ENTERPRISE ARCHITECTURE WITH ENTERPRISE ARCHITECTURE PLANNING (EAP) AT POLTEKES TNI AU BANDUNG

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ABSTRAK

Politeknik Kesehatan TNI AU is one of the universities in Bandung. POLTEKES TNI AU Bandung has the basic tasks in the field of education to human resources as a professional health worker, tough and reliable. Information technologies are still not widely available and optimal use of its functions, it is in suspect has yet to perfect the strategy in the implementation of information systems to support the business of the organization. Planning of information systems development is done using the method of enterprise architecture planning (EAP) a process for mendefenisikan architecture for the use of information in support of business, architecture referred to in defenisi above, i.e., data architecture, applications and technology, analysis for the assessment of the condition of the organizations currently use the SWOT analysis and the analysis of the Organization's business modeling using the value chain. The conclusions of this study, namely the architecture proposed is enough data in accordance with the Organization's business needs, application architecture that could support the already proposed in the business organization and the proposed technology architecture can support the Organization's business.

Keyword: enterprise architecture planning, data architecture, application architecture, technology architecture.

1. INTRODUCTION

Politeknik Kesehatan TNI AU (POLTEKES TNI AU Bandung) is one of the universities in Bandung. Currently POLTEKES TNI AU Bandung under Adi Foundation Efforts (YASAU) based on the decision letter number: skep/403/XI/2006 dated November 8, 2006. POLTEKES TNI AU Bandung has the basic tasks in the field of education to human resources as a professional health worker, tough and reliable. POLTEKES TNI AU Bandung in providing services assisted by academic and Student Affairs Administration Bureau (BAAK) and Bureau of public administration and finance (BAUK).

Based on the strategic plan 2011-2016 in Appendix C, POLTEKES TNI AU Bandung is currently still not planning the development of information systems to support the business processes. The development of information systems has not been overly of concern so that the POLTEKES TNI AU BANDUNG Bandung has not planned the development of information systems.

Based on interviews with Mr. Pudin as IT POLTEKES TNI AU BANDUNG staff of Bandung stated that currently the TNI AU Bandung POLTEKES already have information systems to support academic activities in the implementation of the system of academic Information that is held by the Financial and information systems BAAK held by BAUK. Academic information system serves to manage the admission of new students, the academic process and release of academic information systems, while the finance function to manage the payment of herregistrasi College. Both the information systems used to serve students, faculty and staff of the POLTEKES TNI AU BANDUNG in Bandung. Information technologies are still not widely available and optimal use of its functions, it is in suspect has yet to perfect the strategy in the implementation of information systems to support the business of the Organization, so the BAAK and BAUK still difficulty in running all business processes that exist in the organization. BAAK and BAUK in the POLTEKES TNI AU BANDUNG Bandung has an important role because it helps academic activities associated directly with prospective students and students.

Based on the explanation that has been presented, it will be using Enterprise Architecture Planning (EAP) used to make the planning of the development of information systems to support its business processes to realize the vision and mission of the POLTEKES TNI AU BANDUNG in Bandung.

The intent of the penetilian does is create an Enterprise Architecture Planning (EAP) as a guideline before implement information system in the POLTEKES TNI AU BANDUNG, Bandung. While the goals to be achieved from this research are generating Enterprise Architecture Planning (EAP) as the plan to build information systems to support the business process in the POLTEKES TNI AU BANDUNG, Bandung.

2. REASEARCH

2.1 Theory

The cornerstone of the theory is the explanation of the various basic concepts of theories related to the design of the enterprise architecture. Several theories related to the design of the enterprise architecture is a theory of information system, SWOT analysis, enterprise architecture, enterprise architecture planning, analysis of the value chain (Value chain) and business process modeling and notation (BPMN).

2.1.1 Information System

The system is a collection of components where each component has the function of interacting and interdependent and have one unified whole to work achieve a particular purpose [5]. While the information is data that have been processed into a form is a form that is useful and can be used for humans [6].

So the conclusion information system is a set of components that have the function of interdependence in a unified whole in the form of a data that has been processed into a form that can be used to achieve the goals of a particular human.

2.1.2 Enterprise Architecture

enterprise architecture is a draft to deal and interoperating components of business (example: policies, operations, infrastructure, information) that supports the keberjalanan of an enterprise. Enterprise architecture is also defined as a set of representations that are descriptive and appropriate for describing an enterprise so that the quality of the enterprise remain awake and able to adjust to the changes.

2.1.3 Enterprise Architecture Planning

Enterprise Architecture Planning (EAP) is a process of defining architectures for the use of information in support of the business and the plan for implementing those architectures. There are three architectural fruit referred to in the above definition, that is, data architecture, application architecture and technology architecture. In the EAP, the architecture defines and describes data, applications and technologies needed to support the operation of the business, while the implementation plan defines when the architecture is implemented [3].

The EAP has 4 stages: stages for launch, stages to understand current conditions, stage of the pendefenisian vision of the future, and devised a plan to phase in achieving the vision of the future. Stages of development of enterprise architecture planning can be expressed in the form of Figure 1.

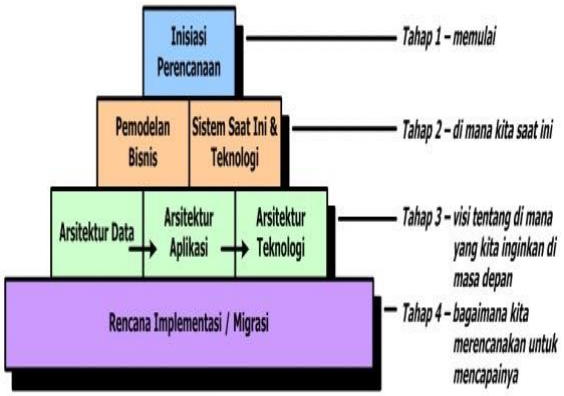


Figure 1 Step EAP

A description of the 4 layers of Enterprise Architecture Planning (EAP) above are:

Step 1 – Planning Initiation

Initiation of planning. This stage comprises of the determination of the methodology used, who will be involved, and what tools will be used. The result of this stage is the work plan for the enterprise architecture planning and management commitment to proceed to the next stage of a six.

Step 2 – Where We Are Today

Model business. This stage of compile and build a base of knowledge about the business and the information used in business today.

1. Documentation of the structure of the organization.
2. Identification and definition of business functions.
3. Documentation of the main business model, distribution, and presentation to all the business community to listen to his comments.

System and current technology. This step defines the application system and the existing technology platform to support the business at this time. The results in the form of an inventory system applications, data, and technology platforms that will be used as the basis for a long-term migration plan.

1 determine the scope, goals and framework of the IRC.
2 preparation for the collection of data.
3 data collection of IRC.
4 data inputs.
5 validation and review the draft of the IRC.
6 Draw scheme.
7 Distribute IRC.
8 Administration and maintenance of the IRC.

Lapisan 3 – Future Vision

In this layer, there are three stages of workmanship EAP consists of:

1. Data Architecture. This step mendefenisikan the main data types are needed.

1) Register the candidate entity data by reviewing the business model and the description of the system and the technology used.
2) defines the entities that will be used.
3) Define each of these entities and document them

4) connect the entity data with detailed business functions.
2. Application architecture. Defines the types of applications that are required to manage the data and support the business functions.
1) register a candidate application.
2) Define an application.
3) application against the Relasikan function.
4) impact analysis of existing applications.
5) Distributed application architecture.
3. Architectural technology. Defining technology platforms needed to generate an environment for data manager application and supporting business functions.
1) identification of the principles of technology and platform.
2) Define the platform and distribution.
3) Relasikan technology platform with applications and business functions.
4) Distributed Architecture technology.

Lapisan 4 – How To Get There

Migration/implementation plan. This step defines the displacement current business strategy into the future, here are the steps:
1) sorts the applications
2) Mengistimasi efforts, resources needed and schedule
3) Mengistimasi costs and profits
4 success factors) determine and make recommendations.

2.2 Analysis of Enterprise

On sub this chapter will discuss about analysis of enterprise where there are current system penilaiaian analysis, initiation planning, business modeling and business processes that exist in the enterprise. Enterprise analysis done before designing the architecture of information systems. With the analysis of the enterprise can also define business requirements the POLTEKES TNI AU BANDUNG in Bandung.

2.2.1 Analysis Of The Current System Of Assessment

On sub this chapter will discuss about the assessment of the current system by using SWOT analysis.

2.2.1.1 Analysis of SWOT

Based on the SWOT analysis has already been done in Appendix C, can be seen any strategy that was already done POLTEKES TNI AU Bandung for achieving the objectives of the Organization and the needs of just about anything that needed POLTEKES TNI AU Bandung for achieving the objectives of the Organization, from the analysis already done by mobilising the deciding factor of the success of diantarannya as follows:
1. make the planning data architecture, applications and technology
2. Create a development planning system of admissions information, academic information systems, information systems, finance, information systems, library in the form of prototype.

To achieve the success that it will be carried out the planning of the development of information systems in the form of prototypes to support business strategy at the INDONESIAN POLTEKES TNI AU BANDUNG, Bandung.

2.2.2 Inisiasi Perencanaan

Inisiasi perencanaan merupakan tahapan pertama dari pembuatan EAP akan membahas penentuan ruang lingkup, pendefinisian visi misi dan pendefinisian kebutuhan.

2.2.2.1 Defining the vision and mission of POLTEKES TNI AU BANDUNG

The vision and mission for an instance of the school can be said to be guidelines and goals. Without the vision and mission of an agency will not survive and don't know what to do performed by agencies that school. Here is the vision and mission of TNI AU Bandung: POLTEKES
1. The vision
POLTEKES TNI AU BANDUNG c as a place of education is PSF health workers were professionals, tough and reliable.
2. Mission
The Mission of the POLTEKES TNI AU BANDUNG is:
a. Making graduates have an insight in the field of health and are able to devote themselves to the community.
b. develop and disseminate health sciences matra Aerospace Matra in particular.
c. Develop extracurricular student activities in particular.
d. Provide students with competencies, foreign language skills and professions.
e. Hold cooperation with instasi both in and outside the country in the absorption of graduates

2.2.3 Early Business Modeling

On sub this chapter will discuss the business modeling and business process analysis on POLTEKES TNI AU Bandung.

2.2.3.1 Business Modeling

Business modeling is to define a business model that is based on reality. Important modeling is done because it relates to the representation of the definition of business that will be involved in the construction of the EAP (Enterprise Architecture Planning). Modeling business functions using output from the analysis of the enterprise that is as consideration and input events or activities can be categorized as main activity and a supporter of the results of the analysis of enterprise value chain with the method in Figure 2.



Figure 2 Value Chain Education at Politeknik Kesehatan TNI AU Bandung

supporting activities (support activities) in the POLTEKES TNI AU BANDUNG the main activity that occurs in the enterprise in Figure 3.1 is as follows:

1. Inbound Logistics

Inbound Logistics is the main activity associated with the initial input POLTEKES TNI AU BANDUNG. The activities included in the inbound logistics is the planning implementation, PBM PBM acceptance, registration and reporting student birthday PMB. Activity-aktivititas it can support vision Health Polytechnic TNI AU Ciumbuleuit as the place of education in order to print professional health workers, tough and reliable.

2. Operations

The main activities are the operations related to the process of the main goal or vision of the Mission of the POLTEKES TNI AU BANDUNG. Activities that are included in operations, namely the preparation of academic activities, curriculum Management, charging card study plan and check grades, Scheduling of courses and the use of data Management, student management, herregistrasi the value data of students, management of absences, work Management practices, the management of the final project, to improve maintenance products such as installation, training, repair, supply of materials and treatments ... Activities operations can support the vision and mission in POLTEKES TNI AU BANDUNG.

3. Outbound Logistics

Outbound Logistics is a major activity related to the outputs of the input that has been in process. The activities included in outbound logistics i.e. resignation, drop out and making a transcript of grades and graduation. The expected output POLTEKES TNI AU BANDUNG as a college education that is engaged in producing graduates-graduates who are professional, reliable and resilient society.

4. Marketing and sales

Marketing and sales are the main activities related to the promotion of the socialization is done POLTEKES TNI AU BANDUNG.

5. Services

Services are the services provided POLTEKES TNI AU to alumni.

While supporting activity in for 4 parts into:

1. Firm infrastructure

Firm infrastructure is public POLTEKES management of the AIR FORCE as a laboratory, library, administration, boarding, finance, quality assurance, research and public service.

2. Human resource management

Human resource management is supporting activities related to HUMAN RESOURCE management of all activities of TNI AU POLTEKES such as recruitment and admissions ...

3. Technology development

Technology development is supporting activities related to the development of the nonprofit technology resources that would be useful for the company.

4. Procurement

Procurement is supporting activities related to procurement or purchase of a useful tool to support the main activities of the company.

2.3 Design Architecture

On sub this chapter will discuss about, current systems and technology, data architecture, application architecture and technology architecture.

2.3.1 Data Architecture

Data architecture aims at defining the primary data types (data entities) needed organization in doing its business activities. The architecture of the data will be in the identification of data apa aja will be used.

2.3.1.1 Relationship Entity Data By Business Function

The purpose of this step is to define data entities created (create), use (reference) and updated (update) by business function. Business functions that are defined in the direlasikan business model with data entities in the form of a matrix. Based on tables, rows stated business functions, while the columns consist of entity data. A business function can be associated with some entity data as entity data can be associated with multiple business functions. The following data entity relationships and business functions in the table 1.

Table 1 Relationship Entity Data by business function

Entitas Data / Fungsi Bisnis	Calon Mahasiswa	Pendaftaran	Hasil Tes	Registrasi Mahasiswa	Dosen	Mahasiswa	Matakuliah	Prodi	Absensi	Ruang	Kelas	Nilai	Kuesioner	Krs	Jadwal Kuliah	Tahun Akademik	Wisuda	Pendapatan	Transaksi Bayar	Transaksi Keuangan	Alumni	Anggota	Buku	Peminjaman Buku	Pengembalian Buku	Pegawai	Gaji	Pengadaan Barang
Penerimaaan Mahasiswa Baru	C U R	U R																										
Registrasi ulang Mahasiswa baru	R		R	C U R																								
Pelaporan penerimaan mahasiswa baru	R		R	R																								
Penyusunan kegiatan akademik																C U R												
Pengelolaan kurikulum							C U R																					
Pengisian kartu rencana studi						R	U R	R						C U R														
Penjadwalan mata kuliah dan penggunaan ruangan							R			U R	R					U R												
Pengelolaan data herregistrasi mahasiswa						R	R	R											U R	U R								
Pengelolaan data nilai mahasiswa						R	R		R			R																	
Pengelolaan absensi						R	R		C U R																			
Pengelolaan kerja praktek						R	R																					
Pengelolaan tugas akhir						R	R																					
Pengelolaan transkrip nilai akhir						R	R						U R															
Pengelolaan Wisuda						R											U R											
Pengelolaan Droup out						R																						
Pengelolaan pengunduruan diri						R																						
Pengelolaan data alumni																	R				C U R							
Pengelolaan perpustakaan						R															C U R	C U R	U R	U R				
Pengelolaan pegawai																									C U R			
pengelolaan gaji pegawai																										U R		
Pengadaan Barang																												C U R

2.3.2 Application Architecture

At this phase aim to define the main types of applications required to process data and support the business functions of the enterprise. Application architecture is not a draft system or needs analysis system, but is defining the application needed to manage data and provide user information to do business.

2.3.2.1List Of Candidate Application

After a business function and data architecture is defined in the next stage is the definition of candidate applications which is the encouragement of the needs of the business functions to manage data that has been defined in the application architecture. Candidate application can be obtained by reviewing the Information Resource Catalog (IRC). Candidate list this application based on the business processes that have been modeled on a sub-chapter 3.1.3.2 where there is business process modeling using BPMN tools.

Business process placed on a sub chapter 3.1.3.2 because it corresponds to the output of the process modeling business functions using the methods of the Value Chain. Next steps propose a candidate application, here is a candidate for the proposed application can be seen atTabel 2 Kandidat Aplikasi

CANDIDATE INFORMATION SYSTEM	A DESCRIPTION OF THE INFORMATION SYSTEM
PMB Information System	A useful system for registration, re-registration and acceptance of the new prospective students
Academic Information System	The system is useful to cultivate academic lecturers and students to pass
Financial Information System	A system that is useful for processing the payment of student and employee payroll
CANDIDATE INFORMATION SYSTEM	A DESCRIPTION OF THE INFORMATION SYSTEM
Library Information System	Useful information system for processing loan books

2.3.2.2 Candidate Mapping System With Organizational Units

Next is the matrix of candidate mapping applications with organizational units, this table aims to see anyone of the users who can access the application. The matrix can be seen in table 3.Tabel 3 Pemetaan Kandidat Sistem Dengan Unit Organisasi

Information / Candidate Systemi	PMB Information System	Academic Information System	Financial Information System	Library Information System
Organizational Unit				
The Director		✔	✔	
BAAK	✔	✔		
BAUK	✔		✔	
Program Of Study		✔		
Lecturer		✔		
UPT. Library				✔
Students		✔		

2.3.3 Architectural Technology

In architecture the technology there are some steps that are performed in order to define the needs of the technology as well as environmental dibutuhlan to fit the application architecture that has been defined earlier. The steps that are performed on architecture technology:

2.3.3.1 Determination of the Foundation and principle of Technology

The purpose of the making of the technology architecture is to define the main type of technology needed to provide the appropriate technology environment for applications to perform data management. In the construction of architectural technology with the EAP approach, the first step needs to be done is to identify principles and Foundation of technology. This step aims to identify basic principles for grounding and grounding potential technology needed to support an environment of shared data in the enterprise. The result of the identification can be seen in table 4.

Table 4 the determination of the Foundation and principle of Technology

Group	Principle Of Technology Platform
Software	1. The operating system windows 7
	2. application using interface-based Graphical User Interface (GUI).
	3. diimplemntasikan Application using object-oriented programming.
	4. Applications made with the same programming language and the same dbms
	5. The existence of supporting applications like miscrosoft word, excell, adobe reader and applications of graphic design
	6. An application has data security mechanisms to prevent the occurrence of data access illegally (e.g. password).
	7. the guardianship of the software is done at regular intervals
Hardware	1. using the server
	2. Speesifikasi computer device to suit your needs
	3. The existence of a printer, photocopy, fax, scanner
	4. Maintenance of information technology software communication be done periodically.
Network	1. using lan, wifi
	2. Use the network devices such as switches, routers, hubs
	7. the guardianship of the software is done at regular intervals

2.3.3.2 Distrbusi Data and information systems

This stage aims to define a strategy for distributing data and applications to support the business activities of TNI AU POLTEKES. Distribution is defined as the physical storage location/placement of servers and workstations. The artifact will be produced at this stage in the form of a map of the spread of data entities and the application relative to the location of the business, the location of the data and the location of the application is stored. Location of business happening in POLTEKES Bandung INDONESIAN AIR FORCE are:

a. Room Director
b. Indoor BAAK
c. Room BAUK
d. the Chamber Prodi
e. Room Lecturer
f. Library

2.3.3.3 The Configuration Of The Platform Technology

The activities carried out at this stage aims at defining the configuration of the platform technology on konseptualnya level. EAP defines the configuration of the technology platform which includes three conceptual technology architecture level, namely:

1. Conceptual workstation, i.e. facilities that are used by the user to access the data and applications.
2. Conceptual enterprise network, describes the relationship between the components of computing systems in the design. Computational components include computer devices, i/o devices, storage devices, and telecommunications facilities. Conceptual network proposed for technology architecture can be seen in Figure 3.

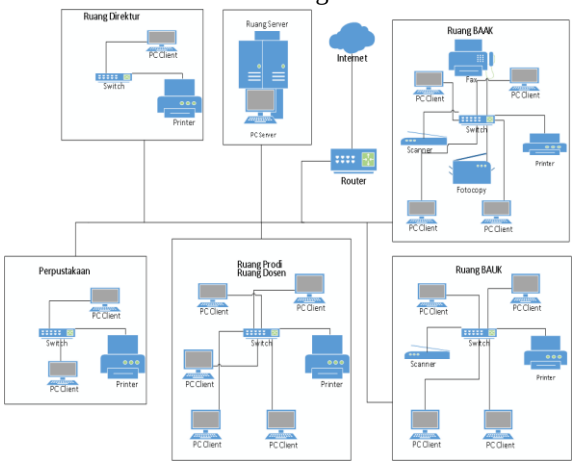


Figure 3 Conceptual Network POLTEKES TNI AU Bandung

3. Business systems architecture Architecture business system is the technology used to implement and manage enterprise applications and databases. Access to business systems/applications by users with the aim of:

a. Operational Information Update; create, manipulate or remove operational data interactively. The application provides these functions through the interface.

b. Operational Review Report; helps the user to get different views of reports

c. Operational Informastion Inquery; allows applications to access data interactively and view the data in a variety of formats and media

d. Ad hoc information review; provides facilities for accessing enterprise data with SQL or other languages.

e. Business Inquery and Rules Update; allows a user has been authorized to change the rules that are defined for the operation of the business system.

For more details of the proposed business systems architecture can be seen at figure 4.

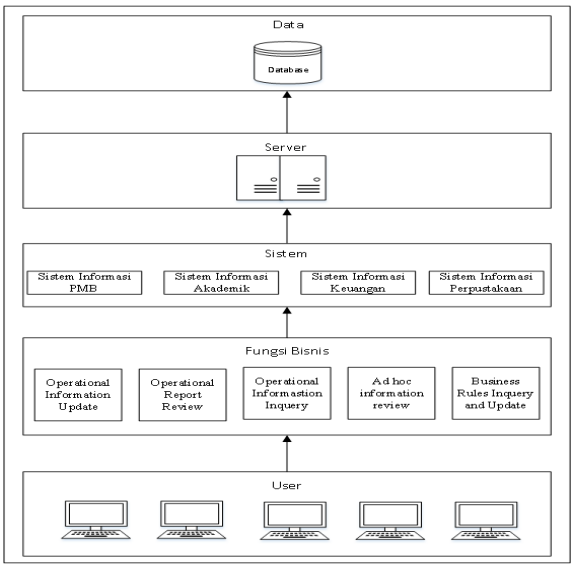


Figure 4 architecture of business system

2.4 Prototype System

On sub-this chapter will discuss about prototype development scheduling information system for POLTEKES TNI AU Bandung in order to give an overview of the implementation of the enterprise architecture plan that has been created. The main function of the prototype was to show application interface between the interaction with users, the first to be discussed is the mockup:

2.4.1 The Order Of Application And Scheduling Implementation

The order of application and scheduling pelaksaanan needs to be done before implementing information system by observing the estimation time of implementation.

Table 5 the order of Application and scheduling Pelaksanaan

No	Information Systems	Estimation of days	Month Start	Moon Completed	Duration (Months)
1	Academic Information System	120	October	January	4
2	Financial Information System	90	October	December	3
3	PMB Information System	30	September	October	1
4	Library Information System	60	January	February	2

3. CLOUSURE

Pada bagian ini, menjelaskan tentang kesimpulan yang berisi hasil-hasil yang diperoleh setelah dilakukan penelitian. Hasil tersebut bukan merupakan hal yang bersifat baku akan tetapi dijadikan acuan dan referensi dalam perencanaan pengembangan sistem di organisasi.

3.1 Conclusion

Enterprise architecture planning are applied on POLTEKES TNI AU Bandung, based on an interview then it can be taken on conclusion of the proposed data architecture is sufficient compliance with the Organization's business needs, application architecture that could support the already proposed in the business organization and the proposed technology architecture can support the Organization's business. Prototype for academic information systems, information systems, finance, information systems, admissions and library information system proposed is in compliance, to its implementation required the permission of the Executive of the organization.

3.2 Advice

Enterprise architecture planning are applied on POLTEKES TNI AU Bandung, then the advice given is this research could be dilanjutkan up at the stage of determining the cost of manufacture information system, human resources involved, the determinants of the success of the application of information systems in an organization.

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