Knowledge Management within Collaboration Processes: 
A Perspective Modeling and Analyzing Methodology

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Abstract

Collaborative projects are relatively complex and, hence, are difficult to handle. Managing distributed knowledge among stakeholders in a systematic way is crucial to improving the collaboration productivity. This article provides a generic modeling approach that explicitly represents the perspectives of stakeholders and their evolution traversing a collaborative process. This approach provides a mechanism to analytically identify the interdependencies among stakeholders and to detect conflicts and reveal their intricate causes and effects. Collaboration is thus improved through efficient knowledge management. This article also introduces a Web-based information system that uses the perspective model and the social network analysis methodology to support knowledge management within collaboration.

Keywords: collaboration processes; knowledge management; information systems; perspective modeling; social interactions

Introduction

The ability to effectively manage the distributed knowledge and business processes is becoming an essential core competence of today’s organizations. Various knowledge management theories and approaches have been proposed and adopted (Earl, 2001). These include ways to align knowledge process with strategies (Spender, 1996) in order to leverage organizational learning abilities (Nonaka & Takeuchi, 1995), and to build IT infrastructures to support knowledge activities (Lu, 2000; Zack, 1999). Knowledge management systems (KMS) can be viewed as the implementation of the knowledge management (KM) strategy. KMS improve the knowledge processes through IT infra-
structures and information processing methodologies. Although the importance of knowledge management has been well recognized, organizations are still facing the problems of how to successfully implement knowledge management. In order to effectively utilize these theories and technologies to support teamwork, it is necessary to gain more fundamental understandings of the characteristics of knowledge management within collaboration processes.

Previous knowledge management approaches can be classified generally into two categories (Hanson et al., 1999). The strategies supporting knowledge replication provide high-quality, fast, and reliable information systems implementation by reusing codified knowledge. The strategies supporting knowledge customization provide creative, analytically rigorous advice on high-level strategic problems by channeling individual expertise. The codification approaches view information technology (IT) as the central infrastructure of knowledge-based organizations. KMS thus are treated as system integration solutions or applications that retain employees’ knowledge. The major concern of these approaches is how to help organizations to monitor the trends of rapidly changing technologies and inventions in order to recognize new applications that may provide competitive advantage (Kwan & Balasubramanian, 2003). However, IT is just one of the elements of KMS. As knowledge management involves various social and technical enablers, the scope, nature, and purpose of KMS vary during the collaboration processes. Researches from the knowledge customization perspective focus on understanding knowledge and its relationships with organizations (Becerra-Fernandez & Sabherwal, 2001; Nonaka & Takeuchi, 1995). A typology of knowledge creation and conversion of tacit and explicit knowledge was proposed (Nonaka et al., 1998). The conversion involves transcending the self of individuals, teams, or organizations and reveals the importance of organizational architecture and organizational dynamics to capitalize on knowledge. Recent research on knowledge management has focused on developing models that interconnect knowledge management factors, such as collaboration, learning, organizational structure, process, and IT support (Lee & Choi, 2003). These research works have mainly addressed understanding the nature of knowledge and knowledge management. Both approaches provide workable models and methods for implementing knowledge management.

In fact, knowledge replication is interlaced with knowledge customization within a collaborative process. In collaborative projects, it is important to systematically integrate these two groups of KM approaches in order to build methodologies and systems to facilitate teamwork. First, KM methodologies should be coupled with process management in collaborative projects. An organization and its members can be involved in multiple knowledge management process chains. The tangible tasks are accompanied by the implicit knowledge integration activities. As such, knowledge management is not a monolithic but a dynamic and continuous organizational phenomenon (Alavi & Leidner, 2001). Second, KM and KMS have to take account of various social factors within collaboration processes. Collaborative projects involve various stakeholders (i.e., all of the human participants and organizations that influence the collaboration process and the results) from different disciplines to work coopera-