

Chapter 3.10

Business Artifacts for E-Business Interoperability

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ABSTRACT

Traditional solutions to address interoperability issues are mainly process-centric so that consistent interactions among collaborating enterprises are ensured. These solutions examine interoperability from a technological perspective with focus on exchanging information messages between distributed and heterogeneous applications. However, interoperability from a business perspective has been overlooked in the past due to the complexity of reconciling diverse business strategies, organizational constraints, and IT infrastructures.

Business interoperability denotes the ability of diverse enterprises to collaborate together to coproduce added-value products and services. In this chapter, a new line of thinking is promoted whereby interoperability is data-centric instead of process-centric. Business interoperability is dealt with by adopting business artifacts that are able to cross organizational boundaries, and by introducing a stack of three layers - strategy, service, and resource. Artifacts are self-contained business records that include attributes, states, and life cycles that reflect the changes in these states. The artifact concept not only describes a business entity, but also encompasses knowledge about what to process without explaining how to

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do it. The shift from processes to artifacts makes business interoperability “quite simple” to deploy and renders collaboration easy to manage and analyze. The chapter also introduces several interaction patterns that regulate the exchange of artifacts between enterprises. The ideas and proposals in this chapter are discussed via a realistic case-study to demonstrate how business people can seamlessly manage their day-to-day activities and intuitively construct interoperable and sustainable collaborations at the business and technological levels.

INTRODUCTION

To face today’s challenges such as competition and market volatility; enterprises must adapt their business operations and even, sometimes, modify their organizational structures. Existing information and communication technologies attempt to make this happen by integrating diverse entities including people, applications, processes, and information into the same common working space (Nandi & Kumaran, 2005). In this space, people use applications that trigger processes that themselves make use of the available information to answer their needs. Despite the collaborative tools that render the integration possible, the main challenge remains the ability of these entities to effectively interoperate together to accomplish their business goals. In a broad sense, interoperability refers to “*the ability of a system or a product*

to work with other systems or products without special effort” (Touzi et al., 2007).

Interoperability is a recurring challenge that surfaces each time either physically or morally independent enterprises decide to collaborate (Norta et al., 2006). Differences in terminologies, backgrounds, requirements, priorities—just to cite a few examples—offer a glimpse of the interoperability challenges. Despite the large number of initiatives, standards, and specifications to deal with interoperability (Arsanjani, 2002; ETSI, 2006; Gailly & Poels, 2009; Peristeras & Tarabanis, 2006; Ma, 2009), enterprises have been struggling over the years with almost the same set of issues: lack of common semantics and ways of doing businesses, reduced access to external resources, data inconsistencies, and policy incompatibilities. These initiatives have, to a certain extent, focused on technical issues while neglecting the need of examining interoperability from a business perspective. Extending Cimander and Kubicek’s work (Cimander and Kubicek, 2009), we distinguish five interoperability levels (Table 1): technical, syntactic, semantic, organizational, and business. Regardless of any of these interoperability levels, the main purpose remains business collaboration where different systems not only have to communicate and consolidate their data but also semantically understand business practices to meet customers’ expectations and increase enterprises’ profits.

Considering the success factors of some today’s technologies such as the Internet, the eXtensible

Table 1. Interoperability levels

Business	Ability of diverse enterprises to collaborate together to coproduce added-value despite their different business strategies, organizational constraints, and IT infrastructures
Organizational	Ability to seamlessly interoperate pre-existing organizational structures and their business processes in response to different types of business collaborations
Semantic	Ability to automatically interpret the data exchanged meaningfully and accurately in order to produce useful results
Syntactic	Ability to integrate and exchange data by using specified data formats
Technical	Ability of systems to technically provide data transfer protocols to communicate with other systems and operate effectively together

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