15 Service-Oriented Architectures: Modeling the Selection of Services and Platforms

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1 This is an extended reprint of Widjaja/Buxmann (2009) with minor improvements (see esp. footnote 23). Thomas Widjaja’s research is supported by a research grant from the FAZIT-Stiftung.
15.1 Introduction

The basic idea behind the Software-Oriented Architecture (SOA) paradigm is the support of business processes by IT systems consisting of services. Those services are clearly encapsulated, and loosely coupled entities, which deliver defined business functionality. Current literature accredits SOA-based software systems various benefits compared to traditional monolithic systems such as enhanced agility, straightforward integration of heterogeneous IT environments, etc. However, in order to leverage those benefits, new or adapted methods and tools are needed to support decision makers.

The technical realization of the SOA paradigm is the focus of various research efforts. The SOA concept itself is technology-independent. However, SOA is mostly seen in direct correlation with the Web Service technology and associated standards. This technical standardization significantly decreases the costs of integrating software services implemented by different vendors, thus making the realization of best-of-breed software systems more feasible and compelling. This paper focuses on the trade-off between possibly enhanced utility versus higher assembling costs of best-of-breed SOA solutions, i.e. solutions in which the SOA system is composed of components that are provided by different (and often specialized) vendors.

Software systems based on the SOA paradigm can be structured in two layers: Based on an integration platform (layer 0), loosely coupled services (layer 1) are combined to support business processes (see Figure 15-1). In this paper the term integration platform is used in a broad sense to refer to all infrastructure components of an SOA-based software system, e.g. enterprise service bus (ESB), service repository, application server, and process server. This abstract and two layered perspective is a simplification but it is possible to extend the proposed model in order to consider the SOA platform in greater detail (see section 15.5 for further research).

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3 See Krafzig et al. (2006), S. 251ff.
4 See e.g. Erl (2006); Krafzig et al. (2006).
6 See Krafzig et al. (2006) for a more detailed description of the integration platform.