Service Oriented Architecture And Enterprise Architecture Alignment For Loan Financing System

Ahmad Nurul Fajar, Rama Ambara

Abstract: Today, company that Enterprise Architecture (EA) document has not yet been able to follow up on the SOA implementation. This study aims to proposed loan financing system using services oriented architecture. It will construct based on EA documents. The more specific EA documents such as business architecture. The methodology used is to integration EA and SOA paradigm which is has correlation. The research sample is an business architecture document from multi finance company in Indonesia. In this study, we design and build a prototype of SOA. Besides that, we make simulation also related to the prototype loan financing system. we used Enterprise Service Bus (ESB) tools and Business Process Management (BPM) tools also. The research sample is an EA document from a multi finance company in Jakarta. The results of the study is Loan Financing System for multi finance company in Indonesia that has been implemented with simulation experiment.

Index Terms: EA, SOA, Loan, Financing, Alignment, Application, ESB

1. INTRODUCTION

Each function in an organization will be supported by one or more information systems used in order to help automate the organization's business processes. Existing information systems are developed with different programming languages and separate databases. This condition is called Silo Stage Application, which is the stage where an organization will focus on developing individual computer applications that are used only to meet the needs of certain parts or departments [1]. This can cause the organization to have several different types of applications and are less integrated with one another. Individual application development will cause problems when between systems must communicate with each other or be integrated, because from the beginning each system is only designed to meet the needs of certain parts [2]. This results in a company having a misalignment in developing applications that are used with business needs in the organization [3]. Another problem is the difficulty in managing and developing the system.

2 RELATED WORKS

In designing SOA-based applications, there are general standards / architectures in the development of SOA-based applications [2]. Defining general semantics and information models is the key to achieving agility and flexibility [2]. Because without this, services cannot be easily combined to form new business processes. The separation of integration services and business services is very important to maintain a flexible enterprise environment. This involves transforming data and functions from what is desired at the level of business service that is truly possible in the existing system. Service Granularity [2] describes the size of a service which is the number of business functions performed in a request / response in the exchange of messages. SOA development with methodology from [2]. Previous research was carried out by [3]. This study aims to look at the areas of EA and SOA that are mutually correlated. Through the results of this study, by looking at the harmony between EA and SOA to look at an entire enterprise holistically, a new concept was produced called the Service Oriented Enterprise Architecture (SOEA). The next study was conducted by [4]. This research introduces a new paradigm called Service-Oriented Enterprise (SOE). In the SOE model, the organization sees itself as a set of "business services" that are supported by technologies that can be adjusted, scalable, and reliable. Early adopters of this model benefited through global collaboration, real-time business responsiveness, and a productive mobile workforce. By understanding this paradigm shift, corporate architects can guide organizations in building models of agility and competing in the global economy. The next study was conducted by [5]. This research presents different perspectives of EA and SOA along with comprehensive new definitions of SOA based on the interaction of authors with people who have different industrial backgrounds and different industrial years. This study discusses the results of the survey to understand how certain members of the association see the need for EA and SOA. Further research is carried out by [6]. This study aims to draw conclusions on SOA / SoEA adoption in organizations, identify critical success factors for SOA / SoEA adoption, and identify maturity level models in measuring SOA / SoEA adoption in an organization. The next study was conducted by [7]. This study explores the integration of SOA in EA, identifies the SOA integration approach in EA and identifies the factors that influence SOA integration in EA. Further research by [8]. This study investigates and compares the integration of SOA elements in the five EA frameworks that are widely used: Archimate, TOGAF, FEAF, DoDAF, and MODAF. It identifies what are considered SOA elements and their relative position in the overall structure. The results can support the EA and SOA communities with the integration of EA and SOA that are closer and more consistent and support practitioners in identifying the EA framework that provides SOA support that fits their needs. The next study was conducted by [9]. This study does not discuss in detail the relation between EA and SOA, but the results of this study are SOA-based applications.
The next study was conducted by [10]. This study explores business and IT motivations for SOA implementation and the benefits realized from this implementation. The findings of this study can provide guidance for practitioners about the successful implementation of SOA.

3 RESEARCH METHOD

The initial step of the research is to take the example of existing Enterprise Architecture with the TOGAF framework of a company. In detail, the activities to be carried out based on the EA documents obtained are: (1). Analyze Business Architecture. Analysis is done to look at the main business processes, business services, and use cases of the process. (2). Based on the Business Architecture analysis, a Business Model for SOA will be designed using BPMN notation. (3). Analyzing Information Architecture. This analysis is conducted to see the relevance of data and information used in supporting business processes on Business Architecture. (4). Based on the Information Architecture analysis, ERD and common semantics and data will be designed on SOA. (5). Analyzing Application Architecture. This analysis is done to see the applications that are used to support key business processes and the connectivity between existing applications. (6). Based on the analysis of Application Architecture, the service design is needed to become a prototype of SOA-based applications. (7). Carry out an analysis of Technology Architecture to see the technology used today and proposed (future). (8). Based on references from Technology Architecture, an enterprise service bus will be setup as the foundation of SOA-based applications.

4 RESULTS AND DISCUSSION

Business Architecture Analysis

Business architecture is a description of capabilities possessed by a company in carrying out its business, developing business and achieving the company’s vision, mission, and goals. One important aspect of business architecture is how companies can run their business processes. Here is the business architecture found in this company.

According to these processes above, the role are: (1). Operator data entry; (2). Traffic coordinator; (3). Surveyor; (4). Credit analyst; (5). Branch manager; (6). Area manager; and (7). Head office. In this study the researcher limits only to process number 7, namely generating PO. This is because process number 8 is an optional process, and number 9 is a manual process outside the system. Information Architecture Analysis

Every business process that runs in the company produces at least 2 things, namely information and products. The information generated previously is managed by an application or needed as input for the next process. So that the flow of information flowing in business processes is modeled in the information architecture. At this stage it emphasizes how data is used for business functions, processes, and services. Data / information architecture represents data, data structures, and data interactions both with business processes and applications. Application Architecture Analysis

To run a business process that is effective and efficient and automated, the company cannot be separated from applications or frameworks. Therefore it is necessary to have mapping and modeling to illustrate the integration between applications and architecture in an application architecture. This section provides an explanation of the results of the study applications that XYZ Finance has. Discussion of the application study consists of a list or catalog of applications that are owned and communication between applications that occur at this time. XYZ Finance has several applications that are used to support business processes. In the application architecture, application development will use.
tools to support the creation of services, such as Java with REST services or using third party tools, such as WSO2 Enterprise Integrators to build data services. Next is a service design that is built based on the characteristics and granularity. From each service that is available then a method / operation can be used. Technology Architecture Analysis Application and information architecture requires technology to ensure that it can run optimally, be reliable and have high integrity, so that supporting infrastructure is needed for the application and information described in the form of technology architecture. In this technology architecture, several tools will be implemented to support SOA, including Enterprise Service Bus (ESB) and Business Process Management (BPM) tools. In this case researchers have conducted experiments by building prototypes of SOA-based applications based on the existing data. In this study, we doing the experiment and simulation using the software and hardware specification that described in table 1 and table 2 below:

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<tr>
<th>Table 1. ESB Specification server</th>
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<td>Processor</td>
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<tr>
<td>Operating System</td>
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<td>Software</td>
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<td>Database</td>
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Table 2 below described the BPM specification server for implement the system:

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4 CONCLUSION

Through this research, researchers have made prototypes of SOA-based applications by referring to the TOGAF-based Enterprise Architecture owned by one of the multi-finance companies in Jakarta. The process used as an example is the Account Acquisition process, which is one of the core processes of this company. In this case the researcher has succeeded in implementing it using BPM and ESB tools which are tools used to create SOA-based applications

REFERENCES


