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Collaborative Information Systems Requirements Elicitation: Discovering Behavioral Requirements Using Scenarios

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Introduction

Several decades of MIS research have clearly shown the importance and the difficulty of developing complete and accurate information systems requirements. Most agree that involving users is critical to the success of the requirements process. The challenge is in determining how to effectively involve groups of users in that process.

Group Support Systems (GSS) have been highly successful in improving group productivity (Nunamaker, Briggs, Mittleman, Vogel, & Balthazard, 1996-97). On-going research on the use of GSS for collaborative requirements elicitation has led to the development of special-purpose GSS tools and an over-arching Collaborative Software Engineering Methodology (CSEM) (Dean, Lee, Pendergast, Hickey, & Nunamaker, 1997-98). However, the existing tools do not support capture of a dynamic picture of the business processes that a system must support. Recent research has suggested that scenarios may be an effective mechanism for eliciting these behavioral requirements. The purpose of this dissertation research is to define a collaborative scenario methodology and tool to capture behavioral requirements.

Literature Review

Scenarios are narrative descriptions of human work processes that specifically identify the sequence of actions taken to accomplish a goal (Carroll, 1995). They are being increasingly used throughout all phases of IS development (Carroll, 1995) including requirements elicitation (Potts, Takahashi, & Anton, 1994; Weidenhaupt, Pohl, Jarke, & Haumer, 1998). Research indicates that this popularity is because concrete scenarios are more compatible with user's situated problem solving tendencies than traditional abstract requirements (Carroll, 1995) and help reduce complexity (Weidenhaupt et al., 1998). Based on these findings, scenarios were included in CSEM to elicit behavioral requirements directly from users. Initially, the focus in CSEM is on capturing rich contextual scenario descriptions that describe work processes in a broad organizational context including goals, user interactions, and required resources.

Several researchers identify information that should be included in a contextual scenario description (e.g., Pohl & Haumer, 1997). Other researchers focus on alternative scenario representations such as unstructured (e.g., Carroll, 1995) and structured (e.g., tabular scripts (Potts et al., 1994)) natural language and graphical models. Little research has been done on how to collaboratively elicit scenarios from users. The purpose of this research is to determine: *What are the collaborative scenario modeling processes, tools, and facilitation techniques needed to effectively elicit IS behavioral requirements from users in a group environment?*

Research Methodology

A multi-methodological systems development research approach incorporating theory building, systems development, experimentation, and observation will be used (Nunamaker, Chen, & Purdin, 1991a). Results of the scenario literature and prior GSS research will guide theory building to identify a collaborative scenario modeling framework and tool requirements. Laboratory experiments will be used to refine the scenario modeling process, tool, and facilitation techniques. The experimental research model will be an adaptation of the basic GSS model (Nunamaker, Dennis, Valacich, Vogel, & George, 1991b). Limited field studies will be used to provide real-world feedback for refining the collaborative scenario modeling methodology and tool if groups are available. The research will be limited to user scenario elicitation. Evolution of requirements scenarios through to design and testing will be addressed in future research.

Expected Results

Based on early scenario group sessions and previous group modeling results, scenarios should be a very effective tool for eliciting behavioral requirements from users. Preliminary research indicates that users can easily define scenarios but that more structure is required to ensure consistent scenario quality and completeness. The primary contribution of this research will be definition of a recommended level of scenario and process structure, with supporting collaborative tools and facilitation techniques, that will increase scenario quality without unnecessarily inhibiting users' productivity when defining scenarios. As a result, the integrated methodology will allow user groups to rapidly define, analyze, and achieve consensus on the large number of scenarios necessary to define behavioral requirements for today's complex information systems.

References available upon request from the author (ahickey@cmi.arizona.edu)..