Chapter 5
Improving Application Decoupling in Virtual Enterprise Integration

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ABSTRACT

The interaction of applications belonging to several enterprise information systems (EIS), forming a collaborative network in a virtual enterprise (VE) context, raises an application integration problem that is even more stringent than within a single EIS, since a VE has a temporary nature and therefore integration requirements can change more frequently. Current integration technologies, such as web services and RESTful APIs, solve the interoperability problem but usually entail more coupling than required by the interacting applications. This is caused by sharing data schemas between applications, even if not all features of those schemas are actually exercised. The fundamental problem of application integration is therefore how to provide at most the minimum coupling possible while ensuring at least the minimum interoperability requirements. This chapter proposes compliance and conformance as the concepts to achieve this goal, by sharing only the subset of the features of the data schema that are actually used.

INTRODUCTION

Traditionally, enterprises focused on having a well-designed enterprise architecture, a web site as the customer interface, an enterprise integration solution to deal with the supply chain, and the enterprise was practically open for business, for either products or services.

However, digital-based technologies such as cloud computing, mobile devices, and the Internet of Things (IoT) (Paul, & Saraswathi, 2017) started to become ubiquitous and disruptive, and customers became more acquainted and at ease with digital services. Nowadays, customers want everything self-service, anywhere, anytime, with as little effort as possible. The world has entered a Digital Era (Liska, 2018; Chamoux, 2018), in which the simple alignment between Business and Information Technology

(IT) is no longer enough (Kahre, Hoffmann, & Ahlemann, 2017). Figure 1 illustrates the complexity of the current enterprise technological landscape.

Today, a classical and well-designed enterprise architecture is almost a liability, rather than an asset, due to the inertia regarding change that it entails. A small, startup enterprise can outrun an established enterprise in a short period, if its business model is innovative enough. A large organizational mass (a complex enterprise architecture), which translates to inertia and lack of agility, ability to innovate, and adaptability, is an enterprise's worst enemy. Since enterprises are usually integrated in complex supply chains, the overall business of an enterprise cluster can only be as agile and innovative as its most traditional member.

Digital technologies, and the business models they enable, are the key factor in this highly interconnected world. This means that enterprises need to become more and more digital, from top to bottom. The business itself must be inherently digital, not just enabled by digital technologies (Uhl, & Gollenia, 2016).

For an existing company, this does not mean improving the web site, moving the business to the cloud, making business processes more automated, or adding some digital features to existing products or services. This is just a digital makeup, or digital optimization. A true digital transformation (Hinings, Gegenhuber, & Greenwood, 2018; Bohnsack, Hanelt, Marz, & Marante, 2018) means reinventing the business model and providing a significant improved value as perceived by customers (Delgado, 2015), while significantly reducing the organizational inertia by taking a light approach on the supplier and resource channels.

Figure 1. An example of a complex enterprise technological landscape
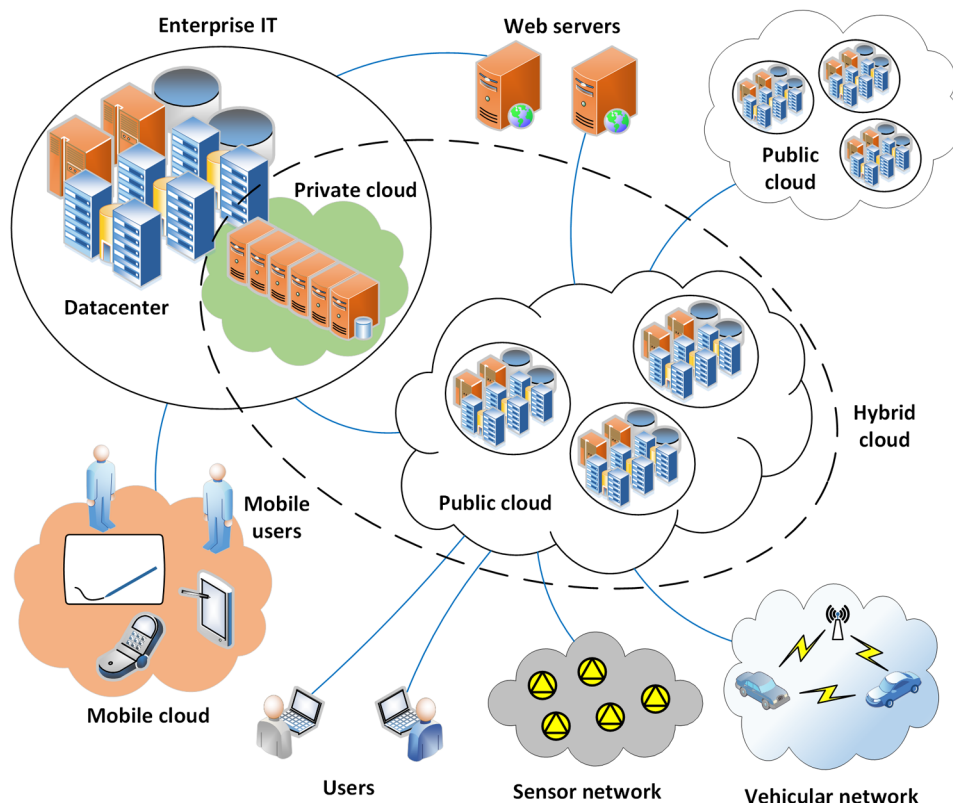
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