SYSTEMS INTEGRATION USER ISSUES

WESTERN EUROPE 1991-1996

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Abstract

This report evaluates the driving forces behind the development of the systems integration market, and considers the impact of the changing roles now being adopted by IS management and senior non-IS executives. It also considers vendor selection criteria and factors which determine the success or failure of individual projects.

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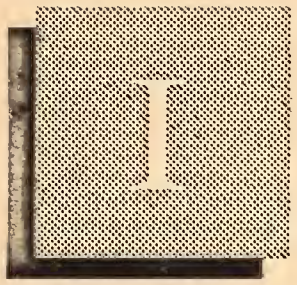
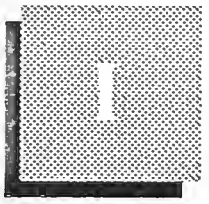


Introduction



Introduction

A Objectives

This report examines systems integration from the user perspective. Its objectives are to identify:

- The principal driving forces behind the systems integration market
- The nature of the buying process and vendor selection criteria
- Some of the characteristics of "successful" and "unsuccessful" projects

B Scope

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

To be included in the information services market, systems integration projects must involve some application processing component. In addition, the majority of cost must be associated with information systems products and/or services.

The systems integrator will perform, or manage others who perform, most or all of the following functions:

- Program management, including subcontractor management
- Needs analysis
- Specification development
- Conceptual and detailed systems design and architecture
- System component selection, modification, integration and customisation

- Custom software design and development
- Custom hardware design and development
- Systems implementation, including testing, conversion and post-implementation evaluation and tuning
- Life cycle support, including
- System documentation and user training
- Systems operations during development
- Systems maintenance
- Financing

C

Report Structure

Chapter I provides details of the objectives and scope of the research.

Chapter II is the Executive Overview of the entire report. It summarises the principal findings of the research with an emphasis on the buying process and an evaluation of the characteristics which lead to successful systems integration projects.

Chapter III discusses the driving forces in the systems integration market and the reasons why organisations use external vendors.

Chapter IV considers the changing approaches being adopted by in-house IS departments and the impact of these in the systems integration market.

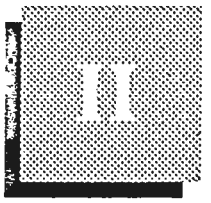
Chapter V considers the growing importance of senior end user management in systems integration purchasing decisions.

Chapter VI analyses the buying process including vendor selection criteria and evaluates the perceived strengths and weaknesses of the major vendor categories.

Chapter VII considers the management of systems integration and identifies some of the characteristics of successful projects.

Chapter VIII contains two case studies: one of a "successful" systems integration project and another of an "unsuccessful" systems integration project.

Executive Overview



Executive Overview

A

Systems Integration Provides Both Business Solutions and Infrastructure Development

The systems integration market can be broadly segmented into two types of project:

- Business solutions
- Infrastructure development

Firstly, business solutions are major projects, typically initiated by senior end user management, which arise from changing business processes within the organisation—for example, a desire to improve customer service. These projects tend to have a strong application emphasis.

Systems integration projects of this type often arise from consultancy/ audit studies and to win these projects vendors need experienced consultants who can demonstrate:

- An understanding of the clients' business
- Experience of their industry
- The ability to improve the effectiveness and efficiency of the organisation's business processes
- The ability to manage the change to improved business processes

Once the information systems requirements have been clearly identified, any vendor who has an off-the-shelf solution to the problem will have a major advantage. Users are increasingly turning to packages, even for their mission-critical applications, recognising the speed of implementation, cost savings, and greater flexibility which can be achieved in this way. While all systems integration projects involve elements of customisation, the vendor that can demonstrate a high proportion of

standard software and a standard framework for integration will be well placed to succeed.

Secondly, there are systems integration projects which are primarily concerned with developing the IS infrastructure of the company. There are increasing trends for companies to make information more widely accessible across departmental "barriers" and to link heterogeneous computer systems. The majority of projects of this type have a strong networking component. Here the major influence in the buying process is the in-house IS department and the vendor selection criteria are orientated more towards an evaluation of the vendor's technical capabilities. Business knowledge and industry-specific experience become of secondary importance.

B

IS Department Issues & Trends

Some of the key issues facing IS departments and factors which have a bearing on the degree of outsourcing, especially systems integration, that is adopted are listed in Exhibit II-1.

EXHIBIT II-1

Key Issues of Information Systems Departments Western Europe

- Senior user management's failure to understand the potential of IS
- End user "ownership" of projects is low
- End users' autonomy in choice of supplier

One of the perennial issues facing the software and services industry was summed up by one IS manager as follows:

> *"The key to successful projects is to get business and IS people talking to one another."*

This maxim applies equally to the identification of how information systems can contribute to the business and to the implementation of individual projects. Typically senior end user managers have failed to make the effort to understand the potential of IS, alienated by the technical emphasis and jargon of their IS departments.

This lack of shared goals between end users and IS personnel has often led to a lack of interaction between the two parties which has in turn resulted in a lack of creativity in the application of information systems

and lack of a feeling of "ownership" among users on the receiving end of information systems development projects.

This situation has only been exacerbated by the "sellers' market" in which the IS department found itself, with many systems subject to a development backlog and long lead times. Many companies responded to this situation by allowing end users to appoint external vendors, often without even a requirement to inform the IS department of their intentions. In many cases, this has created as many problems as it has solved by leading to incompatible "islands of automation".

However, many IS departments have now started to tackle these issues and this is reflected strongly in the organisational structure of these departments as listed in Exhibit II-2.

EXHIBIT II-2

Organisational Trends
Information Systems Departments,
Western Europe

- Closer links between IS and end users
- Greater use of joint IS/top management steering committees
- Emergence of IT directors

There is now an increasing emphasis within IS departments on closing the divide between themselves and their end users. Organisationally this manifests itself in a number of ways. Firstly, there is increasing use of joint IS/end user top management steering committees, the purpose of which is to provide senior management with an understanding of the potential of information systems and to encourage them to take a keener sense of ownership in applying IS to their business. Secondly, IS directors are being encouraged to participate in business decisions more widely than previously and to improve their knowledge of business processes and company strengths and weaknesses.

In order to improve their day-to-day relationships with end user departments, many IS departments are developing more formal, and professional, relationships with end users. These are often characterised by:

- Introduction of Service Level Agreements
- Charging for services on the basis of actual usage

- Use of account managers for end user liaison

- Adoption of more formal change management procedures

The extent to which IS departments successfully come to terms with these issues will have a significant impact on the systems integration market. At present, systems integration projects can be broadly separated into two segments:

- Major projects primarily initiated by senior end user management. These are typically commercial projects with a strong application emphasis.

- IS infrastructure development projects initiated by IS management. These projects often have a strong networking emphasis.

The size of the first of these two segments will be strongly influenced by the strength of the relationship between the IS director and senior end user management. If this relationship is strong then IS management will tend to retain a strong influence on the way any components of a project are subcontracted to external vendors. Typically the IS department will be keen to retain a strong influence over the initial project specification and to retain the project management role. Hence, a project will often be subcontracted in the form of professional services and software product contracts.

Where the relationship between the IS director and senior end user management is less well-developed, there is a greater likelihood of end users subcontracting entire systems integration projects to external vendors.

C

The Buying Process

Exhibit II-3 lists the major reasons why external vendors are used for systems integration projects. Both senior end user management and IS management agree that the major reasons for using external vendors are to fill in the gaps in skills or resources within the in-house IS department.

However, much of the skill shortage is not so much in the technical development of systems as in the commercial knowledge and detailed knowledge of specific business processes. So applications such as logistics, automated warehousing, and factory automation are prime targets for outsourcing. Also this vacuum creates an opportunity for vendors selling consultancy—which assists user management in defining improved business processes—to sell a total systems integration service.

EXHIBIT II-3

Reasons for Using External Vendors for Systems Integration—Western Europe

- Peak workloads
- Skill shortfall
- Assistance in vendor selection
- End user decision

The majority of application/business process-driven systems integration projects tend to be outsourced by senior end user management rather than by the IS department, as indicated in Exhibit II-4.

EXHIBIT II-4

Buying Process Systems Integration, Western Europe

- Led by senior director or senior management committee
- IS management has low level of influence in choice of vendor
- Projects often spin-offs from audits/studies

Senior management is playing an increasingly critical role in systems integration purchasing decisions. Many "strategy-led" organisations would now like their information systems to make a major contribution to delivering improved customer service, and faster product development and delivery. However, such use of IS involves a fundamental re-thinking of the way business processes are performed and in the way the organisation is structured.

To quote from Andersen Consulting:

> *"Successful companies will be those that have re-engineered their organisations to provide greatly improved customer services and cost competitiveness. To achieve this goal, IS must become part of the organisation's fabric.*

In practice, this means senior management of European companies must place IS in the context of their whole business in integrating business strategy, technology, operations, and people ...."

This means that senior end user management must become more involved in providing the vision behind systems integration projects and in vendor selection. In practice, the major initiative tends to come from senior management who consequently have a major influence in the choice of systems integration vendor; IS management usually plays a subservient role.

This has a major impact on the criteria by which vendors are chosen in this segment of the market, since the criteria by which senior end user managers choose systems integration vendors differ markedly from those adopted by information systems managers. The principal criteria adopted by senior end user managers are listed in Exhibit II-5.

EXHIBIT II-5

End User Management's Criteria for Vendor Selection Systems Integration, Western Europe

- Strategic advice capability
- Industry knowledge
- Experience/suitability of consultants

Senior management are not primarily concerned with, or often capable of evaluating, a vendor's technical capabilities. Their focus is on the vendor's:

- Understanding of their business
- Experience of their industry
- Ability to suggest ways of improving the organisation's effectiveness and efficiency
- Ability to manage the change to improved business processes

Hence the scope of the dialogue is much wider than information systems. The information systems may be viewed as a minor, but expensive, supporting tool. Therefore, traditional software and services vendors are at a disadvantage unless they can provide sophisticated business consultancy, particularly in the initial business process review stages.

Finally, as consultancy becomes an increasingly common entry point into systems integration, so the calibre and experience of the consultants and project managers proposed will become increasingly important determinants of success.

Once the information systems requirements have been clearly identified, any vendor who has an off-the-shelf solution to the problem will have a major advantage. Users are increasingly turning to packages, even for their mission-critical applications, recognising the speed of implementation, cost savings, and greater flexibility which can be achieved in this way. While all systems integration projects involve elements of customisation, the vendor that can demonstrate a high proportion of standard software and a standard framework for integration will be well placed to succeed.

However, the emphasis placed on this latter criterion may depend on the extent of the involvement of the IS department since a degree of technical evaluation is required.

In addition to their importance in advising senior management on business process improvement, consultancies play two other roles which can have an impact on systems integration projects. Firstly, they are sometimes used by senior management to bridge the gap between the IS department and themselves. This can include:

- IS strategy reviews
- IS audits
- Validation of IS proposals

All of these can lead to the identification of systems projects and potentially put the consultant in a strong position to influence the choice of vendor.

Secondly, as listed in Exhibit II-6, IS departments are themselves increasingly using consultancies to assist in the development of IS strategies, and to perform a "consulting engineering" role. The latter involves assisting the IS department, particularly in applications where the IS department lacks know-how, in systems specification, vendor selection, and project management.

Consultancies, carrying out these roles, are typically only acting as advisers to IS management and are operating on a fee basis rather than a fixed price basis. IS management typically retains all ultimate project management responsibility for all aspects of the project. Much of the work carried out by consultancies such as Price Waterhouse and Andersen Consulting is in fact taking on this "consulting engineering" role rather than acting as prime contractor.

EXHIBIT II-6

Advisory Roles of Consultancies
Systems Integration, Western Europe

- Business specifications
- Vendor selection and monitoring
- IS strategy development

D

Characteristics of Successful Projects

The overall level of satisfaction of users with systems integration projects performed by external vendors is contrasted with their level of satisfaction with professional services and turnkey systems in Exhibit II-7.

EXHIBIT II-7

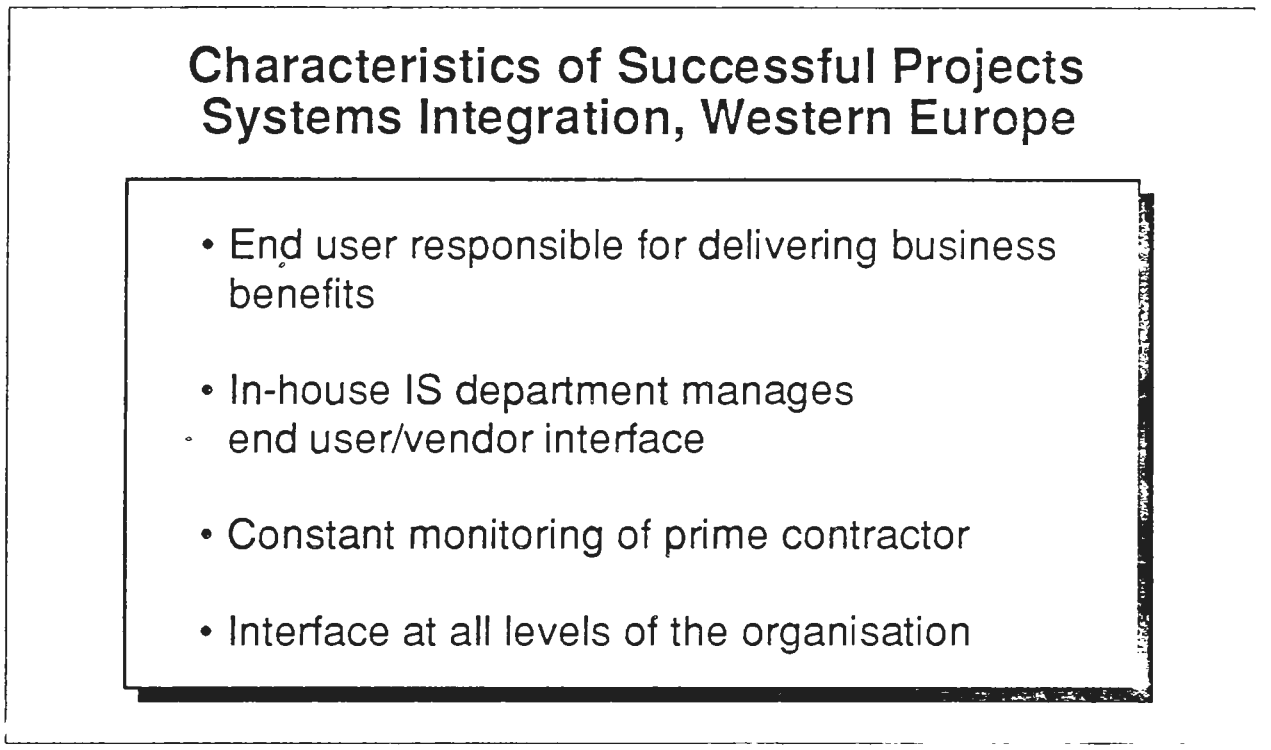
User Satisfaction Levels
Systems Integration, Western Europe

Nature of Project	Degree of Satisfaction
Systems Integration	Low - medium
Professional Services and Turnkey Systems	High

Overall, the level of satisfaction with systems integration projects is comparatively low, and the whole sector is characterised by a high incidence of public failures.

Some of the characteristics of successful projects identified by users are listed in Exhibit II-8.

EXHIBIT II-8



Two quotes from users sum up the keys to successful completion of projects:

> *"The key to successful projects is to get business and IS people talking to one another."*

> *"Sound project management on both sides is a requirement for success."*

To achieve the involvement and commitment of senior end user management, many organisations now nominate a "business owner" from the end user community. This "business owner", typically a senior director, is required to accept full responsibility for delivering the business benefits from a project. Users are increasingly recognising that vendors and IS departments can only deliver working technology, they cannot ensure that the business exploits the technology fully or that end users develop a sense of ownership for information systems. However, it is also being recognised that this "business owner" needs technical project management support. Systems integration projects where the vendor has sole contact with the end users have a high incidence of failure. Where a strong IS project manager manages the end user/vendor interface, projects are more likely to succeed. In particular, it is important that change control is firmly managed and that the vendor's delivery is closely monitored on a day-to-day basis in terms of costs, timescales, and product suitability.

On the other hand, systems integration projects tend to be unsuccessful when they are characterised by:

- A direct interface between the vendor and the end user
- High levels of commercial uncertainty
- Lack of adequate change management procedures

In the absence of any detailed technical management of the vendor, there is always the danger of change management being inadequately enforced, leading to significant slippages in project cost and timescale.

A degree of technical uncertainty— excluding performance issues— appears to pose less of a threat to a successful outcome than does a high level of commercial uncertainty. If the specification or business processes involved are subject to rapid change, the chances of success are much diminished.

Driving Forces

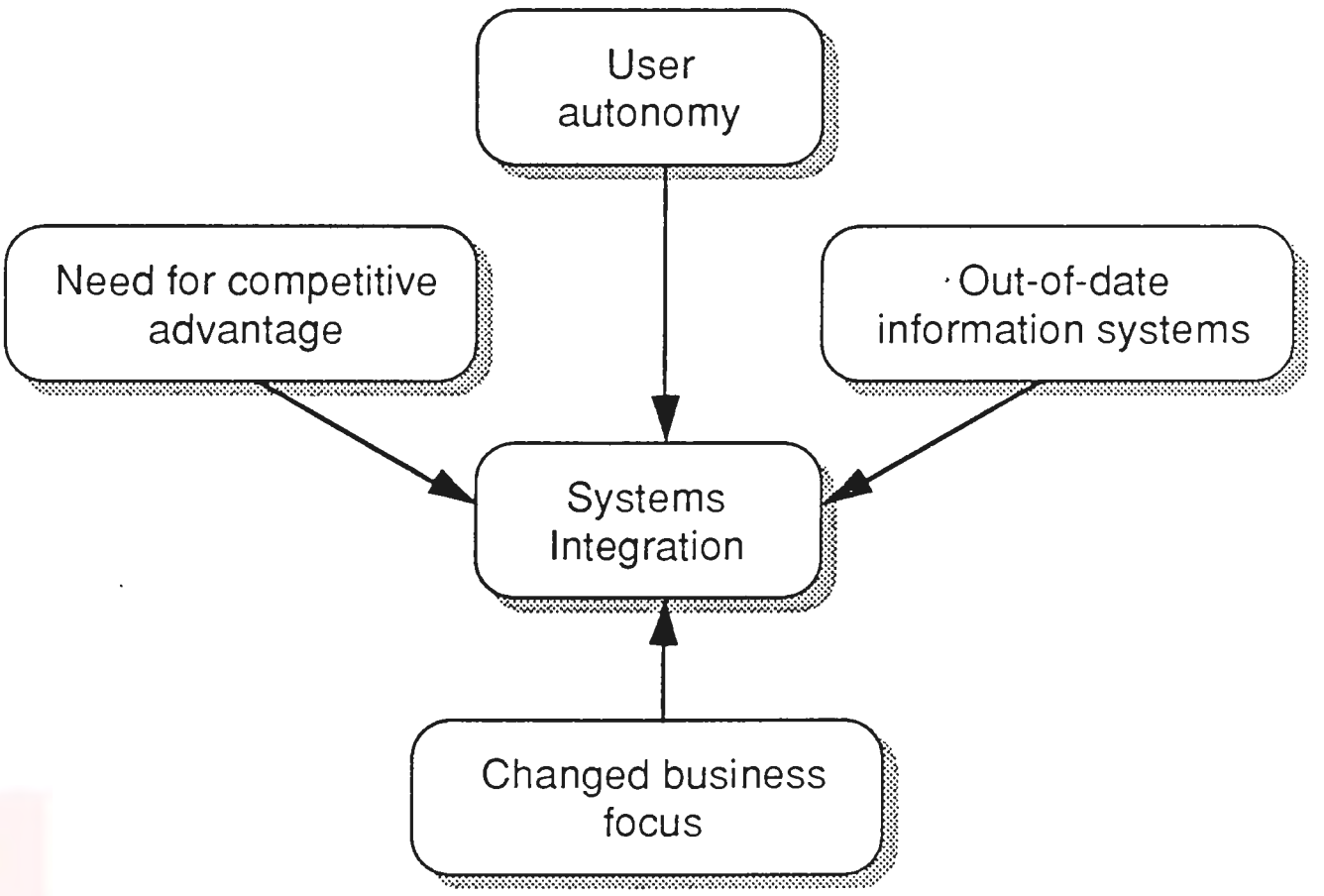
III

Driving Forces

The primary driving forces behind the use of systems integration are shown in Exhibit III-1.

EXHIBIT III-1

Western European Systems Integration
Driving Forces



Systems integration projects frequently arise as organisations change their business focus and, as a result, need to dramatically realign their corporate information systems. On the other hand, an organisation's information systems simply may not have evolved in recent years and consequently not kept up to date with the changes in business practice. In either case, this may lead to a need for a major redevelopment of existing information systems.

Of course, systems integration projects can also be concerned with increasing the scope of information systems within the organisation. In some instances, this will be because the technology has itself progressed to the point where new, more ambitious applications can be introduced. Many of these projects will be seen as the use of information systems for competitive advantage. Examples include the airline system Amadeus and major industrial automation projects.

However, many internal information systems departments are reluctant to transfer responsibility for major projects to external vendors, preferring to subcontract only those elements of the project necessary to overcome resource or skill constraints. Hence the rise in end user autonomy is an important contributory factor in the outsourcing of major projects.

Central government is a major purchaser of systems integration services since it is more favourably disposed to the outsourcing of critical projects than the private sector.

The major reasons for the use of external vendors rather than in-house information systems personnel are listed in Exhibit III-2.

EXHIBIT III-2

Western European Systems Integration
Reasons for Use of External Vendors

- Peak workloads
- Skill shortfall
- Assistance in vendor selection
- End user decision

Most internal information systems departments prefer to manage major projects themselves rather than letting control pass to an external vendor. Overall, and with the exception of the increasing trend towards use of

applications software products, the major reasons why information systems departments use external vendors remain to cover their peak workloads and to meet specific skill deficiencies. For the majority of large commercial projects, the information systems department perceives itself as having an excellent understanding of both the business and the technical requirements of the task and so will manage these projects itself.

Where the information systems department cannot handle the peak development workload in-house, then specific modules—usually accompanied by highly detailed functional specifications—will tend to be subcontracted.

However if the information systems department perceives itself as lacking the necessary business understanding, then it is probable that the complete project—including specifications—will be outsourced. Areas where this is common include logistics, automated warehousing, and factory automation.

Information systems departments also use external vendors to assist them in managing projects. While all project management responsibility and accountability is retained by the information systems department, the vendor will perform a similar role to a consulting engineer in civil engineering projects. The vendor will typically assist the user in producing a detailed specification and documentation, and then assist in the evaluation of suppliers. Once the project is under way, the vendor may be retained as an adviser, but without any direct project management responsibilities.

The result is that for the majority of systems integration projects undertaken by systems integration vendors, the decision to use an external vendor will have been taken by end users rather than the information systems department. This is particularly true of commercial projects where both the business processes and the technology are well understood by the information systems department.

A recent survey by the Computing Services Association in the United Kingdom showed that roughly a third of chief executives in companies with revenues exceeding $1 billion are dissatisfied with the contribution of IT to their businesses. Superficially this appears to represent a considerable opportunity for software and services vendors.

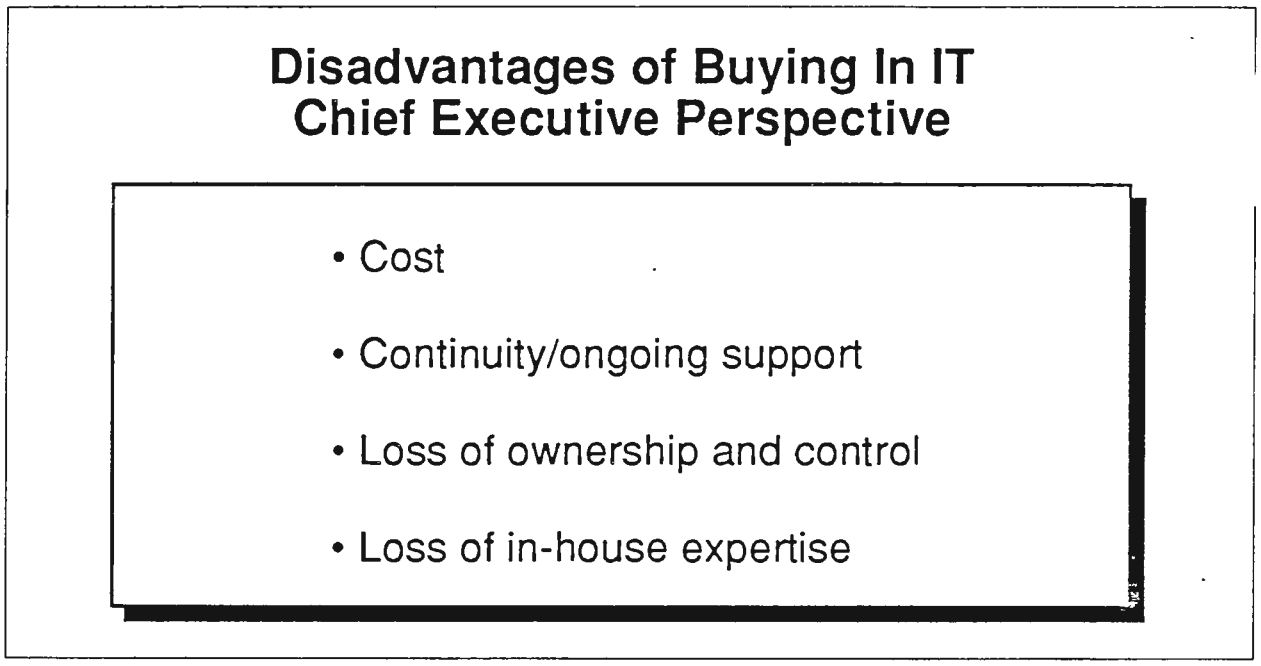
However, closer examination shows that the problem may lie primarily in the nature of information technology and chief executives' understanding of it rather than unsatisfactory performance by in-house information systems departments. Only one-fifth of chief executives of large companies believe their in-house resources will have any difficulty in coping with the demands made on them over the next five years. In accordance

with the views of IS management, chief executives consider the main advantages of buying in information systems and services to be:

- Access to up-to-date technical skills
- Supplementation of in-house skills
- Increased speed of development

The disadvantages of buying in information systems and services as perceived by chief executives of large organisations are listed in order of priority in Exhibit III-3.

EXHIBIT III-3



However, there are indications that user top management often have an inadequate understanding of information systems and their potential to support business initiatives, and so do not adequately involve their in-house information systems department in business issues.

A recent interview with the retiring head of Sainsbury's information systems department in the United Kingdom showed that there was clearly a divide between the IS department and senior management.

The IS department believed that businessmen:

- Viewed IS staff as 'mechanics'
- Saw IS as primarily an operational issue
- Were reluctant to spend time evaluating the contribution IS could make to their businesses
- Failed to appreciate the strategic role which IS could play in the development of the business

However, the top management was prepared to involve a management consultant in bridging the gap between IS and themselves, and validating the proposals put forward by the in-house IS management.

Changing Role of the IS Department

IV

Changing Role of the IS Department

A

Issues Faced by IS Departments

In order to understand the potential for systems integration projects within major users, it is helpful to review the changing roles being adopted by their information systems departments and their impact on the purchasing process for systems integration projects.

Some of the principal issues faced by IS departments in large organisations are listed in Exhibit IV-1.

EXHIBIT IV-1

Issues for Information Systems Departments

- Business persons' understanding of potential of IS
- Business ownership of projects low
- IS centralisation vs. decentralisation
- Co-ordination of systems
- Theoretical user autonomy
- Cost reduction

One of the most significant problems faced by IS departments over the last decade has been the combined issue of getting business managers to understand the potential and relevance of IS to their businesses, while simultaneously getting IS personnel to understand the business issues and priorities. To achieve the best systems for the business it is inappropriate

for either side to impose its ideas rigidly upon the other; what is required is a creative dialogue between the two parties.

This lack of mutual understanding has led in the past to a lack of interaction between IS and business management which in turn has resulted in a lack of creativity in the application of IS combined with a lack of ownership of individual IS projects by end user management.

The end result has been systems which have failed to live up to their true potential.

Another important issue facing IS departments has been the application backlog or long development lead time associated with projects. Many companies responded to this issue by giving end users the freedom of choice to use external vendors rather than the in-house IS department. This state of affairs remains the norm today.

However, this approach introduces its own problems. Two overriding trends at the present time are a demand for greater accessibility of information across business functions and departmental barriers and a need for greater integration and data sharing between applications. For these goals to be achieved information systems need to be coordinated across the organisation. Departmental autonomy has often in the past led to a number of islands of automation which cannot interact with one another.

Cost reduction is another major issue for IS departments. However, most IS departments will argue that they can develop and implement systems much more cheaply than any systems integration vendor. The major factor determining the cost of new systems development for either in-house IS personnel or external vendors is the degree of customisation performed on behalf of the end user. In this area, there is currently a very significant move to applications software products for mission-critical systems. This is especially evident in the banking sector, where a number of major organisations are adopting applications software products for the first time for their more critical applications. This can entail a significant change in the nature of the relationship between IS departments and their end users. Each user now needs to make realistic cost/benefit trade-offs rather than insisting that his *modus operandi* is sacrosanct. It is no longer appropriate for users to draw up a detailed specification and insist on its 100% fulfillment.

End users need to be more prepared to consider alternative ways of working, taking into account the overall cost/benefits of each approach.

B

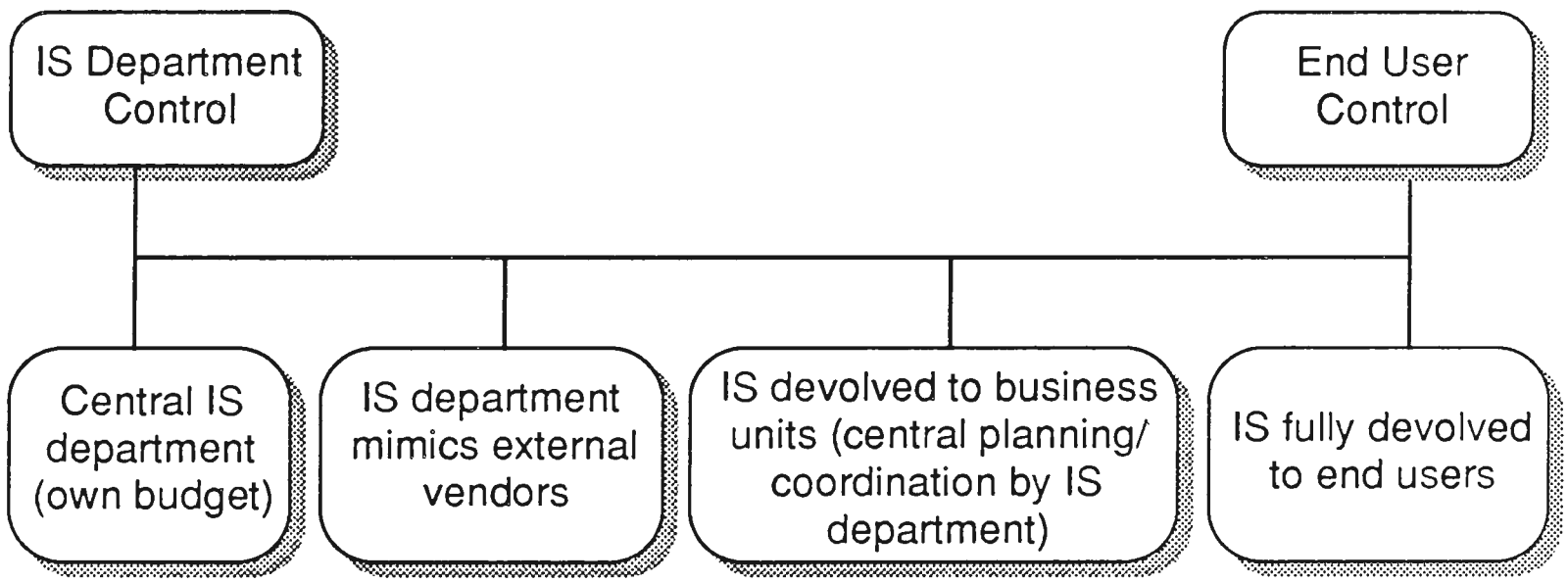
IS Organisational Structure

The attempt to resolve some of these issues has led to some dramatic changes in the organisation of IS departments. Four types of organisations now commonly found are shown in Exhibit IV-2, classified according to the location of the major influence on IS spend.

The traditional highly centralised IS department, shown in the far left of Exhibit IV-2, is increasingly giving way to IS departments which have adopted a more commercial stance towards their end users.

EXHIBIT IV-2

Control of External Software and Services Expenditures
IS Department versus End Users



Such an approach, where the internal IS department largely mimics an external vendor, is typically characterised by:

- Charging for services on the basis of actual usage
- Introduction of Service Level Agreements
- Use of account managers for liaison with end users
- Focused business groups/product managers
- High-level IS steering committees

This type of organisation can be very difficult for systems integration vendors to penetrate since it emphasises strong steering of overall IS

development involving senior directors, strong interaction with end user departments, and value for money. The steering committee will typically initiate all major projects and because of the close working relationship between senior directors and IS, will only involve a systems integration vendor where the relevant skills are not available in-house. This type of organisational structure is becoming widely adopted in large companies.

However, some companies have adopted even more dramatic approaches to solving the problem of getting appropriate IS systems in place quickly and cheaply. One of these is to devolve all IS development into end user business units, retaining just a central IS policy unit to maintain IS frameworks, policies, and guidelines. In some cases, this central policy unit enforces its role by approving all capital spending on IS projects by the business units.

In other cases, the central policy unit has been completely disbanded, leaving individual businesses free to determine their own IS approaches. This latter type of structure is probably most appropriate where the business consists of a large number of independent business units with little need to share systems or access to information.

In many ways, this latter type of business should constitute a natural target for systems integration vendors. However, the individual business units may often be too small to support projects of any magnitude. One of the consequences of this type of organisation is a tendency to down-size systems from a central mainframe to minicomputers or PC networks.

C

Impact on Systems Integration

The major trends impacting IS departments are summarised in Exhibit IV-3.

EXHIBIT IV-3

Trends Being Adopted by Information Systems Departments

- Some users only just starting to use packages
- Increased use of consultants for specialised knowledge
- Emergence of IT directors
- Closer links between IS and end users
- Greater use of joint IS/top management steering committees

Firstly, it is apparent that many large organisations are only now starting to use applications software products for mission-critical applications.

Secondly, there is a strong emphasis within IS departments in large companies on closing the divide between themselves and their end users. This manifests itself in several ways. There is much greater use of joint IS/top management steering committees for development of corporate IS plans, together with an increasing tendency for companies to appoint IS directors—as opposed to DP managers—to a place on the board.

This closing of the divide between top management and IS management is potentially a strong inhibitor to the growth of systems integration. It will become correspondingly more difficult for management consultants assisting top management in managing change to sell IS development as a natural consequence of a change in business practice. There will be a greater tendency for senior directors to seek the opinion of their own IT director, who may be keen to ensure that his department retains control of all IS strategy, system specifications, and project management.

The reluctance of IS departments to use external vendors for business studies, specifications, and project management is illustrated in Exhibit IV-4.

EXHIBIT IV-4

Role of External Vendor

Activity Performed by Vendor	Number of Users
Business study	2
Functional specification	4
Project management	4
Program development	8

Sample of eight users

While most users actively utilise software and services vendors to assist their software development activities, few information systems departments are prepared to hand over control of business studies to external vendors. Indeed, external vendors were involved in project management and the development of functional specifications in only half of the companies interviewed.

This reluctance to subcontract project management and specifications to vendors is typically supported by a range of anecdotes describing the project failures which have resulted from such actions in the past. Indeed, the press continues to provide evidence in support of such prejudices with constant examples of major projects which have either dramatically exceeded budget, overrun by years, or been cancelled because of a defect in their specification. Recent examples of such projects include a system for the Department of Social Security in the U.K. where costs are reported to have risen threefold, and the EFTPOS project which was overtaken by changing market requirements. While most of the examples cited in the press relate to the public sector, similar failures also exist in the private sector, though these tend to receive little publicity.

As a result, a number of major financial institutions insist that they are only prepared to use junior staff from software and services vendors for activities such as software development.

Typical arguments used by information systems departments to retain control include:

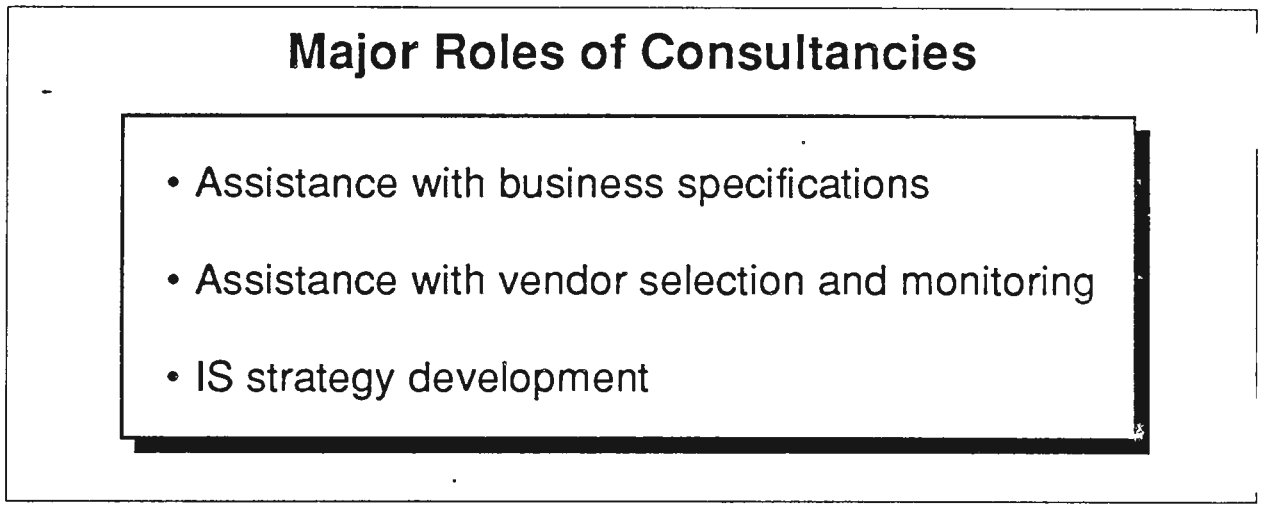
- It is important that accountability remains within the company.
- End users lack the ability to manage projects and external vendors.
- The in-house department understands the company's needs better than any external vendor.
- We have tried using external vendors in the past—the quality was poor.
- We can deliver at one-third of the cost of an external vendor.
- Our systems are highly integrated—it is difficult to carve out a standalone system to give to the vendor.

Even in those instances where the IS department is prepared to consider the use of external vendors for business studies, specifications, or project management, this only applies typically to that small proportion of projects for which they lack the know-how or resources to implement in-house. So, for example, a factory automation project may be subcontracted to a systems integration vendor while responsibility for a change in production management system remains in-house.

However, it is clear that while IS departments are still reluctant to subcontract mission-critical applications in their entirety, they are increasingly prepared to use consultants as advisers and to subcontract elements of an implementation.

The major roles for which IS departments use consultancies are listed in Exhibit IV-5.

EXHIBIT IV-5



When the IS department feels it lacks the business expertise to specify a major system, it is common practice to employ a consultancy to provide the necessary know-how.

One example is a German bank's approach to Andersen Consulting, McKinsey and Roland Berger. However, in this case, as in many others, the company was keen to retain control of project management and system development in-house. The consultancy selected was only contracted to join the steering committee of senior executives and IS management and provide input to the project specification. The second development phase was both managed and staffed by the in-house IS department.

In other instances, consultancies are being used as "consulting engineers" to assist in:

- Systems specification
- Vendor selection
- Project management

However, it is important to note that consultancies carrying out these roles are typically only acting as advisers to IS management who retain the ultimate responsibility for these activities.

Much of the work carried out by consultancies such as Price Waterhouse and Andersen Consulting is in fact in taking on this "consulting engineering" role rather than acting as prime contractor.

IS departments are frequently more prepared to use consultants in this advisory role than to hand over complete responsibility for a project.

The overall lack of willingness of information systems departments to use systems integration vendors as prime contractors is indicated in Exhibit IV-6.

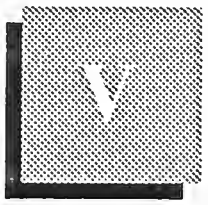
EXHIBIT IV-6

Willingness of Information Systems Department to Use Systems Integrators

Attitude	Number of Users
Will use	3
Will not use	7

However, IS departments also use consultancies such as Index and Nolan, Norton to assist them in redefining their overall IS strategies. This activity is a strong source of potential systems integration projects, and explains the popularity for acquiring such organisations within the systems integration vendor community. Recent examples of this include CSC's acquisition of Index and Butler Cox. Butler Cox was acquired in May 1991 for $27 million. In Italy, System & Management Group owns 50% of Nolan, Norton Italia.

Changing Role of Senior Management



Changing Role of Senior Management

Overall there are strong indications that senior management is playing a more critical role in software and services purchasing decisions. This is particularly true in the case of systems integration projects.

Historically, senior management has had a poor understanding of the potential of information systems to support improved business processes. Information systems have been perceived primarily as operational tools which support existing processes rather than facilitating improved ways of working.

However, whilst these attitudes are still common, some "strategy-led" organisations would like their information systems to make a major contribution to delivering improved customer service, and faster product development and delivery. Such use of information systems entails fundamental changes in business processes—for example, the move to just-in-time in manufacturing organisations—not merely the automation of existing processes.

This calls for a wider range of skills in specifying information systems than was the case when the rate of business process change was comparatively slow. In such circumstances, it was possible to concentrate on "mechanising" each application in turn. The need to replace information systems was driven more by the desire to incorporate the latest technology than the need to adapt to new ways of working. Also, systems were comparatively easy to specify since they largely mirrored manual procedures.

That scenario no longer exists. The emphasis is now on rapid evolution of business processes and the need for information systems to adapt to support these processes.

To quote from Andersen Consulting:

> *"Successful companies will be those that have re-engineered their organisations to provide greatly improved customer service and cost competitiveness. To achieve this goal, IS must become part of the organisation's fabric.*
>
> *"In practice, this means senior management of European companies must place IS in the context of their whole business - integrating business strategy, technology, operations and people ...."*

In this sense, the key challenge in systems integration is no longer the technical one of developing the system. The key challenge now is to assist top management in identifying coherent business process improvements which support the overall business strategy. The development of information systems is merely a consequence of this.

This means that senior end user management must become more involved in providing the vision behind systems integration projects and in vendor selection.

This seems to manifest itself in organisations in two different ways. In some instances, end user developments are completely by-passing the in-house IS department and outsourcing any major systems integration projects to external vendors themselves.

In other cases, senior management and the IS department are working together much more closely—often via joint steering committees—to identify how new technology can facilitate business improvements.

Senior management are typically ill at ease when discussing technical issues and find it difficult to relate to vendors perceived as having a technical bias. They have a strong preference for dealing with vendors perceived as business consultants for whom technology is just another issue within the overall implementation and change management.

Here the emphasis is on:

- Understanding of the competitive business environment and the industry's key success factors
- New process design
- Change management

IS is merely one of the tools available to reach the desired objective.

Under this scenario, the management consultancies' share of the computer services market has grown steadily over the last decade, as these organisations have diversified out of the traditional consultant's advisory role and into implementation and bodyshop activities.

In systems integration, there remains considerable scope for the consultancies to increase their market share. At present much of their involvement—probably the major part—is concerned with assisting clients in developing specifications, selecting vendors, and advising on project management. All of these activities are typically charged on a fee basis. However, it is increasingly likely that the consultancies will gradually take on prime contractorship for clients and begin charging on the basis of a fixed price for the whole project.

At present, Andersen Consulting is the market leader in this field. On the one hand, the leading established software and services vendors are positioned to provide a full range of IT and IT-related services. On the other hand, the large management consultancies, many grown within auditing firms, are treating IT expertise as just one of a broad range of disciplines offered to clients. Andersen is seen by both camps as the strongest common competitor by far, using its board-level credibility to win against the software companies and its IT resources and expertise to win against the consultancies.

VI

Vendor Selection Criteria

VI

Vendor Selection Criteria

A

The Buying Process

Systems integration studies may arise from a variety of sources, including:

- Reviews of business strategy
- Reviews of business operations
- IS strategy reviews and audits

The characteristics of the buying process for systems integration projects, as opposed to professional services projects, will typically resemble those shown in Exhibit VI-1.

EXHIBIT VI-1

Buying Process
Systems Integration, Western Europe

- Led by senior director or senior management committee
- IS management has low level of influence in choice of vendor
- Projects are often spin-offs from audits/studies

It is probable that the major initiative for a systems integration project will come from one of the senior management team, who will consequently tend to be the key decision maker in the choice of systems integration vendor. Although IS management may be involved in this decision, it is likely that they will play a subservient role in the choice of vendor, and have little influence over the eventual outcome. Indeed, in

some cases, it is apparent that senior management use external vendors, particularly the consultancies, to bridge the divide between themselves and their IS departments. This again weakens the influence of the IS department.

These factors have a major impact on the criteria by which systems integration vendors are chosen. Typical selection criteria are listed in Exhibit VI-2.

EXHIBIT VI-2

Vendor Selection Criteria—Systems Integration, Western Europe

- Strategic advice capability
- Industry knowledge
- Ability to offer application software product approach
- Experience/suitability of consultants

Senior management are not primarily concerned with, or often capable of evaluating, a vendor's technical capabilities. Their focus is on the vendor's:

- Understanding of their business
- Experience of their industry
- Ability to suggest ways of improving the organisation's effectiveness and efficiency
- Ability to manage the change to improved business processes

Hence the scope of the dialogue is much wider than information systems. The information systems may be viewed as a minor, but expensive, supporting tool. Therefore, traditional software and services vendors are at a disadvantage unless they can provide sophisticated business consultancy, particularly in the initial business process review stages.

Once the information systems requirements have been clearly identified, any vendor who has an off-the-shelf solution to the problem will have a major advantage. Users are increasingly turning to packages, even for their mission critical applications, recognising the speed of implementation, cost savings, and greater flexibility which can be achieved in this way. While all systems integration projects involve elements of customisation, the vendor that can demonstrate a high proportion of

standard software and a standard framework for integration will be well placed to succeed.

Finally, as consultancy becomes an increasingly common entry point into systems integration, so the calibre and experience of the consultants and project managers proposed will become increasingly important determinants of success.

The criteria listed in Exhibit VI-2 are essentially those which are adopted by senior management. When information systems managers initiate projects, these are more likely to be professional services projects rather than systems integration projects and the vendor selection criteria become less concerned with business issues and more concerned with a detailed evaluation of each vendor's technical capabilities, as shown in Exhibit VI-3.

EXHIBIT VI-3

Vendor Selection Criteria
Professional Services, Western Europe

- Experience of vendor
- Detailed evaluation of capabilities
- Location

A typical information systems department seeking a vendor to carry out specific software development work will evaluate each potential vendor's capabilities in some detail. The information systems department will typically know of the capabilities of many of the major professional services vendors, and will have experience of using their services previously. Vendors not used previously will frequently be given a small project initially to test their capabilities. For each new project, the information systems department is likely to interview the vendor's proposed project manager in some depth, request the CVs of all personnel involved in the project, and possibly take up references from the vendor's client base. The location of the vendor can also be an important factor, since vendor and client personnel need to work closely together and this is obviously aided by physical proximity.

B

Users' Perceptions of Vendors

1. Management Consultancies

The influence of the management consultancies lies behind the initiation of some of the more ambitious systems integration projects attempted in recent years.

In terms of their consultancy capabilities, they are perceived as having some very capable, if expensive, personnel. These consultants have a high degree of credibility with user top management, and will often be seen as having a better appreciation of the business issues involved than the in-house information systems department. However, within information systems departments, the management consultancies do have a reputation for working to set patterns and producing standard solutions almost irrespective of the organisation's individual circumstances. Overall attitudes to the use of management consultancies for systems integration projects are listed in Exhibit VI-4, and their perceived strengths and weaknesses in Exhibit VI-5.

EXHIBIT VI-4

User Attitudes to Use of Management Consultancies Systems Integration, Western Europe

- "They have some extremely good people, but are expensive."
- "For IS consultancy, most have a set pattern from which they do not vary."
- "The Big Six have a tendency to run away with cost and timescales."
- "They proposed an all-singing, all-dancing system. We spent millions before the project was dropped."
- "They need watching all the time."

EXHIBIT VI-5

Perceived Strengths and Weaknesses of Management Consultancies—Systems Integration, Western Europe

Strengths	Weaknesses
High-calibre personnel	Expensive
Credibility with user top management	Sometimes overrun cost and timescales
	Difficult to manage

The high calibre of staff employed by these vendors, and their emphasis on working with top management, can lead to problems on occasion. There is sometimes a danger of the consultancy believing its own personnel know what is best for the client and not liaising adequately with either the end users or personnel from the information systems department. The resulting lack of control can lead to changing, or over-ambitious, specifications which can result in increased cost or timescales.

Several of the companies researched in the course of this survey had initiated multi-million-dollar projects with management consultancies in the past, only for these to be abandoned after considerable sums had been spent.

The management consultancies were also criticised for looking for additional business towards the end of projects, which made it difficult for users to bring projects to a clear end point. This problem can be exacerbated if the vendor is by-passing the internal IS department and dealing with the end user department directly.

Overall, the main difficulty users experienced in working with the consultancies was the need to manage them strongly and monitor them closely. It was felt that this difficulty could be greater where the end users and the IS department are not working as a team or where the management of the IS department is comparatively weak.

2. Major Equipment Vendors

Some typical user attitudes towards the use of the major equipment vendors for major projects are listed in Exhibit VI-6, while Exhibit VI-7 shows the perceived strengths and weaknesses of major equipment vendors.

EXHIBIT VI-6

User Attitudes to Use of Major Equipment Vendors Systems Integration, Western Europe

- "The calibre of their personnel varies widely."
- "Those staff who have worked on the equipment vendor's internal systems are very good."
- "I wouldn't use them for IS strategy studies. These should not be linked to the hardware."
- "We would evaluate their expertise the same as for any other vendor."
- "One advantage is that they will be there tomorrow."
- "Definitely not. They are still box shifters."

EXHIBIT VI-7

Perceived Strengths and Weaknesses of Major Equipment Manufacturers Systems Integration, Western Europe

Strengths	Weaknesses
Stability	Lack depth of resources
High-calibre personnel	Lack proven track record
Good consultancy skills	Vested interests

Overall, attitudes to the use of the major equipment vendors are mixed, but with most companies prepared to evaluate their services alongside those of their more traditional suppliers. A major factor here is the perceived stability of this category of vendor, and the high likelihood of their continued presence in the market.

The major equipment vendors are increasingly recognised by IS management as having very capable personnel for assistance with consultancy studies; particular mention was made of personnel who have worked on equivalent internal systems within the manufacturer's business.

However, one major drawback here is users' fear of vested interests and of committing themselves to the constraints of a single hardware vendor policy. This may not be a major handicap where users' information strategies are already largely committed to equipment from a single vendor.

For more detailed development work, users expressed concern about the major equipment vendors' lack of track records and the depth of their personnel resources. Many users are familiar with the difficulty of locating personnel with specific skills within their equipment vendor's organisation. For example, one user suggested that it was very difficult to find vendor personnel who knew how to connect a personal computer to a minicomputer. This implied that project teams might be put together on a very ad hoc basis, with personnel drawn from many different areas of the vendor. Users would prefer a stable organisation to be set up by the vendor, offering continuity of personnel and service.

While IS management is increasingly prepared to seek the advice of the major equipment vendors, this is less likely to apply to senior management who continue to perceive the technical background of these vendors.

3. Professional Services Vendors

Exhibit VI-8 shows user attitudes to the use of professional services vendors while Exhibit VI-9 lists their perceived strengths and weaknesses.

EXHIBIT VI-8

User Attitudes to Use of Professional Services Vendors Systems Integration, Western Europe

- "The professional services vendors tend to develop to time and budget."
- "The professional services vendors are a lot better than they used to be."
- "They show a rapid appreciation of business requirements."
- "The quality is very high and the delivery very good."

EXHIBIT VI-9

Perceived Strengths and Weaknesses of Professional Services Vendors Systems Integration, Western Europe

Strengths	Weaknesses
Appreciation of business requirements	Business consultancy skills
Develop on time	Technical orientation
Develop to budget	

On the whole, the professional services vendors seem to have good working relationships with in-house information systems departments. The two groups appear to understand one another, and the information systems departments know that they can manage the professional services vendors. However, this does not necessarily mean that information systems departments are prepared to subcontract systems integration projects to these vendors. On the whole, they prefer to delegate specific tasks to professional services vendors with detailed briefs. On this basis, they are confident of professional services vendors' ability to deliver against the agreed schedule. There was a strong perception that professional services vendors have improved their project management capabilities markedly in recent years.

The main weakness of the professional services vendors is that they are still perceived mainly as implementors with good technical skills. Accordingly, user top management does not perceive them as appropriate organisations to assist in clarifying how information systems relate to the organisation's overall business strategy.

The management consultancies will continue to be perceived as the appropriate type of vendor to assist user management in improving its business strategies. Often it will only become clear that information systems need to be realigned once a more general review, and possibly revision, of the complete business strategy of the organisation has been conducted.

This can leave the professional services vendors poorly positioned to tackle systems integration projects compared to the management consultancies.

The Management of Systems Integration Projects

VII

The Management of Systems Integration Projects

A User Satisfaction

As illustrated in Exhibit VII-1, there is a marked contrast in the degree of satisfaction reported by users between large systems integration projects and smaller professional services projects.

EXHIBIT VII-1

User Satisfaction Levels
Systems Integration, Western Europe

Type of Project	Degree of Satisfaction
Systems Integration	Low - medium
Professional Services and Turnkey Systems	High

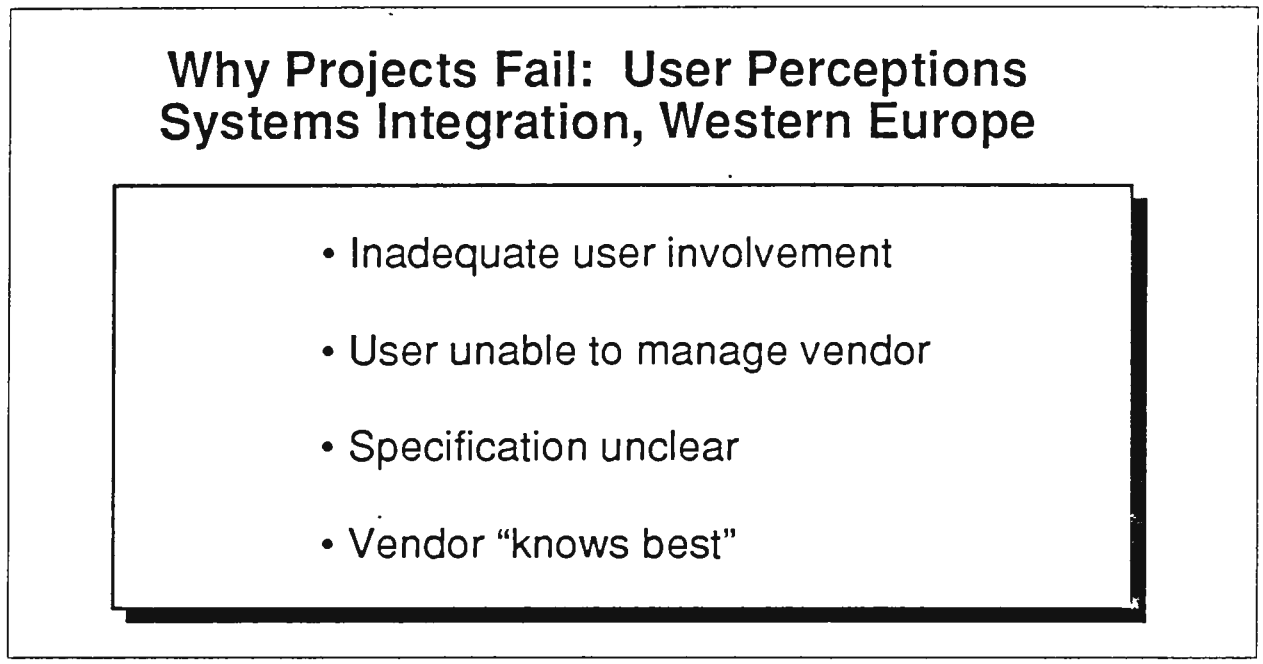
Overall, respondents indicated comparatively low levels of satisfaction with systems integration projects. While it is to be expected that information systems management may be biased in their acceptance of projects initiated outside their domain, it remained comparatively simple for many managers to cite examples of failed systems integration projects within their own organisations.

Even where systems integration projects had been initiated by external vendors with the co-operation of the in-house information systems department, failures still occurred.

On the other hand, a high level of satisfaction was expressed concerning professional services projects.

Exhibit VII-2 lists some of the major factors which contribute to the failure of systems integration projects.

EXHIBIT VII-2



It is clear that where a systems integration vendor has been appointed to carry out a major development by a user's top management, this weakens the ability of the in-house information systems department to contribute to the management of the project. Unless the end user department has the skills, and can spare the resources, to manage the project, then this leaves the vendor effectively unmanaged by the client. This danger is particularly prevalent if the proposed system is a company-wide one, so that no single end user department can effectively take responsibility.

However, the detailed development work is not usually a cause for concern with systems integration projects. The main problem area is typically the specification of the system.

A vague outline specification leads to problems since it will give too imprecise a definition of the work to be carried out, typically leading to cost increases and delays in development timescales.

Ideally, a specification needs to be fairly precise, yet allowing some degree of flexibility for change, and to be robust in the medium term. Companies' planning horizons and product life cycles are continually decreasing. Any specification for a system being developed over a period of years needs to be robust enough to adapt to changing products, business approaches, and organisations. Many large projects, such as the EFTPOS scheme, have been abandoned because they have been rendered obsolete by changing external circumstances.

While it is essential that the end users be adequately involved both in the initial specification and its subsequent evolution, it is also important that top management review the features proposed. This is to ensure that all the items proposed are cost-effective, and features are not incorporated

without commercial justification. Failure to do this will lead to both system inflexibility and a considerable increase in costs.

If not properly managed by the client, there is always a danger that vendors will over-elaborate on systems design and impose their own beliefs on the way the client's business should be run. To avoid these pitfalls, it is essential that systems integration projects be strongly managed by the client, as suggested in Exhibit VII-3.

EXHIBIT VII-3

Why Projects Succeed: User Perceptions Systems Integration, Western Europe

- Strong management by user
- Accountability retained by users
- Detailed agreement
- Regular monitoring

Detailed agreements between the vendor and the client are increasingly seen as the key to successful management of projects, the development of the system being monitored against strict timescales, costs, and functionality. However, clients cannot afford to be too rigid in defining the initial specification. Projects have been known to fail even though they met the above criteria, because the initial specification given to the vendor turned out to be flawed. Therefore it is important throughout the project to monitor the user's business objectives and to show a degree of flexibility in meeting these.

It is also essential that the client be professional in its approach to the project and provide the necessary levels of co-operation to the vendor. This is best achieved by making individual client personnel accountable for the project in terms of its cost, delivery date, and relevance to the organisation's needs. Client personnel should then manage the vendor to achieve these aims. This requires the agreement of detailed project plans and the review of progress and quality of work on a frequent, and regular, basis.

When purchasing professional services, users reported greatest levels of success when a very detailed specification was produced and development was closely project managed by the in-house personnel.

The visibility of systems integration project failures is one of the factors suppressing the adoption of systems integration.

While the private sector is typically loathe to announce its failures, those in the public sector receive considerable media coverage. In the United Kingdom, it has been suggested that more than half of the systems integration projects initiated by central government fail to come within sight of their objectives. Recent examples include:

- Passport Issuing and Management Information System - where the original specification is reported to have contained a number of flaws
- Foreign Office London Integrated Office System - a secure UNIX-based office automation project which slipped one year in the first two years of development and never reached even the pilot stage
- Department of Social Security - where development costs are estimated to have reached triple the initial estimates

Many other examples of comparatively unsuccessful projects can be found within the defence and health sectors.

All of these examples fuel the case of in-house information systems departments that, on the whole, prefer to manage large projects in-house, countering any resource or skill shortfalls by subcontracting specific elements of the overall project.

Another argument used by information systems departments is the difficulty in interfacing systems developed by external vendors with their own highly integrated environment.

By their nature, systems integration projects tend to be both high value and high risk. This means that they are particularly vulnerable to economic conditions and, in the current business climate, many large systems integration projects are being postponed indefinitely.

B

The Management of Projects

Exhibit VII-4 lists some of the characteristics of successful systems integration projects identified by users.

EXHIBIT VII-4

Characteristics of Successful Projects Systems Integration, Western Europe

- End user responsible for delivering business benefits
- In-house IS department manages end user/vendor interface
- Constant monitoring of prime contractor
- Interface at all levels of the organisation

Firstly, it is increasingly being recognised by a wide range of organisations that the key factors in achieving the business benefits sought from projects are the involvement and commitment of senior end user management. In-house IS departments and external software and services vendors can deliver the technology but make poor sponsors of a project. The system delivered must be compatible with the vision of end user management and it is only their enthusiasm for a project that will inspire the involvement of the personnel who are ultimately the end users of the systems. In the words of one IS manager:

> *"The key to successful projects is to get business and IS people talking to one another."*

Accordingly, it is increasingly common for organisations to nominate a "business owner" from the end user community with responsibility for delivering the business benefits and for all high-level project reviews to be chaired by the business owner, typically a senior end user director.

Even with extensive end user commitment and involvement, it is difficult for end users to effectively manage vendors since they may typically be unfamiliar with both IS technology and the management of large-scale projects. Many projects fail because end users cannot adequately manage vendors and because vendors find it very difficult to police themselves. This accounts for the widespread use of consultants in assisting users to manage projects. However, systems integration projects appear to be most likely to succeed where the in-house IS department forms the interface between the end users and the prime contractor. The IS department assists the end users in defining their requirements and running the

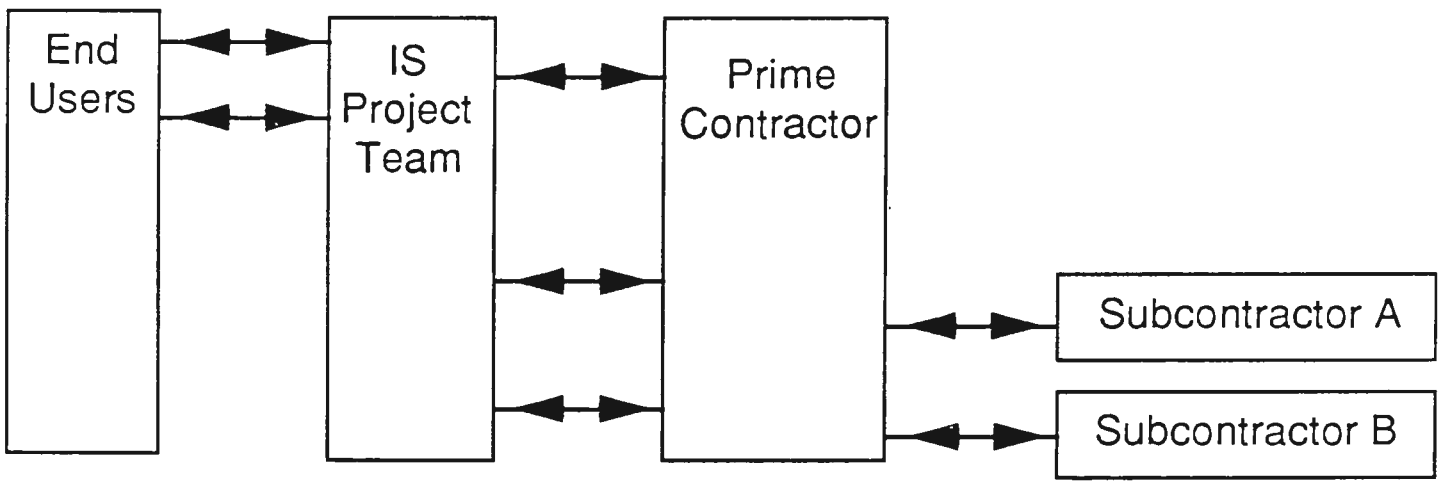
change management procedures. It also undertakes the day-to-day management of the prime contractor, ensuring that the vendor is on target in terms of timescales and monitoring the suitability and quality of all software developed. In one recent project, the in-house IS department had a full-time team dedicated to testing releases issued by the prime contractor. This is obviously an excellent way of monitoring the acceptability of the system being developed and also acts as a check on whether the project is meeting the agreed milestones on time. In another example, the IS department specifically recruited a senior project manager to manage the prime contractor and the prime contractor was made directly responsible to this person. Another of the conditions for success appears to be that the vendor is strongly managed by the IS department's project manager and cannot overturn decisions by direct appeal to the end users.

However, it is important that the interface between the prime contractor and the in-house IS department, while strongly managed, encourages communication between the project teams at all levels and not just through the project managers.

This results in the type of project organisation shown in Exhibit VII-5.

EXHIBIT VII-5

Project Organization
Systems Integration, Western Europe



IS management tends to see the initial specification and arguments concerning change management as the major obstacles to achieving a successful conclusion. The vendor is obviously keen to protect the projects' profitability but the user must believe that any additional costs

for specification changes are being calculated in good faith. In one recent project, the user commented that a formal change control mechanism was established at the beginning of the project, and the vendor agreed to evaluate the impact and cost of each change proposed. However, the volume of change requests was such that the vendor then wanted to charge the user for the evaluation of change requests whether or not they were adopted. Obviously this came as an unwelcome surprise to the user at this stage.

From the vendor perspective, some of the major obstacles in danger of impeding the project are listed in Exhibit VII-6.

EXHIBIT VII-6

Obstacles to Project Management Systems Integration, Western Europe

- Subcontractors' reluctance to accept responsibility for a problem
- Subcontractors' "buying time" at other vendors' expense
- Third party advisers' interest in prolonging projects
- End users' reluctance to take difficult decisions

"Fear of blame" was identified as potentially one of the most destructive characteristics of a project. This arose when projects hit a mishap and the users, the prime contractors, and the subcontractors all started blaming one another rather than constructively searching for a solution to the problem. A related problem was subcontractors' attempts to "buy" time by falsely attributing the blame for problems to other vendors or the specification. The solution to this was felt to lie in making each subcontractor responsible for delivering a "working" version of their component, whether it be equipment or software.

Third-party advisers were also regarded as a potential obstacle by some vendors, since they were felt to profit more from the length of the project than from whether the project ultimately succeeded or failed. Accordingly they were felt to lack the commitment of either the users or the vendors in achieving a successful outcome. This had the effect that they sometimes worked to the "letter of the law" rather than "the spirit of the law". One approach to this issue could be for users to structure the remuneration packages of their advisers to alter this balance.

Case Studies

A

Case Study 1

1. Buying Process

Company A was in the middle of a period of major transition and the Financial Director was in the process of appointing a new IT Director. The company's information systems and IS capability were regarded as having a number of areas of shortfall.

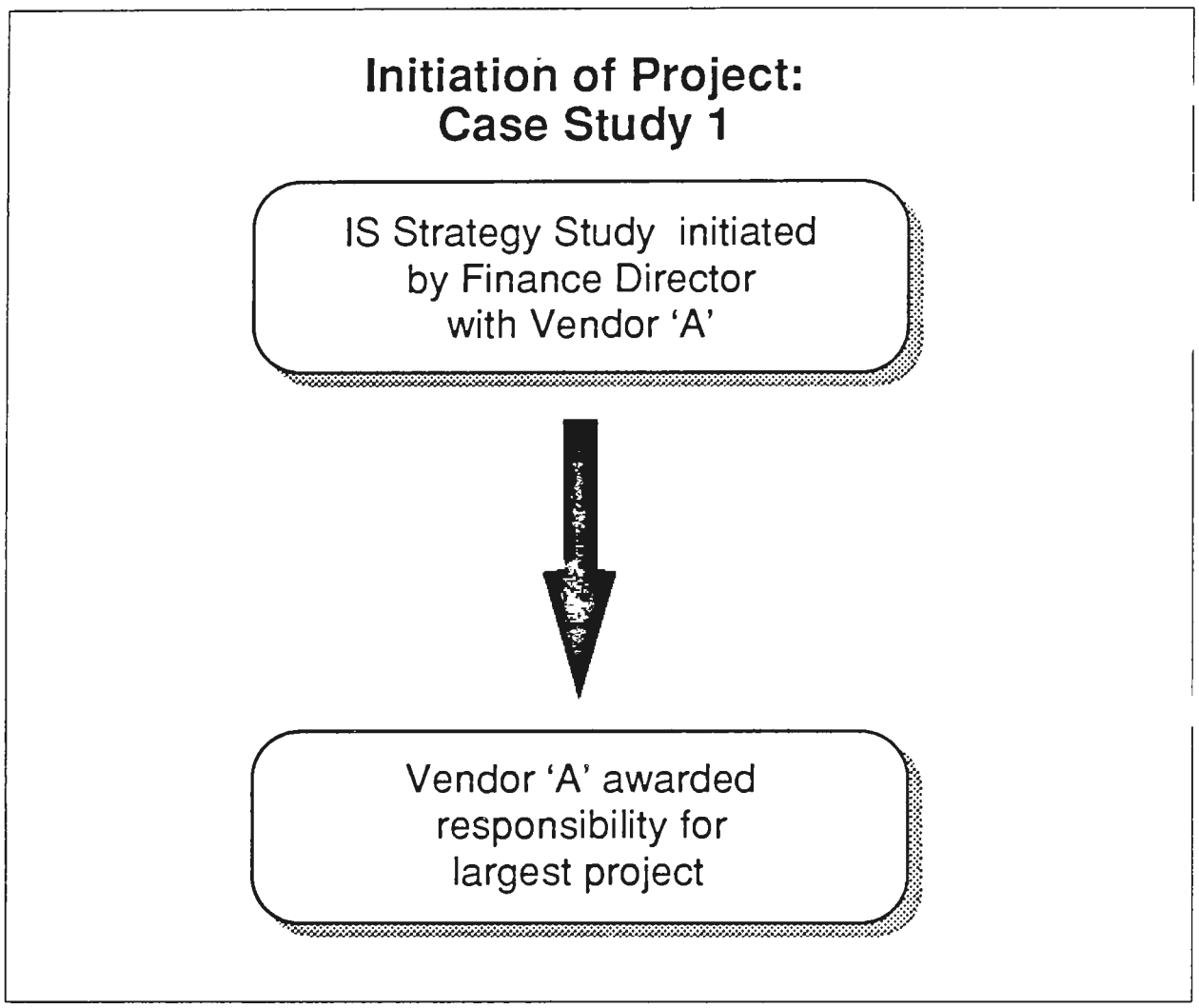
Accordingly, the Finance Director of Company A appointed Vendor B, shortly before the new IT Director took up his position:

- To assist in developing the organisation's IS strategy
- To supplement some of the resource shortfalls within the in-house IS department

As a result of the IS strategy study, a need for a major new application was identified, and Company A wished to use application software products as the basis of the business solution. Vendor B had part ownership of an appropriate application software product and was awarded the development contract.

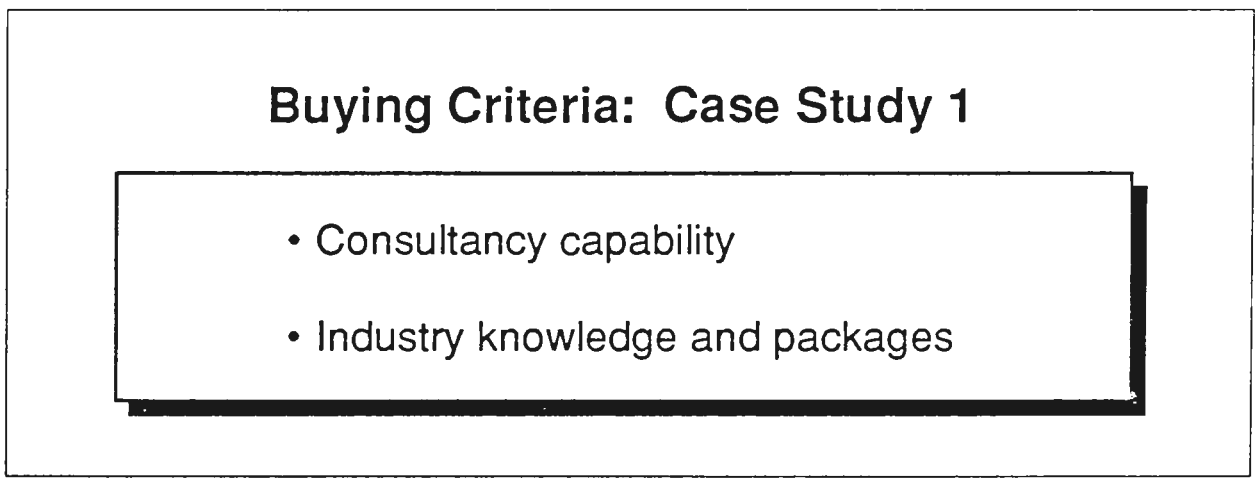
Undoubtedly the consultancy image of Vendor B was an important factor in the Finance Director's choice of vendor for initial assistance, and as suggested in Exhibit VIII-1, the undertaking of the IS strategy study and existing relationship between the two parties made a major contribution to the choice of vendor for the systems integration project.

EXHIBIT VIII-1



Both the Finance Director and the IT Director of Company A were also impressed by the sound industry knowledge of Vendor B, even though much of this expertise was resident in another country, and this was another major factor in the selection of Vendor B for the systems integration project, as indicated in Exhibit VIII-2.

EXHIBIT VIII-2



2. Project Management

Within Company A, it is the policy that the ultimate responsibility for the management of all development projects rests with the appropriate end user management, in this case a business unit director who chaired all major project reviews.

However, the role of the IS department remains of prime importance in terms of day-to-day management of vendors. The critical success factors for successful systems integration projects identified by Company A are listed in Exhibit VIII-3. In particular, the company recognised the importance of strong management of Vendor B. This was achieved by:

- Ensuring that the vendor's brief was tightly controlled and its involvement in the company strictly limited
- Ensuring that experienced personnel were used on the project and not large numbers of junior staff
- Keeping the pressure on the vendor to meet deadlines

In addition, the IS department recruited a senior project manager with experience of the applications being developed to monitor Vendor B on a day-to-day basis, checking both the feasibility and the progress of each stage of the project. While Vendor B managed all the project development staff—including personnel from Company A—the vendor was directly responsible to this senior project manager.

EXHIBIT VIII-3

Critical Success Factors: Case Study 1

- Vendor must be strongly managed
- Limit vendor's involvement
- Avoid junior personnel
- Monitor vendor constantly

3. Customer Satisfaction

The project is now nearing completion. So far all deadlines have been largely met and initial tests suggest that the system performance will meet the targets identified. Overall, Company A believes that Vendor B has done a good job.

The customer's specific likes and dislikes are listed in Exhibit VIII-4.

EXHIBIT VIII-4

User Likes and Dislikes: Case Study 1

Likes	Dislikes
Good project management	Need to maintain pressure on vendor
Kept project rolling in difficult circumstances	Need to constantly monitor vendor
Disciplined approach	
Industry knowledge	

Company A perceived the vendor's project manager to have been very capable. In particular, Company A was pleased that the project manager had been able to maintain the momentum of the project despite a number of periods when it had been difficult to persuade the end user to be decisive and provide much-needed input to the project. The vendor was also recognised as having a considerable amount of industry experience.

The customer's main criticism was the perceived need to maintain constant pressure on the vendor to ensure that deadlines were met, and, from time to time, the need to involve senior vendor management to achieve this aim. The customer perceived that unless this was done and unless the vendor was strongly managed, there was always the danger that the customer would have to get involved in the direct management of subcontractors.

Another criticism, which seems to be commonly made about the consultancies, is their ability to invent new projects or make additions to existing ones in a very plausible fashion. Therefore the customer needs to have a very clear idea of its requirements from the consultancy, and a clear end point to each project.

The one area where the vendor's performance was felt to be weak was change management, a key process in implementing new business processes. Here the customer perceived the vendor's team to be fairly inexperienced, with good understanding of the theory but lacking in practice.

4. Attitudes to Potential Vendors

The customer felt that the equipment vendors would have been totally inappropriate as systems integrators and that they still had a "box-shifting" mentality.

The IT director had considerable respect for the professional services vendors and clearly would have been happy to use them in this role. However, the Finance Director's perception that a consultancy was the most appropriate type of organisation for initial advice gave the consultancy Vendor B a significant advantage. Nonetheless, a professional services vendor could still have won the systems integration contract had such a vendor been able to demonstrate superior levels of appropriate industry expertise and superior supporting application software products to Vendor B.

B

Case Study 2

Exhibits VIII-5 and VIII-6 chart the course of a recent systems integration project. The user (Company C) operates in the service sector and is a major subsidiary of a multinational conglomerate operating in Western Europe. The vendor is referred to as Vendor D to protect the company's anonymity.

The project arose as a result of Vendor D being commissioned to undertake an audit of the effectiveness of information systems throughout the subsidiaries of the conglomerate.

Vendor D concluded in the course of this audit that the information systems within Company C had not kept pace with the development of the organisation, which in recent years had been showing strong growth. Since Company C is a service business, its information systems are required to play an important role both in assisting the management of the business and in supporting the delivery of its services to clients. In this sector, information systems are an important determinant of the quality and range of customer service which can be provided. Accordingly, it was agreed that a major redevelopment of Company C's information systems was required and that Vendor D would assist in this process.

Vendor D then produced a business study to be used as the basis for an Invitation to Tender, to be sent to a number of major vendors. The scope of the redevelopment—a multi-million-dollar bespoke development supporting a considerable end-user population—was clearly seen to be beyond the capabilities of the medium-sized in-house information systems department.

At this stage, Vendor D requested that it too be allowed to tender for the project. Bids were received from a number of major systems integration vendors, though one vendor declined to tender on the basis that the

specification contained within the invitation to tender was too vague to permit a fixed-price bid to be submitted. Other vendors submitted fixed-price bids as requested, in some instances making allowances for the vagaries of the invitation to tender. However, the lowest bid received came from Vendor D, which duly won the contract to develop the system.

Vendor D now completed its formal functional specification. This was done not within the constraints of the business study which had included only limited functionality, but by thorough interviewing of end users. The result was a "wish list" which went far beyond the scope of the original business case and substantially increased the functionality required.

Vendor D reasoned that this additional functionality was not referred to within the original business case, and so the cost of providing it was additional to the fixed price already negotiated. The difference was considerable.

However, to reduce the overall cost to Company C, Vendor D proposed that Company C purchase the major equipment items directly from the supplier and take advantage of the large discount available. Unfortunately, this would mean that Vendor D would no longer be in a position to guarantee the response times specified in the initial contract, since it would no longer be responsible for the equipment.

Vendor D also explained that it would be much cheaper if it developed the software off-site. The invitation to tender had stressed the importance of on-site development to ensure high levels of contact between vendor and client personnel. Company C was now beginning to have misgivings concerning the depth of Vendor D's expertise in the technology being used for software development, and to worry about technology transfer to in-house personnel.

Company C was also starting to realise that it, not Vendor D, was responsible for managing the change-over from the existing information systems to the new ones.

At this point, with the project costs escalating and the likelihood of successful implementation diminishing, Company C cancelled the project.

EXHIBIT VIII-5

Case Study—Initiation of Project

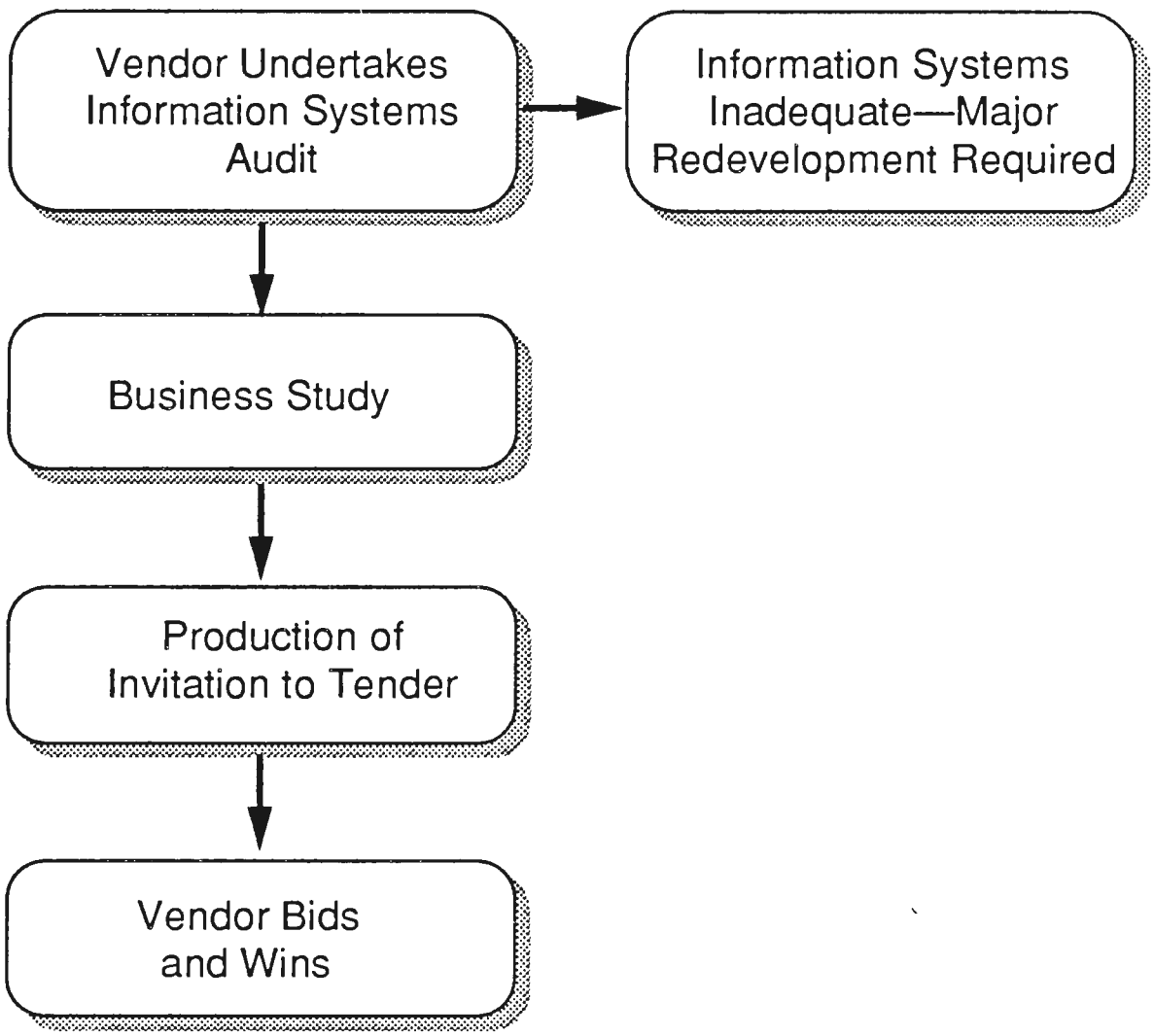


EXHIBIT VIII-6

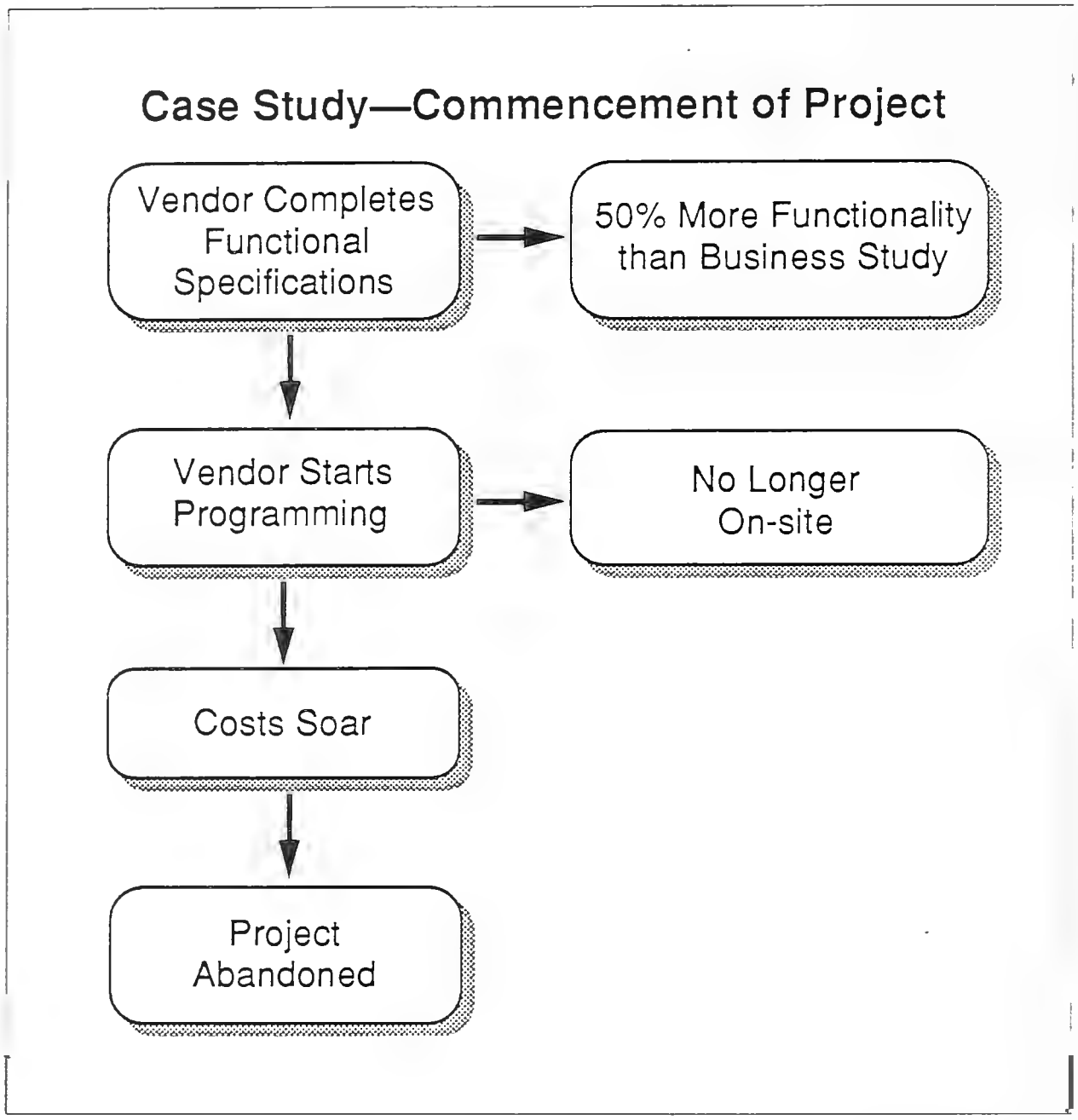
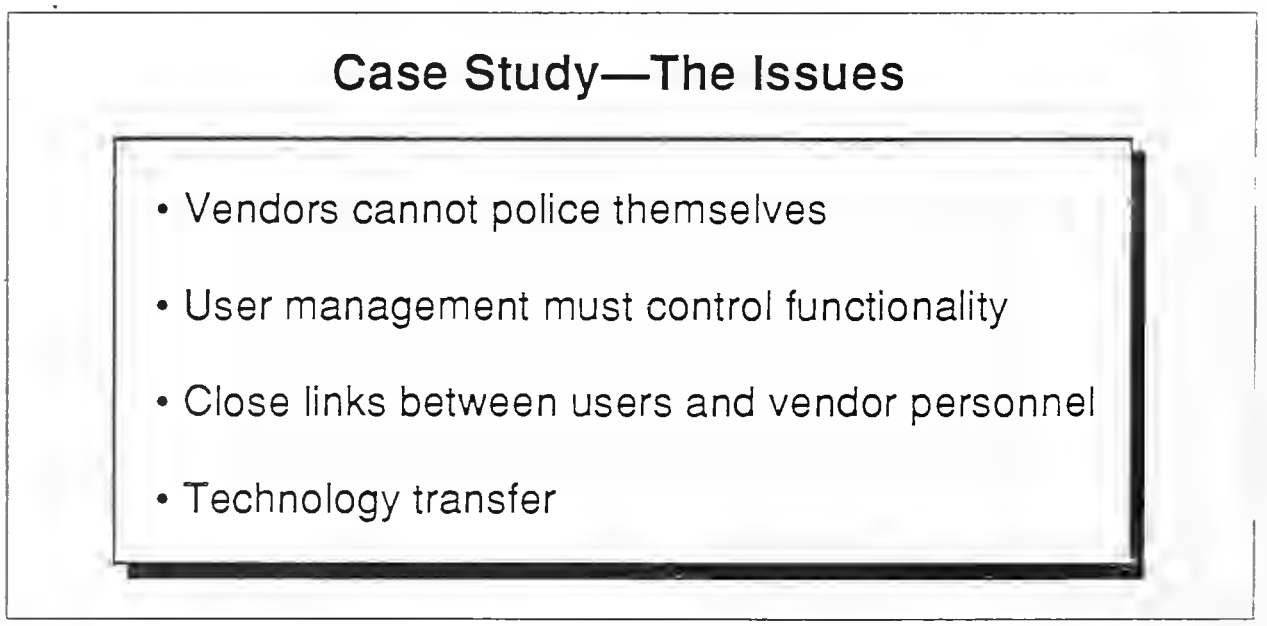


Exhibit VIII-7 lists some of the major issues which arise from this case study.

EXHIBIT VIII-7

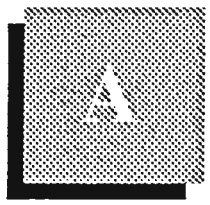


To the client, the major issue was not the vendor's bidding against its own invitation to tender, or even the rapid escalation of costs on what was supposedly a fixed-price contract, but the vendor's failure to point out to the client that the client did not have the capability to manage the supplier.

In particular, it is clearly essential in this case that the user management decide the appropriate level of functionality. Leaving this decision to the vendor is clearly unsatisfactory. Also it is not good practice for development to take place without close involvement of user staff. This is needed both to regularly review the functionality being implemented, and to monitor progress against the budget and schedule.

In this case, the user also felt that it was important to include in-house information systems personnel within the development project team, to ensure that adequate knowledge of the system was built up within the client's organisation. A more satisfactory arrangement for implementation and change-over to the new system, with the vendor taking more responsibility, is needed to bring the project to a successful conclusion.

Appendix



Appendix: Systems Integration User Questionnaire

Systems Integration User Questionnaire

1. How did this project arise?

2. Who was involved in initiating the project?

3. What role was played by the information systems department?

4. What role was played by user top management?

5. Why did you decide to use an external supplier for this project?

6. Who did you select as prime contractor?

Why?

7. Would you please rate the suitability of each of the following types of vendors as prime contractors for major projects?

	Not At All				Very
Major Equipment Vendor	1	2	3	4	5
Middle-Ranking Equipment Vendor	1	2	3	4	5
Major Professional Services Vendor	1	2	3	4	5
Software Products Vendor	1	2	3	4	5
Management Consultancy	1	2	3	4	5
Other _____	1	2	3	4	5

8. How satisfied are you with the work so far on this project?

Not At All				Very
1	2	3	4	5

Which aspects of the service are you most pleased with?

_____

_____

_____

Which aspects of the service are you least pleased with?

_____

_____

_____

9. Who within your organisation was responsible for the management of the vendors?

_____

_____

_____

10. How do you see the role of the in-house IS department changing over the next few years?

_____

_____

_____

11. How do you see your use of external vendors changing over the next few years?

_____

_____

_____

Thank you very much for your assistance.