services tend to be focused on areas such as cabling and installation/de-installation.

With the emergence of increasing user need for communication systems combined with the emergence of modern buildings/business parks, the "intelligent building" is forming a key part of the computer environment. This market trend is a consequence of the user need for integrated systems resulting from a requirement for continuously updated information, and is also part of a trend towards business/industry globalisation. These factors, together with the building/construction element of environmental services, have been responsible for the involvement of companies whose

main line of business is more related to the provision of buildings and building services than specifically to the computer industry. Companies involved in the provision of computer environmental services from the construction sector include large construction companies and the associated subcontract companies, large and small.

A number of product companies are also involved in providing environmental services to computer users. These are companies providing, for example, power stabilisation systems, uninterruptable power supplies (UPS), air conditioning, fire protection systems and specialised flooring/partitioning. Further, these specialist product companies are not wholly dedicated to the computer industry in that they provide cross-industry services.

Large companies often have large in-house resources able to satisfy computer environmental services needs, together with access to specialist subcontract resources where required. These companies are often resistant to the approaches of external service vendors and, because of their internal cost structures (which may not fully load labour costs), consider that external services are more costly.

As a result of the many and varied types of vendors providing environmental services, the market is relatively fragmented and contains a high proportion of non-computer-industry vendors. It is estimated that up to 80% of the market for environmental services (excluding basic building expenditure) is serviced by companies whose primary business is outside the computer market.

The environmental services market is driven by business needs and by technology. The business needs drive is a result of a user need for integrated information systems that provide a continuous flow of updated information relating to business performance and the market environment in which the business operates. Technology is driving the market by providing more-effective and speedier means of achieving business aims—for example, computer systems that are less dependent on tightly controlled temperature/humidity environments but more dependent on integrated connectivity and the trend towards distributed data processing systems.

Some areas of environmental services are highly specialised—for example, the design and implementation of fibre optic cabling systems and the provision of automated continuous power supply systems.

Discussions with equipment vendors have indicated an overall consensus that the market for environmental services is relatively undeveloped, with equipment vendors claiming that some users are unaware of the complexity of environmental needs. One result of this user unawareness is that

users often undertake tasks for which they do not have the experience, or the skills, and as a result the services provided to the computer system are inadequate and can create a potential for serious problems.

2. Equipment Vendor Environmental Services

Equipment vendors providing environmental services for users usually do so through their customer services organisation, as part of the customer services professional services offerings.

A list of primary customer services professional services is provided by Exhibit III-2. These services in general are related to the equipment platform, hardware or operating systems software. One element of these professional services activities is the provision of environmental services, which in Exhibit III-2 has been highlighted and expanded to identify the range of services that are, and can be, offered to users.

EXHIBIT III-2

Equipment Vendor Environmental Services

Environmental Services

Customer Services Professional Services
- Consultancy
- Network planning
- Network management
- Systems software evaluation
- Environmental planning
- Problem management
- Configuration planning

Adjacent Services
- Disaster recovery
- Systems operations

Consultancy | Design | Project Management | Implementation

Computer Room Requirements

System Cabling

Power Requirements

Installation/Deinstallation

There are two further aspects of professional services that contribute to the provision of an environmental service—these are consultancy and network planning services. Exhibit III-2 divides environmental services into four primary aspects:

- The provision of computer room facilities such as air conditioning, raised flooring, humidity control, fire protection and security systems, sound insulation etc.

- Provision of system cabling—including interconnection between system components, distributed systems, network terminals and file servers—together with connections to communication services.

- The provision of power requirements—including power stabilisation/ transient suppression and emergency power systems such as uninterruptable power supplies (UPS).

- Providing a service for installing the computer system on the user's site or the moving and subsequent re-installation of the computer system.

In providing environmental services, the service vendor can assume responsibility at four different levels, as illustrated by the vertical dotted segments in Exhibit III-2. Briefly these are:

- Provision of consultancy services to the user or to a subcontractor to ensure that correct environmental facilities are provided for the computer system.

- Design of one or more of the primary environmental systems required—for example, the cabling systems.

- To undertake project management for the implementation of computer environmental facilities on behalf of the user.

- Undertake responsibility for implementation of one or more of the primary environmental systems required—for example, the power system. Vendors may use their own resources or subcontract the work to a third party.

C

The Customer Services Professional Services Market

1. Market Growth 1991-1996

The growth of the professional services sector of the customer services market is illustrated by Exhibit III-3, of which the provision of environmental services is a part.

Growth of revenues in the professional services market is critical to computer services vendors as a mechanism for reducing reliance on the declining growth of hardware maintenance revenues. Hardware mainte-

nance revenues are subject to declining growth of about 4% over the period 1991 to 1996, a figure that is below the overall Western European rate of inflation, which is assessed at about 5.5%. This declining growth therefore indicates a revenue decline in real terms.

EXHIBIT III-3

The Customer Services Market for Professional Services in Western Europe 1991-1996
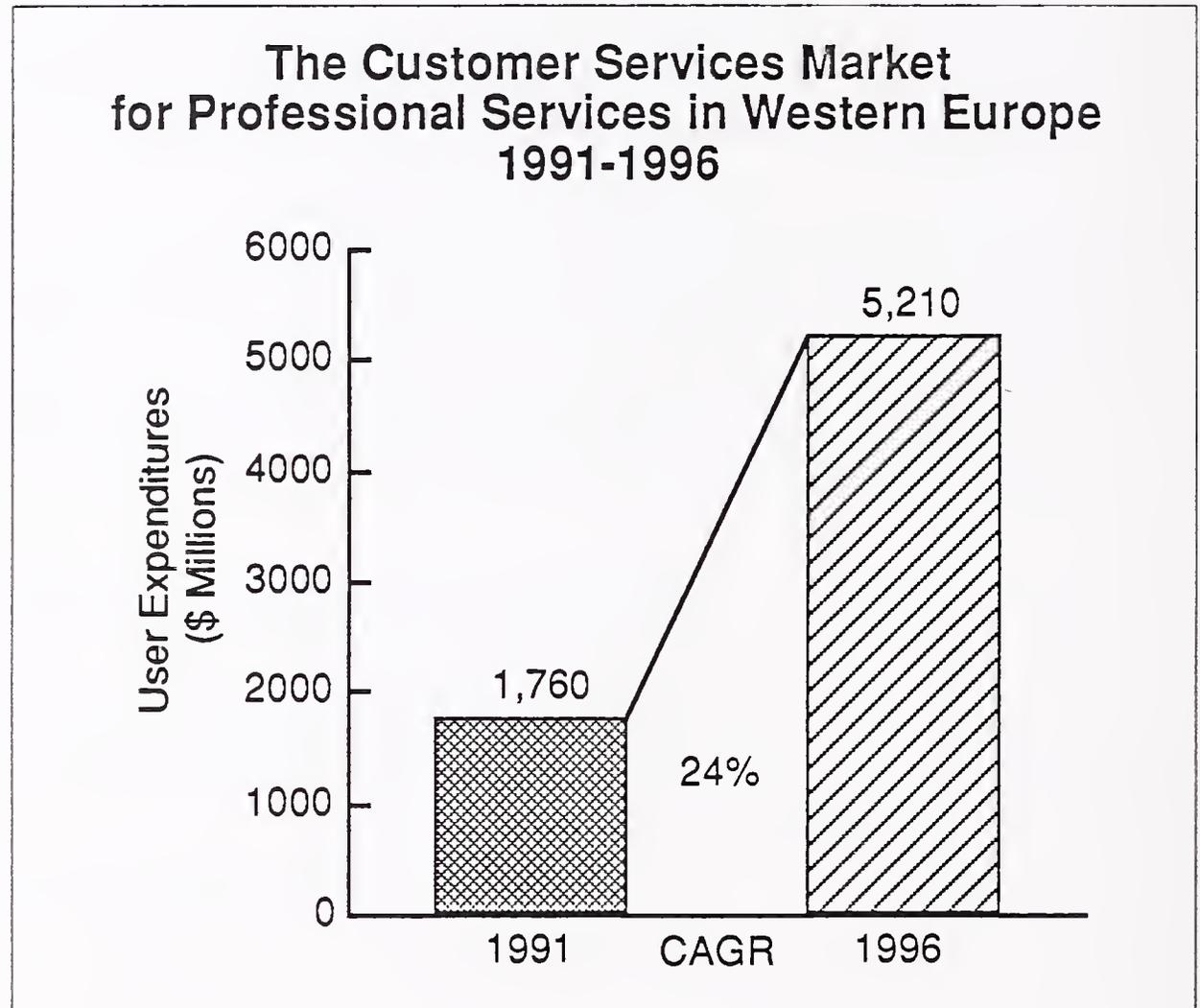
The growth of professional services, of which environmental services form an important part, is forecast at over four times the overall rate of European inflation. Hence, professional services provides vendors with an opportunity to compensate for the declining growth of hardware maintenance revenues.

The opportunities presented by environmental services are a key element of the success that can be achieved from professional services. At present it is estimated that user expenditure for external vendor environmental services is restricted to about 60% of the potential market, the reminder of the market being serviced by user in-house resources. This factor suggests that adequate opportunities exist for vendors that can develop their products and successfully market them.

2. Country Market Growth

Exhibit III-4 provides a forecast for the growth of professional services sector of equipment vendor customer services for thirteen country markets in Western Europe, in US dollars.

EXHIBIT III-4

Country Market Growth of Professional Services in Customer Services, 1991-1996

Country Market	User Expenditures $ Millions			CAGR 1991-1996 (Percent)
	1990	1991	1996	
France	222	281	875	26
Germany	262	326	900	23
United Kingdom	284	341	840	20
Italy	170	220	750	28
Sweden	61	78	220	23
Denmark	37	48	159	27
Norway	33	42	123	24
Finland	28	34	86	20
Netherlands	81	102	340	27
Belgium	34	42	121	24
Spain	60	78	257	27
Switzerland	70	88	264	25
Austria	25	31	96	25
Rest of Europe	37	49	175	29
Total (Rounded)	1,400	1,760	5,210	24

Overall growth of this market is forecast at about 24% compound annual growth rate (CAGR) between 1991 and 1992. The opportunities for vendors within this market are indicated by a growth rate that is almost 19% higher than the overall European rate of inflation, which is about 5.5% and included in the growth figures illustrated.

The four largest country markets in Western Europe are the markets in France, Germany, United Kingdom and Italy. Between them these four markets account for about 66% of user expenditure for professional services in Europe in 1991. Of these four, the United Kingdom is forecast to attract the lowest growth rate, which is partly due to the degree of past successes by vendors in making this the largest country market in 1991 and partly due to a general lack of interest, and awareness, among the remaining users. Discussions with users in the United Kingdom indicate this lack of awareness towards the services offered by equipment vendors and also provide an indication that equipment vendor services are considered expensive, more expensive than independents and the users' own in-house resources.

By 1996 it is projected that the market in the United Kingdom will be relegated to third place, in terms of size, behind those of France and Germany.

Exhibit III-5 provides a market forecast for the period 1991to 1996 expressed in local currency.

Exhibit III-6 provides a market forecast in ECUs.

Currency conversion rates and inflation assumptions used in these forecasts are for 1990.

EXHIBIT III-5

Country Market Growth of Professional Services in Customer Services, 1991-1996

Country Market	User Expenditures ECU Millions			CAGR 1991-1996 (Percent)
	1990	1991	1996	
France	199	253	785	26
Germany	232	288	795	23
United Kingdom	242	291	715	20
Italy	155	200	680	28
Sweden	53	67	190	23
Denmark	33	43	144	27
Norway	29	36	106	24
Finland	24	30	74	20
Netherlands	72	91	304	27
Belgium	30	38	109	24
Spain	54	69	229	27
Switzerland	62	78	236	25
Austria	22	28	85	25
Rest of Europe	45	59	211	29
Total (Rounded)	1,250	1,570	4,660	24

EXHIBIT III-6

Country Market Growth of Professional Services in Customer Services, 1991-1996

Country Market	User Expenditures ECU Millions			CAGR 1991-1996 (Percent)
	1990	1991	1996	
France	199	253	785	26
Germany	232	288	795	23
United Kingdom	242	291	715	20
Italy	155	200	680	28
Sweden	53	67	190	23
Denmark	33	43	144	27
Norway	29	36	106	24
Finland	24	30	74	20
Netherlands	72	91	304	27
Belgium	30	38	109	24
Spain	54	69	229	27
Switzerland	62	78	236	25
Austria	22	28	85	25
Rest of Europe	45	59	211	29
Total (Rounded)	1,250	1,570	4,660	24

D

The Environmental Services Market in Western Europe

1. Market Drivers and Inhibitors

The primary factors that are responsible for driving or inhibiting the growth of environmental services are listed in Exhibit III-7.

EXHIBIT III-7

Environmental Services Market Drivers and Inhibitors

Drivers	Inhibitors
• Growth of networks	• User in-house resources
• Implementation of office technology	• User lack of awareness
• Implementation of POS technology	• User-installable products
• Growing need for integrated systems	• Slowing of growth in equipment market
• User lack of expertise	• User investment economies
• Outsourcing trends	• Office environment equipment

The growth of the network equipment market in Western Europe is estimated at about 35% CAGR for the five-year period 1991-1996. One characteristic of network implementation is the high content, by value, of the cabling system, which is estimated to account for about 30% of the capital cost at initial installation. This figure is calculated on the cost of a network system, excluding connected terminals. As cabling forms the largest part of the environmental services market, estimated at over 50%, the growth of networks is a primary factor driving growth in this market. An integral part of the growth of networks is the growth of the market for implementation of workplace technology—for example, office technology and front- and back-office systems in commerce and retail (such as point of sale (POS) terminals). Implementation of workplace online computer terminals and systems is driving the growth of the network market, which in turn is driving growth of the environmental services market.

A user need for integrated systems serving business needs is also driving growth of the environmental services market, particularly the cabling sector, as the number of interconnected systems increases. As integrated systems become more prevalent, the systems themselves merge to become networks and in turn drive further growth in the network market as access for more users becomes an integral part of the system requirement.

As the level of connectivity between systems and terminals becomes more complex, users will likely find themselves lacking the expertise and resources to undertake the environmental tasks required. Therefore, users will look to the expertise and resources of external specialist vendors to satisfy this need and stimulate growth in the environmental services market.

A further factor driving the growth of the environmental services market is the trend towards outsourcing. As companies seek to improve competitiveness by reducing internal costs, many aspects of the business previously supported by in-house resources will be contracted to outside vendors.

Factors that are inhibiting growth in the environmental services market include:

- The use of in-house resources by companies with the skill and expertise to undertake these tasks. A number of users claim that equipment vendor services are expensive compared with those of independents and their own in-house resources.

- Discussions with users indicate that there is a lack of interest in vendor services and also a lack of awareness of the services available or the benefits.

- One characteristic of the small-systems sector of the market is that systems are being currently designed to be "user friendly" in terms of installation. One feature of some small systems is that they are marketed as user installable.

- Growth of the equipment market is tending to slow, partly as a result of reducing product price and users downsizing as smaller systems offer increasing power. A further factor impacting growth of the equipment market is a tightening of economic conditions in Western Europe and users increasingly looking to improve the "return on asset" from computer equipment rather than simply following technological "fashions."

- The technology of computer systems continues to become less environmentally sensitive. Computer systems can be used in environments that are less strictly controlled, thereby reducing the need for complex control of temperature, humidity and cleanliness. One result of this trend is to reduce the need for the more traditional environmental services—such as computer room environmental control systems—and for purpose-built computer rooms as equipment moves into the more normal office environment.

2. Environmental Services Market Growth

Growth of the market for environmental services in Western Europe is illustrated by Exhibit III-8. Data contained within this exhibit is divided into three primary categories of vendor: independent companies, computer equipment vendors and building/construction companies.

EXHIBIT III-8

Environmental Services Market Growth in Western Europe, 1991-1996

	CAGR (Percent)
Independents: 1.4 (1990), 2.1 (1996)	8%
Equipment Vendors: 1.4 (1990), 3.2 (1996)	18%
Building/Construction Companies: 4.3 (1990), 7.0 (1996)	10%

Legend: ▨ 1990 ▨ 1996

User Expenditures ($ Billions)
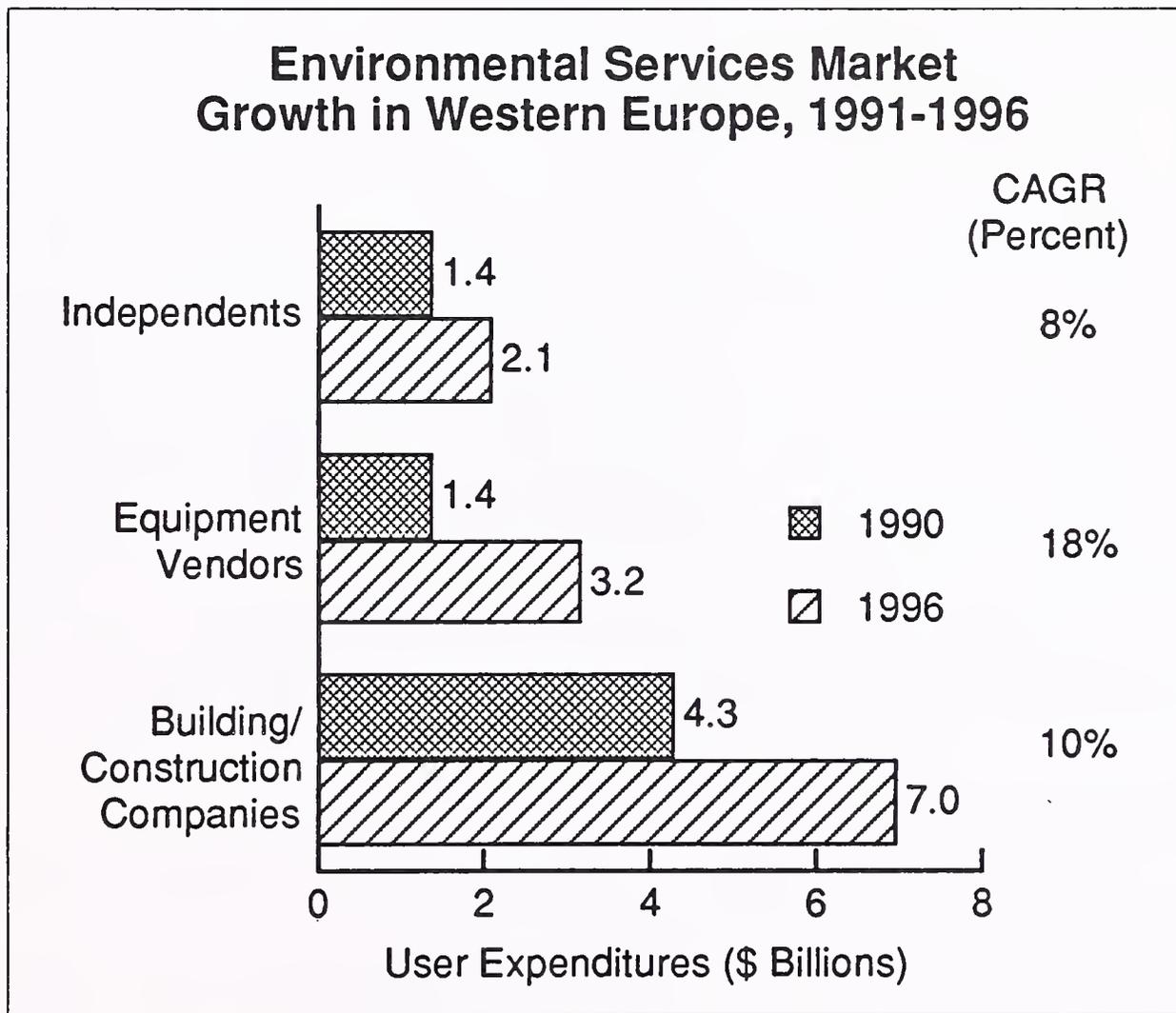
The basis on which the forecast for growth of environmental services has been estimated is as follows:

- Excluded from this forecast are general building and construction costs and architectural design of buildings since these are not generally part of the computer systems market.

- Included in the forecast are:

  - Special-purpose computer room facilities and special-purpose environmental facilities such as air conditioning.

  - Provision of computer-specific power systems, including UPS.

  - Provision of complete system and network interconnecting cabling systems.

  - Installation and de-installation of computer systems and networks.

In brief, the forecast identifies the incremental user expenditure dedicated to the implementation of computer systems or networks.

The largest share of the market is held by the building and construction companies (or their subcontractors), which normally undertake or subcontract the installation of special computer system environmental requirements when buildings are being erected or modified. The market share of these vendors is estimated to be about 60% in 1991. This market share is expected to reduce slightly by 1996, partly as a consequence of reducing need for special computer environments. However, modern building techniques ensure that many modern buildings are constructed, at least in theory, to be "computer friendly" in that they already incorporate a set of basic communications infrastructure, such as cabling, raised flooring, and office-level temperature and environmental control. Many modern buildings appear to be almost computer ready, requiring only the addition of special cabling, power systems, etc.; however, equipment vendors question the suitability of these features.

The market share of the equipment vendors and the independent vendors is currently estimated to be about 20% each. However, a number of factors are likely to combine to differentiate the market share of these vendors:

- As the complexity of modern buildings and the integration of basic communications infrastructure becomes more commonplace, independent vendors are more likely to take the role of subcontractor to larger building and construction companies. Therefore, the market share of the independent vendors will reduce to about 17% by 1995.

- Equipment vendors, in their drive to increase nonmaintenance revenues, are actively structuring a total solution approach to service. Part of this activity is developing building cabling services specifically aimed at the requirements of computer and network systems—for

example, structured or saturated cabling products. As special cabling services play an increasingly important role in environmental services, cabling activities will likely enable equipment vendors to increase market share to about 25% by 1995.

Typically, environmental services is estimated to account for about 20% of the total cost of a new computer installation and about 35% of a typical new network installation. The cost of cabling systems—typically about 15% for a new computer system installation and about 8% for reinstallation/reconfiguring—is estimated to be the largest single expense. The cabling costs associated with network systems are substantially higher and are estimated at 30% of total cost at initial installation, excluding terminal devices.

3. Country Market Growth

Exhibit III-9 provides a forecast for the growth of environmental services in thirteen country markets throughout Western Europe. The data contained within this exhibit is expressed in US dollars.

The four largest country markets in Western Europe are in France, Germany, United Kingdom, and Italy. Together, these four markets account for just over 65% of user expenditure for environmental services in 1991.

The market in the United Kingdom is indicated as the lowest growth market. This low growth is partly due to an overall low level of user interest in vendor services—about 4.0 on a scale of 0-10 as compared with Spain where the level of interest expressed by users is about 5.3. Discussions with users confirm that interest levels are relatively low, particularly in larger organizations with access to extensive in-house resources. Also, users indicate a perception that vendor services are relatively expensive. A further reason is the current economic climate in the United Kingdom, which is depressing user investment.

Countries such as Italy and Spain indicate higher levels of growth, partly due to the climatic conditions prevalent in those countries which infer a higher need for temparature-controlled environments. Also, the computer markets in these countries are less developed, indicating an overall higher growth rate for computer equipment.

EXHIBIT III-9

Country Market Growth of Environmental Services, 1991-1996

Country Market	User Expenditures $ Millions			CAGR 1991-1996 (Percent)
	1990	1991	1996	
France	990	1,135	2,065	13
Germany	1,170	1,315	2,125	10
United Kingdom	1,265	1,375	1,980	8
Italy	755	885	1,775	15
Sweden	270	315	520	11
Denmark	165	195	375	14
Norway	145	170	290	11
Finland	125	135	200	8
Netherlands	360	412	805	14
Belgium	150	170	285	11
Spain	265	315	610	14
Switzerland	315	355	625	12
Austria	110	125	230	13
Rest of Europe	165	198	415	16
Total (Rounded)	6,250	7,100	12,300	12

Lower growth in the German market is partly a consequence of that market tending to be more of a mainframe/supermini market. The implementation of workplace technology in terms of office and point-of-sale systems has yet to develop in Germany to the same extent as other countries. Although the impact of these factors increases the need for controlled computer environments, the high growth areas—such as local-area networks—exist to a much lower extent in the German market.

Exhibit III-10 provides a market forecast converted from local currency into ECUs.

EXHIBIT III-10

Country Market Growth of Environmental Services, 1991-1996

Country Market	Currency	User Expenditures			CAGR 1991-1996 (Percent)
		1990	1991	1996	
France	FF Millions	6,110	7,000	12,740	13
Germany	DM Millions	2,120	2,380	3,850	10
United Kingdom	£ Millions	795	865	1,245	8
Italy	Lira Billions	1,030	1,210	2,425	15
Sweden	SK Millions	1,725	2,015	3,325	11
Denmark	DK Millions	1,165	1,375	2,645	14
Norway	NK Millions	995	1,165	1,985	11
Finland	FM Millions	525	570	840	8
Netherlands	DFI Millions	740	845	1,650	14
Belgium	BF Millions	5,710	6,470	10,850	11
Spain	Pta Millions	30,700	36,500	70,650	14
Switzerland	SF Millions	505	570	1,005	12
Austria	AS Millions	1,405	1,595	2,940	13
Rest of Europe	$ Millions	165	198	415	16

EXHIBIT III-11

Country Market Growth of Environmental Services, 1991-1996

Country Market	User Expenditures ECU Millions			CAGR 1991-1996 (Percent)
	1990	1991	1996	
France	890	1,020	1,855	13
Germany	1,035	1,160	1,880	10
United Kingdom	1,075	1,170	1,680	8
Italy	685	805	1,615	15
Sweden	233	272	450	11
Denmark	149	176	340	14
Norway	125	147	250	11
Finland	108	118	174	8
Netherlands	322	367	717	14
Belgium	135	153	257	11
Spain	237	281	545	14
Switzerland	280	317	558	12
Austria	98	111	204	13
Rest of Europe	199	239	500	16
Total (Rounded)	5,570	6,335	11,030	12

E

Market Opportunities and Challenges

Exhibit III-12 provides identification of the challenges and opportunities available to vendors in the market for environmental services and in the cabling subsector of that market.

EXHIBIT III-12

Market Opportunities and Challenges

Environmental Planning Services		
35% of Users	17% of Users	48% of Users
• Currently claim access to vendor-contracted services	• Indicate requirement for vendor services	• No real need for external services indicated

Vendor Marketing Opportunities ⬅

Vendor Marketing Challenges ➡

45% of Users	13% of Users	42% of Users
• Currently claim access to vendor-contracted services	• Indicate requirement for vendor services	• No real need for external services indicated
Cabling Services		

Overall in Western Europe, the market penetration gained by vendor services is approximately 40%. This factor has been estimated from the percentage of users claiming to have access to vendor-contracted services and was based on INPUT's 1990 survey of 1,211 computer users thorough Europe.

In addition to the survey in 1990, discussions with equipment vendors have indicated that a relatively high percentage of users that do not express a requirement for vendor services may, in fact, have access, but that this access is transparent to the user. In large organisations with extensive building facilities departments, users on some sites are unaware of subcontracts with external vendors. Discussions with equipment vendors have indicated that this figure could be as high as 10%.

Opportunities for vendors are indicated by an overall figure of about 15% of users that express a requirement for vendor-contracted services. However, the general levels of interest in vendor-contracted services are described as moderate, about 5.0 on a scale of 0-10. Therefore, although the opportunities exist, vendors may need to embark on relatively extensive promotional and marketing programmes to stimulate user interest levels and create awareness of the types of services available. Discussions with users suggest that they are not fully aware of the range of services available and also that the marketing of these services could be significantly improved.

The proportion of users that do not express an interest in vendor-contracted services, even though in some cases these services may be transparent, indicates a challenge for vendors. In order to open up this sector of the market, vendors need to not only apply extensive marketing techniques, but also work towards providing justification for the user to opt for external services.

At present the market for environmental services is estimated to be valued at about $7 billion in Western Europe. This estimate assumes that only about 50% (maximum) of users are currently contracted to receive vendor services. Conversion of the remaining available market to vendor services suggests a potential market close to $12 billion. Therefore, the rewards for the success of marketing efforts can be gauged.

IV
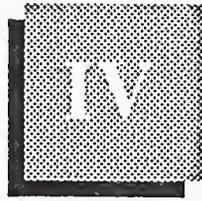
Vendor Opportunities and Challenges

A
Introduction

The market for environmental services presents a number of opportunities and challenges to equipment vendors.

Challenges are presented in the form of market fragmentation where the market is serviced by a mix of computer industry participants and non-computer industry participants. These non-computer participants are the cause of further fragmentation of the market in that they range from large construction companies to small subcontractors to independent specialists providing cabling, air-conditioning, power systems, etc. The services supplied by smaller subcontractors are often on the basis of opportunism or as part of a general building service.

Further challenges are presented by a relatively high proportion of users, about 45%, that do not indicate a need for external vendor environmental services.

The major opportunities presented result from two primary market trends:

- User need for the integration of computer systems and networks, together with the potential for an overall integrated system that includes security, fire detection/prevention and general communications.

- The requirement for office ergonomics as the implementation of technology and computer systems infiltrate the office environment.

B
Issues, Challenges and Opportunities

1. Key Vendor Challenges and Issues

The key vendor challenges and issues are indicated in Exhibit IV-1. These factors are given a weighting to indicate their relevance to vendors in formulating plans to structure service offerings.

EXHIBIT IV-1

Key Vendor Challenges and Issues

Weighting
Factor

Challenges   Issues

10

Inadequacy   Fragmented market
of building   8   and lack of standards

Needs of the office
environment and   6
technology

Competition from
non-computer   4
industry participants
                                    User-installable
                                    office equipment
                     2
                                    Lack of user
                                    awareness
                     0
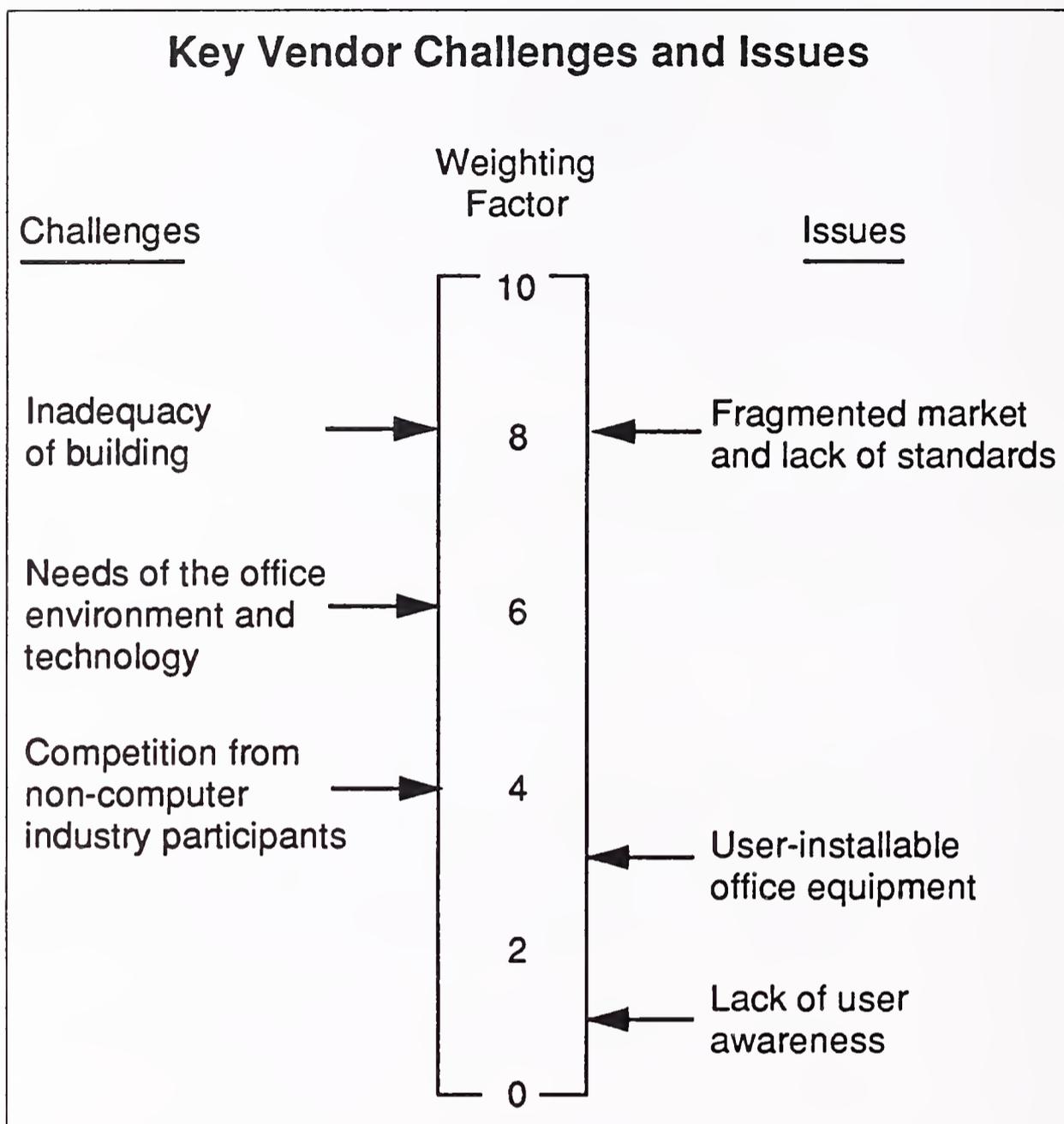
The major challenge, indicated in Exhibit IV-1, is the inadequacy of buildings suitable for the installation of computer systems and networks.

Discussions with equipment vendors indicate that although many new buildings appear to be constructed with a basic infrastructure in place to accept computer and network systems installations, the facilities provided by these buildings are woefully inadequate. One example quoted was a typical case of a modern building with a ceiling height of 3.7 to 4.3 metres and the problems associated with the construction of a computer suite for a large mainframe installation. By the time underfloor cabling and overhead air conditioning had been installed, the ceiling height was reduced to between 2.5 and 3.1 metres. The consequent impact of this on a large suite of, for example, 30 metres in length was to create an unacceptably claustrophobic environment.

A further example of the inadequacy of modern buildings is the fact that in many instances these are built speculatively rather than for the needs of specific occupiers. One problem that results from this factor is the potential for mismatch between any existing communications infrastructure and the needs of the occupier, which is likely to result in a total or partial refit.

Challenges are also presented by the trends towards distributed processing, departmental systems, networking and the integration of company computer systems. The challenges presented by these trends fall into a number of categories:

- The lack of facilities and space to run complex interconnection systems in older buildings is a challenge. One example of the problems caused by older buildings concerns a multinational computer company that was forced to vacate its headquarters due to a lack of space in which to extend communications. There was a lack of space for interconnect cabling and the internal walls of the building were starting to indicate evidence of heat dissipation.

- Moves to implement computer technology in the office environment have presented both an opportunity and a challenge to vendors. Challenges are presented by the need to retain environmentally acceptable office environments in the face of additional heat dissipation from installed equipment and the attendant need to ensure safety regulations are met. Opportunities are presented by the need to achieve implementation of office technology that conforms to ergonomic requirements for clean and tidy offices.

- Technology also presents a challenge in the form of the skills required for the installation of fibre optic cabling systems. Also, the myriad of different cabling systems can create connectivity problems when integrating multivendor and multirange systems.

Competition from non-computer industry companies is also a challenge to equipment vendors. One specific area quoted during discussions with vendors concerned independent suppliers of air conditioning and power systems. Often these vendors do not specialise in the requirements of computer systems and treat this activity as a minor diversification without fully understanding the environmental requirements of computer systems.

Further, many installations of environmental facilities are carried out by smaller subcontracting companies adjacent to the construction industry that work with relatively low overhead costs compared with equipment vendors. In some cases these companies quote speculative prices to undercut competitors and the standards to which work is carried out can be inadequate for the needs of a computing environment.

The challenges that are presented by the market for environmental services give rise to a number of key issues that were highlighted during discussions with equipment vendors. These issues can be summarised as follows:

• The fragmented nature of the market for environmental services was raised as a key issue by equipment vendors. This fragmentation results from the wide range of vendors that are providing services to end users:

  - Large construction companies that provide "basic shells" for occupation, often speculatively, without sufficient thought applied to the need for installation of computer and communication systems.

  - Independent specialists in power or air conditioning equipment/ systems. Many of these companies are equipment manufacturers that adopt an opportunistic attitude and diversify into the installation of the equipment they manufacture.

  - Subcontracting companies, often small companies, specialise in building work and view the provision of computer facilties as just another facet of buildings. Many of these companies operate with low overheads and equipment vendors claim that subcontractors do not have the required knowledge and experience related to the environmental requirements of computer systems.

  - A high proportion of users do not indicate a need for external vendor environmental services—indicating that computer users themselves are a component part of what is a fragmented market. Many large corporations retain a building services department that undertakes the implementation of any new facilities required, in many cases utilising the services of local subcontractors. Equipment vendors also claim that many users, without adequate resources or experience, attempt to undertake the provision of environmental services believing that the tasks are easy. Instances were quoted where users had attempted to reconfigure systems cabling, for example, and subsequently run into either immediate or delayed problems as a result.

• Small systems are being designed with user installation in mind. Success in achieving this aim reduces user need for vendor services in this sector of the market. The result of these activities is to create a conflict in which equipment vendors are seeking to increase environmental services revenues and at the same time preclude growth in specific sectors.

• Lack of user awareness, although not given a very high weighting factor, is nonetheless a key issue in the environmental services market.

This is firstly due to the fact that about 45% of users do not indicate a requirement for external vendor services. Secondly, equipment vendors claim users simply do not understand the full complexity and requirements of providing a suitable environment for computer or network installations.

In discussing lack of user awareness on the need for adequate computer environments, two examples illustrate this lack of understanding:

- The first example relates to a user that implemented a departmental computing solution with networked terminals without considering the need for air conditioning in an older building. The consequent heating effect caused by the power dissipation of the equipment made the office environment unbearably hot during normal summer weather.

- The second example concerns a large organisation that implemented a plan for on-desk computing access in an older building without consideration of the problems associated with additional cabling and power requirements. As a result, the organisation was forced to resolve problems by removing about one-third of the lighting in the building in order to relieve the stress on the power systems.

2. Key Opportunities

Exhibit IV-2 lists the key opportunities for vendors in the provision of environmental services. These opportunities have been categorised and given a rating indicating the importance level.

The major opportunity, listed under the primary category, that emerged from discussion with equipment vendors is that the provision of environmental services is a key component of total solution services. Previous research by INPUT indicates that about 90% of equipment vendors are structuring integrated service solutions as a method of addressing competitive forces in the customer services market and as a method of better satisfying user needs. Integrated service solutions, or total service solutions, comprise a mix of maintenance, software support, professional services and education and training together with other related services. The provision of environmental services forms part of the professional services sector and is therefore considered a key component.

The provision of cabling and communications systems is claimed to be a good market opportunity by equipment vendors. A factor that supports this level of opportunity is the high growth of networks; the installation of network equipment is forecast to grow at about 34% CAGR over the next five years in Western Europe.

EXHIBIT IV-2

Areas of Opportunity

Category	Opportunities	Strength Rating (0-10)
Primary	• Component of total solution and consultancy services	8
	• Cabling and communication systems	6
	• Need for office ergonomics	5
Secondary	• Implementation of technology into corporate echelons	
	• Integration of systems and needs of buildings	3
	• Missionary marketing	
Low Level	• Prepare equipment for ease of installation	1

A further factor supporting the provision of cabling as a key opportunity is the trend away from centralised processing facilities towards distributed processing and office-level technology, indicating that user needs for sophisticated mainframe installations and their attendant environmental needs are decreasing.

A primary opportunity is presented by the need for office ergonomics. As computing technology continues to infiltrate the office environment, partly as a result of the trend towards distributed processing, the need arises for design and implementation of ergonomically designed installations. This need arises from the requirement that offices are structured to not only satisfy the various legislative requirements, but also to create an acceptable working environment in terms of lighting, temperature and hygiene. Further, the design of office environments should take into account the needs of the computer equipment by providing sufficient

ventilation and protection from direct sunlight. Office environments with a high density of computing technology require mandatory air conditioning to dissipate the heat generated by equipment.

Secondary opportunities identified by equipment vendors in the provision of environmental services include:

- Implementing computing technology into the corporate echelons of company organisations. The drive behind this trend is provided by executive need for faster access to information in increasingly dynamic and competitive business environments. On-desk technology provides access to information for senior management, executives and secretarial staff and not only provides access to internal company information, but also to the many external sources of information available from managed network services such as Reuters.

- Integrating computer systems and integrating these with other building services—for example, integrating computer systems with the requirements of security, fire prevention and control, and general communications.

- Undertaking a programme of marketing, or missionary marketing, to address lack of user awareness. One reward that would likely result from a marketing programme is converting users that use in-house services or are unaware of the need/availability of vendor services to the use of external vendor services.

Designing equipment for ease of user installation has been discussed as an opportunity and is particularly appropriate to the small-systems sector of the market.

In taking advantage of the opportunities presented by the market for environmental services, the approach adopted by vendors can take a number of forms in terms of the level of services offered—for example, the vendor could provide services at the following levels:

- Design
- Consultancy
- Project management
- Implementation

The level of services chosen by the vendor is dependent on available skills and resources. However, vendors are encouraged to adopt an approach which provides control as primary contractor.

3. Competitive Forces

Exhibit IV-3 provides analysis related to a consensus of opinion expressed by equipment vendors on the competitive forces that are operating within the environmental services market.

EXHIBIT IV-3

Market Competition

Competitive Rating	Vendor	Growth Prospects
1	Building/construction companies	Declining
2	Independents	Flat
3	Equipment vendors	High Growth
4	Users' own resources	Declining

One key factor indicated by Exhibit IV-3 is the drive that equipment vendors are applying to the provision of environmental services and the degree of confidence in their ability to be successful in this task. These factors are underlined by the high growth rates that equipment vendors expect to achieve as a result of their activities.

In part, the level of confidence expressed by equipment vendors relates to the degree of specialist expertise that they can bring to the market and partly to the claimed level of expertise that is required for the implementation of successful environmental services. This expertise is considered to be less prevalent in the competing vendors.

Equipment vendors generally project that the end-user revenues of building/construction companies from environmental services will decline. Also, use of users' in-house resources for the provision of environmental services will gradually decline as the trend towards outsourcing gathers momentum.

A further factor influencing the projected high growth potential of equipment vendor services is the relatively high growth of network services. This factor—when considered in line with equipment vendor plans and capability for providing saturated building wiring—indicates relatively high growth in the cabling sector, which forms the largest part, about 70%, of the environmental services market.

C

Revenue Potential

1. Incremental Factors

A measure of the relativity between the capital cost of computer equipment and environmental services is illustrated by Exhibit IV-4.

EXHIBIT IV-4

Environmental Services Relationship to Hardware Capital Cost

Cabling Services	Percentage of Hardware Cost	Environmental Services Overall

Mainframe
Computer system range
Small systems

Networks → 30
New installations → 15
Re-installations → 10

50 — Mainframe
45
40
35 ← Networks
30
25
20 ← Computer systems
15
10
5
0 — Small systems

Computer system range
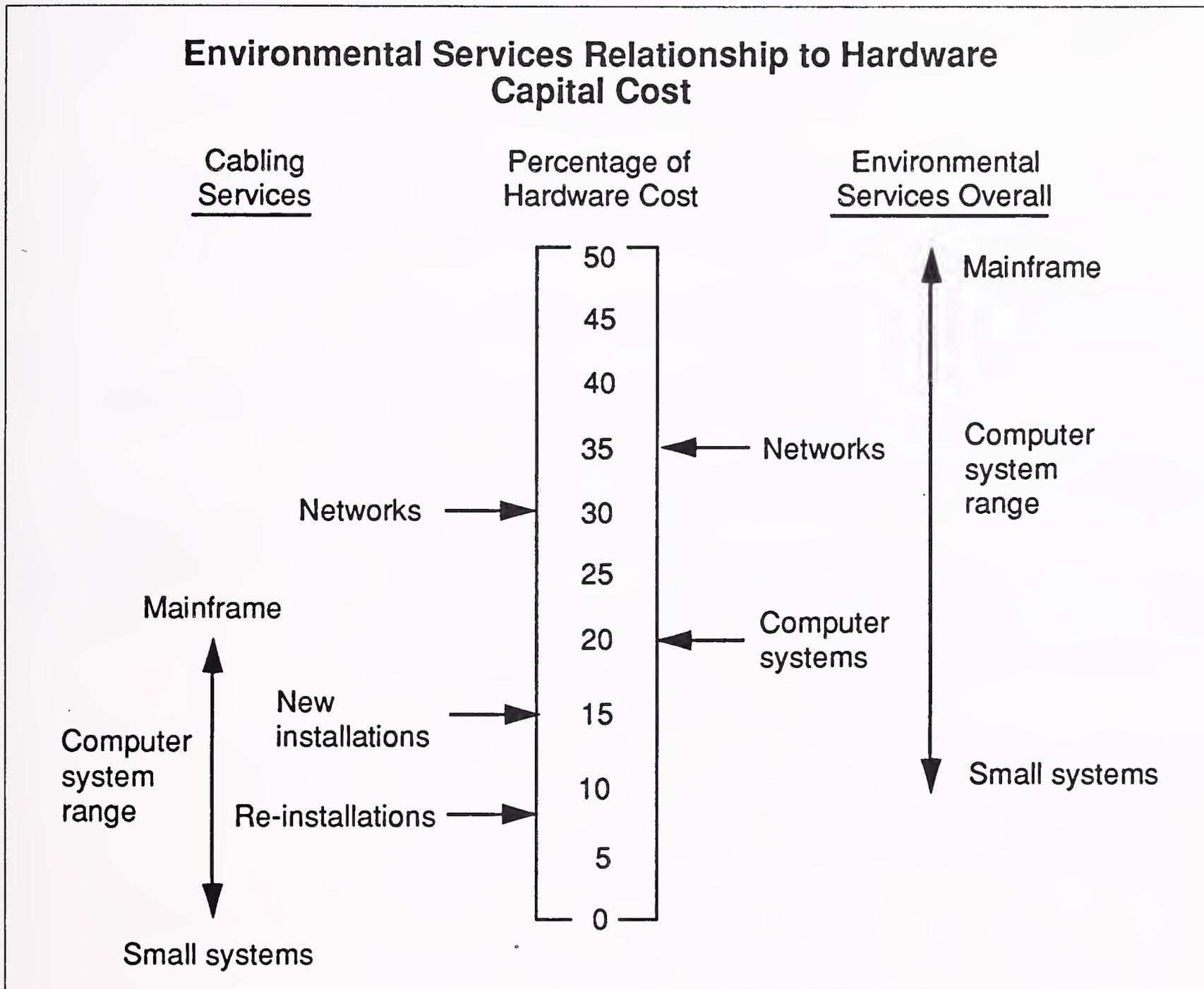
Within the overall range of computer systems, the proportion of capital costs required for environmental services represents between about 10% and 50% of that cost. The lower of these two figures relates to small workstation or PC-based systems and the higher figure to a complex mainframe installations.

A typical computer system will require an average of about 20% of the capital cost of the hardware for environmental services. The corresponding figure for a network system increases to about 35% as a consequence of the significant increase in cabling costs.

The highest proportion of environmental services costs overall is expenditure for cabling. This relativity is not constant over the whole range of systems; other services, such as power systems and air conditioning, are most likely to exceed the cabling cost on large mainframe installations.

However, on average the cost of system cabling accounts for about 15% of the capital cost of hardware for new computer installations, reducing to about 7% in the case of re-installations. The range of expenditure for system cabling lies between just below 5% of hardware costs for a small PC-based system and about 20% for a mainframe system.

The cost of cabling on network systems is much higher than that on a conventional computer system, representing about 30% of the overall capital cost of the network, excluding connected terminals.

2. Service Sector Contribution

Exhibit IV-5 provides analysis of the proportion of revenues achieved by equipment vendors from four sectors of the environmental services market.

EXHIBIT IV-5

Service Sector Revenue Contribution

Environmental Service Sector

Computer room	5 – 25
Cabling	10 – 70
Power systems	5 – 30
Installation/ De-installation	15 – 50

Range of Revenue Contribution (Percent)
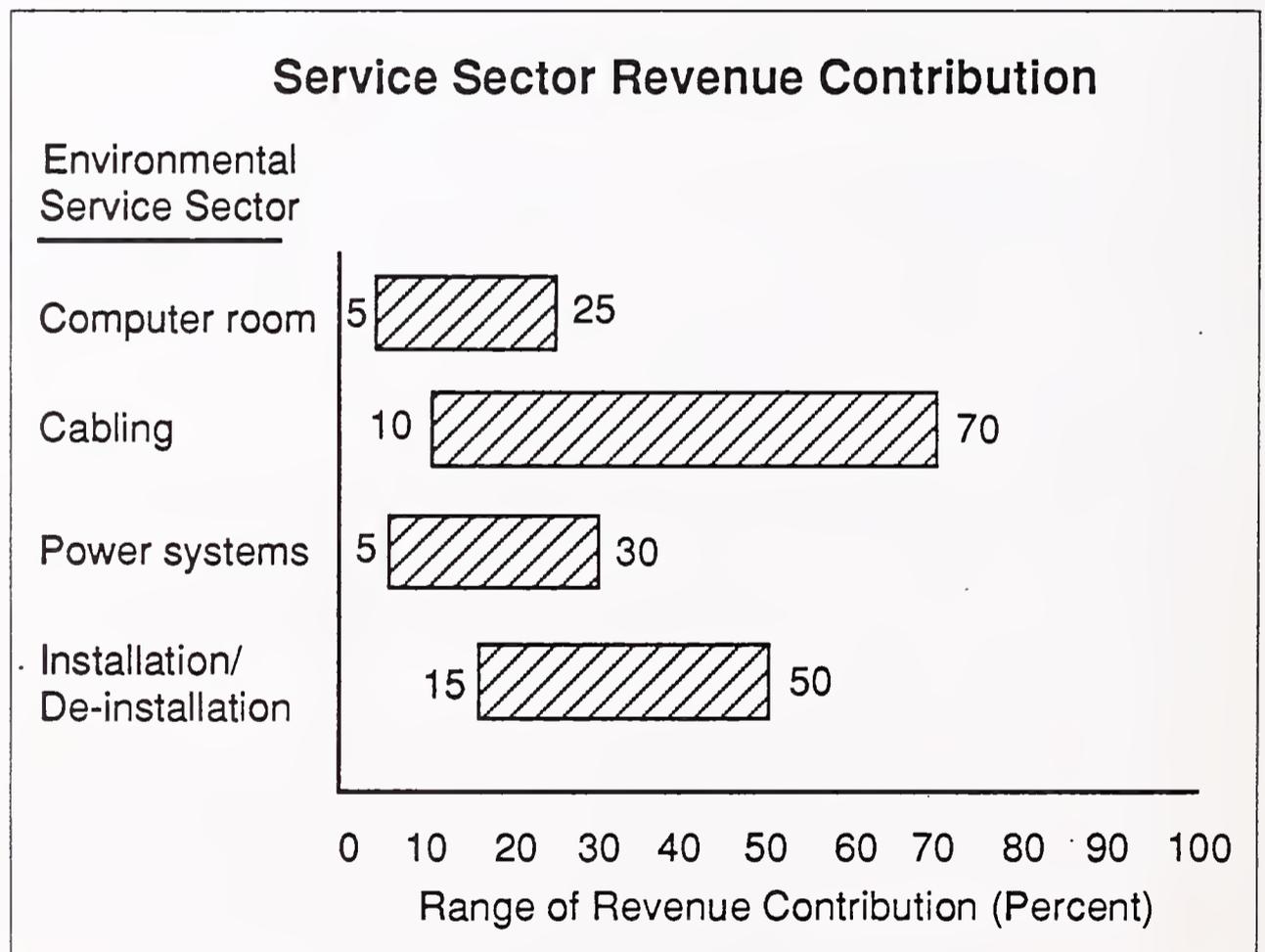
One key factor indicated by Exhibit IV-5 is the relatively high proportion of equipment vendor revenues that are generated from cabling services and installation/de-installation services. Overall, just over 60% of revenues are generated from these two services. It should be noted, however, that there were instances encountered where the system cabling services were bundled with the hardware price.

Overall, equipment vendor revenues from environmental services can be apportioned as follows:

- About 15% of environmental services revenues result from services related to the provision of computer rooms.

- The largest proportion of environmental services revenues, about 40%, result from the provision of services related to computer systems cabling.

- About 18% of environmental services revenues result from the provision of services related to power systems. About 90% of the vendors interviewed provided uninteruptable power supplies (UPS) as part of the service offerings, even though these were bought in items.

- The second highest revenue contribution from environmental services results from the provision of installation/de-installation services, which account for about 22% of equipment vendor revenues.

The equipment vendors share of the environmental services market is currently about 20%. However as a consequence of the higher growth, it is expected that market share will increase to about 26% by 1996.

D
Marketing Challenges

This section identifies and quantifies the challenges facing service vendors seeking to further penetrate the environmental services market. User data indicates, in overall terms, that the market for environmental services in Western Europe can be divided as follows:

- Market Penetration. About 40% of users currently claim to have access to vendor-contracted environmental services. In this section of the market, vendors are likely bidding competitively against each other to retain or acquire existing contracts. True market penetration could be higher, as much as 50%, due to:

  - Subcontracting of services by in-house building facilities organisations in a manner that is transparent to the computer departments.

  - Corporate-level contracts in large organisations where the provision of external environmental services are also transparent to the computer departments.

- Requirements for Service. About 15% of users indicate a need for vendor-contracted environmental services. This section of the market is considered to offer the most likely immediate opportunities to vendors.

- No Service Requirements. About 45% of users do not indicate a need for vendor-contracted environmental services and it is this section of the market that presents a major challenge to vendors. In order to open up this section of the market, vendors will likely need to mount an extensive marketing and promotional campaign to stimulate user interest and awareness. The term "missionary marketing" applies.

A programme of additional in-depth user interviews conducted during the latter part of 1990 served as confirmation that a relatively high proportion of users are either unaware of equipment vendor service capability or consider alternatives to be more cost attractive.

1. Environmental Planning Services

Exhibits IV-6 to IV-9 indicate the challenges facing vendors offering environmental planning services. These exhibits quantify the challenge presented to vendors by showing the percentage of users not indicating a requirement for vendor-contracted services. The data presented is segmented as follows:

- System Range - Exhibit IV-6

- Country Market - Exhibit IV-7

- Industry Sector - Exhibit IV-8

- Vendor Installed Base - Exhibit IV-9

At the systems range level, the large- and small-systems sectors present the most significant challenges to vendors; the medium-system segment slightly less challenging.

In terms of country markets, illustrated in Exhibit IV-7, challenges presented to vendors by the users in Italy represent a major barrier. About 75% of Italian users do not indicate a requirement for vendor environmental planning services. The markets in France and the United Kingdom represent the second-most significant challenge because about 55% of users do not indicate a requirement for vendor environmental planning services.

EXHIBIT IV-6

Western Europe Market Challenges
Environmental Planning

Sample size: Large systems -   324
                Medium systems - 638
                Small systems -   249

Standard error: 0.3

Source of data: INPUT 1990 User Survey

EXHIBIT IV-7

Country Market Challenges
Environmental Planning

Country Market

Country Market	Value
Benelux Region	34
France	55
Germany	40
Italy	75
Norway and Sweden	33
Spain	31
United Kingdom	56
Other European Countries	44

0 10 20 30 40 50 60 70 80 90 100

No External Requirement (Percentage of Users)

Sample size: 1,211

Standard error: 0.3

Source of data: INPUT 1990 User Survey

At the industry sector level, illustrated by Exhibit IV-8, two industry sectors stand out as representing relatively significant challenges to vendors. These are:

• Insurance Sector. Almost 60% of users do not indicate a requirement for vendor environmental planning services.

• Manufacturing and Services Sector. About 50% of users do not indicate a requirement for vendor environmental planning services.

EXHIBIT IV-8

Western Europe Industry Sector Market Challenges
Environmental Planning
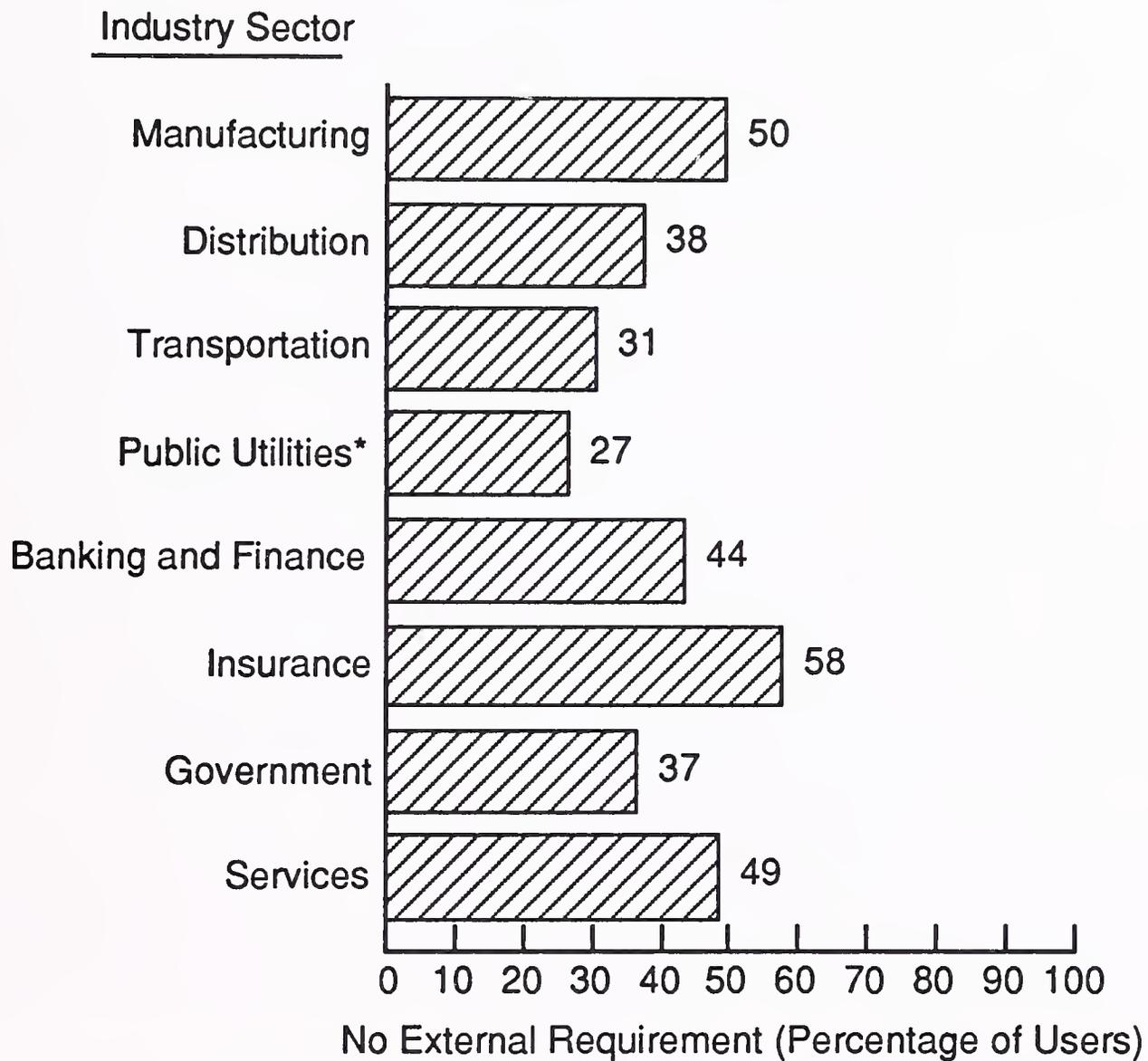
Industry Sector

Industry Sector	Value
Manufacturing	50
Distribution	38
Transportation	31
Public Utilities*	27
Banking and Finance	44
Insurance	58
Government	37
Services	49

0 10 20 30 40 50 60 70 80 90 100

No External Requirement (Percentage of Users)

Sample size: 905

Standard error: 0.35

Source of data: INPUT 1990 User Survey

* Indicates small sample

In terms of vendor installed base, illustrated in Exhibit IV-9, the user base of ICL and Stratus indicates relatively substantial challenges to vendors with about 60% of users not indicating a need for vendor environmental planning services.

Representing a lower but still relatively significant challenge, in the installed user base of Amdahl, NCR and Philips, about 50% of users do not indicate a need for vendor environmental planning services.

Western Europe Vendor Installed Base Market Challenges—Environmental Planning

Vendor

Vendor	Value
Amdahl	49
Bull	40
Digital	29
Hewlett-Packard	42
IBM	41
ICL	61
NCR	50
Philips	53
Stratus	62
Unisys	29

0 10 20 30 40 50 60 70 80 90 100

No External Requirement (Percentage of Users)
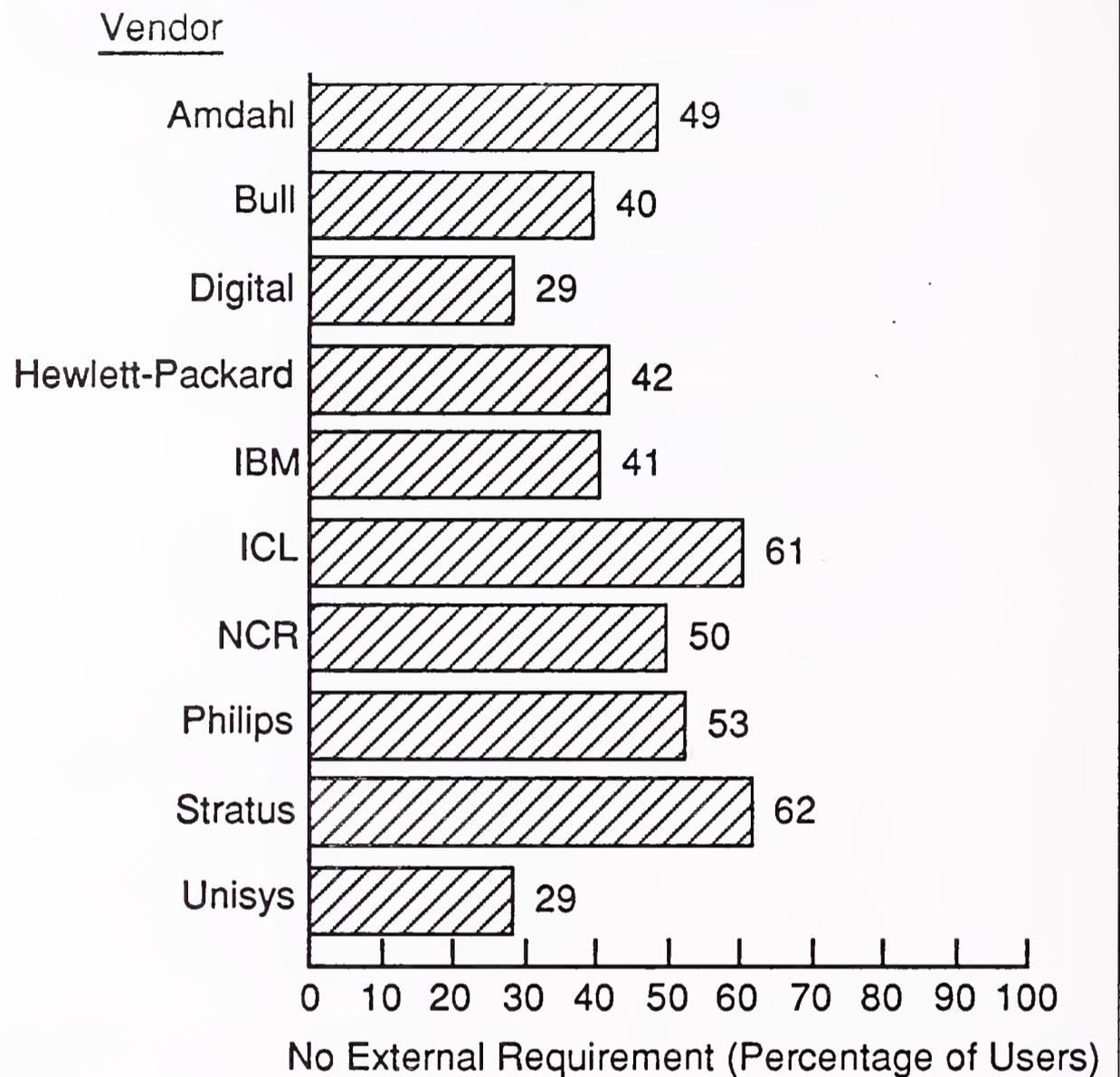
Sample size: 1,211

Standard error: 0.3

Source of data: INPUT 1990 User Survey

2. Cabling Services

Exhibits IV-10 to IV-13 indicate the challenge facing vendors offering cabling services. These exhibits quantify the challenge presented to vendors by indicating the percentage of users not indicating a need for vendor-contracted services. The data presented is as follows:

IV-16

• Systems Range - Exhibit IV-10

• Country Market - Exhibit IV-11

• Industry Sector - Exhibit IV-12

• Vendor Installed Base - Exhibit IV-13

EXHIBIT IV-10

Western Europe Market Challenges Cabling Services

Large systems — 43

Medium systems — 39

Small systems — 46

No External Requirement (Percentage of Users)

Sample size: Large systems -   324
                Medium systems - 638
                Small systems -   249

Standard error: 0.3

Source of data: INPUT 1990 User Survey
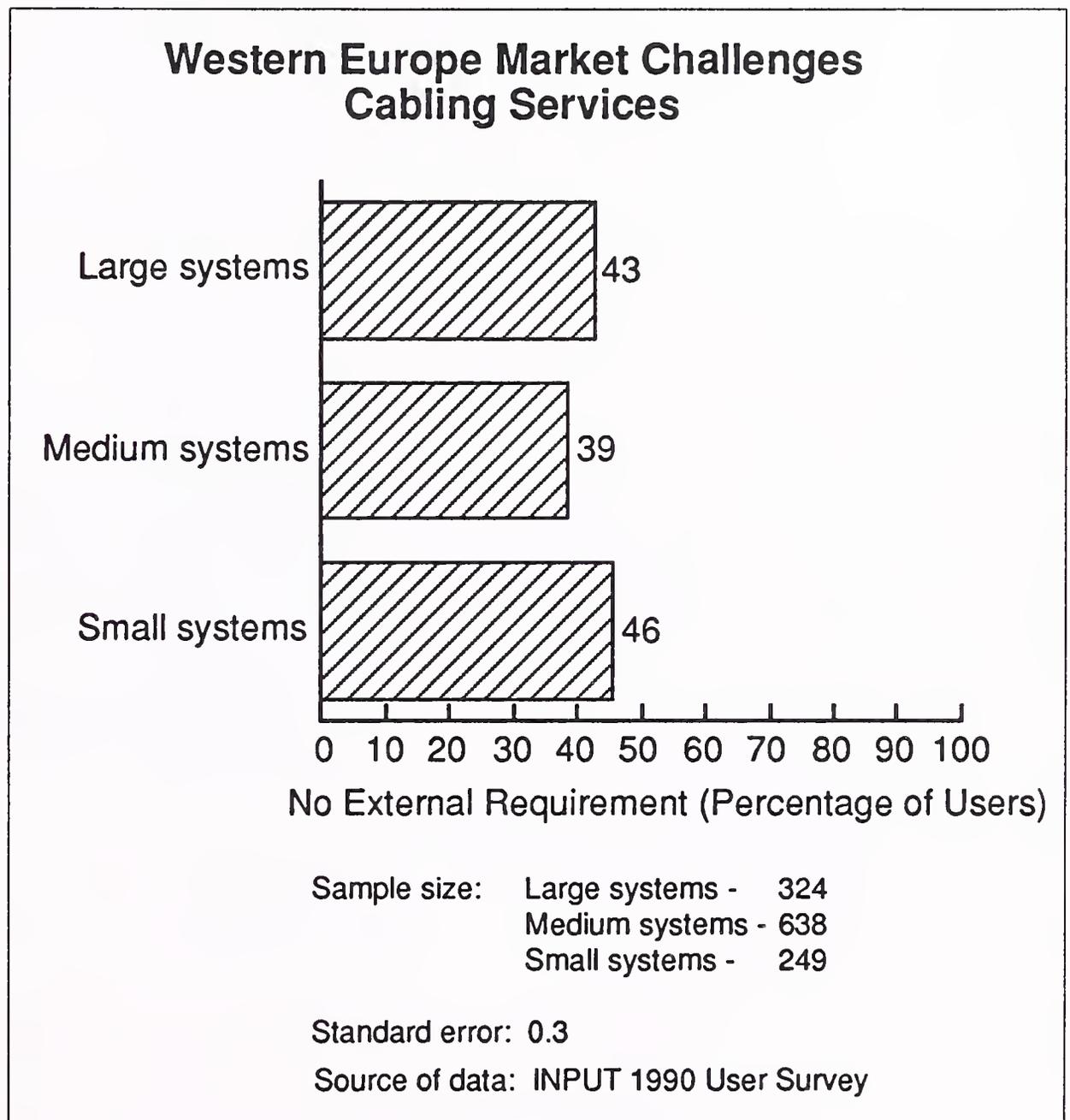
At the systems range level, the challenge presented to vendors is relatively consistent across systems ranges. Overall, between about 40% and 45% of users do not indicate a need for vendor cabling services.

In terms of country markets, illustrated in Exhibit IV-11—as in the case of environmental planning services—the country market in Italy represents a major barrier to vendors seeking to extend their market. Almost 75% of Italian users do not indicate a requirement for vendor cabling services. In addition, the market in the United Kingdom also represents a relatively significant challenge to vendors because about 50% of users do not indicate a need for vendor cabling services.

EXHIBIT IV-11

IV-18

Country Market Challenges—Cabling Services

Country Market

Country Market	No External Requirement (Percentage of Users)
Benelux Region	19
France	44
Germany	32
Italy	73
Norway and Sweden	35
Spain	32
United Kingdom	50
Other European Countries	36

No External Requirement (Percentage of Users)

Sample size: 1,211

Standard error: 0.3

Source of data: INPUT 1990 User Survey
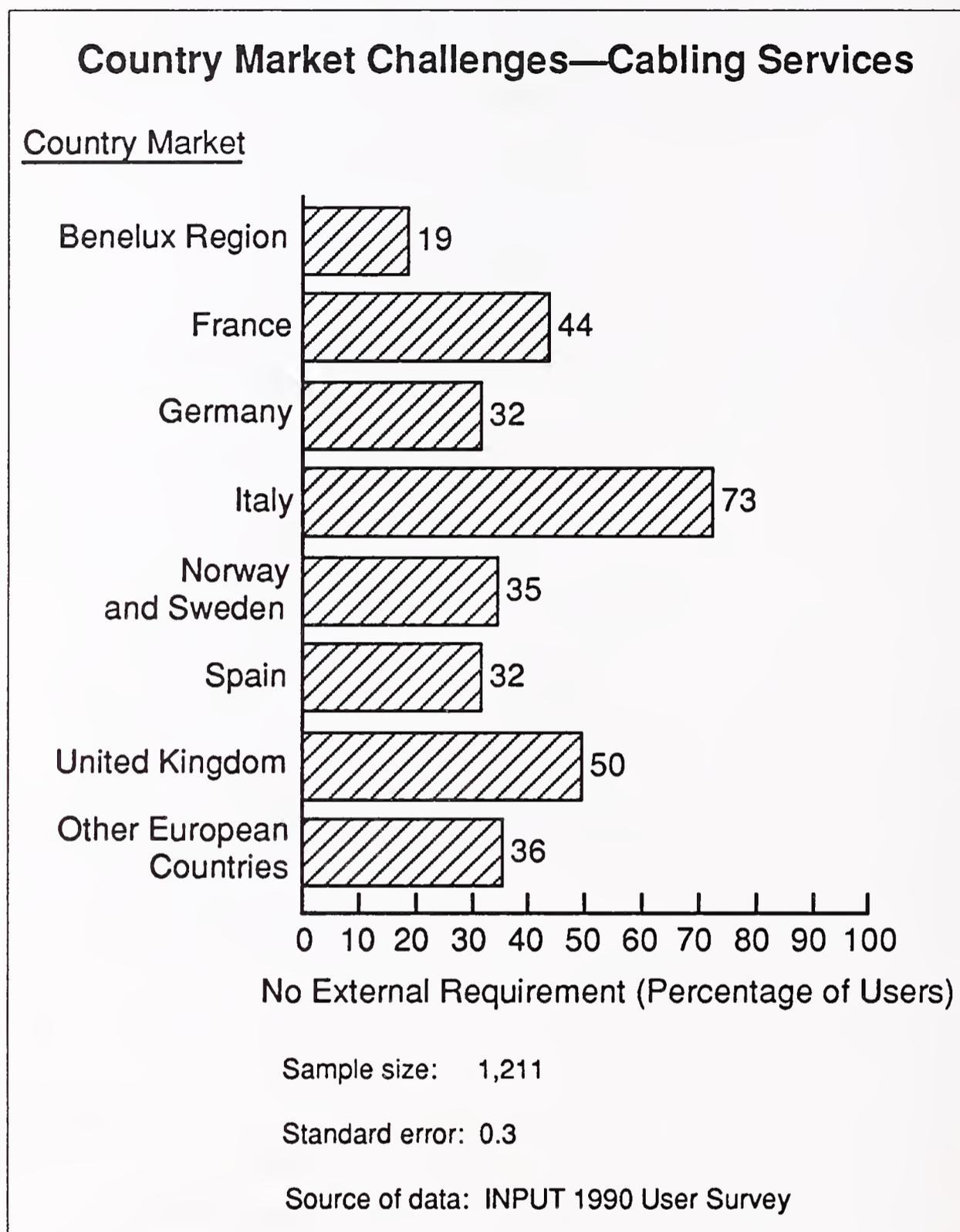
At the industry sector level, illustrated in Exhibit IV-12, the challenges presented to vendors are less extreme and more consistent than those presented by the country market sectors. Apart from the transportation and public utilities sectors, which indicate a much lower level of challenge to vendors, about 40% of users do not indicate a requirement for vendor cabling services.

EXHIBIT IV-12

Western Europe Industry Sector Market Challenges
Cabling Services
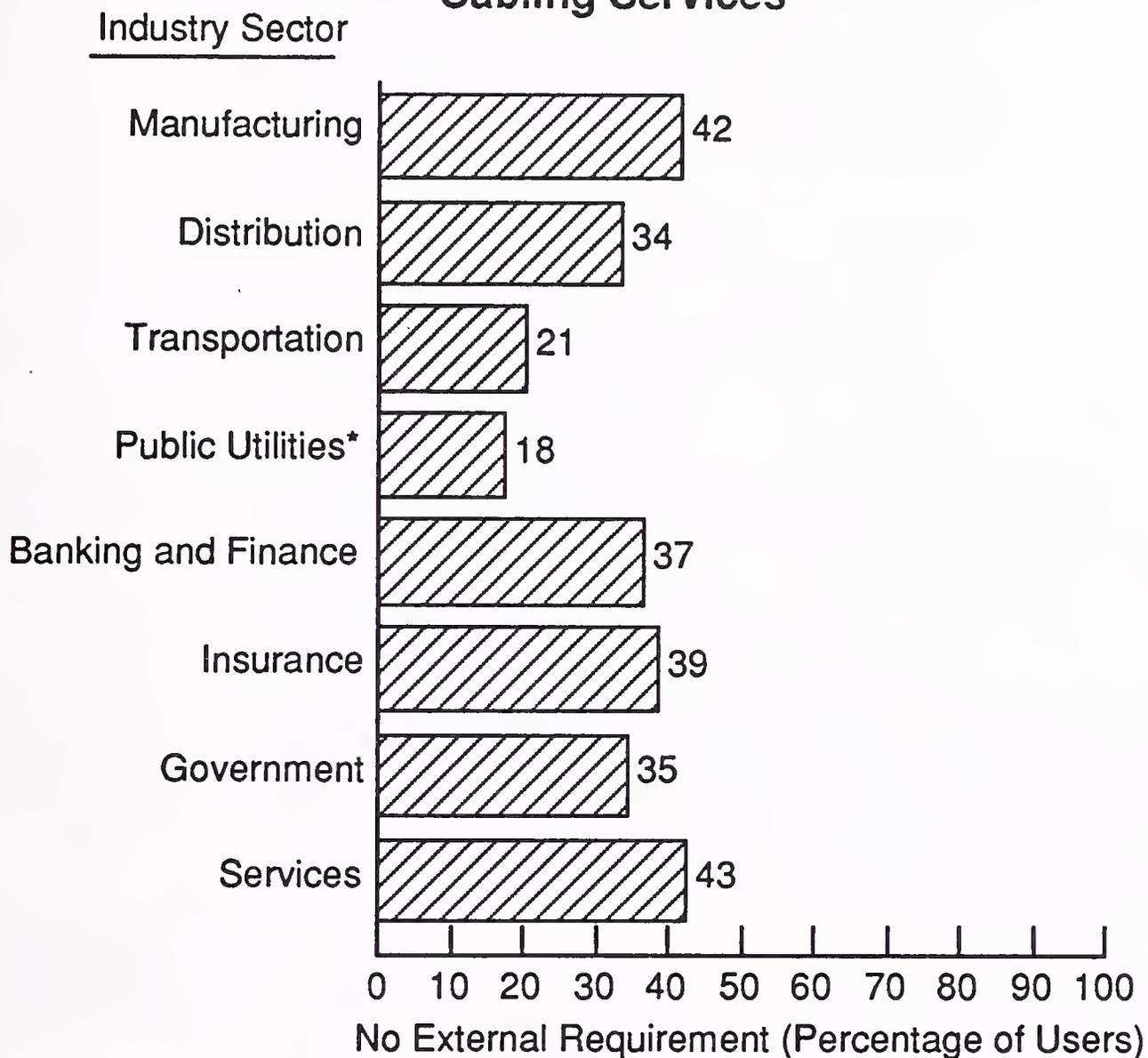
Industry Sector

Industry Sector	Value
Manufacturing	42
Distribution	34
Transportation	21
Public Utilities*	18
Banking and Finance	37
Insurance	39
Government	35
Services	43

0 10 20 30 40 50 60 70 80 90 100

No External Requirement (Percentage of Users)

Sample size: 905

Standard error: 0.35

Source of data: INPUT 1990 User Survey

* Indicates small sample

In terms of vendor installed base, illustrated by Exhibit IV-13, users of Stratus equipment represent a relatively significant challenge to vendors because about 55% of users do not indicate a need for vendor cabling services. A slightly lower level of challenge is presented by the Amdahl and NCR user bases, where about 45% of users do not indicate a need for vendor cabling services. One factor that may have influenced the response of Amdahl users is that the cost of cabling required is included in with the Amdahl system prices.

Western Europe Vendor Installed Base Market Challenges—Cabling Services

Vendor

Vendor	Value
Amdahl	45
Bull	38
Digital	22
Hewlett-Packard	37
IBM	38
ICL	41
NCR	45
Philips	31
Stratus	54
Unisys	33

0 10 20 30 40 50 60 70 80 90 100

No External Requirement (Percentage of Users)

Sample size: 1,211

Standard error: 0.3

Source of data: INPUT 1990 User Survey

V
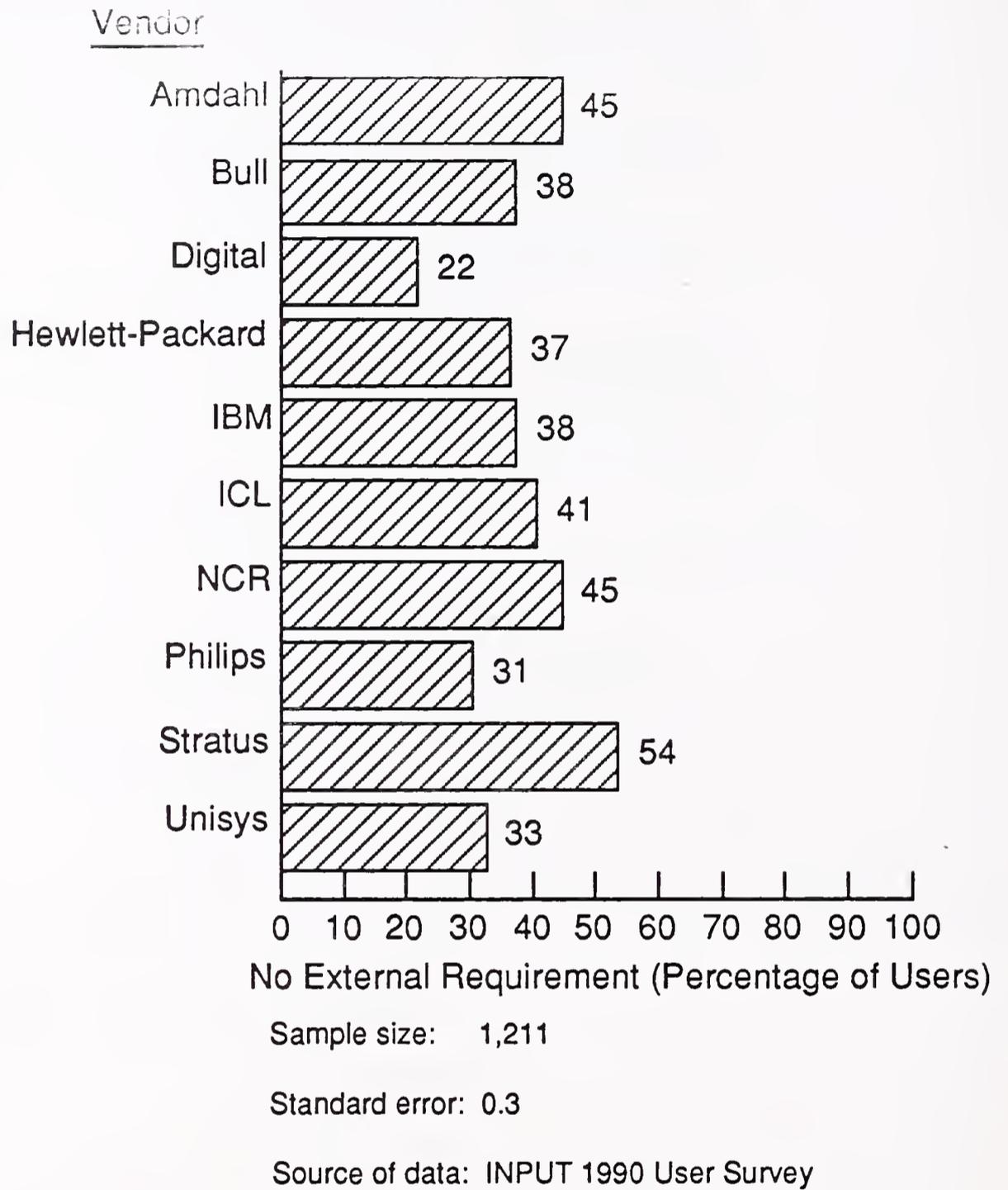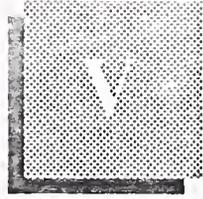
User Requirements for Environmental Services

A

Introduction

This report focuses on two aspects of user requirements:

• Environmental planning services
• Cabling services

In broad terms, about 40% of users claim to currently have vendor-contracted services—indicating that the remainder of the market is unpenetrated or that users satisfy needs using in-house resources. Of the remaining 60% of users, only about 15% indicate a requirement for vendor-contracted services, with levels of interest that are best described as "moderate."

One clear factor that emerges from in-depth user interviews is a need for vendors to market their services in a more positive manner. A higher profile is needed to create user awareness and stimulate interest.

B

Need for Marketing

1. User Attitudes toward Vendor Services

During the course of in-depth interviews, users were questioned concerning their views on equipment vendors providing a wider range of services. The list of services discussed with users included environmental planning and cabling services. User attitudes toward equipment vendors providing a wider range of services—beyond hardware maintainance and systems software support—are summarised in Exhibit V-1. User attitudes listed in Exhibit V-1 have been weighted to indicate a measure of the importance of specific attitudes.

EXHIBIT V-1

User Attitudes toward a
Wider Range of Vendor Services

User Attitude	Weighting Factor

No real need — 8

No interest — 6

Too expensive — 6

Interested — 5

Sample: 30 users
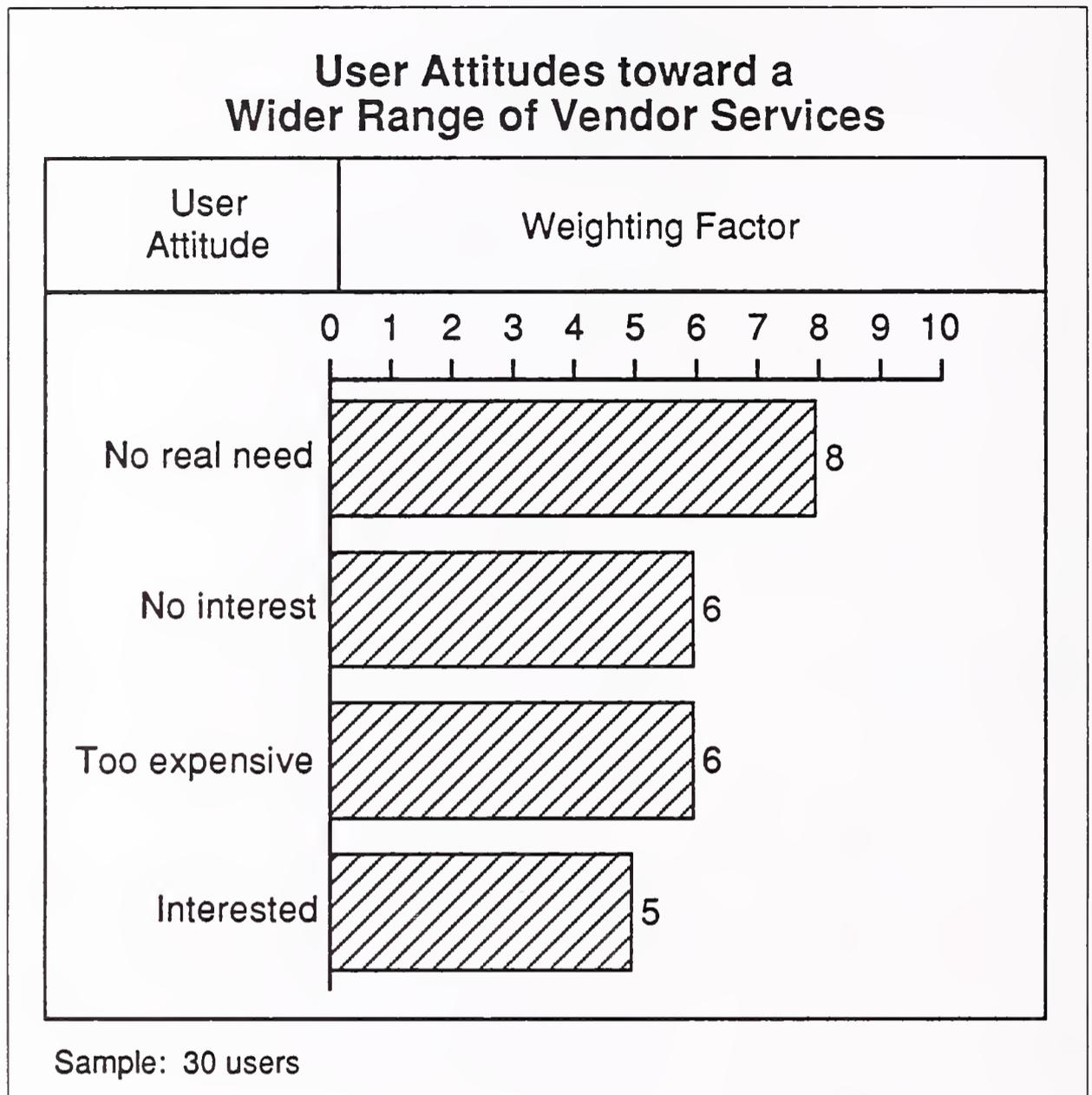
One key factor that emerges from discussions with users is that a high percentage of users—about 30%—feel no real need for additional vendor services. However, even though these users feel no real need for additional services, some are interested in obtaining competitive quotations from service vendors.

A second key factor that emerged from discussions with users is that about 17% of users claim to have no interest in additional vendor-provided services.

A combination of these two portions of the in-depth user interview sample and those users that expressed some interest suggests that approximately 35% of users consider additional vendors services to be unimportant to their computer operations. This proportion of users therefore presents a marketing challenge to equipment vendors seeking increased market penetration with their environmental services offerings.

In justifying their attitudes toward additional vendor-contracted services, users claim that their internal organisations are sufficiently large to cater for most needs. However, there are some indications that organisational cut-backs could change this situation if pressured by economic conditions.

The fact that about 35% of users involved in in-depth discussions indicate that additional vendor services are unimportant is supported by statistical data derived from a much larger sample of 1,211 users . This larger sample indicates that current market penetration is about 40% with an additional 15% of users expressing a positive interest in obtaining vendor services.

A further challenge presented to vendors is that some users believe equipment vendor services to be too expensive. About 17% of the in-depth user interview sample expressed this opinion, claiming that lower cost services can be obtained from using in-house resources or that independent vendors are more cost competitive.

The need for active marketing by equipment vendors is highlighted by the fact that almost 17% of the in-depth user interview sample expressed a positive interest in vendor-contracted services. This proportion represents a relatively high level of unfulfilled user need that, as yet, has not been tapped by the equipment vendors.

2. Service Marketing

Exhibit V-2 illustrates a consensus of user opinion related to the effectiveness of equipment vendor marketing of additional services. This consensus has been given a weighting factor in order to establish a relative perspective on the strength of vendor marketing successes.

An estimated 65% of the in-depth user interview sample hold the view that equipment vendors do not market their services adequately. There is an indication, however, that when negotiating sales of new equipment, equipment vendor service marketing is subject to a higher profile.

One comment made during in-depth user interviews is that equipment vendors need to improve their account management and be more proactive when marketing and offering new services. One characteristic of user need for service is that the interest level in new services is at its highest level during the negotiation phase. Once equipment is installed and running, user interest in new services reduces.

EXHIBIT V-2

User View on Service Marketing in Western Europe

Weighting Factor

Inadequate marketing →

Vendors do market ←

10

8

6

4

2

0

Sample size: 30 users
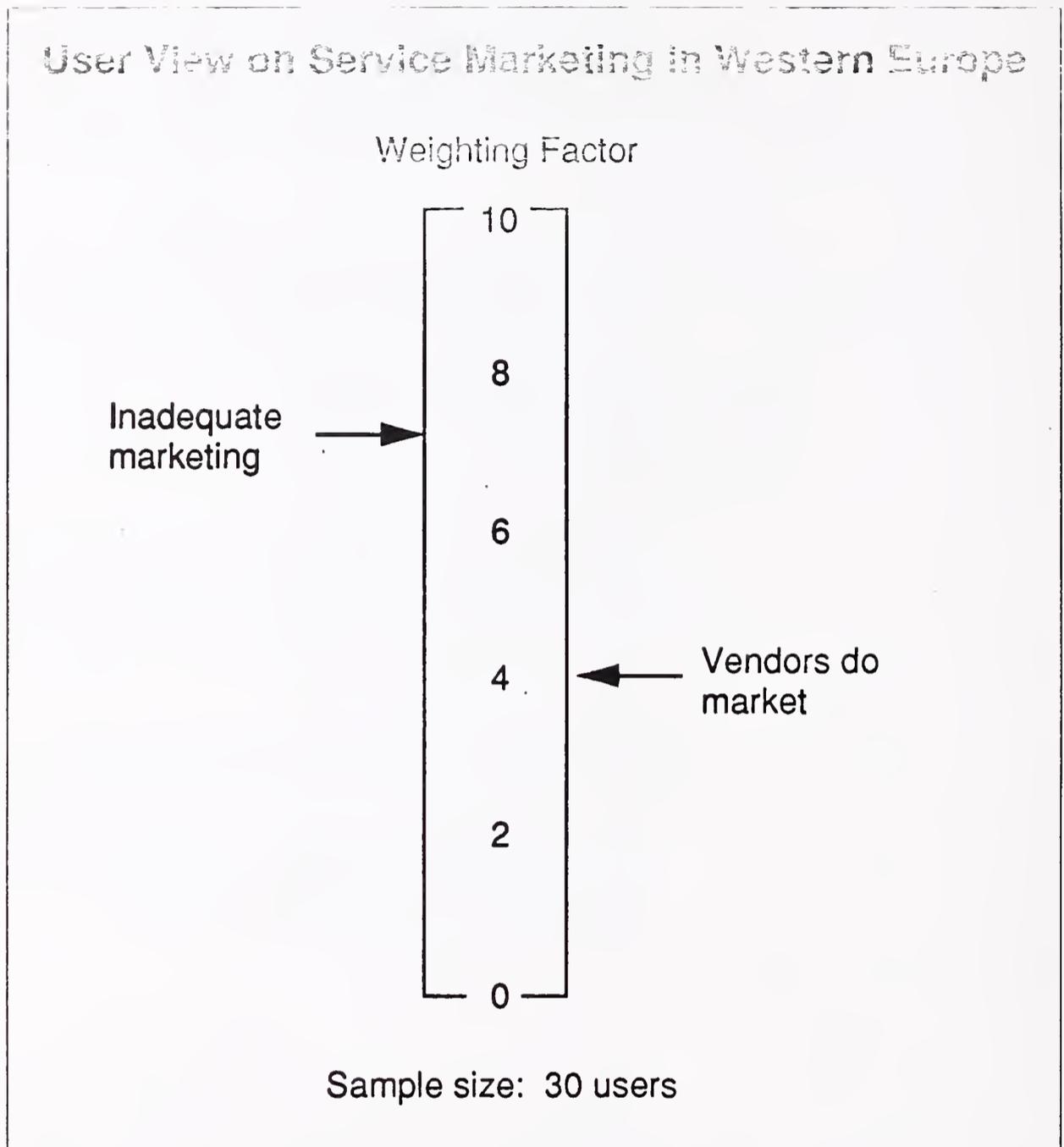
A key factor that emerged from in-depth user interviews is a general lack of awareness among users of the extent of equipment vendor services that are available. This lack of awareness extended to appreciation of the benefits that can be gained from taking advantage of the equipment vendors experience and expertise.

Analysis of the larger user sample database of 1,211 user interviews supports this general lack of awareness. Of those users—about 15%—that indicate an unsatisfied requirement for vendors services, levels of interest remain moderate suggesting that the concept is viewed as good, but confusion exists over the level of benefit that could be achieved.

3. User Comments

Exhibit V-3 lists some comments made by users during in-depth interviews.

EXHIBIT V-3

User Comments on Vendor Service

- The vendor is not actively marketing other services.

- Lack of account management reduces user awareness and enthusiasm.

- New services are marketed with new equipment.

- We have used project management and environmental services and are pleased with the results.

- The vendor does not market anything in particular.

- Vendors need to improve account management and be more proactive.

- No real need for additional services; we have in-house resources available.

- We prefer to use in-house services, but if economic cutbacks occur, vendor service could be useful.

- We have considerable in-house resources and would not consider an external vendor.

- Equipment vendors should not get involved in cabling; independents are cheaper.

- Vendor service is not required; we have in-house resources. However, we would be prepared to consider a competitive package provided the vendor had the expertise.

EXHIBIT V-3 (CON'T)

User Comments on Vendor Service

- The vendor should offer services and we would consider a partnership approach. There is a need to balance in-house and external resources.

- Environmental services are the province of the users' in-house resources.

- Vendors have been a bit slow but the services are now available and the price is about right.

- More than one source is available but we would welcome a wider range of services. Problem is that equipment vendors are expensive.

Study of these comments indicates that the marketing of additional services represents a challenge for equipment vendors. The general trend of user comments suggests three barriers that vendor marketing programmes need to address:

- Stimulation of user interest and need for other services.

- Lack of user awareness of the availability and benefits available from vendor services.

- Reversal of a degree of resistance among users to consider external vendor service contracts.

In addition, equipment vendors need to address a perception among users that their services are expensive. This can be addressed in a number of ways; two of which are:

- Developing competitive pricing

- Exposing the true cost of services provided by user in-house resources

C

User Requirements for Environmental Planning Services

Environmental planning services comprise a range of services and assistance provided to the user related to the physical environment in which the computer system is installed. Examples of this type of services include involvement in:

- Computer room design
- Project management of computer facility construction
- Air conditioning
- Raised flooring
- Cabling and cabling systems
- Power requirements
- Remote connection links

1. Western European User Requirements

Exhibit V-4 illustrates the percentage of users claiming to have vendor-contracted environmental planning services and the percentage of additional users requiring vendor-contracted services.

EXHIBIT V-4

Western European User Requirements for Environmental Planning Services

	Level of Interest
Large systems — 10	—
Large systems — 40	4.9
Medium systems — 18	—
Medium systems — 37	4.2
Small systems — 17	—
Small systems — 25	4.1

Percentage of Users (0, 20, 40, 60, 80, 100)

▨ Users Requiring Vendor Service

▨ Currently Contracted

Standard Error:	Percentage of users -	0.3
	Level of interest -	0.06
Sample size:	Large systems -	324
	Medium systems -	638
	Small systems -	249

Source of data: INPUT 1990 User Survey

Data presented in this exhibit is segmented by system size and also indicates on a scale of 0 to 10 the level of interest expressed by those users requiring vendor services.

Overall, about 35% of users claim to currently have access to vendor-contracted services; this figure is also a measure of the current level of market penetration that has been achieved. In addition to this proportion of users, an additional 16% of users express a requirement for vendor services that at present remains unsatisfied.

The remainder of the user sample either has no need for vendor service or is unaware of the availability of these services from external vendors. This proportion amounts to almost 50% and represents both an opportunity for vendors to increase market penetration and a marketing challenge for vendors to stimulate user interest and awareness.

As system complexity decreases, the proportion of users claiming access to vendor service also decreases. However, the proportion of users indicating unsatisfied requirements is higher in the midrange and small system sectors. These sectors are those which contain the less experienced and smaller users and, therefore, need is likely higher. This need is not reflected in levels of interest expressed, which may be due to lack of awareness among users of the benefits that can be achieved and the extent of services that can be provided.

Low levels of interest should not be regarded as an inhibiting factor, but rather an opportunity for achieving increased interest and awareness through marketing programmes, particularly "missionary marketing." That levels of interest are only moderate against an unsatisfied requirement among about 16% of users indicates that marketing and promotional activities are one of the key ingredients of successful further market penetration.

2. Country Market User Requirements

Country market user requirements for environmental planning services are highlighted in Exhibit V-5. This exhibit indicates the percentage of users in the various country markets claiming to have access to vendor-contracted services, and the percentage of additional users indicating a requirement for vendor-contracted services together with the level of interest expressed by those users.

EXHIBIT V-5

Country Market Environmental Planning Requirements

Country Market	Users Claiming Vendor-Contracted Service (Percent)	Users Requiring Vendor Service	
		Percentage of Users	Level of Interest
Benelux Region	51	15	4.8
France	21	24	4.9
Germany	29	31	2.3
Italy	20	5	8.4
Norway and Sweden	55	12	5.3
Spain	56	13	5.3
United Kingdom	36	8	4.0
Other European Countries	27	29	5.1

Sample size: 1,211

Standard error: Percentage of users - 0.3
                Level of interest -   0.06

Source of data: INPUT 1990 User Survey

The overall Western European figure for users that claim to have access to vendor-contracted services is about 35%. Therefore, Exhibit V-5 indicates those country markets where higher- and lower-than-average levels of market penetration have been achieved. Country markets where above average levels of market penetration are indicated include:

- Benelux region
- Norway and Sweden
- Spain

Country markets where lower than average levels of market penetration have been achieved, and those which provide the most significant challenge to vendors are:

- France
- Germany
- Italy

The most significant opportunities presented to vendors are indicated in the following country markets:

- Benelux region. The percentage of additional users requiring vendor services is close to overall European average of 16% and levels of interest are about the overall European average, 4.8 compared with 4.4.

- France. Whilst providing a challenge to vendors, the French market also indicates opportunities. An above average (24% compared with 16%) percentage of users indicates a requirement for vendor service and expresses an above average level of interest (4.9 compared with 4.4).

- Italy. Although the Italian market presents a relatively significant challenge to vendors with only 5% of users indicating a requirement for vendor service, the level of interest expressed by those users is almost twice the overall European average.

Users in the German market indicate the highest percentage of additional requirement for vendor services. However, the levels of interest expressed are relatively low, indicating that a relatively significant marketing programme may be required for vendors to achieve success.

3. Industry Sector User Requirements

Exhibit V-6 provides analysis of user requirements for environmental planning services in eight industry sectors across Western Europe. Data relating to users that did not accurately identify the industry sector in which their company primarily operates has been excluded from the analysis.

EXHIBIT V-6

Western Europe Industry Sector Environmental Planning Requirements

V-11

Industry Sector	Users Claiming Vendor-Contracted Service (Percent)	Users Requiring Vendor Service	
		Percentage of Users	Level of Interest
Manufacturing	32	18	3.8
Distribution	37	25	4.3
Transportation	48	21	4.7
Public Utilities*	27	46	3.0
Banking and Finance	46	10	4.5
Insurance	36	6	8.0
Government	40	23	6.0
Services	35	16	4.9

Sample size: 905

Standard error: Percentage of users - 0.35
                 Level of interest -   0.07

Source of data: INPUT 1990 User Survey

* Indicates small sample

Comparing industry sector market penetration with the overall Western European average—about 35%—indicates that the percentage of users claiming access to vendor-contracted services is above average in three industry sectors:

- Transportation
- Banking and Finance
- Government

Overall in Western Europe, about 16% of additional users indicate a requirement for environmental planning services with an average level of interest of about 4.4. Analysis of industry sector data has highlighted a number of opportunities for vendors to achieve increased market penetration.

- Distribution. The percentage of additional users requiring vendor services is relatively high compared with the overall European average. Levels of interest, however, are no better than average.

- Transportation. An above average percentage of additional users indicates a requirement for vendor services and levels of interest expressed are also slightly above average.

- Government. The percentage of users indicating a requirement for vendor services is above average at about 23%, compared with about 16%, and levels of interest expressed are relatively high. Level of interest is rated at about 6.0 compared with an overall average in the region of 4.4.

Although the public utilities sector indicates a well above average user requirement for vendor service, the sample size obtained from this sector is relatively low at 11. Therefore, the statistical validity of this data is less reliable. Nonetheless, a figure of 46% of users indicating a requirement for vendor service could represent an opportunity for vendors even though the level of interest expressed was sufficiently low to suggest the need for a relatively significant marketing activity.

4. Vendor Installed Base User Requirements

Analysis of user requirements for environmental planning services related to the installed base of ten equipment vendors is provided in Exhibit V-7.

The percentage of users currently claiming to have access to vendor-contracted services is indicated as being above the overall Western European average of 35% in the installed bases of five equipment vendors:

- Amdahl
- Bull
- Digital
- IBM
- Unisys

EXHIBIT V-7

Western Europe Vendor Installed Base Environmental Planning Requirements

Vendor Installed Base	Users Claiming Vendor-Contracted Service (Percent)	Users Requiring Vendor Service	
		Percentage of Users	Level of Interest
Amdahl	43	8	5.4
Bull	42	18	5.2
Digital	51	20	5.2
Hewlett-Packard	38	20	3.8
IBM	43	16	4.5
ICL	24	15	4.9
NCR	22	28	3.5
Philips	29	18	2.2
Stratus	30	8	3.7
Unisys	48	23	4.3

Sample size: 1,211

Standard error: Percentage of users - 0.3
                Level of interest -   0.06

Source of data: INPUT 1990 User Survey

The installed bases of NCR and ICL indicate user access to vendor-contracted services at a level that is significantly below the overall European average. This level of market penetration may indicate a challenge to vendors, suggesting that a relatively significant marketing programme may be required to stimulate user awareness and interest.

Opportunities for vendors are provided in the installed bases of the following vendors:

- Digital. User requirements for vendor services are indicated by an above average percentage of users, 20% compared with 16%. Levels of interest expressed by these users are also relatively high at 5.2 compared with a European average of 4.4.

- Unisys. An above average percentage of users indicates a requirement for vendor services, 23% compared with the overall European average of 16%. However, levels of interest expressed by those users are about average.

The installed bases of Hewlett-Packard and NCR also indicate an above average percentage of users requiring vendor services, but the level of interest expressed by those users is below average. This factor suggests that marketing and promotion of vendor services may be required to stimulate user interest in order to capitalise on the potential opportunities offered.

D

User Requirements for Cabling Services

Cabling services are a component part of the overall range of environmental services. The service includes the design, planning, layout and installation of the cabling systems necessary for the interconnection of the hardware components of a computer system or the interconnection of networks.

This section presents an analysis of user requirements for cabling services.

1. Western European User Requirements

Exhibit V-8 presents an analysis of user requirements for cabling services in Western Europe. This exhibit identifies the percentage of users who currently claim to have access to vendor-contracted services and the percentage of additional users indicating a requirement for vendor services, together with the level of interest expressed by those users.

Overall about 45% of users in Western Europe claim to have access to vendor-contracted cabling services. This figure is somewhat higher than that for environmental planing services as a whole, which is about 35%, and levels of interest expressed by users requiring vendor services is higher at about 5.3 compared with 4.4.

EXHIBIT V-8

Western European User Requirements for Cabling Services

Level of Interest

	Percentage of Users	Level of Interest
Large systems	8 / 49	— / 5.7
Medium systems	14 / 47	— / 5.2
Small systems	17 / 37	— / 4.8

Percentage of Users

▨ Users Requiring Vendor Service

▧ Currently Contracted

Standard Error:	Percentage of users -	0.3
	Level of interest -	0.06
Sample size:	Large systems -	324
	Medium systems -	638
	Small systems -	249

Source of data: INPUT 1990 User Survey

However, one key factor that differentiates between cabling services and environmental planning services is that the percentage of users indicating a need for vendor services is slightly lower at about 13% compared with 16%. This factor indicates that the market for cabling services may present a slightly more significant challenge for vendors, but this aspect may well be offset by the higher levels of interest among users indicating a requirement for the service.

The remainder of the user sample analysed, just over 40%, either have no need for vendor services or are unaware that these services are available. This proportion of users presents a challenge to vendors by indicating a need for marketing programmes to stimulate awareness and interest, and an opportunity to increase market penetration if marketing programmes are successful.

The percentage of users claiming access to vendor-contracted services is similar in the large systems and medium systems segments. However, the percentage of additional users indicating a requirement for vendor services in the medium system segment is almost twice that indicated for large systems users.

In the small systems segment, the percentage of users indicating a requirement for vendor service increases further to about 17%. Therefore the system size segments of the market indicate that the better opportunities for vendors are likely in the market sectors containing less experienced and smaller users. Levels of interest in these two segments are relatively similar.

As the market for networking expands the growth of user needs for cabling services should also expand and the emergence of intelligent buildings/structured wiring should also provide additional opportunities for vendors. The installed base of network equipment is estimated to grow about 34% per annum, by value, and is projected to maintain this growth rate for at least the next five years.

2. Country Market User Requirements

Exhibit V-9 presents an analysis of user requirements for cabling services in eight European country markets.

The overall average percentage of users claiming access to vendor-contracted services in Western Europe is about 45% and an additional 13% of users indicate a requirement for vendor service, expressing an average interest level of about 5.3.

Compared with the overall European average, four country markets indicate an above average percentage of users claiming to have access to vendor-contracted services;

- Benelux region
- Germany
- Norway and Sweden
- Spain

EXHIBIT V-9

Country Market Cabling Service Requirements

Country Market	Users Claiming Vendor-Contracted Service (Percent)	Users Requiring Vendor Service	
		Percentage of Users	Level of Interest
Benelux Region	71	10	4.3
France	32	24	5.0
Germany	49	19	4.0
Italy	24	3	8.0
Norway and Sweden	54	11	5.8
Spain	54	14	6.2
United Kingdom	45	5	5.3
Other European Countries	41	23	6.0

Sample size: 1,211

Standard error: Percentage of users - 0.3
                Level of interest -   0.06

Source of data: INPUT 1990 User Survey

Country markets in which a lower than average percentage of users claim access to vendor-contracted service are:

• France
• Italy

Markets where below average market penetration has been achieved may represent a challenge to vendors, particularly the Italian market where only 24% penetration is indicated. In order to open up these markets, relatively significant marketing and promotional programmes may be required to stimulate user interest and awareness.

The most significant opportunities for vendors are indicated in the following country markets:

- France. The percentage of users indicating a need for vendor-con-tracted services is almost twice the European average and although levels of interest are slightly below average, they are nonetheless moderately high at 5.0.

- Germany. Compared with the overall European average of 13%, in the German market almost 20% of users indicate a requirement for vendor service. However, levels of interest expressed by these users are below average at 4.0 compared with 5.0. Therefore, vendors may need to embark on marketing and promotional programmes to stimulate user interest further.

Although the percentage of users indicating a need for vendor services is significantly below average in the Italian market, the levels of interest are relatively high, 8.0 compared with the European average of 5.3. There-fore, the Italian market, while presenting a challenge to vendors, also provides a limited number of opportunities.

3. Industry Sector User Requirements

Analysis of user requirements for cabling services in eight industry sectors is provided by Exhibit V-10. In this exhibit data relating to those users that did not identify the industry sector in which their company primarily operates have been excluded from the analysis.

Comparison of the percentage of users claiming access to vendor-con-tracted service in the industry sector analysis with the overall European average of 45%, indicates that this percentage is above average in the following industry sectors:

- Transportation
- Banking and Finance
- Insurance
- Government

The public utilities sector has been omitted from this list on the basis that the user sample size was relatively small, at 11, and therefore the statisti-cal validity of the data is less reliable.

EXHIBIT V-10

Western Europe Industry Sector Cabling Service Requirements

Industry Sector	Users Claiming Vendor-Contracted Service (Percent)	Users Requiring Vendor Service	
		Percentage of Users	Level of Interest
Manufacturing	43	15	5.1
Distribution	45	21	5.5
Transportation	62	17	4.3
Public Utilities*	55	27	3.7
Banking and Finance	53	10	6.1
Insurance	52	9	5.3
Government	56	9	5.7
Services	46	11	4.8

Sample size: 905

Standard error: Percentage of users - 0.35
                Level of interest -   0.07

Source of data: INPUT 1990 User Survey

* Indicates small sample

Overall in Western Europe, about 13% of additional users indicate a requirement for cabling services with an average level of interest of about 5.3. Therefore, analysis of industry sector data indicates that above average opportunities for vendors may exist in the distribution sector where the percentage of users indicating a requirement for vendor services is relatively high at 20%. Levels of interest expressed by those users is also moderately high, even though only slightly above average.

Although the public utilities sector indicates a requirement for vendor service which is over twice the European average, sample size and hence statistical validity of the data may be unreliable. Nonetheless, the level of opportunity indicated may well be worthy of further investigation.

4. Vendor Installed Base User Requirements

Exhibit V-11 provides an analysis of user requirements for cabling services related to the installed base of ten equipment vendors.

EXHIBIT V-11

Vendor Installed Base	Users Claiming Vendor-Contracted Service (Percent)	Users Requiring Vendor Service	
		Percentage of Users	Level of Interest
Amdahl	47	8	5.1
Bull	44	16	5.5
Digital	64	14	5.9
Hewlett-Packard	48	15	4.5
IBM	48	14	5.2
ICL	48	11	4.9
NCR	36	19	4.0
Philips	51	18	3.4
Stratus	43	3	4.0
Unisys	51	16	5.3

Western Europe Vendor Installed Base Cabling Service Requirements

Sample size: 1,211

Standard error: Percentage of users -   0.3
                 Level of interest -   0.06

Source of data: INPUT 1990 User Survey

The percentage of users currently claiming to have access to vendor-contracted services is indicated as being above the overall Western European average of 45% in the installed bases of three equipment vendors:

• Digital
• Philips
• Unisys

The installed base of NCR indicates that user access to vendor-contracted services is below average by a relatively significant amount at about 36% compared with the overall European average of 45%. However, users of NCR equipment indicate an above average requirement for vendor services even though levels of interest expressed by those users are relatively low at 4.0.

Therefore, these factors indicate both a challenge and an opportunity for NCR to increase market penetration provided that user interest levels can be stimulated by marketing and promotional programmes.

The installed bases of other vendors do not indicate any significant above average requirements for vendor services.
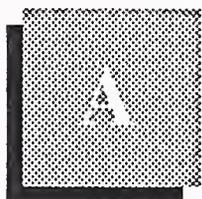
User Database—Environmental Planning Services

Western Europe
System Range User Requirements for
Environmental Planning Services

System Range	Number of Users Claiming Access to Vendor Service	Users Requiring Vendor Service		Number of Users not Identifying Need for Vendor Service	Total Sample
		Number of Users	Level of Interest (0-10)		
Large systems	131	33	4.9	160	324
Medium systems	233	116	4.2	289	638
Small systems	63	43	4.1	143	249

Source of Data: INPUT 1990 User Survey

EXHIBIT A-2

Country Market User Requirements for Environmental Planning Services

Country Market	Number of Users Claiming Access to Vendor Service	Users Requiring Vendor Service		Number of Users not Identifying Need for Vendor Service	Total Sample
		Number of Users	Level of Interest (0-10)		
Benelux	68	20	4.8	45	133
France	38	44	4.9	101	183
Germany	44	47	2.3	63	154
Italy	24	6	8.4	88	118
Norway/Sweden	58	13	5.3	35	106
Spain	50	12	5.3	28	90
United Kingdom	120	26	4.0	190	336
Other European Countries	25	26	5.1	40	91

Source of Data: INPUT 1990 User Survey

EXHIBIT A-3

Western Europe
Industry Sector User Requirements for
Environmental Planning Services

Industry Sector	Number of Users Claiming Access to Vendor Service	Users Requiring Vendor Service		Number of Users not Identifying Need for Vendor Service	Total Sample
		Number of Users	Level of Interest (0-10)		
Manufacturing	101	56	3.8	163	320
Distribution	45	30	4.3	47	122
Transportation	14	6	4.7	9	29
Public Utilities	3	5	3.0	3	11
Banking and Finance	65	14	4.5	61	140
Insurance	12	2	8.0	19	33
Government	17	10	6.0	16	43
Services	72	33	4.9	102	207

Source of Data: INPUT 1990 User Survey

EXHIBIT A-4

Western Europe
Vendor Installed Base User Requirements for Environmental Planning Services

Vendor Installed Base	Number of Users Claiming Access to Vendor Service	Users Requiring Vendor Service		Number of Users not Identifying Need for Vendor Service	Total Sample
		Number of Users	Level of Interest (0-10)		
Amdahl	45	8	5.4	52	105
Digital	46	18	5.2	27	91
Hewlett-Packard	31	16	3.8	34	81
Bull	34	15	5.2	33	82
IBM	110	41	4.5	106	257
ICL	48	29	4.9	121	198
NCR	8	10	3.5	18	36
Stratus	12	3	3.7	25	40
Philips	23	14	2.2	42	79
Unisys	37	18	4.3	22	77

Source of Data: INPUT 1990 User Survey

User Database—Cabling Services

EXHIBIT B-1

Western Europe
System Range User Requirements
for Cabling Services

System Range	Number of Users Claiming Access to Vendor Service	Users Requiring Vendor Service		Number of Users not Identifying Need for Vendor Service	Total Sample
		Number of Users	Level of Interest (0-10)		
Large systems	157	25	5.7	142	324
Medium systems	302	87	5.2	249	638
Small systems	91	42	4.8	116	249

Source of Data: INPUT 1990 User Survey

EXHIBIT B-2

Country Market User Requirements
for Cabling Services

Country Market	Number of Users Claiming Access to Vendor Service	Users Requiring Vendor Service		Number of Users not Identifying Need for Vendor Service	Total Sample
		Number of Users	Level of Interest (0-10)		
Benelux	94	13	4.3	26	133
France	59	44	5.0	80	183
Germany	76	29	4.0	49	154
Italy	28	4	8.0	86	118
Norway/Sweden	57	12	5.8	37	106
Spain	49	13	6.2	28	90
United Kingdom	152	18	5.3	166	336
Other European Countries	37	21	6.0	33	91

Source of Data: INPUT 1990 User Survey

EXHIBIT B-3

Western Europe
Industry Sector User Requirements
for Cabling Services

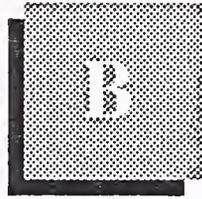| Industry Sector	Number of Users Claiming Access to Vendor Service	Users Requiring Vendor Service		Number of Users not Identifying Need for Vendor Service	Total Sample
		Number of Users	Level of Interest (0-10)		
Manufacturing	136	49	5.1	135	320
Distribution	55	26	5.5	41	122
Transportation	18	5	4.3	16	29
Public Utilities	6	3	3.7	2	11
Banking and Finance	74	14	6.1	52	140
Insurance	17	3	5.3	13	33
Government	24	4	5.7	15	43
Services	96	23	4.8	88	207

Source of Data: INPUT 1990 User Survey

EXHIBIT B-4

Western Europe
Vendor Installed Base User Requirements
for Cabling Services

Vendor Installed Base	Number of Users Claiming Access to Vendor Service	Users Requiring Vendor Service		Number of Users not Identifying Need for Vendor Service	Total Sample
		Number of Users	Level of Interest (0-10)		
Amdahl	49	8	5.1	48	105
Digital	58	13	5.9	20	91
Hewlett-Packard	39	12	4.5	30	81
Bull	36	13	5.5	33	82
IBM	122	37	5.2	98	257
ICL	94	22	4.9	82	198
NCR	13	7	4.0	16	36
Stratus	17	1	4.0	22	40
Philips	40	14	3.4	25	79
Unisys	39	12	5.3	26	77

Source of Data: INPUT 1990 User Survey
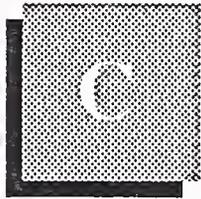
User Questionnaire

INPUT 1991 Computer User Survey Questionnaire

A

General

1. What is the make and model number of the main computer on your site and how many do you have?

   Make_____

   Model (CRITICAL INFORMATION)_____

   Units_____

2. Are you the person who is knowledgeable on the servicing of this system?

   Yes _____   No _____

   (If not, then obtain the name of the correct person and start again.)

   Name of person responsible   _____

3. Do you have another system? What is the make and model number of that system and how many do you have?

   Make_____

   Model (CRITICAL INFORMATION)_____

   Units_____

All of the following questions that I am going to ask you are related to your _____ system. (Write in system type.)

(To confirm, read out the make and model number.)

4.   So that we can ensure that we get a proper cross-section of industry and commerce, can you tell me what is the main business sector of your company?

(Read out the list to allow for best choice. Then circle appropriate answer.)

Business sector

•	Manufacturing	1	C53
•	Distribution	1	C54
•	Transportation	1	C55
•	Utilities	1	C56
•	Banking and Finance	1	C57
•	Insurance	1	C58
•	Government (including education)	1	C58
•	Services	1	C60
•	Other/don't know	1	C61

B

Service Vendor Selection

I would like to ask you some questions relating to the vendor that services your computer system.

5.   Could you please rate the **importance** of the following criteria in selecting your service vendor, on a scale of 0 to 10 (0 = low, 10 = high).

	Criteria	Rating	
a.	Price	_____	C62-C63
b.	Quality of service	_____	C64-C65
c.	Guaranteed system availability level	_____	C66-C67
d.	Guaranteed availability of spare parts	_____	C68-C69
e.	Technical expertise	_____	C70-C71

Criteria		Rating
f.	Fast response time	_____ C72-C73
g.	Availability of software support	_____ C74-C75
h.	Ability to provide other services	_____ C76-C77
i.	Contract flexibility	_____ C78-C79
j.	Ability to service other products	_____ C80-C81
k.	Vendor reputation	_____ C82-C83

6a.   Would you please tell me who services your computer system hardware? (Remind the user _____ system)

(Please circle appropriate vendor type; multiple answers are allowed.)

•	Manufacturer	1	C84
•	Dealer/distributor	1	C85
•	Third-party maintenance company	1	C86
•	Own company	1	C87
•	Other	1	C88

(If the respondent answered **YES** to third-party maintenance, ask the following question. If not, go to question 7.)

b.   I notice that your system, or part of it, is serviced by a third-party maintenance company. Could you tell me the reason why you use third-party maintenance?

(Please circle appropriate answer; multiple answers allowed.)

•	Lower cost	1	C89
•	Local service	1	C90
•	Single-source service	1	C91
•	TPM service higher quality	!	C92
•	More flexible contract	1	C93
•	Other/don't know	9	C94

7a. I notice that you **DO NOT** use a third party maintenance company; is there a reason for this? (Please circle appropriate answer; multiple answers allowed.)

•	Satisfied with manufacturer	1	C95
•	Manufacturer has an advantage	1	C96
•	TPM cannot support software	1	C97
•	Tied to manufacturer with contract	1	C98
•	Fear of system supplier response	1	C99
•	Considered and rejected TPM	1	C100
•	TPM financial weakness	1	C101
•	Unaware of TPM	1	C102
•	Other/don't know	9	C103

b. Assuming you were approached by a TPM company, at what level of price reduction would you consider using a TPM vendor to service your computer hardware? (Please circle appropriate answer. Only **ONE** answer allowed.)

•	1% - 10%	1	C104
•	11% - 20%	1	C105
•	21% - 30%	1	C106
•	31% - 40%	1	C107
•	41% - 50%	1	C108
•	50% +	1	C109
•	Unwilling at any price	1	C110
•	Don't know/other	9	C111

8.   How important is it that your service vendor COMMUNICATES with you regularly and effectively to advise you of, for example:

- The status of your system   >
- Possible problems   >
- Repair plans   >   **INTERVIEWER**
- Availability of spare parts   >   **PROMPTS**
- Routine visits   >
- Hardware and software changes   >

Could you please provide an IMPORTANCE and SATISFACTION rating on a scale of 0 to 10, where 0 is of no importance or indicates total dissatisfaction and 10 is at top importance or indicates that you are fully satisfied?

- Importance   _____   C112-C113
- Satisfaction   _____   C114-C115

9a.   Would you prefer all hardware maintenance and systems software support to be provided by one service vendor at each site? If yes, what would your interest level be on a scale of 0 to 10 (0 = Low, 10 = High)

(Circle answer)

- Yes   1   C116
- No   1   C117
- Don't know   9   C118
- Level of interest   _____   C119-C120

(If the respondent answered YES, ask:)

b.   Who would you prefer that vendor to be? (Please circle appropriate answer; multiple answers allowed.)

- The manufacturer of your main hardware   1   C121
- Dealer/distributor/VAR   1   C122
- TPM company   1   C123
- One of your hardware manufacturers   1   C124
- Don't know/other   9   C125

Note: VAR is a value-added reseller.

C

Hardware Maintenance

I would now like to ask you some questions about the **HARDWARE MAINTENANCE** of your computer system. (Reaffirm the system type.)

Some of the questions are scaled with ratings from 0 to 10. Zero (0) represents zero importance or satisfaction, 5 is average, and 10 represents top importance or full satisfaction.

10.   What is your rating for the importance of hardware maintenance to your business and how satisfied are you with your service vendor's performance?

   - Importance rating   _____   C126-C127
   - Satisfaction rating   _____   C128-C129

11.   If we define **SYSTEMS AVAILABILITY** as the percentage of your normal working hours that the system is operational (disregarding non-critical peripheral breaks), what percentage has that been for your system over the last twelve months?

   - Percentage   _____%   C130-C132

12.   How many times each year does your system fail completely for a period of greater than one hour?

   - Failures per year   _____   C133-C134

And what percentage of these system failures are due to:

Hardware   _____%   C135-C137

Systems software   _____%   C138-C140

Applications software   _____%   C141-C143

Other (i.e., power failure)   _____%   C144-C146

(Please check that percentages add up to 100.)

13.   What is your rating for the importance of **SYSTEMS AVAILABILITY** (scale 0-10), and what is your level of satisfaction?

   - Importance rating   _____   C147-C148
   - Satisfaction rating   _____   C149-C150

14. Defining **HARDWARE RESPONSE TIME** as the time it takes between reporting a fault and the arrival of the service engineer on site (in working hours, that is to say 8 hours = 1 working day), what response time (in hours) do you find acceptable and what did you actually experience as an average over the last twelve months?

   - Acceptable   _____Hours   C151-C153
   - Experienced   _____Hours   C154-C156

15. If **HARDWARE REPAIR TIME** is defined as the time taken to get the system fully operational from the time the engineer arrives on site, then what time do you find acceptable (in working hours) and what time did you experience in the last twelve months?

   (Note: 8 hours = 1 working day/shift)

   - Acceptable   _____Hours   C157-C159
   - Experienced   _____Hours   C160-C162

16. I would now like go through a list of five aspects of hardware maintenance and ask you to give both an **IMPORTANCE** and a **SATISFACTION** rating for each (scale 0-10, 0 = Low, 10 = High).

		Importance	Satisfaction
•	Spares availability	_____ C163-C164	_____ C165-C166
•	Engineer skills	_____ C167-C168	_____ C169-C170
•	Problem escalation	_____ C171-C172	_____ C173-C174
•	Documentation	_____ C175-C176	_____ C177-C178
•	Remote diagnostics	_____ C179-C180	_____ C181-C182

17. How important is it that your system supplier provides a hardware **CONSULTANCY/ PLANNING** service to support your operations and how satisfied are you with the service provided? (Scale 0-10, 0 = Low, 10 = High).

   - Importance   _____   C183-C184
   - Satisfaction   _____   C185-C186

18.   If possible, I would like you to provide some information on **HARDWARE MAINTENANCE PRICING.**

a.   What percentage price **INCREASE** or **DECREASE** did you pay for hardware maintenance in the year 1990?

- •   Increase   _____ %   C187-C189

- •   Decrease   _____ %   C190-C192

- •   No change   1   (circle)   C193

b.   What do you expect the **PRICE CHANGES FOR HARDWARE MAINTENANCE** to be in the future, in percentage terms per annum?

- •   Increase   _____ %   C194-C196

- •   Decrease   _____ %   C197-C199

- •   No change   1   (circle)   C200

c.   How important do you rate **HARDWARE MAINTENANCE PRICING** and how satisfied are you with the price you currently pay? (scale 0 - 10, 0 = Low, 10 = High)

- •   Importance rating   _____   C201-C202
- •   Satisfaction rating   _____   C203-C204

19.   Which type of **HARDWARE MAINTENANCE CONTRACT** do you currently have on the main part of your system? (Please circle appropriate answer; only ONE answer allowed.)

- •   Warranty   1   C205

- •   Three-year   1   C206

- •   One-year   1   C207

- •   Time and materials   1   C208

- •   None   1   C209

D

Systems Software Support

I would like to ask you some questions relating to the service you get from your software support vendor.

These questions relate to **SYSTEMS SOFTWARE** - not applications.

As before, some of the questions are scaled with ratings from 0 to 10. Zero (0) represents zero importance or satisfaction, 5 is average and 10 is top importance or full satisfaction.

20.   Who supports your **SYSTEMS SOFTWARE?**

(Please circle appropriate answer; multiple answers allowed.)

•	Hardware manufacturer	1	C210
•	Software house	1	C211
•	Software product vendor	1	C212
•	Value-added reseller (VAR)	1	C213
•	In-house	1	C214
•	Don't know/other	9	C215

21.   What is your rating for the **IMPORTANCE** of systems software support to your business and what is your satisfaction with your vendor's systems support activities? (Scale 0-10)

•	Importance rating	_____	C216-C217
•	Satisfaction rating	_____	C218-C219

22.   What percentage of systems software problems are **SOLVED BY TELEPHONE**, and how long does this take in elapsed time from the time it is alerted to the service engineer?

•	Solved by phone	_____%	C220-C22
•	Elapsed time	_____Hours	C223-C225

23.   For those problems **NOT** possible to solve over the telephone, what **RESPONSE TIME** would you find acceptable, and what time (on average and in working hours) have you experienced over the last twelve months? (Take RESPONSE TIME to mean from the time the problem is reported to the arrival of the engineer on site.)

•	Acceptable	_____Hours	C226-C228
•	Experienced	_____Hours	C229-C231

24. If **FIX TIME** is defined as the time taken to get the system fully operational from the arrival of the engineer on site, then what time (in working hours) do you find acceptable, and what did you experience over the last twelve months?

- Acceptable   _____Hours   C231-C233
- Experienced   _____Hours   C234-C236

25. I would now like to go through a list of five aspects of **SYSTEMS SOFTWARE SUPPORT** and ask you to give an **IMPORTANCE** and a **SATISFACTION** rating for each. (Scale 0 - 10, 10=High)

	Importance	Satisfaction
Engineer s kills	_____ C237-C238	_____C239-C240
Documentation	_____ C241-C242	_____C243-C244
Software installations	_____ C245-C246	_____C247-C248
Provision of updates	_____ C249-C250	_____C251-C251
Remote diagnostics	_____ C253-C254	_____C255-C256

26. How important is it that your system supplier provides a systems software **CONSULTANCY/PLANNING** service to support your operations and how satisfied are you with the service provided? (Scale 0 - 10)

- Importance   _____   C257-C258
- Satisfaction   _____   C259-C260

27. If possible, I would like you to provide some information on **SYSTEMS SOFTWARE SUPPORT PRICING.**

a. What **PERCENTAGE PRICE INCREASE** or decrease did you pay for systems software support in the year 1990?

- Increase   _____   C261-C263
- Decrease   _____   C264-C266
- No change   1 (circle)   C267

b. What do you expect the **PRICE CHANGES FOR SYSTEMS SOFTWARE SUPPORT** to be in the future, in percentage terms per annum?

- Increase   _____   C268-C270

- Decrease   _____   C271-C273

- No change   1 (circle)   C274

c. How important do you rate **SYSTEMS SOFTWARE SUPPORT PRICING** and how satisfied are you with the price you currently pay? (Scale 0 - 10, 10=High)

- Importance rating   _____   C275-C276
- Satisfaction rating   _____   C277-C278

28. Which type of **SYSTEMS SOFTWARE SUPPORT CONTRACT** do you currently have? (Please circle appropriate answer. Only ONE answer allowed.)

- Support included in software   1   C279
  license fee

- Three-year contract   1   C280

- One-year contract   1   C281

- Ad hoc   1   C282

- None   1   C283

E

Other Services

29. I am particularly interested in obtaining your views on other services or modified current service offerings that your service suppliers could provide that would help to improve the running of your computer systems.

Could you say which of the following services your service vendor is **CURRENTLY CONTRACTED** to supply and which you would like your service vendor to provide? Also, could you give a level of interest rating against each in the range 0 to 10 where 0 = no interest, 5 = average interest and 10 = must have.

(Please circle appropriate answer and give LOI rating.)

		Currently Contracted	Require	LOI
•	Configuration Planning	1 C284	1 C285	_____ C286
•	Capacity Planning	1 C287	1 C288	_____ C289
•	Environmental Planning	1 C290	1 C291	_____ C292
•	Cabling	1 C293	1 C294	_____ C295
•	Software Evaluation	1 C296	1 C297	_____ C298
•	Consultancy	1 C299	1 C300	_____ C301
•	Network Planning	1 C302	1 C303	_____ C304
•	Network Management	1 C305	1 C306	_____ C307
•	Disaster Recovery	1 C308	1 C309	_____ C310
•	Facilities Management	1 C311	1 C312	_____ C313
•	Problems Management	1 C314	1 C315	_____ C316
•	Applications Software Support	1 C317	1 C318	_____ C319
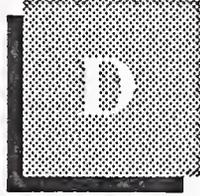
Vendor Questionnaire

1a. What do you consider to be the key issues and challenges in the environmental services market?

_____

_____

_____

_____

_____

1b.   And what are the key opportunities presented?

_____

_____

_____

_____

_____

2.   Which type of environmental services does your company offer?

		Current	Future Plans
A.	**Computer Room** Design	_____	_____
	Consultancy	_____	_____
	Project Management	_____	_____

		Current	Future Plans
B.	**Power Requirements** Design	_____	_____
	Consultancy	_____	_____
	UPS	_____	_____
C.	**Cabling** Design	_____	_____
	Installation	_____	_____
	Structured Wing	_____	_____
	Consultancy	_____	_____
	System Design	_____	_____
D.	**Installation/De-installation**	_____	_____

3. How do you promote, market and sell environmental services?

_____

_____

_____

_____

_____

4a. Who do you view as your major competitors and what do you feel their market share is?

_____

_____

_____

_____

_____

4b.   How, in your opinion, does the market fragment?

   %   Equipment Vendors   _____

   %   Building Contractors   _____

   %   Independents   _____

5a.   What percentage of your customer service revenues are derived from environmental services?

   _____ %

5b.   How are these revenues proportioned by the following services?

   Environmental Planning   _____ %

   Project Management   _____ %

   Room Design   _____ %

   Consultancy   _____ %

   Cabling   _____ %

   Power Requirements   _____ %

   UPS   _____ %

   Installation/De-installation   _____ %

6.   How do you see the growth of the environmental services market developing over the next five years?

   Equipment Vendors   _____ % p.a.

   Construction Companies   _____ % p.a.

   Independents   _____ % p.a.

7.   What percentage of the capital cost of a computer hardware systems is normally attributed to?

   A.   Cabling
          Normal systems   _____ %

          Network   _____ %

   B.   Environmental services as a whole   _____ %

8.   What do you feel are the major country markets in Europe?

_____

_____

_____

_____

9.   Which factors do you believe are driving and inhibiting market growth?

Drivers:

_____

_____

_____

Inhibitors:

_____

_____

_____

Thank You for Your Assistance with This Questionnaire