

Blueprint of Enterprise Architecture on Project Management Information Systems using TOGAF in ERP Provider Company



Mozari Putri, Zahrotur Rohimah

Abstract: XYZ company is a leading Enterprise Resources Planning (ERP) solution provider company from Singapore that develops innovative software to help businesses automate their daily operations to achieve optimal levels and productivity. To realize its vision of becoming a leading Enterprise Resources Planning (ERP) solution provider in South East Asia, a solution to the current problems is needed, namely that the project management is not optimal so that some projects are not completed according to the timeline due to poor communication. This study aims to build an Enterprise Architecture using The Open Group Architecture Forum framework (TOGAF) that supports the design, planning, implementation and governance of an enterprise information technology architecture, so that this framework will help the company to improve the quality of project management information systems. This study implements 4 phases of TOGAF, namely Architecture Vision, Business Architecture, Information System Architecture, and Technology Architecture to build an application management project called Internal Po. In this study, TOGAF framework will help the company's business to achieve its vision.

Keywords: Enterprise Architecture, Enterprise Resource Planning, Management Project, TOGAF.

I. INTRODUCTION

XYZ company is a leading Enterprise Resources Planning (ERP) solution provider company from Singapore that develops innovative software to help businesses automate their daily operations to achieve optimal levels and productivity. With more than 12 years of experience, XYZ company has served various types of businesses engaged in more than ten industries including manufacturing, retail, wholesale, service, food & beverage, rental, construction, engineering, real estate, and education.

The main business process of XYZ company is the development of each project that comes from the client's

request. Of the 150 employees owned, there are approximately 10 project teams and 50 developers in two different countries. While the current project management carried out at XYZ company is still completely manual with the help of several tools that are not mutually integrated. Like the use of repositories in the form of Google Drive, GitHub, and communication media via Skype and email.

This presents a number of things complained by team project members, such as the difficulty of assigning developers to each project because the existing system is only manually booking each other via Skype. And the difficulty of the management team in tracking the project due to the update of each current project status is still through Google sheets and the absence of a clear SOP in writing makes a lot of things mess up.

Because of the above problems, the impact varies from miss communication between the project team and the developer because booking systems are sometimes through personal messages, not from group chat as they should. Until the project was over timeline because of the lack of attention of the management team in tracking every issue that faced each team project.

Enterprise Architecture (EA) is a solution to rebuild the design of the right information system for XYZ company, with The Open Group Architecture Framework (TOGAF) framework which is an EA framework that supports the design, planning, implementation and governance of an enterprise information technology architecture.

TOGAF is a tool to assist the receipt, production, use and maintenance of corporate architecture. This is based on iteratives. TOGAF was developed and maintained by the Open Group Architecture Forum. TOGAF helps the practitioners to utilize resources to be more efficient and effective, and leads to greater return on investment [1].

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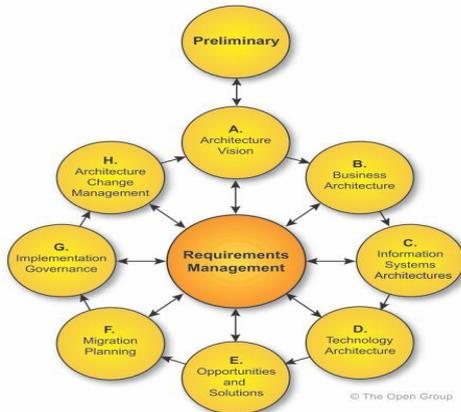


Fig. 1. TOGAF framework [1]

From Fig. 1 we can see the standard TOGAF framework stages. In this research we will produce a new project management information system blueprint for XYZ company. The stages to be proposed are Architecture Vision, Business Architecture, Information System Architectures, and Technology Architecture.

- Architecture Vision is an initial design that will define the company's general picture, the vision and mission of the organization or company.
- Business Architecture describes business process diagrams from existing and target. We will also do a fit and gap analysis in this phase.
- Information System Architecture provides a blueprint for the system that is built and its interaction with current business processes, including sequence diagrams and use case diagrams.
- Technology architecture explains the technology support that will be used. Such as hardware, software, and network infrastructure.

II. LITERATURE REVIEW

A. Enterprise Architecture

Enterprise Architecture is about organizing business processes and information technology infrastructure that are integrated and standardized depending on the company's vision and operational model. The operational model is the model that best fits the integration and standardization of business processes to distribute company products or services to consumers. Architecture is considered very helpful in maintaining the essence of the business and allows maximum flexibility and adaptation because basically the essence is far more stable than the specific solutions found for the problem being faced [2].

Study [3] was done in the Ministry of Energy and Mineral Resources (MEMR) in Indonesia. This research aims to map the current condition of MEMR and recommend the architecture design that fits to MEMR using TOGAF.

Reference [4] explains the proof of concept development using the concept of Corporate Architecture (EA) as a solution for improving medical designation and patient customer service business processes.

Reference [5] proposes the use of an enterprise architecture methodology known as the Systemic Enterprise Architecture Methodology to determine the relevance of EA in addressing

the business-IT alignment. A theoretical framework build upon the Systemic Enterprise Architecture Methodology (SEAM) was used based on a business-IT alignment market, in which supplier business systems compete to provide a value to an adopted business system.

Reference [6] reviews the critical success factors (CSF) that affect the success of EA implementation viewed from various factors from a number of CSF models for effective EA implementation and comparing these models.

B. TOGAF Framework

TOGAF (the Open Group Architecture Framework) is an architectural framework that was developed and maintained by the Open Group. TOGAF assists the receipt, production, use and maintenance of corporate architecture. This is based on iteratives. The first version of TOGAF, developed in 1995, was based on the US Department of Defense's Technical Architecture Framework for Information Management (TAFIM).

The TOGAF framework helps organizations to streamline time and money, and use resources more effectively so that they can achieve demonstrable ROI [7]. The stages of TOGAF framework are [1]:

- Architecture Vision: Define the scope of the project, the goals expected from the company, and create the Statement of Architecture Work
- Business Architecture: Develop baseline and target architectures and describe the gap analysis
- Information Systems Architecture: Provide a blueprint for the system that is built and its interaction with current business processes
- Technology Architecture: Explain the technology support that will be used
- Opportunities and Solution: Perform initial implementation planning and identify major implementation projects
- Migration Planning: Initiate migration planning, how to move from baseline to target architecture
- Implementation Governance: Define how architecture impedes implementation projects, monitor it when building it, and produce a signed Architectural Contract
- Architecture Change Management: Provide continual monitoring and a change management process to ensure that the architecture responds to the needs of the enterprise

C. Project Management

Project management is an effort on an activity so that the purpose of the activity can be achieved efficiently and effectively. In this case, effective is where the results of the use of resources and activities are in accordance with the objectives which include quality, cost, time and others. While efficient means the use of resources and the selection of sub-activities appropriately which includes the number, type, when using other sources and others.

Reference [8] presents a web-based software tool called MfPMIS for initiating and facilitating and the collaborative project management environment. The software tool is constructed based on the meeting flow concept, an idea of managing software projects by the meetings and their contextual flows.

Reference [9] designs the control of project management using social network analysis (SNA). In this project, SNA will be a tool of diagnostic gap analysis for social networks in organizations.

III. RESEARCH METHODOLOGY

The proposed methodology is a descriptive approach in the case study found at XYZ company. With qualitative methods, to identify fully and thoroughly with a question and answer process (interview) on several respondents at XYZ company.

The authors will use two types of data, namely primary and secondary. Primary data will be obtained directly from the source / respondent based on the results of the interview process. Data can be in the form of opinions or opinions that

will be used as formulation of answers to the problems found in this study.

While secondary data is data collected from various previous studies that have been assembled. Used to support information from primary data. This primary data is obtained from various sources such as literature studies, previous research, books, papers, and so on.

IV. RESULT AND DISCUSSION

A. Architecture Vision

The main product of XYZ company is ERP software that supports more than 100+ modules that can be customized according to client needs.

Their vision is to become the leading provider of consulting services and ERP software development in Southeast Asia.



Fig. 2. Value Chain Diagram of XYZ Company

We can also see from Fig. 2 above, the value chain diagram that describes primary and support activities in XYZ company with input and output in the form of project management.

B. Business Architecture

The main business process that we will carry out in this research is only on project management. We can see the existing business processes from the following business process diagrams in Fig. 3:

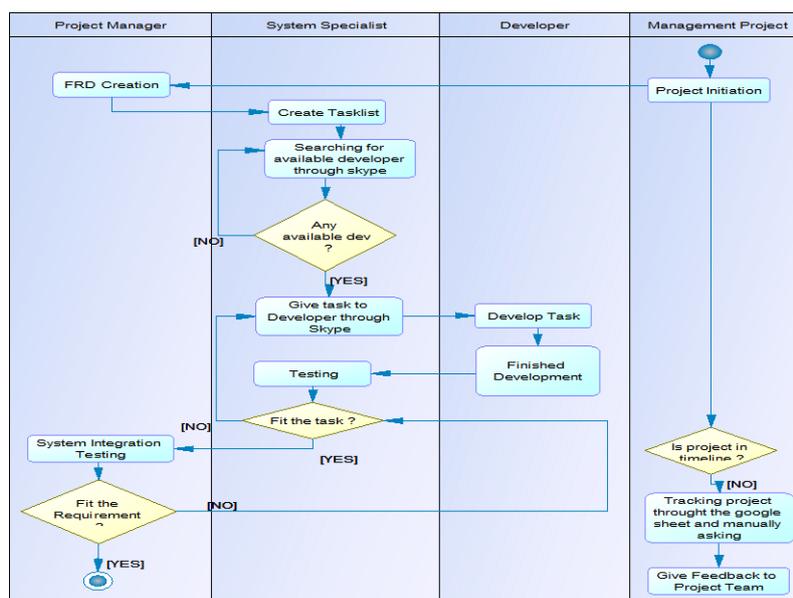


Fig. 3. Existing Program of Business Process

The involved role is the project manager as the lead of the team, the system specialist as the person responsible for technical design and development management, the developer as the role that builds the system technically, and the project management team that oversees the project.

The system that will be submitted in the target business process is a project management application called Internal Portal. Through the internal portal system specialist, they will no longer search and assign developers manually via Skype, with the developer booking feature on the internal portal with process approval directly from the management project. That way the project team will find it easier to find developers that are available and can be assigned to their projects, with

bookings within a certain time it also reduces the risk of developers who suddenly get annoyed because they get assignments from other projects.

In addition, the internal portal has been made a state based on each task given to the developer. SOPs will be made for all team project members so that they are obliged to update each project progress on the internal portal, so that the management team will also easily track if there are obstacles in the project. In the internal portal all details of the data must be filled in from the task list document, the developer on duty, to the repository module that has been worked on. So that project management will have centralized data on the internal portal which will greatly facilitate the project monitoring.

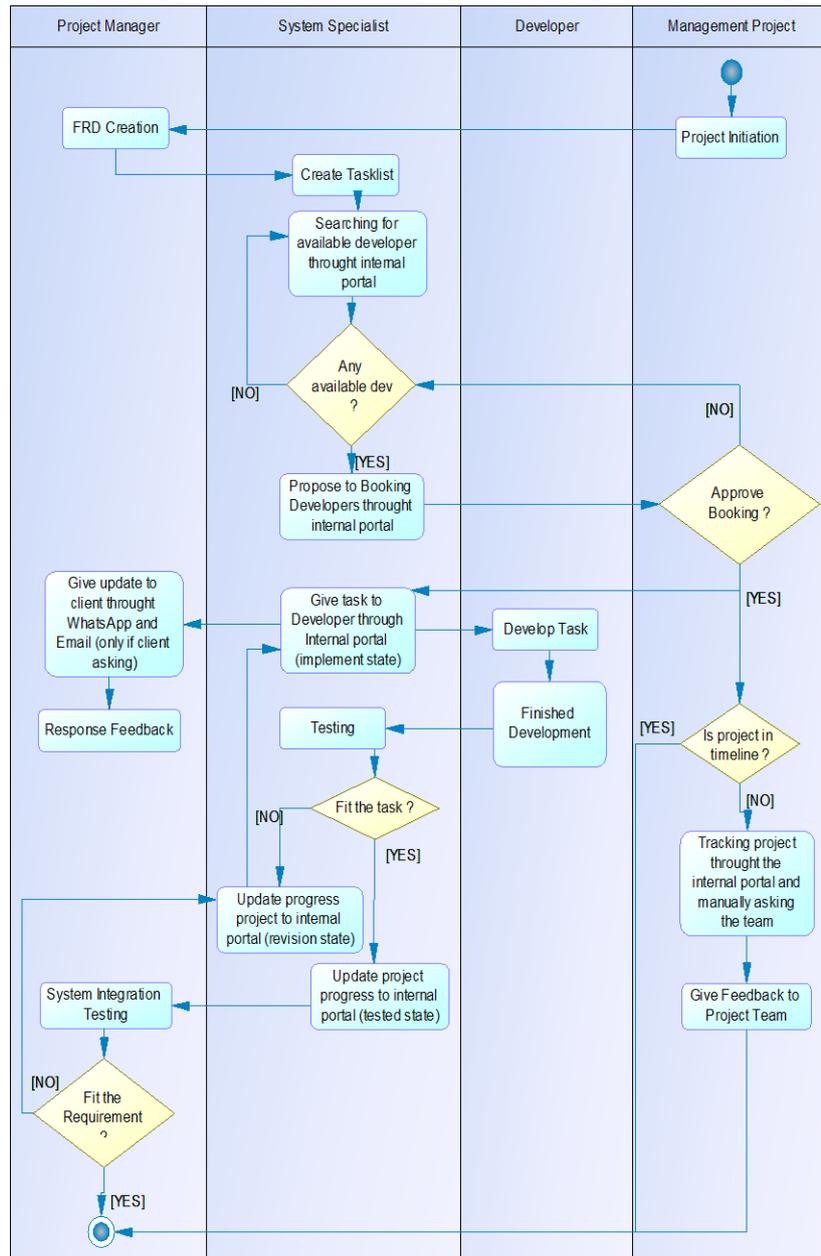


Fig. 4. Target Diagram of Business Process

C. Information System Architecture

From Fig. 5 below, we can see sequence diagram from internal portal applications that will support the core activities of project management, especially during the development

process. The relationship between the system specialist and developer and project management as the authorities in approving the submission of booking developers by the system specialist.

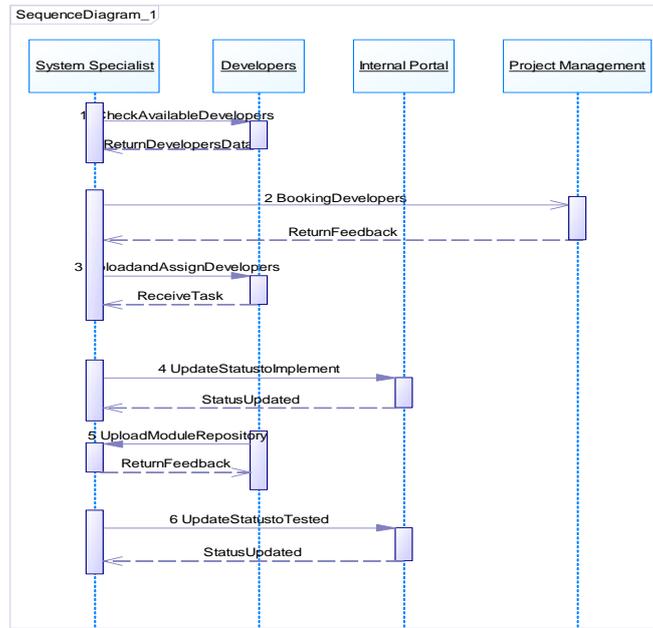


Fig. 5. Sequence Diagram of Internal Portal

The Fig. 6 below is a use case diagram to describe the access rights of each role involved in the proposed business management business process with an internal portal application. project management as a level 1 party has full access to access all features in the application, while the

project manager and system specialist who has the same access rights are limited to some features such as the create project, booking developer approver. The developer alone can only access detailed information from the tasklist and upload the development module.

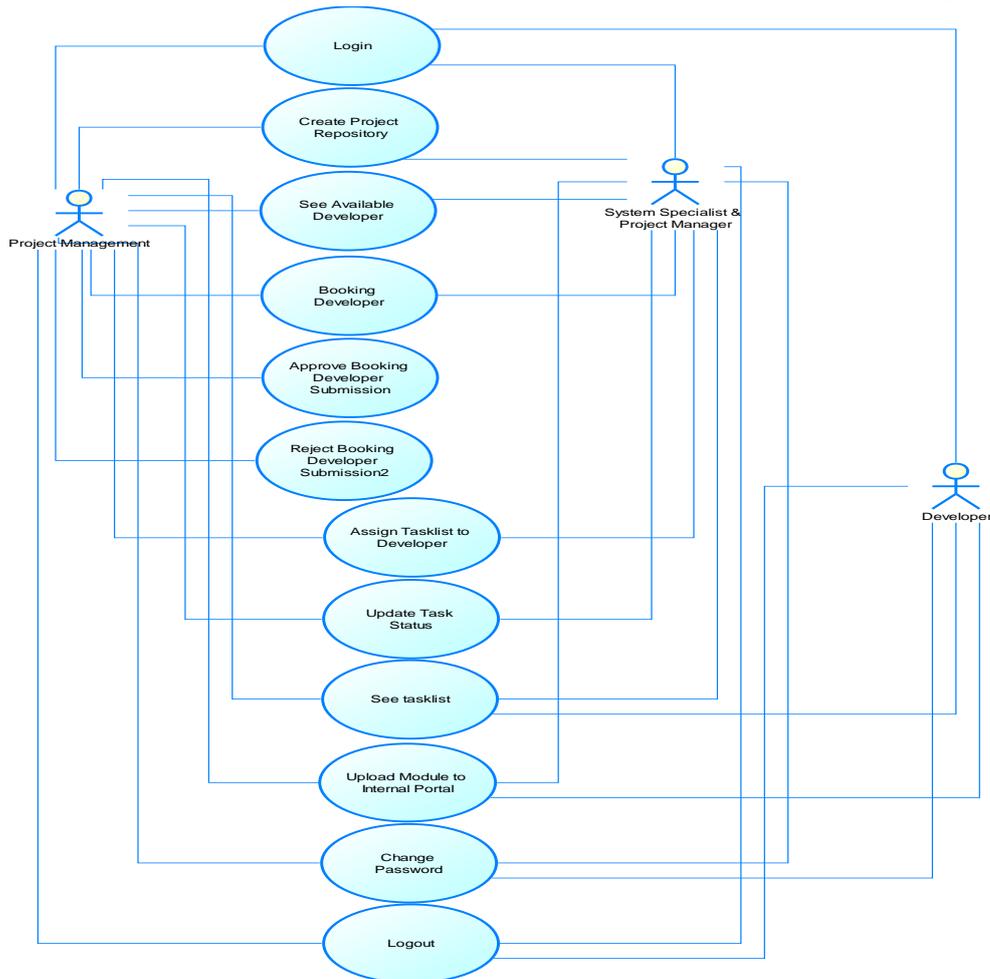


Fig. 6. Use Case of Internal Portal

D. Technology Architecture

Internal portal is a web-based application whose servers are located outside Indonesia. Users access through the web

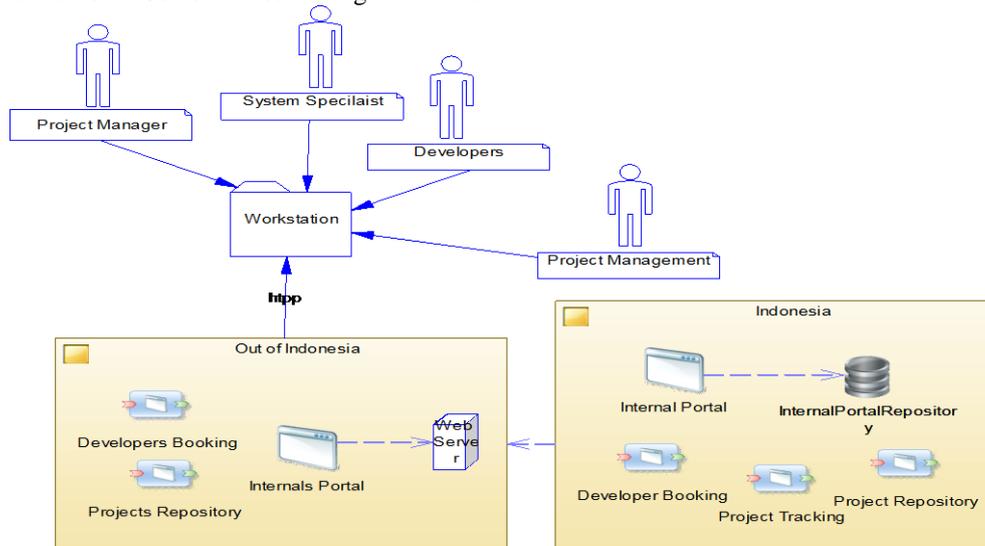


Fig. 7. Technology Architecture of Internal Portal

V. CONCLUSION

Seeing the current condition of the project management business process, several issues were often found such as project delays, difficulties in finding the causes of project delay, difficulties in the project team in management development and so on. From the result of the enterprise architecture design built in this study, it shows the design of web service technology that makes it very easy to access the International Portal wherever and whenever there is an internet connection. Improving information systems with enterprise architecture is the best solution because the existence of applications that are proposed will be very helpful in completing every issue that exists today. With good project management, the impact will be felt in the development of the company's business to achieve its vision.

Because the TOGAF framework in this study only implements phase A (Architecture Vision) to phase D (Technology Architecture), then for future research it is expected to provide new concepts and innovations in this project management by developing the next TOGAF phase that was not carried out in this study, namely the phase of Opportunities and Solutions to the phase of Architecture Change Management.

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service with links that are available. Web service technology makes it very easy to access the International Portal wherever and whenever there is an internet connection.

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