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Enterprise Architecture Planning using the TOGAF 9.2 Framework at the Department of Tourism, Youth, and Sports of Tasikmalaya Regency.

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***Abstract*— The Tourism, Youth, and Sports Agency (DISPARPORA) of Tasikmalaya Regency is tasked with supporting the Regent in managing government functions related to tourism, youth, and sports (Tasikmalaya Regency Regent Regulation No. 36, 2016). The utilization of systems and technology in DISPARPORA Tasikmalaya Regency is currently not optimal and not fully aligned with its business process needs. At present, several applications such as SIMPEG, SIMDA, and SADASBOR are being used. However, some other data management processes, such as archiving incoming and outgoing letters and managing official travel, are still handled manually using notebooks and Microsoft Office applications. This poses risks of human error and data redundancy, which could hinder data management and the agency's task execution. As a follow-up to these issues, architecture enterprise planning is needed at DISPARPORA Tasikmalaya Regency to improve agency performance and provide better services to the community by leveraging SI/TI. The architecture enterprise planning will be developed using the TOGAF ADM 9.2 framework, following several stages such as the phase preliminary, phase architecture vision, phase architecture business, phase information systems architecture, phase architecture technology, and the opportunities and solutions phase. The results of this study include a blueprint consisting of 7 architectures business, 3 architectures information systems, and 1 architecture technology. Additionally, this study produces a roadmap for implementing the architecture enterprise planning.**

***Keywords*— *Architecture enterprise planning, Information System*, TOGAF**

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I. INTRODUCTION

The Tourism, Youth, and Sports Agency (DISPARPORA) of Tasikmalaya Regency is tasked with assisting the Regent in managing government affairs related to the tourism, youth, and sports sectors (Tasikmalaya Regency Regent Regulation No. 36, 2016) [1]. The utilization of systems and technology at DISPARPORA Tasikmalaya Regency is currently not optimal and not fully aligned with its business process needs. At present, several applications are in use, such as SIMPEG for personnel administration, SIMDA for planning, evaluation, reporting, and finance, and SADASBOR for SKP attendance. However, some other data management processes, such as archiving incoming and outgoing letters and managing official travel, are still handled manually using notebooks and Microsoft Office applications. This poses risks of human error and data redundancy, which could hinder data management and the execution of the agency's tasks. Based on the issues faced by DISPARPORA Tasikmalaya Regency regarding the use of SI/TI to support business processes, improve performance, and implement an electronic-based government system (SPBE), this study aims to develop an architecture enterprise plan using the TOGAF ADM framework version 9.2.

Architecture Enterprise is a management approach aimed at improving organizational performance by providing a strategic perspective on the organization's direction, business projects, information flows, and the utilization of technological resources. [2],[3],[4],[5],[6]. TOGAF (The Open Group Architecture Framework) is one the methods used to develop architecture enterprise planning by providing a framework reference that can be applied by a company or organization for planning, implementation, development, and maintenance in f ield of information technology. [7],[8],[9],[10],[11]

TOGAF is an architectural framework that provides a holistic method for designing, planning, implementing, and overseeing architecture enterprise. [12],[13],[14],[15]. Over time, TOGAF has been widely adopted in various sectors, such as manufacturing, industry, education, and banking.[16],[17].

The difference between this study and previous research is that the case study location selected has never been the subject of similar research, which is conducted at DISPARPORA Tasikmalaya Regency. The framework used is TOGAF ADM 9.2 because it is a framework that can be implemented by organizations or companies to help reduce the risks of failure related to planning and developing information architecture technology, as well as for organizations or companies that do not yet have architecture enterprise planning and the need for architecture enterprise development. [18],[19],[20],[21]. The characteristics of TOGAF 9.2 include several innovations that support an agile approach and digital transformation, as well as having a document structure that is easy to understand. [22],[23],[24],[25]. This study utilizes a broader range of tools. The final results of the research consist of a blueprint that includes architecture business, architecture data, architecture application, and architecture technology, as well as the development of a roadmap for the architecture enterprise planning.

II. MATERIALS AND METHOD

The research methodology used in this study:

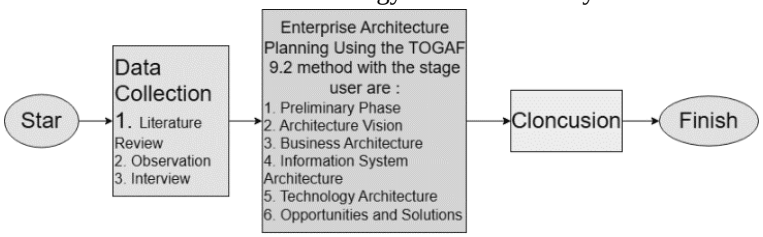


Figure 1. Research Methodology

A. Data collection

Data collection are carried out to obtain the information or data required to achieveobjectives of this study. Data collection methods used in this research include literature review, observation, and interviews.

B. Architecture enterprise Planing Method

The Enterprise Architecture Planning approach is implemented using the TOGAF framework version 9.2 ADM. The stages of TOGAF ADM followed in this process include phase preliminary, architecture vision, business architecture, information systems architecture, technology architecture, and the opportunities and solutions.

The following is an explanation of the TOGAF ADM 9.2 stages that will be used:

"Table 1. TOGAF Modeling Tools"

FASE ADM	*Tools*
Preliminary Phase	• *5W+1H* • *Principle Catalog*
Architecture Vision	• *Value Chain* • *Stakeholder Map Matrix* • *Solutions Concept Diagram*
Business Architecture	• *Rich Pichture* • *Actor/Role Matrix*
Information System Architecture (Application & Data)	• *Application Portfolio Catalog* • *User Case Diagram* • *Class Diagram*
Technology Architecture	• *Communication Engineering Diagram* • *Technology Portfolio Catalog*
Opportunities & Solutions	• *Matrix Gap Analysis* • *Roadmap*

1) Preliminary Phase

This stage begins by determining the core scope that will be directly involved in architecture enterprise planning at DISPARPORA by identifying 5W + 1H (what, who, when, why, where, how) and using the Principle Catalog to describe the principles of Architecture enterprise planning. These principles are used as the foundational reference for the development of Architecture enterprise planning.

2) Phase A : Architecture Vision

This stage begins with identifying the scope of DISPARPORA, followed by mapping the main and supporting activities using a Value Chain Diagram. Next, the identification and determination of the parties involved in the main and supporting activities are carried out through a stakeholder map matrix. This stage also includes identifying problems in the activities at DISPARPORA and developing solutions for each problem using a solutions concept diagram.

3) Phase B : Architecture business

This stage begins with analyzing the current business activity flow at DISPARPORA, followed by identifying the roles of each stakeholder in every DISPARPORA activity using an actor/role matrix. In addition, architecture business identification and development are carried out using a rich picture.

4) Phase C : Architecture Information System

This stage involves the development of application architecture and data architecture based on the results of the business architecture. The process of developing the application architecture begins with identifying DISPARPORA's application needs, aligned with the activities identified in the previous phase. The applications to be used in DISPARPORA are determined and illustrated using an application portfolio catalog, while interactions between users and their roles in each application are depicted through use case diagrams. The process of developing the data architecture involves identifying the data forms required by each application, designing the data types, and mapping the

relationships between data entities, which are visualized using class diagrams.

5) *Phase D : Architecture technology*

This stage begins with modeling the initial network configuration at DISPARPORA, modeling the architecture technology using a communication diagram by designing the proposed network infrastructure according to the needs of DISPARPORA, and identifying the list of technologies to be used through a technology portfolio catalog.

6) Phase E : Opportunities and Solutions

This stage starts by conducting a gap analysis on the architectural models created in the business architecture, information systems architecture (applications and data), and technology architecture phases using a gap analysis matrix. Afterward, a roadmap is formulated to guide the implementation of the information systems and technology architecture..

C. Conclusions

Drawing conclusions from the results obtained from the research on architecture enterprise planning using TOGAF ADM 9.2 at the DISPARPORA of Tasikmalaya Regency.

III. RESULT AND DISCUSSION

A. Preliminary Phase

This stage aims to formulate the approach to architecture enterprise development through the identification of 5W+1H and establish the principles of architecture enterprise planning using the principle catalog. The following Table 2 explains the 5W+1H identification, and Table 3 explains the principle catalog.

Tabel 2. 5W+1H

No	Driver	Object and Description	Description
1.	What	Scope of architecture at DISPARPORA	Creating enterprise architecture planning at DISPARPORA.
2.	Who	Who is involved in the creation of enterprise architecture planning?	- Planner : Researcher - Source : DISPARPORA Employees
3.	When	Completion time of enterprise architecture planning	January 2025
4.	Where	Location of the research case study	DISPARPORA of Tasikmalaya Regency, located at Jl. Ahmad Yani No.128, Sukamanah, Cipedes District, Tasikmalaya Regency, West Java 46131
5.	Why	Reasons for creating enterprise architecture planning	There are several business processes that are still not integrated and are manual, so the creation of enterprise architecture is necessary as a reference for the development and automation of activities at DISPARPORA Tasikmalaya Regency.
6	How	Determining how enterprise architecture planning is created.	Using the TOGAF ADM 9.2 framework with the stages: Preliminary Phase, Architecture Vision, Business Architecture, Information System Architecture, Technology Architecture, and Opportunities and Solutions.

Tabel 3. *Principle Catalog*

No.	Principle	Objective
1.	The architecture created must align with the goals and business processes at DISPARPORA Tasikmalaya Regency.	➢ Supporting business processes at the Department of Youth, Sports, and Tourism (DISPARPORA) of Tasikmalaya Regency. ➢ Strengthening the relationship between infrastructure and business processes to facilitate the alignment of business processes during changes.
2.	The enterprise architecture created must be easy to manage, user-friendly, and scalable.	➢ Facilitating business processes in usage, thereby improving the effectiveness of business processes and resource efficiency. ➢ Facilitating faster responses in the event of changes or to adapt to Information Technology advancements.
3.	The enterprise architecture created must have strong data security.	➢ To protect the security and confidentiality of data from unauthorized access. ➢ To manage stakeholders in data processing.

The principle serves as a guide for the decision-making process related to architecture in systems and information technology. It helps determine the structure and components of architecture, establish the qualifications for technology choices, and serve as a reference in enterprise architecture planning.

B. Phase A : Architecture Vision

This stage begins with identifying the scope, identifying key and supporting activities using a value chain diagram, determining the stakeholders involved using a stakeholder map matrix, identifying issues, and developing solutions for each issue using a Solutions Concept Diagram. Below is Figure 2, which shows the identification of key and supporting activities using a value chain diagram.

Supporting Activities	**Finance Infrastructure** Finance Subsection				
	Human Resource Management General and Human Resources Subsection				
	Technology Development Planning, Evaluation, and Reporting Subsection				
	Procurement Section for Infrastructure Provision and Development of the Creative Economy Ecosystem.				
Main Activities	Inbound Logistic	Operation	Outbound Logistic	Marketing	Servicing
	a) Conducting needs analysis and preparing youth development programs b) Preparing sports coaching and achievement programs c) Budget preparation and resource allocation d) Conducting collaboration and partnerships	a) Determining the program schedule b) Conducting promotion and publicity for the program c) Following up and developing subsequent programs d) Monitoring and evaluating the program	a) Collecting data and documenting the program b) Analyzing the program's impact by identifying challenges and solutions through the preparation of recommendations c) Reporting the budget expenses used for activities d) Writing the final activity report	a) Preparing the technical details for promoting tourist destinations and socializing the work programs b) Establishing policies for the technical aspects of promoting tourist destinations and socializing work programs c) Preparing the materials for promoting tourist destinations and socializing work programs d) Implementing promotion and socialization of work programs through electronic media e) Reporting and evaluating the promotion of tourist destinations and the socialization of work programs	Public Service

Figure 2. *Value Chain diagram*

Figure 2 illustrates the activities at DISPARPORA, divided into main and supporting activities. This stage reflects an integrated strategy between supporting and main activities. Through analysis, implementation, collaboration, evaluation, and reporting, the organization is able to enhance the efficiency, effectiveness, and impact of each program carried out. This process emphasizes the importance of cross-department collaboration to create maximum value for public services, creative economy development, and resource management.

C. Phase B : Architecture business

This stage aims to explain the role of stakeholders in DISPARPORA activities using the actor/role matrix analysis, with roles divided into four categories: Responsible (R),

Accountable (A), Consulted (C), Informed (I). This analysis is used to illustrate the modeling of activities currently taking place at DISPARPORA. Below is a figure that shows an example of a architecture business designed using a rich picture, which is the promotion of tourist destinations and the socialization of work programs to the public through electronic media.

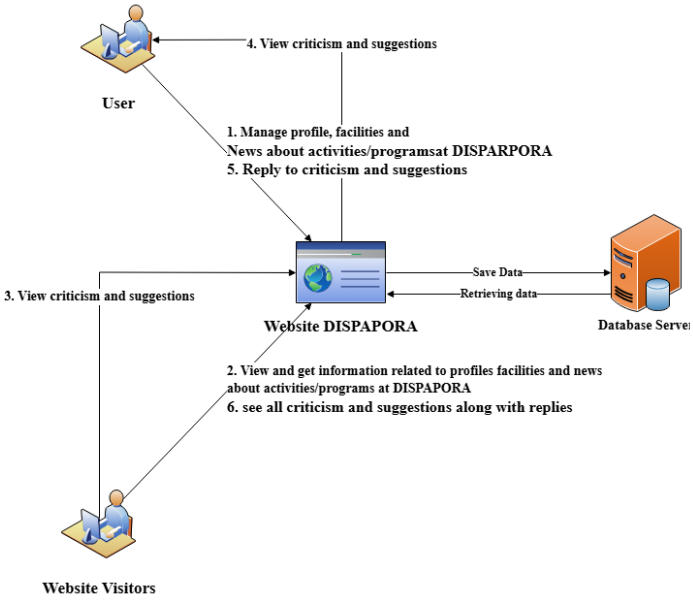


Figure 3: Rich Picture of the Activity of Promoting Tourist Destinations and Socializing Work Programs to the Public Through Electronic Media

Figure 3 illustrates the activity of promoting tourist destinations and work programs conducted through electronic media, specifically the DISPARPORA website. The use of this website aims to facilitate the promotion and dissemination of information regarding work programs organized by DISPARPORA. The stakeholders involved in this activity are the users, namely the employees from the Tourism Marketing Section, as the activities carried out by this section need to be communicated and introduced to the public.

D. Phase C : Information System Architecture

1) Architecture application

The architecture design of this application uses the Application Portfolio Catalog, which is useful for describing the functions of the proposed application design.

Tabel 4. *Application Portfolio Catalog*

No	Application Name	Function
1.	Sistem Informasi Manajemen Perjalanan Dinas (SIM Perjalanan Dinas)	Providing services for agencies or individuals with an interest in planning, managing, and reporting on official trips both within and outside the city. Additionally, helping manage various aspects of official travel efficiently and in an organized manner.
2.	Aplikasi Surat Masuk dan Surat Keluar	Facilitating and shortening the time required to manage incoming and outgoing letters, along with the disposition of those letters.
3.	*Website* DISPARPORA Kabupaten Tasikmalaya	Providing information to the public about the profile, work programs, and activities offered by the Department of Tourism, Youth, and Sports of Tasikmalaya Regency, as well as publishing news about activities or events organized by the Department of Tourism, Youth, and Sports of Tasikmalaya Regency.

2) Architecture data

The data design for DISPARPORA is structured using a class diagram, which serves to visualize the conceptual data model in the form of classes, attributes, methods, and relationships between elements. There are three data designs required by DISPARPORA, namely for the Official Travel Information System (SIM Perjalanan Dinas), the Outgoing and Incoming Letter Application, and the Tourism, Youth, and Sports Department Website of Tasikmalaya Regency. Below is Figure 4, an example of a architecture data on the DISPARPORA website created using a class diagram.

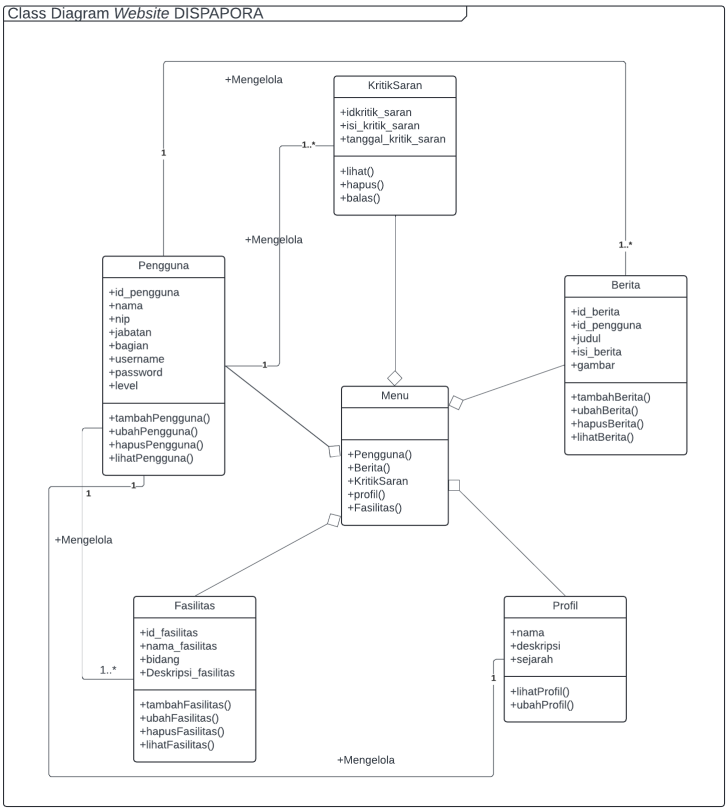


Figure 4 *Class Diagram Website* DISPARPORA

Figure 4 is a class diagram consisting of six classes: Menu, Profile, Facilities, News, Feedback, and User..

E. Phase D : Architecture technology

The architecture technology is designed to produce a technical infrastructure that supports the information system architecture. This process includes mapping the network infrastructure, encompassing the hardware and software used within the network. The network infrastructure is tailored to meet the needs of DISPARPORA, taking into account the previously developed information system architecture and aligning it with the availability of information and communication technology (ICT) facilities and infrastructure owned by the department. In this architecture technology, the network infrastructure and technology portfolio catalog are designed. Figure 5 below illustrates the proposed network infrastructure.

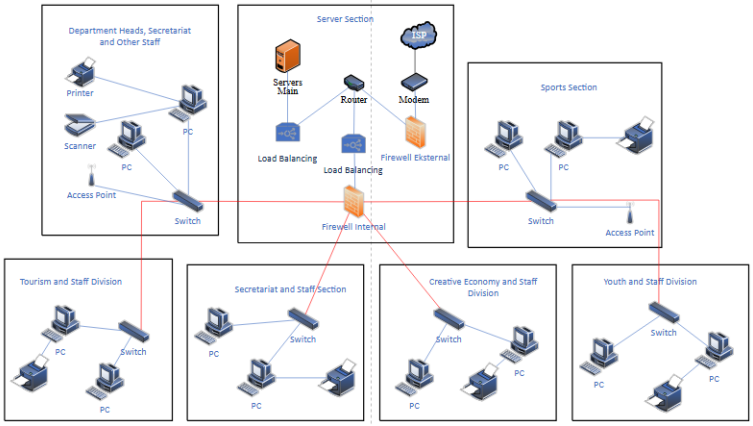


Figure 5: Proposed Network Infrastructure at DISPARPORA

Figure 5 illustrates the proposed network infrastructure design for DISPARPORA. The proposed architecture technology consists of the Internet, LAN (Local Area Network), and VPN (Virtual Private Network). Internet access is also provided for visitors and department employees with bandwidth allocation adjusted for each user. Additionally, the proposed architecture technology includes activating a firewall to protect the system from unauthorized access and managing data flow efficiently through a load-balancing mechanism integrated into both internal and external networks.

F. Phase E : Opportunities and Solutions

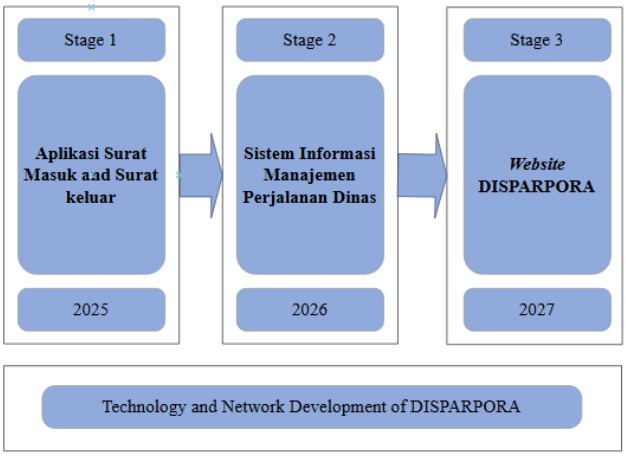
This phase is conducted to perform a gap analysis of the architecture business, information system architecture (data and applications), and architecture technology designed for DISPARPORA using a gap analysis matrix. This ensures that the developed architecture meets the desired targets. Additionally, an implementation roadmap for the architecture is created. Table 5 below presents an example of a gap analysis matrix for the Architecture business of Promotion Through Electronic Media.

Tabel 5 *Matrix Gap Analysis* Promotional Architecture business Through Electronic Media

Future / **Existing**	Login *Website* DISPARPORA	Profile Management	Facility Management	Management of News about DISPARPORA	romotion of DISPARPORA programs	Activity Socialization DISPARPORA	Management of feedback and suggestions.	***Eliminated***
Promotion of DISPARPORA Programs					RP			
Activity Socialization						RP		
New	*ADD*	*ADD*	*ADD*	*ADD*			*ADD*	

Keterangan : *Retain* (RT)
Replace (RP)
Remove (RM)
Add (ADD)

Based on the needs of DISPARPORA, a roadmap for the implementation plan of system architecture and information technology is outlined in the following Figure 6



Gambar 6 Roadmap implementasi Aplikasi Figure 6 Implementation Roadmap of the DISPARPORA Application

Overall, this development roadmap is designed to ensure that DISPARPORA is not only able to adopt the latest technology in its operations but also to create an integrated, transparent, and efficient system. Each stage in this roadmap is strategically designed to address existing operational challenges and prepare DISPARPORA to meet future demands. The initial stage aims to establish an efficient document management foundation, the second stage focuses on improving operational management, particularly in business trips, and the third stage emphasizes public information transparency. With the successful implementation of these three stages, DISPARPORA is expected to position itself as a modern, responsive, and innovative institution in providing services to the public and supporting the achievement of national development goals.

IV. CONCLUSION

From the research conducted, it can be concluded that the enterprise architecture planning at DISPARPORA in Tasikmalaya Regency applies the TOGAF 9.2 framework and utilizes the ADM approach as its architecture development method. The result is a blueprint that covers architecture business, information system architecture (data and applications), and architecture technology. In this planning, there are 7 architecture businesss modeled using rich picture, 3 information system architectures visualized through use case diagrams and class diagrams, and architecture technology depicted with communication diagrams. This research also produces a gap analysis matrix to identify the gaps between the current system and the designed information system and architecture technology. Additionally, the research includes the roadmap for the planning of the enterprise architecture. It is hoped that in future research, the TOGAF ADM phases can continue to Phase F: Migration Planning, Phase G: Implementation Governance, and Phase H: Architecture Change Management..

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