

ENTERPRISE ARCHITECTURE DESIGN FOR REGIONAL PARLIAMENT INFORMATION SYSTEMS USING THE STANDARD GOVERNMENT AND ARCHITECTURE APPLICATION (SAGA) FRAMEWORK

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ABSTRACT. *Regional parliament as a government agency will meet the needs of information systems by defining business needs in the information system architecture. The Enterprise Architecture Planning (EAP) design was created to support business policy in achieving the vision and mission of local governments. The purpose of designing this enterprise architecture model is to create harmony between the needs of government administration, business needs, and the information technology used. The method used in this research is qualitative by collecting data through the website, the regional parliament information system application survey and also conducting literature studies from previous research. The architectural design in this study uses a standardized framework and approach for architectural and government application models (SAGA) for e-government applications. This architectural model will map every need for government information systems in the form of a display/interface. The results that will be presented for the architectural design of this regional parliament are the data design model, hardware architecture design and information technology design.*

Keywords: Regional parliament, Government, EAP, Information technology, Information systems

1. Introduction. Political strategy is a strategy used to realize the ideals of politics in Indonesia. Political strategies are usually used in efforts to seize or maintain power, especially during elections. The development of political strategy requires a model of enterprise information system architecture planning. Enterprise architecture planning is a method of approaching data quality planning oriented to business needs consisting of data architecture, applications and technology and how to implement architecture in such a way in an effort to support the business wheel and achieve the mission of information systems and organizations [1].

An organization that attempts to build on the architecture of an information system can sometimes be unable to understand the outcome of information system planning in its business needs by the reason the language and models used tend to be complicated and highly technical; consequently, no feedback is a major factor in the architecture planning of previous information systems [2]. Architectural design is an effective solution for developing a network model of corporate information technology [3]. The success of implementing an enterprise information system architecture is very dependent on the

understanding of each business entity itself including the organization's management commitment. An architectural design aims to develop the solution of the logging.

A regional parliamentary institution will meet the needs of information systems by explaining the needs of business and information systems in the design of information systems architecture with the aim that strategic direction and political policy can be planned well and efficiently [4]. Therefore, we need the development of integrated information technology with small units of government, and the existence of an information technology architecture included in the enterprise architecture.

Problems to be discussed in this study are the first of how to analyze the administrative management information system of the regional parliament government. The second is how to build a local government parliamentary information system enterprise-architecture model that contains a conceptual model of enterprise architecture based on a data model planning approach, a diagram architecture model, and a business technology application model and a design interface implementation model. The third is how to align business needs and the human resources of regional parliamentary.

The method used to design this enterprise architecture paper uses the Enterprise Architecture Planning (EAP) approach in the form of Standard Government and Architecture Application (SAGA).

The purpose of this paper is to design a conceptual model of information systems architecture in the regional parliamentary governance of information technology and business processes.

2. Problem Statement and Preliminaries. An organization building Enterprise Architecture (EA) for corporate investments, aligning the business needs of information technology and providing strategic planning facilities for greater and optimal information technology [5].

Implementation of each government EA governance process will require an EA governance framework that is agreed upon by stakeholders in an organization [6].

Previous studies explained that Enterprise Architecture Planning (EAP) is a method developed to build enterprise architecture [7,8]. The stages of the development of Enterprise Architecture Planning (EAP) according to SPEWAK et al. are the stage to start, understand the current condition of the research location, understand the vision and mission in the future, and the stage to set the planning stage in achieving the vision and mission in the future [8,9]. This study only describes the planning of enterprise data architecture, technology architecture and applications, but does not design business process architecture.

Other research on governance, management explains that an organization/company makes Enterprise Architecture Management (EAM) to make changes in the paradigm and strategy of a sustainable company [10].

2.1. Enterprise architecture. Enterprise architecture is an organizational component consisting of integrated business processes, organizational responsibilities, service platforms and information technology [11]. Enterprise architecture can be called coordinated planning and design of Information Technology (IT) architecture and harmony [11]. Enterprise architecture is an explanation and a representation of a higher level view of the company's business processes and Information Technology (IT) systems between their relationships and their parts. This study aims to help business and IT processes, visualize what is happening in the future and is expected to make policy decisions for change [11]. This study does not include updates on information technology on a regular basis in a certain period, and also does not carry out maintenance in a certain period and also does not create a schema of information systems user architecture [12]. The SPEWAK model approach to the enterprise architecture plan is similar to the model taken by the

Department of Energy (DOE) in terms of the main drivers of vision, business mission, and data requirements. To meet these needs, data development, architecture, applications and information technology are needed for implementation [8]. Model enterprise architecture planning will be used in government information systems enterprise architecture design which consists of several levels of architectural design models. This level in EAP describes the architectural planning of the current planning, business models, systems and technology layers, the next layer about the design of multiple architectures and the completion of the implementation layer.

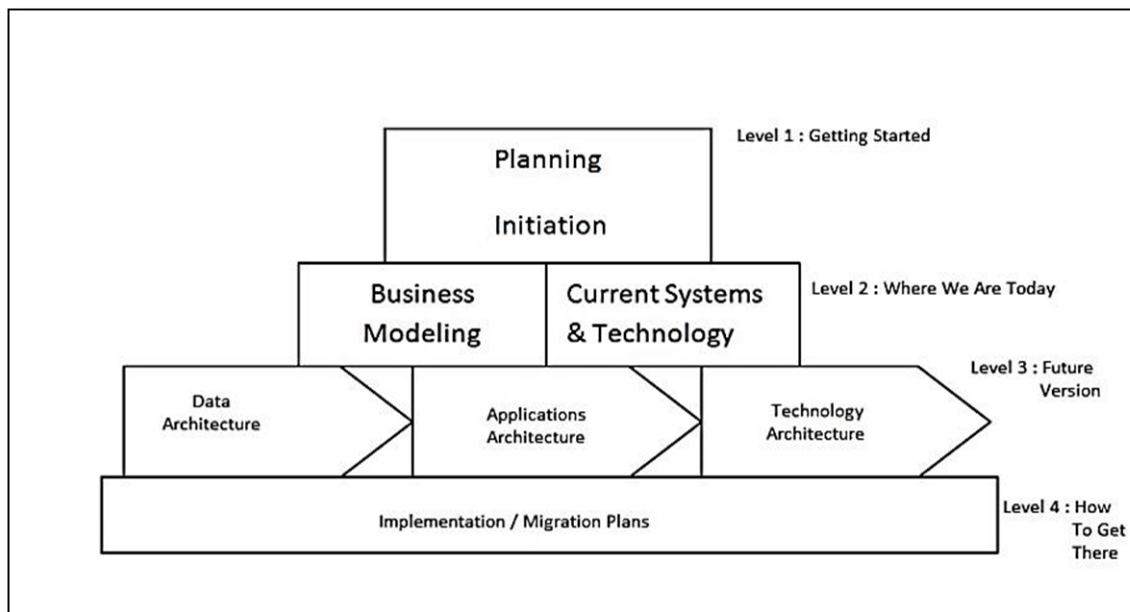


FIGURE 1. Level of enterprise architecture planning (SPEWAK) [13]

2.2. E-government. E-government is an electronic public service that is very important for government agencies to measure the success of government in order to be better, in accordance with the vision, mission and goals [13]. E-government information technology is designed to provide information and services to citizens in the legislative, executive and judicial branches and public administration to improve internal efficiency or supportive governance processes.

2.3. Standard Government and Architecture Application (SAGA). Standards and architecture for e-government applications is a high-level programming interface that provides the ability to develop distributed applications in infrastructure independently. SAGA is designed primarily for decision makers in the field of organization and information technology (e-government teams) in government. Documents are guidelines that serve as an orientation to help when there is a development of concepts for technical architecture and technical concepts in general and for each individual IT application [14].

In this section, describing the applicable implementation plan will be made for the needs of Local E-Government, Parliamentary Governments based on the priority level of each service unit for one area, government agencies and institutions.

3. Main Results. This research begins by building an enterprise architecture model of the regional parliament information system of the people's representative using the Enterprise Architecture Planning (EAP) model approach, for system development using a standard framework and architecture for e-government applications, with enterprise frameworks of view, computational views, views of response to information, technical

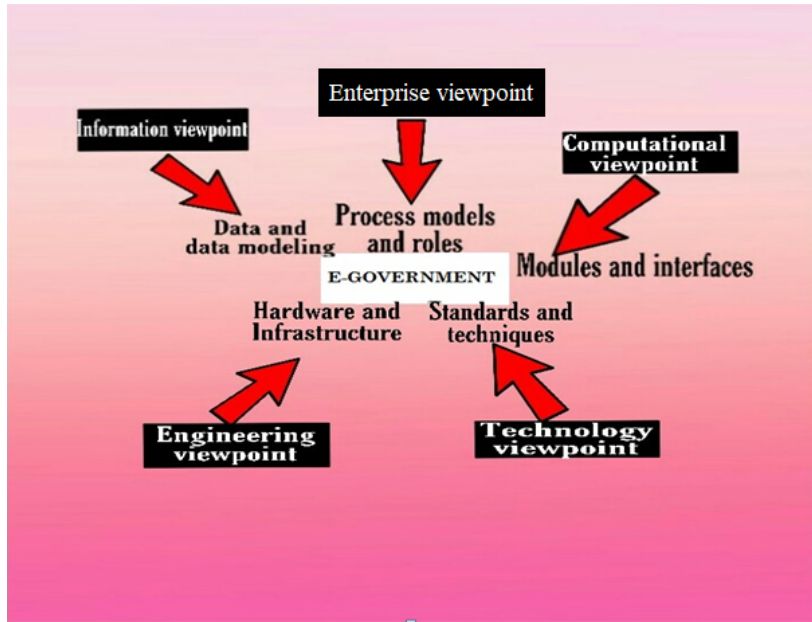


FIGURE 2. Architectural standard framework and application architecture

perspectives, technology perspectives with UML (Unified Modeling Language) tools so that it is hoped that the government will make an important contribution to the service of modern parliamentary administration and oriented towards good governance based on e-government.

3.1. Designing enterprise architecture models.

3.1.1. *Enterprise viewpoint.* At this stage, make a process model that includes the organizational structure of the local government parliamentary institutions, identification and definition of the functions of the business area, and then the structure of the information system and information technology will be built. Apart from that it makes functional arrangements for operational management and government policy strategies.

3.1.2. *Computational viewpoint.* At this stage it will be designed a modular design and interface design of business information systems by means of classifying each block's functional design. The design of the scheme is to create an interface design to display the

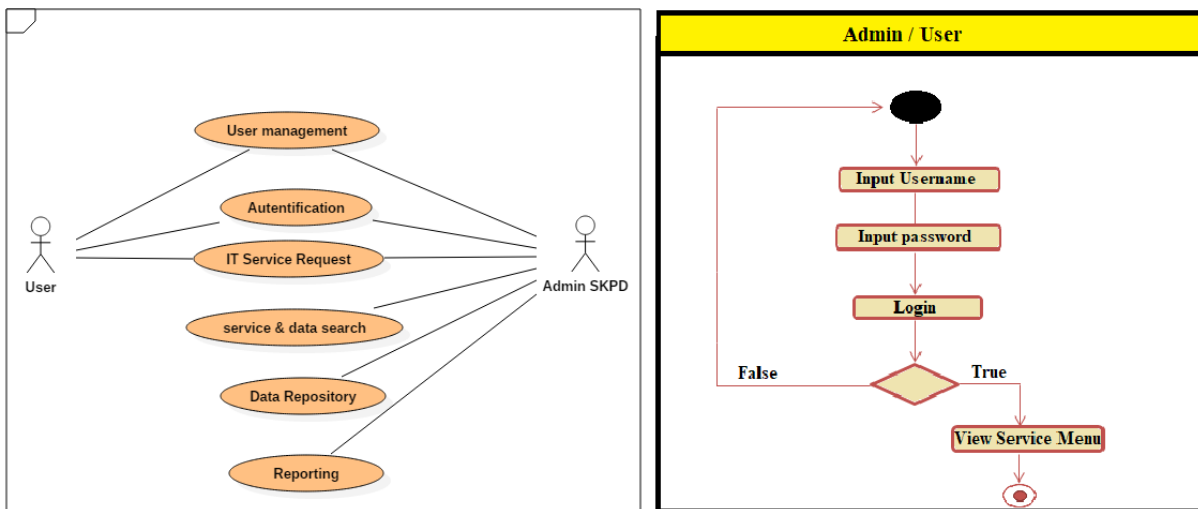


FIGURE 3. Use case diagram and activity diagram

relationship between the regional government information system and the central government or called government relations for the government (G2G), the relationship between the government’s business firms (G2B) and the relationship between governments and customers (G2C). The second design is to create a layer that acts as a middleware for interfaces and applications.

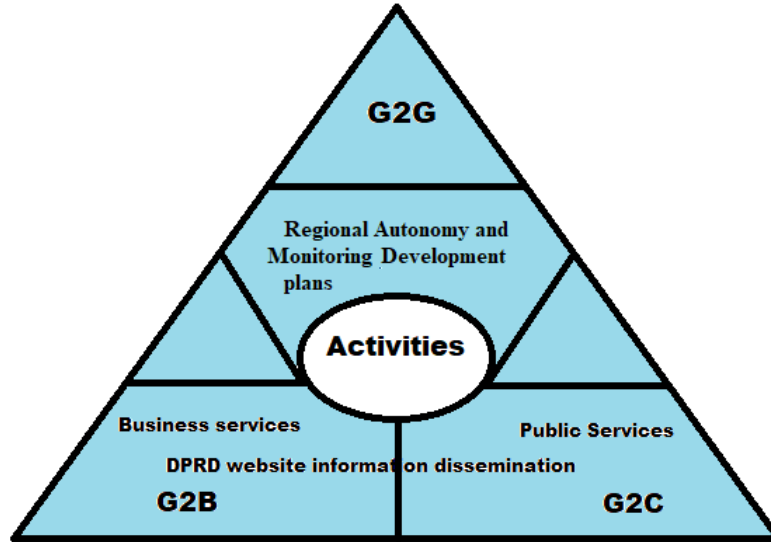


FIGURE 4. Viewpoint interface

3.1.3. *Information viewpoint.* At this stage, modeling of physical-based data in a database table is needed, namely by creating several tables:

- a) User table
- b) Classification table
- c) SI-government table
- d) Service table
- e) Repository table
- f) Report table

3.1.4. *Engineering viewpoint.* From an engineering perspective, some of the tools used or will be used in the design of local government parliamentary infrastructure development are the Network Operations Center (NOC), local government work unit (SKPD) services, office administration.

The device will connect the entire office administration Internet network around the Karawang Regional Parliament area.

Table 1 explains the hardware infrastructure requirements for IT network design in the local government work unit (SKPD).

TABLE 1. IT network hardware infrastructure

Hardware component	SKPD unit	Function
Routers, switches, PCs, servers	Network Operations Center (NOC)	Routers, hubs, e-government applications
Routers, switches, servers, computers	Local government work unit (SKPD)	Router, gateway, hub, database
Routers, switches, servers, computers	Administration office	Routers, gateways, hubs, databases, PC

3.1.5. *Viewpoint technology.* Technology point of view consists of the first standard user interface on every system that involves humans, programs, and computers in the user interface. Both work procedure standards in the form of Standard Operating Procedures (SOP) formally create security policies at the top management level of the regional parliament/SKPD leader and hand over security responsibilities to regional parliament staff members.

TABLE 2. Interface view menu

No	Application menu	Government unit	Description
1	E-government system services	SKPD user, admin user	Login status setting, E-government service classification, Save classification
2	Data repository	Regional government secretary	Login status setting, See repository data, Repository data update, Delete repository data
3	Data search and data repository	SKPD user	Login status setting, Input data setting, Data service confirmation
4	Reporting	District head	Data reporting, Logout

3.2. **Deployment diagram.** Diagram IT network placement requirements:

- a) User computer in government administration
- b) Web server to Network Operations Center (NOC) namely part
- c) Database server for storing administrative data and regional parliament offices.

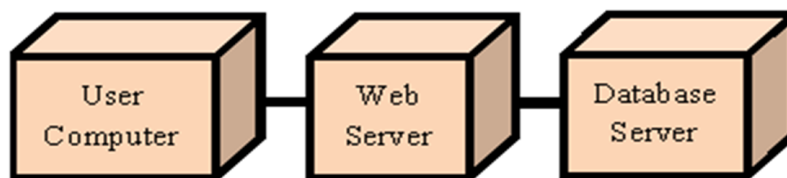


FIGURE 5. Local government work unit (KPD) placement diagram

3.3. **Planning-development of enterprise architecture information systems for local government.** Workflow of the local government network architecture enterprise model is as follows.

1) The Network Operations Center (NOC) in this picture functions as a central location or workspace that functions for the supervision, monitoring, and distribution of Internet data providers. The NOC will be placed in the IT section of the regional parliament.

2) The network in this picture is the main gateway for Internet providers that have been monitored by the IT Department NOC which functions to connect the Internet from a communication device that has a WIFI device in each local government work unit (SKPD).

3) The router in this picture functions as data transmission from a server that has been given Internet access.

4) The central server will provide data/file access from one client computer to another client computer.

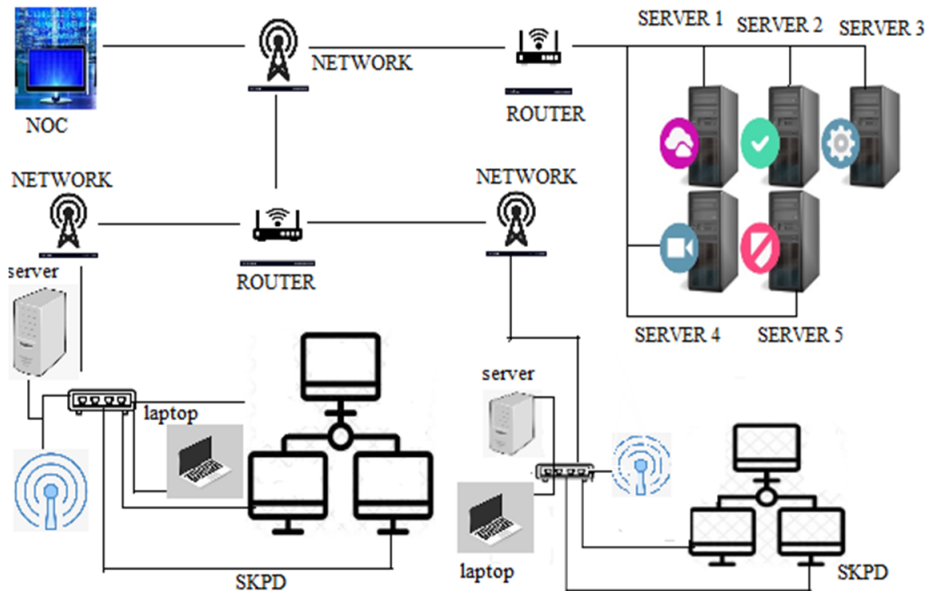


FIGURE 6. Design of a model of local government network architecture

5) Hub/Switch functions as a signal receiving device from a computer which is an access center/file transfer that can be called a server. This hub is connected from a computer to another computer client.

6) WIFI functions to provide wireless Internet connection to laptops of local government work unit (SKPD).

4. **Control Design.** In this section, explaining the applicable implementation plan will be made for the needs of local e-government applications, the parliamentary government based on the priority level of each service of the regional work unit, government agencies and institutions. This plan will implement several applications with interface menus needed in the local parliamentary computer work units. This is presented in the table below.

1) **Planning the application implementation sequence**

TABLE 3. Interface view menu

No	Application menu	Government unit	Description
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2) Human resource training planning

TABLE 4. Human resource training

Training materials									
Agency, Regional agency service, SKPD	Insight	Network	Database	Operating system	Internet	Office	SI-Government	Intranet	DSS
Top management	v				v			v	v
Middle management	v	v			v		v		
Operational management	v	v	v	v	v	v	v		

5. **Conclusion.** The conclusions of this study are (1) designing business model data needs of local parliamentary institutions, (2) designing an information technology architecture model using the SAGA framework, (3) designing an e-government application architecture model of the local parliament, (4) making training plans for human resources users of the local government information system application based on the work unit of the regional parliament. This paper's contributions are presenting architectural information systems data for regional parliaments, providing information about business process models, creating a new information technology model on integrated enterprise architecture in local parliamentary institutions using the Standard Government and Architecture Application (SAGA) approach, and creating an application architecture model in the form of a user application interface. Recommendations for further research are design detailed data needs in accordance with the vision and mission of local government agencies, architectural design of government, business processes in terms of local government budget policies, architectural design evaluation and monitoring of system information performance and the strategic planning architecture of government information systems.

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