Chapter II

Electronic Collaboration, Communication and Cooperation:
A Taxonomy and a Prototype

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Abstract

This chapter investigates the subject of e-collaboration and proposes a meta-taxonomy that classifies the existing taxonomies of collaborative systems found in the literature. It also points out the three dimensions in e-collaboration: communication, cooperation, and coordination. The most commonly encountered functions of collaborative systems are identified through an extensive review of commercial and research products. The functions and the systems are classified with relevance to the communication, cooperation, and coordination dimensions. We find that although all three dimensions of collaboration are necessary for the successful completion of work, there is a lack of an integrated system enabling all of them. Consequently we present the C-CUBED system, which attempts to support all three collaboration dimensions.
Introduction

E-collaboration and collaborative systems bring geographically dispersed groups together, enhancing communication, coordination, and cooperation. This results in tremendous time and cost saving, greatly decreased travel requirements, faster and better decision making, and improved communication flow throughout the organization.

Broadly defined, the term electronic collaboration encompasses the support of communication and coordination of two or more people through the use of software programs in an effort to fulfill an assignment or solve a problem together (Borenstein, 1992; Schooler, 1996).

Researchers have identified at an early stage the need for providing means for classification of the systems supporting e-collaboration. Therefore classification efforts have existed since the early 80s, and their number continues to grow.

This chapter performs a review of the research field of online collaboration and provides a meta-taxonomy of the classification schemes of collaborative systems in the literature. In addition we present a prototype classification and identify the need for a system that would support in an integrated way the communication, cooperation, and coordination dimensions of e-collaboration. Finally, we suggest the functional and technical architecture of a prototype system developed to address this need through the access and management of shared artefacts and offering, at the same time, coordination capabilities through the automation of business processes with the use of workflow management technologies.

The chapter is organized in the following manner: the next section gives an overview of previous literature concerning taxonomies and classifications of collaborative applications. Then, the chapter discusses some of the most common collaboration functions, while the three dimensions of e-collaboration along with their basic characteristics are defined. The chapter then introduces the proposed taxonomy of collaborative systems, and is followed with a presentation of the results of our research on the market of e-collaboration, giving information about the examined systems and also correlating the systems with the identified collaboration functions. In the same section we also identify the lack of a system supporting in an integrated manner all three collaboration dimensions. Next, the chapter presents the technical and functional architecture of a prototype application, as well as a usage scenario of this system applied in the tendering/bidding process. Finally, the chapter discusses our conclusions and indicates future research issues.