

Chapter 101

Designing e-Business Applications with Patterns for Computer-Mediated Interaction

Stephan Lukosch

Delft University of Technology, The Netherlands

Till Schümmer

FernUniversität in Hagen, Germany

INTRODUCTION

Probably the most important aspect of e-Business and e-Commerce is that it mediates the interaction between various stakeholders in a business setting. New organizational forms such as virtual organizations emerged in which independent companies form a strategic alliance for a close collaboration towards a shared goal (e.g., shared product development). New forms of B2C (business-to-customer) interaction argue for the importance of hearing the customer's voice e.g., by providing means for customization (Piller, 2006) or by collecting the customers' feedback (Levine, Locke, Searls, & Weinberger, 2000). And in some cases, C2C (customer-to-customer) interaction has become an integrated part of the

business (in settings where customers also act as providers of goods or services). Closely related to these trends is the emergence of the Web 2.0 as “*a set of economic, social, and technology trends that collectively form the basis for the next generation of the Internet – a more mature, distinctive medium characterized by user participation, openness, and network effects.*” (Musser, O'Reilly et al., 2006, p. 4). Again, collaboration and user participation is one of the most important terms in this definition and it is what makes Web 2.0 different from traditional web sites that have mainly focused on content delivery rather than interaction and collaboration among users of content. Considered from an e-business perspective, there are important analogies, especially the shift from mass delivery to customized goods and services that are co-created by traditional sellers and customers.

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Interestingly, this analogy is not yet widely reflected in the technology support. If business would move from traditional provider-customer interaction to the so-called c-business, the respective support technologies need to be designed so that the social processes of collaboration become an integral part. First examples of web-based collaborative applications provide hints towards the future of c-business: *Google Docs* (<http://google.docs.com>), *Yahoo Groups* (<http://groups.yahoo.com/>), the *Amazon bookstore* (<http://amazon.com/>), or *Google Earth* (<http://earth.google.com/>) are all instances with comparable characteristics. They activate the users to create and share information instead of only consuming information created by a single owning company. At Google Earth, users, e.g., tag the map of the earth with points of interest or photography that is shared among all users. The information provider (Google) transfers parts of his business to the customers and acts as an enabler for information creation done by customers. Through the efforts of the user community, the map becomes a reflection of what the inhabitants of the different places on the map consider as relevant. The same is true for the Amazon book store: by allowing users to comment on books and to comment on comments, the bookstore becomes a place for exchanging thoughts rather than just consuming. Considered from a B2C e-commerce perspective, this increases the stickiness of the store (Schümmer, 2001a). Once customers are involved in an interaction with other customers, they have additional incentives for returning to the store. Instead of having a community of circumstances that brings together all users who want to buy books, the site evolves to a community of interest for books of a specific topic (Schümmer, 2001a).

Yahoo groups support users in creating places for discussion and exchanging ideas and content. The shared manipulation of files is one of the core ideas of Google Docs where users can interact synchronously on a shared document using just their web browser as client infrastructure. Again, such

tools open up new opportunities for e-business. They are the enabling technology that allows organizations to create goal-oriented distributed project teams that collaborate intensively in order to reach a shared objective.

The remaining part of this article discusses aspects common to these e-business applications and presents an approach to capture the best practices within these applications by means of patterns. Then, we describe how patterns for end-users can look like, outline the structure of a pattern language for computer-mediated interaction and explain how the different patterns of this language form a holistic pattern catalogue for computer-mediated interaction. The pattern language is illustrated by means of an example pattern. Finally, we give a conclusion and discuss questions for future work.

BACKGROUND

Several core aspects that make collaborative e-business applications like the ones described above compelling:

- Users can create and share content.
- Users can get in contact with other users whom they in most cases have not met before.
- Users can express their opinion on content and on users.
- Users become aware of other users' presence and actions, which transforms the usage experience from a single-user experience to a group experience.

Looking more closely at these aspects, all of them have been subject of research and development in the area of computer supported collaborative work (CSCW) and groupware. Peter and Trudy Johnson-Lenz defined groupware systems as "*intentional group processes plus software to support them*". (Johnson-Lenz and Johnson-

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