Chapter VI

Supporting the Complexity of Inquiring Organizations: An Agent Approach

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Abstract

This chapter examines the issue of technological support for inquiring organizations and suggests that the complexity of these organizations is best supported by a technology of equal complexity—that is, by agent technology. Agents and the complex systems in which they are active are ideal for supporting not only the activity of Churchman’s inquirers but also those components necessary to ensure an effective environment. Accordingly, a multiagent system to support inquiring organizations is introduced. By explaining agent technology in simple terms and by defining inquirers and other components as agents working within a multiagent system, this chapter demystifies agent technology, enables researchers to grasp the complexity of inquiring organization support systems, and provides the foundation for inquiring organization support systems design.
Introduction

Organizations are operating in increasingly complex environments. Simply functioning effectively in these environments requires increasing amounts of information; creating, storing, and retrieving this information is of paramount importance. To effectively manage these tasks, organizations must adopt flexible technologies capable of withstanding dynamic environments and which enable the organization to maintain and evolve a reliable data store. A framework for such an organization is based on the philosophies underlying inquiring systems (Churchman, 1971); an organization that adopts the framework is known as an inquiring organization (Courtney, Croasdell & Paradice, 1998).

The inquiring organization is a complicated structure which has, as its primary task, creation and maintenance of knowledge. Learning is of paramount importance to such an organization and relies heavily on the organization’s ability to manage its stores of data, information, and knowledge. Managing these stores requires not only the ability to store and retrieve but also to ensure integrity throughout organizational memory by reducing or eliminating redundancy, inconsistency, and temporal issues. This indicates a need for a complex knowledge creation system that also supports management of knowledge within the organization.

Further, any organization today must glean and analyze information from its complex environment. This requires that an organization be cognizant of its environment and has the ability to continuously scan for changing conditions. Once changing conditions are noted, the organization must be able to recognize whether the condition is immediately threatening (or opportunistic) and requires immediate action, is potentially actionable, bears watching, or can be ignored.

While Churchman’s (1971) inquirers on which the concept of an inquiring organization is based are separate entities, they are discussed in terms of an overall knowledge creation and sharing system. To be successful in these endeavors, inquiring organization members require support from a system that also aids decision-making and information discovery, provides temporal guidance, and routinely provides feedback. An inquiring organization must, therefore, be able to scan the environment, interpret incoming information, assess its importance, decide whether action is necessary, and ultimately decide on a course of action in addition to looking for and creating opportunities to learn. This is a complex set of actions best accomplished by a knowledge creation system based in part on the knowledge creation capabilities of the inquirers and, in part, on an overall knowledge management system. This chapter suggests that agent technology is an appropriate method for conceptualizing, designing, and ultimately implementing this complex system.