Chapter V

Enterprise Application Integration: New Solutions for a Solved Problem or a Challenging Research Field?

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ABSTRACT

When closing the loop back to legacy systems, data warehousing is becoming a general IT integration topic, which is — partly — discussed under the label enterprise application integration. This article enables the interested reader to identify current problems in enterprise application integration. It shows solutions reached in previous research efforts, as well as solutions provided by today’s software vendors. Finally, it sums up the pending gaps and open research fields.
INTRODUCTION

For many years, the integration aspect has been a main topic in both theory and practice of computer science. The overall aim is to integrate heterogeneous applications across processes in the whole enterprise. During the last decade, several approaches have been made in both research and practice to establish such integrated information systems (Mertens, 1966; Scheer 1995; Mertens, 1995). The theoretic approach often is to propose new application systems or architectures. For example, Scheer (1995) and Mertens (1995) worked on reference models for the integration of applications (and data). Other approaches focus on data flows, processes or functions.

Still today, there is an increasing demand for integrating applications in the business area. Pending integration efforts, like data warehousing projects, are to be extended to bring their results back to legacy systems, e.g., to feed customer relationship management systems. New business models require the adoption of new technologies without leaving enough time to build up completely new systems: existing applications have to be extended by connecting them to new application types bearing these new technologies. The development of horizontal applications is an example of this trend (Winter, 2000).

Although several approaches were developed to integrate existing applications, software vendors still present new toolkits based on new technologies to address the specific needs of enterprise application integration problems. As these technologies are not mentioned explicitly in the existing approaches for application integration, we have to ask whether these approaches fulfill today’s needs and represent the state of the art in application integration. Main problems occur in both increasing complexity and dynamics of today’s businesses and information technologies, as well as in varying decentralized architectures. Furthermore, for most of the approaches presented in research, existing applications or architectures are discarded in favor of new ones without referring to or even integrating the existing set of systems.

This article derives specific problems occurring from integration and requirements for the integration of existing heterogeneous applications regarding current business needs. After an initial discussion, we will show the result reached in several research projects in the past and compare them with the problems and requirements described before. In a third step we ask for current solutions provided by both software vendors and the scientific community. Again, we will compare these solutions with the problems and requirements described initially. Finally, we show the gaps still pending and deduce the open research problems. A short conclusion will round up this paper.
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