What Practitioners Think of Inter-Organizational ERP Requirements Engineering Practices: Focus Group Results

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ABSTRACT

Empirical studies on requirements engineering for inter-organizational enterprise resource planning (ERP) systems have demonstrated that the ERP vendor-provided prescriptive models for ERP roll-outs make tacit assumptions about the ERP adopter’s context. This, in turn, leads to the implementation of suboptimal solutions. Specifically, these models assume that ERP implementations happen within a single company, and so they pay only scant attention to the stakeholders’ requirements for inter-organizational coordination. Given this backdrop, the first author proposed 13 practices for engineering the ERP coordination requirements in previous publications. This paper reports a confirmatory study evaluating those practices. Using an online focus group, the authors collected and analyzed practitioners’ feedback and their experiences to understand the extent to which the proposed practices are indeed observable. The study indicated very low variability in practitioners’ perceptions regarding 12 of the 13 practices, and considerable variability in their perceptions regarding the role of modeling inter-organizational coordination requirements. The contribution of the study is twofold: (1) it adds to the body of knowledge in the sub-area of RE for ERP; and (2) it adds to the practice of using qualitative research methods in empirical RE.

Keywords: Empirical Software Engineering, Enterprise Resource Planning, Focus Group Research, Qualitative Research Methods, Requirements Engineering

INTRODUCTION

The elicitation, documentation, and negotiation of the requirements for systems based on ERP software packages have formed an important sub-area of Requirements Engineering (RE) in the last decade (Daneva & Wieringa, 2010). ERP solutions are, more often than not, large and multi-component systems that provide cross-functional services to a business. They often impact data semantics and business processes across more than one functional area of an
organization. This sub-area of RE is becoming even more important, as ERP solutions are increasingly responding to the reality of modern companies networking with others to form inter-firm partnerships (also called ‘extended enterprises’). For such companies, the use of ERP is a central component of their strategy for the proper management, coordination, and control of inter-organizational relationships (Nicolaou, 2008). An inter-firm partnership is a business collaboration composed of multiple companies or business units, which together accomplish the mission of bringing a product or service to market. Engineering the coordination requirements for an inter-organizational ERP solution to support an inter-firm partnership is, however, a difficult task. The current RE approaches to ERP are based on prescriptive models that are provided by ERP vendors and their implementation partners (Ahituv et al., 2002). These models do not explicitly draw on practices perceived as useful from the standpoint of the stakeholders in the ERP-adopting organizations that have formed a partnership. A 2010 survey by Daneva and Wieringa (2010) on state-of-the-art ERP RE approaches reveals that, while the prescriptive RE models explicitly address business process, data, and interface requirements, they tacitly assume a project environment where an ERP package is implemented within the walls of one organization. As a result, only scant attention is paid to the requirements for inter-organizational coordination that stakeholders expect the ERP solution to meet. This, in turn, leads to the implementation of systems that are suboptimal from the perspective of some stakeholders, as the resulting ERP requirements definitions lack an explicit part on what the solution-to-be should do to properly support the inter-firm partnership’s needs and intentions for inter-organizational coordination and collaboration. Many inter-firm partnerships therefore seek to extend the vendor-provided RE models by adding practices that address the requirements for inter-organizational coordination (Daneva & Wieringa, 2010). In the inter-organizational context, the solution-to-be may well include diverse ERP configurations, each of which matches the needs and intentions of a particular partner, which, in turn, implies the presence of coordination mechanisms unique to each configuration. Companies therefore justifiably assume that, if they identify, document, and validate their needs and intentions for ERP-supported coordination early enough, it is more likely that the right ERP-solution will be delivered to them (Prakash, 2010).

In our earlier research by the first author (Daneva & Wieringa, 2006b; Daneva 2010), we investigated the following issues: (1) how to engineer the requirements for inter-organizational coordination in ERP projects; and (2) what constitutes good engineering practices with respect to the coordination requirements for shared ERP solutions. This research was accomplished by reviewing the published literature; specifically, case studies representing the experiences of a broad array of companies that had implemented inter-organizational ERP solutions in the past 15 years. We found that the coordination among companies in an extended enterprise takes place at four different levels of complexity. Considering these levels, we proposed 13 RE practices, along with an early indication of the benefits that can be expected from introducing each RE practice in an extended enterprise. While in our earlier publications (Daneva & Wieringa, 2006b; Daneva 2010), we reported on our motivation to search for the RE practices and on the research process that helped us derive them, in this paper, we focus on the need to evaluate them. Specifically, our goal is to carry out an initial evaluation of the practices based on ERP practitioners’ feedback. This paper provides a detailed account of how we used an asynchronous online focus group approach to do this. This study represents the first step of the many we have planned to empirically evaluate RE practices.

The research presented in this paper contributes to the body of knowledge in RE for ERP in two ways. First, we are adding to the literature in RE for ERP, by making RE knowledge explicit and providing information on which practice works in what context, and providing evidence suggesting that 12 of the 13 proposed practices
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