ENTERPRISE APPLICATION ARCHITECTURE FRAMEWORK PARKING INFORMATION SYSTEM USING TOGAF ADM (CASE STUDY : BRAYAN SHOPPING CENTRE)

Safrian Aswati[1], M. Irfan Fahmi[2], Khairil Anwar[3]
[1,3]Study Program Information System STMIK Royal,
Kisaran North Sumatera Indonesia,
[2]Study Program Computer Engineering AMIK Royal,
Kisaran North Sumatera Indonesia

Correspondence : Study Program Information System STMIK Royal Kisaran,
Address: Jl. Prof. MH. Yamin SH No. 173, South Kisaran, Asahan, North Sumatra,
Phone: (0623) 41 079,

Abstract

The Brayan Shopping Centre is a shopping center in the Medan which there are many consumers who visit every day. It is an affects to increase the volume of vehicles on the court of Brayan Shopping Centre, because certainly the visitors who come to bring the vehicle. Data management boulevard parking vehicles of visitors who really needs to do let alone the current technological developments are so rapid data processing requires that every aspect has to be utilizing information technology and computerized application form in order to provide the details. The application designed for data processing park vehicles on the Brayan Shopping Centre in the form of an information system that was created by applying a framework.Enterprise architecture enterprise architecture (EA) is a structured approach to describe any system needs so that it can be used to design and develop complex systems to be more modest. In the EA required the use of modeling framework. With the framework, allows developers to design and develop the system, because the stages, methods or logical structure that has been provided by the framework. In this research framework used is TOGAF. TOGAF provides a method which detail how to build and manage and implement enterprise architecture and information systems called the Architecture Development Method (ADM).

Keyword : ADM, TOGAF, Enterprise Architecture, Parking

1. Introduction

The development of information technology is now growing rapidly and has a significant impact on the business. The developments in information technology such as the widespread to use of computers in recent years as a popular tool in dealing with information systems in an enterprise. In this globalization era, the computer is a tool that is often suggested to be an ideal tool in handling to manage of data in a company. For that we have to see that ideal in general are always able to provide the best results for a particular company. It turned out that it will be analyzed the extent to which the role, influence and benefits of computerized data within an enterprise.

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Base on the background of the problems described above, the writer can be describing some formulation of the problem in how to produce accurate information to the data vehicles are parked on the Brayan shoping Centre and how the application of the Framework TOGAF Enterprise Architecture in designing data management information system for vehicles parking on Brayan shoping Centre. As for the objective study, the information system designed to implement the enterprise architecture framework TOGAF. And also process data information system parking attendant, data is vehicle parking and parking location data.

2. REVIEW OF THEORY

2.1 Enterprise Architecture (EA)

EA is an explanation of how an organization to design a system to support the needs of business and technology in realizing the mission and vision and achievement of results that have been targeted. EA preceded the emergence of two things:

1. These complex systems, where the organization must spend a considerable cost to design or develop a system that is owned.
2. The alignment of business with technology, where the number of organizations that have difficulty in aligning business needs with technology. EA has three main components, namely business architecture, information systems architecture (divided into data and application architecture) and technology architecture.

2.2 EA Framework

Framework is defined as the key to understanding the EA that acts as a logical structure to classify complex information. Using a framework for developing EA then, to note any criteria are met by the framework. As for some of the criteria to be used as consideration in choosing a framework, namely:

1. Taxonomy completeness, refers to how well a framework to classify the application architecture.
2. Process completeness, referring to how a framework provides guidance in the form of a process (step-by-step) to create an EA.
3. Practice guidance, refers to how much a mindset framework helps users (easy using) within the organization to understand the development of EA.
4. Maturity models, refers to how much a framework provides guides for assessment or evaluation of the organizations using EA.
5. Governance guidance, refers to the extent to which a framework to help provide understanding and create an effective governance model for EA .
6. Partioning guidance, refers to how well a framework will guide the effective autonomy partitions on the company so that it becomes an important approach for managing complexity.
7. Vendor neutrality, refers to how likely EA to rely on a specialized consulting organization when using the framework .
8. Information availability, refers to how much a framework to produce the quantity and quality of information.
9. Time is value, base on how long it takes a framework used to build solutions that deliver business value.

There are a variety of frameworks that can be used in developing the EA. According to the survey conducted IFEAD (Institute for Enterprise Architecture Development), suggests a comparison types of framework used in the organization.

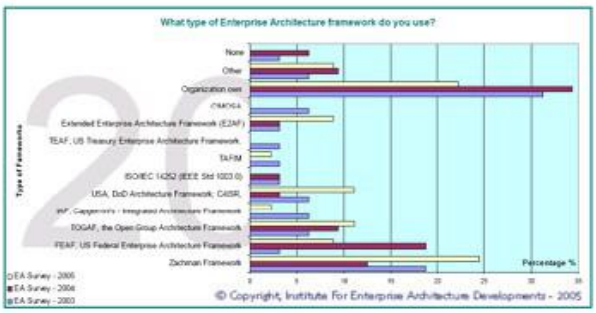

Figure 1. Framework Usage Survey 2005

In 2005 the use of Zachman Framework experience a significant progress compared to the use of the previous year. The use of TOGAF is making progress but, not much like the Zachman Framework. Meanwhile, the use of FEAF has decreased dramatically compared to the previous year. TEAF and several other frameworks are not presented in the survey use framework in 2005.

2.2 Architecture Development Method (ADM)

ADM is a generic method that contains a set of activities that present progressive phase of ADM and architectural models are used and created during the development phase of an Enterprise Architecture. ADM is the core of management needs, in which the needs of business, information systems , and technology architecture is always aligned with the goals and business needs (Udin, 2013).

2.3 TOGAF

It is a framework that provides a comprehensive approach to design, plan, implement and manage EA. TOGAF has ADM (Architecture Development Method) which is a methodology that consists of a couple of stages to develop and maintain the technical architecture of the organization, where ADM to form an iterative cycle for the entire process, between and each phase so that at each iteration taken a new decision that could determine the extent enterprise scope, level of detail, as well as a target to be achieved. Open Group (2009) states that the TOGAF ADM also explained the principles that are used as a measure to assess the success of the development of EA where these principles are (Yeni, 2013):

1. Principles of Enterprise
   Development of architecture that do are expected to support all parts of the organization, including organizational units that need.
2. Principles of Information Technology
   Leads to the consistency of the use of information technology in all parts of the organization, including organizational units that will be used.
3. Architectural Principles
   Designing a system architecture based on business process needs and how to implement it.

Figure 2. Process Stages TOGAF Achitecture Development Method (ADM)

2.4 System

The term comes from the Greek system is "Systema" which means unity. Seen from the point he says the system means a set of objects that work together to produce a unified, methods, procedures, techniques are combined and arranged so that as one that serves to achieve the goal. There are several meaning in a system according to the experts, namely:

1. According Jogiyanto H.M (2005:1) "denotes a system is a network or procedures that are interconnected, gather together to perform an activity or complete a specific goal".
2. According Fathansyah (2005: 9) defines "system is an arrangement (alignment) consisting of a number of components with a specific function or task interconnected and together aim to meet the specific job.
3. According Jogiyanto H.M (2005: 683) argues that "the system is a unit consisting of two or more components or subsystems that interact to achieve a goal."

2.5 Information

Information is processed data and can provide benefits for the recipient to be used as a base or wisdom to good a information. According Jogiyanto HM (2005: 8) argues that " information is the result of processing the data in a form that is more useful and more meaningful for those who receive that describes an events (event) real (fact) used for decision-making " .

2.6 Information Systems

In some problems of information system has always put emphasis on how to produce an information and means what should be equipped as a reliable supporter. It should be noted that the information used in an information system is generally used for several purposes.

According to Robert .A. Leitch and K. Davis in the book Jogiyanto HM (2005:11) argues that "The information system is a system within an organization reconcile the needs of daily transactions, support operations is manajerial and strategy activities of organizations that provide certain outside parties with the reports required ".

2.7 Overview System Development

Development of the system means constructing a new system to replace the old system .System long need to be repaired / replaced for several things, including :

1. The emergence of problems (problems)
   a. Irregularities in the old system .
   b. The growth of the organization that requires the formulation of a new system .
2. To seize the opportunities (opportunities)

In a competitive market conditions, the speed of information or time efficiency is critical to seize the opportunities that exist. To obtain this information , the need for more sophisticated information technology .

2.8 Systems Development Life Cycle

The system development process has several stages starting from the planned system until the system is implemented, operated, and maintained. These stages can be seen in the following figure .

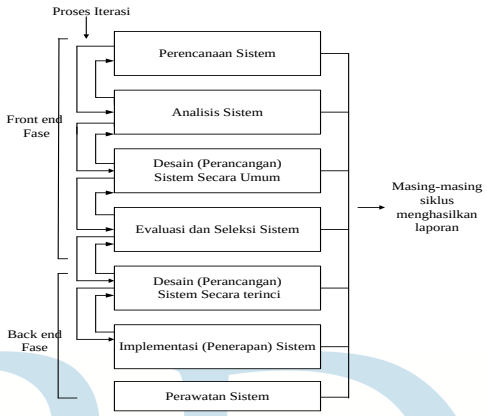

Figure 3. System Development Life Cycle

For more details as for the stages that must be carried out systematically in the development of information systems is as follows:

1. Policy and planning system (System planning)
   a. Demand for the study of a system (request for a system of study)
   b. Observations / initial investigation (initial investigation).
   c. The feasibility study (feasibility study)
2. Analysis of the system (System analysis)
   a. Redefine back problems (redefine the problem).
   b. Understanding the existing system (understand the existing system)
   c. Determining the needs of users (Determine user requirements)
   d. Model logic of solving the recommended (logical models of the recommended solution)
3. Design System (System design)
   a. Ouput design (design output)
   b. Design Input (input design)
   c. Design files (file design)
4. Implementation of the system (System implementation)
   a. Construction of the system (system building)
   b. Testing (Testing).
   c. Installation / conversion (installation / conversion)
   d. Operation (operation)
   e. A review after implementation (post-implementation review)
5. Care (Maintenance)
   a. Using the system
   b. Audit System
   c. Maintain System
   d. Maintenance and improvements

3. RESEARCH METHODS

Research methods to design information systems are:

1. Observation (Observation)
   Made by observing the systems and work processes that the object of research being done in this case Brayan Shopping Centre in motor vehicle parking system.
2. Library (Library Research)
   Using books, previous studies and journals related to topics and issues in the study.
3. Laboratory (Research Laboratory)
   Laboratory research conducted computer where the data obtained is processed and made its programming to generate an information system in accordance with the existing problems. As related to the laboratory can be classified as below.

   Hardware consists of:
   a. Proccessor Computer with Intel Atom 1.66 GHz
   b. Memory 1 GB and and 320 GB HDD
   c. Printer Canon PIXMA iP 1980

   The software consists of:
   a. Operating System Windows XP SP2
   b. Microsoft Office Word, Visio and Access 2007
   c. Visual Basic 6.0 programming language
   d. Seagate Crystal Reports 7.0

4. Analysis and Design
   Conducted through TOGAF phases, namely:
   a. Design of enterprise architecture
   b. The design of information systems architecture
   c. Architectural design technology
   d. Opportunities and solutions
   e. Migration and planning

4. ANALYSIS And RESULTS

Design Enterprise Architecture
Architecture Vision

1. Design information system enterprise architecture includes the Architecture Vision, Business Architecture, Information System Architecture, Technology Architecture, Opportunities and Solutions, and Migration Planing that optimize motor vehicle parking system on Brayan Shopping Centre.
2. Desig Information System blueprint that can be used to manage parking for vehicles using TOGAF ADM methodology .

Business Architecture
Do the architectural design business processes that directly relate to the process of parking the vehicle is one of the critical parts in the motor vehicle parking system. Proposed Business Process Flow Diagram With Motorized Vehicle Parking Context.

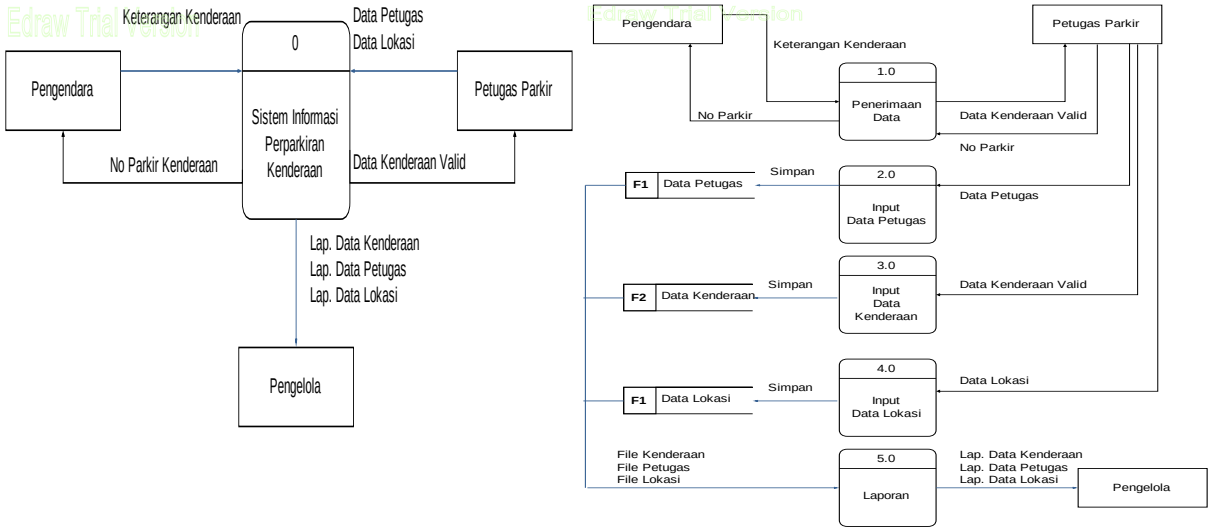

Figure 4. Proposed Business Process Flow of Motor Vehicle Parking
With Diagram Context and DFD Level 0

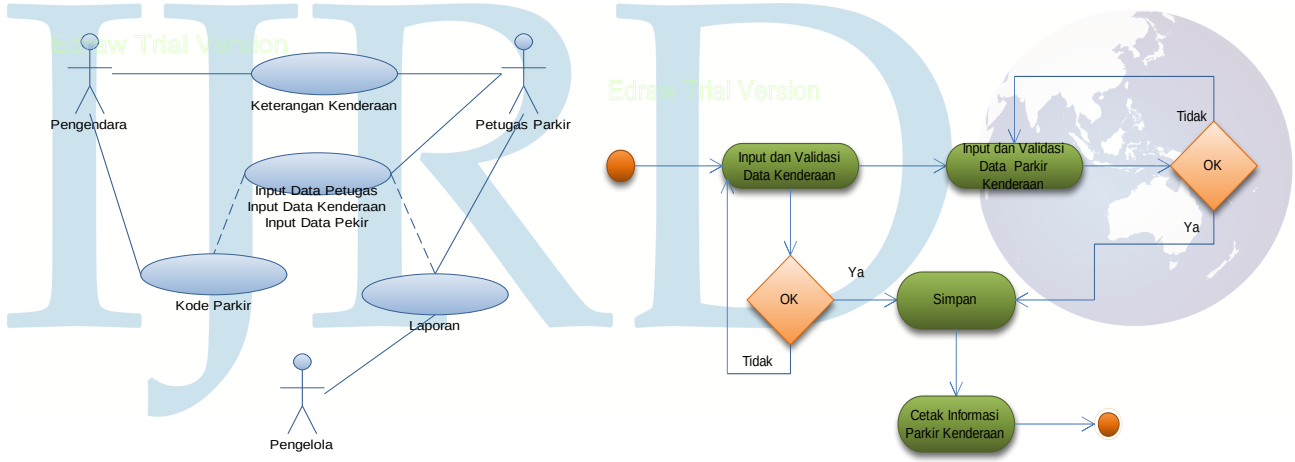

Figure 5. Proposed Business Process Flow of Motor Vehicle Parking
By Use Case Diagrams and Activity Diagrams

Information System Architecture

Architecture Design of Information Systems is divided into two main stages, namely designarchitecture design Architecture Design Data and Applications .

1. Architecture Design Data
   The design architecture of data created by the relationships among the data of the proposed system for motor vehicle parking system. The relationships created with Class Diagram as in the image below.

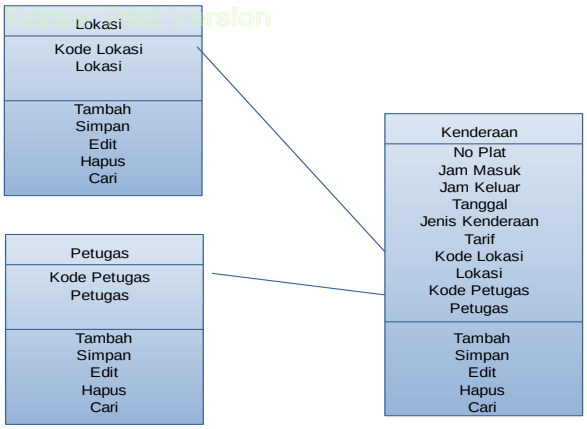

Figure 6. Architecture Design Data In the Class Diagram

2. Architecture Design Applications

The design of the application architecture can be seen in the image below. Applications involving the user as an operator as well as the media information producer (output) for parking motor vehicles .

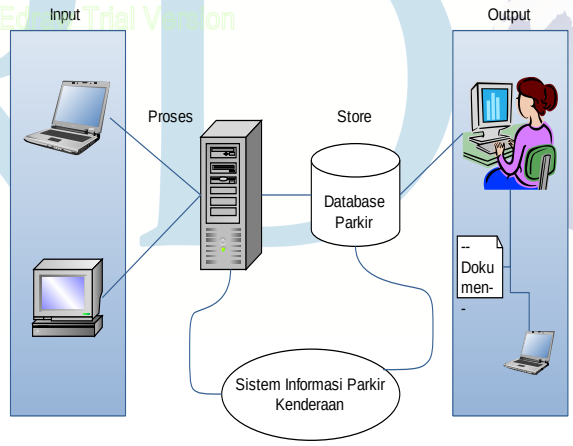

Figure 7. Architectural Design Applications

Technology Architecture

In this stage to consider alternatives that are required in technology selection. The technology used in motor vehicles parking information system will be applied to the concept of the network. Every computer has been connected network operator (client and server). Architecture technology can be seen in the image below.

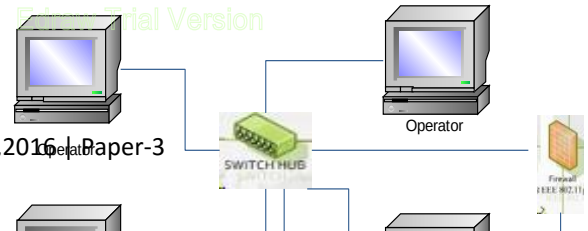

Figure 8. Architecture Technology

Opportunities and Solutions (Opportunities and Solutions)
In support of this proposed system needed some strategies that must be considered, this is to minimize the risk of failure.

1. Design a database that match the needs dan bersifat flexible so that bias is developed in the future.
2. Using software licensed dan banyak digunakan untuk minimize risk and design examination parking of motor vehicles flexible applications for development in the future.
3. Expand the network coverage area with using wires, besides simply use little capital also minimize the risk of data security.
4. Design information technology management includes working procedures in the management of IT.

Migration Planning
Proposed migration planning namely:

1. Analyze the constraints of the old database. If there is a problem that cukup banyak, it can be proposed to the migration of database like MySQL.
2. Analyze the tools used to design information system parking of motor vehicle.
3. To analyze the feasibility of specification computers and network infrastructure.
4. Conduct analysis risk of expansion of the network to the migration process such as data security risks, data errors, data is not valid, a natural disaster.

5. Conclusions and Recommendations

1. To design the system architecture blueprint this information there are 6 steps being taken in the framework TOGAF ADM vision covering architecture, business architecture, information systems architecture, technology architecture, opportunities and solutions, until migration planning.
2. Utilizing the functionality of a computer in a vehicle parking information system on Brayan Shopping Centre is expected to optimally support the pace of business activity.
3. Application of an application for vehicles parking on Brayan Shopping Centre can help children in knowing the development of the number of visitors at a time of need.
4. Application of motor vehicle parking applications Brayan Shopping Centre can provide timely information so that the leadership can take the right decision.
5. Some of the constraints faced by them is the limited presence of infrastructure provided therefore it is advisable to empower the existing infrastructure first and then provide the infrastructure gradually in accordance with the ability Brayan Shopping Centre.

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