



# SIXTEEN

## Blueprint for Twenty-First Century Innovation

*Information at the speed of light. Instant communication.  
Satellite services can place information on any spot  
with the precision of a surgeons knife.  
Our planet is ringed with data that practically circles the globe,  
binding one continent to another.  
We have become a global village,  
where a sneeze in the Tundra  
can be heard in Antarctica.*

*The World Development Report 1999<sup>1</sup>*

I was visiting a country (which shall go unnamed) and meeting with the Minister of Education who had just launched an initiative called “Knowledge Management in the Information Society.” I queried why it was the information—and not the knowledge—society. He asked me “What’s the difference?” I responded that there are at least two distinctions.

- First, when the focus is on the information or the technology, we are placing the attention on things and not people. I believe that this is actually increasing the digital divide.
- Second, when the focus is on knowledge, the knowledge of everyone is important. The knowledge agenda is a very human and humane agenda.

These distinctions are not insignificant, and leaders worldwide are acting on the promise of the new management future. Much activity may be launched with only a cursory understanding of the principles and practice. This is not bad—far from it, but it is suboptimal.

Instead, there should be ways to design the frame for the discussion, promote astute awareness, develop the leadership that has a considerable sphere of influence, and collectively evolve a compelling vision that provides a quantum impact rather than relying upon incremental improvement.

### 16.1 THE CASE FOR INNOVATION

The business intelligence (UK) research project documented in *Creating the Knowledge-Based Business* (Skyrme and Amidon, 1997<sup>2</sup>) contains thirty-three leadership case studies that illustrate the various dimensions of knowledge management. In almost every case, references are made about the need to create a culture of sharing, openness, learning, collaboration, trust, and innovation. As stated earlier, Peter Drucker claims that innovation, along with the ability to measure the performance thereof, is the one competence needed for the future. In the accompanying survey performed by Ernst and Young (see Figure 16.1), innovation is the primary attribute most important to an organization's future in both Europe and the United States.

The graphic in Figure 16.1 portrays the next wave beyond reengineering and quality. In what has become known as Charles Handy's sigmoid curve, enterprises must transform at point *A*. For enterprises reaching point *B*, it is too late.

Overlaid on the graphic are the five business generations defined in an earlier *Research-Technology Management* article (Amidon, 1996). A sixth stage was added representing work done with Leif Edvinsson, then vice president for intellectual capital at Skandia, where managing the future is the real agenda for the twenty-first century. In *Power of Innovation*, the 1996 supplement to the interim report, the image used

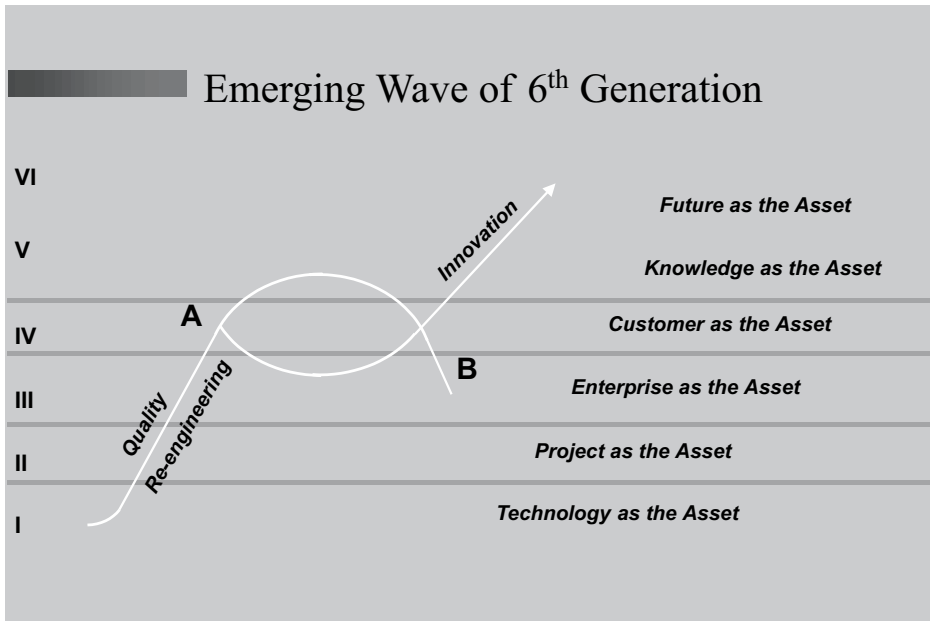


FIGURE 16.1 *Emerging sixth wave of management.*<sup>3</sup>

is that of a powerful wave to depict the complex, but robust innovation system needed to manage the intangible assets of an enterprise.

## 16.2 A SOLID FOUNDATION<sup>4</sup>

Every architectural effort—especially one that proposes to integrate elements that may not have been heretofore connected—should begin with some planning assumptions. Many of these elements were detailed in Chapters 4–8. There was a combined effort with expertise across the sectors to think through what might constitute sustainability in the knowledge economy; and their collective wisdom identified these five<sup>5</sup>:

1. Knowledge is the primary of innovation.

2. The value of human potential can/should be linked to economic results.
3. A systems approach (i.e., understanding the whole and the relationship of the parts) enables optimal performance.
4. A prosperous future is based increasingly on interdependence, interaction, and collaboration.
5. The flow of knowledge—not just cash flow—must be visualized, monitored and incentivized.

There is more than enough evidence of activity that we are on the right path, and the voices are being heard in the most prominent forums of our society. There is hardly a functional orientation or discipline that is not taking careful note of the implications from this perspective. Companies have launched major knowledge and/or learning initiatives usually residing in the responsibilities of a C\*O. Government agencies have followed suit with swift embracement of e-government initiatives. Academic institutions—realizing now that they are but a “node” on the learning network—have launched assessments of their own programs and the value of distance learning, some on a regional or worldwide basis. All has not been as serendipitous (or naturally evolving) as many might think.

This focus on knowledge was originally shared with the OECD in Paris in 1988<sup>6</sup>. Many readers are aware of the resulting articles and the superb research on the topic, some of which is outlined in *Blueprint of 21<sup>st</sup> Century Innovation*.<sup>7</sup>

For example, the OECD has produced a series of reports that have provided both leadership and direction on the topics of human capital, learning and society, national systems of innovation, and, most recently, the knowledge-based economy. A bi-monthly *OECD Observer* features the most recent thinking and research results. One issue featured an editorial by Jean-Claude Paye, Secretary-General of OECE, on the rationale for national innovation systems:

*Performance in the knowledge-based economy depends to a large extent on the functioning of such national innovation systems, particularly the ability to distribute knowledge and technology to a wide range of economic actors... Coherent policies for the knowledge-based economy must therefore create incentives for expanded investment in human resources, technology, innovation, and information networks. (Paye, 1996)*

In the same issue, three main aspects of industrial innovation deserve to be mentioned. First, technological change impinges on codified and tacit knowledge. Second, the sources of innovation may be either internal or external to the firm. Third, innovations can either be embodied in capital goods and products or disembodied. These interdependencies in purpose may be a result of the cross-divisional activity within the OECD. It may be that the time has come to step back from the details of current analysis and see the entire picture.

In 1993<sup>8</sup>, we took the knowledge agenda into The World Bank, and you have seen the results in the stellar work of Stephen Denning and the report *Knowledge for Development*, which has helped convert The World Bank from financial to intellectual capital. And we know that industrialized nations do not have a monopoly on knowledge—far from it! I believe that the knowledge agenda has actually created a level playing field and inspired developing economies to innovate their own future.

Years later with the creation of the World Development Report (1998–1999) and according to Stephen Denning, knowledge became the major strategic theme—getting organized to create, capture, distill, and disseminate relevant development knowledge<sup>9</sup>. It is aimed initially at increasing individual effectiveness, transferring information and knowledge to the organizational level, and ultimately making it accessible so that all individuals can take effective action. This constitutes not only a corporate memory of information and best practices' it also incorporates the best knowledge from outside organizations. The knowledge management system will interconnect with universities,

foundations. and other world-class sources of knowledge so that the Bank becomes a clearinghouse for development knowledge.

We are “neighbors in a global village.” In May 1997, the Dutch Ministry of Education, Culture and Science, together with the European Union, held a three-day invitational conference on knowledge management and learning organizations as a step toward creating the European Knowledge Union. Coordinated by Kenniscentrum CIBIT, the meeting brought together knowledge leaders from all over the world. As background material, a compilation of speeches by the Honorable J.M.M. Ritzen was provided, outlining concepts (e.g., a continuous Europe, neighbors in a global village, co-ownership) that have been part of what is described as the “knowledge debate” (Ritzen, 1997).

In a study by Brown and Herzfeld (1996), the authors find that in the emerging global environment, the nation’s capacity to innovate will play a dominant and probably decisive role in achieving that goal. Deborah Wince Smith, former Assistant Secretary for the U.S. Department of Commerce, outlines the incentives for investment in innovation: human resources; technology; intellectual property rights; physical infrastructure; capital formation and allocation systems; regulatory framework; international trading systems; reciprocal access to international investment opportunities; and industrial structure for innovation and business, management, and manufacturing practices. She concludes that a national innovation system is a dynamic, holistic system of mutually reinforcing elements. No one element can exist independently from the impact it exerts on the overall system vitality.

There are many world economic surveys. Perhaps the most succinct and comprehensive overview is contained in a survey produced by *The Economist* (1996). It describes how the future prosperity of rich economies will depend increasingly on their ability to innovate and capacity to adjust to change. The rich economies are coming to depend increasingly on the creation, distribution, and use of information and knowledge, involving both technology and human capital. The most distinctive feature of the knowledge-based economy is not that it

churns out information for consumers—it does that too—but that it uses knowledge pervasively as both an input and an output throughout the economy.

Connecting with the movement on organizational learning is a parallel study. The Economist Intelligence Unit produced a research report in cooperation with the IBM Consulting Group, entitled *The Learning Organization: Managing Knowledge for Business Success*. (The Economist Intelligence Unit and IBM Consulting Group 1996.) It involved a questionnaire sent to 3,000 executives in 26 countries and 50 in-depth interview with 37 companies. The study was not a focus on innovation, nor did it examine the role of knowledge in the economy; however, the interview findings do reveal implications germane to this chapter:

- Learning enhances a company's speed, innovativeness, and adaptability.
- Formal business procedures must be balanced with the freedom to create.
- Every company has a different approach.
- Work is personal.
- Culture is key.
- Individuals must commit to personal change.
- Day-to-day operating demands conflict with learning.
- Business performance measures do not value knowledge assets.
- Learning builds shareholder value for the long term.
- Effective information systems meet both business and human needs; and with economies of thinking, bigger and better ideas emerge.

The point is that this transition has been well documented in both the academic and professional circles and the trade press. Something fundamental is changing, and we are all a part of its evolution.

## 16.3 CREATING AN INNOVATION CULTURE

Creating the culture in which knowledge is valued and shared effectively is one of the most difficult challenges faced in practice. One of the primary influences may actually be the competitive environment that has been developed over time and begins with a child's birth. Competition is healthy when it involves sports, and it was appropriate for an economic climate in which resources were plentiful. Once global competition became a reality, available resources shrank rapidly overnight. However, the knowledge economy promises an abundance of resources if the metrics and measurement systems can be properly defined.

Of primary importance is the innovation language—a language that transcends the paradigm and biases of one function or another. Ideally, such a language would also encompass industries, sectors, and regions of the world and, therefore, would be universal in scope. There are several attempts to define the language with a glossary of terms. Of course, the language must be adapted to the heritage, purpose, mission, and strategy of a particular entity. It is important that the language be established and pervade all operations and planning efforts. The intent of this chapter is to suggest that the language can best be created under the rubric of innovation strategy—redefined, of course, according to the flow of ideas.

Culture extends beyond the enterprise. When the stakeholders in the process are considered (e.g., suppliers, alliance partners, distributors, customers, competitors, and even the customer's customer), the view of the knowledge base from which organizations might learn becomes expansive. The strategic business network (SBN) as model is in direct contrast to Alfred Sloan's multidivisional structure (SBU) for organizations, which was well suited to the Tayloristic industrial paradigm. Dividing the large enterprise into independent strategic business units was considered the optimal way to measure performance.

However, the dynamic economic climate demands a networked, fluid organizational structure that balances accountability with respon-

sible risk taking. It is not the parts themselves that add value, but the synergistic nature of the whole, the value of which is greater than the sum of the parts. This is the nature of fusion and the result of symbiotic learning networks, both human and technical. Demonstrated value resides in the interfaces between the boxes, sometimes described as the white space, which must be the object of our performance-management systems.

Shared purpose is essential for an enterprise to thrive in the dynamic global economy. Amidst the turmoil and chaos of the past decade, throughout downsizing and reengineering processes, many organizations have lost their sense of direction. Initiatives have become fragmented and, worse still, internally competitive. Interestingly enough, it may not be the financial resources that are scarce today as much as the mindset and available commitment time of the enterprise leaders.

Too often, managers operating in the traditional, competitive work climate are managing initiatives with unnecessary duplication of effort and suboptimal allocation of resources. In many instances organizations must find a way to coalesce, rededicate themselves to a common agenda, and respect the complementary competencies that can be brought to bear. Creating the community of innovation practice may be one way to begin the process.

#### 16.4 MULTIPLE ECONOMIC LEVELS

Innovation management must be viewed within a global context. The complexity of managing within a global economic system creates a dissonance between strategy and operations at multiple levels. An adjustment on one level automatically has an effect on, and is affected by, another. During the past decade researchers have documented the challenges of cross-boundary activity. Enterprises have a sense of what it means to convert an organization from a domestic to a national or even transnational business. Systems dynamics tools and collaborative

technologies provide a way to visualize scenarios, understand relationships among factors, and experiment with options for action.

What is not so well established in the literature or in practice is how to optimize the allocation of resources across the multiple boundaries. Perhaps the best-known and most practiced model is that of the stage-gate developed by Cooper and Edgett (1999). In general, modern frameworks for analyzing technology strategy, innovation management, and strategic alliances are so complex that it is difficult to capture their meaning.

In 1989, research on the nature of alliances in this transnational economy was reported in *Global Innovation Strategy*<sup>10</sup> By contrasting activities in different parts of the world according to diverse functional perspectives, the researchers were able to uncover the managerial implications on three economic levels: microeconomic (intra-organizational); mesoeconomic (inter-organizational), and macroeconomic (transnational). Following are the three economic levels of analysis that proved useful for contrasting activities. The results of that research suggest that optimization demands a balance among all three levels simultaneously.

#### 16.4.1 The Microeconomic (intra-organizational) Level

Each enterprise consists of separate functions from each of which R&D discoveries need to be transferred into products and services that are created, marketed, sold, and maintained. However, as already discussed, these are no longer linear value models, for ideas indeed come from throughout the enterprise. In fact, it is through the simultaneous development process and sharing of expertise that much of the breakthrough thinking occurs.

#### 16.4.2 The Mesoeconomic (inter-organizational) Level

With intensified global competition and increased consumer sophistication, it has become increasingly important to consider the relationships with external stakeholders (e.g., suppliers, distributors,

alliance partners, investors, government, academia, customers, and competitors). This is the economic level least documented in the literature and the one most responsible for competitive threat from the Japanese during the late 1980s because of their keiretsu. It is also the most important level for economic development experts building national infrastructures. These interdependent relationships are dynamic, evolve over time, and are necessary to strengthen organizations.

#### 16.4.3 The Macroeconomic (transnational) Level

Advancements in computers and communications and the explosion of the number of users of the World Wide Web have provided global opportunities unforeseen a decade ago. John Naisbitt claims, "The bigger the world economy, the more powerful its smallest players." With the emergence of electronic commerce and international networks of professionals across every border imaginable, the strength of the entrepreneur in a global context is a reality. Enterprises, both regional and national, need to consider the advantages of linking with global partners for idea sourcing, joint ventures, marketing partners, or contributors to one's distributed learning system, however that might be defined.

Organizations need to determine what connectors might be developed at the interfaces to link these economic levels and what would be the relationship among the levels. After years of research, it has been determined that a focus on knowledge (content) and innovation (process) with learning (method) is the optimal core an enterprise might create. With such a common focus, all initiatives at and across levels can be synchronized. That may be the place where most value is created

When these economic levels are viewed as overlapping circles, such as in a Venn diagram, the boundaries of the interfaces become apparent. This is also the locale in which similarities in intent might be discovered and leveraged (see Figure 3.2 for an example)]. These repre-

sent the value-creating opportunities in cross-functional integration in a firm, cross-sectoral integration within a nation, and cross-cultural integration in the global infrastructure. How enterprises effectively manage this dimension of collaboration will determine how they survive and prosper.

### 16.5 CRAFTING AN ENTERPRISEWIDE INNOVATION VISION

The challenges that confront institutions approaching the third millennium are complex, diverse, and compelling. Such change dynamics are kaleidoscopic in nature, transformative in impact, and international in scope. One could take on the traditional planning role of identifying and overcoming obstacles in attempts to control the environment so as to minimize any negative impact. Such has been the focus of competitive strategy for the past three decades.

A more constructive strategy is collaborative and synergistic. It embraces the inevitability and strength of change in ways that catapult learning forward, stretch imaginations, and define common ground for contributions from diverse paradigms. Such a strategy recognizes the value of the whole and its interrelated parts, operating as an evolving ecological system in which streams and cross-currents of activity are opportunities to harness the value of knowledge.

People from developing nations have often said to me: “We are an agricultural society just transforming to an industrial society, and you want us to become a knowledge economy? Is it possible?” My response is that not only is it possible, it is necessary. You can gain learnings from industrialized economies—the good and the bad—and chart your own future in full realization that the knowledge of every human being is important and the process to be managed is one of innovation.

Innovation must be in the head, heart, and hands of every participant in the system. It does not mean everyone is an expert technician or marketer. Everyone should have knowledge of the entire innovation system and his or her particular role. There must be a common

language and shared purpose, and boundaries must fade between functions, sectors, industries, and cultures. There must evolve a basic trust, mutual respect, and collegial competencies and, above all, a thirst for learning.

A knowledge agenda—whether for an enterprise or for a nation—cuts across the aspects of the new knowledge value proposition (i.e., economics, behavior, and technology) noted in Chapter 2; but it also operates on the three economic levels simultaneously—micro-, meso-, and macroeconomic) (see Figure 16.2).

To do so, we need a frame of the activities—how resources might best be allocated.

Innovation must be in the head, heart, and hands of every participant in the system. It means is that everyone has knowledge of the entire innovation system and his or her particular role in that process. It does mean that there is some common language and shared purpose

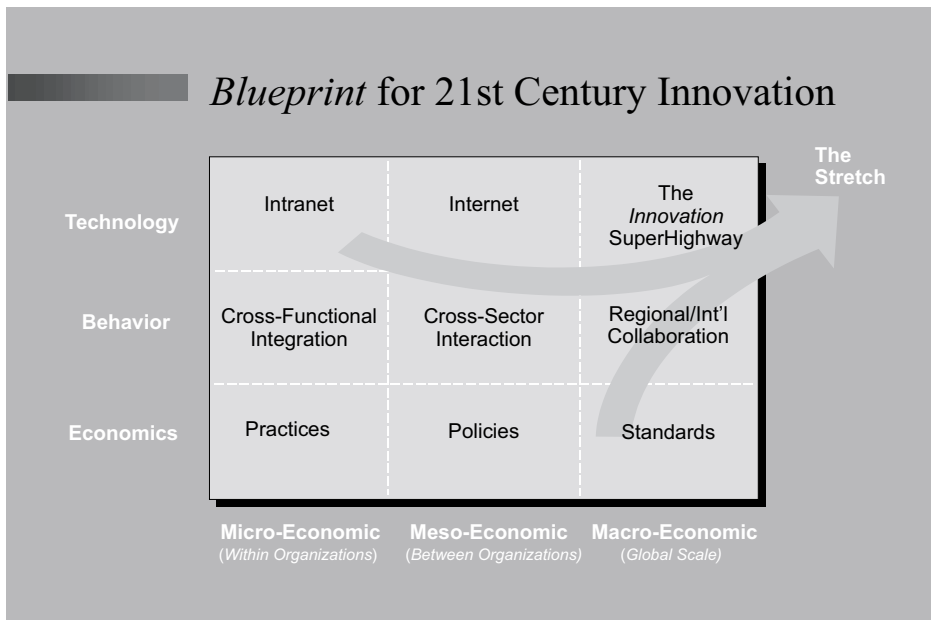


FIGURE 16.2 *Nine-box blueprint for the innovation superhighway.*

and that the boundaries fade between functions, sectors, industries, and cultures of the world. It means that there are basic trust, mutual respect, and collegial competencies. In addition, it is likely that a thirst for learning pervades the culture.

That being the case, players at all enterprise levels (from micro-economic to macroeconomic) can share these modern management philosophies and in so doing overcome the barriers and obstacles to progress. Academics, government officials, industrial executives, and nonprofit practitioners may all participate in this community of innovation practice. With this in mind, a three-dimensional transformation matrix has been formulated and can be applied. It includes the activities that can be mapped according to the different economic levels, as well as the three elements of the knowledge value proposition (See Chapter 2): economic, behavioral, and technological.

Not only are the language and concepts transforming, but also the basic principles of our professions—and what some might suggest is the new knowledge profession. Some will see it as a challenge; others will perceive it as a threat. Progressive managers will see an opportunity to shape the very foundations for the future. What was managed previously will pale in comparison.

## 16.6 SUMMARY

If we are able to take a worldview of how to best utilize our most precious resources—the insight and imagination of the human mind—and vow to avoid unnecessary duplication of resource, we can envision interaction that expands our assets with—as some have suggested—a multiplier effect. Building The Innovation Superhighway of today that enables free trade for marketable goods and services is more a function of the human capacity to create and apply new ideas—or old ideas in different ways (i.e., the ability to innovate). Too much emphasis has been placed on the technology, which has likely exacerbated the digital divide. Similarly, too much emphasis has been placed on the “informa-

tion” economy, given that the new economy is not one that is digital as much as it is human.

Increasingly, management responsibilities will be viewed as facilitating the learning process, which includes external stakeholders (e.g., suppliers, distributors, alliance partners, customers, and even competitors). How these relationships are managed is far more a matter of collaborative expertise than the competitive skill with which most are familiar. Values, valuation, and valuing will gain prominence as executives search for what to measure and how and when to evaluate performance. Only when we have a common language across borders—functions, industries and countries alike—can we begin to explore the prospects for collective prosperity.

The core premise of the future is collaboration. This does not mean that organizations do not compete; competition is inevitable. It does mean that the orientation shifts to one of sharing and leveraging one another for mutual success. The common language will emerge as well as the shared vision—one that might be realized in our lifetime. In national and global terms, this is described as creating the common good from which all benefit. Previous eras have experienced reliance upon resources that are depleted. Perhaps the era based upon the bountiful resource of knowledge provides an opportunity for true global symbiosis.

## CHAPTER ENDNOTES

<sup>1</sup> Opening of the World Development Report, “Knowledge for Development,” (1999).

<sup>2</sup> Pp. 67–68.

<sup>3</sup> Originally appeared in Chapter 1 of *Innovation Strategy for the Knowledge Economy* (p. 6) and then adapted for *Power of Innovation*. Supplement to Skandia’s 1996 Interim Report: 8.

<sup>5</sup> Published in *Collaborative Innovation and the Knowledge Economy*, p 1.

<sup>6</sup> “Managing the Knowledge Assets into the 21<sup>st</sup> Century” was brought to Graham Vickery, an OECD principal administrator, in the fall of 1988.

<sup>7</sup> For an electronic version, see <http://www.gkii.org/articles/blueprint1.htm>.

<sup>8</sup> Materials were passed to Carl Dahlman, the executive responsible for producing the World Development Report.

<sup>9</sup> Author's note: This is precisely the process of innovation.

<sup>10</sup> MIT thesis published by the IC<sup>2</sup> Institute of the University of Texas at Austin (1989).