

# Chapter 1

## From Collaborative Tools to Collaborative Working Environments

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### ABSTRACT

*In this article we introduce the main research lines concerning CSCW and groupware, which are forming the core foundation of Collaborative Working Environments (CWE). Furthermore, we introduce the problematic aspects in CWE and the features and recommendations for the integration of CWE in organizations. Through this issue readers will learn new paradigms for the building of CWE as well as directions for measuring and planning the implementation of collaboration within enterprises with the aim of obtaining the best performance. Finally, a brief introduction of the three articles of this special issue on CWE is presented.*

### INTRODUCTION

This introductory essay aims at presenting a short overview on the history of CSCW (Computer Supported Cooperative Work), groupware research and Collaborative Working Environment (CWE). Obviously such an overview can not be complete in the context of a short essay. Instead

we will try to identify those approaches that are relevant to the current research on CWE and that indicate that the integration of different cooperation functionalities is often the key for innovation.

The term CSCW has been coined at a workshop at Endicott house in Massachusetts by Irene Greif, Cashman. Shortly after that workshop the first conference on CSCW was held in Austin, Texas in 1984. However research in collaborative systems has a longer tradition, but it was performed

DOI: 10.4018/978-1-61350-459-8.ch001

under different headers, such as office automation and office information systems. In particular the term office automation was criticized by many CSCW researchers for the fact that it implied an “automation” of the office and in some sense also the office worker while CSCW research has its primary focus on the support of cooperative work. The initial definitions of CSCW indicate this: CSCW is a generic term which combines the understanding of the way people work in groups with the enabling technologies of computer networking, and associated hardware, software, services and techniques (Wilson 1991).

At the beginning the CSCW research community was full of enthusiasm about the new possibilities of networked computers, i.e. the first PCs or more powerful workstations. It seemed to be possible that a lot of cooperation processes could be easily supported by networked computers through an appropriate modeling and implementation. At this time several models for the representation of cooperation patterns have been presented such as the rule based AMIGO model (Danielsen et al. 1986), Petri-Net based systems such as CHAOS (Cindio et al. 1986) for office conversations or DOMINO for office processes (Kreifelts et al. 1984), or the speech-act based approaches (Bowers et al. 1988). In particular the adoption of the speech act theory by Austin (Austin 1962) and Searle (Searle 1979) had a strong influence on the CSCW community. It resulted in new email based communication tools such as the Coordinator (Action-Technology 1987; Winograd et al. 1986) but also into a big debate about the applicability and for cooperative activities. Lucy Suchman’s book (Suchman 1987) and her follow discussion with (Suchman 1994; Winograd 1994) pointed out that cooperation is mainly a situated activity that can not be pre-planned and prescribed (Schmidt 1999) as it was required by many CSCW systems at this point in time.

Although speech act based systems were no longer popular in the 90<sup>th</sup> we can observe an uptake

of some of the ideas with the advent of semantic web technologies which aim at the understanding of cooperation artifacts (Bojārs et al. 2008) and services to enable system interoperability by a standardized ontology. In this context speech act research can help to identify the basic interaction elements of a cooperation system as well as the primary cooperation artifacts. The Information Lens system (Malone et al. 1986) was a first approach in this direction.

The CSCW research community was always an interdisciplinary, but with this introduction we wish to concentrate mainly in the technical strand when we discuss the research streams that can be seen as the pillars of CSCW research and that evolved within the within the 90<sup>th</sup>.

Research in Videoconference technology as such was never a topic in CSCW. Instead CSCW was looking at the drawbacks and bottlenecks of videoconference systems such as the problem of eye contact, screen estate problems or the lack of possibilities for remote interaction. In particular researchers from Japan contributed a lot of innovative ideas to this research. Ishii contributed a series of editions of his TeamWorkstation and Clearboard systems (Ishii et al. 1992). All of his approaches contributed to an integration of a video conferencing system with the ability of seamless interaction on a shared object such as text or drawings. Integration was also the innovative aspect of the GestureCam system that integrated a video conference with a small robot that enabled remote users to perform gestures and to point on remote objects (Kuzuoka et al. 1994).

The extension of a point to point video conferencing system towards a media space was achieved by a widespread distribution of video conferencing facilities within an office environment. Additionally new features were included that enabled users to share their office by a video link or to get a quick overview on the presence and availability of users by glancing into their offices (Mackay 1999). This research area delivered

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