Instal : Jurnal Komputer

E-ISSN: 2808-683X
Edisi : Volume 16 Nomor 06 | 2025

Available online at https://journalinstal.cattleyadf.org/index.php/Instal/index

Enterprise Architecture Planning Using TOGAF ADM (Case Study: Kantor Desa Tengah Pancur Batu)

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ABSTRACT

The Central Village Office of Pancur Batu is a government institution that operates in the village in the Pancur Batu sub-district area of Deli Serdang Regency. The government Pancur Batu Tengah Village has not implemented Information System in carrying out its duties, this can be seen from the obstacles faced by the Village Government. obstacles faced by the Village Government. The obstacles faced are often hoarding old data, making it difficult when it will be recorded again, even usually there is data that is lost so that it requires a system that can help store data. help with data storage. The purpose of this research is to provide direction to be able to implement an information system for data storage. performance in the future.
The method used in the development of enterprise architecture this time is the TOGAF method.
architecture development this time, namely the TOGAF ADM (The Open Group Architecture Framework) by using 3 (three) phases out of 9 (nine) phases, Preliminary Phase, Architecture Vision Phase and Business Architecture Phase. Phase. This research will produce a blueprint and provide a roadmap using the elements in TOF ADM. using the existing elements of TOGAF in the Village Office in order to implement a performance information system for the Pancur Batu Central Village Office in the future. in the future.

Keywords:

Enterprise Architecture desa Tengah Pancur Batu.

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INTRODUCTION

Pancur Batu Tengah Village Office is a village-level government centre located in Pancur Batu Sub-district, Deli Serdang Regency, North Sumatra. As the centre of the village government, this office has an important role in serving the village community, coordinating various village activities, and serving as an information centre for residents. The main

functions of the Pancur Batuan Tengah Village Office include administrative services, providing various population administration services, such as making KTPs, KKs, certificates, and so on. Coordination of Village Activities: Becomes a coordination centre for various village development activities, community social activities, and other activities related to village interests. Information Centre: Provides up-to-date information on government programmes, village policies, and other important information for residents. Mediation and Problem Solving: Serves as a place to mediate and resolve problems that occur in the village community (Sid, n.d.).

Common Facilities Available at the Village Office: The workspace of the village head and village officials, meeting room, administrative service room, village archives, public notice board. The various facilities that have been provided at the village office in Pancur Batu Tengah Village will not be effective if not supported by an adequate information system. This research will assist the village government in implementing technology to the maximum extent so as to assist the village administration process and social population related to the development that will be carried out at the Pancur Batu Tengah Village Office (Management & Village, n.d.).

Enterprise Architecture is a framework for planning, designing and managing Information Systems infrastructure, and being able to integrate Information Systems within an architecture. Enterprise Architecture is concentrated on infrastructure that includes hardware, software and networks to be able to work together with the mission, goals and objectives of the organisation to run the organisation's business processes supported by Information Technology. The main objectives of implementing enterprise architecture using TOGAF ADM, for example: increasing the efficiency and effectiveness of public services, strengthening village governance, optimising the use of resources, supporting better decision making, ensuring the sustainability of information systems (Angeline & Fibriani, 2021).

TOGAF consists of guiding stages and principles that provide flexibility in choosing the modelling techniques used and is a combined guide to architecture development. TOGAF can provide a detailed method on how to build, manage and implement enterprise architecture and information systems called the Architecture Development Method (ADM) and explain how to find a company/organisation enterprise architecture specifically based on business needs and processes (Silaen et al., 2022).

1. Problem Identification The following are some of the problems found in Pancur Batu Central Village

a. There is often a hoarding of problem data and there is even data that is lost when needed.
b. Architecture in the village of Tengah Pancur Batu is still not well planned.

From the above problems can be concluded as follows:

a. How to minimise data hoarding in every service process in Pancur Batu Tengah village.
b. How to build an information system architecture that is used when providing services to the people of Tengah Pancur Batu village.

Overview of the Puska

a. Enterprise Architecture

Enterprise Architecture is a masterplan that acts as a collaborator of several aspects including business planning aspects such as goals, vision, mission, and good governance principles (Sudarsono et al., 2020). EA (enterprise architecture) is basically an IT utilisation strategy and integration between business development and IT development (Hartono et al., 2020). EA describes a plan to develop a system or set of systems. In helping the company's business processes, the master plan can help in planning the organisational structure, tasks and activities of the company in computerised aspects such as information systems and databases,

and the technology infrastructure that supports its business such as computers, networks and operating systems. Various kinds and methods commonly used in designing enterprise architecture include the Zachman framework, TOGAF ADM, EAP and others ((Shane et al., 2022)).

b. TOGAF ADM (Architecture Development Method)

According to The Open Group (2009), a key element of TOGAF is the Architecture Development Method (ADM) which provides a specific description for the enterprise architecture development process. TOGAF ADM (Architecture Development Method) provides a tested and repeatable process for developing architecture. These activities are performed in a continuous, iterative cycle and are realised to enable organisations to transform their enterprises in a controlled way in response to business objectives and opportunities (TOGAF TM Version 9 A Pocket Guide, n.d.).

ADM (Architecture Development Method) is the result of the collaboration of architecture practitioners in Open Group Architecture. ADM is a generic method that contains a set of activities that present the progression of each phase of ADM and architecture models used and created during the development phase of enterprise architecture (Yunis & Surendro, 2009). ADM is an important feature that allows organisations to define requirements management, where business requirements, information systems, and technology architecture are always aligned with business goals and needs. The following is an explanation of each phase in TOGAF ADM according to The Open Group (2009).

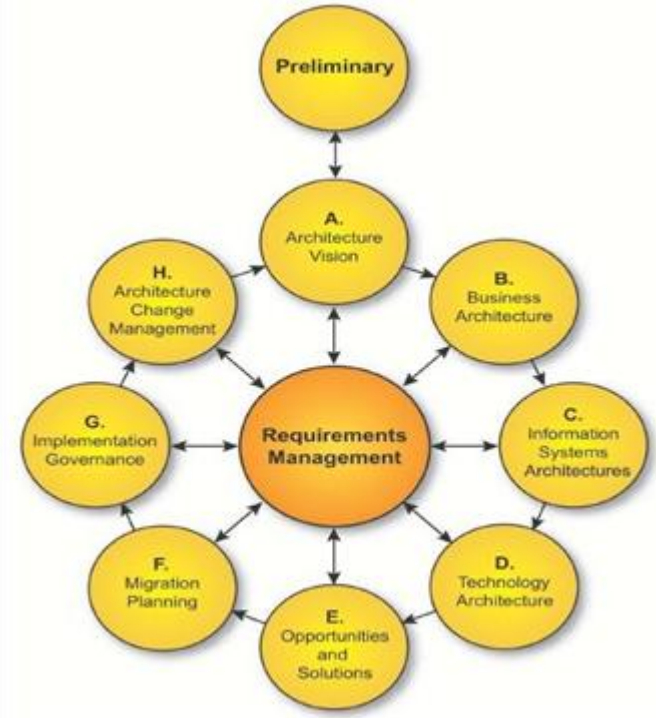


Figure 1. Togaf ADM
Source: Research (2022)

The TOGAF ADM development cycle is a logical methodology consisting of eight main phases for the development and maintenance of the business architecture, data architecture, application architecture, and technical architecture of the organisation. In Figure 1 the ADM Phase describes the TOGAF ADM Phase (Sains et al., 2016).

Some of the phases in TOGAF ADM include (Winarno et al., n.d.):

1. Preliminary Phase. This phase is carried out to produce architectural principles that are part of the organisation's information technology policy that will affect the entire design

process and to convince everyone involved in it that this approach is committed to the success of the architecture process.

2. Phase A (Architecture Vision). This phase aims to create an aligned view of the importance of enterprise architecture design to achieve the company's goals and determine the scope of strategic planning to be developed.
3. Phase B (Business Architecture). In this phase describes the development of business architecture that has been defined in the architecture vision that will be used in developing the company's business processes.
4. Phase C (Information System Architecture). At this stage, an independent information system is developed based on company needs.
5. Phase D (Technology Architecture). Determine the technology and software that will be used to help implement information technology in the company.
6. Phase E (Opportunities and Solutions). In this stage, describe the results of the Blueprint formation from Information System Architecture to Technology Architecture to analyse the gap between the old system and the new system.
7. Phase F (Migration Planning). In this phase, risk and cost analysis will be carried out.
8. Phase G (Implementation Governance) This phase analyses the effectiveness and efficiency of implementing the system that has been built.
9. Phase H (Architecture Change Management). In this phase, the preparation of procedures that will be used to run the new system that has been created.
10. Requirement Management. Test the process of managing architecture requirements throughout the ADM cycle (Studi et al., n.d.).

c. Value Chain

Value chain aims to identify and classify activities into two parts, namely main activities and supporting activities. Then these activities will be mapped and used as a basis for determining SI/TI solutions and generating competitive advantages for the company (Indra & Sopryadi, 2008). Porter explained that value chain analysis is a strategic analysis tool used to better understand the advantages of the company, to identify where customer value can be increased or costs reduced, and to better understand the company's relationship with suppliers, customers, and other companies (Anggriani, 2022). The value chain identifies and connects a company's strategic activities. The purpose of using the value chain is to define the main activities and supporting activities in the company's business processes and which ones can be improved to provide a competitive advantage. In other words, by looking into the internal activities, the analysis reveals where the company's competitive advantages or disadvantages are (AZANI, 2020).

METHODOLOGY

In collecting data, the author does several things to obtain data, so that it can be collected into material to go to the next stage, namely the design method [2].

a. Interview Interviews were conducted to find out in detail the system that runs in Bappenda Sumedang Regency related to the management of Regional Revenue. The author conducted direct interviews with several officers related to the information system.
b. Observation The author conducts data collection techniques by observing ongoing activities. From the results of observations, several things were obtained that were needed for design analysis.
c. Document Study This method is done by collecting materials in the form of theory, by reading books and various literature found on the internet related to the system to be developed.

d. Literature Review Literature review, namely reviewing previous studies to avoid remaking research. The literature review is determined by the results of previous research, starting from the most actual traced to the earliest. The literature review must be the theoretical basis for the research we will do.

RESULTS AND DISCUSSION

1. Preliminary Phase

The following main activities and supporting activities are described through value chain analysis to see the analysis of the internal environment at the Pancur Batu Tengah Village Office.

Figure 2. Value Chain of Main Activities and Supporting Activities.

a. Main Activities.

The following is a description of the main and supporting activities at the Pancur Batu Tengah Village Office:

1. Issuance of population registration such as issuance of family cards, issuance of identity cards and issuance of domicile certificates.
2. Licensing services.
3. Social services such as social assistance, family planning programme management.
4. General Services such as village asset management, village financial management, community problem solving, and security and order.

b. Supporting Activities

1. Village Facilities are equipment or tools provided by the Village that can be used for the benefit of the village community for mutual benefit in daily activities.
2. Village Gallery is a place that serves to present the results of photos in Village activities.

2. Architecture Vision

This phase is the initiation of architectural development that identifies stakeholders, compilin vision and mission as material for further development. The vision of this enterprise architecture modelling is:

a. Creating a Village information system architecture design that is in accordance with the needs and use of the system contained in the Central Village of Pancur Batu. So as to facilitate and assist in serving the community
b. Creating an integrated system design which is expected in the future to be integrated with other systems if there is an additional system, so that the new information system can later complement the existing system, so that it becomes a fully integrated system.
c. Generate several benefits by providing technology-based services to the village community. One of them is that the Village system process that has been carried out will be faster because the data search process is electronic.
d. Develop Sitorang Village's information system towards a better direction in terms of effectiveness, efficiency, and security.

The Stakeholder Map Matrix is a visual tool used to identify, analyse and prioritise stakeholders in a project, programme or organisation. Stakeholders are individuals or groups who have an interest in or influence over the central village of Pancur Batu.

Table of Stakeholders of Pancur Batu Central Village

No	Stakeholde	Description
1	Village Head	As the supreme leader of the village, responsible for the entire organisation of the village government
2	Village Apparatus	Village officials who assist the village head in carrying out governmental tasks, such as the village secretary, government head, development head, and community welfare head.
3	Village Consultative Body (BPD)	A representative institution of the village community that is in charge of making village regulations and providing considerations to the village head.
4	Village Community Organisation (LKD)	Institutions tasked with assisting the village government in carrying out government tasks in certain fields, such as the PKK, youth organisation, and farmer groups.

3. Business Architecture

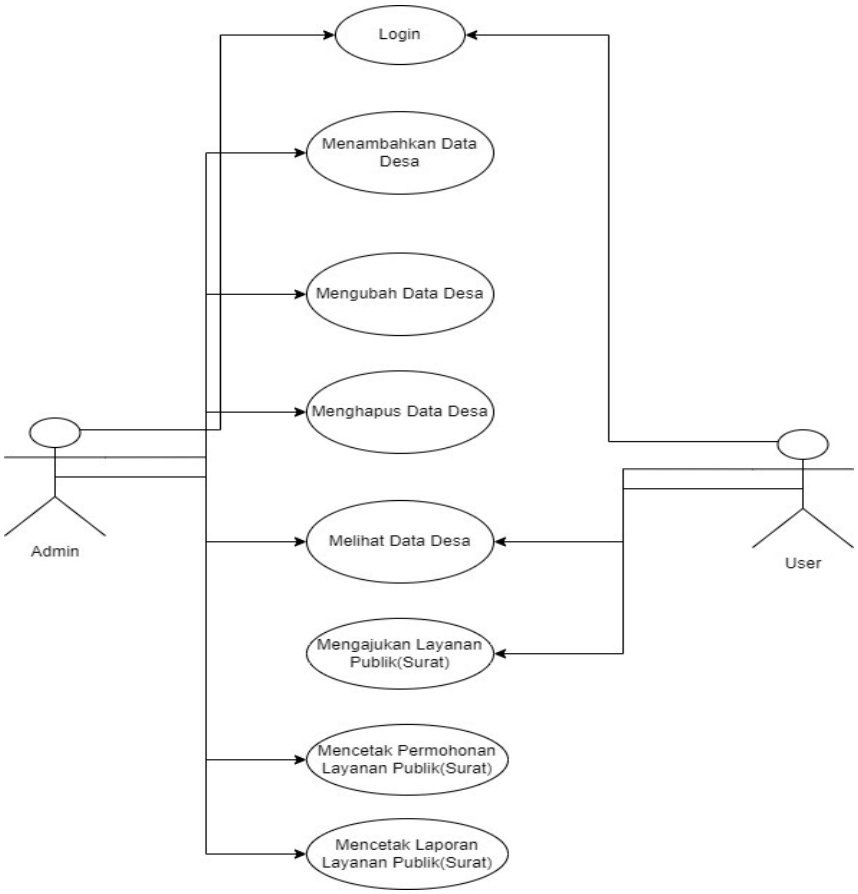
This phase aims to develop a target vision architecture that describes how the organisation operates to achieve business goals. In this phase, one of the main activities, namely the mail request service, will be described in BPMN (Business Process Model and Notation) notation.

Table 2. GAP Analysis.

Current activity	Proposed Activities	GAP Analysis
In data entry, the letter form is still computerised, namely using Ms. Word and Ms.Excel.	In inputting letter form data, you only need to select what letter will be created in the management letter system.	Replace
In searching for letters, it is still done by searching for files in several folders that are not neatly stored, so it takes a long time.	The process of finding the cover letter and information needed is very fast because there is a search menu in the letter management system.	Replace
Data storage has not been effective because there are several other files and folders that risk losing mail folder data.	In storing data, it has used a MYSQL database so that it can store a lot of data.	Replace
Data collection on people entering and moving out of the village is carried out	The process of data collection of incoming and moving people only needs to select community data on the system.	Replace
People request and receive letters from the village offline	The community requests and receives letters from the village online.	Replace

a. Usecase Diagram

As for the design of the system proposed by the Central Village of Pancur Batu Kec. Pancur Batu Kab. Deli Serdang Namely, the proposed system design can be explained in the usecase diagram, activity diagram and sequence diagram.

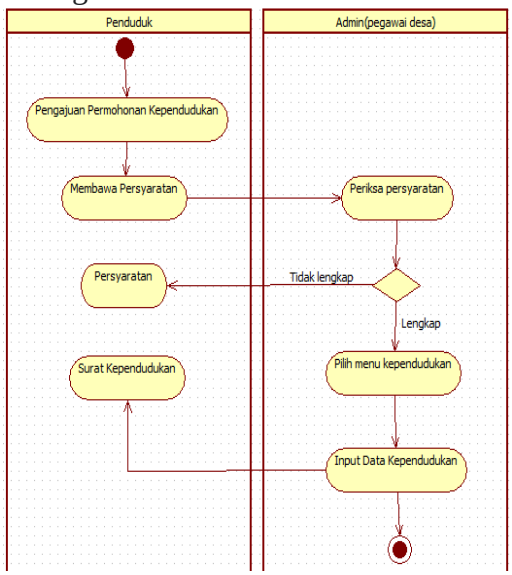


Source: Researcher 2024

Figure 3. Usecase Diagaram

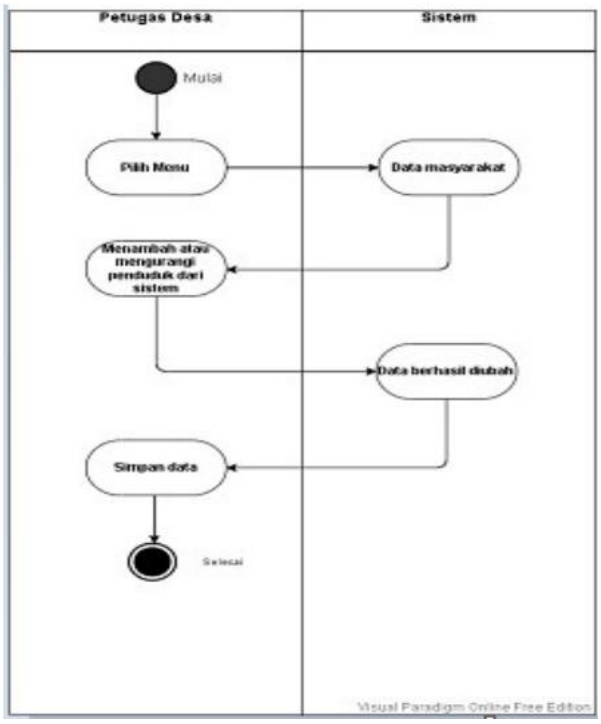
b. Activity Diagram

The following Figure 5 is a display of the village officer's activity diagram on letter management.



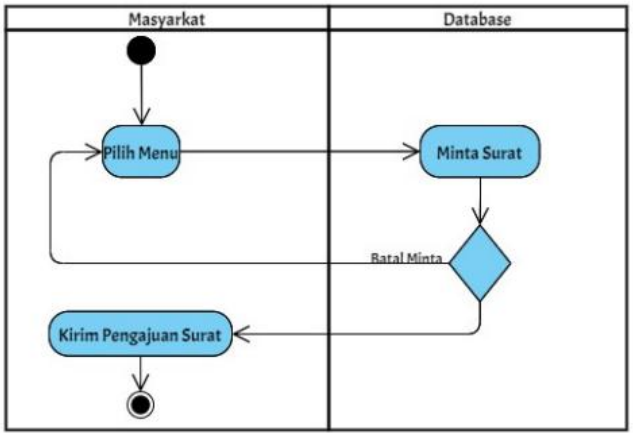
Source: research (2024)

The following Figure 6 is a display of the village officer activity diagram on community data moving out of the village or entering the village of Pancur Batu Tengah.



Source: Research (2024)

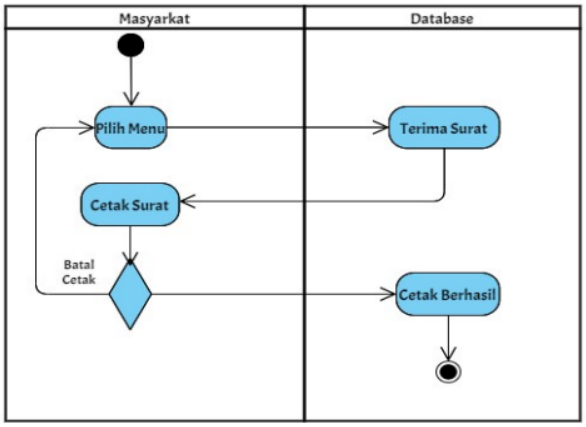
The following Figure 7 is an activity diagram for the community to request a letter from the village.



Source: Research (2024)

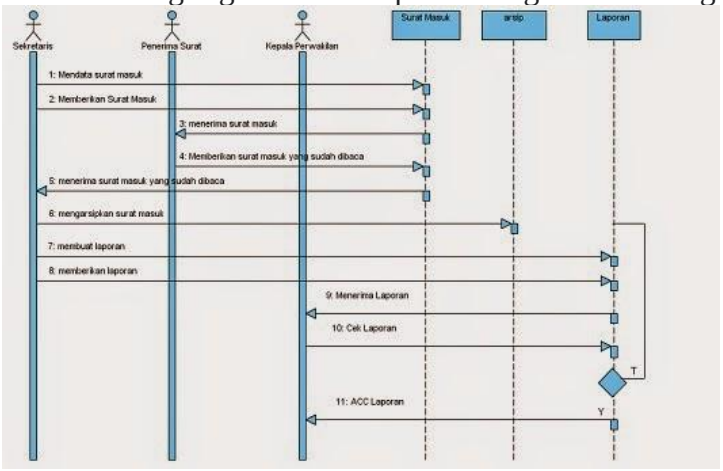
Activity Diagram of the Community

The following Figure 8 is an activity diagram of the community in receiving letters from the village.



Source: Research (2024)
Activity Diagram of the Community

c. Sequence Diagram
The following Figure 9 is a sequence diagram for village officials for community data.



CONCLUSION

Enterprise architecture planning using TOGAF ADM at the Pancur Batu Tengah Village Office aims to Improve the efficiency and effectiveness of village management, By designing a structured architecture, business processes can be optimised, so that services to the community become faster and more accurate. Strengthen village governance: A good architecture will support transparency and accountability in the management of village finances and assets. Facilitate information system integration: Various information systems in the village can be integrated so that data becomes better managed and can be accessed easily. Providing a strong foundation for future village development: A well-designed enterprise architecture will serve as a blueprint for village development, both in terms of infrastructure, technology, and human resources. In the future, this enterprise architecture design will be developed using the Togaf ADM phase which includes Information System Architecture, Technology Architecture, Opportunities and Solutions, Migration Planning, Implementation Governance, Architecture Change Management and Requirement Management.

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