Enterprise Architecture Model using Enterprise Architecture Planning for Services in National Land Agency

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Abstract. This research tries to make information system architecture modeling in the Office of the Land Agency. Information system modeling needs to be done to optimize the organization and create innovation in improving quality services for the community. Modeling that can be used is using the enterprise architecture planning method. Corporate architectural planning (EAP) is a business-oriented method that is useful for modeling information system architecture consisting of planning initialization, business modeling and technology used, architectural data, applications, and technology as well as architectural planning assistance programs created, so that blueprints (data, applications, and technology) that are made can be made the basis of improvement and development. The results of this study indicate that there are seven functional areas consisting of four supporting functionalities and three main functionalities within the organization. EAP modeling provides documentation for the National Land Agency with recapitulation consisting of data architecture models, architectural applications, functional businesses and technology architectures.

1. Introduction
Land certificates are proof of land ownership issued by the National Land Agency (BPN) for the interests in accordance with physical and juridical data and have a function to help resolve land disputes, in carrying out their functions, the National Land Agency is based on the Republic of Indonesia National Land Agency Regulation Indonesia Number 3 of 2011 concerning Management of Assessment and Handling of Land Cases. [1]

The government as a public servant must also be prepared to be competent and must have effective management, so that it is able to provide excellent service. To improve the quality of service, there needs to be an adequate facility. Service is one of the choices and marketing strategies to create superior customer service and service delivery must be accurate on time with attention and friendliness. [2] Many efforts have been made by the government to make public services more effective in managing everything related to land, but there are several systems that have been implemented that only pay attention to momentary needs so that these conditions make the information system unusable as expected. Enterprise Architecture is a set of principles, methods, and models used in the design and realization of a company's organizational structure, business processes, information systems and infrastructure. The method functions to manage information systems is oriented to business needs which consist of data, application, and technology architectures and implementation plans of the architecture that is made, so that the blueprint (data, applications, and technology) made can be used as a basis for improvement and development for service information systems so as to produce an information system.
architecture that can create information system alignment with business strategies and support the achievement of the organization's vision and mission.[3]

The method for preparing the company's architecture is that there are several methods that can be used including Enterprise Architecture Planning (EAP), TOGAF ADM, Zachman Framework, and others. In this study, the concept of Enterprise Architecture Planning (EAP) will be used to create a blueprint for planning information service systems at the BPN in Purwakarta Regency. Enterprise Architecture Planning is an approach method for planning data quality based on business needs and how the implementation of the architecture is carried out to support the achievement of the information system mission and organization. [4]

So the implementation of the model will show an overview of the EA model that can be used for the benefit of business processes, especially for improving services to the community and the needs of organizations that are in accordance with their designation.

2. Method
Enterprise Architecture Planning is an approach method for planning data quality based on business needs and how the implementation of the architecture is carried out to support the achievement of the information system mission and organization. [4-8]

There are several steps in Enterprise Architecture Planning, namely:

- Planning initialization;
- Business modelling;
- Current system and technology architecture;
- Development of enterprise architecture models:
  - Data architecture;
  - Application architecture;
  - Technology architecture;
  - Implementation. [9]

This research method is done by collecting data and information that will be used as a reference in the design of enterprise architecture. Data derived from primary data sources are obtained using two methods, namely observation and interview. Observation is a technique of collecting data through direct observation of symptoms or events that occur in the object of research. In this case the author made observations to observe business processes, locations or research sites (Purwakarta Regency National Land Agency) and make necessary notes. Meanwhile, the interview is a technique of collecting data through face-to-face and question and answer directly between data collectors (authors) and parties related to the object of research. In this case the interview was conducted with several related parties, such as the administrative division of the BPN Purwakarta Regency.

3. Results and Discussion
In making a blueprint on an architecture, steps need to be carried out in accordance with the steps in the enterprise architecture planning (EAP). The EAP concept is one way to model the service information system. The steps are as follows:

3.1 Planning Initiation
The first stage in the EAP concept is planning initialization, this stage aims to identify the rules related to enterprise architecture planning for the development of information systems for the determination of the enterprise scope of vision and mission so that architectural development can be carried out in accordance with business objectives.

In accordance with the Republic of Indonesia Presidential Regulation Number 17 of 2015 concerning the Ministry of Agrarian and Spatial Planning, the Ministry of Agrarian and Spatial Planning (ATR) / National Land Agency (BPN) has the task of organizing government affairs in the agrarian / land and spatial plan to assist the President in organizing government country. [10] In carrying out its duties, BPN has the task of carrying out government duties in the land sector in accordance with the provisions of
the legislation. In this case, it is necessary to plan for the future vision and mission that must be done to determine various kinds of information technology strategies that can support the vision and mission.

3.2 Business Modelling

Business modelling can be done by making the organizational structure the main basis so that determining the organizational structure will be very decisive towards the steps of business modelling. The organizational structure will show the parts and tasks at the BPN. The role of a government institution aims to provide services to the community in this matter in the field of land. In general, it is grouped into two work terms, namely technical and non-technical. Technical work, namely a work that handles directly the process of making certificates, both physical processes related to the field and juridical, namely the completeness of file requirements. While non-technical acts as a supporter for carrying out technical duties. In this study only technical issues will be discussed. Based on the concept of value chain, the main (technical) function consists of file receipts, service operations and submission. While the supporting functions (non-technical) consist of activities related to internal offices (general), majors of staffing, BMN financial management and information systems, and reporting planning. The value chain of the service model at BPN is as shown in Figure 1.

![Figure 1. BPN value chain](image)

From Figure 1, each main activity can be described as follows:

- Receipt of files is the first activity that begins in service at the BPN in the form of file verification up to registration administration.
- Service operations are all activities related to all service processes that exist in the BPN to become products (land certificates).
- Submission is an activity carried out to submit a certificate to the applicant accompanied by proof of the identity card (KTP) concerned and cannot be represented.

Supporting activities can be described as follows:

- General section, namely the part responsible for all internal and external office activities to the provider of facilities and infrastructure needed to support office performance.
- Personnel is the part that is tasked with managing human resources so that it is in accordance with the main tasks and functions of each employee.
- Finance, State Property (BMN) and information systems are the parts that are responsible for financial management in the form of a budget that must be in accordance with the implementation checklist of the state and tasked with being an equipment developer to support information technology.
- Planning, evaluation and reporting is a functioning part of planning and making regular reports related to office performance results.
3.3 Current system and technology architecture

The role of information and technology systems in the current government has provided bureaucratic changes that are easier to serve the public. Therefore, management and development of technology need to be taken into consideration for a better Indonesia. At this stage, it aims to define the application and technology platform used in the organization's business processes. In this case, the Purwakarta BPN has 6 sections including Administration, Land Arrangement, Land Infrastructure, Land Law Relations, Land Procurement, Handling of Problems and Land Control. From the six sections, all use the main application, namely computerization of land activities to help the process of issuing certificates and activities related to land and have supporting devices such as scanners, printers, teleconferences and internet networks that are useful to support the activities of making land certificates.

3.4 Development of enterprise architecture models

In the construction of architectural models, there are several types including the following

3.4.1 Data Architecture

At this stage is to look for entities in each business process that can be described in Table 1.

| No | Business Entity                  | Data Entity                                      |
|----|----------------------------------|-------------------------------------------------|
| 1  | File Receipt                    | Employees, Administration, applicants           |
|    |                                 | Employees, service counters, Land Objects, Measuring Instruments |
| 2  | Service Operations              | Employees, Offices, Notaries, Measurement Studios, Head of Offices |
| 3  | Submission                      | Employees, Applicants, Administration           |
| 4  | General                         | Employees, Administration, Head of Office       |
| 5  | Human Resource Management       | Employees, Administration, Other Offices, Head of Office |
| 6  | BMN Finance and Information     | Employees, Finance, Financial Reports, BMN reports, Administration, Head of Office |
| 7  | Planning, evaluation and reporting | Employees, Administration, Head of Office, periodic reports |

3.4.2 Application Architecture

After defining the data architecture, the next step is to define the application architecture that is useful for helping the main tasks of the organization. The application architecture related to land services is shown in the Table 2 below.
| No | Application group                          | Application System                                                                 |
|----|-------------------------------------------|-------------------------------------------------------------------------------------|
| 1  | File Receipt System                       | Computerized Application of Land Activities                                        |
|    |                                           | Plot checking system                                                                |
| 2  | Service Operations System                 | Computerized Application of Land Activities                                        |
|    |                                           | GEO Application for Computerized Land Activities                                     |
|    |                                           | Tax administration system                                                           |
|    |                                           | Survey officer scheduling system                                                    |
|    |                                           | Licensed AutoCAD application                                                        |
| 3  | Submission System                         | Computerized Application of Land Activities                                        |
| 4  | General System                            | Administration Application                                                          |
|    |                                           | Annual tax system                                                                   |
|    |                                           | Certificate blank system                                                            |
| 5  | Human Resource Management System          | Computerized Application of Land Activities                                        |
|    |                                           | Attendance system                                                                   |
|    |                                           | Staffing system                                                                     |
|    |                                           | Recruitment system                                                                  |
| 6  | BMN Finance and Information Systems       | Payroll system                                                                      |
|    |                                           | Employee spending system                                                            |
|    |                                           | Land program quality control system                                                 |
|    |                                           | Accounting system                                                                   |
|    |                                           | Tax system                                                                          |
| 7  | Planning, evaluation and reporting System | Reporting system                                                                    |
|    |                                           | Land program quality control system                                                 |

3.4.3. Technology Architecture
The most recent stage is defining the technology architecture. This stage aims to identify and define the technological principles needed to provide an environment that supports applications in previously compiled application architectures in managing data and supporting business functions. Technology architecture is a definition of technology that will support business functions by providing a data sharing environment. [11] In table 3, a technology platform that can be used at Purwakarta BPN will be described.
| No | Type          | Description                                                                 |
|----|---------------|-----------------------------------------------------------------------------|
| 1  | Operating System | - Supports software, hardware and system development tools in the organization   |
|    |               | - User friendly                                                             |
|    |               | - Supports organizational networks                                           |
| 2  | Hardware      | - The hardware used must be able to withstand long-term and can support future technology |
|    |               | - The hardware used is based on needs                                       |
|    |               | - User friendly                                                             |
|    |               | - Not focusing on one particular brand but must prioritize quality           |
| 3  | Software      | - Software must be based on needs                                           |
|    |               | - User friendly                                                             |
|    |               | - Made appropriate and good development documentation                        |
| 4  | Network       | - The network used must have adequate bandwidth                              |
|    |               | - Has easy installation development                                         |
|    |               | - Network infrastructure must be adequate and managed centrally             |
| 5  | Data          | - Data access is not free because it is related to legality                 |
|    |               | - Data format is adjusted to the data type and data sensitivity              |
|    |               | - Data is stored centrally                                                  |
| 6  | Security      | - Physical and electronic safety standards                                   |
|    |               | - All service activities can be monitored centrally                          |
|    |               | - The right of access can only be used by the person concerned in accordance with the decree made by the head of office |

4. Conclusion
BPN is one of the government agencies that serves the community in the land sector who can use EAP as a guideline to create an information system blueprint to support the vision and mission. The results of research conducted in this journal consist of value chains in information systems for land services, data architecture, application architecture, technology architecture, groups and application systems and technology platforms.

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