Chapter 1
Engineering the Coordination Requirements in Cross-Organizational ERP Projects:
A Package of Good Practices

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ABSTRACT

There is yet little knowledge about cross-organizational Enterprise Resource Planning (ERP) implementation projects when it comes to determining requirements and achieving alignment between IT and businesses. Consequently, the requirements engineering (RE) processes are often more expensive and less effective as they could be. In this chapter, the authors view a cross-organization ERP implementation as a coordination problem, and introduce a coordination complexity model based on an organization's level of participation in a business network. They show how the external coordination characteristics of an organization can be mapped to ERP-supported mechanisms for cross-organizational coordination. To incorporate this activity in the state-of-the-art ERP RE processes, the authors propose a set of good practices that counterpart certain coordination issues at different complexity levels. Their chapter is based on empirical data gathered from secondary sources. They also carried out an early validation assessment based on an online focus group composed of ERP solution architects

INTRODUCTION

Conceptualizing the requirements and developing the architecture design of ERP applications, mostly takes place in an inter-organizational context. Cross-organizational ERP solutions are the preferred vehicles that profit-and-loss responsible business actors use to achieve cooperation in a value web (Davenport, 2000; Holland, Shaw & Kawalek, 2005; Nicolaou, 2008). An example of ERP-enabled value web is the business network of WalMart Stores Inc. who collaborates - by means of a global ERP coordination support system, with a large number of non-U.S. companies and gives them direct access to the American market (Champy, 2002).

This chapter defines cross-organizational ERP systems as multi-module application packages supporting cross-organizational coordination. This

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definition means those information systems that consist of standard ERP software packages and automate cross-organizational process work flows and data control flows, composed of flow fragments owned by or shared among multiple companies. The packages in a cross-organizational ERP system may or may not all be shared by the participating companies; and they may each be provided by the same vendor or by different vendors, each having its own application logic, data formats, and data semantics. Transforming ERP into cross-organizational coordination support systems poses to ERP adopters a number of complicated coordination issues. For example, partner companies may well vary in terms of levels of trust, needs for cooperation, decision making processes pushed out into other organizations, business processes, semantics of data, authorization hierarchies, enterprise systems, and infrastructure (Daneva & Wieringa, 2006). When a company ventures out to partner in a value web for a particular purpose, all these differences still exist. No participating party is prepared either to change its infrastructure, business processes, and data semantics just for this particular cooperation, or to reveal the confidential business rules embedded in its processes and applications. Yet, to build a profitable ERP-supported network, each business must be able to decide which processes it will carry out itself and which ones it will perform for or with other actors (Champy, 2002). These decisions need to be explicit part of the requirements engineering (RE) stage in any cross-organizational ERP project. Though, existing approaches to cross-organizational ERP RE, by and large, ignore these issues.

This chapter addresses the cross-organizational coordination issues and proposes to augment the state-of-the art ERP RE processes by using a set of 'good' practices that counterpart these issues. These practices are derived from the author's own project experience (Daneva, 2004) and from secondary sources. The chapter makes the claim that for each company, there are different complexity levels of coordination in a value network, and that if a company aims to be involved in cross-organizational coordination at a certain level, then certain RE techniques are relevant and others are not. The author draws on previously published results (Daneva & Wieringa, 2006) from applying a coordination theory perspective to cross-organizational RE problems. The earlier research by the author and R.J. Wieringa (Daneva & Wieringa, 2006) yielded (i) a model of undocumented assumptions about coordination built into modern ERP systems, and (ii) a library of ERP-supported coordination mechanisms that the requirements engineer can match to the coordination needs of the businesses participating in a network. The present chapter refines the earlier work by introducing an organization's coordination complexity levels and by linking these to appropriate RE practices. The specific technique we used to identify and characterize these practices is compliant with the approach which Sommerville and Sawer, 1998, deployed to define the practices in their RE Good Practice Guide.

The chapter is organized as follows: Section 2 provides the background for this research and presents related work. Section 3 reports on the method we used to design our solution proposal. Section 4 describes the solution. Therein, we discuss how companies differ in terms of who they participate with in business networks. We also map their scope of participation in a network to levels of coordination complexity that companies face. For each complexity level, we summarize the typical sets of cross-organizational coordination requirements that companies will have at this level. Based on this, we derive RE practices that address four types of ERP-supported coordination. All results are based on empirical data gathered from secondary sources. Section 5 presents the first validation study we carried out to evaluate whether the practices make sense to practicing ERP professionals. The section presents an online asynchronous focus group study and discussed its results and its limitations. Section 6 discussed

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