

# Portals in Application Integration

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## INTRODUCTION

Integration is widely used in different areas, but few are explained. A common understanding is that integration is a process by which parts of a whole become more connected so that they are, in effect, less “part” and more “whole”; that is, such that functions formerly carried out by one part are carried out by others and usually vice versa. Normally, in the IS area, we use integration in such a case: formerly separated or loosely connected parts are expected to be considered as whole, then we need approaches to connect them more tightly, and at the same time, functions in the “new” system are redefined and redistributed to “new” parts.

IT application in business starts from function-specified system. While businessmen use them as necessary tools and businesses become more integrated, disparate applications become the obstacle to be integrated, even without IS tools. Different solutions are designed. ERP systems use a shared database and a software package to substitute separated systems inside an enterprise; some technical methods are designed to transfer/translate data among systems, and so forth. As a result, there are more heterogeneous systems, the integration projects become much longer, and what is worse is that IT environments become increasingly rigid. Costs and pressure from integration make it the top strategic software projects (Morgan Stanley CIO Survey, May 2001).

There are many authors that have considered the definition of a portal. Smith (2004, p. 94) considered 17 definitions of portal and classes of portal. He provides a definition of portal to distinguish it from other types of information systems: “. . . an infrastructure providing secure, customisable, personalisable, integrated access to dynamic content from a variety of sources, in a variety of source formats, wherever it is needed.” Now portal is considered as a powerful integration tool and solution. This article examines the development of integration in IS area and analyses different concepts. From several views, such as drives, function, and architecture, portal is compared with other integration concepts. Its features and related technical issues and trends are addressed also.

## WHY AND WHAT APPLICATION INTEGRATION

The notion and technology of application integration are developing quickly. Historical analysis of the business requirements and technical solutions can clarify the essence of application integration, those factors in their development and discriminate various terms in this area.

Data sharing is the initial and primary requirement in which information is moved between two or more systems, some regarded as information producers and some as consumers. In those cases, integration occurs at the data level by simply exchanging information between systems, mostly inside enterprise. Typically, this means defining information flows at the physical level. Most interests are driven by technological or tactical demand, not from business strategic demands.

While businessmen are concerned with a quick response speed of their business, abstract business concepts, such as business processes, are becoming critical for application integration. Integration is supposed to provide a single logical model that spans many applications and data stores, providing the notion of a common business process that controls how systems and humans interact to fulfil a unique business requirement. The goal is to abstract both the encapsulated application services and application information into a single controlling business process model.

The systems using traditional techniques and technology simply cannot communicate with one another without changing a significant portion of the application. Earlier solutions were just concerned with specific integration requirements with custom-coding APIs. While more and more distributed computing systems have been built with poor architectural planning, many organizations run into technical obstacles in which any change is networked with API patches. The need for EAI (enterprise application integration) is the direct result of this architectural foresight, or rather, the lack of it.

EAI is defined as the unrestricted sharing of information between two or more enterprise applications, a set of technologies that allow the movement and exchange of

information between different applications and business processes (Linthicum, 2004). Another earlier definition is “EAI is the ongoing process of putting an infrastructure in place, so that a logical environment is created that allows business people to easily deploy new or changing business processes that rely on IT” (*ID-SIDE*, 1999) EAI emphasizes the technology architecture in which an integration layer connects all systems within an organization. Normally EAI deals with integration inside an enterprise. EAI is widely used in the application integration area. Many IT companies provide related solutions and products.

In the last several years, application integration, at least the notion of it, has worked its way into most information technology departments. This has been driven by a number of emerging developments, including the need to expose information found in existing systems to the Web, the need to participate in electronic marketplaces, the need to integrate their supply chain, and most importantly, the need for their existing enterprise systems to finally share information and common processes.

Application integration is defined as a strategic approach to binding many information systems together, at both the service and information levels, supporting their ability to exchange information and leverage processes in real time. In the long run, it aims at building applications that are adaptable to business and technology changes while retaining legacy applications and legacy technology as reasonable as possible (Hasselbring, 2000). In fact, integration demands are based on the understanding of ever-changing business. Business flexibility depends on IT flexibility. Today’s IT architectures, arcane as they may be, are the biggest roadblocks most companies face when making strategic moves (McKinsey, n.d.). Application integration can take many forms, including internal application integration, enterprise application integration (EAI), or external application integration, business-to-business application integration (B2B).

From the business perspective, integration is trying to provide a more closed logically integrated environment on demand in real-time fashion. Logically, in one enterprise or more enterprises, we hope to get a virtual information world where data is centrally stored, process is tightly connected, and people communicate in one room. In another way, physically, it is hoped everything can be distributed as easily, cheaply, and flexibly as possible. Then we need to redefine all the data processes, business processes, and user functions in the virtual world, and then redistributed them to different physically distributed information systems and integrate them together. The goals of application integration are to design the user out of the process, thus removing the greatest source of latency in the exchange of information, and to support the new event-driven economy (Linthicum, 2004).

Ever-changing businesses and technologies encourage the research on the architecture to ensure flexible integration. In conclusion, application integration studies how to

provide a logically central platform on a distributed physical platform to get business value with a flexible and costless technical solution.

## PORTAL IN APPLICATION INTEGRATION: CONCEPTS

Application integration is a combination of problems. Approaches to it vary considerably. Linthicum (2004) finished his third book on application integration, in which approaches to application integration are divided into four categories:

1. **Information-Oriented Application Integration (IOAI):** Integration occurs between the databases (or proprietary APIs that produce information, such as BAPI).
2. **Business Process Integration-Oriented Application Integration (BPIOAI):** Products layer a set of easily defined and centrally managed processes on top of existing sets of processes contained within a set of enterprise application.
3. **Service-Oriented Application Integration (SOAI):** Allows applications to share common business logic or methods. This is accomplished either by defining methods that can be shared, and therefore integrated, or by providing the infrastructure for such method sharing, such as Web services.
4. **Portal-Oriented Application Integration (POAI):** Allows us to view a multitude of systems, both internal enterprise systems and external trading community systems, through a single-user interface or application.

Here application is divided according to technical requirements. POAI is concerned with externalising information from a multitude of enterprise systems to a single application and interface. Technically, POAI integrates all participating systems through the browser, although it does not directly integrate the applications within or between the enterprises, which is shown in Figure 1 (Linthicum, 2004).

Normally, application integration focuses on the real-time exchange of information or adherence to a common process model between systems and companies. POAI avoids the back-end integration problem altogether by extending the user interface of each system to a common user interface (aggregated user interface): most often a Web browser.

The use of portals to integrate enterprises has many advantages:

1. It supports a true noninvasive approach, allowing other organizations to interact with a company’s internal systems through a controlled interface accessible over the Web. Noninvasive just means not affecting the safety of the internal systems.

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