Chapter XVIII

Knowledge Elicitation and Mapping: Ontology as an Instrument of Design and Organizational Learning

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ABSTRACT

This chapter is concerned with engaging end-users in the design and development of knowledge management systems. The identification, capture and use of contextual knowledge in the design of knowledge management systems (KMS) are key development activities. It is argued that tacit knowledge, while often difficult to capture, can be extremely useful as contextualising knowledge to designers of KM systems. A methodology was developed to combine soft systems methodology, causal cognitive mapping, and brainstorming to provide a set of knowledge requirements. The methodology appears to offer an effective platform for making sense of non-routine yet rigorous knowledge work. The interventions enacted by the consultant and involving project stakeholders and end users facilitates individual, group and organizational learning through a metacognitive process of understanding the relationships and dynamics of shared group knowledge. Engagement with the methodology, in addition to causing tacit knowledge to be made explicit, enables second-order ‘deutero learning’, or ‘learning how to learn’. The combination of activities presented forms a metacognitive process which is both a form of proactive individual and organizational learning and an endeavour which adds to organizational memory. The identification, capture and use of contextual knowledge and their use in engaging end-users in the design of KMS will result in better user-system interaction.
INTRODUCTION

This chapter is concerned with engaging end-users in the design and development of knowledge management systems. The identification, capture and use of contextual knowledge in the design of knowledge management systems (KMS) are key development activities and it is suggested that the metacognitive tasks involved in formalising tacit knowledge, when undertaken by stakeholders and end-users, adds to and enhances organizational learning and organizational memory. By linking process modelling, elements of soft systems methodology and cognitive mapping for knowledge elicitation, the stakeholders in the case study improve both the knowledge management system design process and organizational learning. These are important activities which can enhance organizational learning (Tsoukas & Mylonopoulos, 2004b, Snowden, 2002). Metacognition involves thinking about the aspects and processes involved in cognition itself - thinking about one’s own thinking, memory and perception etc. Here, we are concerned with stakeholders and end-users reflecting on two types of knowledge: implicit/unconscious knowledge and explicit, conscious, factual knowledge and the process of transforming the former into the latter.

The interface between business activities known as ‘knowledge work’ and the group of technologies referred to as ‘knowledge management systems’ is a key area for organizational change and organizational learning. While there continues to be much debate about the relationships between organisational learning and the use of knowledge management systems to augment this process, the interface between the knowledge work activities and the technologies used to manage them has to be considered a crucial area (Awad & Ghaziri, 2004; Becerra-Fernandez et al., 2004; Malone et al., 2003) In addition, while there are many formal notations to rigorously capture and document information systems requirements for the purposes of design, a more difficult yet critical area also exists: that of capturing the knowledge processes of creating, finding, sharing and using knowledge to achieve good business outcomes. A key challenge taken up here then, is to construct representations which will assist in the design of appropriate tools and management solutions to support those activities and in doing so involve end-users in a manner which will enhance the development process and eventual outcomes. The activities involved also entail developing processes that can facilitate and augment organizational learning.

This chapter therefore has been concerned with contextual knowledge and organizational learning, more specifically with the identification, capture and use of contextual knowledge in the design of knowledge management (KM) systems. It was proposed that this is an important process which can augment organizational learning through enhancing object learning and making tacit knowledge explicit.

The elicitation and analysis of operational and management knowledge and the design of systems to contain and give access to that knowledge still seem to focus largely upon explicit forms of knowledge. Even design ontologies (Guarino, 1998; Maedche et al, 2003), which appear to offer comprehensive methods for the rigorous capture of shared conceptualisations, generally remain in the comfort zone of knowledge that can be written down. As Robillard (1999) says:

*Software engineers have placed a great deal of emphasis on documenting the final representation of the knowledge structure, or the source code, but only recently the rationale, or process, of knowledge crystallisation.* (Robillard, 1999, p92).

Using a single case study, this chapter argues that any type of knowledge which is used for effective action should be considered in the search for systems or managerial solutions. Design formalisms, such as UML class diagrams and activity models (Bennett, McRobb and Farmer,