Delineating Knowledge Flows for Enterprise Agility

Mark E. Nissen
Naval Postgraduate School, USA

INTRODUCTION

The practice of knowledge management (KM) purports to take the power of knowledge to the group, organization and even enterprise level (Davenport & Prusak, 1998). Although this potential benefit of KM is not viewed universally (Gore & Gore, 1999; McDermott, 1999), many scholars (e.g., Drucker, 1995) assert that knowledge represents one of the very few sustainable sources of competitive advantage. Hence, the knowledge-based organization—one that competes on the basis of its differential knowledge (e.g., see Grant, 1996, for discussion of the knowledge-based view of the firm)—appears to offer great promise in terms of performance and capability.

Drawing from Nissen (2004), the knowledge-based organization must be able to apply substantial knowledge, when and where it's needed, to affect organizational goals. However, knowledge is not distributed evenly through the organization, so rapid and efficient knowledge flow is critical to enterprise performance. The larger, more geographically dispersed, and time-critical an enterprise (e.g., global manufacturing firms, telecommunication and software companies, military forces), the more important knowledge flow becomes in terms of efficacy. Unfortunately, our collective knowledge of how knowledge flows is quite primitive (Alavi & Leidner, 2001; Nissen, 2002). Lacking knowledge-flow theory and application for guidance, even enterprises with multimillion-dollar KM projects have difficulty seeing past *information* technologies such as intranets and Web portals. Further, Nissen, Kamel, and Sengupta (2000) note such KM projects rely principally upon trial and error, one of the least effective approaches known.

BACKGROUND

This section draws heavily from Nissen (2004) to summarize key background pertaining to knowledge flow. It focuses in particular on important concepts from the emerging literature on knowledge management and augments current work on knowledge flows (e.g., Baumard, 2002; Echeveria-Carroll, 1999; Fang, Lin, Hsiao, Huang, & Fang, 2002; Foss & Pedersen, 2002; Gupta & Govindarajan, 2000; Schulz & Jobe, 2001; Zhuge, 2002). For the purposes of this article, three important concepts from the KM literature are summarized: 1) knowledge hierarchy, 2) knowledge management life cycle, and 3) current knowledge-flow theory.

Knowledge Hierarchy

Many scholars (e.g., Davenport & Prusak, 1998; Nissen et al., 2000; von Krogh, Ichijo, & Nonaka, 2000) conceptualize a hierarchy of knowledge, information, and data. As illustrated in Figure 1, each level of the hierarchy builds on the one below. For example, data are required to produce information, but information involves more than just data (e.g., need to have the data in context). Similarly, information is required to produce knowledge, but knowledge involves more than just information (e.g., it enables action). We operationalize the triangular shape of this hierarchy using two dimensions—abundance and actionability—to differentiate among the three constructs.

Briefly, data lie at the bottom level, with information in the middle and knowledge at the top. The broad base of the triangle reflects the abundance of data, with exponentially less information available than data, and even fewer chunks of knowledge in any particular domain. Thus, the width of the triangle at each level reflects decreasing abundance in the progress from data to knowledge. The height of the triangle at each level reflects actionability (i.e., the ability to take appropriate action, such as a good decision or effective behavior). Converse to their abundance, data are not particularly powerful for supporting action, and information is more powerful than data. But knowledge supports action directly, hence its position near the top of the triangle. Curiously, there is current speculation as to one or more additional levels "above" *knowledge* in such hierarchies (e.g., *wisdom*; cf. Spiegler, 2000). The present article does not attempt to address "wisdom flow."

Knowledge Management Life Cycle

Nissen et al. (2000) observe a sense of process flow or a life cycle associated with knowledge management. Integrating their survey of the literature (e.g., Davenport &

Figure 1. Knowledge hierarchy (adapted from Nissen, 2002)

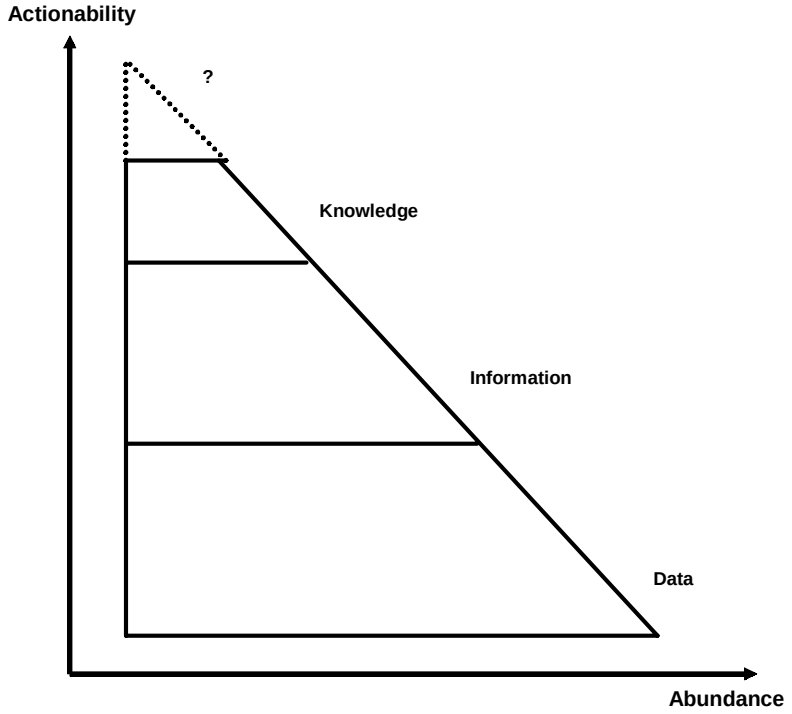

Table 1. Knowledge management life cycle models (Adapted from Nissen et al., 2000)

Model	Phase 1	Phase 2	Phase 3	Phase 4	Phase 5	Phase 6
Despres and Chauvel	Create	Map/ bundle	Store	Share/ transfer	Reuse	Evolve
Gartner Group	Create	Organize	Capture	Access	Use	
Davenport & Prusak	Generate		Codify	Transfer		
Nissen	Capture	Organize	Formalize	Distribute	Apply	
Amalgamated	Create	Organize	Formalize	Distribute	Apply	Evolve

Prusak, 1998; Despres & Chauvel, 1999; Gartner Group, 1999; Nissen, 1999), they synthesize an amalgamated KM life cycle model as outlined at the bottom of Table 1.

Briefly, the creation phase begins the life cycle, as new knowledge is generated within an enterprise; similar terms from other models include *capture* and *acquire*. The second phase pertains to the organization, mapping, or bundling of knowledge, often employing systems such as taxonomies, ontologies, and repositories. Phase 3 addresses mechanisms for making knowledge formal or explicit; similar terms from other models include *store* and *codify*. The fourth phase concerns the ability to share or distribute knowledge in the enterprise; this also includes terms such as *transfer* and *access*. Knowledge use and application for problem solving or decision making in the organization constitutes Phase 5, and a sixth phase is included to cover knowledge refinement and evolution, which reflects organizational learning—and thus a return to knowledge creation—through time. It is important to note, as in the familiar life cycle models used in IS design (e.g., System Development Life Cycle), progression through the various phases of this Life Cycle Model is generally iterative and involves feedback loops between stages; that is, all steps need not be taken in order, and the flow through this life cycle is not necessarily unidirectional.

Current Knowledge-Flow Theory

This section summarizes the dynamic model developed by Nissen (2002). It begins by building upon Nonaka's (1994) work to conceptualize an extended model of knowledge-