

# Analysis of System Design of SIPKD (Regional Financial Management System) and SIM PAD (Locally-Generated Revenues Management Information System) Integration in Order to Fulfill the Need for Preparing an Accrual-Based Financial Statements Case Study in The Provincial Government of Jakarta

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**Abstract:** This research aims to determine the needs of information systems required by The Provincial Government of Jakarta in related to the management of retribution revenue and other locally-generated revenues, to find out what is required by SIM PAD and SIPKD in the framework of the management of retributions and other locally-generated revenues, and to analyze the integration of SIM PAD and SIPKD in order to create an integration model for the two systems in order to facilitate the preparation of accrual-based financial statements. This research is a qualitative research with case study method at The Provincial Government of Jakarta. The result of this research shows that the problem in managing the retribution revenue and other locally-generated revenues is that the systems being used are not fully integrated, thus causing the reporting of the revenues-LO, receivable, and allowance for doubtful account for retribution and other locally-generated revenues still being done manually and not in accordance with the accrual base accounting cycle. Therefore, this research will produce a design for integration plan within SIM PAD and SIPKD in order to produce accurate and reliable data, in result to meet the need for accrual-based government accounting standard implementation.

## 1 INTRODUCTION

2016 is a challenging year for government financial management, especially in the case of financial statements, as in accordance with the mandated Government Regulation Number 71 Year 2010 (hereinafter referred to as PP 71 Year 2010) that the deadline for accrual government-based accounting implementation is at the time of preparation of financial statements fiscal year 2015. Prior to 2015 government agencies are still permitted to use Government Regulation Number 71 of 2010 Appendix II, which is cash-based toward accruals similar to Government Regulation No. 24 Year 2005 (hereinafter referred to as PP 24/2005). The adoption of accrual-based government accounting has had a major impact on government financial reporting that previously used the cash-based toward accruals, particularly in recognition for each accrual-based

account. In addition to the issue of recognition the number of reports should be presented also increased from the previous 4 (four) reports into 7 (seven) reports. The additional three new reports are Statement of Operational Activities (LO), Statement of Changes in Surplus Budget Balance, and Statement of Changes in Equity.

Implementation of accrual-based government accounting is of course a challenge for the Provincial Government of Jakarta, the main problem in the spotlight is the problem of information systems. In 2017 the Provincial Government of Jakarta has several independent systems in accordance with their designation. These systems are not integrated because of their development by different work units. These stand-alone systems make the preparation of financial statements more difficult and longer because data from each of these systems should be reconciled with existing data in SIPKD as the main system of financial management

in the Provincial Government of DKI Jakarta. In addition to making it difficult and time consuming, with no integration of the system the preparation of financial statements to be incompatible with the appropriate accounting cycle.

Two systems that become the object of this research is SIPKD (Regional Financial Management System) and Locally-Generated Revenues Management Information System (SIM PAD), some of the things underlying are:

- 1) Reporting of Retribution and other locally-generated revenue-LO account and retribution and other locally-generated receivable account, do not go through the appropriate accounting cycle. The revenue-LO and receivable account is journalize only in reporting period, not at the time of the transaction occurred and only for account that have balance at the end of accounting period.
- 2) Reporting of Retribution Revenue-LO account and Retribution Receivable account do not use SIPKD. as described in the preceding point, the journal process is only made at the end of the accounting period, so in SIPKD the data for that account is only available during the reporting period and is only available for accounts that have balance at the period.

Satrio, et al (2016) in their research states that one of the obstacles in the application of accrual-based accounting is the problem of information systems that do not support accrual based accounting and not fully integrated with each other. Kusuma (2016) also in their research stated that Constraints in the implementation of accrual-base government accounting standard is the preparation of financial statement still done manually using microsoft excell because there is no special software for accrual based government accounting standard.

Based on these matters, this research aims to analyze the needs of information systems required by the Provincial Government of Jakarta related to the management of retribution and other locally-generated revenues and to analyze design of SIM PAD and SIPKD integration to create an integration model for both systems so as to facilitate the preparation of accrual based financial statements through the appropriate accounting cycle and generate more reliable data.

This research will analyze current condition of SIM PAD and SIPKD. this study does not just extend the current finding of the information system requirements for the needs of accrual-based government accounting standard, but also propose

an appropriate system development model for the needs of accrual-based government accounting standard in terms of retribution and other locally-generated revenues management. In creating the integration and development model for SIM Pad and SIPKD researchers will use FAST Method and middleware.

## 2 LITERATURE REVIEW

### 2.1 Information System

The system is one or more components that are interconnected and interact to achieve the goal. Most systems consist of small sub-system components that support a large system. Each sub-system is created to achieve one or more organizational or company goals. While information is data that has been prepared and processed to give meaning to improve decision making process. Increasing the quantity and quality of information will make users make better decisions. (Romney and Steinbart, 2012).

Information system is an arrangement of people, data, processes and information technology that interact to collect, process, store, and provide as output the information needed to support an organization (Whitten and Bentley, 2007).

Organizations or companies need the help of information systems that can assist in running company or organization activities. Information systems also help in management's decision-making. this is also applies to government entities.

Permana, et al (2016) and Sophian (2016) in their research stated information systems have a significant influence in the implementation of accrual-based government accounting standard. the higher the readiness of information systems will affect the readiness of accounting accrual-based accounting

### 2.2 Middleware

Middleware is a generic term used to described software that mediates with other software and allows for communication between disparate applications in a heterogeneous system (Connolly and Begg, 2014). Hurwitz (1998) defines six main type of middleware: Asynchronous Remote Procedure Call (RPC), synchronous RPC, publish/subscribe, message-oriented middleware

(MOM), Object Request Broker (ORB) and SQL-oriented data access.

Al Jaroodi, et al (2010) stated in their paper that currently middleware is essential component for almost any type of distributed environment and network applications. Starting from the hardware infrastructure and run-time support all the way up to the applications, middleware solutions provide endless possibilities to support applications requirements both functional and non-functional. They believe that in the near future we will have more generic middleware solutions that will provide clean interfaces, dynamic functionalities and adaptive operating criteria to support a wide range of networked applications and operating environments Al-Jaroodi, et al (2011), stated in their research that middleware can play an important role in facilitating the design, development and implementation of service-oriented systems and furthermore, middleware approaches will provision non-functional requirements like performance, scalability, reliability, flexibility and quality of service (QoS) assurance.

### 2.3 Framework for the Application of System Thinking (FAST)

In analyzing and designing the development and integration of SIM PAD and SIPKD, we used the FAST (Framework for the Application of System Thinking) method. The Framework for the Application of System Thinking is a compilation of best practices found in many reference and commercial methods. FAST is a flexible framework to support different types of strategies and projects (Bentley and Whitten, 2007).

The stages in the FAST methodology are as follows:

1. Scope Definition  
The first phase of the FAST methodology is scope definition, this phase has the dual function of first answering the question "is this problem worth calculating?", And secondly assuming the problem is worth taking into account, it sets the size and constraints of the project.
2. Problem Analysis  
The second phase is problem analysis, in this phase studying the current system and analyzing the findings to give the project team a better understanding of the problems that triggered the project.
3. Requirement Analysis  
In this phase the project team determine and prioritizing business needs, in order to generate a

system requirements analysis report, system analysts should be close to the user system to identify their needs and priorities.

4. Logical Design  
In this phase the project team changes the form of business needs from the form of words to the image form known as the system model to validate the completeness and consistency of the business needs.
5. Decisions Analysis  
The objectives of this phase are to (1) identify technical solution candidates, (2) analyze solutions of candidates for feasibility tests, and (3) recommend candidate systems as target solutions to be designed.
6. Physical Design and Integration  
The purpose of this phase is to change the business needs (partly represented by the system model) into physical design specifications that will guide the development of the system.
7. Construction and Testing  
There are two objectives of this phase: (1) to build and perform system tests that meet business needs and physical design specifications; and (2) implementation of interfaces between the new system and the current system.
8. Installation and Delivery  
In the last phase performed by the team is to provide a good transition from the old system to the new system.
9. System Operation and Maintenance  
After the system operates, it is necessary to support system (support system) continuously.

From the nine FAST stages that described above, this study is limited to only the fourth stage of FAST Method.

Ariyani (2014) and Firdaus (2016) in their research using FAST methodology for their research, because FAST methodology is an agile method that provide alternatives routes and strategies to accommodate different types of project, technology goals, developer skills and development paradigms.

## 3 RESEARCH METHODOLOGY

### 3.1 Research Methods

This research is a qualitative research with a descriptive analysis. This approach is chosen to address the research purposes that has been

described about what is the requirement of retribution and other locally-generated revenues system that must be fulfilled by The Provincial Government of Jakarta in order to implement the accrual based accounting and how does the design of integration of SIM PAD and SIPKD help The Provincial Government of Jakarta in preparing the accrual bases financial report more efficient and reliable.

This research is single case study with one unit of analysis. Object in this research is regional finance management board (BPKD) of The Provincial Government of Jakarta. This research focuses on the management of retribution and other locally-generated revenues in order fulfill the needs for preparing an accrual based financial statement. We took a case study of the phenomena in BPKD Provinsi DKI Jakarta as regional finance management board. The selection of case study method based on problems occur in BPKD Provinsi DKI Jakarta that requires direct involvement of researchers in this research.

This study uses primary data sources obtained directly from BPKD. The use of primary data sources aims to support the objectives of this study which are to understand how the systems works and to propose an design of integration between the two systems.. We used several research instrument to support data collection process as follows:

1. Interview

We conducted interview with the revenues division, treasury division, information system division and accounting division. The interview aims to obtain an understanding how SIM PAD and SIPKD works and to obtain the information about user requirement and expectations.

2. Document Analysis

We analyzed several internal documents in the form of certain government accounting standard, governor regulation about retribution and other locally-generated revenues management, and structure of SIM PAD and SIPKD. This method aims to obtain an overview of accrual based government accounting standard and the retribution and other locally-generated revenues management process.

### 3.2 Data Analysis

This study uses a deductive approach, data analysis produce a conclusion that originated from the theory or model or main framework used as the basis of

conclusions. We use qualitative descriptive method to elaborate, describe and compare the data obtained during the research. We use the data collected to analyze the integration design of SIM PAD and SIPKD. This analysis will generate information on how the two systems works and what development is needed for both systems in order to fulfill the needs for preparing the accrual based financial report . We also developed a design for integration between SIM PAD and SIPKD using FAST Method. The results of interviews, document analysis will generate scope definition, problem analysis and system requirement as the basis to develop the integration design.

## 4 RESULT

### 4.1 Scope Definition and Problem Analysis

To analyze information system needs in order to better management of retribution and other other locally-generated revenues and reporting in accordance with accrual based government accounting standards, the researchers performs scope definition, problem analysis and system requirement in FAST method.

In the scope definition stage, we do PIECES framework analysis proposed by James Wetherbe (Whitten and Bentley, 2007), it is called as PIECES, because the letters of each of the six categories of PIECES, the categories are Performance, Information, Economics, Control, Efficiency and Service. The result of the PIECES framework analysis is the problem statement. After the scope definition process is completed and the problem statement and scope of system development have been determine then the researcher performs the problem analysis. we conduct the analysis of problem related to the system that currently used SIM PAD and SIPKD. The following is the identification of the problems and consequences that arise from the currently unintegrated SIM PAD and SIPKD.

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Table 1 List of Problems, Impact and Solutions

No	Problem	Impact	Solution
1	The reporting of revenues-LO accounts, accounts receivable for retribution and other locally-generated revenues is done manually.	<ul style="list-style-type: none"> <li>The reporting process becomes longer, because reconciliation is required for each account and each SKPD (work unit).</li> <li>The process of preparing the financial statements is inconsistent with the appropriate accounting cycle.</li> <li>Unable to generate financial reports at any time</li> </ul>	Integrated SIM PAD with SIPKD so that data for revenues-LO account, receivables and allowance for doubtful account for retribution and other locally-generated revenues are transferred from SIM PAD to SIPKD
2	Calculation and reporting for allowance for doubtful account retribution and other locally-generated revenues is done manually using ms excel.	<ul style="list-style-type: none"> <li>The value of the account that goes into the financial statements is potentially miscalculated and incorrect input</li> <li>Unable to present account allowance for doubtful account retributions and other locally-generated revenues at any time</li> </ul>	Additional menu is required for the calculation of allowance for doubtful account retributions and other locally-generated revenues.
3	The menu for payment validation on SIPKD does not suitable with SIMPAD	Unable to validate payment from SIM PAD to SIPKD	A new user interface is required to validate payment data with the data in bank statement.
4	There is no database for revenues-LO at SIPKD to accommodate the assignment and payment data from SIMPAD	Reporting of revenues-LO accounts is done manually	An additional database for revenues-LO and additional menus in SIPKD should be created.

### 4.3 Requirement Analysis

After the current problem is known and understood, the next step is to conduct the requirement analysis to make the system able to overcome the problem. These requirements include the system's ability to do the following:

1. The system can generate revenues-LRA account, revenues-LO account, accounts receivable, and allowance for doubtful account retribution and other locally-generated revenues in the financial statements of the Provincial Government of Jakarta.
2. The system can simplify the process of preparing financial statements from previously done with the manual process, to be more effective and efficient.

3. The system can generate operational reports every month, not only during the financial reporting period
4. The system can generate revenue report data for retribution and other PAD more accurate and complete

### 4.4 Logical Design

The integration between SIMPAD and SIPKD is done through a middleware application in charge of translating data from SIMPAD into a format readable by SIPKD and then sending it to SIPKD on daily basis. Diagram of system integration between SIM PAD and SIPKD can be seen in figure 1.



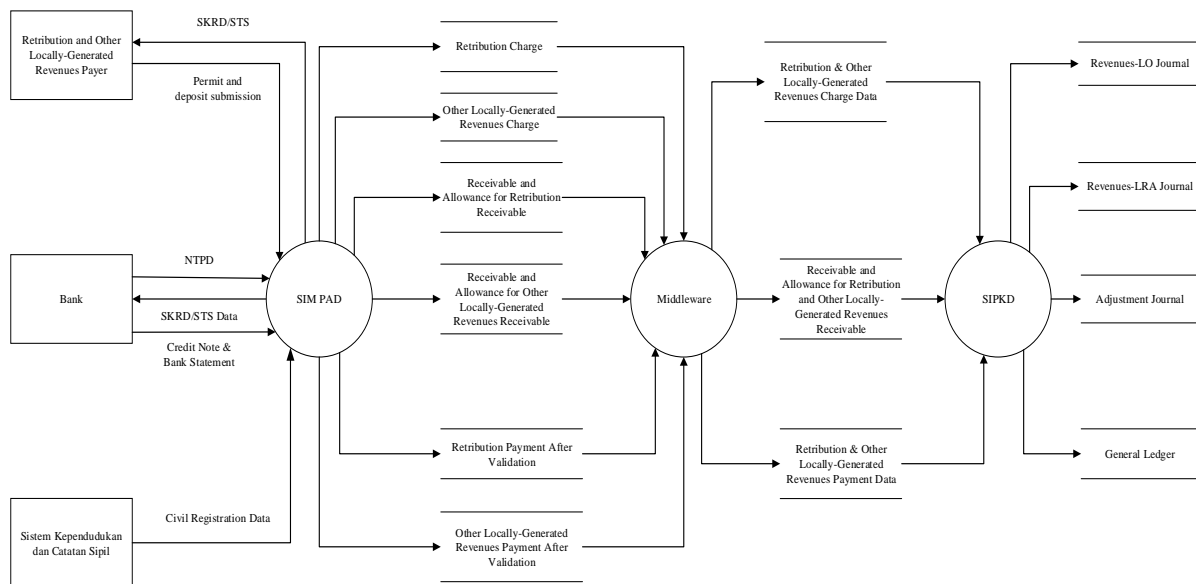


Figure 1 Diagram of System Integration Between SIM PAD and SIPKD

Based on figure 1, the following is Mapping data transfer that is done from SIMPAD to SIPKD through middleware:

1. Data transfer from retribution charge record and other locally-generated revenues charge record in SIM PAD into retribution and other locally-generated revenues charge record in SIPKD.
2. Data transfer from retribution payment record and other locally-generated revenues payment record in SIM PAD into retribution and other locally-generated revenues payment record in SIPKD
3. Data transfer from receivable and allowance for receivable retribution record and receivable and allowance for receivable other locally-generated revenues record in SIM PAD into receivable and allowance for receivable retribution and other locally-generated revenues record in SIPKD.

In addition to integration design, we also propose a system development both in SIM PAD and SIPKD. Development on SIM PAD is an additional menu and database for receivable and allowance for receivable retribution and other locally-generated revenues, receivable write-off process and validation for retribution and other locally-generated revenues payment to replace the manual input data for payment of retribution and other locally-generated revenues. While development in SIPKD is an additional process which is automatic journal for revenues-LO, revenues-LRA, receivable and

allowance for receivable account to replace manual journal process.

#### 4.5 Advantage of The Proposed Integration and Development Model

The integration and development model of SIM PAD and SIPKD that has been described has several features that can assist The Provincial Government of Jakarta in terms of the management of retribution and other locally-generated revenues and reporting in the financial statements in accordance with the appropriate accounting cycle and more reliable account data.

The first advantage is that there is no need to do manual data input on retribution payments and other other locally-generated revenues data because the data is transferred from SIM PAD to SIPKD so as to minimize error during input and increase efficiency because there is no need to input one by one. The second advantage is retribution and other locally-generated revenues charges data generated by SIM PAD can be transferred to SIPKD, which is currently unavailable in SIPKD and the data can then be used as a basis for doing a revenue-LO journal.

Based on the first and second advantages, it relates to the third advantage of not having to do manual journals for revenue-LO recognition and revenue-LRA, since the journal will be automatically performed by the system based on the

charge and payment data of retribution and other locally-generated revenues that have been transferred from SIM PAD to SIPKD. Retribution and other locally-generated charge data will serve as the basis for revenue-LO journal, while payment data will serve as the basis for revenue-LRA journal. This automated journal has several advantages: time efficiency because the journal does not need to be done manually and one by one, minimize journal errors that can occur in manual journals, it does not need much human resources to do journal considering the large number of retribution and other locally-generated revenues transactions.

The last advantage is that there is no need to calculate and journal the allowance for bad debts by manual. One of the proposed developments in SIM PAD is the addition of menus and databases for calculation of receivables and allowance for retribution and other locally-generated revenues receivables. The allowance data of these receivables will then be sent to SIPKD, which this data will serve as the basis for SIPKD to perform adjustment entries for allowance for retribution and other locally-generated revenues receivables at the end of the accounting period. This process has several advantages that minimize miscalculation of allowance for receivable account that has been done manually and also the advantages of the automatic journal as mentioned in the third advantage above.

## 5 CONCLUSIONS

Based on the results of the analysis and discussion that has been discussed in the previous section, some conclusions obtained are as follows:

1. To meet the needs of accrual-based government accounting standard implementation, it is necessary to integrate the SIM PAD and SIPKD. Such integration is required for data on retribution and other locally-generated revenues to flow into SIPKD and can be used in SIPKD for accrual based financial reporting. With the data flowing it will eliminate the manual process that has been done so as to minimize errors that may occur.
2. In order to integrate SIM PAD with SIPKD, some adjustments are required to fit the accounting needs of government-based accruals. Such adjustments need to be made on either the SIM PAD or SIPKD, the adjustments are as follows:
  - a. There should be additional database and menu to calculate the allowance for doubtful

account retribution and other locally-generated revenues either on SIPKD or SIM PAD.

- b. There needs to be a new menu for validation of retribution and other locally-generated payment in SIM PAD to replace the current manual validation menu.
- c. There needs to be a new database in SIPKD to accommodate the charged and payment of retribution and other locally-generated revenues data sent from SIM PAD.
- d. It is necessary to make changes to the menus and databases to conduct and retain revenue-LO, revenues-LRA and allowance for doubtful account journals.

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