

Service Oriented Architecture Role In The Comprehensive Systems Integration

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Abstract. Today, any organization or economic enterprise, a method for systems integration application uses its collection and therefore can not never found a unique method that can meet the needs of system integration is in all organizations. With a proposed solution to the issue of pay .

Key words: Functional systems integration, service oriented architecture, service-oriented integration.

I. INTRODUCTION

Today, any organization or economic enterprise, a method for systems integration application uses its collection and therefore cannot never found a unique method that can meet the needs of system integration is in all organizations.

Thus, for application integration systems should always consider the various viewpoints was applied according to their circumstances, one or even a combination of them can be selected for integration. In this paper, different methods of integration of comprehensive systems are evaluated and compared and then combined solution for comprehensive integration of systems will be presented.

II. TYPE COMPREHENSIVE SYSTEM INTEGRATION

Methods for comprehensive system integration can be divided into four general categories that can include data-oriented integration, integration based on business processes, service-oriented integration and portal-oriented integration.

A. Data-oriented integration

Data-oriented professionals who have to use the system integration, integration, however, believe that the level should be raised databases . In this way, there are different perspectives that include: Replication, Federation of creating interfaces and information processing.

1) Replication:

Replication consists of the data transmission between two or more database. These databases can be owned by different companies or even different models to store and use information retrieval . Basic operations needed Replication, despite infrastructure for data transfer with regard to structural differences between the models is the database.

Replication, by placing a layer of software between the databases is possible. On the one hand banks of information or

databases and sources can be extracted from other information extracted at the destination database or databases are stored.

The index score method, simplicity and low cost of it. However, the circumstances of the methods with other information should be considered in this method would be effective and service-oriented solutions should be replaced.

2) Creating information federation :

Information Federation creating consists of integration in the form of multiple database integration and a unique view of the databases. In other words, the information Federation in the comprehensive virtual databases that are comprised of multiple physical database are.

Federation software databases, put the software layer between the distributed databases of physical and functional recovery are the information systems. This layer, which gave some Aided interface is placed, is attached to the physical databases and makes them associated with a model virtual database that the software is built. Therefore, application systems to access information, use of this virtual database . Strong point is that this software can be integrated to different types of data in the form of an integrated model. This method makes possible access to all available databases distributed in the form of a unique model of good form. This method can be considered the most practical solution in the integration of data-oriented systems outlined. Unlike Replication, this method required a change in the source and destination systems are not practical. Only minor changes should be created that can communicate with their virtual database.

3) Processing interfaces:

Processing solutions based interfaces, use the API for integration of systems ready and created systems to customer. This is considered as the most common method of approach in systems integration ERP. As the only disadvantage of this method can be noted that this is somewhat related to the business logic of origin and destination systems . In other words, this type of integration, are shared use of some facilities based services, along with methods of information.

B. integration of business processes

According to a simple expression can be said that this integration method, provides a layer of the central processing. Will create the top layer processing complex application systems .

Business process integration methods (BPI) is the following

mechanism of knowledge and information and call management process in accordance with specified time and a certain order so that it can implement those processes that exist between various application systems to manage such a manner appropriate. The aim of this approach, all processes related to gathering together is an organization in a way that the highest value to be had with the organization and flow of information to be able to support and maintain the logical connection between them. This method should be quite flexible, and layer systems for an interpreter between the origin, destination and integration engine to create business processes.

Traditional methods of integration between BPI and there are many differences, some of them are as follows:
1 - an example of BPI is in fact a bridge between many traditional integration methods
2 - traditional methods are focused on integration between information handling system without involving its internal details to each of the systems, if the BPI process model directly handles and performs data transfer in the form of this model
3 - Traditional models of integration in a tactical way to communicate between systems is . While the BPI will provide strategic business rules. Systems that enable communication between a business model in the form of a guarantee. BPI offers the main services include: visualization processes of each system, the interface abstraction and performance measurement processes for a moment.

C. service-oriented integration

Service-oriented integration, the system enables to share business logic, or methods to the public. To achieve this goal or some method that can be shared are identified and then be integrated or used for providing infrastructure to share their methods of sharing, such as Web services .

D. Port-oriented integration

Portal-oriented integration to help, we can establish a set of application systems within the organization and between organizations or even through a common communication interface. This method will largely rule out the need for integration of the infrastructure . While other methods of integration, emphasizes the real-time information exchange between application systems, this approach is founded on the basis of their information exchange between systems through a unique system is established.

III. SOLUTION COMBINED A COMPREHENSIVE SYSTEM INTEGRATION

IN THIS SECTION, IT OUTLINES A PRACTICAL APPROACH TO A COMPREHENSIVE SYSTEMS INTEGRATION. THE SOLUTION IS TO INCLUDE TWO STAGES THAT INCLUDE:

Collecting relevant information and create models and how to use integration tools.

A. collecting information and making relevant models:

Different stages of collecting information about the necessary creation of appropriate models are as follows:

a) modeling business processes:

Before the integration plan applications, regardless of the organization requires understanding the following technologies are making it. In recognition of how computers communicate, communication protocols, no matter the mapping between systems and we focus we just business processes.

Business processes, including a group of logical operations that are models of the organization participate. Typically, these activities represent the smallest unit of logical operations to be performed in the organization. For instance, "make update stock" is one of these activities when the new products list is reached or when the customer is given is called. Business processes usually have a start and end points and operations with names that indicate they are assigned. For work activities and work done can be measured by the contract. For example, the process can be called "Now processing orders," "Schedule Now the product," and "Update the warehouse" is. When ordering, processing will change position and status are not processed to processed state goes. Each application in the implementation of a business process involved, the candidate has integrity. Because the integration of applications to assist business processes of different ways . Lead to faster integration process, reduce errors, reduce expenses.

How business process modeling, BPM tools largely depends on selection. In fact, the keyboard must first modeling language approach, and we select business processes. For example, you can use the UML 2 and BPMN.

Definition and classification of services: According to the method for service-oriented analysis, design and implement comprehensive systems, the definition of all business processes to extract and classify the intended service. Obviously, the series of services, public services will be provided will be all the software and other series, service-specific application software system and will be shared between several systems. Services must define the process based on the approved pattern and compliance with all standards should be developed. After this stage of conceptual database will have all the desired services in the next section will be used.

b) Create Model Meta Data:

At this stage are collected all the information in the data directory in the form of organization. It should be noted that this information should be extracted based on the standard model developed. After creating the data directory, turn the organization to create comprehensive data Meta Model looks. The difference with this model is that the data directory list data in the raw solution needed for the integration will give us, while comprehensive data Meta Model, the desired solution for data integration is oriented.

This model not only all the Data structures in the organization is in the presents, but the communication between these buildings and also the comprehensive integration environment.

c) **determining common User Interface:**

User Interface common use as one of the most practical methods of integration are discussed. So at this stage that a relatively comprehensive understanding about the systems we have achieved master plan, can User Interface common among the related systems to identify and compile the relevant information such as access levels, security and information ... We act.

d) **design a comprehensive system of data transmission networks:**

After the above steps, the detailed processes required, services and information items are extracted from the comprehensive plan. At this stage we should evaluate how the physical connection between the operational units of the organization.

Obviously the quality and bandwidth of communication lines, choose different methods of integration will have a determining role.

IV. HOW TO USE INTEGRATION TOOLS:

For a comprehensive systems integration, we can not use the entire set to a certain limited way. Considering the requirements and limitations, in fact, be a combination of the integration methods be used (Fig. 1).

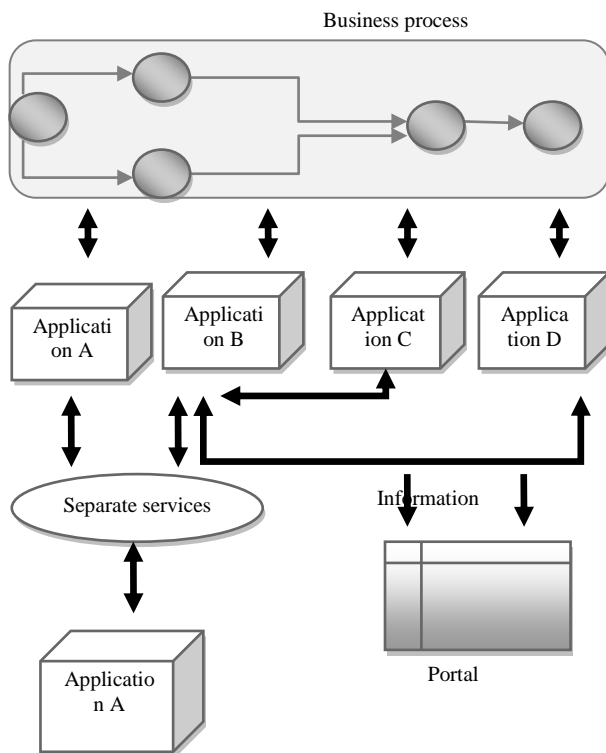


Figure 1: Combination Model Integration

To implement any of the methods of integration, related tools will be used in this section are the tools examined:

A. BPM Tools

Business process models created in the previous section, are interpreted by the desired BPM tools are coming and store the desired record in the database processes. At this stage of duty run-time engine BPM architecture that processes the stored symbol processing and run. Processing of each process, are creating a list of services that are placed at the disposal applications. Therefore, if operating in each of the comprehensive system of relief applications that perform some kind is part of a process, the relationship between run-time engine and the desired application system through the service will be established.

B. distribution servers in the model BPM:

Due to this the integration of business processes using the total relief provided in the way things are done BPM model, so each work unit requires a BPM server will have a minimum engine run time is the model. Anymore with the distribution model of the BPM server noted the following.

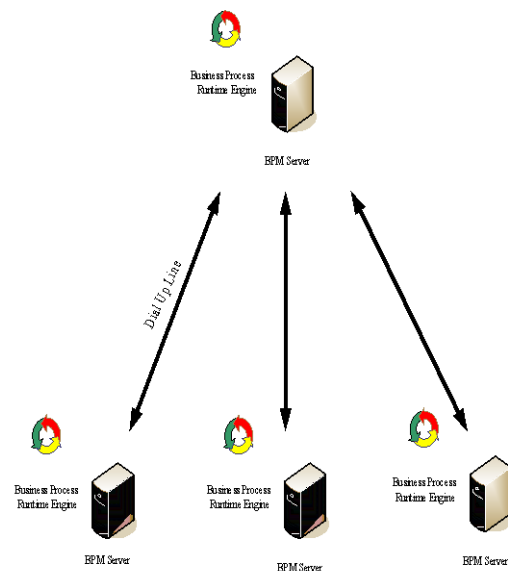


Figure 2: Graph distribution servers in the BPM model

As you see in the figure above, BMP servers as trees are associated with each other so that the servers are on a level with just one level above their servers are connected. Therefore, the relationship between the level of the server, via server overhead, they are established.

Requirements of this model:

According to the information being compact model BPM, special needs, there is no specific bandwidth between servers and thus different levels through the Dial Up lines will be established.

Application framework:

A: Mode, which stages a business process within a server workstation is done, process management engine run time by the server is done.

B: In case the process of working on a process workstations to different servers is done, the coordination procedures established by the engine run time is done at a higher level.

C: When a process is needed to define new procedures or change existing processes to be created, these changes in Aided Process Management Tool Server is done by higher levels of BPM and executive processes in the form of lower levels of the server is transferred .

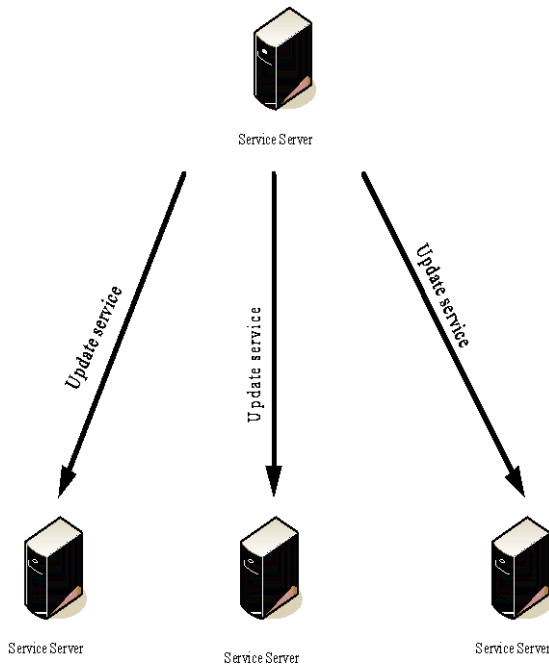


Figure 3: Model distribution services provider Servers
 C. Setting up and management services:

Public service, dedicated and shared derived in the previous section, in the form are created and shared in a database will archive. Therefore, any change in focus as the services will be conducted to aid recall systems are preserved. To enhance speed and efficiency of the systems locally are used in different parts of the network, each section will be embedded servers provided that the management and operational services will be responsible. However, should the mechanism for automatic updating services available in each local server to have.

Therefore, the model distribution service provider's servers noted various systems will be integrated (Figure 3)

Requirements of this model:

In certain time intervals, the need for updated service is as comprehensive. operation of updating the server tree structure and services as top-down occurs. This process required for relatively high-speed lines, more (such as ADSL) is. However, the absence of a desired communication lines; this process indirectly (by using the

upgrade CD) is also achieved.

Application framework:

A: In case of failure of any of the servers, the possibility of replacing them with the server there will be a higher level. Therefore, each server should have a complete set of service level lower levels have their own.

B: Update service in lower levels of all servers is distributed. Therefore, the level of the server must have a common set of services.

D. creating mechanism for exchanging information between servers:

Considering the geographical extent of user centers a comprehensive plan, possibly different servers in different places duty service will be responsible. Therefore, a suitable mechanism must synchronize the server information is considered to be maintaining comprehensive information systems.

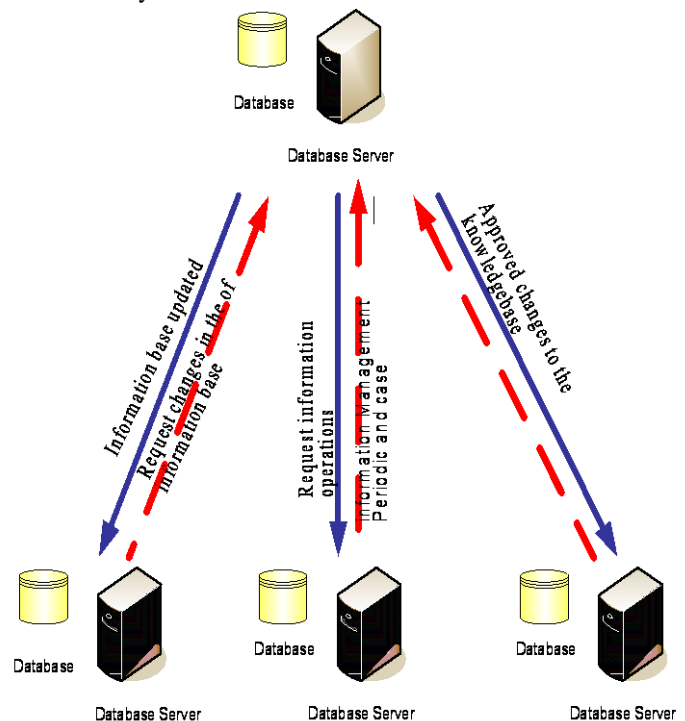


Figure4:distribution of formation in the proposed model

Information on distributed servers can be classified as made under:

- 1 - General basic information: basic data are the total set of integrated rescue systems are used. Task management and updating the information on the central server is responsible.
- 2 - local basic information: Each of the servers, alone with basic information on the geographic range servers that are desired are available. Obviously, the operation responsible for managing such information is the local server.
- 3 - Operational Information: Information about Transactions

carried out in each operational unit, is stored in the respective local server. It is to say, except in special cases requiring specific reporting higher levels of management, operational information will not be transferred to higher levels.
 4 - Information management: Information management and periodic two categories are divided into a case. Periodic management information includes a summary of operational information within the specific time of the server layers are transferred to higher levels. Case management information, including information Mrvbt operations are performed on the case of the desired server is transferred to higher levels.
 5 - System information: specific information about the system and maintenance management system are stored locally on servers.

Requirements:

Implementation mechanism for transferring information between various servers communications lines required in the table below have been introduced:

Table 1: data transfer between servers

Transmission Type	Minimum bandwidth required	Transition period	Information type
Offline	Speed / CD	Annual	General base
Online	Dialup (<10 MB) (>10 MB) Speed	Case	Operational
Offline	Dialup (<10 MB) (>10 MB) Speed	Case / Annual	Periodic management
-	-	-	System

CONCLUSION

After the integration of different methods and Acquaintance with a range of applications, Can be concluded that the implementation of comprehensive solutions for system integration in relatively large (in the national project), It is better to use the facilities and architecture, systems design, Combination of integration techniques to be used simultaneously.

Details such as the comprehensive systems integration solution for the combination, in Part 2 of this paper is expressed.

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