INFORMATION SYSTEM STRATEGIC PLANNING BASED ON TOGAF ADM FRAMEWORK IN BUDGET, TREASURY, AND ACCOUNTING FUNCTION OF REVENUE AND FINANCIAL MANAGEMENT DEPARTMENT BANDUNG REGENCY

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Abstract
Revenue and Financial Management Department (DPPK), a part of Bandung Regency Government, is a public oriented enterprise that engaged in financial world. DPPK needs to improve their information technology (IT) usage for upgrading Indonesia e-Government Ranking. For carrying out IT usage, DPPK needs information system strategic planning that is supported by enterprise architecture (EA) concept. By designing enterprise architecture using TOGAF ADM framework, DPPK has long-term information system strategic planning that align with its business strategy. This result can be useful to optimize IT resource that support business activities, in order to achieve goal and objective based on the vision and mission of DPPK.

Keywords: information system strategic planning, enterprise architecture, TOGAF ADM

1. Preliminary

The development of the era of IT into the era of data technology, is a phenomenon that is quite interesting for people to prepare taking a new step. In this transitional period, the use of IT is still tend to be done for every organization, whether profit-oriented and public service-oriented. One use of IT in government agencies could be seen with their e-Government, its the use of IT to support government services and operations [1]. Based on e-Government Directorate, 2014, the average value of Indonesian e-Government Ranking (PEGI) Bandung Regency Government in 2014, is 2.43 [2]. This indicate that the performance ratings of Bandung Regency Government in using IT is still included in the poor category.

Bandung Regency Government try to increase ITusage in operational case starting on a small scale, such as the regional working units (SKPD) such as DPPK. In accordance with current conditions, DPPK has implemented IT to support business activities. Application named SIMDA Keuangan used in Budget, Treasury, and Accounting Deputy. According to the results of observations in DPPK, the existing business processes in budget, treasury, and accounting deputy can be supported by SIMDA Keuangan. It is intended to help financial management process, especially on transactional level that can produce standard financial document. It still can not support the managerial functions, such as monitoring and approving processes. From the mentioned problem, it can be concluded that DPPK requires information systems strategic planning, aligned with business strategy and IT. Therefore, DPPK requires IT Master Plan as one form of strategic planning.

In order to create a strategic information systems plan, EA concept is needed to develop an integrated IT usage. A framework is also needed as a basis for managing complex information systems. Appropriate framework to be implemented in the case of DPPK is The Open Group Architecture Framework (TOGAF), by following the phase in the Architecture Development Method (ADM). TOGAF ADM chosen because it has a flexible nature, can adjust to the changes and needs during the design conducted. And phase for strategic planning of the TOGAF ADM was very detailed, so that DPPK would be easy to understand clearly.

2. Study Literature

2.1 Information System Strategic Planning Concept

Strategic planning is not just a statement of an organization strategy. The strategic planning process begins by defining strategic objectives, then develop some strategy plan to achieve the desired change. The strategy should be coherent, consistent, and purposeful. Coherence means obviously within information system organizations and businesses, consistent means to be constructed in accordance with a common interest, and purposeful means can point to organizational goals. Establishing an Information System Strategic Plan adds value to the organization. A company should think through what it hopes to accomplish with its strategic planning project. For a large complex company, should think about planning approach from a corporate or divisional scope.

2.2 Enterprise Architecture Concept

According to The Open Group, Enterprise Architecture is a description of the stakeholder mission that included information, functionality, location, organization, and performance parameters. EA describes plans to build a system or set of systems. Zachman defines EA as a blueprint of relationships mapping between components and all the people working in the company consistently to improve cooperation and coordination between them. So it can be seen that it is a concept for planning, designing, and managing information systems where IT can meet the needs of business in the organization. If there has been a harmony between business and IT resources, it is no longer a gap in the development of EA.

2.3 TOGAF ADM

TOGAF is a set of principles to be found in the value of an organization to be relied upon in making architectural and planning decisions, develop policies, procedures, and standards. Alignment between business goals with IT capabilities is importance key in defining the principles on TOGAF. TOGAF confirms that the principles is numerous, future-oriented, and approved by the top level management. TOGAF consist of 4 main architecture domain [3], such as :

1. The Business Architecture which defines the business strategy, management, organization, and key business processes in the organization.
2. The Application Architecture which provides the blueprint for am applications system to be deployed, the interaction between the application system, and its relationship to the main business processes in the organization.
3. The Data Architecture which explains the structure of the logical and physical data assets of the organization and management of data sources associated with each other.
4. The Technology Architecture which describes the hardware, software, and network infrastructure required to support the deployment of main applications.

TOGAF Architecture Development Method (ADM) is important feature that enable company to defines business requirement and build specific architecture to meet the needs. ADM form an iterative cycle for the entire process, between phases and in each phase which every iteration new decision should be taken. The decision is intended to determine the extent of enterprise scope, level of detail, time targets to be achieved and architectural assets that is explored in the enterprise continuum. ADM is a common method so that if necessary in practice, ADM can be adjusted to the particular specific needs, for example, combined with other frameworks that ADM produces specific architecture to the organization. Figure 1 describes TOGAF ADM which consist of stages to build an enterprise architecture:
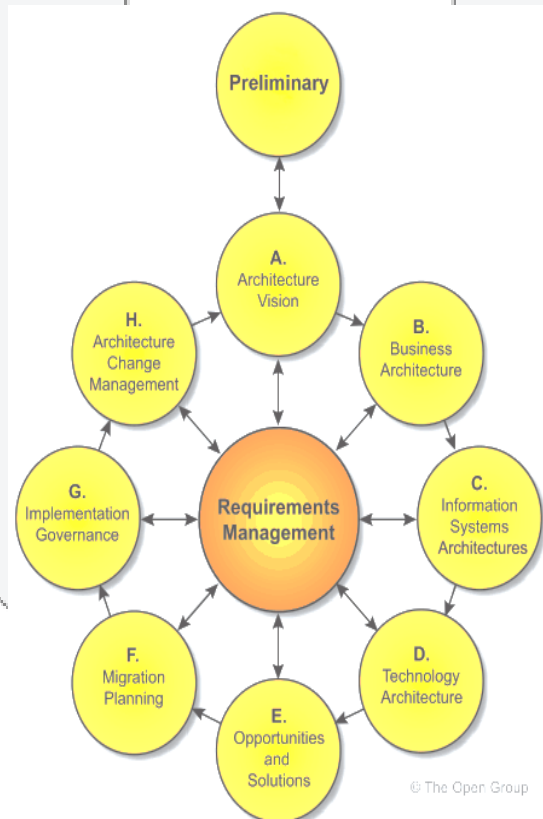

Figure 1. Cycle of TOGAF ADM[1]

3. Research Methodology

This research uses TOGAF ADM as a method to make information system strategic planning using EA approach. It starts from Phase A until Phase E, the method is defined by research conceptual model. Below Figure 2 shows the details of research conceptual model:
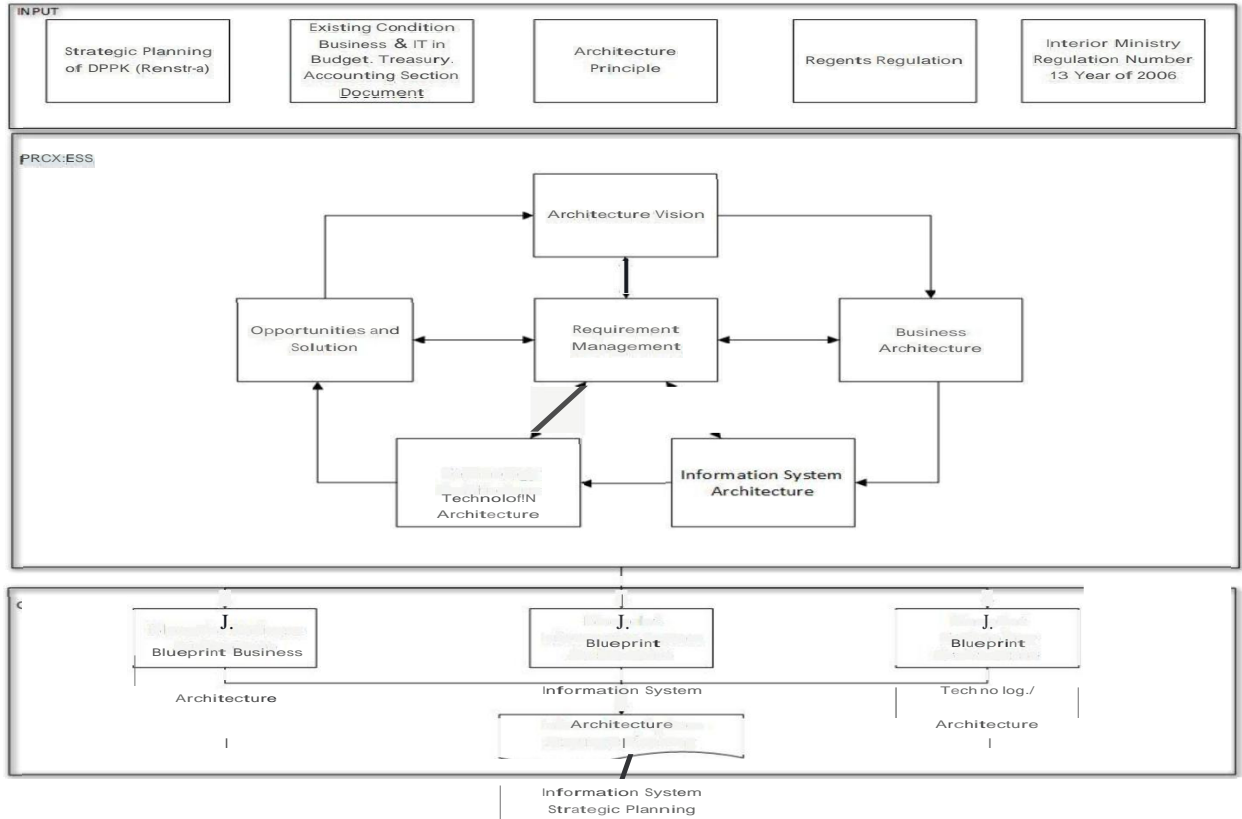

Figure 2. Research Conceptual Model

4. Analysis and Design

4.1 Value Chain Diagram

Value Chain Diagram is one of the output from the architecture vision phase. Value chain describe set of activities that an organization carries out to create value for public. DPPK is the organization that focus for the taxation management and financial management of Bandung Regency. The primary activities in government is public services, so the primary activities in DPPK just focus in public services which is in taxation service. For the financial management in DPPK placed in support activities that related with internal of Bandung Regency. This figure below show the value chain of DPPK carries out their value to the public:
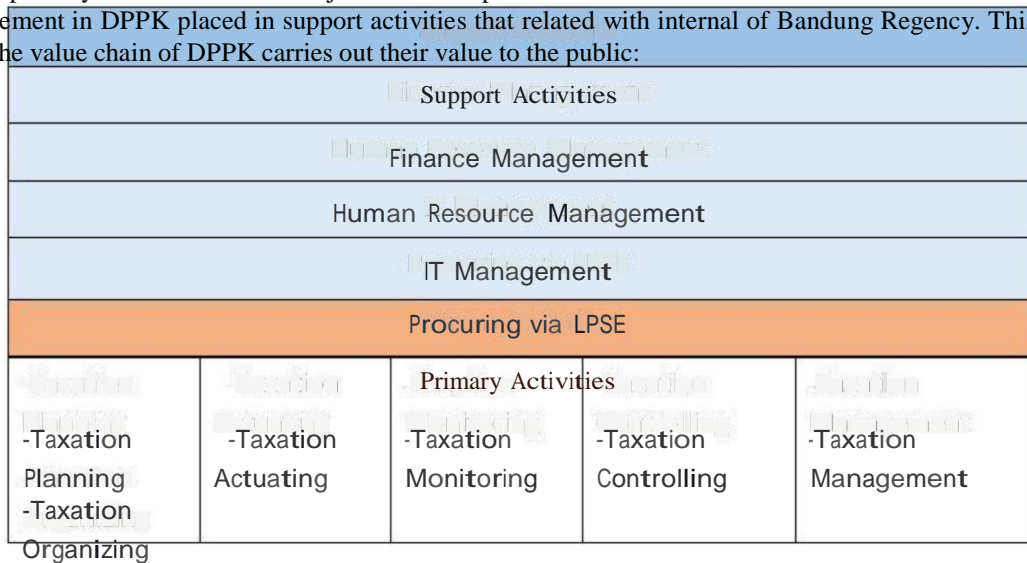

Figure 2. Value Chain of DPPK

4.2 Solution Concept Diagram

Solution concept diagram is another output from architecture vision phase that show the concept of solution which offers a high-level orientation of the solution that is envisaged in order to meet the objectives of the architecture. Executive Information System (FMS) has two functions, such as approving and monitoring. FMS user is only the one who has high-level management position, using many channels such as internet, intranet, extranet, and mobile. FMS connects to all information system in DPPK using component in middleware, such as web server, database server, and web services. The back office shows the system that is integrated by FMS as a part of DPPK System, such as SIMDA Pendapatan, SISMIOP, and SIMDA Keuangan. There is also a bank as a facility for doing payment transaction that is done by tax payer. Below Figure 3 shows the solution concept diagram:
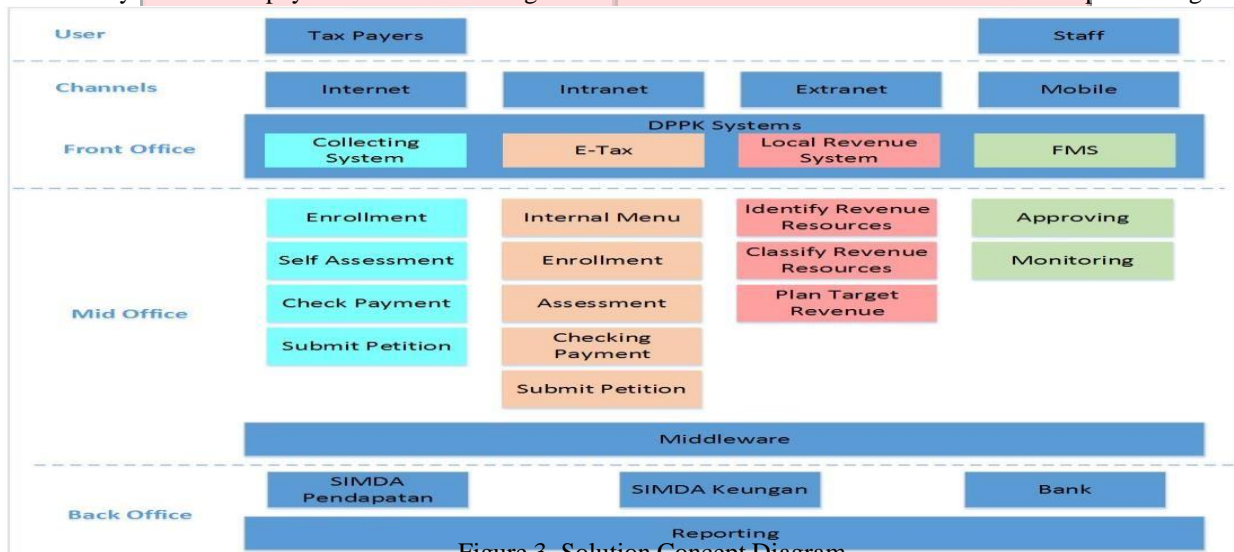

Figure 3. Solution Concept Diagram

4.3 Business Footprint Diagram

Business Footprint Diagram describes the links between business goals, organizational units, business functions, and services, and maps these functions to the technical components delivering the required capability. It is defined from the strategic plan of DPPK and also analyzing the existing condition in DPPK. Below Figure 4 depicts business footprint diagram of DPPK:
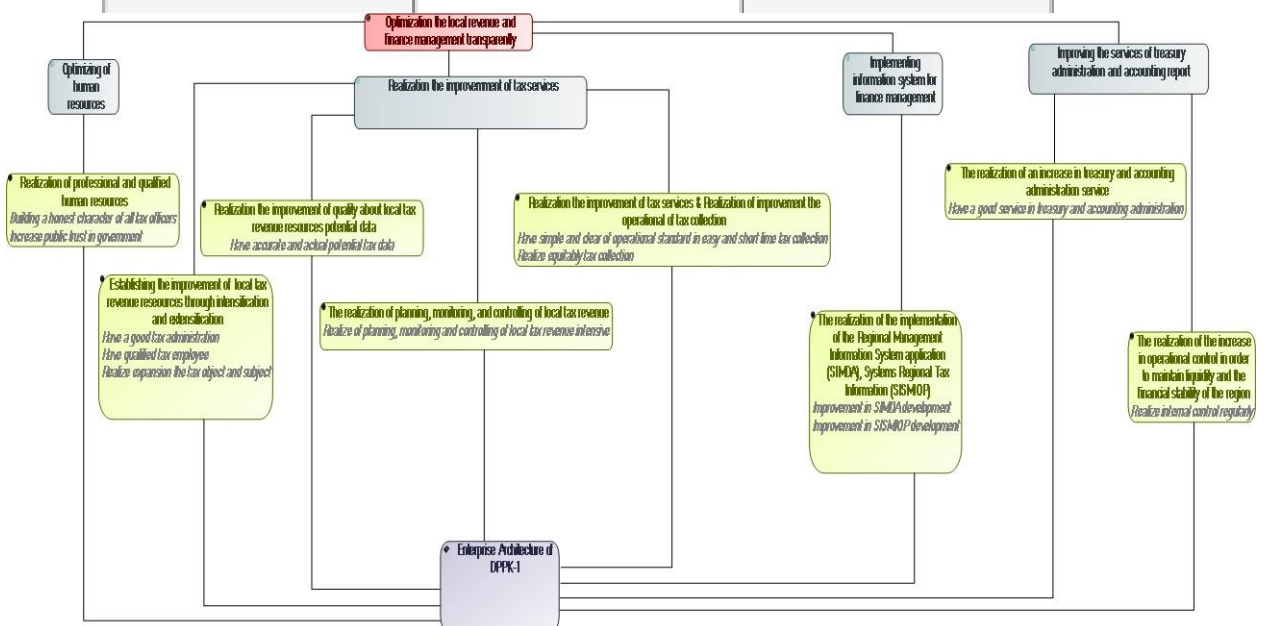

Figure 4. Business Footprint Diagram

4.4 Business Architecture Gap Analysis

Gap analysis defines the comparison of existing business architecture with target business architecture, in order to find the gap between them. It can show the required solution after analyzing the gap. It can give an overview to

high level management to determine whether DPPK has the resources to meet the vision, mission, goal, and objective. Below is the Table 1. depicts business architecture gap analysis:

Table 1. Business Architecture Gap Analysis

Requirements	Fulfillment			Analysis	Solution Target
	N	P	F		
Realize using SIMDA optimally			V	The usage of SIMDA Keuangan is usefull for the staff in doing administration of Budget, Treasury, and Accounting Section.	Keep up to date with the development from BPKP as the developer of SIMDA Keuangan.
Realize internal control regularly		V		High level management still do internal control manually and if the financial documents are already published.	Implement Financial Management System to monitor and review all financial document.
Have a good service in treasury and accounting administration		V		Business activities especially in checking, validating, and signing are still done manually.	Implement Financial Management System for high level management. So, the document can be checked, validated, and signed easier.

4.5 Class Diagram

Class diagram describes the static structure of the symbols in new system named Executive Information System. This model allows graphically represent symbol diagrams containing classes. Below Figure 5. Depicts class diagram:

Figure 5. Class Diagram FMS

4.6 Data Dissemination Diagram

Data Dissemination Diagram is a diagram illustrating the relationships between data entities, application es where data entities are clearly depicted in the logical application components [3]. emination diagram:
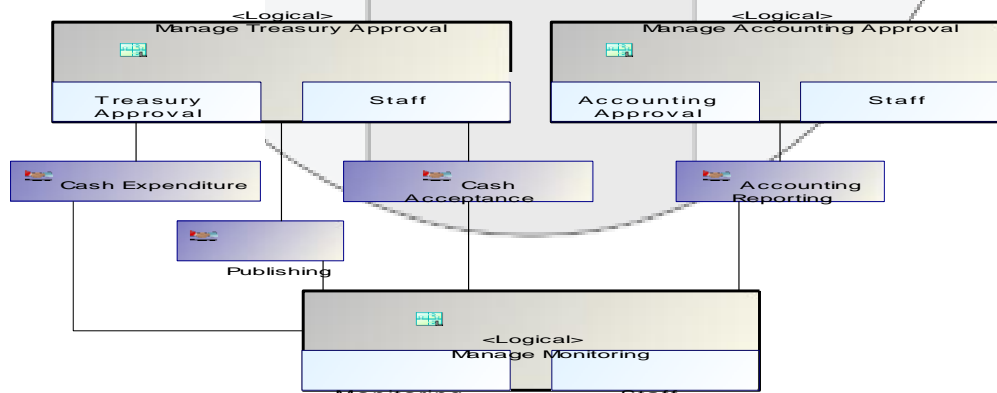

Figure 6. Data Dissemination Diagram FMS

4.7 Financial Management System Dashboard

Financial Management System Dashboard shows how is it worked in order to do integration with other application in DPPK. There is database of SIMDA Keuangan that have data entities and related with FMS. In data warehouse those data become to another form, so it can be used by FMS. FMS can monitor and approve treasury document, show graphical treasury report summary and trend analysis about revenue and expenditure. FMS can monitor and approve accounting document, show graphical treasury accounting summary and trend analysis about journal, adjustment, and trial balance. Below Figure 8 shows FMS architecture:
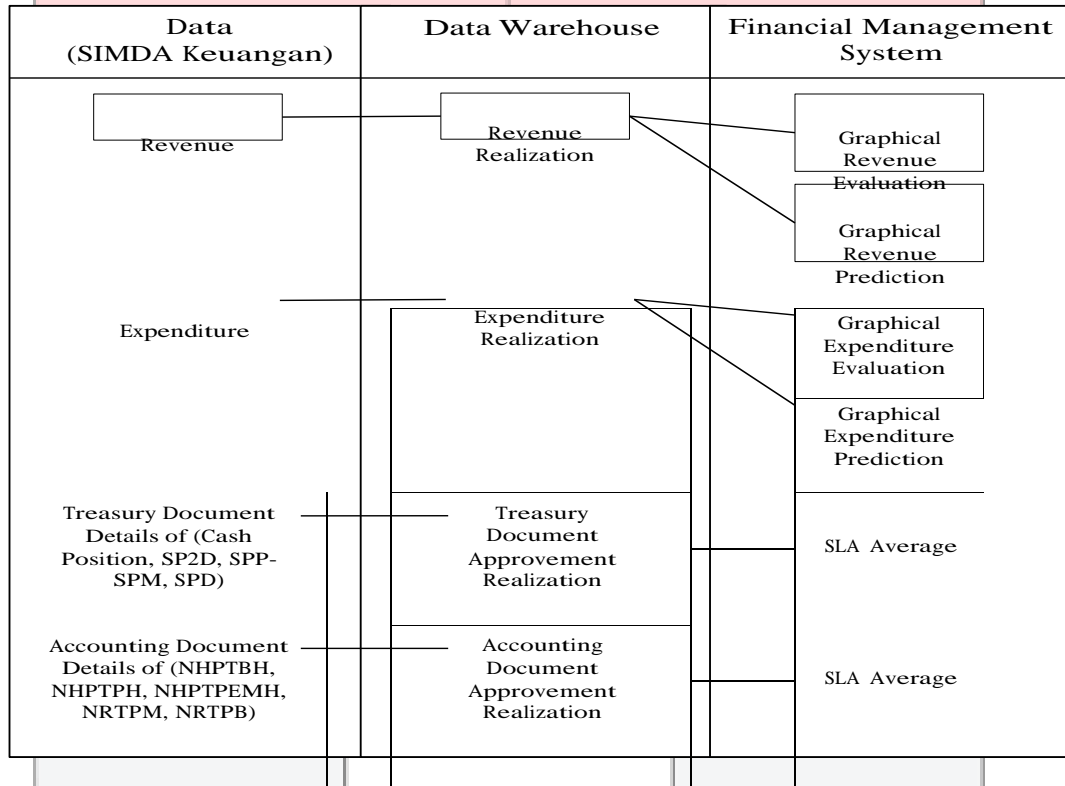

Figure 8. FMS Dashboard

4.8 Information System Gap Analysis

Gap analysis defines the comparison of existing information system architecture with target information system architecture, in order to find the gap between them. It can show the required solution after analyzing the gap. It can give an overview to high level management to determine whether DPPK has the resources to meet the vision, mission, goal, and objective. Below is the Table 2 depicts information system architecture gap analysis:

Table 2. Information System Architecture Gap Analysis

Requirements	SIMDA Keuangan	Analysis	Solution Target
System supports all business process	F	All business process in treasury and accounting already fully supported	Keep using SIMDA Keuangan and stay update with new version
System can share data	F	System can share data such as export and import data	Keep using SIMDA Keuangan and stay share data
System use intranet/extranet service	F	System can use intranet/extranet service	Keep maintain intranet/extranet service
System has updated information	P	Updated information only about operational things	Updated information can be about strategic things
System has high level security	F	System is mandatory developed by BPKP, so it is fully high level security	Keep update with the new version
System can be used in high level management	N	System only can be used for low level management (staff)	Implement system that can interact with high level management

4.9 Topology Network

Topology target can show the ideal network topology that fulfill requirement. With the topology defines how the workstation, or nodes, within the network are arranged and connected to each other. Below Figure 10 shows the target topology network of DPPK:
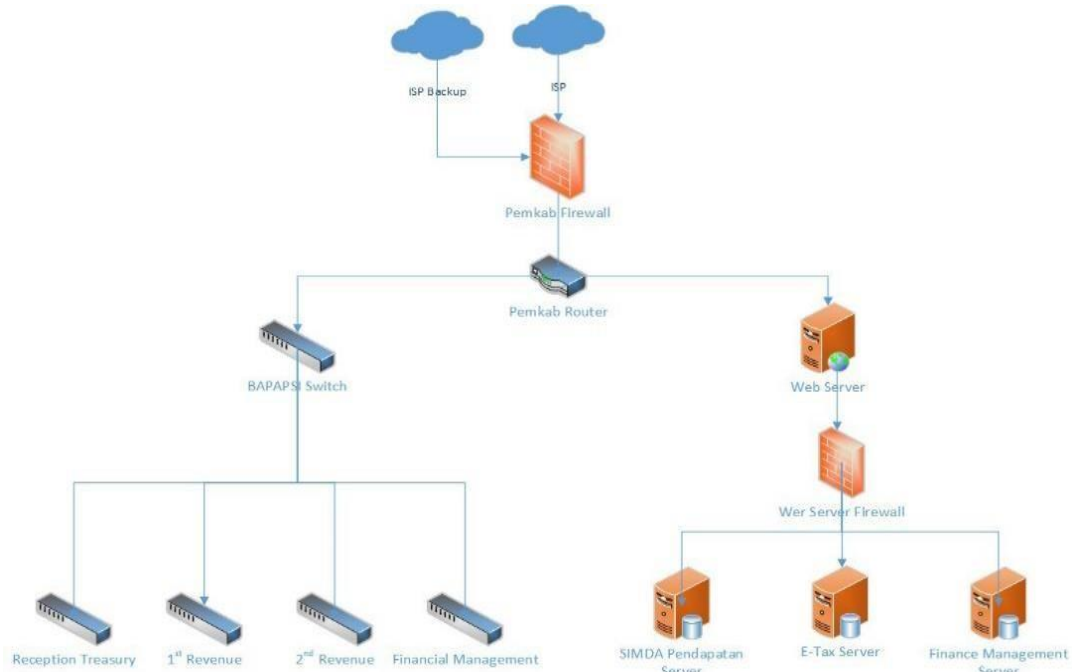
Figure 10. Topology Network

4.11 Technology Architecture Gap Analysis

Gap analysis defines the comparison of existing technology architecture with target technology architecture, in order to find the gap between them. It can show the required solution after analyzing the gap. It can give an overview to high level management to determine whether DPPK has the resources to meet the vision, mission, goal, and objective. Below is the Table V.18 depicts information system architecture gap analysis:

Table 3. Technology Architecture Gap Analysis

Requirement	Fulfillment	Solution Target
Technology supports all running system	P	Develop technology especially on the 1st and 2nd Revenue Section
Capable to have centered storage media in a network	N	Cooperate with BAPAPSI to make centered storage media
Have reliable security	P	Cooperate with BAPAPSI to maintain the security
There is distributed communication network	P	Cooporate with BAPAPSI to make distributed communication network
Technology bridges application with different platform	N	Cooporate with BAPAPSI to bridge application with different platform
Technology usage based on requirement	P	Cooporate with BAPAPSI to analyze usage
Network connection is connected with all device	P	Cooporate with BAPAPSI to make connection in all device
There is back-up for network	N	Cooporate woth BAPAPSI to deploy back-up network
There is controlling and maintenance for technology usage	P	Cooporate with BAPAPSI to make maintenance schedule

4.12 Roadmap

The Architecture Roadmap lists individual work packages that will realize the Target Architecture and lays them out on a timeline to show progression from the Baseline Architecture to the Target Architecture. The Architecture Roadmap highlights individual work packages' business value at each phase [3]. Below Table 10. shows the roadmap:

Business Architecture		2016	2017	2018	2019	2020
E-Tax	Plan taxation by online		v			
	Evaluation by online		v			
	Enrollment of PBB and BPHTB by online			v		
	Data collection of PBB by online		v			
	Assessment of PBB by online				v	
	Payment PBB and BPHTB by online	v				
	Restitution of PBB and BPHTB by online	v				
	Reduction of PBB by online	v				
	Objection tax by online					v
	PBB refund by online			v		
	Correction PBB by online					v
	Reduction or deletion sactions by online					v
Local Revenue Managament System	Plan Taxation for Revenue Process by system		v			
	Establishment Tax Object by system		v			
	Evaluation of Taxation Management by system				v	
Collecting System	Enrollment New Tax Payers by online			v		
	Self Assessment by online			v		
	Checking Payment by online			v		
	Petition Submission by online		v			
	SKPDLB by online		v			
Financial Management System	Approving treasury report online			v		
	Monitoring treasury online			v		
	Approving accounting report online			v		
	Monitoring accounting online			v		
Information System Architecture						
Financial Management System	Website Application FMS			v		
Local Revenue Managament System	Desktop Application Local Revenue Management System		v			
Collecting System	Website Application Collecting System		v	v		
	Mobile Application Collecting System				v	v
E-Tax	Website Application E-Tax	v				
	Mobile Application E-Tax					v
Technology Architecture						
- Financial Management System	Data Center				v	
- Local Revenue Management System	Security				v	
	Infrastructure	v		v		
- Collecting System	Integration			v		

Figure 10. Roadmap

5. Conclusion and Suggestion

Based on result of analysis and design architecture target in budget, treasury, and accounting section of DPPK, the conclusion that can be conclude are:

1. Existing condition analysis is required to determine the gap which is used for design the architecture target.
2. Architecture target design include architectural of business, data, application, and technology.
3. The initial phase of the design determining the principles for target design, identifying scope and stakeholders, and defining the overview of DPPK solutions.
4. The design of business architecture target includes the identification actor or anyone who is involved with the system, the business services, the relationship between actor with their role and business functions, business interaction between business services provided in all functions of DPPK, the identification requirement based on the goals, objectives and drivers and make business process improvement to meet specific business requirements.
5. Target design of data and application architecture depends and suits with target business architecture.
6. Target design of technology architecture depends and suits with target data and application architecture.
7. Designing roadmap in three years ahead to complete strategic information system planning based on TOGAF ADM Framework.

Suggestions are given based on the results of the design and analysis has been done are:

1. For DPPK staff, especially in budget, treasury, and accounting section, are expected to maintain their performance in using SIMDA Keuangan which supports their business process.
2. For DPPK organization is expected to implement all of this information system strategic planning.
3. For further research are expected to do a research for implementing the strategic information system planning in DPPK based on TOGAF ADM Framework.

5. Bibliography

[1] Palvia, S. C., & Sharma, S. S. (2007). E-Government and E-Governance: Definitions Domain Framework and Status around the World. International Journal of Electronic Governance, 1-12.

[2] Direktorat e-Government. (2014). Pemeringkatan e-Government Indonesia. Retrieved November 2015, from http://pegi.layanan.go.id/tabel-hasil-pegi-4/

[3] The Open Group. (2011). TOGAF Version 9.1. The Open Group.