Volume 1, No. 3, Sept-Oct 2010
ISSN No. 0976-5697
International Journal of Advanced Research in Computer Science
TECHNICAL NOTE
Available Online at www.ijarcs.info

Integrating Enterprise Portals with Service Oriented Architecture

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Abstract: Organizations using enterprise portal successfully manage business processes which existed in the inter-organizational or intra-organizational networking of business. Enterprise portals define functions and content on the basis of the customer process and make them accessible to users through personalized interface. We will discuss the importance and role of using enterprise portals with service oriented architecture in order to improve work with business processes and thereby increase the effectiveness and efficiency of the business. This way we will gain knowledge about enterprise portal and service oriented architecture and establishing integration between these two different areas.

Keywords: Enterprise portal; SOA; Service Oriented Architecture; integrating; business processes, architecture

I. INTRODUCTION

In today's flexible business environment it is necessary to constantly adapt to changes because where amount of information is enormous. Providing efficient access to important information and business functionality is crucial for ensuring long-term effectiveness of organization. Achieving this goal is not an easy task. Applications are often implemented in different technologies using information which is typically stored in unlinked and unconsolidated sources. Integration between them is therefore very aggravated. Many organizations have found opportunity to eliminate these problems by using Service Oriented Architecture (SOA).

SOA allows organizations to break monolithic applications and exposing their functionality into reusable business services that can be used in the implementation of agile business processes. Although it seems that introduce of SOA eliminates all identified problems, it often appears this is not completely true. One of the most common problems is to provide the advanced user interface that can be used by employees, customers and business partners. The best solution is probably the introduction of enterprise portal which allows us to eliminate the gap between the technical aspects of SOA and business users. Enterprise portal is the web application consisted of sets of portlets where each portlet represent a complete unit of business functionality.

II. ENTERPRISE PORTAL

A. Introduction

A portal is an application in information technology that facilitates complex business interactions by representing them in an "easy to use" web based interface. It allows users a consistent and structured way to access large amounts of information and related functions. An enterprise portal further narrows a portal's focus by addressing corporate interactions among employees and other stakeholders.[1] At this point employees obtain all necessary information about business processes, examine internal news and warnings, make a claim (holidays, purchase of equipment) and execute various business functions.

The real value in mentioned portal is ability to create an efficient environment that allows users to collaborate, perform tasks and obtain information from a single customized source. An enterprise can use a portal to [3] [7]:

- **Streamline processes**. Portals can be used as collaboration tool to improve communication between employees and business processes.
- **Improve Decision-making**. Through portal, employees can provide "real time" information, which is crucial for making good decisions. A portal can provide facility for agents to fill commonly asked questions resulting in efficient customer services.
- **Build Intellectual capital**. Critical business and technical knowledge can be better managed. Users manage this information through a centralized, secure interface.
- **Improve Employee retention**. Portal allows employees to work more effectively and help them to find information they need, whenever and wherever they need them.

B. Enterprise portal architecture

For organizations is very important to have a good understanding about portal architecture model. Although most components of portal can be bought on the market (this way we save a lot of time and effort used for implementing) it is necessary to integrate those components properly, which often turn out to be a difficult task. High level enterprise portal architecture is shown in Fig.1. [3]

Enterprise portal consists of five groups of components:

- **Portal core services**. Provides core portal application functions such as interface design and search. These functions are utilized by other components and can be supported using third party tool.
- **Content services**. Services allow displaying information from heterogeneous internal sources, external feeds, databases, etc. Third party tools or application service providers can provide this component.
- **Portal interface Framework**. Framework provides structure or container for other applications and portlets.

Allows new applications to follow compatible visual interface standards.

- **Collaboration services**. Collaboration components are those which facilitate employees working together through application and data sharing, community chat rooms or videoconferencing.
- **Integration services**. Integration components are those that integrate existing services (such as ERP, HR, LDAP, document system) to the portal. Users can use the functionality of these systems through a portal web interface. Adapters can facilitate this integration.

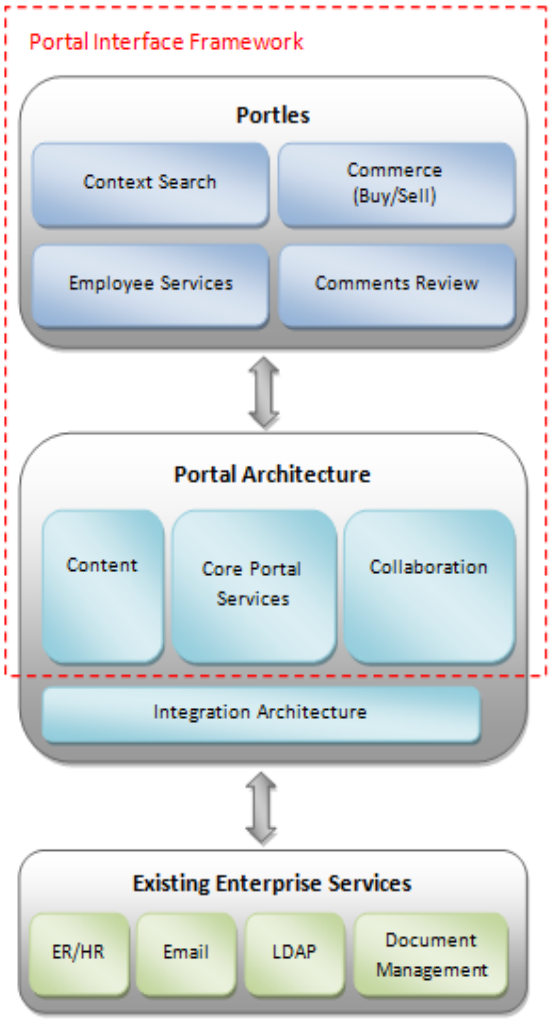

Figure 1: Enterprise Portal Architecture

II. SERVICE ORIENTED ARCHITECTURE

A. Introduction

Nowadays information systems need to support business changes as quickly and efficiently as possible. Still they need to adjust to fast development of new technologies.
The majority of enterprise information systems are heterogeneous which include a range of different systems, application, technologies and architectures. Integration of these technologies is crucial as only integrated information systems can deliver business values (e.g. instant access to information, data integrity, etc.).[6]
A service-oriented architecture (SOA) is basically an IT architecture which supports service orientation, based on open standards. SOA solutions are combined of reusable services, with well-defined, published and standards-compliant interfaces and give a mechanism for integrating existing legacy applications that are independent of the language and computing platforms on which they run. A service is any well-bounded, defined and repeatable business task that can be invoked in a standard manner. These processes are supported by a governance approach and by best practices derived from experience.

Conceptually speaking, there are three different levels of SOA abstraction:

- **Operations**: Transactions that represent single logical units of work. Execution of an operation will normally cause one or more persistent data records to be read, written or modified.
- **Services**: Services represent logical groupings of operations.
- **Business processes**: A set of activities executed with specific business goals in mind. They usually include many service invocations. (E.g. initiate new employee).

B. SOA concepts

Because SOA is not directly related to any technologies, even though it is most often implemented with web services, is more than just a set of technologies.[6] Web services are the most appropriate technology for SOA realization, however using them is not adequate for building SOA. We have to use web services according to the concepts that SOA defines. The most important SOA concepts are: [6]

- Services
- Exchange of messages
- Quality of services
- Composition of services into business processes
- Coarse granulation
- Synchronous and asynchronous communication
- Services registries

C. Architectural aspects of SOA

While services represent the basis for implementing SOA we cannot talk about service oriented architecture if only functions are exposed as services. Fig. 2 represents the architectural aspects of SOA. We can see that a comprehensive approach to SOA provides a wide range of application components based on established standards and compliance with best practices and patterns, providing a good base for a successful SOA implementation. To access data, SOA provides the implementation of data services layer, whose purpose is to provide loose coupling between data sources and business level and to encourage re-use of data. Services, which represent business functionality, are called business services. Enterprise Service Bus (ESB) provides fundamental services for complex architectures via an event-driven and standards-based messaging-engine. The main purpose of the ESB is to interrupt links between services and their users.

Since the location of the interfaces and services change frequently, it is necessary to ensure that users do not access these services directly, but through the ESB.

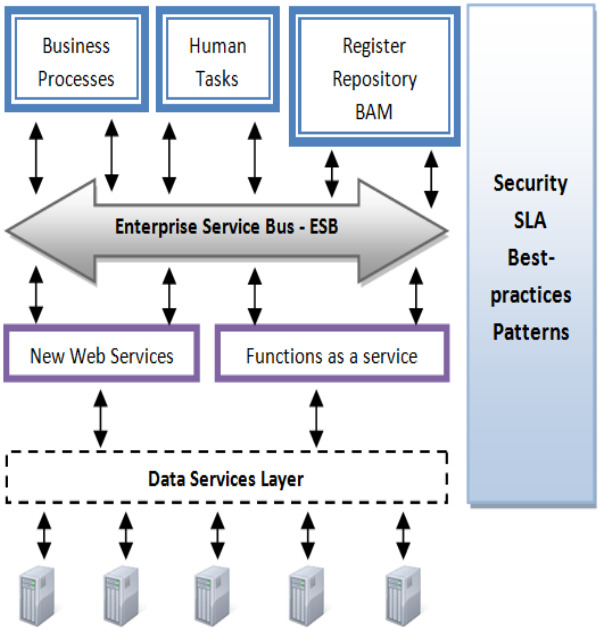

Figure 2: Architectural aspects of SOA

SOA allows direct implementation business processes. Business process can be implemented with help of one procedural language (e.g. Business Process Execution Language – BPEL) and deployed on the process server. During execution of process is possible to have a direct insight into running specific instances and monitor their performance through BAM tools.

The important part of SOA is also Business Rule Engine which exposes business rules from application code and provides changing the rules during implementation without the need to reinstall solutions. In addition to all listed components, each SOA platform should provide the mechanism for protection services and monitoring their quality with Service Level Agreement (SLA). It is also necessary to implement Universal Description and Discovery (UDDI) and Repository which together allow advanced service management, simplify development and significantly improve access to the SOA.

III. INTEGRATING ENTERPRISE PORTAL WITH SOA

A. Using enterprise portals in SOA

Enterprise portals enable us to bridge the gap between the architecture and business users. Like SOA enables integration at the system and services level, portal enables enterprise integration at the level of user interfaces. For each user portal represents starting point for his work and aggregates all necessary functionalities. All the leading SOA vendors are strongly aware of the importance of portals in SOA solutions and in addition to the basic SOA platforms also provide enterprise portal, allowing advanced integration of SOA concepts. Mature SOA architecture is composed of three levels which are shown in Fig. 3. [1]

As we see architecture besides IT and business view also includes user view. IT view provides the architecture core and is composed of the existing systems and SOA solutions, including dynamic business tasks, flexible business processes, human tasks and BAM (Business Activity Monitoring) Dashboards. With introduction of enterprise portals we intend to facilitate the user work in a way which would allow easy and efficient use of wide range of functionality provided by SOA.[1] Constituent components of a business view are business services and provide the implementation of business activities. Services are divided into internal and external services:

- **Internal services** – Services that are located within the organization and include the exposed functionality of existing systems and newly developed SOA solutions.
- **External services** – Services provided by external partners and can be in various forms (web services, Email, RSS, portlets, etc.

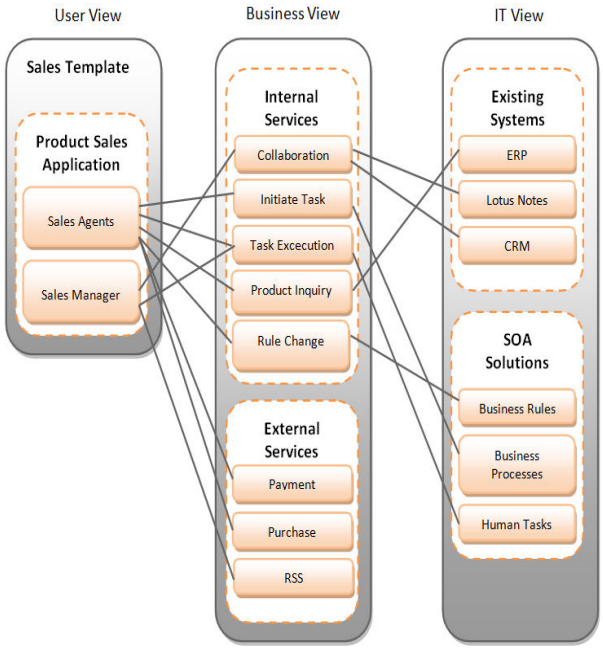

Figure 3 : Using enterprise portals in SOA

User view is the closest to end-users and it's presented in the form of user interfaces. When talking about the user's view we think about user interfaces which allow users to interact with systems and functionalities that they need in their work. If we want to make user work easy and increase their productivity, it is necessary to implement a central user interface which allows aggregation of many features and can be adapted to needs of each individual [4]. The important role here has the enterprise portal which allows aggregation functionality like portlets. The power of the portals is to provide high level of flexibility (personalization), show all types of content and use of a wide range of functions.

To ensure a high level of interoperability it is important to select an enterprise portal which provides support for standards such as JSR-168, JSR-268 and WSRP. Te best option

is to select a portal offered by the selected SOA platform vendor.

B. Benefits of using enterprise portals

Using the SOA enterprise portal in the organization brings following benefits [5]:

- Increased probability of successful SOA implementation
- Integration of user interfaces
- Improving the efficiency and user satisfaction
- Personalization of user interface
- Increased flexibility
- Faster and easier development of new enterprise solutions
- Advanced integration with SOA solutions (business rules, business processes, human tasks, BAM Dashboards)
- Improved collaboration between employees and external organizations
- Compliance with standards
- Modular design

IV. CONCLUSION

Enterprise portals integrate the companies in a business network via the services of the business processes. With the intention to realize integration between SOA and Enterprise Portals organizations must develop open architectures capable of grouping together in one heterogeneous applications which are distributed across various applications. Experience shows that the role of the enterprise portal in the business process management within SOA is important for effective and efficient business. At the beginning of the note we introduced the importance of enterprise portal by focusing on the architecture and describing logical architecture model. Following we described the importance of enterprise portals in SOA by exposing the user view. The user view represents the integration of user interfaces and improves efficiency and satisfaction of end users. Business portals represent an ideal solution for implementing end-user-friendly service-oriented architecture which can actually improve the functioning and competitiveness of organizations at all levels of its operation.

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**Operation part financed by the European Union, European Social Fund. Operation implemented in the framework of the Operational Programme for Human Resources Development for the Period 2007-2013, Priority axis 1: Promoting entrepreneurship and adaptability, Main type of activity 1.1.: Experts and researchers for competitive enterprises.*

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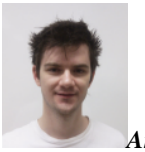

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