Introduction

This book is about strategic direction of Internet strategies and the management of strategic change to emerging technologies, in general, and Web services, in particular. To deal with this complex topic we have structured this book into three parts containing six main areas. The first section looks at a comprehensive framework of the emerging technologies process upon which this book is structured. This part also includes chapters on Application Service Provision (ASP), Web services, Concerns, and Recommendations. These chapters clarify the various issues relating to this new phenomenon in Internet strategy.

Section II includes chapters on case studies from different parts of the world showing how Web services are being used to benefit businesses. They show leadership in the Internet strategic direction and decision-making and on culture and values as these are forces that determine how Internet strategy can be managed within an organization.

Section III considers how a situation analysis for the future of Web services business model might be carried out. The emphasis is on understanding the future of new technology strategies and the continuously changing business environment and technological resources. The functional subjects that relate to the management of organizational technological resources and that underpin a study of Internet strategy are examined.

Following this Introduction is a **Technology Review** section that presents the central theme of the historical shifts from a mainframe to a client server, and now to Web services strategy. An observer of the client-server technology would have found the task of accurately discerning the path of that tech-

nology during the last decade of the 20th century very difficult. Similarly, the reality of the Web services technology has not burst on the business scene full-blown, but has evolved over some 5 to 10 years from the ASP business model. Moreover, statistical evidence to define this emerging social and economic reality has lagged behind the writers and commentators who have identified the important features of this significant change.

Chapter I contains **ASP** and discusses the rise and fall of this phenomenon in a relatively short period. This is followed by a similar discussion for the **Web Services** business model.

This will then be followed by **Concerns** which discusses the engine that is driving the Web services industry. Just as the steam, electric, and gasoline engines became the driving forces behind the Industrial Revolution of the early 1900s, so the Internet and high-speed telecommunications infrastructure are making Web services a reality today. A resulting "information processing" industry is the business sector which is providing the impetus for this revolution, with its increasingly improving array of hardware, software, and information products and services. These technologies, in turn, are having and will continue to have profound impacts on business management, competitive advantage, and productivity.

Having set the stage by describing the changing business environment for organizations today, **Recommendations** then moves to the need for each enterprise to fundamentally think its corporate strategy. The situation can be compared to the railroad industry in the late 1800s. It had to change its mindset from one of buying up large land tracts and laying railroad ties to one of moving goods and people from one place to another, so companies today must reconsider their traditional lines of business as they begin operating in the 21st century. For Web services vendors, it is not just a question of selling a product, but of selling a solution to a customer's problem. This is where the lines between delivering the services and traditional versus emerging markets are blurring and changing.

The qualitative dimension is as important in the Web services industry as the quantitative dimension. Quality control must be built into the front end of the service delivery cycle, not viewed as a last-minute check to be done just before contracts are reviewed. Here is where the human factor is introduced into our discussion. In essence, the intelligent enterprise is a distributed network of human talent. Within the individual enterprise, outmoded human resources management philosophies must be replaced by modern approaches that maximize the brain contribution to the products and services, not just the brawn contribution. The emphasis of Web services is on working smarter, not

just harder. Web services strategy requires businesses to rethink not just the elements of their economic milieu, but also their political and social contexts. This does not suggest some kind of radical shift away from the profit motive to the quality-of-life motive. However, we do endeavor to point out that this strategy presents both risks and opportunities for every business in the 21st century. Much of this discussion implicitly recognizes that doing business in an intelligent enterprise forces suppliers, producers, and consumers into far closer proximity with one another than is the case in an industrial economy.

Before the concluding statements, we invite the reader to look at more forms of Web service applications involving implementation issues from active researchers in both Europe and Asia. Haroun Alryalat and his colleagues at Brunel University, London, report on a strategy involving the Stock Exchange. Mayumi Hori and Masakazu Ohashi both at Hakuoh University, Japan, and Paulus Insap Santosa at the National University of Singapore, report on some respectable projects taking place in Asia involving Web services in the distribution of technology to that part of the world. Souad Mohammed clarifies several hidden costs relating to the implementation of information systems in the 21st century. Matthew Guah and Wendy Currie take the reader through an implementation of Web services in the UK National Health Service, summarizing parts I and III within a live project.

Finally we examine the problem of redefining success in the business environment of the 21st century in **Future Trends**. Central to this discussion is the idea of adding value at each stage of the information systems life cycle. ASP, as a form of technological accomplishment, had little meaning for businesses and other organizations. Unless Web services can be linked to business innovation, the challenge for business professionals is to find ways to improve business processes by using Web services.

This book has been written to take the reader into the 21st-century IS strategy paradigm. Utmost attention is paid to integrate the current business and management ideas with the deployment of Web services as one of the new information technologies. Yet, the book is rooted in the concepts that have emerged over the decades of development of the IS discipline. Web services in terms of its products and services has continued to evolve over its short history. As these changes have progressed, the landscape of the Internet technology has become crowded with new services, technologies, products, and transmission media. As the Internet has continued to evolve with the discovery of new technologies and the integration of "older" technologies such as mobile computers and broadband communications, new opportunities and markets within this area of business have opened up. Web services, as a form of electronic

commerce, can be the sharing of business information, maintaining business relationships, and conducting business transactions by means of computer tele-communications networks. Similar to the development of the Internet's World Wide Web, Web services has been changing both the ways organizations deal with one another and the way internal corporate processes are carried out with the assistance of telecommunication infrastructures. The capabilities offered by Web services present an opportunity to redesign the business processes of intelligent enterprises in order to reach new levels of performance.

The researchers whose work underpins this book did not operate in isolation to the work of others in the IS and related fields. All through this book, selected examples of the existing literature will be discussed under the various headings of theory. Many examples and cases throughout the text have been drawn from international business areas. The purpose is to describe some interesting work, which was forerunner and inspiration to our research, while maintaining the role of theory and case studies within the interpretive tradition of IS research. The epistemology can be viewed as broadly interpretive, seeing the pursuit of meaning and understanding as subjective, and knowledge as a social construction.

Technology Review

Change usually takes a long time, and the technology that transformed enterprises and the economy is no exception. Why should anyone be overwrought about the slow growth of Web services? It took mainframe computers a decade or two to become central to most firms. In fact, when IBM marketed its first mainframe computer, it estimated that 20 of these machines would fulfill the world's need for computation! Minicomputers moved into companies and schools a little faster than mainframes, but they were also considerably less expensive. Even the ubiquitous PC took 5 to 10 years to become an important part of work life. The road travelled by these pioneers was rocky. Actual accomplishments seldom matched those initially envisioned. There were several reasons for this shortfall—a general lack of computer literacy among users, a general lack of business literacy, and an ignorance of the management role by information specialists, computing equipment that was both expensive and limited by today's standards, and so on (McLeord, 1993). Some IS reviewers believe that one error in particular characterized the early systems above all others: they were too ambitious. Firms believed that they could build

giant information systems to support all managers. With the benefits of hindsight, one can now describe systems designed then as being snowballed or the task attempted being unmanageable. However, some firms stuck it out, invested more resources, and eventually developed workable systems—although more modest in size than originally projected—while other firms decided to scrap the entire management information system idea and retreated to data processing.

When the first computers were applied to business problems in the 1950s, there were so few users that they had almost total influence over their systems. That situation changed during the 1960s and 1970s as the number of users grew. It then became necessary to consider the combined needs of all users so that the systems could function in an efficient manner. During the 1980s, the situation became even tighter when a new player entered the picture—the enterprise (McLeord, 1993). A stage of organization/staff reliance on information systems started in the mid-1980s with demands that information systems increased operational efficiencies and managerial effectiveness. On the back of such evolution, strategic information systems gained importance as systems expected to help organizations compete. In the 21st century, information systems are being developed in an enterprise environment (see Figure 4.1).

21st Century: The Age of Information Society

Beniger (1986) puts forth a seemingly influential argument that the origin of the information society may be found in the advancing industrialization of the late nineteenth century. As industrial plants increased their processing speed, the need for increased resources to control manufacturing and transportation resulted in a feedback loop wherein enterprises had to process information ever faster. The demand for sophisticated information processing equipment resulted in the development of computers. While the subsequent new technologies nurtured the development of an information society, the continuing cycles of demand pull and supply push account for the progress in the field.

The Internet is simply a global network of networks that has become a necessity in the way people in enterprises access information, communicate with others, and do business in the 21st century. The Internet contains a distributed software facility that organizes the information on it into a network of interrelated electronic documents called the World Wide Web (WWW). WWW has

changed the face of computing, both individual and enterprises resulting in the expansion and development of electronic commerce. The Internet is regarded in the 21st century as much more than a means of communication. It is also a source of information and entertainment that facilitates the development of electronic commerce. The initial stage of e-commerce ensured that all large enterprises have computer-to-computer connections with their suppliers via electronic data interchange (EDI), thereby facilitating orders completed by the click of a mouse. Unfortunately, most small companies still cannot afford such direct connections. Web services enable low-cost access to this service and having a standard PC is usually sufficient to enter this marketplace.

The Internet has been a subject of enormous hype and speculation since its explosion in late 1980s. However, Web services can most certainly be said to be responsible for the latest debate surrounding its usage for purposes far beyond its original scope. By the late 1990s, ASP-like business models were applied by a proliferation of small businesses in the Western world, thereby creating what sometimes seemed a cult status with people from many parts of society talking about a "new breed of entrepreneurs."

Beyond the problems that may arise from the systematization of information, we suggest that there is within the discipline of Web services a model of infrastructure and context which is foundational but inadequate. This is the code model of Web services, deriving from the work of Sleeper and Robins taking a pragmatic look at the emerging Web services market (Porter & Millar, 1985). We will draw on a number of theoretical sources in search for an improved foundation. A link is also made to the environment reality theory of perception proposed by Little (1999).

Internet Strategy

Our examination of Internet strategy begins with a look at the understanding of strategy in business and it's purpose to achieving business goals. Nearly all written work in the area of strategy are based on the classic book by Alfred Chandler (1962), *Strategy and Structure*. The definition used in that book is:

The determination of the basic long-term goals of an enterprise and the adoption of courses of action and the allocation of resources necessary for carrying out these goals. (p. 13)

Chandler considered strategy to be about setting general goals and deciding on the broad types of action and use of resources needed to achieve them. These involved the overall size and scope of the organization concerned, the mix of products or services being provided, and the organization's core values. Such approach to strategy implies that strategies are the intended outcomes of systematic, rational decisions by top managers about clearly defined problems. The resulting strategic change or innovation would appear as a linear, sequential process in which strategic analysis and choice would follow unproblematic trend by strategy implementation.

It has been recorded that Chandler's views of strategy goes without its critiques (Mintzberg, 1979, 1990; Quinn & Hilmer, 1994; Whittington, 1993). Some of these authors have contrasted the idea of strategy as a deliberate, consciously intended plan with strategy as an emergent property, evolving incrementally and piecemeal out of the ideas and actions of people at different levels of the organization. Such strategies may be articulated consciously by top management in most successful organizations. Others consider such emergent, adaptive, or incremental view of strategy assumes that the internal and external environments of organizations are inherently ambiguous, unstable, and unpredictable. Others believe strategy does not assume that managers in organizations can only influence events at the margin, simply adapting pragmatically and opportunistically to continually changing circumstances. These authors consider the essence of a strategy and its crucial importance in any process of change or innovation is that it embodies the deliberate and conscious articulation of a direction. Successful strategies require both an overall sense of direction and a continuous adaptation to change.

For a deeper understanding of strategies and strategy development, it is imperative to recognize their strong links with organization culture, the deeper level of basic assumptions and beliefs that are shared by members of an organization that operate unconsciously and define in a basic taken-for-granted fashion an organization's view of itself and its environment. It has become even more accepted in the 21st century that strategies are both rooted in, and partly explained by, organization culture. Jon Clark in his book, *Managing Innovation and Change* (1995), outlined how the original founders of many of today's large successful organizations—Ford in the USA, Marks & Spencer in the UK, Pirelli in Italy, and Siemens in Germany—played a crucial role in establishing their overall strategy and organizational culture. Clark (1995) also shows that organizational culture is one of the most important areas of strategy which can be influenced by top managers and visionary leaders within the organization.

Mintzberg (1979, 1990) shows strategies to usually exist at a number of levels in any organization. These strategic levels can be generally distinguished into corporate, business, and operational.

1. Corporate strategy is concerned with the overall size and scope of the organization. This involves the organization's basic goals and objectives, its core values and overall profile, as well as the general allocation of resources to different operations.

2. Business strategy can also be referred to as competitive strategy and is concerned with the choice of products or services to be developed and offered to particular markets and customers. This also involves the extent to which the choices made are consistent with the overall objectives of the organization.

3. Operational strategy is concerned with the different functions within the organization. These functions could be production or service delivery, finance, personnel, research, or development which all influence and are integrated within the corporate and business strategies of the organization.

The interaction and consistency between the different levels of strategy and structure are crucial issues for the organizational performance.

Clark (1995) raises the level of a long-standing debate about the relation between strategy and organization structure. Chandler (1962) phrased this debate with a phrase that "structure follows strategy." This implies that organizations should first plan their strategy before embarking on the process of designing their structure to fit within such strategic plan. In contrast, Mintzberg (1990) argued that strategies are unlikely to be decided without reference to existing structures. The relationship between strategy and structure is likely to be reciprocity rather than a one-way determination. Mintzberg (1990) paraphrased Chandler's "structure follows strategy" as the left foot follows the right. Clark (1995) points out that multinational corporations face a number of complex structural problems in developing strategies which are not faced by small businesses or professional organizations.

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