

Knowledge Management: An Engine for Innovation

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One of our colleagues with several decades of experience in managing innovation has proclaimed that his mission in life is to absolve executives from feeling that they must know everything before they can effectively do anything. There is simply too much data, intelligence, information, and even disinformation flowing through all complex, technology-driven organizations for any manager to master it all.

Recognizing this reality, leading firms in many industries have instituted systematic approaches to knowledge investment, capture, and exploitation. These practices operate throughout the innovation process, in a deliberate drive to coalesce loosely formed ideas into competitive, high-performance products and services.

The goal is to harness the knowledge resident in the organization and across the „extended enterprise“ of lead customers, key suppliers, etc., so as to capture and deploy the competencies that will drive the company’s competitiveness and create value. In this model, the executive’s role is to identify those areas of knowledge that are critical to the company’s competitive position and to relentlessly focus resources on acquiring them and embodying them in the firm’s output.

This article describes how knowledge management has become a vital engine for innovation and how several firms have adopted the mindset, tools, and behaviors to make it work for them.

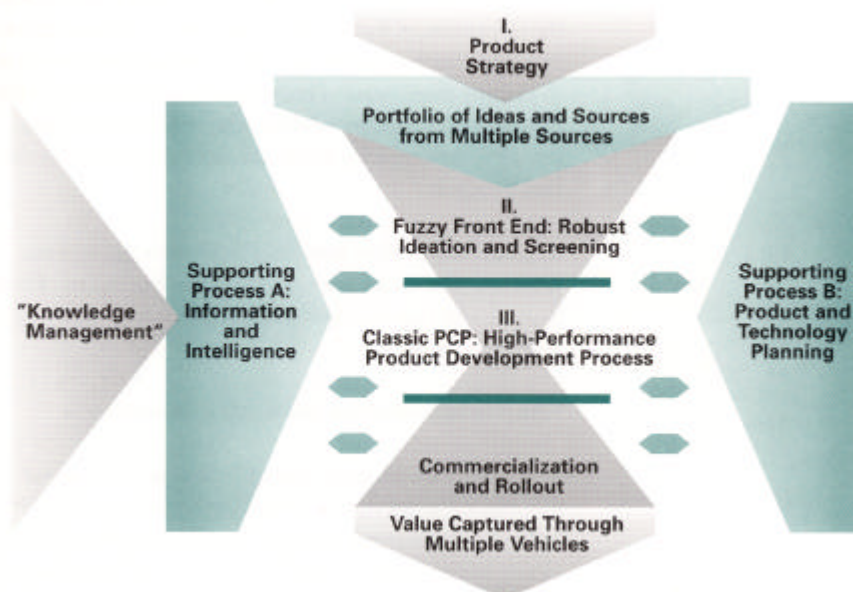
Knowledge and the Innovation Process

While still viewed as an oxymoron by some, „managed innovation“ is not only accepted but actively practiced by high-performing organizations. In fact, managing the complexity and ambiguity of innovation is rapidly becoming a key strategic competence. While „management“ does not connote „control,“ it does imply a disciplined set of methods for confronting the issues throughout the product-creation process. The continuous role of knowledge management in this process is depicted in the „innovation funnel“ in Exhibit 1.

In a world where CEOs recognize that at least half the competencies that will determine their firms’ competitive positions will come from outside the company,¹ the ability to fill the funnel with ideas and opportunities from an array of sources is critical. Yet we hear from company after company that, while the formal product development process at the neck of the funnel is well under control, the acts of concept generation at one end and product rollout at the other are poorly conceived and executed. In a resource-constrained future, it becomes essential for executives to identify and invest in the elements of organizational knowledge that drive innovation and move new products and services swiftly through to commercialization. The range of required knowledge can be as explicit as understanding the state of development of an advanced technology or as intangible as knowing how to design the relationship with an external partner for mutual benefit.

Exhibit 1

The Innovation Funnel



This problem was tackled effectively last year by Caterpillar, the global industrial vehicle manufacturer and an ADL client. Given the accelerating increase in the electronics content of its products, the company's engineering organization faced exponentially growing demand to innovate and develop new products, while continuing to support and improve the existing ones. With insufficient resources to invest internally in every needed competence, the company used technology portfolio techniques to identify those areas that were likely to provide the greatest potential for product differentiation in the future. The resulting priorities were compared with a clear-eyed assessment of the organization's existing internal strengths. Through this analysis, the most effective route to filling the knowledge gaps became apparent. A combination of focused internal investments in high-impact staff capabilities with partnering for external competencies provided an alternative to wider increases in internal investment.

Satisfying the Information/Intelligence Need

Knowing what knowledge is needed is only the beginning of the process. The next piece of the puzzle is figuring out where it is. Senior executives participating in ADL's 1997 Global Innovation Survey² said „getting the needed information and intelligence to make effective decisions“ is one of the biggest obstacles to effective innovation. Again, a disciplined approach, focused on setting priorities, can help managers resist the impulse to locate all relevant information before proceeding. A body of work on business intelligence, pioneered by Jan Herring at Motorola, among others, emphasizes the need to build an intelligence activity around issues of high significance to the corporation. An effective intelligence function is not a more responsive library – it is a management tool for getting the organization to understand and recognize critical elements of information that may be available, either inside or outside the company, and to alert the right parts of the organization when they are discovered. An ongoing process of synthesis by a well-networked group of analysts turns this flow of key information into timely intelligence that can be used by decision-makers.

One firm that has embedded the intelligence component of knowledge management into a comprehensive program for accelerating innovation is Eveready/Energizer. Early in the process, the company recognized what has been true for nearly every industry: any competence that will be relevant to your business in the next five years already exists. If you don't have it now, you can't „invent“ it in time. *YOU* have to find it wherever it currently resides, acquire it, and integrate it into your business.

As part of „Project Innovation,“ Eveready/Energizer undertook an assessment of the major ongoing business issues it faced. It prioritized those issues and specified the most critical questions that would drive the decision process surrounding them. These questions became the foundation for an ambitious information and intelligence process that would reach across every facet of the organization.

Exhibit 2 depicts a model for an intelligence process that has management decision support as its principal mission. Guided by business strategy, the process is designed to both handle ongoing information requirements (event-driven) and respond to emergent management needs (request-driven). Intelligence generation, which is the synthesizing and reporting function, is sustained by continuous activities in which staff seek and gather key information from sources that the organization encounters in its everyday work. For example, a senior engineer, knowing that the launch of a new class of personal digital assistants (PDAs) might affect the demand for batteries, would be sensitive to announcements at an industry trade show and report any pertinent news through his or her information/intelligence network. Combining this input with information from other sources, the company might change its sales forecasts, rethink its distribution plans, or even seek a partnership with the PDA manufacturer.

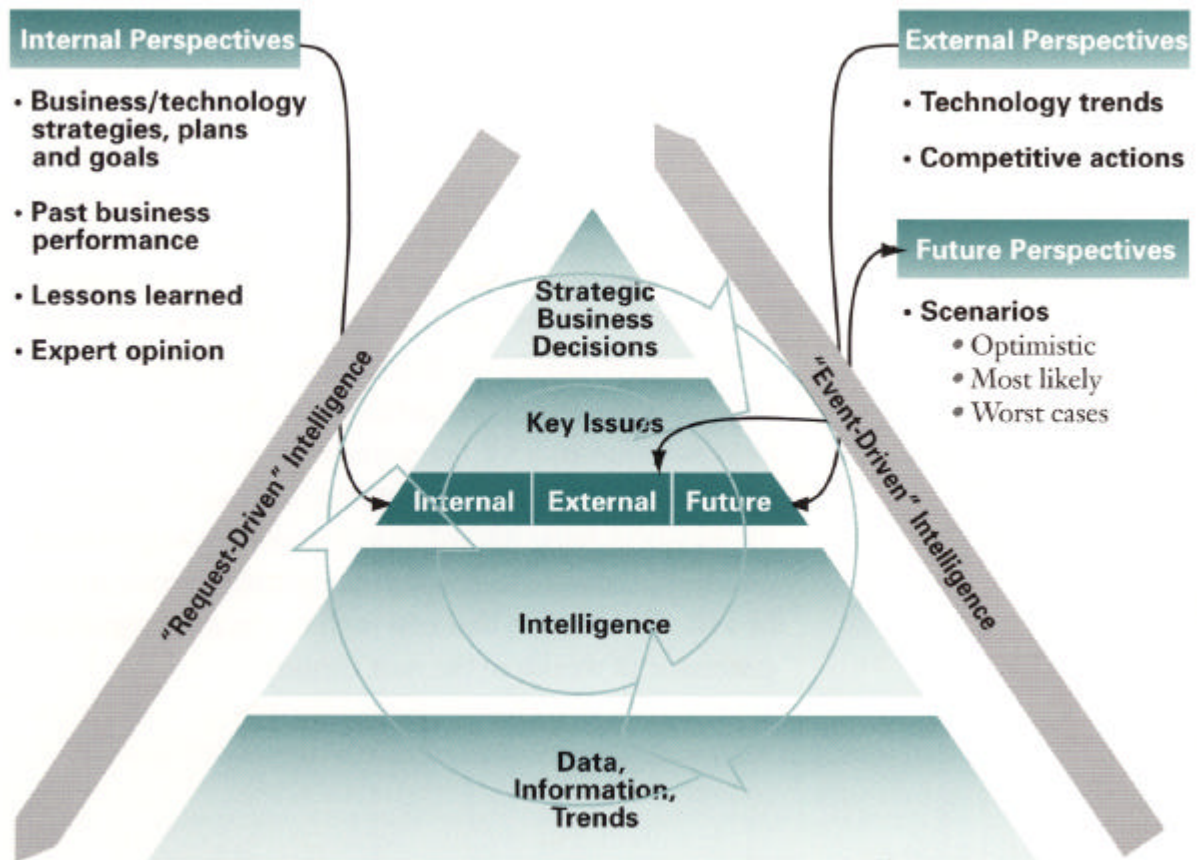
Systematic Knowledge Management

Armed with a knowledge investment plan and an intelligence process, the innovation-driven executive can begin to mold the organization into an entity that embodies the right mix of knowledge for competitiveness. At ADL, we define an internally embedded technology as one that completes the sentence, „We know how to...“ For many firms, the ability to make such statements about critical elements of organizational knowledge may hinge on only one or two individuals. Especially in research and engineering organizations, the capacity of the firm to continue to innovate can depend on knowledge residing in too few people.

Recognizing this risk, the regional telecommunications firm NYNEX (now part of Bell Atlantic) undertook a comprehensive evaluation of its knowledge base in technology. Looking at all its current and anticipated development initiatives, the company identified more than two dozen major competencies and the technologies that would be needed to support them. The company benchmarked its capabilities against those of similar firms and other organizations whose strengths the company might emulate. Knowing which competencies would have to be maintained within the organization, they catalogued their strengths and weaknesses in the form of a „knowledge depth chart“ (Exhibit 3). Subsequent analysis made it clear where the company lacked „bench strength,“ so that it could make targeted searches outside the organization through its human resources function or supplement the staff with external resources.

Exhibit 2

Model for an Information and Intelligence Process



In many organizations we encounter a surprisingly arm's-length relationship between the human resource function and the rest of the company. While quite earnest and cooperative in filling personnel requests generated by others, HR is seldom the source of initiative in building the company's knowledge base. In contrast, many of the more innovative startups of Silicon Valley have created proactive, knowledge-base-driven HR functions. Like many of the trends born in the Bay Area that are now pushing businesses toward higher performance levels, this one may become a new tool for mainstream firms to increase their power to innovate and remain competitive. With most businesses moving toward multidisciplinary, team-based business processes, we hope to see greater participation by HR, the function that may well be the most significant generator of wealth in the next century.

Best Practices

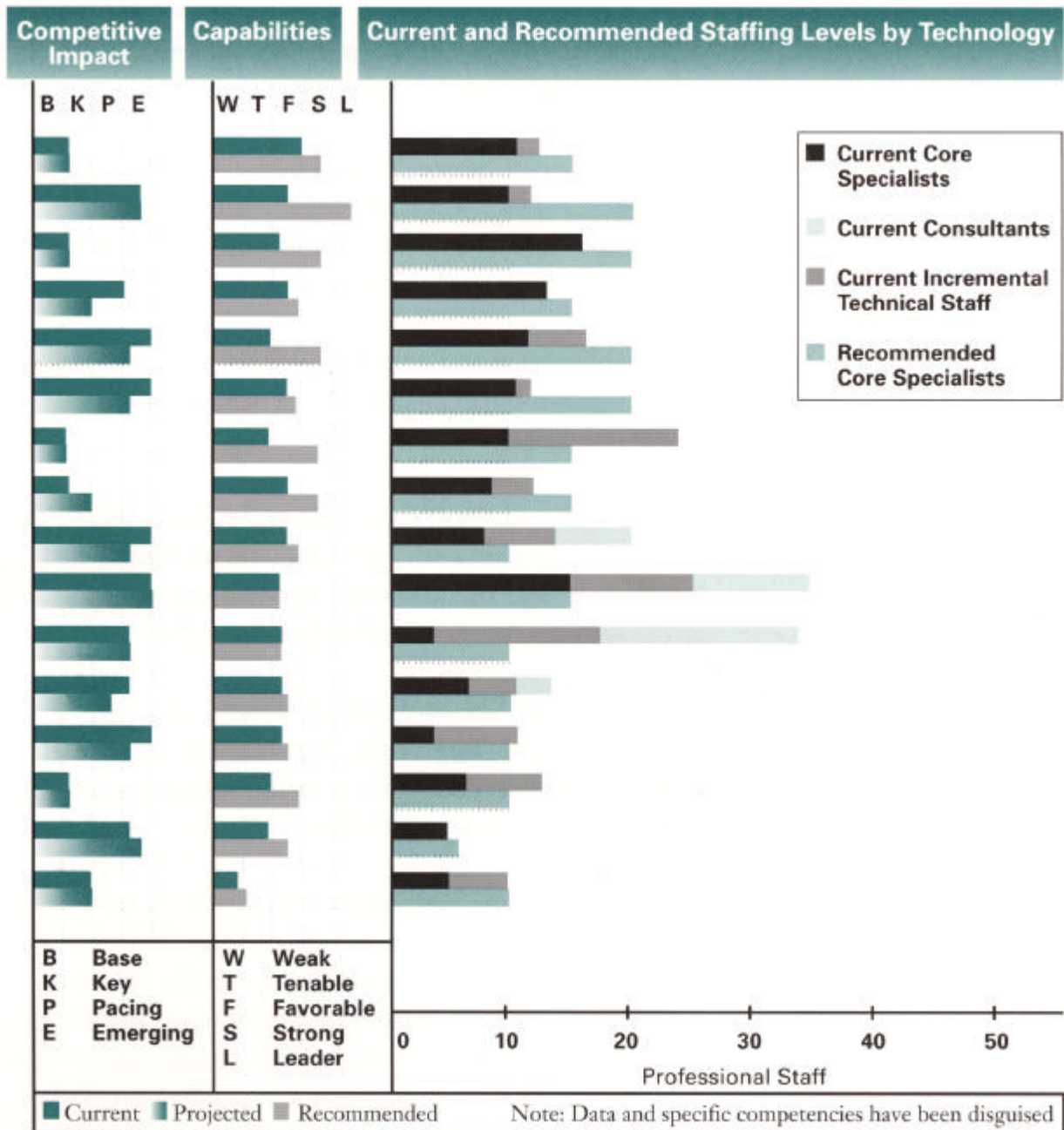
While the three initiatives described above – identifying knowledge needs, establishing an intelligence process, and developing knowledge assets – represent some of the best thinking in ways to accelerate knowledge creation and deployment, they cannot succeed in a vacuum. Each of the firms cited above had other elements in place that served to support the success of innovation. From our work with clients across a number of industries, we have found a common set of behaviors that represent the best practices in managing knowledge to spur innovation. We commend them to others as a good starting checklist in knowledge management:

- Map knowledge management directly to the business strategy and support it clearly with the technology strategy.
- Develop processes for continuously linking major decisions with the knowledge management system.
- As with any other major initiative, get senior management's commitment (including that of the CEO).
- Build an intelligence system by first focusing on a few intelligence topics and achieving short-term successes. This allows processes to be refined, generates momentum, and provides lessons for subsequent efforts.

- Establish legal and ethical guidelines for your intelligence activity early. The bounds of behavior must be understood by everyone.

Exhibit 3

A Representative Knowledge Depth Chart



- Remember the „soft skills“ that enable innovation – the ability to negotiate a win-win deal with an outside firm to obtain a piece of intellectual capital is just as important as the skills to develop a technology internally.
- Get Human Resources involved early, often, and actively in understanding the knowledge needs of the organization and striving, through training and recruiting, to maintain and enhance them.
- Develop and use performance metrics to evaluate both the results (examples: incremental earnings from new or first-to-market products introduced over the previous five years that stemmed from new technology knowledge, or number of plants that adopt a new technology and the time it takes them to implement it in production) and the process itself (example: number of queries to database and percentage that can be associated with technical and/or commercial successes).

The Knowledge Management Systems

Once an organization understands its key knowledge requirements in support of innovation, and once the supporting processes of intelligence, source management, and training are well in hand, the company is much better positioned to exploit the various knowledge management software tools and systems that are currently on the market. These major enablers of knowledge management are important to its implementation, especially in large organizations; however, they are too often, and incorrectly, the starting point or the driving force. „Information technology“ is only 10 percent of the solution. The other 90 percent involves getting the human interactions right, and that should be the primary focus of executives in making knowledge management a driver of innovation.

¹ *Arthur D. Little Survey, Priority Issues in Technology and Innovation Management, 1997.*

² *Arthur D. Little surveyed nearly 700 companies from 10 industries across 23 countries on how companies view the role of innovation in their businesses. See Findings of the Arthur D. Little Global Survey on Innovation, 1997*

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