

# Strategic Planning of Information Communications Systems (SPICS)

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## Introduction

Over the past 20 years, the evolution of computing information systems has changed the role of computers in organizations. Computer systems have developed from those supporting operational procedures to their use in supporting strategic business objectives. This change is exemplified by the way in which organizations such as banks and retail chain stores use computing systems to support business activities, to create new business opportunities and to provide competitive edge.

At the same time, there has been significant technological development in communication networks. Communication systems for voice, data, text and image, whether integrated or separate, are becoming increasingly important in the strategic application of computer systems. This paper discusses the need for a strategic plan for information systems in general and then considers some aspects of strategic planning of information communications systems (SPICS) in particular.

## The need for strategic systems planning

All products and services require information processing in order to bring them to the marketplace. Information that needs to be processed will concern production and marketing and will be required by the underlying support and management functions that are involved in the day-to-day operation of a business. Therefore, information systems play a concomitant role in realizing the goals of any organization which manufactures a product or provides a service to its customers. Indeed, information systems (ISs) can now be regarded as a fundamental asset to an organization, and information can be looked upon as a strategic resource which supports the decision-making process.

Consequently, the perspective of computing information systems is beginning to move its focus away from cost-reduction objectives and towards business effectiveness goals. This means that the benefits of installing computing information systems should be evaluated in terms of the

value they bring to achieving strategic business objectives as well as the operational cost reduction with which they have been traditionally associated.

The key issue in strategy formulation is an ongoing review of the goals and objectives of the organization. A constant theme should be an evaluation of how the use of technology can redefine the business activities in which the organization is engaged in order to gain a competitive edge. It is important, therefore, to recognize the link between business objectives and IS planning. Figure 1 shows the link between key business objectives and key technologies for ISs.

Information, then, is a critical resource in the implementation of any business strategy. As business objectives become more innovative, more complex technology is required to support their information processing needs. The increasing technological content of ISs (as shown in Figure 1) reinforces the need to design ISs which support strategic business objectives.

That the IS strategy should support the business strategy has been highlighted in a study carried out by Kearney Management Consultants.<sup>1</sup> This study considered the allocation of financial resources and the degree to which business objectives had been met in a survey of 235 companies. The general findings indicated that in those organizations that failed to align their IS strategy with that of the business, this failure was responsible for an average wastage of 20 per cent of the investment in IT.

Findings such as these serve to emphasize the need for organizations to plan strategically in order to realize the full potential of investment in IT. A response to the need to plan strategically will provide an organization with the opportunity to react effectively to market forces and to changes in technology.

## The process of strategic information systems planning (SISP)

Approaches to strategic planning were first formulated in the 1960s and strategic planning *per se*

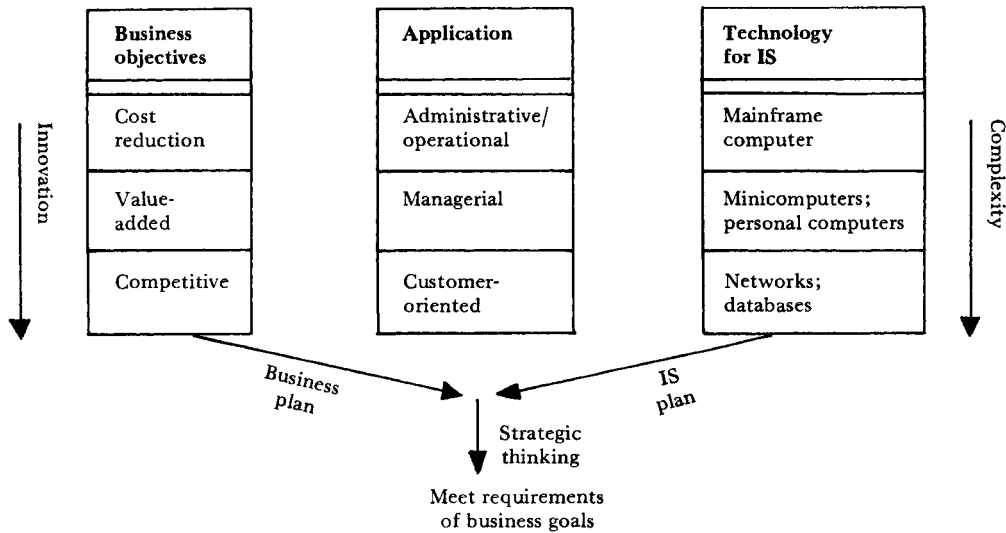


Figure 1. The link between key business objectives and key technologies

has been described by Anthony<sup>2</sup> as the process of choosing long-term objectives and deciding how to achieve them. Although strategic planning of ISs is a relatively new concept it is, essentially, a modification of this process in response to the increasingly complex business and technological environment. In this context, then, 'planning' means exercising influence over future events, and 'strategy' — a term borrowed from military parlance — means a high-level activity whose importance influences the overall direction of the organization. An IS strategy has been defined by Tricker<sup>3</sup> as follows:

Information systems planning is a component of the overall strategic thinking in an organisation, by which top management determines their longer term needs for investment in computing and communications, the management of the data resource and the development of organisational structure and management style, in line with the mission of the enterprise and in the light of available resources and recognising the strategic issues and opportunities facing the enterprise.

Consequently, an IS strategy is seen as more than just a plan for computing and communications equipment in that it is concerned with the long-term development of ISs which support the overall direction of the organization and its activities in the marketplace.

Planning strategically should also provide a framework for tactical planning: i.e., defining the goals within which planning can direct the practical implementation of ISs. In order to provide this framework, the strategic plan will be influenced by

a number of key factors. These are illustrated in Figure 2 and suggest that the resulting IS plan should embrace the key components of the IS function in an organization. These components can be conveniently categorized as data processing (DP), telecommunications (TC) and office automation (OA) although, in practice, there is considerable overlap between them as a result of the convergence of the underlying technologies, due mainly to developments in communications systems.

The confluence of these separate components (as depicted in Figure 2) presents the IS plan as one encompassing an 'integrated information system' function, which relies on communications technology to underpin its components. Therefore, the planning of communications systems should be regarded as an integral part of strategic information systems planning (SISP).

### Towards an information communications strategy

Whatever approach is adopted for strategic information systems planning, communications systems planning will be an integral part of the process. Communications systems provide essential links between users of information and sources of information. Organizations need to recognize and develop the opportunities that communications can offer in terms of effectiveness, efficiency, productivity and growth in order to maximize their investment in IT. In order to do so, however, organizations need to develop a strategic plan for communications systems.

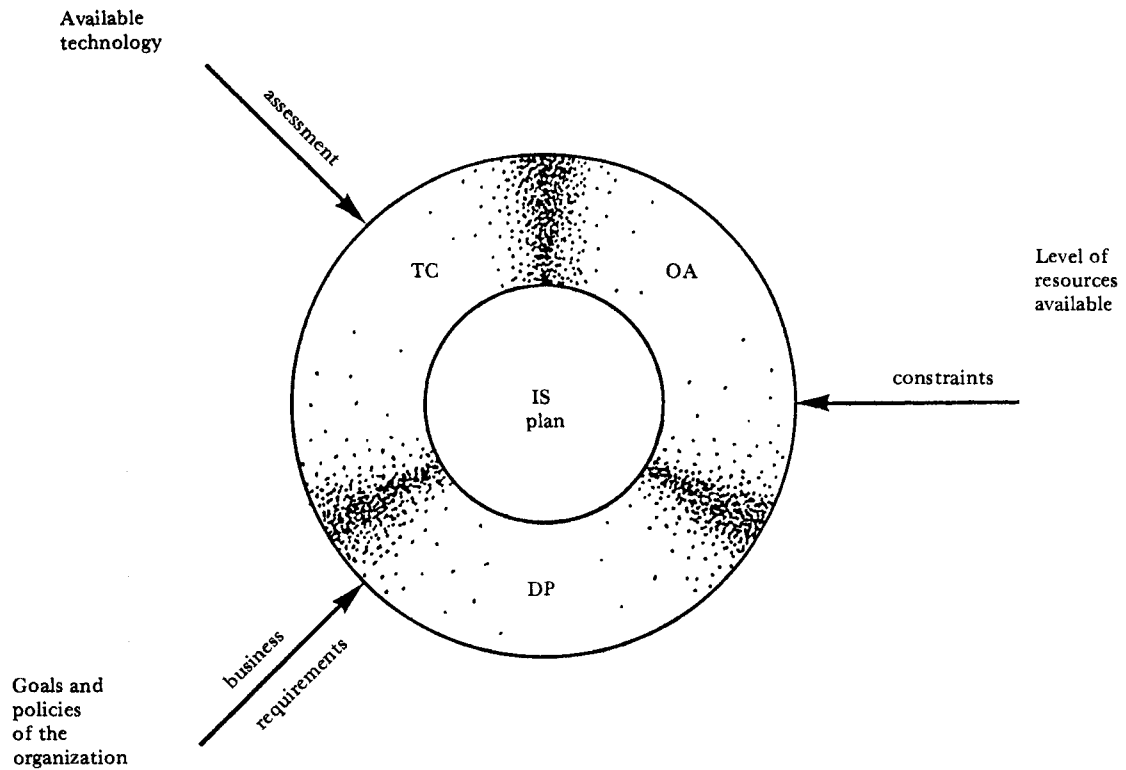


Figure 2. Strategic plan – key factors

In developing a strategic plan it should be recognized that communications systems form the basis of the IS infrastructure. A communications strategy can never be a complete statement of the communications network infrastructure of an organization because there will always be a degree of uncertainty in future products, services, regulations and standards. However, the strategy will act as a signpost pointing towards the development of such a communications network and it should also set out milestones for this development. Table 1 indicates some of the more important reasons why a strategy for communications can provide a framework for planning.

### Objectives for strategic communications systems planning

The overall objective for strategic planning of information communications systems (SPICS) is to ensure that planning is interpreted in terms of business needs surrounding the origin and destination of all forms of information. This implies a need to define a corporate communications network which represents a strategic goal

for an organization. Such a network can be described as an open, digital, integrated corporate information communications system which meets the needs of business units within the organization. Such a network is not clearly defined today and, indeed, fully integrated public or private networks are still some years away. Nevertheless, within a strategic timescale of five to ten years such a goal suggests a rational developmental path. Within this timescale, networks will emerge both in the private and public domain that provide levels of integration of voice and data and, to some extent, text and image.

Figure 3 shows how the important objectives of SPICS can be represented and interrelated to meet the requirements of a corporate communications network.

### Methodologies for strategic planning

In practice, the primary objective of aligning the communications requirements with the business requirements of an organization can prove to be a difficult task. One of the main reasons for this is the depth of analysis that is required. However,

A strategy for communications should:

- Respond to technical developments and exploit new products and services.
- Deal with the proliferation of terminal devices.
- Respond to further de-regulation of the TC environment.
- Respond to changing user needs at the level of the business unit.
- Respond to moves to develop network standards and communication protocols.
- Facilitate the evolution of distributed data processing systems.
- Help to summarize current systems.
- Identify problems in communicating information.
- Identify projected demands for communications traffic volume.
- Identify opportunities for cost reduction and rationalization of separate networks.

Table 1. Requirements for a communications strategy

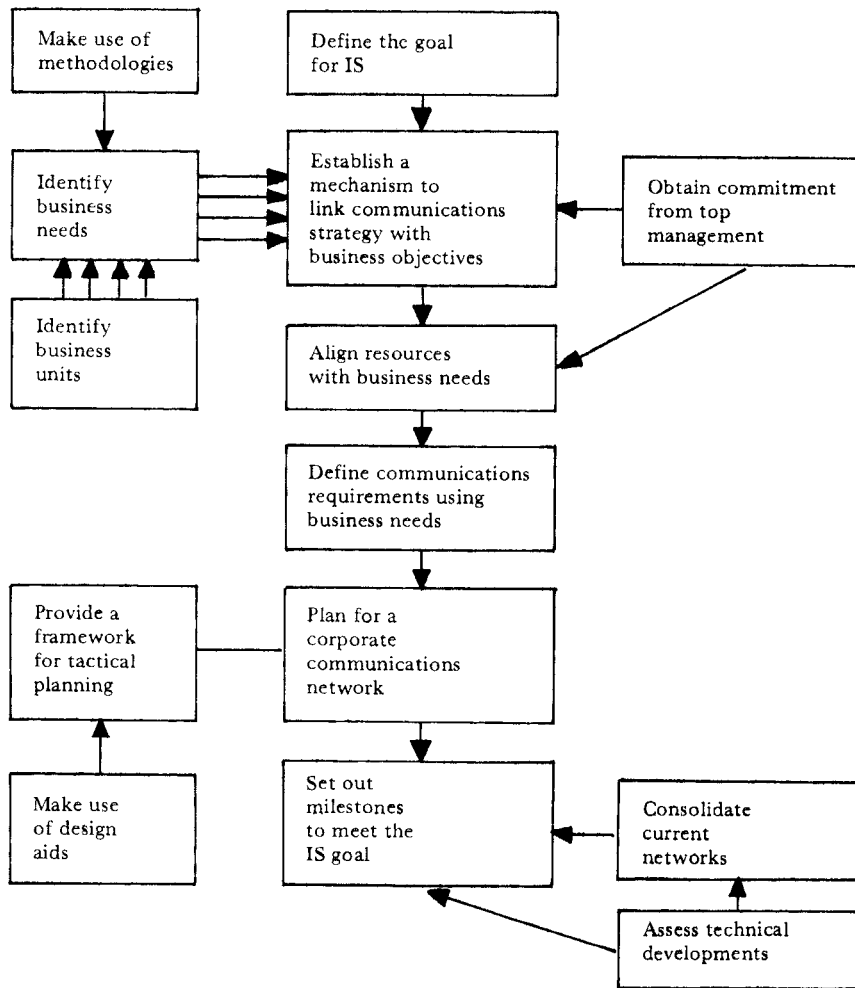


Figure 3. The key objectives of a communications strategy

there are a number of methodologies for SISP that include a business requirement definition stage that could be used in the SPICS process.

Perhaps the best known methodology for SISP is IBM's Business Systems Planning (BSP). This includes a structured approach to assist in establishing ISs to meet requirements by identifying the data and systems needs. The methodology develops recommendations and an 'action plan'. BSP was originally developed in 1970 and has been subsequently modified and successfully employed since then.<sup>4</sup> BSP can reasonably claim to be the basis from which many of today's methodologies for SISP have evolved. Two other well-established methodologies are Critical Success Factors<sup>5</sup> and the Alloway User Needs Survey.<sup>6</sup> Both of these methodologies focus on establishing the business needs and information requirements of an organization.

The benefits of implementing a methodology have been indicated by a survey of US companies.<sup>4</sup> This survey reviewed over 100 companies implementing BSP or some other form of SISP. It reported that the respondents benefited from such a planning exercise by gaining a better working relationship with their end users and with top management in the organization. In particular, the survey reported that BSP helped organizations to obtain top management approval for key developments such as databases and distributed data processing.

These methodologies reinforce the view that the success of any strategic information systems planning exercise is dependent on obtaining approval and support from top management. A thorough analysis of the information needs of business units, coupled with the top level commitment to IS development, will enable an organization to establish a cohesive link between business objectives and IS plans. This will ensure that the communications strategy will be driven by business needs and the desire to exploit opportunities to improve business performance.

The interplay of these key objectives of SPICS (as set out in Figure 3) can be regarded as an indication of the key elements of a communications strategy. This conceptual framework for planning recognizes the need to specify objectives. In this way communications requirements can be translated into plans for the implementation of a corporate communications network.

It is clear that strategic planning should provide a framework for implementation at the tactical level. The design of communications networks for large companies can be a highly complex process and it is often advisable to employ design aids to assist in this process. These aids can take the form of modelling techniques or software tools.

An example of a modelling technique is IBM's Systems Planning Grid.<sup>7</sup> This model, known as SPG, has proved useful in building a blueprint for the implementation of an IS and can be used as a complementary tool to IBM's BSP.

Software tools are available to assist in the development of network design strategies. Konsynski and Bracker<sup>8</sup> have examined several software packages which are available mainly in the US. Two of the more well-known systems available in the UK are micro-NAP supplied by Telecommunications Management Ltd, and PANDA supplied by PA Computers and Telecommunications. Both of these software packages provide a range of decision support facilities for network design.

### Organizational and management issues

The previous section highlighted the importance of obtaining the commitment of top management to the development of the IS in an organization. A number of recent surveys<sup>9</sup> have suggested that a lack of commitment at this level can lead to a failure to exploit IT successfully and a loss of opportunity to improve company performance. The reasons for this lack of commitment may stem from the way in which the IS function is managed and the level of awareness of IT in the organization.

The management of IT varies from one organization to another, but it is usual to find that OA, DP and TC are managed separately.<sup>10</sup> This type of management structure may only converge at board level and can be inappropriate for planning a corporate communications network. In order to co-ordinate network development effectively, it may be necessary to review the management of the IS function and create an information services unit to ensure the harmonious management of OA, DP and TC services. This unit should report directly to the board and should be under the control of a director of the company. The emergence of this integrated style of management is more mature in the US than in Europe. There are, however, indications that the trend is becoming more evident in organizations in the UK. Today, there are probably about 30 to 40 large companies in the UK with an IT executive on the board, using titles such as Director of IT, Computer Services Director, or Management Services Director. With such representation at board level, planning of ISs can be undertaken at the highest level and authority for the IT strategy can be handed down from top management.

The creation of an information services unit should make it easier to obtain top management approval of recommendations for network development. Once these have been agreed it should be the task of the information services unit to

implement them. This will mean that the unit will have to initiate procedures and mechanisms which seek to identify the requirements of business units in the organization and develop application portfolios. In this way, top-down guidance and control can be co-ordinated with the requirements of business units. Thus management effort can be steered towards a corporate communications strategy which supports the needs of individual business units and those of the organization as a whole.

It will also be the responsibility of the information services unit to consider the advisability of employing consultants to assist in the development of the IS strategy. There are a number of consultants in the UK who offer such a service. A recent survey of 26 of them analysed the variability of their services.<sup>11</sup>

For very large organizations with complex communications networks, it may be worthwhile to consider the comparative costs of enlisting the services of a specialist organization to manage and operate these systems. Although the *Computer Users' Year Book* lists over 200 facilities management companies, only a few of these have the experience to manage and operate large-scale DP facilities and communications networks.

Many of these organizational changes and management initiatives will not succeed unless there is a sufficient level of awareness of IT in an organization. This awareness must be evident from board level downwards if the development of ISs is to succeed. A good example of a large organization that has recently initiated an IT awareness programme is that of ESSO (UK). This company is heavily committed to information systems and has initiated an awareness programme to appraise 2,500 managers and administrative staff of the opportunities of using IT in the business.<sup>12</sup> The programme was initiated by top management, and is also used as a vehicle to explain ESSO's IT strategy to all personnel who pass through the scheme.

This section has raised a number of issues which relate to the organization and management of IT and the way in which they can influence the successful development of a communications strategy. They are summarized in Table 2.

### Practical problems in formulating a strategy

Information systems can involve a diversity of computer and communications technology. The wide scope of these systems reinforces the need for effective strategic planning, but can lead to difficulties in developing such a plan. Some of these difficulties were raised in a study by Butler

Cox and Partners, in which managers from several major organizations were interviewed about the problems of strategic systems planning.<sup>13</sup> These problems, as well as others indicated by the research for this paper, are essentially self-explanatory. They are, therefore, presented in summary form in Table 3.

Earlier sections of this paper have discussed some of the key principles of strategic information systems planning which, if applied effectively, can begin to overcome most of these problems. The failure to produce a strategy for IS development can make the process of formulating a communications systems strategy virtually impossible. Therefore it is vital that an organization considers the key principles of strategic systems planning in order to pre-empt problems that might otherwise arise. Effective implementation of these principles can provide an opportunity for developing guidelines for SPICS and bring benefits to the organization via the effective utilization of communications systems.

### Conclusions

The principal benefit of planning strategically for ISs is that an organization is better able to exercise a positive influence over subsequent events. This means that the organization is in a favourable position to respond to technological and regulatory changes as well as to anticipate demands from users. In practice, it is not possible to anticipate all eventualities, but proactive planning will enable an organization to control resources and channel funds to those activities that achieve strategic goals.

This paper has argued that achievement of strategic business goals is highly influenced by effective planning of ISs and that SPICS is an integral part of this planning process. Several key components of SPICS have been highlighted and a broad framework for them has been presented. A more detailed framework for SPICS, which will focus on communications requirements for a corporate communications network, will be presented in a later paper.

### Acknowledgments

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The information services function should:

- Co-ordinate management of separate IS functions.
- Identify information processing requirements at business unit level.
- Obtain board approval of recommendations for network development.
- Consider promoting an IT awareness programme throughout the company.
- Evaluate available methodologies which aid the strategic planning process.
- Initiate the creation of an information centre.

Top management, in conjunction with the management services function, should:

- Consider using a consultancy to assist in the development of a strategic plan for IS and/or assist in the network design process.
- Consider using a specialist company to manage and operate corporate communications networks.

*Table 2. Summary of organizational and management issues*

Problems encountered in the strategic planning process for IS development:

- Lack of a management/control structure for the various aspects of IS development in an organization.
- Poor reputation of the IS function.
- Lack of commitment (and therefore of resources) from top management.
- Yesterday's systems do not necessarily provide adequate guidelines for tomorrow's planning.
- Lack of an overall corporate business strategy.
- Level of detail required in assessing business requirements.
- Difficulty in applying conventional cost-justification techniques to emerging opportunities offered by new technology.

*Table 3. Problems encountered in the strategic planning process*

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### Biographical notes

Dave Etheridge is a senior lecturer in the Department of Computing at the City of Birmingham Polytechnic. His lecturing activities focus mainly on the business applications of computer-based information systems. He graduated from Birmingham University with a PhD in Chemistry in 1972 and, subsequently, spent several years teaching mathematics and computing in secondary schools in Birmingham. In 1972 he joined the Computing Department at the City of Birmingham Polytechnic as the Butler Cox Foundation Research Fellow. For the next three years he worked on a number of commercial projects directed by Butler

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