



Knowledge Management: An Interdisciplinary Approach

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Knowledge management is becoming a critical success factor for enterprises:

- Lean management structures rely on decision making at all organizational levels.
- Short product development schedules require the tight integration and management of knowledge of different departments.
- Fast-changing markets require up-to-date views of customer behavior and strategic activities of competitors.

Knowledge management is inherently interdisciplinary. It involves human resource management and enterprise organization and culture, as well as the information technology methods and tools that support and enable it. Knowledge management can improve the enterprise's competitiveness only by fully integrating technological aspects with the human and organizational aspects.

The Dagstuhl seminar

On 10–14 July 2000, a knowledge management seminar took place in Schloss Dagstuhl, Germany (see <http://dagstuhl-km-2000.aifb.uni-karlsruhe.de>

for the collected presentations). The seminar brought together people from industry and academics with heterogeneous backgrounds, including computer science, information systems, management sciences, and psychology. Although knowledge management is a young, quickly evolving discipline, the seminar participants reached a consensus on several issues:

- Organizations must set clearly specified objectives for developing knowledge management solutions. Later, they can use these objectives to evaluate a solution's success. Objectives might vary substantially from company to company and

might be split into the objectives of the enterprise and of the individuals.

- Information technology is a crucial success factor, but not the most important one. Unless organizational and human resource management aspects are also addressed, an information technology solution will not be successful.
- Knowledge management applications must be embedded in organizational structures that enable organizational learning.
- Knowledge management often must be embedded in processes, which must be reengineered to accommodate knowledge management.
- Successful knowledge management applications rely on the involvement of all respective stakeholders. Setting up a successful knowledge management project requires explicit, strong support from (top-level) management.

In this issue

The articles in this special issue, which were presented at the seminar, focus on real-life issues and corresponding conceptual developments that enabled the applications. Each application comes from a different industry and is derived from a specific company's use of knowledge management:

- In "Knowledge Management: Problems, Promises, Realities, and Challenges," Gerhard Fischer and Jonathan Ostwald describe an application for urban planning and decision making. Their Envisionment and Discovery Collaboratory approach considers knowledge as an artifact that must be designed and constructed in a cooperative environment that supports and links all stakeholders of an envisioned knowledge management application.
- In "Better Knowledge Management through Knowledge Engineering," Alun Preece, Alan Flett, Derek Sleeman, David Curry, Nigel Meany, and Phil Perry discuss the development of a knowledge management system in a drilling firm. They argue that knowledge management applications should profit from knowledge-engineering methods and tools.
- In "How Knowledge Reuse Informs Effective System Design and Implementation," Daniel O'Leary analyzes knowledge management data from a consulting and professional services firm. His analysis indicates that the different service

domains of such companies reuse knowledge in significantly different ways.

- In "Knowledge Processes and Ontologies," Steffen Staab, Rudi Studer, Hans-Peter Schnurr, and York Sure discuss a system for analyzing chemical industry mergers and acquisitions. They show how an ontology-based approach to knowledge management that is embedded into well-defined knowledge (meta) processes opens the way to the management of knowledge contents instead of knowledge containers.
- In "Facilitating the Legislation Process Using a Shared Conceptual Model," Tom van Engers and Erwin Glassée describe a knowledge management application in the Netherlands' Tax and Customs Administration. This application demonstrates how knowledge management helps create a corporate knowledge corpus that makes knowledge traceable and certifiable.

Recent research indicates a trend toward increased emphasis on process aspects of knowledge management and on a smooth integration of knowledge management and business processes.¹ Providing methods and tools that create and capture knowledge while performing business processes is a challenge. Furthermore, integrating knowledge management support functions into a (semantic) knowledge portal might provide a single-point entry to all knowledge management functions that the knowledge worker needs. Personalization, task-dependent views, and decentralized knowledge provision are just some aspects crucial for such knowledge portals.² Obviously, current research and development of the semantic Web³ can deliver methods and tools that will allow transparent handling and integration of knowledge, independent of whether it is stored on the Internet or the enterprise intranet. ■

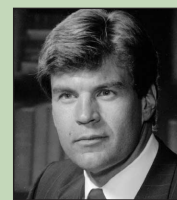
Acknowledgments

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References

1. S. Staab and D.E. O'Leary, eds., *Bringing Knowledge to Business Processes*, tech. report SS-00-03, AAAI Press, Menlo Park, Calif., 2000.
2. S. Staab et al., "Semantic Community Web Portals," *Proc. 9th Int'l World Wide Web Conf. (WWW9)*, Elsevier, Amsterdam, 2000, pp. 473-491.
3. S. Decker et al., "The Semantic Web: The Roles of XML and RDF," *IEEE Internet Computing*, vol. 4, no. 5, Sept./Oct. 2000, pp. 63-74.

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