Designing Enterprise Architecture for Public Health Center Based on TOGAF Architecture Development Method

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Designing Enterprise Architecture for Public Health Center Based on TOGAF Architecture Development Method

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Abstract. This study aims to build an integrated information system at the Curup Timur Health Center. Curup Timur Health Center does not yet have a Blueprint for designing integrated information systems. The method used to design architectural designs is based on the study of the TOGAF ADM literature. The steps applied in this design are the TOGAF ADM, including Preparation, Vision Architecture, Business Architecture, Information Systems Architecture, and Technology Architecture. This research produces a blueprint that will be used to support integrated business processes. The output from this stage will produce a company architecture that can later be used by organizations to support business processes and achieve their strategic goals. The conclusion of this study is that the company's architecture design using TOGAF ADM can be used at the Curup Timur Health Center in accordance with the documents and processes that are running and can produce a blueprint of the company's architecture at the east Curup Health Center which will improve overall health center services.

1.Introduction

Nowadays, information technology, computer, and telecommunications have a revolutionary and structured impact as previously thought. Enterprise architecture is a tool or strategy to support business processes and to achieve business goals [1]. The phenomenon of the development of the use of Information Technology (IT) in Government Organizations is currently developing very rapidly. The use is intended to improve the quality of public services optimally in order to realize good governance. To create good governance, the government is demanded to develop the system in a sustainable manner. In Law Number 24 in 2009 regarding Public Services in the part considering item b it is stated: That building public trust in public services performed by public service providers is an activity that must be carried out in line with the expectations and demands of all citizens and residents regarding the improvement of public services.

Related to this research object is Curup Timur Health Center. Puskesmas (Community Health Center) is a health facility that manages public health and first-level individual health, with more priority to promotive and preventive efforts and to achieve the highest level of public health in the taking area [2]. In a study entitled Referral Architecture Design of Health Companies in Indonesia, some discussed the use of togaf in building information systems in health services [3]. In another study entitled Enterprise Architecture Planning Using the Togaf Method ADM at Puskesmas Promoting treatment requires special data on registration services for long-term care where the puskesmas staff must search medical records that have been done on the first day of treatment, speed up the service

process, and help patients [4]. This study became an inspiration for us to conduct this research. The use of information technology in Curup Timur Health Center is not optimal. It can be seen from the applications that are used are still standard for applications from Microsoft Office, as well as the integration that is still low between work units that are being run individually. It is because the data used are not from a data source (database), with each data flow at risk of unwanted changes, to overcome these problems a new system is needed.

The purpose of this study is to build an integrated information system in the east curup health center. To build an information system, a blueprint of the Enterprise Information System (EIS) is needed as a reference in further developing the system in accordance with the organization's vision, mission, and goals [5]. To produce an information system architecture design that is in accordance with research, it is necessary to have a framework. The framework used is Togaf ADM by taking the following steps, among others, Preparation, Vision Architecture, Business Architecture, Information Systems Architecture, and Technology Architecture. The result of this study is in the form of a blueprint using the TOGAF framework which can later be used to improve health services in the East Curup Health Center.

2.Method

The word enterprise can be defined as an organization (or cross-organizational body) that supports a defined scope of business and mission. Enterprise includes interrelated resources (human, organization, and technology) that must coordinate their functions and share information in support of a shared vision (or related set of missions). In relation to this research, enterprise also means organizations that utilize IT in carrying out its mission [6].

The method used in planning the development of information systems architecture at the Curup Timur Health Center is to use the TOGAF-ADM framework, which in turn will produce a blueprint that can be used to build information systems. This research was only carried out until the initial process of all stages of the TOGAF-ADM framework.

TOGAF Architecture Development Method (ADM), which explains how to obtain an organization-specific enterprise architecture that addresses business needs [7]. TOGAF ADM has eight steps to do such as; Architecture Vision, Business Architecture, Information System Architecture, Technology Architecture, Opportunities and Solutions, Migration Planning, Implementation Governance, and Architecture Change Management [8].

ADM is the core of TOGAF as a result of contributions from many practitioners of information technology architecture in the world. ADM is specifically designed to meet the needs of business and enterprise-scale information technology [7]. ADM is equipped with many tools both in planning and the process, including:

- A set of view architectures that includes business, data, application, and technology views.
- A set of recommended deliverables.
- Linkages with many real case studies.
- Methods for managing requirements.

In guiding the design process, ADM has 8 main phases. For more details, the steps in ADM, are seen in Figure 1:

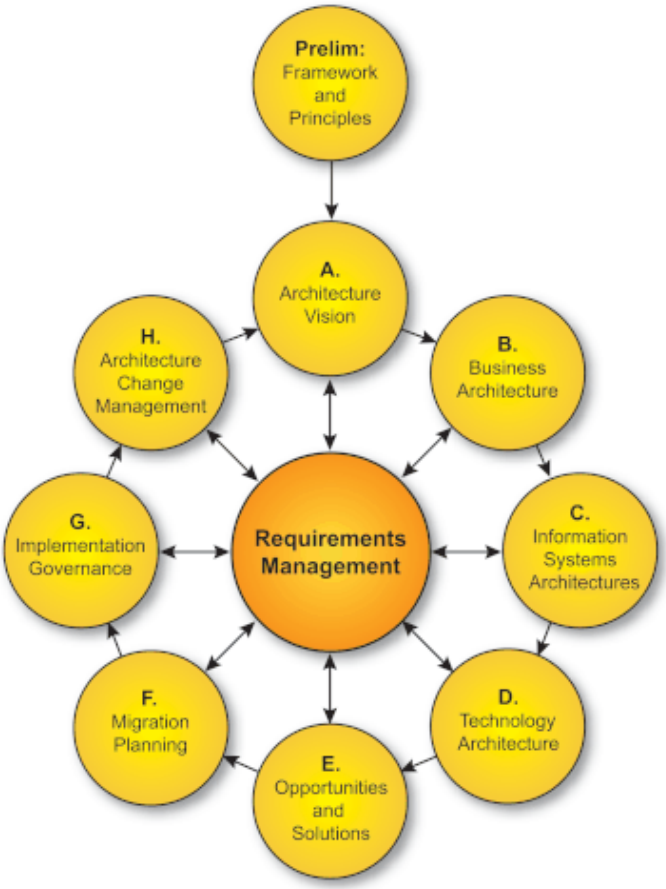

Figure 1. TOGAF-ADM [7]

The eight main stages are supported by a preparatory stage and prerequisite management stages (requirements management) at the end of the process.

3. Results and Discussion

Based on observations and interviews, it can be seen that the Curup Timur health center does not have a blueprint to design a corporate information system architecture that will support your business processes and still use manual processes. The architecture design company will refer to the architecture phase of vision, phase business architecture, information system architecture phase, and Technology Architecture Phase [7]. This research is a blueprint guideline for creating information systems so they can support the on-going business processes.

3.1. Prelimenary Phase

Preparatory stage (Preliminary Stage) is a stage to determine the scope of Enterprise Architecture (EA) to be developed and determine commitment with management in the development of information systems architecture [9]. This stage determines:

- Enterprise Scope
- Determine the Architectural Framework
- Implementing Architectural Tools

3.2. Architecture Vision

The purpose of the Vision Architecture phase is to develop aspirational high-level vision and business value that will be delivered as a result of the proposed enterprise architecture and gets approval regarding the Statement of Architecture Work, which defines a work program to develop and disseminate architecture outlined in the Vision Architecture. Curup Timur Health Center has a vision

of "Achieving the Healthy East Curup District towards the realization of Healthy Indonesia." To be able to achieve this vision East Curup Health Center is demanded to provide excellent service, starting from the service of patient registration, patient treatment, drug administration and recorded medical records, and well stored this stage produces the value chain as follows:

a. Support

1. *Firm Infrastructure*
   BOK Financial Administration, Free Financial Administration
2. *Human Resource Management*
   General Administration of Staffing
3. *Technology Development*
   Management of information systems and information technology
4. *Procurement*
   Inventory Administration

b. Main

1. *Inbound Logistic*
   Patient data reception
2. *Operation*
   Health services
3. *Outbound Logistic*
   Puskesmas Reporting Administration
4. *Marketing and Sales*
   Health-oriented Development Management, Management of Community and Family Empowerment
5. *Service*
   Community complaint services. Provision of information to the public

3.3. Business Architecture

At this stage architectural modeling is carried out on processes that are directly related to the service process, which is the main business in the East Curup Puskesmas. Based on the Curup Timur Puskesmas value chain, it can be identified the business functions that exist at Curup Timur Puskesmas.

3.4. Information System Architectire

The information system architecture phase has two parts: Architecture Data and Architecture Application. The purpose of this phase is to develop information systems to be able to support the Puskesmas business processes by referring to the vision and business architecture.

3.4.1 Data Archietcture

In the data architecture, the curup puskesmas need integrated and centralized data from various work units that aim to improve the coordination and synchronization of business processes and information can be delivered on time, accurately and relevantly. After the data is integrated, it is expected to create timely, accurate and relevant information. Some of the activities required include receipt of patient data, health services, management of health-oriented development, complaints services, administration and reporting, staffing and management of technology, and information systems.

3.4.2 Appication Achitecture

At this stage the application architecture is created to define the information system or the main applications needed to manage data and manage business functions in the main business processes and supporting the Curup Timur Health Center. To be able to design the application architecture, identification of the current conditions at the Curup Timur Public Health Center is carried out in relation to the use of the application.

a. Current conditions

In the Curup Timur Health Center in each sector / section not yet using a computer-based information system, the use of applications to support business processes only uses Microsoft Office.

b. Designing the application architecture

The designed application will integrate every part in Curup Timur Health Center so that the use of data is more accurate. At this stage the application candidate is taken from the identification of business functions and their business processes. Following the application candidates are generated:

1. Health Service Application
2. Community and Family Empowerment Applications
3. Health Insightful Development Application
4. BOK Finance Application
5. Free Financial Applications
6. Inventory Application
7. Staffing Application
8. Administrator Application
9. Community Service Applications

These results can be input for the activities of making SI strategies and possible future development.

3.5. Technology Achitecture

After identifying the data architecture and application architecture, the next step is to propose a technology architecture design to support the application and data distribution strategy. Then, define a technology platform that will become an environment for applications and data to support the business. Current condition of technology architecture The results of the identification of technologies that have been used at the Curup Timur Health Center are in Table 1:

Table 1. Technology in use today

Device Technology	**Function**
Computer	Used as a tool for reporting. All computers use Windows 7 operating system
Laptop	Supporting *Stakeholder*
Printer	Print report
Wifi	Send and Receive Enail

Improvements in technology architecture are adjusted to the results of the identification of previous architectural phases. The design of network topology is shown in Figure 2, the figure is as a proposal in the application of future technology.

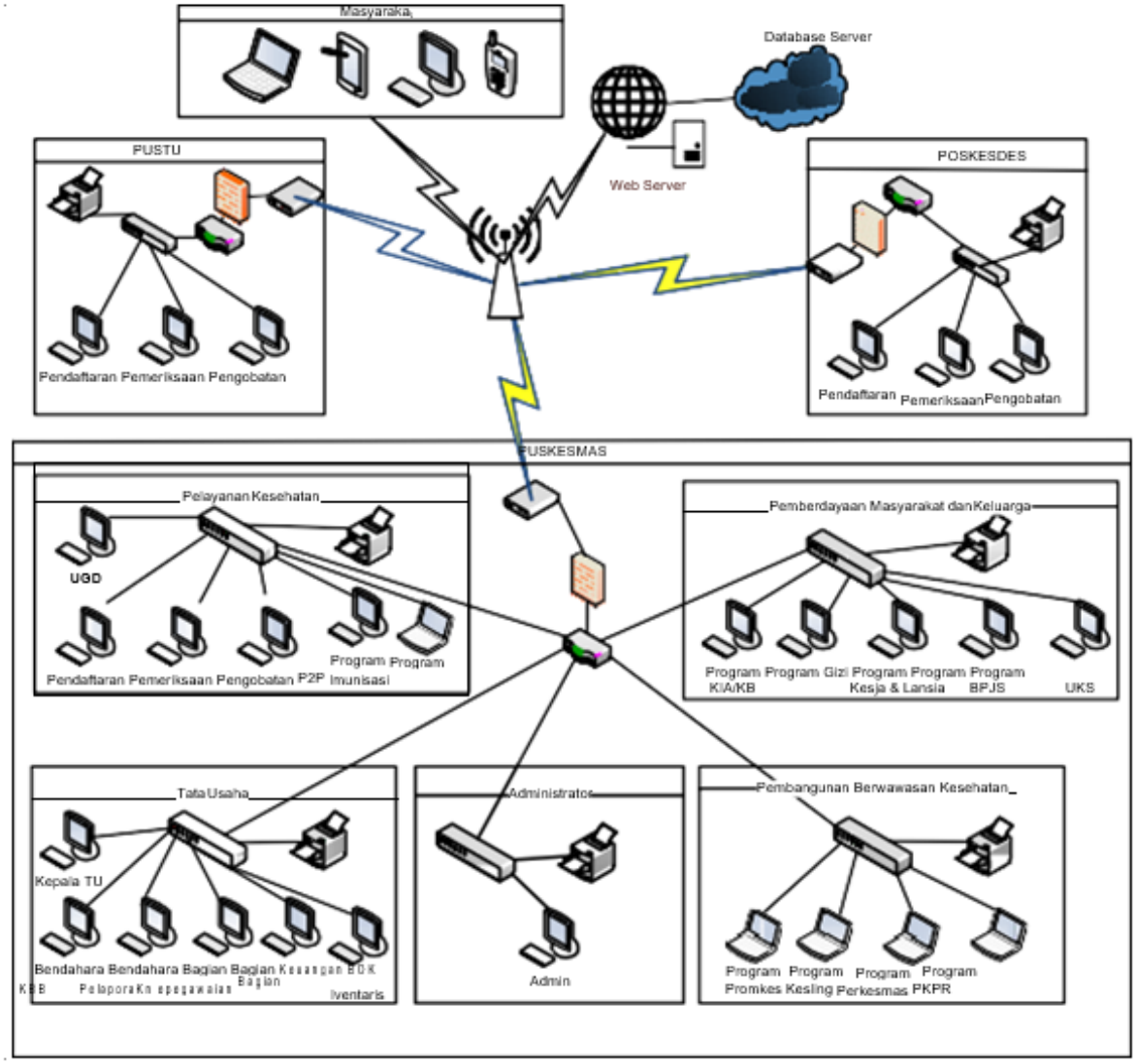

Figure 2. Network Topology

4. Conclusion

By using the TOGAF ADM framework, this research produced enterprise information system architecture for Curup Timur Health Center in accordance with the vision and mission of Curup Timur Health Center. From the results of architectural design, the use of web-based applications can integrate all units at the Curup Timur Health Center and produce blueprints as a basis for developing an enterprise architecture model in the future.

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