Available online at www.sciencedirect.com
ScienceDirect
European Journal of Operational Research 177 (2007) 1385–1399
EUROPEAN JOURNAL OF OPERATIONAL RESEARCH
www.elsevier.com/locate/ejor

Information management in distributed collaborative systems: The case of collaboration studio

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Available online 23 June 2005

Abstract

This paper presents the Collaboration Studio (CS) system, its argumentation and data-structuring models and gives some insights for dealing with information divergence. The system allows discussions among a group of participants that includes a coordinator. The working mechanisms implemented within CS are perfectly transparent to the user, hiding implementation details, giving an appealing and user-friendly environment, and so users do not have to worry about patterns of data distribution, or the details of distribution management. CS shares characteristics with other collaboration computational tools, such as synchronous and asynchronous support and both group working spaces and a local working space. However, its main purpose differs in that, instead of trying to achieve a single document as the outcome of the joint work of several users, CS aims to achieve a broader objective, which is to register (and to demonstrate) the "path" used to obtain certain knowledge.

Keywords: Collaborative systems; Groupware; Divergence management; Knowledge management

1. Introduction

Information systems and information technology are leading to a global organizational change. Some of the more dramatic examples are those where entrepreneurs have created radical new business structures supported by the power of information technology and the arrival of new networked or virtual organizations (Boddy et al., 2002, p. 167). Information becomes the organization's main power source, its main fuel and most important resource or input (Chiavenato, 2000), and the knowledge workers (Drucker, 1988) gain vital importance, as they constitute a scarce resource in the economy, moving freely within and between organizations, presenting new challenges, such as knowledge management and organizational memory (Conklin, 2001).

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0377-2217/$ - see front matter
doi:10.1016/j.ejor.2005.04.010

However, it is known that organization knowledge does not lie within some sort of technological information storage, the importance of humans in the process is fundamental. Nevertheless, they cannot be simply detached. Technological artefacts (such as collaborative systems, databases, knowledge bases, etc.) can be useful for capturing explicit knowledge (for more details on explicit and tacit knowledge see Nonaka and Takeuchi, 1995) and maintaining it in proper repositories, which should be available to all the appropriate people in an organization (Courtney et al., 2000). The major drawback is that less expensive data storage mechanisms in conjunction with increased processing capabilities and networking can generate information overload (Nunamaker et al., 2001), hampering information retrieval appropriate to teams' needs. Mere file or document storage (usually known as formal knowledge objects, Conklin, 2001) becomes inefficient. These records are kept in filing cabinets, folders, in the memory of personal computers, on computer discs and in various databases using a variety of information technologies. The problem with this knowledge is that it is easily lost if the information is stored in a manner that makes it difficult to retrieve, and so this knowledge can become implicit. The storing of information on the hard disk of personal computers by individual employees is a classic example of information that may well be totally lost when the employees leave the organization (Gunnlaugsdottir, 2003). Another level of information (meta-information or information about information) is required to structure and categorize the information repositories for an enhanced utilization of the information objects.

Technically, there are exciting possibilities for the use of hypertext, groupware, intelligent agents, neural networks, advanced search techniques and other computational technologies to provide "relevance retrieval" access in large databases—retrieval which respects the meaning relationships among the stored items (Conklin, 2001). Data manipulation and knowledge mapping representational tools are often designed to create meta-information according to the organization's needs. Such tools include basic office tools, such as spreadsheets and outliners, annotation tools (Ginsburg and Kambil, 1999), information retrieval systems such as collaborative filtering and browsing (Romano et al., 1999a; Hilmer and Dennis, 2000), or "knowledge mapping" software.[1] Sharing and exchanging knowledge will not be a fruitful process unless it has been structured (Gunnlaugsdottir, 2003).

The globalisation process and the spread of enterprise managers all over the world has led not only to new organization structures (Drucker, 1988), but also to virtual project management and associated knowledge management problems (for further details, see Katzy et al., 2000), and to the increasing need for distributed collaboration and decision-making support systems, driving a move towards business teams distributed along the dimensions of space, time, and technology. Large groups using group support systems (GSS) appear to benefit more than smaller groups (Vreede et al., 2003), and research findings suggest that group support systems can facilitate knowledge acquisition (Kwok et al., 2000), improve decision quality and quantity, enhance participant satisfaction (Dennis et al., 1996), and reduce the cost and length of meetings. All of this helps to boost efficiency and productivity (some clear examples of this can be found in Vreede et al., 2003).

GSS research is moving towards providing anytime/any-place/any-technology support for teams of any size (Romano et al., 1999b). Distributed collaboration systems demand specific tools to support both space and time distributed groups. Different tools are needed from the ones used in regular synchronous meetings, whether they are held face-to-face (F2F), or not. During an asynchronous meeting, group members do not interact at the same time, even if they are at the same location. This line of work is extremely important to organizations with dispersed managers and workers, and vital to virtual project management. However, some problems with lower group satisfaction, decreased socialization among the group, and meeting coordination/facilitation problems have been pointed out as process drawbacks (Vreede

[1] See http://www.thebrain.com, for example.