SYSTEM INTEGRATION OPPORTUNITIES IN RE-ENGINEERING EUROPE, 1992

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EUROPE, 1992

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Abstract

Historically, information systems have been developed by the internal specialist departments of organisations, which have concentrated on the automation of existing business procedures. However, this approach has led to widespread dissatisfaction and information systems that made a negligible contribution to the competitiveness of the parent organisation.

In the present climate, senior executives seek a real contribution to the enterprise from their investment in information systems (IS). This can only be achieved if a more proactive approach is taken to IS strategy. Accordingly, a number of vendors are complementing their systems integration capability with management consultancy skills. These skills enable the vendor to assist their clients in tasks such as competitive benchmarking and business process redesign prior to any systems development activity. This report analyses the emerging need for business process re-engineering and its impact on the European systems integration market.

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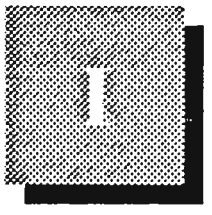


Introduction

A

Purpose

The objective of this report is to analyse the impact of business process re-engineering on the systems integration market. Access to business process re-engineering capability will play a major part in determining the winners in the struggle for the control of the systems integration market between the leading professional services and systems vendors.

B

Scope of Methodology

This report examines the nature of the market for business process re-engineering services in the systems integration market.

For the purposes of this report, business process re-engineering (BPR) is defined as:

"A means of achieving radical improvement in business performance and competitiveness through a re-evaluation and redesign of core business processes."

Systems integration is a vendor service that provides a complete solution to an information system, networking or automation development requirement through the custom selection and implementation of a variety of information system products and services. A systems integrator is responsible for the management of a systems integration contract and is the main of contact for the delivery of the specified system function, on schedule and at the contracted price.

As listed in Exhibit I-1, the components of a systems integration project are the following:

- *Equipment* - information processing and communications equipment required to build the systems solution. This component may include custom as well as off-the-shelf equipment to meet the unique needs of the project. The systems integration equipment category excludes turnkey systems by definition.

- *Software products* - prepackaged applications and systems software products.

- *Professional services* - the value-added component that adapts the equipment and develops, assembles, or modifies the software and hardware to meet the system's requirements. It includes all the professional services activities required to develop, implement, and if included in the contract, operate an information system, including consulting, programme/project management, design and integration, software development, education and training, documentation and systems operations and maintenance.

- *Other services* - most systems integration contracts include other services and product expenditures that are not classified elsewhere. This category includes miscellaneous items such as engineering services, automation equipment, computer supplies, business support services and supplies, and other items required for a smooth development effort.

This research is based on in-depth, face-to-face interviews with 10 leading systems integration vendors and 5 users who had undertaken business process re-engineering projects, as well as INPUT's ongoing research into the European software and services market.

EXHIBIT I-1

Product/Services in Systems Integration Projects

- *Equipment*
  - Information systems
  - Communications
- *Software Products*
  - Systems software
  - Applications Software
- *Professional Services*
  - Consulting
    - Feasibility and trade-off studies
    - Selection of equipment, network and software
  - Programme/project management
  - Design/integration
    - Systems design
    - Installation of equipment, network and software
    - Demonstration and testing
  - Software development
    - Modification of software packages
    - Modification of existing software
    - Custom development of software
  - Education/training and documentation
    - Systems operations/maintenance
- *Other Miscellaneous Products/Services*
  - Site preparation
  - Data processing supplies
  - Processing/network services
  - Data/voice communication services

C

Report Structure

Chapter II is the Executive Overview and contains a summary of the trends in business process re-engineering.

Chapter III contains case studies of three user organisations that have undertaken business process re-engineering exercises.

Chapter IV contains profiles of the business process re-engineering activities of eight vendors.

D

Related Reports

- *Systems Integration Markets, Europe, 1992-1997*
- *Impact of Downsizing on Systems Integration, Europe, 1992-1997*
- *Systems Integration Vendor Analysis, Europe, 1992*
- *Methods for Successful Systems Integration Projects, Europe, 1992*

II

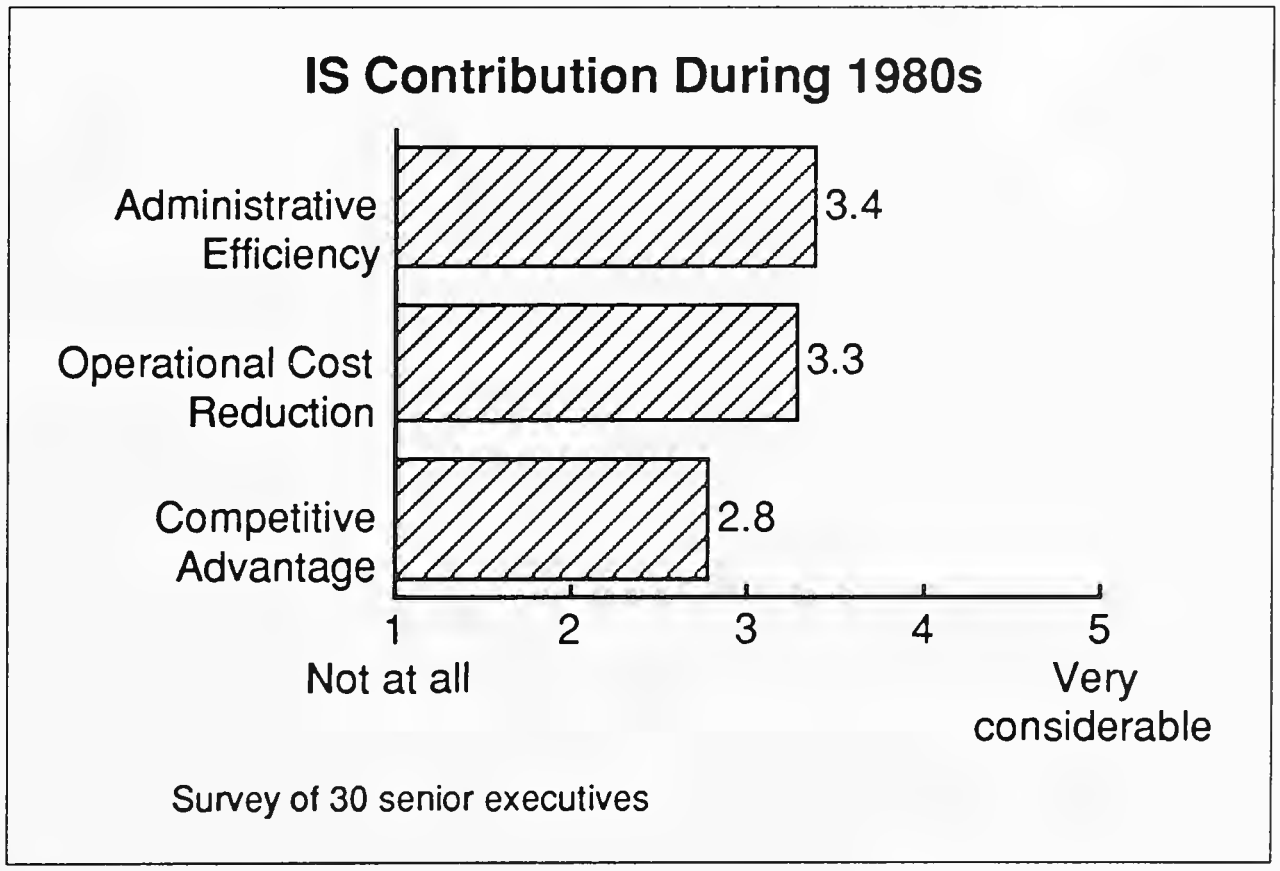
Executive Overview

A

Business Process Re-engineering—The Means to Deliver Competitive Positioning

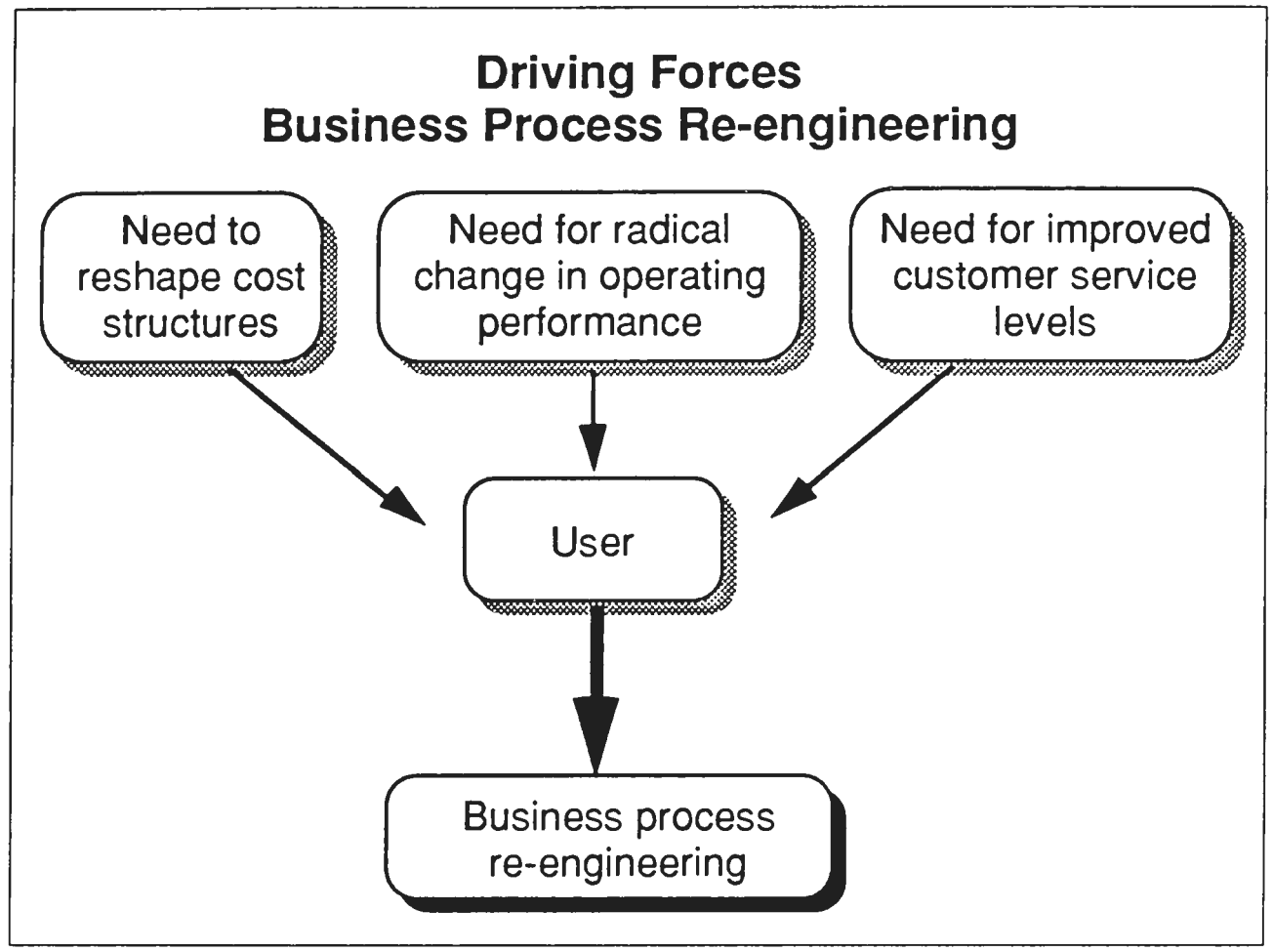
Historically, information systems have been used to automate existing practices. As indicated in Exhibit II-1, this has resulted in some business benefit in terms of increased administrative efficiency and operational cost reduction.

EXHIBIT II-1



Increasingly faced with a combination of shrinking markets and rising competition, many organisations now seek a radical improvement in their competitive positioning. Typically, this manifests itself in the manner indicated in Exhibit II-2.

EXHIBIT II-2



It is now frequently insufficient for organisations to make incremental improvements in their current operating practices. A far more fundamental re-think of business practices that will deliver a radical change in operating performance is required. It is no longer sufficient for organisations to position themselves on a single criterion such as quality or low price. To remain competitive, organisations in many sectors must now simultaneously deliver the benefits of:

- High product/service quality
- High levels of customer service/responsiveness
- Low price

This is equally applicable to the manufacturing sector and the financial services sector, both of which face high levels of competition at the present time.

Accordingly, organisations are increasingly turning to business process re-engineering. Business process re-engineering can be defined as *"a means of achieving radical improvements in business performance and competitiveness through a re-evaluation and redesign of core business processes"*.

Business process re-engineering has a considerable impact on an organisation's use of information systems because:

- The *'old'* systems are unlikely to be appropriate to support the new ways of doing business
- Senior executives may expect the delivery of IS to be re-engineered
- In-house IS departments are rarely regarded as having an in-depth knowledge of the business
- Strategic consultancy skills become the principal critical success factor instead of IS development capability

B

Re-engineering the Delivery of Information Systems

Exhibit II-3 lists the current expectations of senior executives from information systems.

EXHIBIT II-3

Key User Demands

- Value for money
- Cost reduction
- Effectiveness

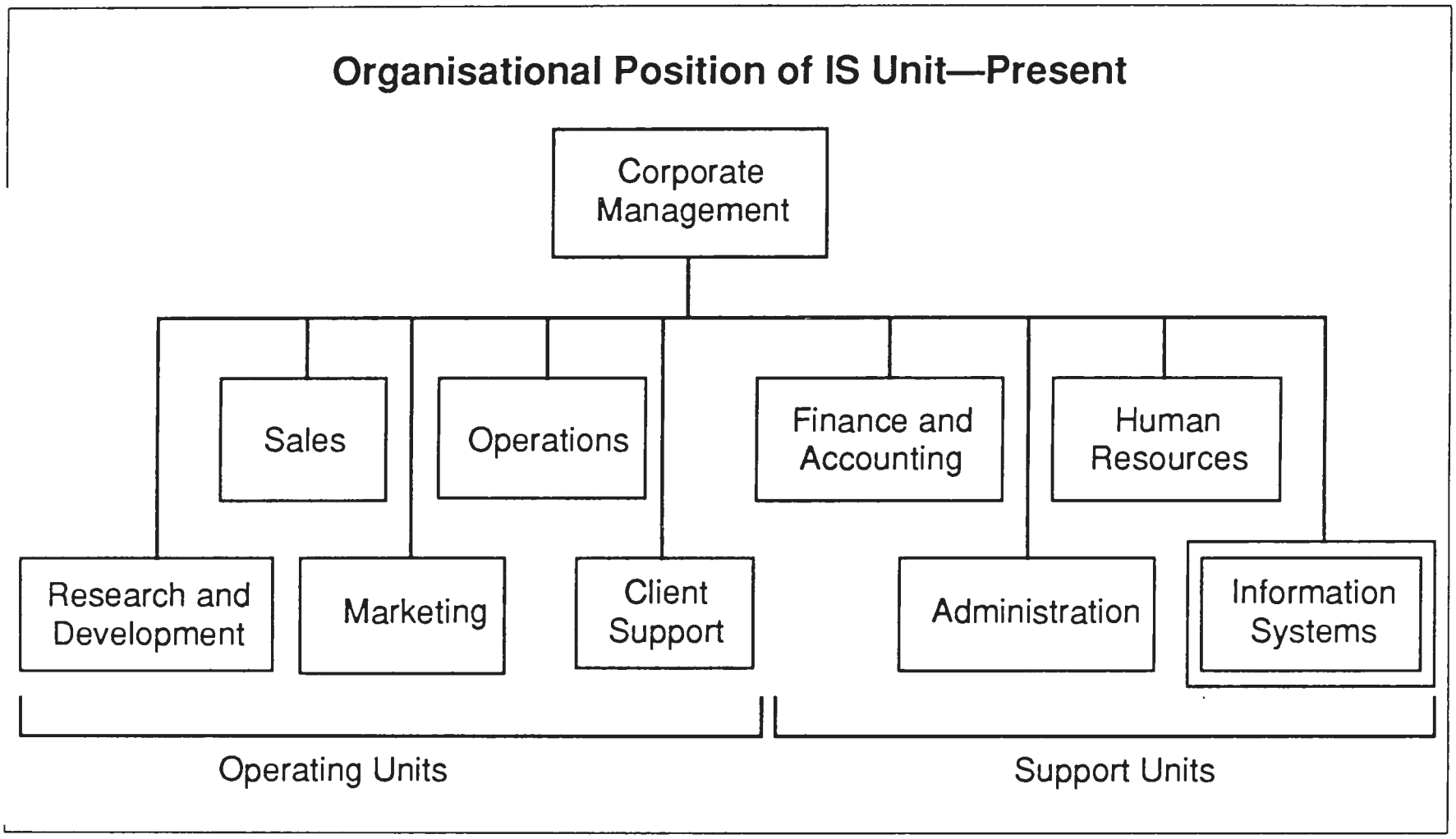
These expectations mirror those for the overall organisation with senior executives seeking improved effectiveness and customer service with a reduction in operating costs.

This creates a significant opportunity for external vendors because the in-house IS department is often viewed as unsuitable to meet these challenges: *"A group of expensive technical staff who do not relate well to the business needs of the organisation"*. What is required is an agency capable of seeking out projects that will lead to a step change in the organisation's effectiveness.

A fundamental question must be asked, "Should a separate IS organisation exist at all in the 1990's?" The IS organisation has consistently grown in size, status, and cost over the last 30 years. It is now a fully recognised service unit reporting to the senior executives or, at a very high level, to a chief financial or administration officer.

A typical organisation structure is shown in Exhibit II-4. Various aggregations may be made by geography or product line depending on the organisation, but essentially the IS department is outside the operating units' control. It is almost always a cost centre.

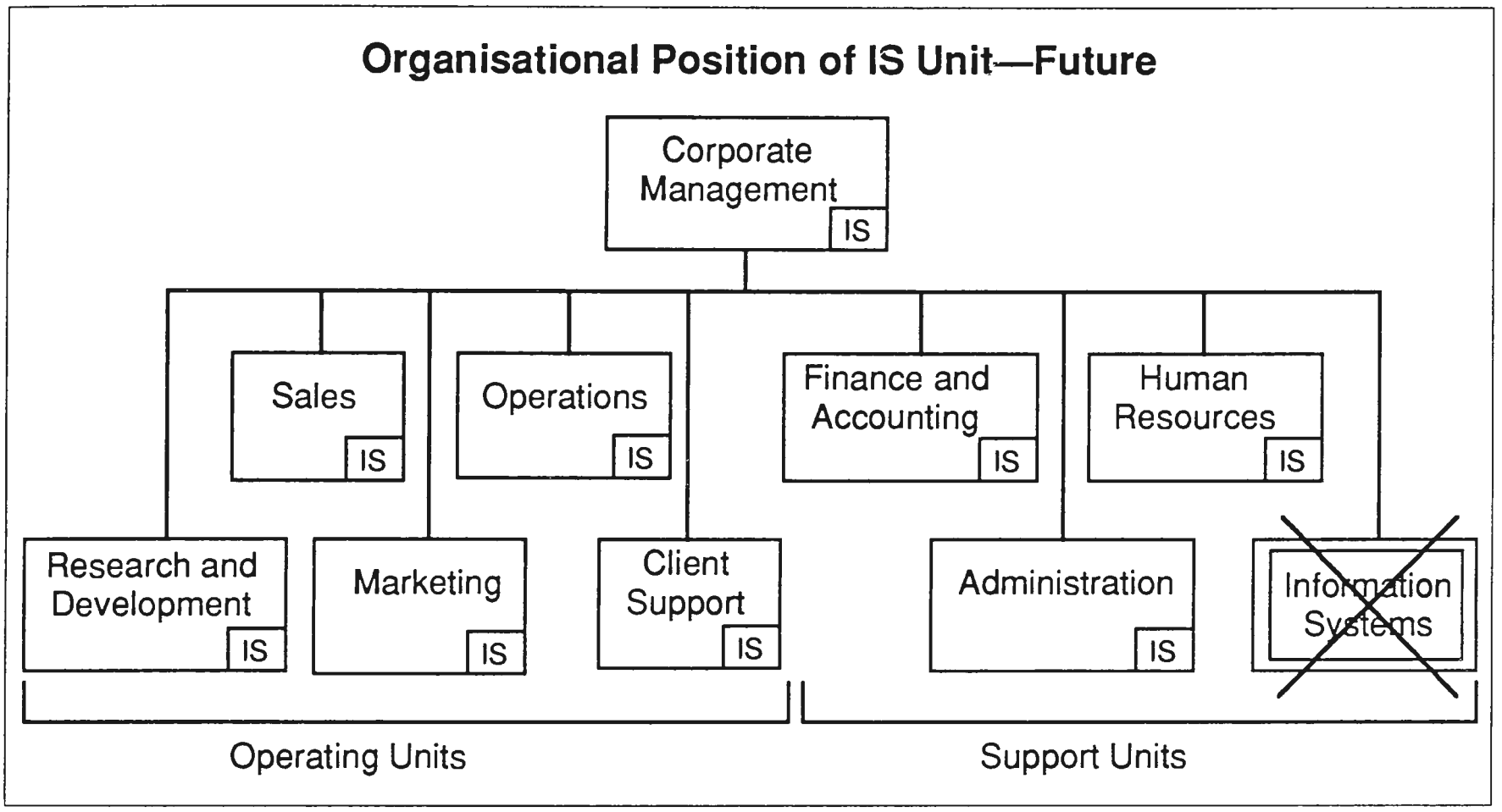
EXHIBIT II-4



Yet in the 1980's it was emphasized that the importance of information systems were to the success of the organism as a whole. Concepts of 'mission-critical systems', 'systems for competitive advantage', etc., were introduced and adopted in large part by organisations. As executives in operating units come to believe these messages, they naturally seek more influence and control over 'their' systems.

Another trend that became obvious in the 1980's was the increasing difficulty of separating computer systems from people systems. With network systems and more rapid information flow, the integration of people and their computer/communications support infrastructure have become symbiotic in operations as well as in development. Computer and communications systems by themselves accomplish nothing; they have to work with people to be effective. A consequence of these two trends could be the disappearance of the separate IS unit as is known today, resulting in an organisation structure depicted in Exhibit II-5

EXHIBIT II-5



This is already happening amongst organisations that have undergone downsizing and an accompanying decentralisation of business units. In these cases, control over IS is frequently transferred to the business unit management.

In other instances, senior executive steering groups—not the IS department—are playing the key role in directing the organisation's business process re-engineering and associated systems integration activities.

C

Strategic Consultancy Skills—The Critical Success Factor

As senior executives begin to become much more involved in their organisation's IS strategies, so the criteria for vendor selection have changed accordingly. In the past, IS managers have typically chosen vendors on the basis of their technical and systems development capabilities.

On the other hand, senior executives are looking for a partner who can assist them in transforming the competitiveness of their business. As a result, business process re-engineering projects exhibit the pattern of vendor selection criteria shown in Exhibit II-6.

EXHIBIT II-6

Vendor Selection Criteria
Business Process Re-engineering

Vendor Capability	Importance
Strategic Consultancy	Very high
Change Management Skills	High
Industry Sector Expertise	High

First, the vendor must have strong strategic consultancy capabilities within the clients' industry sector. Many business process re-engineering projects commence with competitive benchmarking studies to establish the client's current competitive positioning and relative strengths and weaknesses. In the light of this knowledge, the client's value chain is analysed to identify areas where cost and/or time savings can be achieved.

However, strategic consultancy is no longer adequate in isolation. Clients now require partners who can assist them in delivering a competitive advantage. Accordingly, a high level of importance is attached to vendors' change management capabilities.

These changes in the market have led many vendors to recognise the importance of management consultancy capabilities in targeting the systems integration market. Vendors that have carried out business transformation studies for their clients have much higher probabilities of success in winning follow-on systems integration contracts.

Andersen Consulting has arguably achieved the highest level of integration between its management consulting services and its systems integration services, and has been noted for its high success rates in the systems integration market. However, many of the leading vendors are developing their own consulting units in order to adopt a similar approach to the market.

Notable examples include:

- CSC and Index
- Cap Gemini Sogeti and Gemini Consulting
- Digital with in-house capability of 100 European consultants
- EDS with approximately 30 consultants in Europe

Typically these organisations are targeting:

- Organisations with revenues greater than $1 billion
- Senior executives (not IS management)
- Those industry sectors perceived to be undergoing transition.

Sectors that are being strongly targeted at present include the manufacturing sector, financial services, and utilities

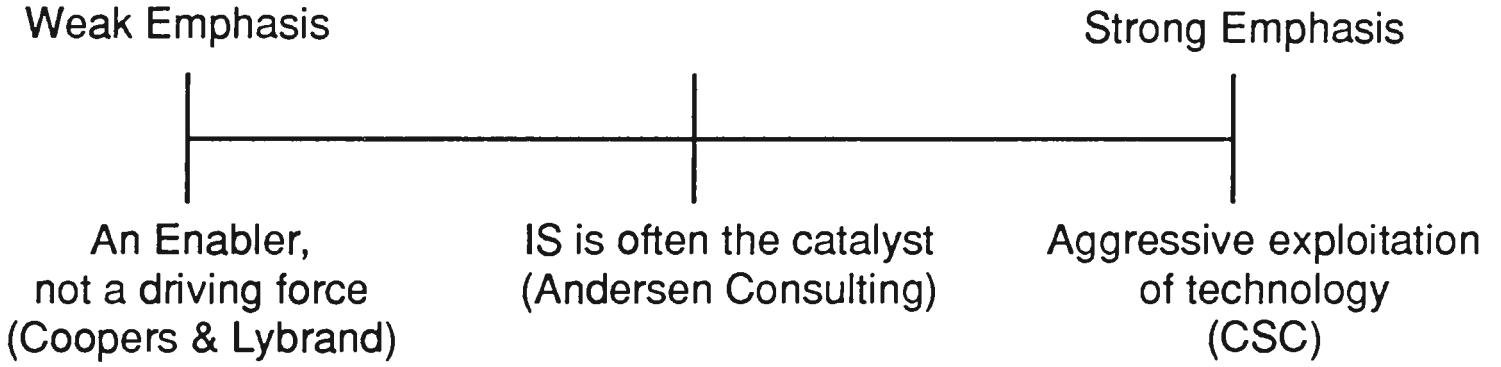
D

Technology—An Enabler or a Driving Force?

Exhibit II-7 identifies the range of attitudes exhibited by vendors towards the role of technology in business process re-engineering.

EXHIBIT II-7

Range of Technology Perspectives



In the past, information systems have frequently inhibited an organisation's ability to adapt by restricting them to a set of administrative procedures, which can only be amended slowly and with difficulty.

However, the advent of client/server architecture offers the prospect of increased flexibility and speed of implementation of information systems for the future. This would enable information systems to contribute more readily in facilitating changes in business process in the future.

As shown in Exhibit II-7, vendors vary considerably in the importance that they attach to IS's ability to contribute to an organisation's competitive positioning. The majority of vendors tend to take a conservative stance, insisting that information systems remain restricted to a supporting role. Other organisations, such as CSC, adopt a more innovative approach justified by the belief that aggressive exploitation of technology offers

businesses a route to a competitive advantage. Technologies that offer particular scope for transforming business practices include document image processing and expert systems. Document image processing is especially applicable for changing business practices—enabling faster customer response and reduced service costs—in the financial services sector.

E

Business Process Re-Engineering—A Critical Skill in Targeting the Top 1000 Organisations

The purchasing pattern for major systems integration projects is changing with greater emphasis placed on re-engineering the underlying business processes prior to the design and implementation of IS systems. The motivation for organisations to approach systems integration projects in this way is their need for much improved competitive positioning. Typically, this necessitates a need to reduce operating costs significantly while improving customer service. The development of new business processes to achieve these aims frequently involves organisations using the services of external consultancies, which have expertise in value chain analysis and design and change management.

Accordingly, systems integration vendors need access to "tied" business process re-engineering skills if they are to achieve "privileged" access to major systems integration projects arising out of business process re-engineering exercises. This "tied" access can be achieved either:

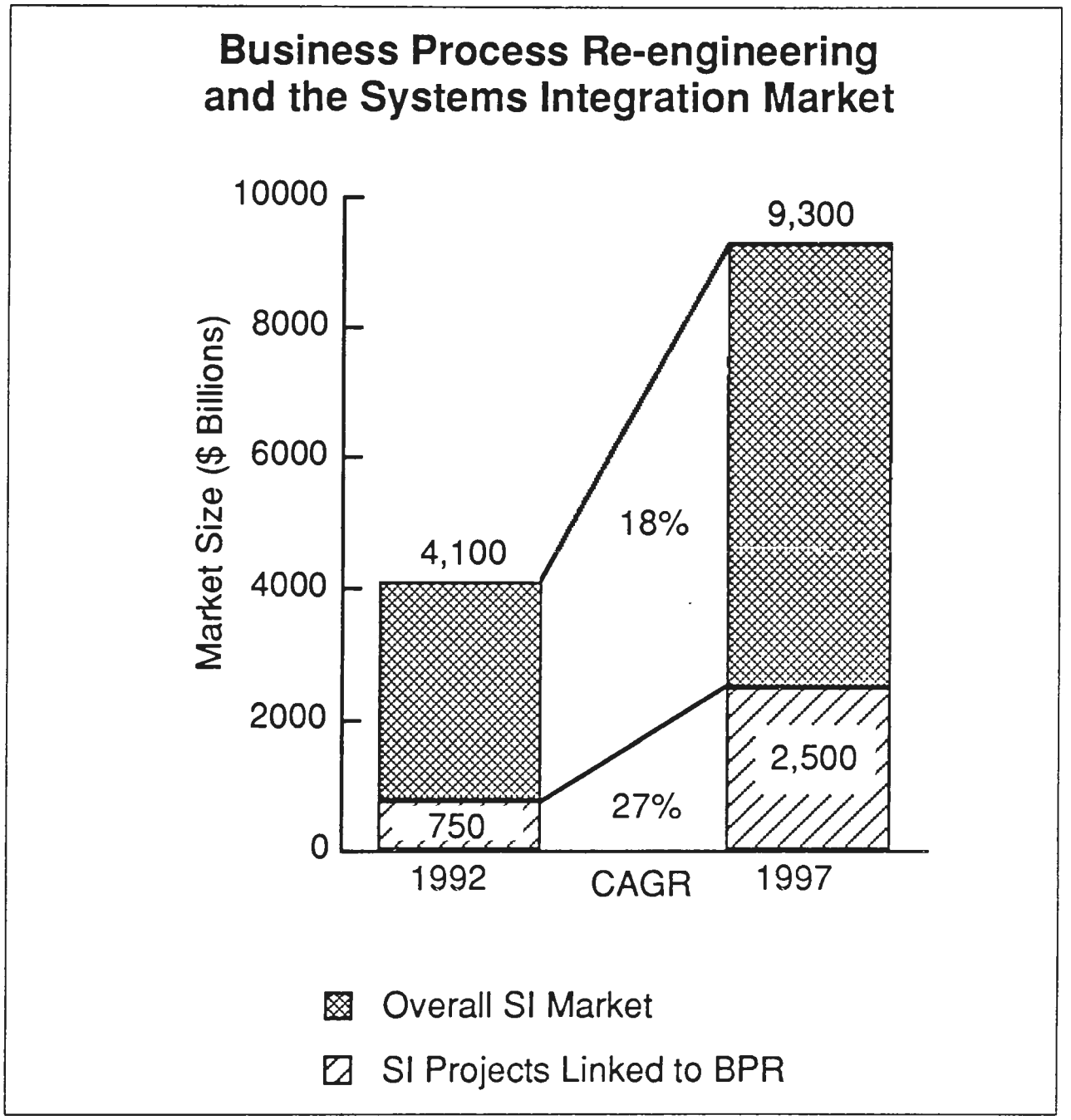
- By developing in-house BPR skills like EDS and Digital
- Acquiring consultancies with the relevant skills, an approach adopted by CSC and Cap Gemini Sogeti
- Forming partnerships with consultancies

However, this latter approach has its difficulties because established management consultancies are keen to preserve their aura of independence and will only be prepared to enter into co-operative agreements with an individual systems integration vendor covering a narrow range of projects.

With these organisations and Andersen Consulting targeting the European Top 1,000 organisations with business process re-engineering, it will become increasingly difficult for vendors without these skills to target major systems integration projects within these leading organisations.

As shown in Exhibit II-8, the market for systems integration projects linked to business process re-engineering consultancy is forecast to grow more rapidly than the overall systems integration market.

EXHIBIT II-8



In 1992, it is estimated that business process re-engineering was an important factor in 18% of systems integration projects by value. By 1997, this proportion is forecast to increase to 27%.

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Case Studies

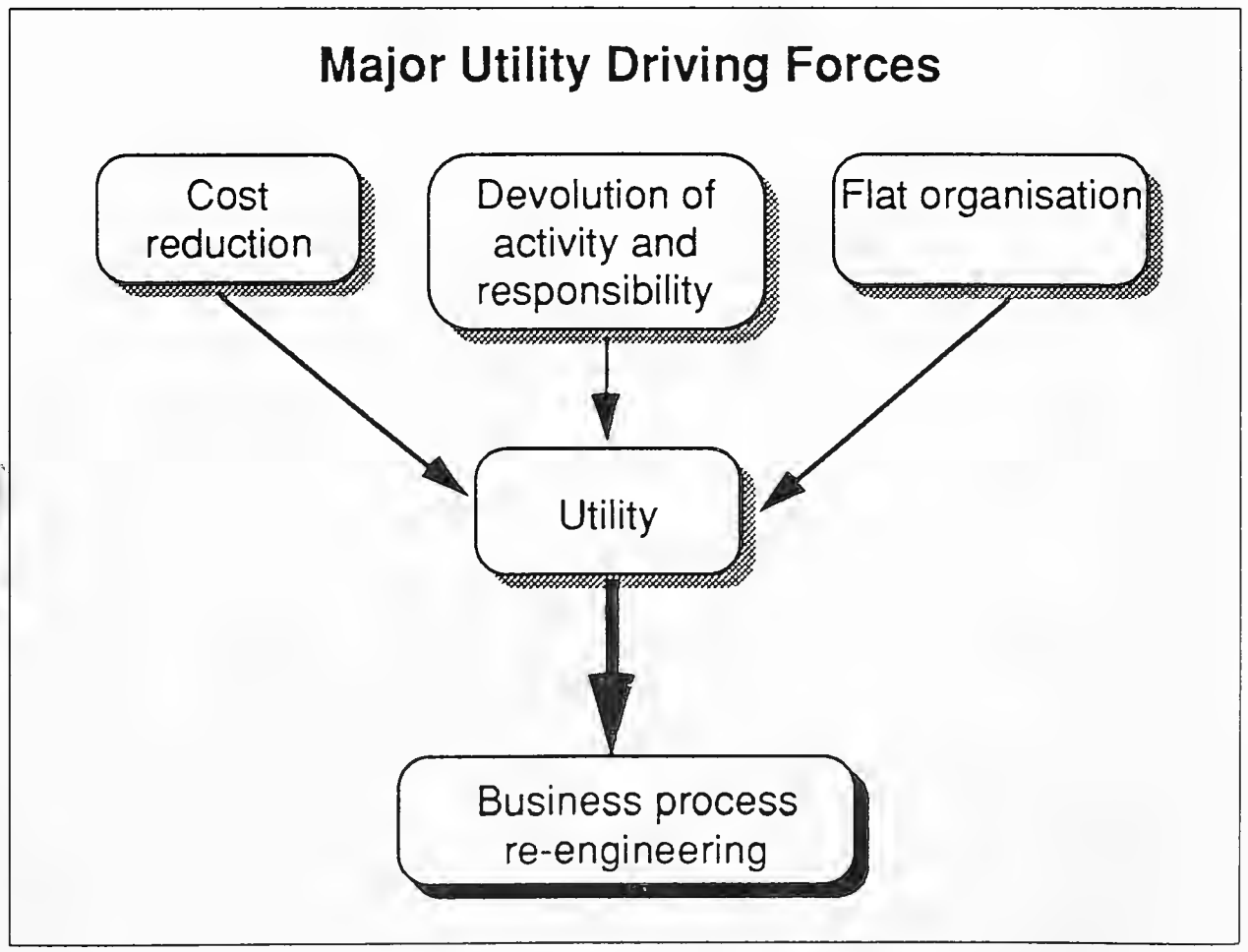
A

Major Utility—Adapting to Privatisation

The company is one of two organisations created by the breaking up of a European state monopoly electricity supply organisation. In order to adapt to the privatisation, the whole organisation has been restructured over a 3-year period at a cost of approximately $500 million.

Obviously, this organisation needed to change many of its commercial processes while making the transition from the public to the private sector; however, the organisation also took the opportunity to undertake a wider review of its operations. The main driving forces behind the desire for business process re-engineering are shown in Exhibit III-1.

EXHIBIT III-1



In order to increase its efficiency within its new and competitive business environment, the organisation reduced its cost base significantly. In particular, the organisation wanted to reduce its cost overheads, especially its staff costs, which has now been achieved. Overall, the organisation has reduced its work force by approximately 50%.

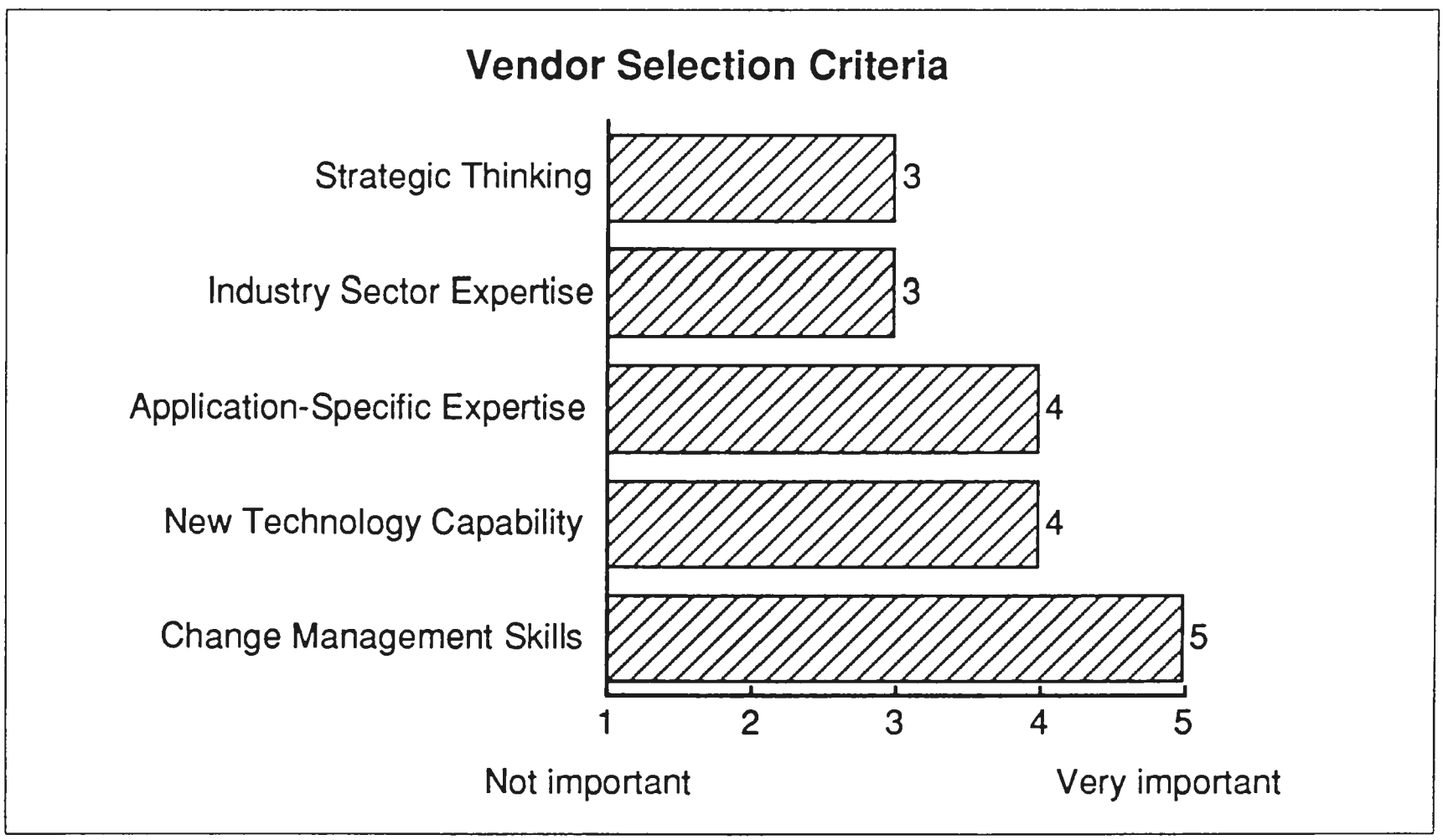
One way in which these reduced staffing levels have been achieved is by adopting a flatter organisation structure with a reduced number of reporting levels. This requires a corresponding empowerment of the remaining work force. The organisation was particularly keen to devolve activities and responsibilities within its power plant operations.

The company has also inherited a fragmented range of IS systems that needed to be replaced to provide consistency of approach across the whole organisation.

A consultancy organisation was commissioned by the finance director to develop an overall strategy for the re-engineering of the organisation. The consultancy was chosen on the basis of its expertise in strategic thinking and change management, though the prior experience and contacts of senior executives with this consultancy was also undoubtedly a significant factor.

The importance of many selection criteria in this instance is shown in Exhibit III-2.

EXHIBIT III-2



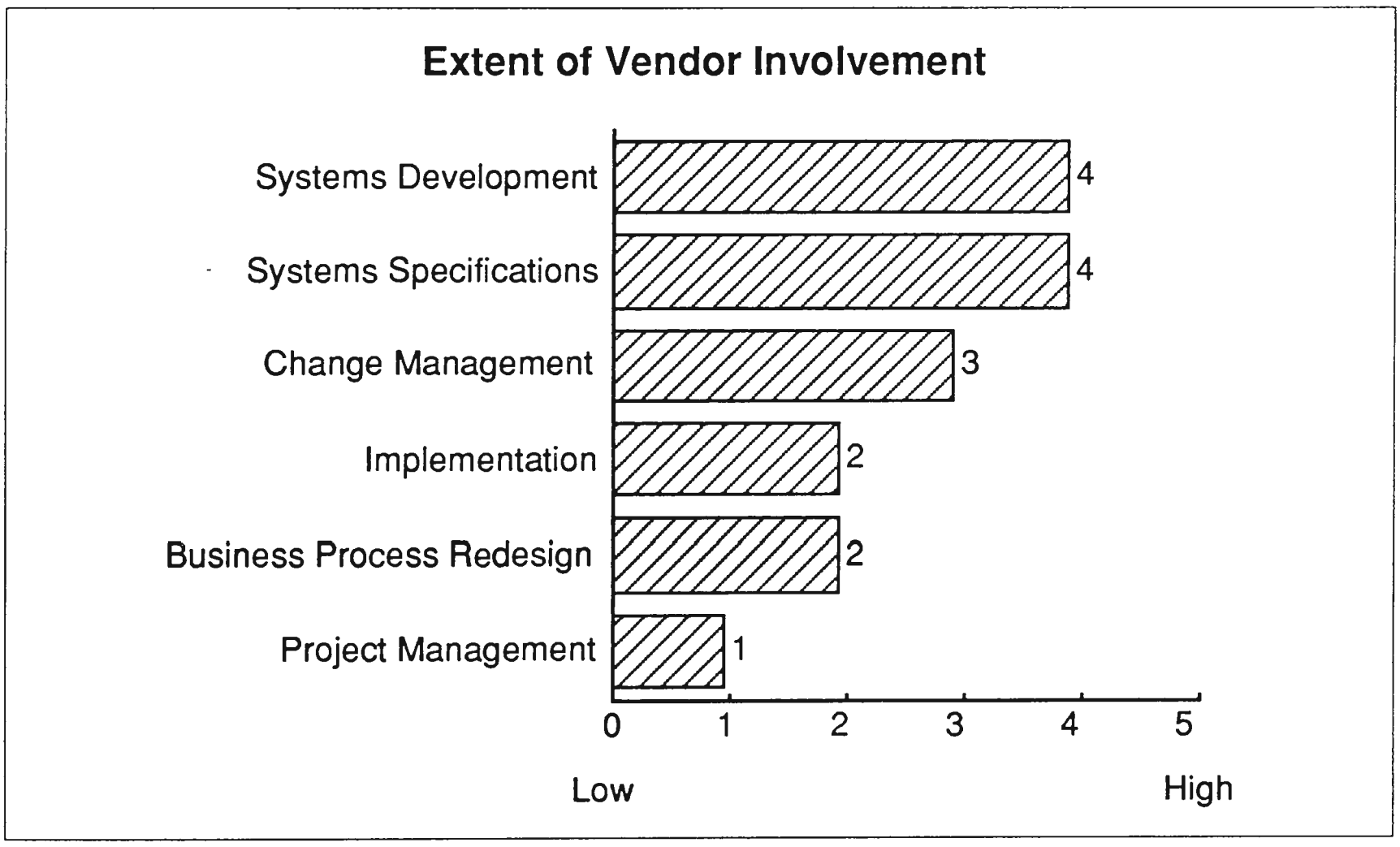
As a result of this strategy, 6 IS related projects were commissioned. It is interesting to note that the principal project for change and systems development was awarded to the same consultancy organisation that had developed the overall strategy.

Of the remaining 5 projects, 3 were awarded to consultancy organisations and only 2 to information-services-based professional services vendors. These latter 2 projects were essentially concerned with establishing IS infrastructure rather than business solutions.

Throughout the 3 years, the organisation's board faced a number of difficult decisions relating to the streamlining and commercialisation of the business.

The profile of involvement of the principal consultancy in the ongoing business transformation as perceived by the client is shown in Exhibit III-3.

EXHIBIT III-3



The company used consultants primarily for specialist skills not then present in the organisation . Strategic thinking and change management were key areas initially.

The prime role of the consultants was seen to be as facilitators with a lot of the actual work being done by the local managers. Similarly, the responsibility for business process redesign was primarily from the IS division, but it was achieved through the effective use of consultants as facilitators in conjunction with the line managers. However, while the consultants were primarily involved as facilitators in business process redesign and change management, they were specifically and heavily involved in systems specification and development. As time progressed, the direct involvement of consultants declined as in-house teams were built to use the newly acquired skills.

In this case, the role of the IS department did not change fundamentally. Business process re-engineering depends on having the right calibre of staff to look critically at the way things are done and in having the involvement of management at senior levels in the company. By contracting out appropriate sections of the overall project, they believe that they now have in place state of the art systems dealing with 95% of the new commercial business and networks for LANs, WANs, voice and data, together with video conferencing. In terms of the benefits sought by the board, they feel that they have 100% conformance with the new style, culture and flatter structure pervading the whole organisation.

In conclusion, it appears that while strategic consultancy and change management expertise were the keys to vendor selection, most of the vendors revenues, and presumably profit, derived from systems design and development activity.

B

Restoring Profitability in a Manufacturing Company

The subject of this case study is the subsidiary of a German-owned multinational that supplies components to the motor industry.

The successful vendor initiated the project. The vendor was awarded the project following meetings at which they introduced the company to the concept of accelerated performance improvement.

As in other BPR projects, the consultants were not so much seen as the workers but as facilitators, ensuring that the techniques and methodologies used—such as business performance assessment and activity based costing—were understood and adopted by the client's personnel.

The driving forces behind the client's agreement to the project were the needs:

- To return the company to profitability
- To gain an understanding of the cost base, that is, a true product costing versus a standard costing
- To review the production processes
- To complete an industry benchmark to identify what could be achieved

The managing director was responsible for vendor selection in conjunction with his financial director. It is understood that the vendor was selected primarily for their techniques and their perceived ability to facilitate change. Otherwise, the only important attribute was their industry sector expertise.

The business process redesign was the responsibility of the team comprising members from the vendor's and client's organisations. Vendor personnel were also actively involved in the change management process and systems development.

Initially, the company was benchmarked against its competitors to quantify its strengths and weaknesses. The vendor used its own proprietary techniques for cross-functional impact analysis and for facilitating the business re-engineering process. The vendor was primarily viewed as a catalyst for change. Client personnel were actively encouraged to take ownership of the project including its aims and the techniques used.

The main benefits sought by the client were the regaining of a profitable business and the understanding of true product costing versus traditional costing. As a result of the business process re-engineering project, the client feels that there has been a substantial achievement in understanding costing and the company has returned to profit.

As a result of revised procedures in disposal and rework, scrap volumes are expected to reduce 66% over a 12-month period. The combined monitoring of stock and work in process has enabled a 49% reduction in inventory costs.

C

Cost Reduction in the Manufacturing Sector

The subject of this case study is a medium-sized German manufacturing company producing components for the motor industry. The company remained largely unchanged for many years, but over the previous 2 years it suffered losses due to a combination of reduced demand from the automotive sector and global competition from U.S. and Japanese companies. In the previous year, the company suffered severe losses—approximately 15% of revenues—and in the coming year was anticipating a fall in revenues in the region of 5 - 25%.

The company had already reduced its work force by one-third and was considering closing one of its manufacturing plants. Although the company was still arguably the European market leader in its field, it was clearly now losing market share rapidly. The company identified its problems as being:

- Inflexible and slow to respond to market needs
- Insufficiently customer oriented
- Low product quality

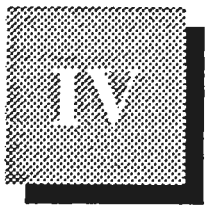
The company spent a sum equivalent to 2% of their revenues on IS. However, it wished to reduce this spending by at least 25%. The current systems were felt to provide poor business support and to be inappropriate for supporting the organisation in its future form. In particular, the company felt that:

- A centralised mainframe system was inappropriate for a company of its limited size and to support the decentralized business unit structure now being introduced

- The emphasis was on administrative systems rather than systems to support shop floor activities

The company's response to the combined challenges of reducing its IS expenditure while introducing new systems to support its business was a decision to outsource all IS activity.

Accordingly, the company is in the process of selecting a vendor to take-over the present equipment and personnel. The same vendor will be required to assist in the business process re-engineering of the company and the provision of new systems.



Vendor Approaches to Business Process Re-engineering

A

Coopers & Lybrand—Anticipating Growth in Business Re-engineering

At present, many senior executives in Europe are disillusioned with the contribution that information systems have made to their business. Companies are frequently presented with soaring IS budgets, but little evidence that use of information systems has contributed to improve their competitive positioning. This has led to demands for improvement in IS effectiveness combined with lower IS spending.

It also increases the influence of management consulting organisations. Users frequently have little faith in the business knowledge and understanding of their in-house IS departments and are turning to external vendors that possess these skills.

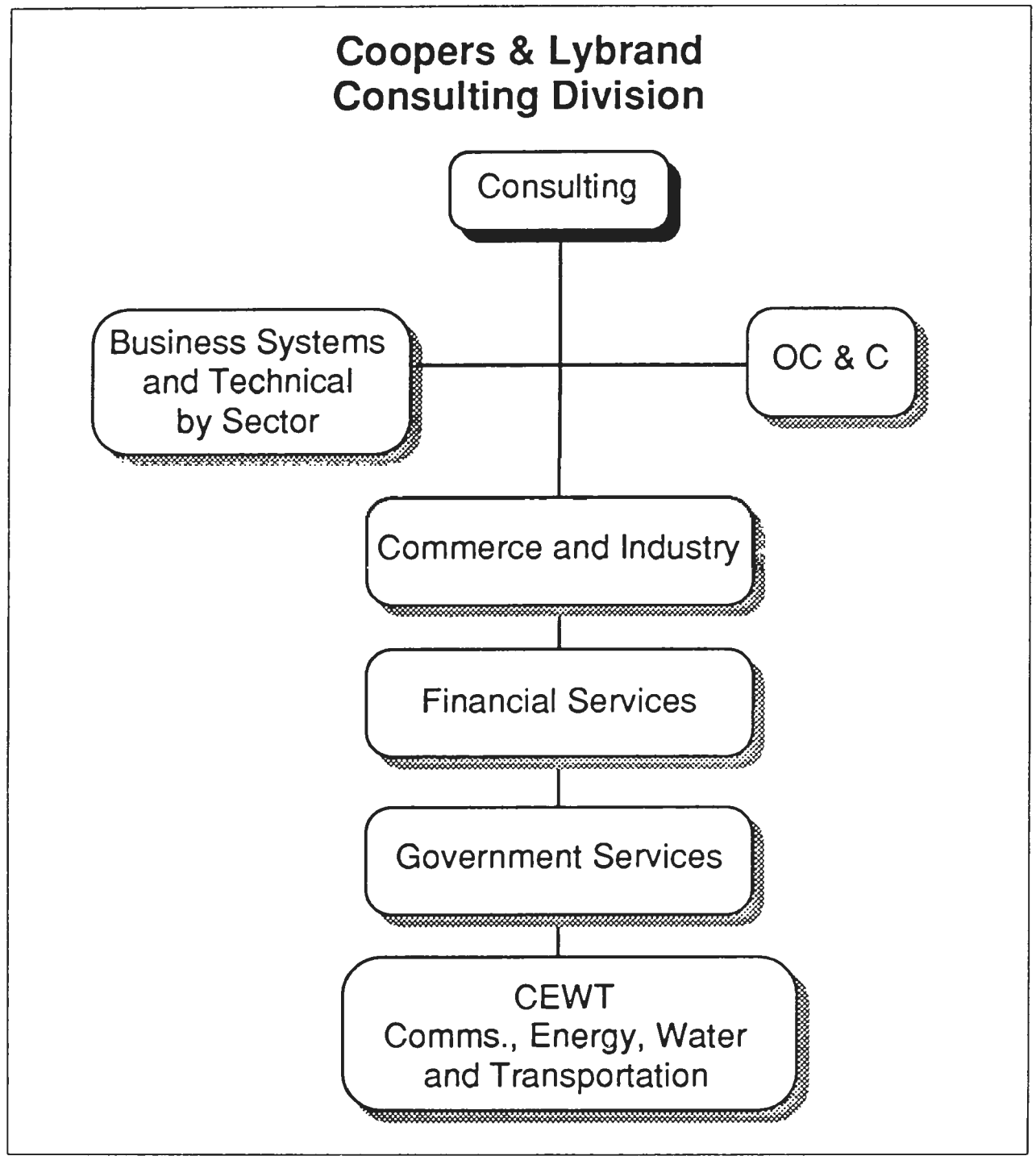
Management Consultancies such as Coopers & Lybrand (C&L) are taking advantage of this trend, and the resulting demand for business process re-engineering by:

- Targeting the equivalent of Times 500 companies
- Offering a branded service—Breakpoint BPR
- Retaining their independence from other vendors

1. Targeting Times 500

C&L is structured into five main areas of Consulting, Accounts and Audit, Tax, Corporate Finance and Insolvency. Consulting is structured as shown in Exhibit IV-1.

EXHIBIT IV-1



Within each of the 4 main areas of consulting there are multidisciplinary teams from human resources, accounts, information systems, engineering, logistics and marketing. In the U.K., these comprise 450 staff in total of whom 70-100 are sufficiently senior enough to discuss such topics as business process re-engineering (BPR). Though BPR activities started within the commercial and industrial sector, it has expanded its sphere of activity to the other 3 areas.

C&L directs its activities towards the Times 500 organisations in the U.K. and while it does not see limits as far as the business application of technology is concerned, it does tend to be more active within commerce and industry and the CEWT division. Sales activities are almost always directed to the chief executive, although sometimes to a budget holding departmental senior manager, but the contact initially is never the in-house IS management.

2. Offering BreakPoint BPR

C&L defines business process re-engineering as a means of achieving radical improvement in performance and business competitiveness through identifying core business processes. It is essential to be selective, that is, to select only one or two processes that will give the greatest return, as perceived by the customer, otherwise the changes may be too great for an organisation to absorb. C&L stresses that BPR is not simply about gaining better performance from an organisation's IS systems.

C&L's prime offering is BreakPoint BPR, which has 4 main components:

- Core process definition
- BreakPoint identification
- Process re-design
- Change management

Other related services that may lead to the use of BPR services include:

- Total quality management
- Activity based management (including activity based costing)
- Time based management

C&L believes that one of the key driving forces is the increased complexity and sophistication of the buying public. Customers are becoming increasingly demanding in what they are seeking from their suppliers, including cost, quality, levels of service and responsiveness, time between order and delivery. Furthermore, companies are attempting to meet these demands while keeping up with technological advances, meeting the demands of the work force (for example, the wish to have a more balanced lifestyle rather than be disrupted by company postings, long hours etc.), adapting to social and legislative change and providing shareholders with acceptable demands on their investment. These, together with the recession, mean that more companies wish to re-evaluate what the customer really wants and values; they wish to check themselves against industry or service benchmarks and are open to consider a major change in how they conduct their business.

A functional view of a business may well be useful for the incumbent management to maintain control, but this can lead to functional 'silos' causing barriers to meet key customer requirements. C&L believes that improvements to those things, which customers perceive as high in value, can only be achieved by looking *across* the company from the customers' point of view (rather than the business function's point of view). This enables the core business processes to be identified, enabling re-engineering to deliver lower cost, faster response, better service and improved quality.

Technologies are important, but must always be considered as enabling factors rather than key drivers to make BPR happen. There is no specific technology for BPR—the latest technology must be viewed as one possibility and should only be used as part of the packaged solution of process re-design.

In the U.K., C&L has had 12-15 clients for their BPR services and 4-5 of these are still active. An annual fee revenue of £2-3 million is being derived and they are expecting a fairly rapid continuing growth of about 20% in the business from their existing clients. Examples of typical business process re-engineering projects are listed in Exhibit IV-2.

EXHIBIT IV-2

Examples of Business Process Re-engineering Projects

Client Industry Sector	Nature of Project
Commodity chemicals	Review of value chain processes from order generation to fulfillment.
Banking	Re-engineering of back office functions.
Brewing	Business process re-engineering including introduction of total quality management and activity based costing.

Business process re-engineering projects typically involve redesigning the supply chain of the client to deliver improved customer service—reduced lead times or greater flexibility—and reduced process costs.

For example, one client of Coopers & Lybrand claims to have undertaken a business process re-engineering project, which saved an immediate 15% in administrative costs, identified a further 15% reduction for the near future, provided a more flexible response to customer requirements and increased their market share.

3. Retaining Their Independence

Business process re-engineering projects typically lead to a need to redesign and re-implement the IS support for those processes affected. Accordingly, identification of such projects at an early stage is a key

objective for many systems integration vendors, and vendors are either setting up their own management consultancy organisations or seeking partnerships to address this issue.

However, C&L does not have any strategic alliances for the provision of solutions resulting from its BPR services and is not seeking them. The retention of independence and integrity is seen as a key factor in their services and must not be compromised. C&L has been courted by a number of vendors for such alliances, but will only respond on a one-off basis rather than develop a formal on-going relationship with another vendor.

B

KPMG Norton Nolan—Formed Strategic Business Management Unit to Address Business Process Re-engineering

KPMG Peat Marwick's (KPMG) services encompass the whole range of accounting, management consulting and IS consulting activities. Approximately five years ago, the organisation strengthened its IS consultancy activities with the acquisition of Nolan Norton, which retains its identity as the information systems arm of KPMG Management Consulting.

KPMG has recently established a Strategic Business Management Unit through which to focus its BPR service. It does not choose to break down the BPR service into smaller units, but recognises that the stimulus for the activity comes through any one of the disciplines in which it is operating with a client, and can be developed from there.

KPMG Norton Nolan has formed this Strategic Business Management Unit from a number of earlier groups and it comprises 100 staff under the partner Charles Symons. The unit contains accountants, IS consultants, human resources staff and industry focused groups; thus, it is strongly cross-functional as the BPR work demands.

Business process re-engineering is seen to be a major new and growing area of activity. It is defined as a project based activity in which business processes across many functions are studied from the customers' viewpoint, radically re-structured to gain significant performance improvements (for example, cost, time, or quality) through cultural and organisational changes and usually with the use of an enabling technology. It includes the use of a whole range of techniques from the macro to the micro processes of business, from business and IS strategies to implementation. There are almost always significant effects on 3 elements of the business: the process, the technology and the people and their skills. Greatest success occurs when only one or two major changes are implemented at one time.

KPMG Norton Nolan expects the major growth opportunities to be generated within:

- The services sector
- Government
- Utilities

The market will grow as awareness increases in these sectors following the initial successes of business process re-engineering.

The prime benefits to a client are the significant performance benefits that can sometimes be gained and the gaining of a strategic edge over their rivals in a competitive, recessionary market place.

The major market forces are seen as either an evolutionary or a natural development from earlier work in seeking business efficiencies. Process improvements in manufacturing were addressed by methods like Just In Time (JIT), quality circles, computer-aided design and manufacturing. There have been many attempts to improve the efficiency in the office and service areas through such techniques as organisation and methods, IS, and activity based costing or management (ABC or ABM). These have very often only dealt with a limited part of the business or total work flow and consequently have fallen into the trap of 'paving over the cow paths'; in other words, to make an inappropriate route more acceptable or slightly faster. The view taken at Norton Nolan is that of the old cliché, "if it ain't broke, don't fix it", yet this is now irrelevant because BPR is the way to alter the effectiveness and efficiency of business processes. Revolutionary, rather than evolutionary, changes in business practice are necessary to restore an organisation's competitive positioning in a recessionary market.

KPMG Norton Nolan targets large- or medium-sized companies in the services sector such as government, banking, insurance, distribution, retail and transport. Their strengths in offering business process re-engineering include senior contacts within major organisations, possession of the necessary multidisciplinary or cross-functional skills, and the ability to deliver significant performance improvements.

Contracts lengths vary enormously depending on the start point of the activity that led to the BPR work. Example contracts include the following:

- A city bank established a team of ten, comprising nine of its own staff and one from KPMG, to review the design of an IS system. This led to a redesign of the business process, followed by a redesign of the computer system. The elapsed time of the contract was 4 months and the revenue less than £100K.

- Aircraft maintenance for KLM . The start point was IS and the team worked backwards to understand work flows at a macro level. The result of BPR was to implement a team-based approach and to redesign the computer system. The value of the contract was approximately £150,000 - £250,000.

- A financial services organisation had been reviewing its activities using activity based costing, but realised this was operating at a micro level. With the aid of KPMG this was broadened into a BPR project worth £300,000 - £400,000 and led to the redesign and implementation of business processes.

KPMG views technology as an enabling mechanism for business process re-engineering rather than a prime driver of business process re-engineering. The redesign of business processes often leads to simplification of the process and the required technology. The impact on internal IS departments is variable, but is sometimes to stop some projects completely while the business processes are analysed. Following BPR, the systems application life cycle can resume. CASE is not seen as a key technology, whereas modeling tools and object- oriented analysis techniques are seen as important. However, use of these tools in BPR is variable. Document image processing is a major enabling technology. KPMG is proud of its independence concerning any technology and consequently will not form any strategic alliances with any hardware or software or network vendor to provide any facility required as a result of the BPR project.

C

Andersen Consulting—Combining Processes, People and Technology

Andersen Consulting has achieved growth rates in Europe in excess of 30% for a number of years and is one of the market leaders in the systems integration market.

This success has been achieved by a tight integration of business consulting and IS expertise.

While business process re-engineering is a comparatively recent concept in Europe, Andersen Consulting has for the last five years held the objective of being 'the pre-eminent provider to top organisations of end-to-end business process solutions and the leading information technology that supports them.'

Over this period, Andersen Consulting has successfully differentiated itself from the leading systems vendors and professional services companies by offering a business-oriented, rather than a technical, approach to senior executives. Senior executives outside the internal IS department tend to be the key decision-makers for large projects, particularly when these involve a substantial element of business process re-engineering.

The challenge for Andersen Consulting over the next few years is to maintain this differentiation as the leading systems vendors and professional services vendors try to develop their own management consulting capabilities.

However, Andersen Consulting remains comparatively unique in that it has developed an organisational structure that integrates its management consulting and systems development activities, yet retains in an aura of independence. The leading systems vendors like IBM and Digital face the issue of persuading clients of the independence of their management consulting teams. On the other hand, for example, Gemini Consulting has been established as an 'independent' subsidiary and faces the challenge of re-integrating its activities with those of Cap Gemini Sogeti.

Andersen Consulting's organisation structures in Europe and the United Kingdom are shown in Exhibits IV-3 and IV-4.

Andersen Consulting utilises the required resources from each of these units to support business process re-engineering projects. All partners sell and a team approach is often adopted, that is, a small number of partners work together on one client usually with one identified as the 'client partner' or what other organisations might call an 'Account Executive'. For example, in the case of National Power, there are 3 partners involved: the systems integrator, the industry partner and a strategy partner.

EXHIBIT IV-3

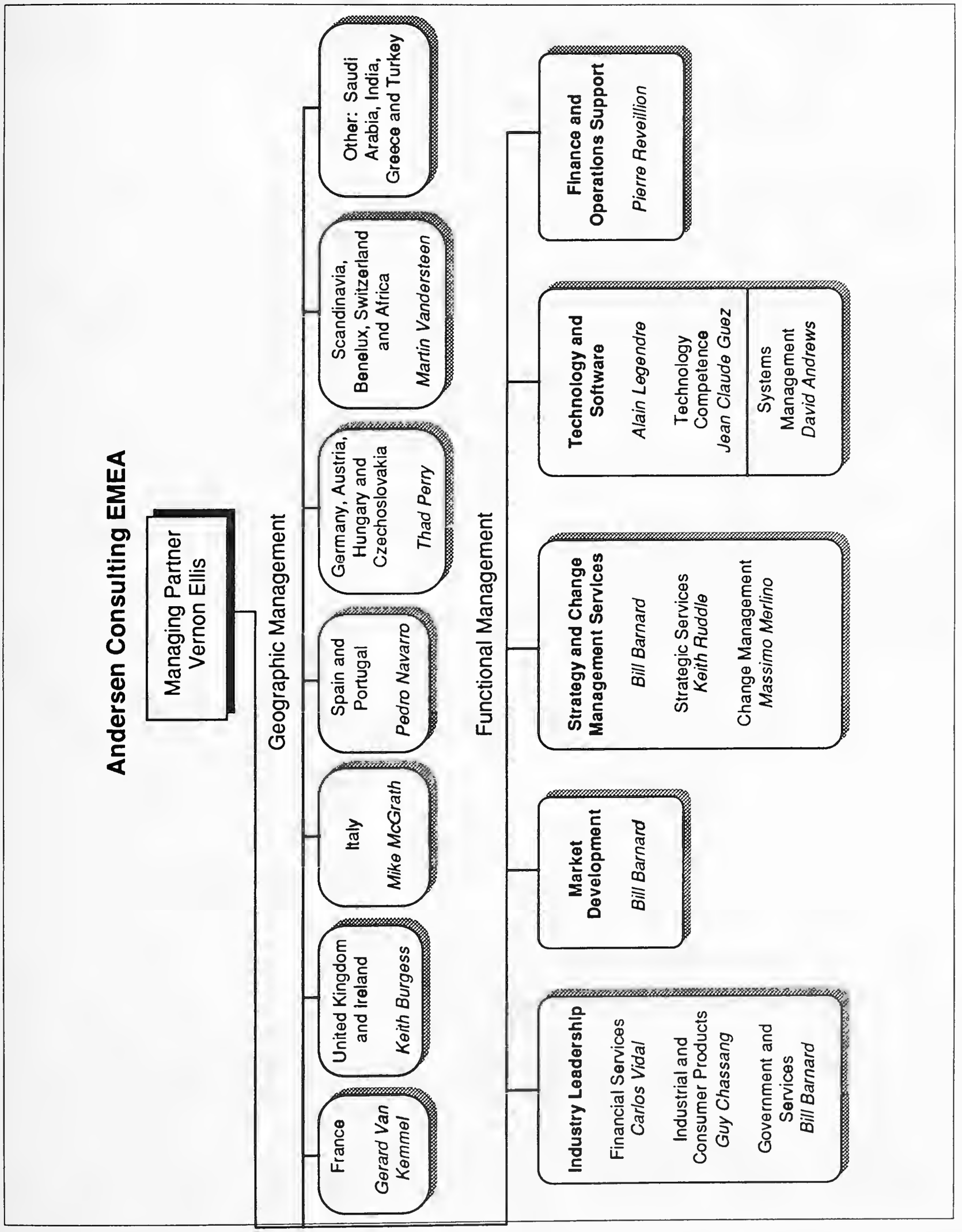
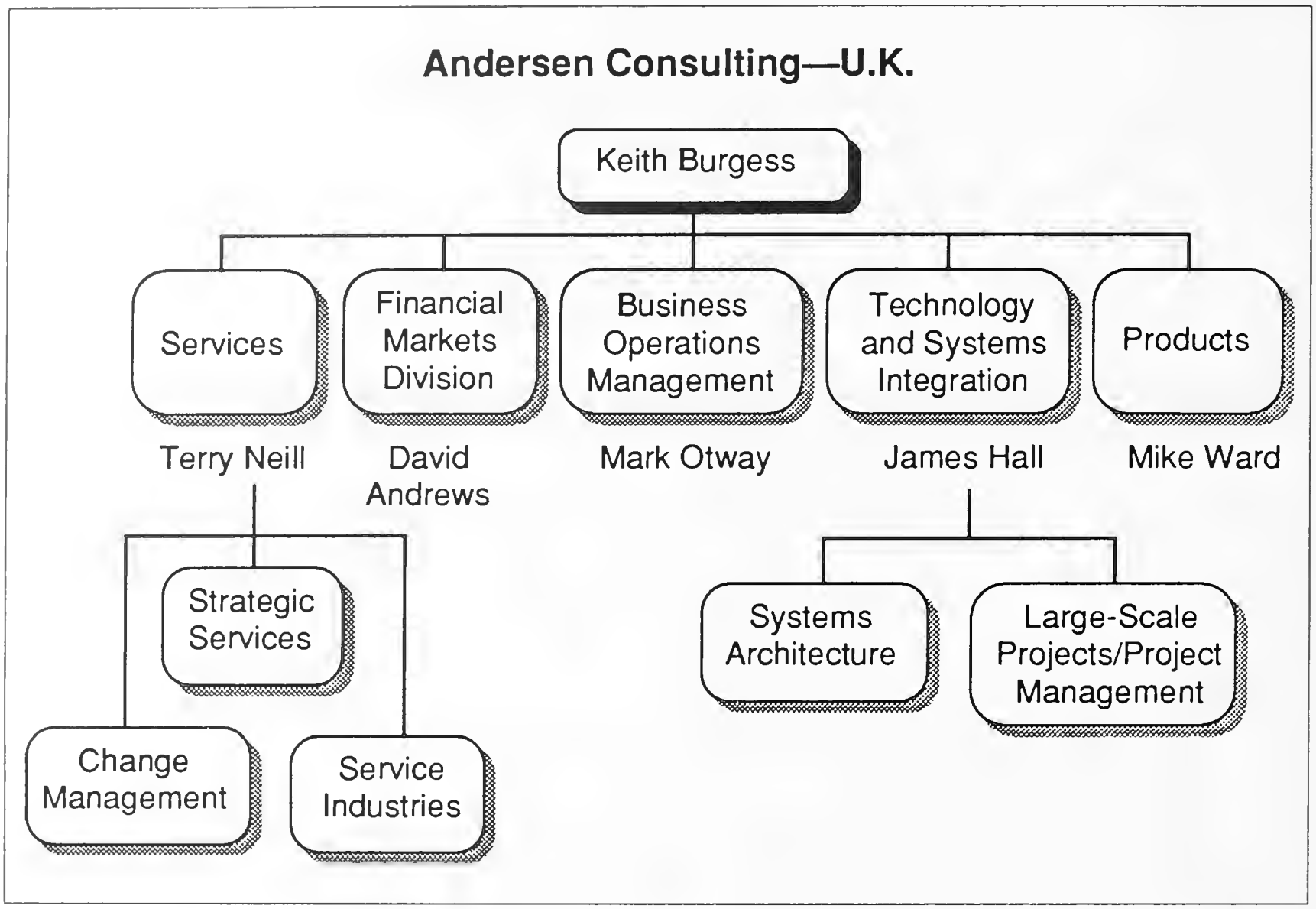


EXHIBIT IV-4



Within business process re-engineering projects, there is a typically high level of interaction between the service division and the technology and systems integration division. Business process re-engineering projects usually involve:

- Strategic business planning
- Change management including organisation planning, design and development and training
- Systems building, integration and management
- Operational consultancy work to deliver a one-off continuing service

Andersen Consulting prefers the term business integration to business process re-engineering. The organisation defines integration as the process of aligning the organisation, people, systems and technology with the business strategy.

Andersen believes that IS is not necessarily the driving force behind business integration, but that it is often a catalyst. The 1990s can be described as the decade of the customer; thus, causing an increased focus on the customers of Andersen's clients. In practice, due to the recession, there has been a greater emphasis on saving costs and seeking radical change to achieve major improvements in the operating performance of an organisation. Furthermore, the drive from government for privatisation has had significant impact.

Work station-based client/server systems enable technologies to integrate, as is document image processing for the improvement of office systems.

Andersen Consulting believes that the trend to business integration is impacting the typical in-house IS department significantly. Organisations are increasingly seeking a 'lean and mean' approach to IS and wish to run down the IS activity to build running operational systems and hand over the maintenance to third parties. Often, IS departments are not geared up for this because two sets of skills are required:

- The psychology of seeking continuous improvement and service
- The search for projects that will lead to a step change in the effectiveness of the organisation

These, coupled with the need to be in close contact with the chief executive, have left many IS departments somewhat isolated and unable to respond. All too often the IS department is seen as a group of expensive technical staff who are not relating well to the business needs of the organisation.

Andersen targets the Times Top 200 in the following sectors:

- Public sector
- Asset finance
- Oil, Insurance and Banking
- Aerospace and Defence
- Consumer products

Sales efforts are typically directed towards the chief executive officer of the organisation.

In the U.K., Andersen Consulting estimates that it has between 15 and 20 business integration clients.

Example contracts include the following:

- Thames Water - where Andersen has been involved from the top level planning, through systems building, organisation design and training (including CBT) and the systems management of the previous system.

The aim of the exercise was to provide Thames Water's 11 million customers with a single point of contact at its new customer services centre at Swindon. At the heart of this system is CUSTOMER/1, but prior to that a whole change management programme was devised.

The whole project generated in excess of $20 million in fees for Andersen consulting.

- National Power - where, following privatisation, a multidisciplinary team designed a leading technical infrastructure into the basic fabric of the organisation and culture. In two years, an IS strategy has been put in place, a common computing and communications infrastructure has been installed throughout the company, and the delivery of critical operational business applications has begun. These include such systems as:

  - Procurement
  - Financial general ledger
  - Accounts payable
  - Property services
  - Energy trading
  - Operational information system
  - Work management
  - Executive information system

  The ultimate aim is to provide a competitive edge in the newly structured power industry. The fee value of this business integration project is approximately $20 million over two to three years.

D

EDS Aims to Close the 'Impact Gap'

The integration of its acquisitions SD-Scicon and GFI into EDS presented the company with a potential clash of cultures. Should EDS in Europe continue its emphasis on high-value systems operations contracts, or should it adopt the typically more European technology focused approaches of SD-Scicon and GFI? The latter approach generated higher European revenues, but sometimes at the expense of profitability.

The answer appears to be that EDS will continue with its U.S. style approach typified by:

- An emphasis on targeting senior executives not IS managers
- An emphasis on business improvement rather than on technology provision
- An emphasis on profitability rather than revenue growth

In particular, EDS is positioning itself as providing clients with the means to bridge the impact gap between an organisation's investment in technology and its positive impact on business needs.

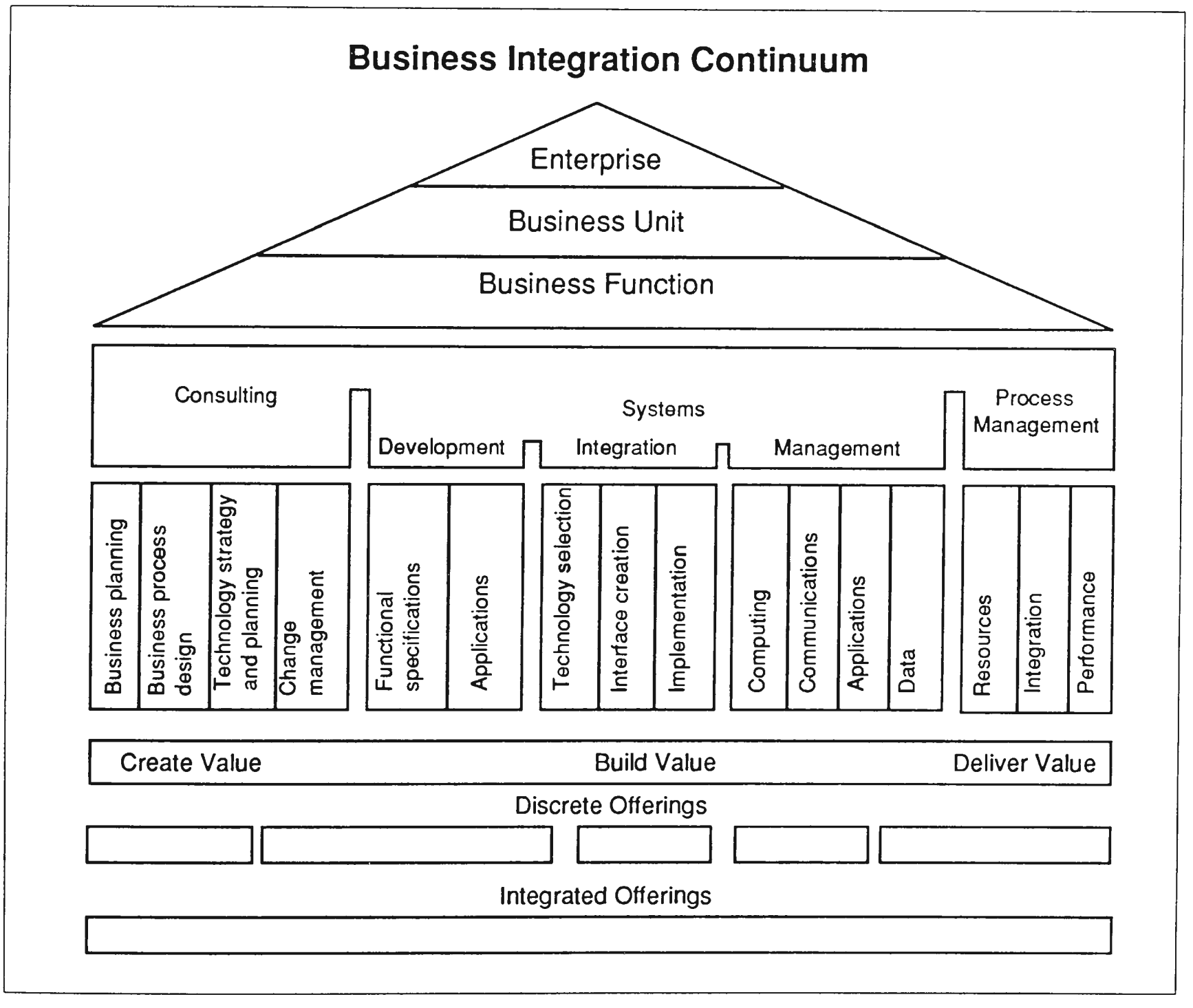
EDS will do this by:

- Placing increased emphasis on its 'front-end' activities
- Offering co-investments to its clients
- Adopting transnational positioning

1. Increased Emphasis on Front-End Activities

The range of services from consulting to business operations provided by EDS are illustrated in Exhibit IV-5.

EXHIBIT IV-5



The breakdown of revenues by service type for EDS' U.K. subsidiary (EDS-Scicon) is shown in Exhibit IV-6.

EXHIBIT IV-6

EDS-Scicon Revenues by Service Type

Service Type	Proportion of Revenues (%)
Consulting	12
Systems Development	22
Systems Integration	13
Systems Management	36
Process Management	7
Products	10
Total	100

Source: EDS

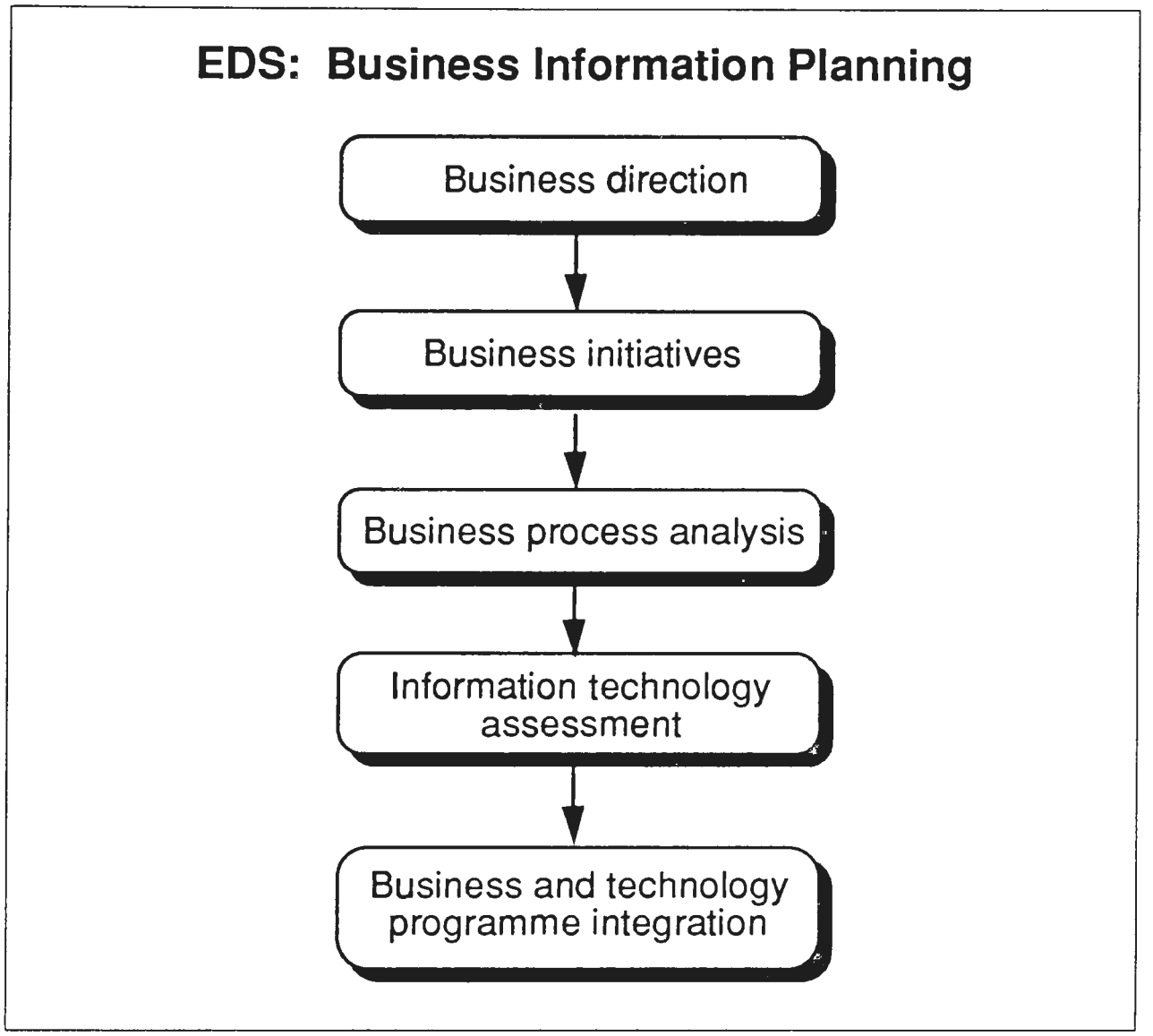
Traditionally, systems management has been EDS's most profitable activity and its major source of revenues. This situation is even more pronounced in France than in the United Kingdom.

However, EDS is looking to achieve an even spread of revenues across the 5 service types shown. In particular, the company emphasises its consultancy services and has formed a Strategic Business Consultancy Group. At present, this group employs 30 consultants in Europe, 100 in the U.S., and is expected to assist in funneling business along EDS' business integration continuum.

The Strategic Business Consulting Group employs a number of methodologies including Enabler and Business Information Planning. Enabler is a performance improvement methodology for manufacturing companies. Enabler begins with a benchmarking service to enable clients to compare their performance on critical success factors in their industry with the performance levels achieved by the leading organisations. EDS then assists the client in improving those business processes, which will lead to marked improvements in the client's competitive positioning.

Business Information Planning is EDS's methodology for linking business strategy definition and IS strategy definition. The flow of Business Information Planning is shown in Exhibit IV-7.

EXHIBIT IV-7



The activities within Business Information Planning (BIP) are defined as follows:

- Business direction establishes business goals, priorities and measures
- Business initiatives identify major opportunities to meet the goals
- Business process analysis applies formal methods to model the business and identify processes critical to success where re-structuring and the use of technology will benefit the business
- Information technology assessment to review and update the technical strategy aligning it with the business strategy
- Business and technology programme integration, in which the plans for the restructuring processes and the organisation are integrated with the changes in technology.

At the other end of the business integration continuum, EDS will increasingly seek business operations opportunities.

2. Offering Co-Investment with Clients

EDS, unlike its recently acquired subsidiaries, is not keen to offer platform operations services on the basis of IS cost savings because such services are extremely price sensitive. EDS prefers to look for business issues and relate its payment to delivered business benefits.

One example of such pricing was for Reinshagen U.K. Reinshagen U.K. is a subsidiary of the German-owned multinational, which produces wiring harnesses and electrical components for Ford, Lotus, Vauxhall, Triumph Motorcycles and other major names in the motor industry. In a 3 month project, with an estimated cost of £50 - £60,000, Reinshagen was benchmarked against its competitors to identify strengths and weaknesses. Using Enabler's cross functional analysis to produce the best case scenarios and through the use of ABC for profitability analysis, the concerns over the impact of change in one area upon another were overcome. Enabler was seen as a catalyst for change by the client and encouraged Reinshagen staff to take ownership of the aims and techniques.

The revised procedures introduced in disposal and rework will reduce scrap volumes by 66% in 12 months. The combined monitoring of stock and work in process has enabled a 49% reduction in inventory costs. The price charged by EDS was geared to results. Overall, a sum equivalent to 3% of turnover (25% of profits) has been saved, producing a beneficial result for Reinshagen U.K. and EDS-Scicon.

The main targets for EDS consulting services are the top 1,000 organisations in Europe—those that have a turnover greater than U.S. $1 billion. The prime industry sectors are manufacturing, communications and financial services. Typically, services are sold to the chief executive or at a very senior level because they are the only ones in an organisation who can take an impartial view of consulting.

Growth is expected to come through the activities of the newly formed European Business Consulting Group and through the co-ordination of consultancy on a worldwide basis.

EDS believes that there is a level of disillusionment in organisations about the performance of IS and therefore there is a need to change the way that work is accomplished. This, combined with the normal pressures of the market place and the wish to save costs, is driving clients to seek the benefits of BPR.

Technology is viewed as an enabling or support process rather than as an end in itself. With the increased exposure and acceptance of the concepts of enpowerment of individuals and the flattening of organisation structures, client server architecture with the use of personal computers or workstations is a key technology. This, together with the downsizing of

mainframe computing and the concomitant change in the workplace processes are fundamental to facilitate change through BPR. Another important technology is document image processing because this too can empower staff who were lower in the organisation structure and not able to avoid the strictures of a more formally hierarchical system.

Inevitably, this is changing the role of the typical in-house IS department in which they must change their focus to the development, installation and maintenance of distributed systems and the special problems associated with them.

Though technology is viewed as an enabler rather than a driver of business process re-engineering, EDS has some strategic partnerships with other organisations with technology relevant to BPR, principally for the provision of software like Lotus Notes and ViewStar for electronic document management. EDS also has alliances with other companies for the provision of change management and human resources activities within their projects.

EDS claims to have worked on about 200 BPR projects worldwide with 20 of those in Europe. Six projects have been started in the last quarter in the manufacturing, communications and public sectors. Currently, about 40% of their consultancy work relates to BPR and projects ranging from $20,000 for a short scoping or benchmarking study up to full projects of about £300,000. EDS expects a rapid growth in the provision of these services, possibly up to 100% per year through the sales of their account managers of the SBUs to the main market sectors that they have identified.

3. Adopting Transnational Positioning

In Europe, EDS is organised into 6 strategic business units namely:

- EDS-GFI in France
- EDS-Scicon in the United Kingdom
- Northern Division covering Benelux and Scandinavia
- Southern Division covering Italy, Spain and Portugal
- Central Division covering Austria, Switzerland, Germany, Hungary, and the Czech Republic and Slovakia
- Pan European CADCAM

EDS is achieving unification of these 6 entities as individual country offices work to serve customers in multiple countries. Some examples of this are found in the pan-European General Motors Development effort, the electronic data interchange project for GM's suppliers, and services provided to companies like Sacilor and Caterpillar.

EDS has also introduced global strategic business units, which are entities through which EDS will tie together the various organisations in multiple countries that serve specific industries. The first of these are in the energy, communications and transportation industries.

EDS's technical infrastructure is also a unifying factor in its European operations. Because all of EDS's Information Processing Centres are built to the same standards worldwide, and are linked via EDS's private telecommunications network (EDSNET), it is possible to process transactions for a Spanish company at the Paris IPC, or to migrate workloads from one IPC to another as required.

E

Gemini Consulting—Seamless Delivery of Business Transformation

Many systems integration vendors have realised the importance of management consulting in initiating large systems development projects, and in establishing credibility at board level in major corporations. However, few vendors have yet succeeded in establishing access to credible management consultancy organisations, whether by establishing partnerships with existing consultancies or building/acquiring their own in-house teams.

One of the notable exceptions is Cap Gemini Sogeti, which is continuing to strengthen its links with Gemini Consulting. With 1991 revenues of $270 million, Gemini Consulting estimates itself to be ranked third in the global market for the strategy-driven, high-quality management consultancy.

Gemini Consulting attributes its success to:

- A strong vision of business transformation
- Its formation as a separate entity
- Its close relationship with Cap Gemini Sogeti

1. The Vision of Business Transformation

At a time when many management consultancies in Europe have been reducing their head counts, Gemini Consulting has been expanding rapidly. The company now estimates that it employs 1,150 consultants. Revenues were expected to increase in excess of 30% during 1992.

Much of this success is attributed to the vision of business transformation. Gemini Consulting perceives that clients are no longer prepared to pay for good ideas. Companies wish to become lean and mean by transforming their business practices and are rarely prepared to pay for tangible results.

Gemini Consulting was formed in 1990 from the combination of 3 consultancies with individual specialisms as shown in Exhibit IV-8.

EXHIBIT IV-8

Constituents of Gemini Consulting

Organization	Specialism
Mac Group	Strategy formulation
United Research	Operations improvement and change management
Gamma International	Information management

However, Gemini Consulting claims that it is no longer interested in isolated projects related to these individual disciplines. The company is only interested in pursuing multidisciplinary projects that accelerate the business transformation process, generating rapid and measurable results for its clients. The company is no longer in the business of marginal improvements.

In practice, Gemini Consulting estimates that all of its U.S. revenues in 1992 will be earned from business transformation projects, while a substantial element of its European 1992 revenues will derive from business transformation activities. This implies that business transformation project revenues worldwide in 1992 were in excess of $250 million. The U.S. market will account for approximately $175 million of these revenues, the European market accounting for $75 million or more. Within Europe, there is a particular concentration of personnel within the U.K.

While Gemini Consulting is unable to provide examples of business transformation projects undertaken, the company claims to concentrate on tackling complex problems for Fortune 100 companies or organisations of similar stature.

The principal sectors for which work has been undertaken are:

- The manufacturing sector, particularly the oil and gas, and chemical subsectors
- The financial services sector

2. Formation as a Separate Entity

Gemini Consulting recognises Cap Gemini Sogeti's strong need for access to management consulting skills. However, Gemini Consulting perceived the importance of establishing the management consultancy unit as an independent entity, believing that a group of 1,000 consultants would have become culturally submerged as part of an organisation employing 17,000 personnel.

Gemini Consulting also believed that it was important for the consultancy to become a market leader in its own right. The new organisation was likely to fail if it remained a subsidised activity within the Cap Gemini Sogeti organisation.

3. Developing Close Relationships with Cap Gemini Sogeti

Gemini Consulting and Cap Gemini Sogeti will continue to strengthen their links over the next few years. The organisations intend to leverage each other's skills and mutually defend their core business.

Both organisations intend to target a small number of transnational companies. Gemini Consulting's ability to identify major systems integration projects to support its clients' business transformation needs are clearly of considerable value to Cap Gemini Consulting. However, Gemini Consulting stresses its ability to deliver business transformation, and not just identify opportunities for business transformation. Accordingly, Cap Gemini Sogeti's development capabilities are of high importance to Gemini Consulting in delivering these benefits.

Cap Gemini Sogeti and Gemini Consulting perceive that the leading transnational organisations are seeking suppliers that can deliver business transformations on a global basis.

Though Gemini Consulting typically generates leads for Cap Gemini Sogeti, it is not uncommon for Cap Gemini Sogeti to enlist Gemini Consulting's assistance when it perceives that the client's problem is of a wider scope than information services.

4. Cap Gemini—Targeting Transnational Projects

Cap Gemini Sogeti claims to have left its 'body-shopping' image far behind, and states that 40% of the company's revenues—FF4 billion—are now derived from its systems integration activity. Certainly the company has now reached a critical mass in each of the major European software and services markets including:

- France
- Germany
- United Kingdom
- Italy
- Netherlands
- Sweden

However, while Cap Gemini Sogeti believes that it can satisfy 80% of market demand by operating on a national basis, the remaining 20% requires a transnational approach to the market.

Cap Gemini Sogeti's response to this opportunity has been a major group restructuring that:

- Organises the company into 7 strategic business areas (SBAs)
- Allocates each SBA an area of global responsibil
- Introduces an international accounts programme

Whereas Cap Gemini Sogeti's SBAs appear at first glance to be organised along strictly geographic lines, each SBA also has a global responsibility. These global responsibilities are for either a specific industry sector or for a particular service line. Some examples of the responsibilities assigned to individual SBAs are listed in Exhibit IV-9.

EXHIBIT IV-9

Strategic Business Areas (SBAs)

Location of SBA	Specialism
Paris	Telecommunications
London	Financial services
Germany	Manufacturing
Benelux	Distribution
U.S.	Oil and chemicals

For example, the Paris SBA is responsible for developing Cap Gemini Sogeti's market share with telecommunications companies while the German SBA is responsible for developing Cap Gemini Sogeti's global presence in the manufacturing sector.

Each SBA has responsibility within its own target sector for:

- Replicating expertise across countries
- Taking advantage of high-growth opportunities
- Targeting multinational organisations

In addition to their focus on a particular industry, SBAs may have a service line responsibility. For example, Hoskyns has responsibility for developing the group's outsourcing expertise, and Debis Systemhaus is viewed as a specialist in the provision of low-cost platform operations.

Each SBA will typically be organised into 5 to 7 divisions. In addition to these divisions, each SBA will have a number of market development units (MDUs) and skill centres. These MDUs will specialise by industry subsector, and will be staffed by senior sales personnel and high-calibre consultants who will take responsibility for the SBA's major clients. These personnel are expected to have a good understanding of the kernels relating to their subsector, and to form alliances with other vendors, particularly application software product vendors.

Skill centres will house the organisation's specialist technical skills such as artificial intelligence and imaging. Within Cap Gemini Sogeti's new organisation, responsibility for the application of new technologies will be increasingly devolved from Cap Gemini Innovations into the SBAs.

Having put in place a strategy and organisation to deliver transnational services, Cap Gemini Sogeti has commenced an international accounts programme to sell its transnational capabilities.

Currently, Cap Gemini Sogeti is targeting approximately 30 multinational organisations. Senior members of Cap Gemini Sogeti are each assigned two named accounts on a worldwide basis and are expected to develop a board-level, transnational approach for the development of each account.

It is likely that these accounts will also be independently targeted by Gemini Consulting. Overall, Cap Gemini Sogeti is endeavouring to develop a business-oriented, rather than technically-oriented, approach to each of these accounts at a senior level.

F

Digital—Developing Business Process Re-engineering Approach to Major Accounts

Digital estimates that it is currently in third or fourth place in the vendor rankings for the systems integration market worldwide. However, the company's systems integration activity in Europe has lagged significantly behind that in the U.S. Digital is now addressing this challenge by:

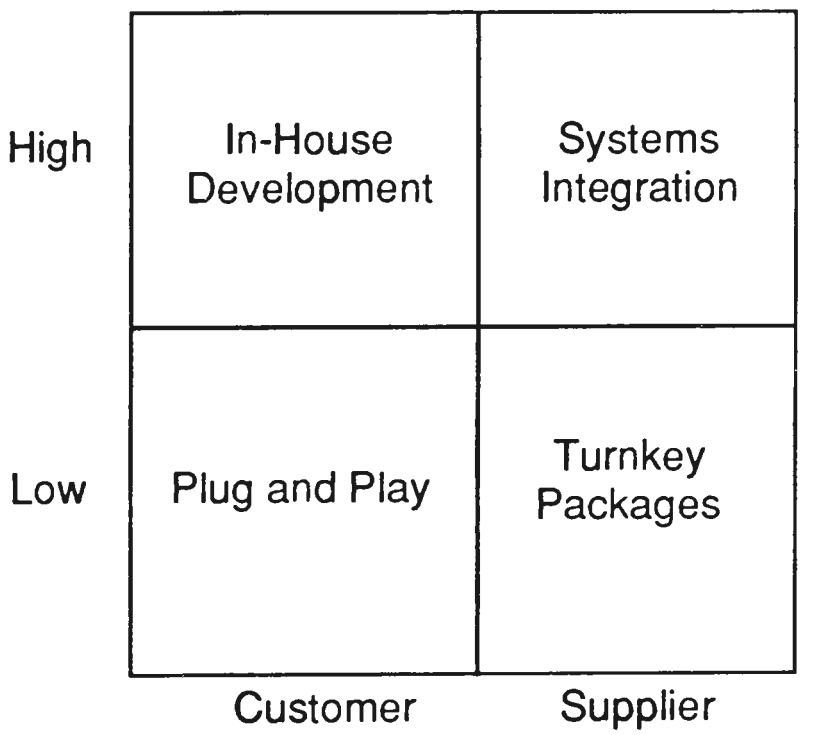
- Establishing systems integration as the main approach to large accounts
- Enhancing its focus on industry sectors
- Developing the company's image as a service provider

1. Systems Integration Becomes the Key to Large Accounts

Exhibit IV-10 shows Digital's view of the trends in the market place arising as a result of the decline in in-house development. In particular, Digital expects clients to request that vendors take responsibility for the provision of complete solutions and accept the risk in doing so.

EXHIBIT IV-10

Digital's View of the Marketplace
Degree of Customisation



Source: Digital

Digital perceives the principal driving forces causing clients to adopt systems integration to be:

- An increasing desire to subcontract activities that are not perceived to be part of the core business
- The increasing complexity of information systems and the tendency to move toward multivendor solutions
- The increasing dependence of businesses on their core information systems

More specifically, Digital believes that the need for business process re-engineering is being driven by:

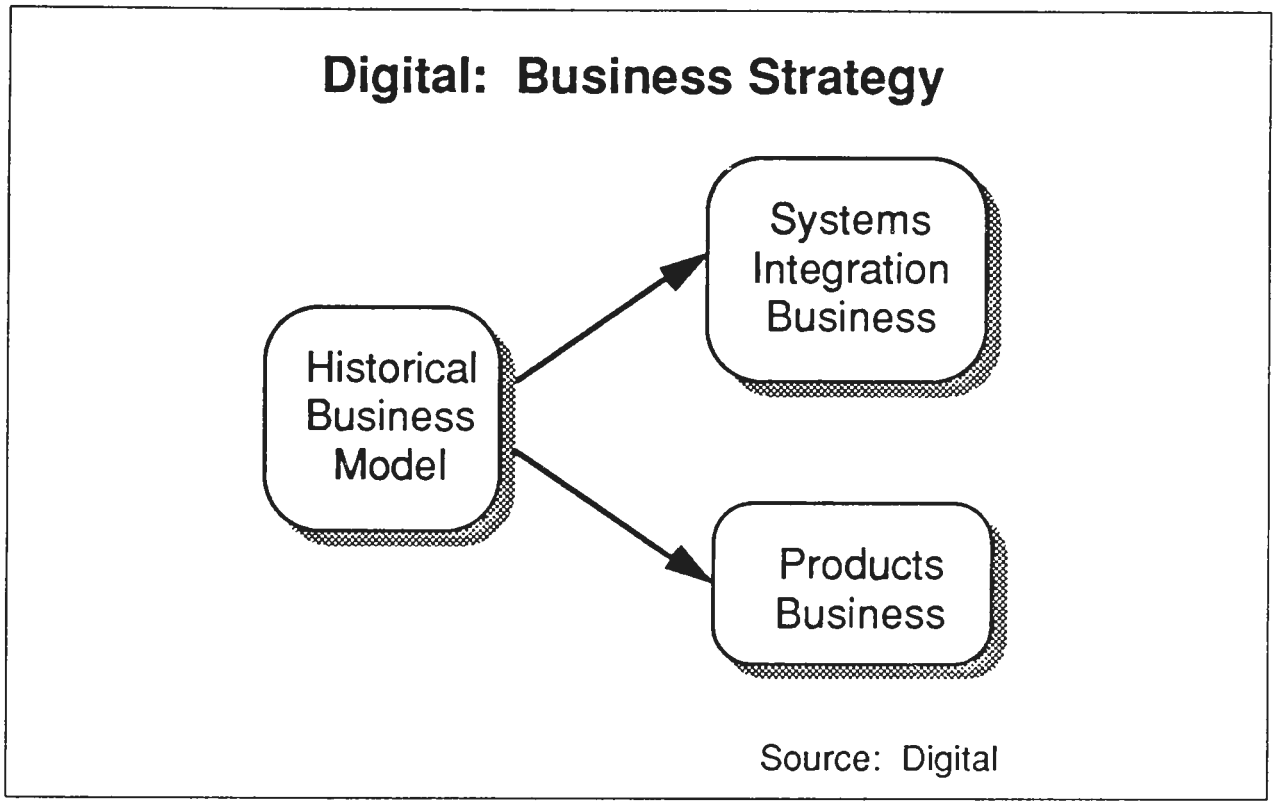
- The need for radical change to enable the European economies to become more competitive
- The need for companies to reshape their cost structures
- Erosion in customer loyalty promoting the need for organisations to improve their service levels and quality

The trend to business process re-engineering is impacting the internal IS department significantly with IS budgets and head counts being typically reduced by 20%. As the relevance of internal IS personnel diminishes, so companies will come to rely more on external vendors.

Accordingly, Digital has found that its historical approach of providing hardware and software products that are applied to the business either by the in-house IS function or by a Complementary Solutions Organisation is no longer adequate. Clients frequently now require the vendor to provide the complete solution.

In response, Digital is adopting the strategy indicated in Exhibit IV-11.

EXHIBIT IV-11



This involves Digital separating its business into two main strands:

- A commodity products business delivered largely through indirect channels.
- Systems integration delivered through account managers to the major organisations.

Though Digital has no precise definition of the major organisations targeted in this way, they tend to be the top 100 organisations and their subsidiaries on a national basis. Small and medium-sized enterprises (SMES) are defined by Digital as organisations with revenues less than $100 million.

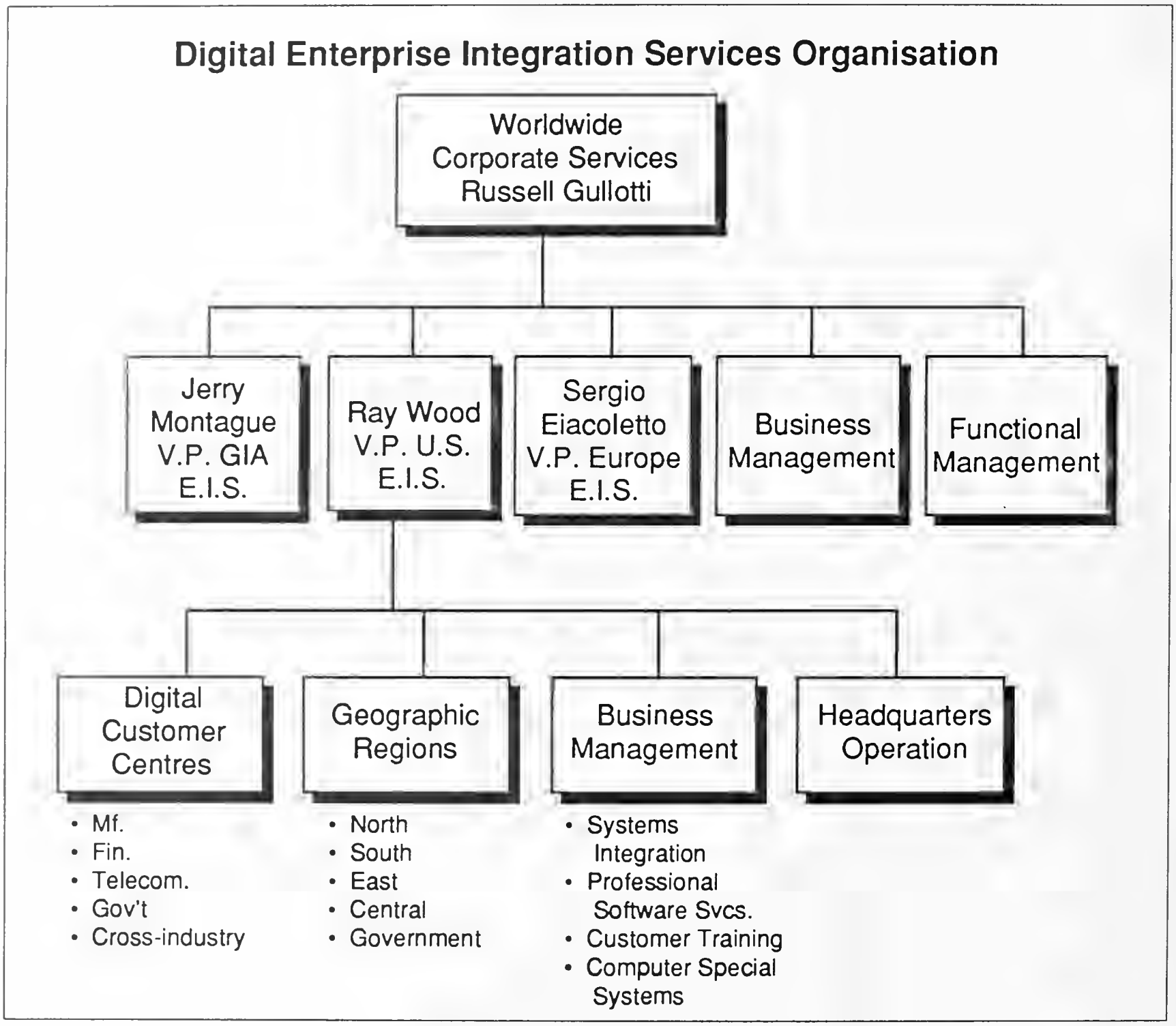
2. Digital is now Targeting 25 Industry Sectors

Detailed industry-specific knowledge along with the ability to supply the key building blocks relevant to that sector are increasingly the prime determinants of success in the systems integration market. As a result, most systems integration and professional services vendors currently organise their sales activities into approximately 5 industry sector facing units. From 1st July, 1992, Digital is re-organising its account management under 25 industry enterprise managers who are responsible for a particular vertical market. This increased focus should give Digital a significant advantage over many of its competitors with their less-focused sector targeting.

These industry enterprise managers will operate at a European level, abolishing the former organisation that initially operated at a country level.

The position of the Digital Enterprise Integration Services Organisation within Worldwide Corporate Services Group is shown in Exhibit IV-12.

EXHIBIT IV-12



The industry enterprise managers are supported at the European level by a number of European Integration Centres listed in Exhibit IV-13 and, at the country level, by a number of Systems Integration Centres.

EXHIBIT IV-13

Digital's European Integration Centres

Specialisation	Location
Service Industries	London
Manufacturing	Munich
Research, Education and Science	Geneva
Government and Healthcare	Brussels
Telecommunications and Corporate Information Systems	Sophia Antipolis (F)

For example, in the U.K., there are currently 8 systems integration centres, as shown in Exhibit IV-14. Five of these centres concentrate on vertical markets, while another three concentrate on Digital's key horizontal specifications.

EXHIBIT IV-14

Digital's Systems Integration Centres United Kingdom

Vertical	Horizontal
Manufacturing and Utilities	Office Systems
Banking	Transaction Processing
Service Industries	Open Systems
Telecommunications	
Public Sector	

Overall Digital remains strongest in the sectors listed below:

- Manufacturing sector
- Utilities
- Financial services
- Telecommunications
- Public sector

Digital has traditionally been a strong competitor in the manufacturing sector, particularly in areas such as engineering design and shopfloor systems. Digital also has a separate subsidiary, Desisco, which targets financial trading systems. Desisco was formed from Digital's acquisition of Data Logic's activities in the area. One element in Digital's strategy will be an increase in acquisition activity aimed at providing Digital with entry into major new markets where it is not competing with its traditional Complementary Solution Organisation (CSO) partners.

Digital's relationship with its CSO's is changing in nature. Historically, the CSO provided the industry expertise in the partnership and was the prime contact with the customer. Now, Digital is developing its own business knowledge and seeks to be the prime contact with the client. Digital then subcontracts to the appropriate application provider.

However, Digital is being careful not to alienate the management consultants and systems integrators who remain important partners, such as EDS, Andersen Consulting and Logica. Digital expects these companies to remain important prime contractors using Digital as a major subcontractor. However, as Digital's expertise as a prime contractor increases, then so will the proportion of systems integration projects in which Digital assumes this role. For example, Digital would already frequently expect to be the prime contractor in areas such as financial trading systems and office systems in which the company has a high level of capability.

Similarly, Digital is being careful not to alienate its traditional clients in the in-house IS function. Unlike a number of leading systems integrators, Digital is not trying to bypass the IS department. However, the company does recognise the increasing need to work with business management rather than the IS Department.

3. Clients Must View Digital as a Key Service Provider

This need to work closely with a client's senior business executives presents Digital with two of its major challenges. The challenges Digital faces in the systems integration market are listed below:

- Acquisitions to fill capability gaps
- Change image to that of services company
- Consultative selling
- More precise vertical focus
- Increase role as prime contractor

These are needed to change the image of the company from an equipment provider to a services-based company capable of delivering total solutions, and the associated challenge of developing the existing sales force's consultative selling capabilities.

Digital perceives that it requires three core skills for the systems integration market, namely:

- Business consultancy skills
- Solution architect skills
- Project management skills

By "solution architect" skills, Digital means the ability to analyse a business problem and identify and design an IS system to tackle that specific business need.

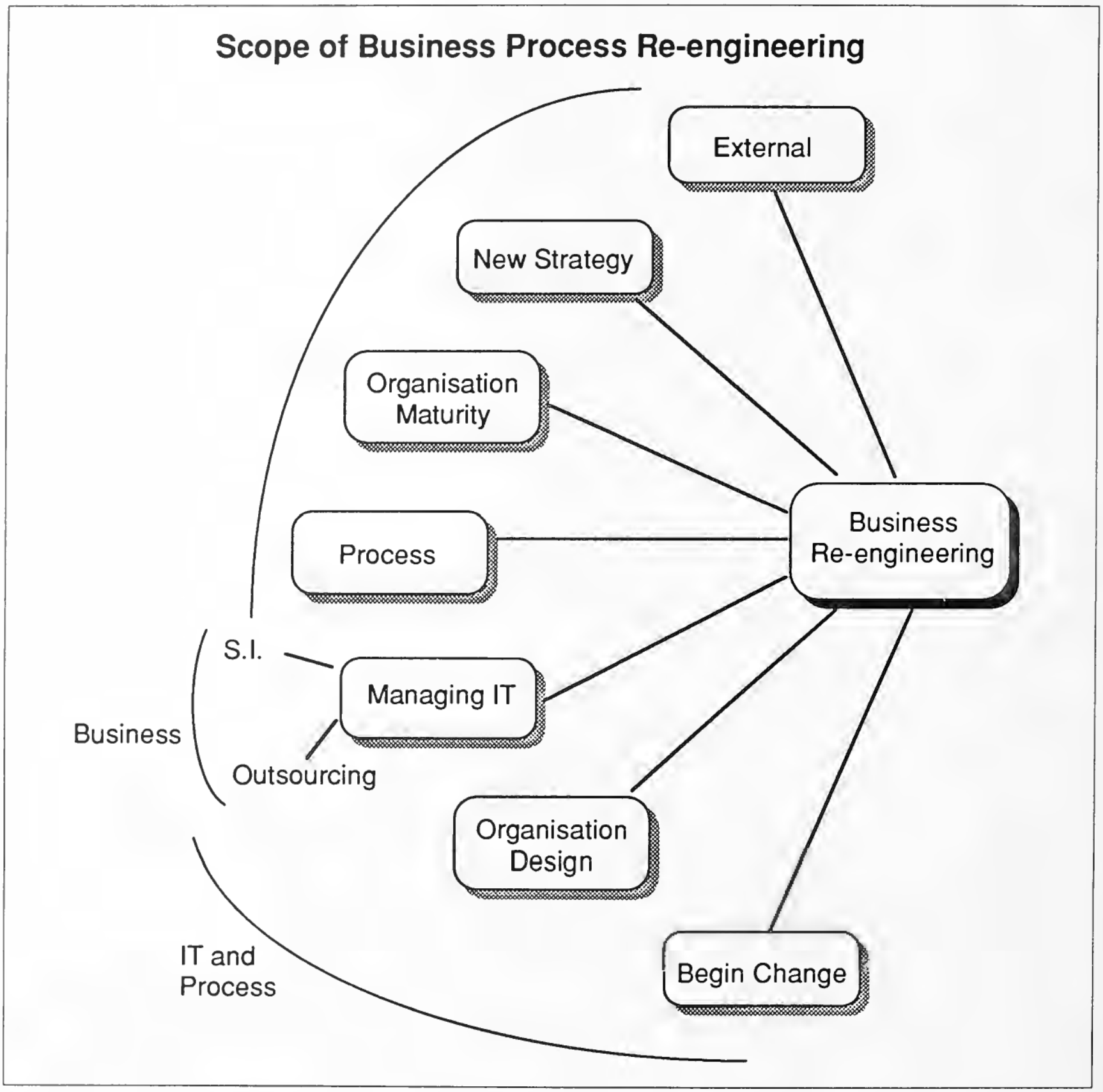
Digital views the scope of business process re-engineering as that shown in Exhibit IV-15.

As defined above, business process re-engineering involves a range of services that are multidisciplinary and address a number of activities caused by external influences and the natural progress of an organisation's growth. The services reflect the processes outlined in Exhibit V-15, namely:

- New business strategies for clients
- Organisational development, required as an organisation matures, and will include leadership training, change management and education.
- Process engineering, including workflow charting, the use of tools (e.g. paste up, top mapping, prototyping, RAM, METIS for an electronic representation of the process)
- Modification of IT, which may include systems integration or outsourcing.

- Organisation design, which may include shaping policies, work, roles, responsibilities and organising behaviour change.

EXHIBIT IV-15



For business process re-engineering, Digital is targeting major corporate players in health, central government, chemicals, banking and insurance, brewing retail, distribution, transport and medicine. It primarily targets senior executives or senior managers with business accountability and

offers the whole range of services shown above. Digital expects to service the Times Top 250 organisations directly, to service the next 1000 with the assistance of a strategic partner, and the remainder through working with other consultants and value-added resellers.

Digital has established a dedicated marketing group and formed in July 1992, a business development sales team, comprising of 12 sales people. However, they are also promoting their services in business process re-engineering through other groups of Digital consultants. They include 80 Focus Consultants, 50 consultants concerned with clients' mission critical systems and 45 concerned with human resources, service excellence and flexible working. In addition, Digital has 450 consultants working on systems integration activities with clients who are being motivated to provide leads to the business process re-engineering group.

Digital claims to have completed 35 business process re-engineering projects and has a further 75 in the pipeline from the Times Top 250, of which it claims to have won 14 so far. Currently, Digital derives $32-33 million from U.K. consultancy work from 350 consultants. In Europe, there are 1500 consultants generating $120 million. Growth is expected to exceed 65% per year and will lead to a doubling of systems integration work and component sales over the next 5 years. It expects this growth to come from the following sources:

- 30% from information technology consultancy
- 13% from process re-engineering
- 8% from human resources and organisation development
- 13% from strategy consulting

Example contracts include the following:

- A London private bank for which organisation design and process re-engineering projects were completed with the aim of improving service levels. Phase 1 generated $100,000 and Phase 2 produced $800,000.

- GEC Express Lifts: The purpose of this project was to enable the client to gain a significant edge over its main competitor Otis Lifts. The project included company strategy and process re-engineering leading to improvements in competitive positioning. The project generated $1 million.

- Banque Nationale de Paris: All 5 services were provided generating $8 million over a 4-year period. The project was principally concerned with customer service improvement and cost reductions.

G

CSC—Major Emphasis on Business Re-engineering

At present, Computer Sciences Corporation's activities remain concentrated within the U.S. market. For the year ending 31st March, 1992, CSC reported U.S. revenues of $1,908 million and European revenues of $205 million. The company's European operations are concentrated primarily in the United Kingdom, Belgium, France, Germany and the Netherlands.

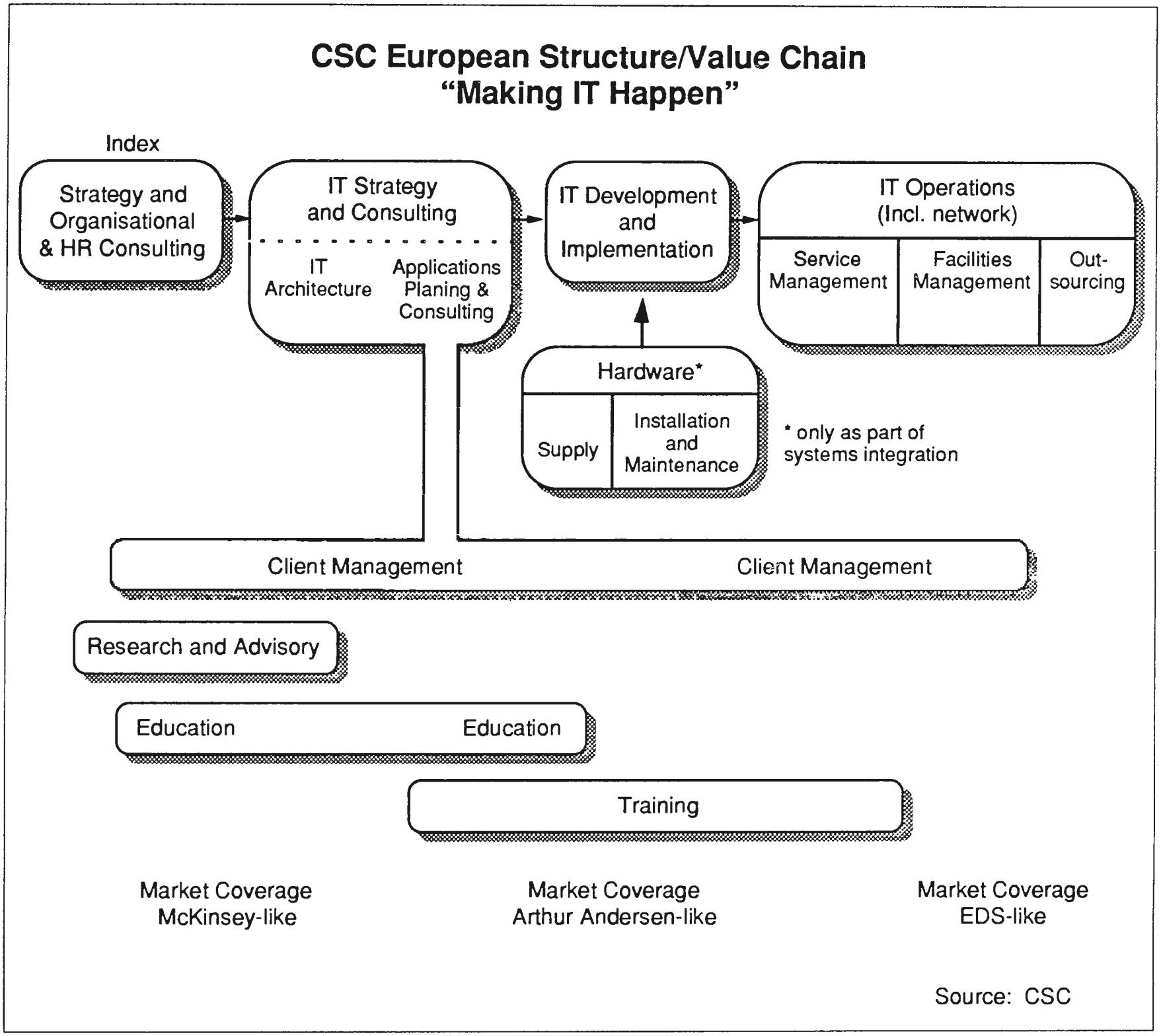
However, CSC is now seeking to redress this balance and is aiming for European revenues of $1 billion by 1997. Assuming that the present profile of business remains constant, this would imply a target of $600 million in 1997 for CSC's European professional services and systems integration revenues, a growth rate of 37% per annum.

The company's performance in marketing and delivering its business process re-engineering services will be a major factor in determining its success in meeting these targets. As indicated in Exhibit IV-16, CSC regards business re-engineering—a term that the company has trademarked—as a critical starting point for its services and a key differentiation for the company.

CSC believes that business re-engineering is best approached by:

- Concentrating on a desired future not an inadequate present
- Encouraging aggressive exploitation of technology
- Utilising an interactive approach to system design

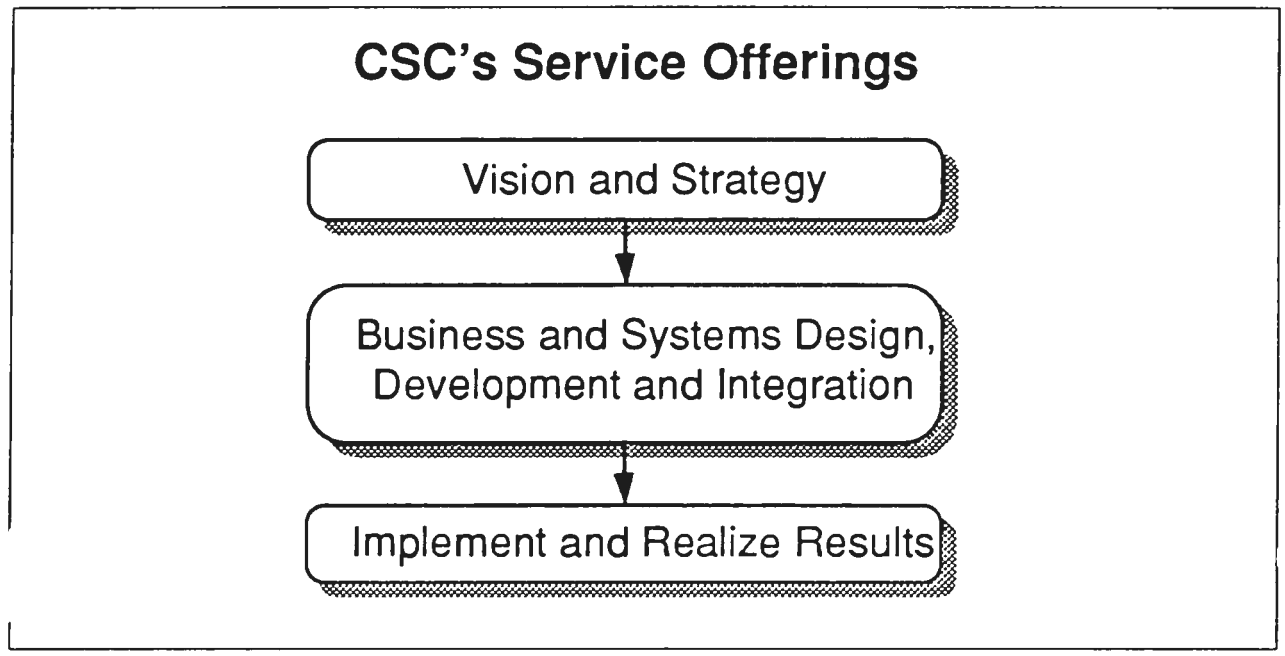
EXHIBIT V-16



1. Concentrating on the Desired Future

CSC offers a complete service to enable clients to realise the benefits of business process re-engineering. The principal stages in this service are shown in Exhibit IV-17.

EXHIBIT IV-17



CSC recognises that in the past, internal IS departments have been largely reactive in approach and have automated existing processes in response to user demand. Though this approach may produce administrative savings, it is unlikely to make a major contribution to the competitive positioning of the organisation. In order to achieve this goal, a much more proactive approach is required. The organisation should not waste time analysing present procedures in detail in order to automate them. Instead, the organisation should develop a vision in which it wants to be in the future and then remodel the organisation accordingly. Typically, this involves taking a cross-functional view of the organisation.

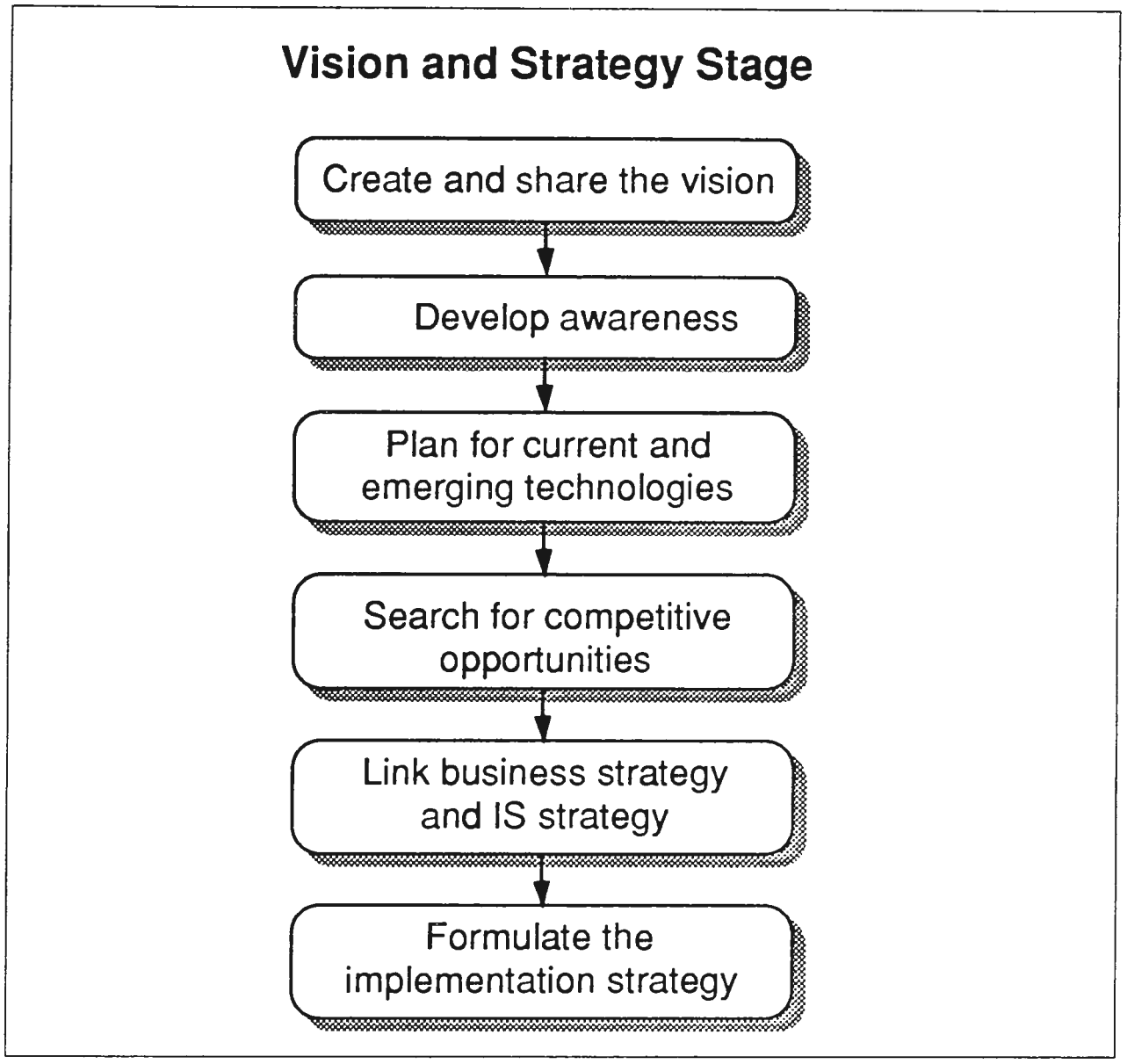
2. Aggressive Exploitation of Technology

CSC believes that another problem with the traditional development of IS has been that organisations have built complex models of business processes before considering how to apply technology to this model.

However, CSC perceives that technology not only provides new ways of solving business problems, but also affects the nature of the problem. Accordingly, it is important that organisations consider the possible applications of technology at all steps of the project, and particularly before the new business process models are developed.

The activities CSC believes are critical to the "Vision and Strategy" stage are listed in Exhibit IV-18.

EXHIBIT IV-18



This approach may differentiate CSC from a number of its competitors, who while stressing the importance of business process re-engineering, relegate the application of technology to a secondary level in supporting new business processes. CSC appears to attach equal importance to technology as a driving force for business process re-engineering in its own right.

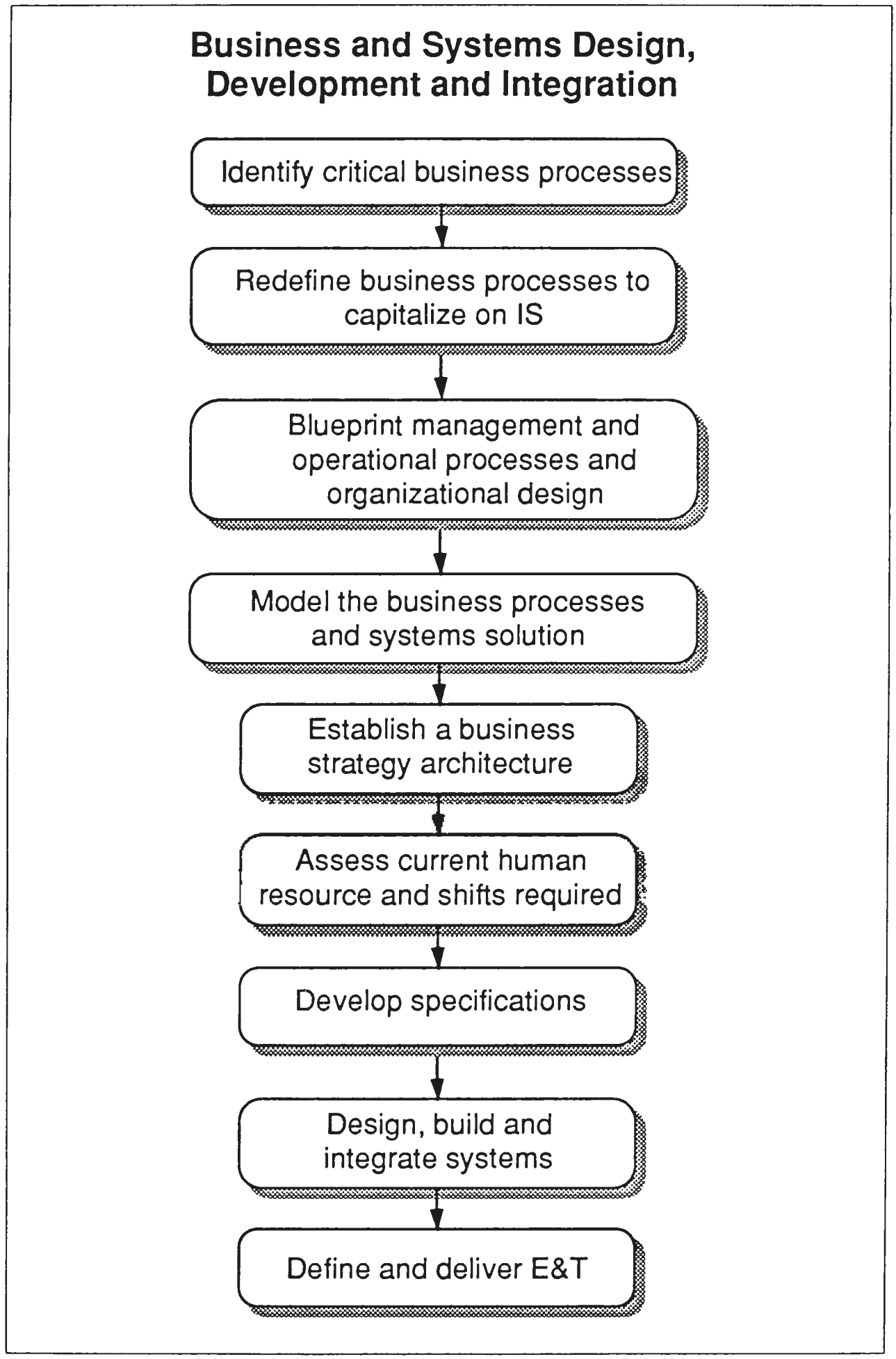
3. An Interactive Approach to System Design

Another drawback in the traditional approach to system design has been its apparent belief in the ability of users to specify their exact requirements well in advance of delivery. The developers have often fueled an adversarial relationship by insisting on delivering against this highly documented specification, regardless of users progression along the learning curve and the evolution of the business.

In contrast, CSC focuses on broad system architectures to support the new business vision and leaves detailed requirements to be defined at a later stage. In this way, CSC endeavours to reduce the time between requirements definition and delivery and to encourage a more participative

approach to systems development between users and developers. Increased user participation also leads to a decrease in resistance to change. The activities adopted by CSC within design and development are listed in Exhibit IV-19.

EXHIBIT IV-19



An example of a business re-engineering project undertaken by CSC is that for the Bradford & Bingley Building Society in the United Kingdom.

In the highly volatile financial service arena, the key to competitive edge and market share is customer service and product innovations.

Bradford & Bingley Building Society (BBBS), a leading building society in the U.K.'s savings and loans marketplace, determined that having an appropriate service and marketing system was crucial. Figuring out how to develop such a state of the art system was time consuming and complex, and because of the urgency of the need, BBBS turned to Inforem for help.

Drawing on Inforem's strategy, methodology and system development expertise, Inforem and BBBS are developing a system that will be able to launch a new financial product with full computerized support within a matter of hours.

In addition, Inforem's software building techniques have enabled BBBS's system to adapt to changing business conditions, minimizing the expense of re-writing applications every time a new financial service product is introduced.

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