Chapter 5.31
Military Knowledge Management

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INTRODUCTION

Knowledge is a critical component of military operations, and the military has been an early adopter of knowledge management (KM) technologies. Significant events include a strategic use of tools to filter information into knowledge, the designation of knowledge officers in high-level strategic positions, and the implementation of knowledge systems as a means to support situational awareness and understanding. Following is a brief overview of knowledge management within the military and a review of knowledge theory and practice pertinent to military knowledge management.

MILITARY KNOWLEDGE MANAGEMENT

The military is extremely diverse in its knowledge systems and practices. In the collective, the military would be the equivalent of many large corporate conglomerates, each with multiple research and development (R & D) branches. Adding to the complexity is the secrecy of many of the systems. To attempt to summarize military knowledge management in its entirety would be presumptuous, if not impossible. Rather, this discussion will focus on some representative systems and approaches being advanced in military-sponsored KM research and practice. Included are comparisons to knowledge-management initiatives in the private sector. The discussion begins with an overview of private-sector and academic-research practices that have carried forward into the military.

Relevant Research

The importance of knowledge management has been equated to the importance of natural resources in previous generations wherein strategies that companies once devoted to optimizing capital

and labor are now being applied to maximize the productivity of knowledge resources (Silver, 2001). A means to maximize productivity in the military is to integrate systems, technologies, and information resources. Such aggregations are increasingly under the umbrella of knowledge management.

At a technical level, military knowledge management is addressed within enterprise-systems engineering initiatives, with a current initiative force transformation through network-centric systems (MIT, 2002). Knowledge systems may be an adjunct to specialized computing systems or an umbrella under which information and communications technologies can be grouped. Similar to the private sector, military KM integrates disciplines addressing computer and communications technology, cognitive science and artificial intelligence (AI), and human-computer and human-systems integration. There is additional research addressing information synthesis or fusion, with XML (extensible markup language) as a categorization schema and ontology structure in support of semantic understanding. In addition are military-specific KM initiatives such as command and control, military intelligence, and sensors.

Common to both the military and private sector is research into mechanisms to consolidate data and information into knowledge, and once integrated, to understand strategic options and cause-effect relationships (Primix Solutions, 2000). The desired result is improved decision making, interorganizational communications, cooperation, and interaction (Schwartz, Divitini, & Brasethvik, 1999). An example at the macro-level is Army knowledge management with its transformation mission toward a knowledge-based organization that integrates best practices into professional duties through active involvement with the knowledge infostructure (MIT, 2003).

At a microlevel are issues in knowledge design that address navigation and search mechanisms (Sherman, 2000), and knowledge structures to

help achieve a goal or objective (Saward, 2000). In the military, a current focus is on context to help document knowledge flows (Nissen, 2001). Metrics are important for the assessment of knowledge initiatives, and means have been advanced to address the value of specific knowledge units (Gao & Sterling, 2000), to include relevance weightings for context-integration points, and to allow the knowledge value added (KVA) methodology to ascertain return on knowledge investments (Housel & Bell, 2001).

Both the military and private sector have an interest in cognitive understanding and research to encode process, procedural, and expert knowledge into software (Storey, Goldstein, & Ullrich, 2002); to find techniques to capture common-sense knowledge in a context-sensitive manner and extract expert-level specifics (Storey & Day, 2002); to derive metacognitive attributes to help define relationships between user cognitive needs and knowledge metadata (Maule, 1998, 2000, 2001); and to implement reasoning tools to identify patterns of behavior to resolve problems or identify opportunities (Fensel & Motta, 2001). All of these approaches are active in military research as a means to structure or derive knowledge for decision-support applications.

A next step is to make this processed knowledge readily available. Portals with collaborative tools are mechanisms to establish relevance (Silver, 2001); to personalize, sort, and filter information (Moore, 2001); and to enhance business intelligence with decision support (Ruber, 2000). A portal with real-time chat and messaging empowers users with collaborative abilities (Loria, 2001). In the Navy, portals have become a primary means for information, communications, collaboration, work-flow coordination, and decision support (Maule, Gallup, & Schacher, 2003).

Also notable is the trend toward communities of practice as a means to build knowledge expertise. Communities increase social capital or the economic value of relationships within an organization and therein lower the cost of knowl-

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