Chapter 6
Interoperability in Service-Oriented Production Networks: Managing n:n Relationships with xRM

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ABSTRACT

How can complex relationship structures be managed? When collaborating in networks, the diversity of stakeholder relationships is increasing. Most times, this leads to interoperability issues that need to be addressed. In this chapter, the authors show how Anything Relationship Management (xRM) can increase interoperability in many-to-many (n:n) relationships. Building upon relationship management theory, they firstly categorize different types of relationships and link them with fitting IT solutions. The authors then give a brief introduction to the xRM concept. Following and more specifically, they present the EU research project GloNet\(^1\) and propose three technical xRM approaches (collaboration spaces, integration of external services, and synchronization framework) in order to improve social network interoperability, services interoperability, and data interoperability. The chapter closes with a conclusion, an example of application, and a research outlook.

1. INTRODUCTION

The corporation as we know it is unlikely to survive the next 25 years. Legally and financially yes, but not structurally and economically (Peter Drucker, 2000, in: Shuman, Twombly, 2010, p. 1).

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The twelve-year old prediction made by business guru Peter Drucker is becoming reality today. As Jay Deragon puts it: due to social computing and social network solutions, economy is changing drastically—with an impact similar to the impact of the 19th century Industrial Revolution (Allen et al., 2008). On various levels a shift towards a primary relationship-based economy can be found:
the old business-centric company model turns into a relationship-centric model, win-lose strategy turns into win-win strategy, the control approach turns into transparency, branding efforts turn into reputation, mass communication turns into conversation, financial targets turn into multifaceted value-based goals, and separate contact silos turn into networks of relationships (Allen et al., 2008).

Naturally, production is also increasingly taking place in networks. While through networks, highly complex and service-enriched product lines can be realized, more and more stakeholder groups are involved in the underlying processes. This leads to issues in the orchestration of the corresponding relationships and to the question how information exchange can be achieved between stakeholders and their multifold information systems. In general, a central challenge of a system (or a product) in the industrial or manufacturing context is its ability to be connected to other systems (or products) without requiring additional user input – it is one of the key factors to maintain high quality and to allow customization, and on the other hand, to offer a quick production at low cost. Interoperability is thereby needed on different levels between internal and external stakeholders. Besides, a new and important success factor is seen in the installation of a management layer across the collaborative network (Cutting-Decelle et al., 2012).

In this chapter, we propose Anything Relationship Management (xRM) as a possible answer to these challenges. Following a classification of different relationship constellations, we outline the xRM concept and show its typical platform architecture. Furthermore, we describe first promising results of the EU research project GloNet. In GloNet, xRM is used to ensure interoperability and a seamless value creation process in a production virtual organization consisting of small and medium-sized enterprises (SMEs) and involving end-to-end collaboration with customers and local suppliers (co-creation). In sum, the three main questions tackled in this chapter are:

1. What kinds of relationships structure are there and which IT solutions suit them?
2. What is the structure of a suitable xRM architecture?
3. How to solve typical interoperability issues in production networks?

2. RELATIONSHIP TYPES IN RELATIONSHIP MANAGEMENT

One of the origins of the relationship based view of firms lies in the marketing domain. Until today, the research areas relationship management and its subset relationship marketing play an important role in explaining the mechanisms of organizational relations and networks. The following classification of relationship types is therefore based on a differentiation scheme of relationship marketing perspectives by Coviello et al., 1997. Similar to our classification, Coviello et al. (1997) distinguish between the practices of transaction (see 2.1), database (see 2.2), interaction (see 2.3, 2.4), and network marketing (see 2.5). As an extension, our classification takes into account the historical development of IT tools for relationship management (Britsch & Kölmel, 2012).

2.1. Transactional Relationship: Short Term View

The transactional orientation was predominant in the industrial era. Growing markets fostered a strong focus on sales. With McCarthy’s (1960) marketing-mix concept and its focus on the Four Ps (Product, Price, Place, and Promotion) new customers should be attracted. The transactional marketing model was overall built around short-term maximization of profit. “As competition intensified with excess capacity, sales transactions further increased. Many engaged in aggressive selling and competitive warfare.” (Sheth & Parvatiyar, 1995, p. 406) In their struggle for market share, firms served the anonymous mass market
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