

**ABSTRACT**

It is widely agreed that the trend toward distributed software development is growing. Although there are difficulties involved, this trend is here to stay, as organizations will continue to search for ways to develop software at lower cost but with same quality. Current research has focused primarily on the later stages of the software development life cycle, especially coding of software requirements. However, as organizations become more virtual, distributed development will become more apparent throughout the entire life cycle. In this study, we investigate distributed e-collaboration in requirements determination in software development. We report on results from a field experiment with two graduate level Information Systems classes, one located in Porto Alegre, Brazil and one in Chicago, Illinois, USA. The students in Brazil played the role of users whereas the students in Chicago role-played analysts. The Chicago-based students developed a requirements document for an information system by interviewing the Brazil students using an electronic discussion board. Our findings provide insight into the distributed analysis process and identify sources of potential problems.

**Keywords:** e-collaboration; software development life cycle

**INTRODUCTION**

It is widely agreed that the trend toward distributed software development is growing (Herbsleb, Mockus, Finholt, & Grinter, 2001). Outsourcing of software development has become more common as organizations search for increased efficiency and lower costs. In particular, offshore outsourcing is attractive to organizations trying to take advantage of differential labor costs in other countries (Agarwal, 2003). Although there are difficulties involved as well, this
trend is here to stay, as organizations will continue to search for ways to develop software at lower cost but with the same quality.

At the same time, virtuality is increasingly common in organizations; more and more employees in different geographic locations are collaborating electronically. From a software development perspective, this means that users and stakeholders may be located in a variety of different geographic locations, separated from each other and separated from systems analysts. Increasingly the trend toward distributed development will become more apparent throughout the entire life cycle, including analysis of software requirements in the early stages of the development life cycle.

Current research on distributed development has focused primarily on the latter stages of the life cycle, especially coding of requirements (e.g., Grinter, Herbsleb, & Perry, 1999). We believe our study is one of the first to address distributed analysis in software development. Our goal is to understand the distributed analysis process better and to identify sources of problems. In addition, we take a first step in the development of training for software developers to increase effectiveness in the distributed environment.

In this study, we report on results from an e-collaboration field experiment with two graduate level Information Systems classes, one located in Porto Alegre, Brazil and one in Chicago, Illinois, US. The students in Brazil played the role of users whereas the students in Chicago role-played analysts. The Chicago-based students developed a requirements document for an information system by interviewing the Brazil students using an electronic discussion board.

The paper is organized as follows: First, we review several different literature streams to establish the foundation for our research. Next we present the methodology used for our study. Finally we present the results and discuss the implication of the study for future research.

BACKGROUND

In the following sections, we first explore the role of requirements determination in the analysis process. The prevailing assumption in the literature has been that requirements determination usually takes place in a face-to-face (FTF) setting. As there has been little research on distributed analysis, we turn to literature from distributed collaboration and cross-cultural relations to develop a foundation for our research.

Role of Requirements Determination in Distributed Analysis

Requirements determination is a critical part of the software development process, occurring early in the life cycle. Correct and complete requirements lead to a more efficient development process and increased quality and acceptance of the completed software product (Browne & Rogich, 2001). Brown & Rogich discuss requirements determination as a three-step process: (1) information gathering — eliciting requirements from users; (2) representation — modeling the elic-
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