

Enterprise Architecture Information System Planning in Pt. Technomotor Indonesia using TOGAF Framework

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Abstract: The development process of Mr. Montir requires support from many department and require much time in flow of information between departments, and have to be better. Otherwise, Mr. Montir prior business is service, to control of each outlet services from head office is highly needed. So that customers can always be satisfied by Mr. Montir services. TOGAF (The Open Group Architecture Framework) with ADM (Architecture Development Method), used for modeling the Information Systems Architecture of Mr. Montir Outlet Development in PT Techno Motor Indonesia (TMI). This study was focused at the business process of Mr. Montir Outlet Development with referring to policies that run in PT Techno Motor Indonesia. The output of this research is a design of information systems architecture model of Mr. Montir Outlet Development, that would support the improvement of overall company's information system service performance and resolved the partial applications problems.

Keywords: Business Architecture, Data Architecture, Application Architecture, Information Systems Architecture, Technology Architecture, General Repair Motorcycles Shop Franchise, TOGAF ADM , Mr. Montir Outlet Development

1. Introduction

Currently TMI is still in the system development stage, TMI want to develop an effective and efficient information system application which integrating all functional area. In addition, the company also wants to make a company information system that can be integrated with each other between departments, between development projects and between outlets, and between branches later. Meanwhile the existing applications are still independent and not integrated between each other.

2. Research Methodology

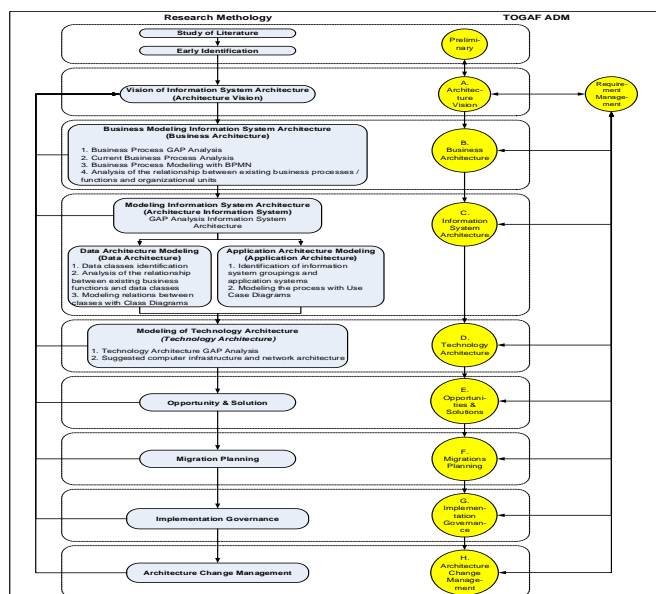


Figure 1: Information System Architecture Research Methodology Modeling TMI

The Architecture Development Method (ADM) forms the core of TOGAF and is a method for deriving organization-specific enterprise architecture[1].

3. Current Condition

Based on direct observation, identified all work procedures (business processes) on TMI, starting from data processing of prospective partners, business plan reviews, until the outlet operated.

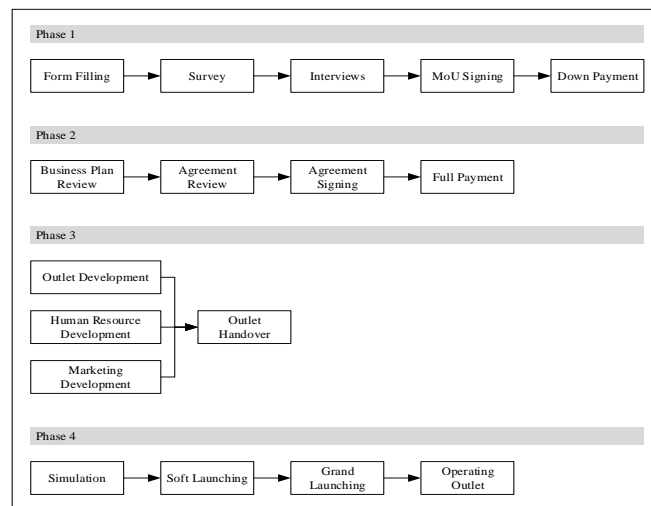


Figure 2: Mr. Montir Outlet Development Business Process

To do this, the majority of IS / IT currently used by TMI is still independent per department and has not been integrated with each other. Almost all applications that is used were developed by the TMI IT Development Team.

Table 1:The applications currently used by TMI

Application	Developer	Platform	Database	Functional
Sales Act	TMI	Windows	SQL Server	Marketing, Sales
Business Plan Calculation	TMI	Windows	Ms. Excel	Development
Human Resource Information System	TMI	Windows	Ms. Access	HRD
Poin of Sales	TMI	Windows	SQL Server	Outlet
Vendor Sales Report	TMI	Web	My SQL	Operation
Accurate Accounting Software	CPS Soft	Windows	Firebird	Finance, TMPA, Purchasing
Warehouse Management System	TMI	Windows	SQL Server	TMPA, Outlet
Care Center Tickets	TMI	Windows	Excel	Care Center
Goals & Tasks Management System	TMI	Web	My SQL	All Dept.
Business Control System	TMI	Web	My SQL	Operation
Development Control System	TMI	Web	My SQL	Development

4. Architecture Development

4.1 Modeling

The main methodology used in modeling this architecture is the The Open Group Architecture Framework (TOGAF) with the Architecture Development Method (ADM). Also uses other additional tools in modeling, such as Value Chain Analysis, Four Stages Analysis and Entity Relationship Diagrams.

4.2 Visions of Information System Architecture

A vision must not be completely unrealizable[2].The vision in architectural modeling at TMI are:

- 1) Designing an integrated system model from existing systems by creating a master plan for the enterprise architecture planning to optimize information flow between functional areas.
- 2) Providing conveniences and supports to functional areas in managing and controlling a real time information that occurs.
- 3) Sharing & analyzing database between functional areas for real time decisions maker.

4.3 Business Architecture Modeling

Value Chain tool used to modeling an architectural of all business processes that are directly related to the construction of new outlets. Value Chain describes all activities based on its business functions, then mapped using the Business Process Mapping (BPM) method using Business Process Process Mapping (BPMN) to provide a notation that is readily understandable by all business users, from the business analysts that create the initial drafts of the processes, to the technical developers responsible for

implementing the technology that will perform those processes, and finally, to the business people who will manage and monitor those processes [3].

The main and supporting business functions are then described according to Requirements, Acquisition, Stewardship and Retirement.

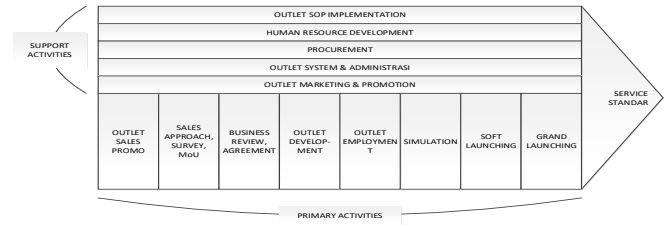


Figure 3:TMI Value Chain

All results of the main activity and supporting activities in the value chain and four stages of life cycle are used to compile the decomposition of sub-activities from the main activities and supporting activities using a hierarchy of business functions. Business processes and policies gap analysis implemented in order to meet the expected targets.

After grouping the business process, a detailed process analysis is carried out by making a BPMN for processes. This stage is done to clarify the detailed flow of each activity, then become a reference for the next architectural planning stage.

Grouping of business processes with functional area must be done to find out the responsibilities of each functional area, then the architecture will be planned in accordance with the needs of the organization. In degree of involvement matrix, every entities marked, to know the degrees of involvement between process and unit entities.

4.4 Information System Architecture Modeling

At this stage, gap analysis applied to analyze the existing information system architecture, so that the results of information system modeling can meet the expected target. The result of gap analysis is to identifies what needs to be changed and to what extent[4].

4.4.1 Data Architecture Modeling

In this stage, the target data architecture is determined, starting from identifying data classes, analyzing the relationship between existing business functions and data classes, and modeling the relationships between data classes with class diagrams. Nowadays, the class diagrams of UML form a crucial element in object-oriented analysis and design [5].

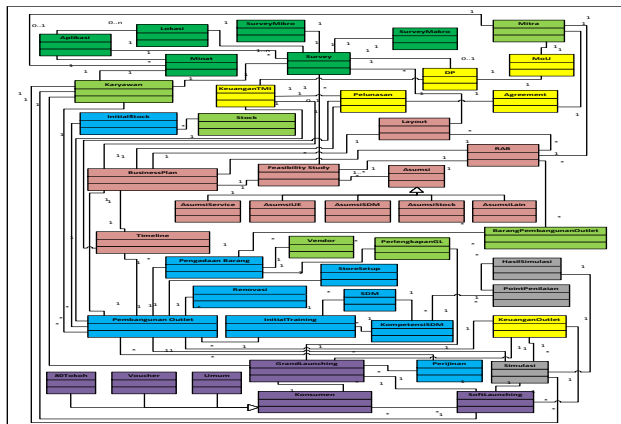


Figure 4: TMI Data Architecture Class Diagram

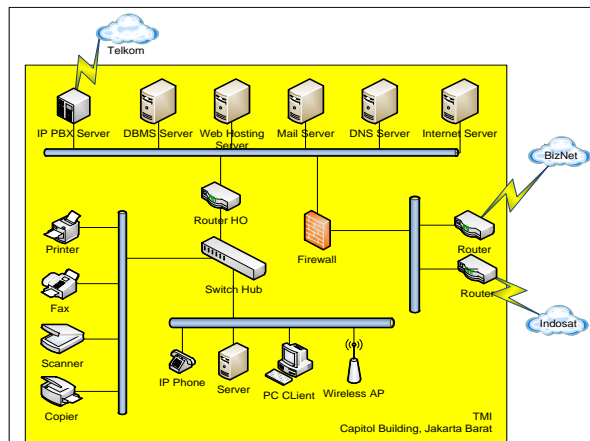


Figure 6: TMI Future Network

4.4.2 Application Architecture Modeling

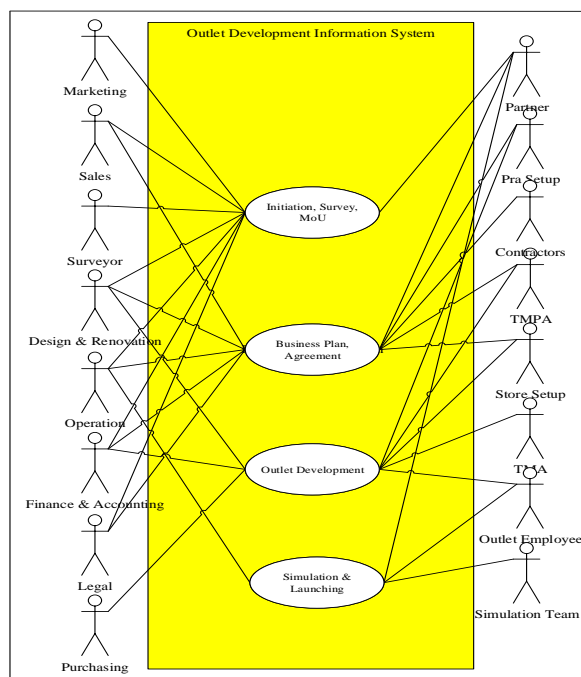


Figure 5: TMI Use Case Diagram

In addition to building an information system architecture, it is also necessary to develop the desired technological architecture and that will be used in assisting reliable information systems.

The development that will be carried out on this architecture are: backbone uses fiber optic, which used to use ordinary network cables; wireless access networks (Wi-Fi) for clients behind a firewall using the IEEE 802.11g standard that is secured with WPA-PSK and MAC address filtering; some additional hardware security features that support technology infrastructure architectures which not exist in the previous architecture.

4.6 Opportunities and Implementation

Starting with defining the main applications needed to manage data to accommodate functional areas in TMI. The modeling is done using Use Case Diagrams which aims to provide an overview of the processes that occur in the process business and to take a snapshot of aspects of the system[6].

To support the implementation process, several strategies are needed to minimize the risk of failure. These strategies include consideration of implementation costs; HR development needed during and after implementation; preparation of a mature implementation plan with project-based management.

4.5 Information Technology Architecture Modeling

App#	App Name	Year I												Year II											
		1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
AP1.01	Outlet Marketing																								
AP1.02	Outlet Sales																								
AP1.03	Survey Management																								
AP1.04	MoU Management																								
AP1.05	Finance (DP)																								
AP2.01	Layout																								
AP2.02	Business Plan Management																								
AP2.03	Resource & Feasibility Study																								
AP2.04	Initial Stock																								
AP2.05	Timeline																								
AP2.06	BP presentation																								
AP2.07	Agreement																								
AP2.08	Repayment																								
AP2.09	Legality of Outlet																								
AP3.01	Procurement																								
AP3.02	Recruitment																								
AP3.03	Initial Training																								
AP3.04	Timeline																								
AP3.05	News																								
AP3.08	Vendor Payments																								
AP4.01	Simulation																								
AP4.02	Soft Launching																								
AP4.03	Grand Launching																								

Figure 6: Applications Development Roadmap

Roadmap help ensure that the information agenda creates value for the organization, remains aligned with business dynamics and requirements, and prioritizes the necessary projects in the right sequence based on the delivered value[4].

4.7 Migration Planning

Migration Planning addresses the formulation of a set of detailed sequence of Transition Architectures with a supporting Implementation and Migration Plan [1]. In implementing the information system architecture model developed, there are several applications that have been developed before. Through the migration planning phase it must be planned in how the migration will be done from the old system to the new system, because this is very important to keep existing data and still be used in the new system.

The steps to be taken at this stage include: identification of high/low risk applications; database identification; data types identification; and the migrations itself.

4.8 Architecture Management Implementation

Through this stage, the formulation of governance recommendations includes organizational governance, information technology governance and architectural governance must be reviewed. Mapping can be integrated using the COBIT framework (Control Objectives for Information And Related Technology) from the IT Governance Institute (ITGI). At present TMI has not used any framework to carry out information technology governance. By implementing this newly developed information system architecture model, the need for the right information technology governance is needed. COBIT framework recommended as a guide to governance, because: provide a basic model with clear rules and good practices in controlling TMI information in achieving its objectives; helping to meet various management needs for information by bridging the gap between business risk, control and technical issues; recommended in the TOGAF document as a tool for implementing IT Governance. From the COBIT perspective, IT Governance is considered a framework to govern IT assets over their lifecycle [4].

4.9 Architectural Change Management

Architectural management is determined to ensure that the architecture that has been built can be maintained. On the architecture of information systems development in TMI, every change that occurs in the system will be changed management in accordance with the circumstances of the change, for example if there is a change in work procedures, changes in policies and changes that will have a direct impact on the applied information technology. Currently at TMI there is a section that handles every system change, procedures, processes and others. The handling of these changes is handled by the Audit & System Control Department.

5. Conclusions

In this article, concluded as below:

- 1) TOGAF ADM methodology can be applied to Mr. Montir Development at TMI. The result is in line with the company's vision and mission.
- 2) The database design that will be used to accommodate the needs of each department in TMI, all functional areas can meet the data needs by providing comprehensive and mutually integrated data services, so the problems regarding partial information systems can be solved, obtained quickly, precisely and accurately.
- 3) To accommodate the needs of the new information system architecture, several technological developments are needed in the future, in order to support the smooth running of the company's business.

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Author Profile



Albertus Tomi Gunawan received the B.Eng. in Industrial Engineering from Parahyangan Catholic University in 2003 and M.Com. degrees in Business Information System from LIKMI High School of Information & Computer Management in 2014. During 2001-2004, active as a lecturer assistant of System Simulation Laboratory, Industrial Engineering of Parahyangan Catholic University, Bandung. 2016-now he stayed in Wastukencana High School of Technology as a lecturer of Industrial Engineering Department also in Tawada Healthcare Head Office as a Business Operational Manager.