Prerequisites for the Implementation of E–Collaboration

Thorsten Blecker
Hamburg University of Technology (TUHH), Germany

Ursula Liebhart
Alpen-Adria-University of Klagenfurt, Austria

INTRODUCTION

E-collaboration refers to a task-oriented cooperation between individuals by using electronic technologies. In the company's practice, e-collaboration mainly describes each form of collaboration between two or more locations and/or organizations via electronic channels in order to support electronic commerce and supply chain transactions.

However, a successful e-collaboration can be achieved only if many requirements are satisfied. We distinguish between three main fields that should be addressed in order to benefit of this concept. The advances in information and communication technology (ICT) are the core of e-collaboration since they make up the 'e' in e-collaboration. However, technology alone is not sufficient to make e-collaboration work. The second requirement is the appropriate organizational integration that supports the implementation of e-collaboration in practice. As a third requirement, we discuss human resource management and leadership. Employees should be capable of using e-technologies and cooperating via the electronic channel to carry out common tasks.

BACKGROUND

Understanding e-collaboration requires clarifying two components: the term "collaboration" and the prefix "e-." The term "collaboration" here is understood in a very traditional manner. By analogy to the *Heritage Dictionary of the English Language* (2004) we define collaboration as working together, especially in a joint intellectual effort. In today's high competitive processes this means that two or more people are sharing complex information on an ongoing basis for a specific goal or purpose. As customary for many current concepts companies often use ICT for an efficient and effective implementation of the necessary information sharing and information processing. On the one hand the application of ICT enables personal communication such as e-mail, video-conferences and chats. On the other hand ICT is often a necessary precondition to get access to common information or rather to allow people to interactively share information at a distance which is used in and arise during the collaboration process. Therefore we call this type of collaboration e-collaboration as it is facilitated by ICT.

In the technical literature, there are many definitions of e-collaboration. A widely accepted definition was provided in one of the first special issues on e-collaboration published by the *Journal of Systems and Information Technology*: E-collaboration is collaborating "among individuals engaged in a common task using electronic technologies" (Kock et al., 2001). Furthermore, beside others Monplaisier/Haji (2002) delineate an enabling function of ICT for collaboration and concentrate on its efficient use to support interaction too. Yet e-collaboration does not mean that all processes are based on the application of ICT. E-Collaboration today entails conventional ways of working such as meetings, phone and fax to facilitate information sharing, discussion and agreement as well as new services and technologies such as project collaboration, workflow tools, and e-conferencing.

Main purposes of applying ICT in collaboration are increasing productivity and efficiency by reducing unproductive travel time, creating shorter and more structured meetings, and providing faster exchange of information for an increased number of participants. In detail, companies strive for:

- Accessing and combining distributed assets and resources

- Reducing travel, project management, and administrative costs
- Speeding up product-development cycle time
- Reducing supply lead times
- Gaining real-time pricing and availability information, real-time order management, continuous demand management
- Improving agility, flexibility and speed of strategic relevant action across locations and company boundaries
- Synchronizing activities across teams leading to efficient coordination within an entire supply chain
- Reducing inventory-carrying costs and logistics costs
- Intensifying collaboration with suppliers, customers and partners
- Improving the supplier visibility

In spite of the multitude of benefits and the promising concepts developed over the last years, there are quite a number of problems to be solved in order to successfully implement e-collaboration in practice. For example Ackermann (2001) argues that in the last years researchers have "identified a base set of findings [to which] human activity is highly flexible, nuanced, and contextualized and that computational entities such as information transfer, roles, and policies need to be similarly flexible, nuanced, and contextualized ... (but) we do not know how to build systems that fully support the social world uncovered by these findings … (this is) the social-technical gap … the divide between what we know we must support socially and what we can support technically." Therefore beside the well known and often discussed technological challenges of e-collaboration companies have to concentrate the more "hidden challenges" such as social and cultural structures.

PREREQUISITES

Technology

The first and widely discussed prerequisite of e-collaboration is the technological infrastructure because information sharing is the core element of all forms of collaboration. This fact is often cited as evidence for the importance of ICT and as a reason that only the ad-

vances in ICT are breaking down geographical barriers in relation to sharing and accessing information.

In order to analyze the technological prerequisites we initially have to differentiate two general classes of ICT systems for collaboration purposes: messaging-based or repository-based. A *messaging-based infrastructure* is used to send process assignments through an e-mail/messaging system (e.g., Microsoft Exchange/SharePoint or Novell GroupWise). However these systems are limited by the e-mail capabilities and policies. In particular, storing documents in e-mail folders instead of dedicated collaboration servers prohibits a close interaction of the participants and may lead to slower, less secure, and less repeatable business processes. The second class of collaboration tools is the *repository-based infrastructure* (e.g., Lotus Notes, FileNet, Documentum eRoom, and OpenText.) These systems store project relevant documents in central repository and expose them to a team by a digital workspace. Further services of a repository-based infrastructure are for example notifications in the case of document changes, synchronous features (awareness, chat, application sharing, whiteboard, etc.) as well as asynchronous functionalities (workspace, task lists, mailing forum, document publication, versioning, member management, etc.).

Although it is (theoretically) possible to use heterogeneous network infrastructure to generate e-collaboration infrastructures, today most e-collaboration systems apply Internet Technologies. Nevertheless, in the case of e-collaboration we have to introduce another differentiation: *browser-based* and *nonbrowser-based systems*. While the first one use the widely accessible internet browser as front end (e.g., WebEX and eRoom), the latter one use proprietary software as client (e.g., Groove and ICQ).

E-collaboration makes high demands on the precise attributes of suitable technologies. Therefore there have been a large number of research articles addressing the importance of ICT for e-collaboration and analyzing the needed features. However beside the obvious qualities such as all-time and all-place availability, stable infrastructures, high-speed interconnections, device-unifying services and security there are much more prerequisites which are often neglected:

- **Interconnectivity:** The number of companies joining a project may cause numerous different IT-Infrastructures and company specific prem-

Related Content

Frameworks for Talking about Virtual Collaborative Writing

Beth L. Hewett, Dirk Remley, Pavel Zemlianskyand Anne DiPardo (2010). *Virtual Collaborative Writing in the Workplace: Computer-Mediated Communication Technologies and Processes (pp. 28-52).*

www.irma-international.org/chapter/frameworks-talking-virtual-collaborative-writing/44330

Human-Centric Design of Unified Communications: e-Collaboration Features

Carolina Abrantes, Óscar Mealha, Diogo Gomes, João Paulo Barracaand José Ferreira (2018). *International Journal of e-Collaboration (pp. 1-18).*

www.irma-international.org/article/human-centric-design-of-unified-communications/231632

Vision, Trends, Gaps, and a Broad Road Map for Future Engineering

Jan Goossenaerts, Frank Possel-Dolkenand Keith Popplewell (2007). *International Journal of e-Collaboration (pp. 1-20).*

www.irma-international.org/article/vision-trends-gaps-broad-road/1964

E-Collaboration and E-Commerce In Virtual Worlds: The Potential of Second Life and World of Warcraft

Ned Kock (2008). *International Journal of e-Collaboration (pp. 1-13).*

www.irma-international.org/article/collaboration-commerce-virtual-worlds/1975

The World Wide Web and Cross-Cultural Teaching in Online Education

Tatjana Takševa Chorney (2009). *E-Collaboration: Concepts, Methodologies, Tools, and Applications (pp. 1020-1042).*

www.irma-international.org/chapter/world-wide-web-cross-cultural/8846