Chapter 16
Adaptable Information Provisioning in Collaborative Networks: An Object Modeling Framework and System Approach

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ABSTRACT

Well-informed network participants are a necessity for successful collaboration in business networks. The widespread knowledge of the many aspects of the network is an effective vehicle to promote trust within the network, successfully resolve conflicts, and build a prospering collaboration climate. Despite their natural interest in being well informed about all the different aspects of the network, limited resources, e.g. time restrictions of the participants, often prevents reaching an appropriate level of shared information. It is possible to overcome this problem through the use of an active information provisioning service that allows users to adapt the provisioning of information to their specific needs. This paper presents an extensible information modeling framework and also additional complementary concepts that are designed to enable such an active provisioning service. Furthermore, a high-level architecture for a system that offers the targeted information provisioning service is described.

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INTRODUCTION

In the recent years collaboration between companies in collaborative networks has been understood as a promising approach to cope with the challenges of the 21st century (Davidow & Malone, 1992; Snow et al., 1992). The ability to carefully form Virtual Enterprises (VEs) which refer to subsets of the entire network is considered as a factor of success for such networks (Camarinha-Matos & Afsarmanesh, 2005). VEs are formed to be assigned to business opportunities which they pursue by the completion of collaborative business processes. Successful collaboration in collaborative networks also depends on the informedness of the members concerning general aspects of the network, the network strategy, the forming of new VEs, and especially the current status of the network and the own company from a network point of view. The research presented in this article is grounded on the assumption that it is not only beneficial to individual members of a network if they are well informed about the network. We furthermore assume that a high level of informedness among the individual members entails benefits especially for the entire collaborative network, too. Evidence for this assumption can be found in the research literature on the relation between informedness and company profitability (Hitt & Brynjolfsson, 1996; Li, 2009). Our assumption has also been inspired by insights gained in earlier research on collaborative networks that included an empirical study of existing networks (Rasmussen & Thimm, 2009) and an investigation of support services for network moderation management (Thimm & Rasmussen, 2010).

The benefits that can result from well informed network members include trustworthy collaboration structures (Riemer & Klein, 2003), trust in the system, personal trust, and a reduced potential for conflicts within the network (Miles & Snow, 1995; Holland & Lockett, 1998). Especially conflicts that result from an overlap of competencies and/or overlap of target markets of members that lead to both a cooperation relation and competition relation between network members need to be addressed adequately (Bengtsson & Kock, 1999). Similar arguments motivating well informed networks can be found in the Business Networking Architecture proposed by Österle et al. (2001).

Even though the members of collaborative networks will naturally strive on staying well informed about the above mentioned aspects of networks often this interest conflicts with limited resources such as time restrictions. Typically such time restrictions do not allow network members to deal with the tedious tasks of searching for required information items in the various distributed information sources of a network and to combine them meaningfully for analytical purposes, for example. Our approach to solve this problem is to offer to network participants an IT based support service that is capable to provide for highly automated information provisioning in networks. A proposal for a first version of such a service can be found in (Thimm & Rasmussen, 2010b). We especially target an adaptable provisioning approach that delivers information not only on demand but permanently and actively. Through the targeted service the network participants are provided with information that is specifically prepared according to their individual requirements in terms of the concrete information objects, the level of detail, the visual form, and also the provisioning frequency. In order to meet these requirements as foundation for the targeted service an information modelling framework is needed that takes the specific requirements of information provisioning in networks into account. In this article we propose such an information modelling framework which is called the IPROVIN framework (Information Provisioning in Collaborative Networks) and also a corresponding system approach for active information provisioning. The IPROVIN framework