Supplies and Property Services Office

Inventory and Annual Procurement Plan Stock Availability Monitoring System

FINAL REPORT

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A. Scope Of Work/Definition Of The Problem

Two of the major functions of the Supplies and Property Services Office (SPSO) of the University of the Philippines Visayas Tacloban College are the (a) Inventory and (b) Annual Procurement Plan Stock Availability Monitoring. These two processes are necessary in order for the office to keep track of data pertinent to the inventory and procurement of expendable and non-expendable items of the college. The SPSO performs these functions through the use of different forms as media for data inputting, tracking and filing.

Presently, SPSO personnel have the option to manually fill-up a hard copy of the form or to encode the data in Excel format. Accomplished documents and records are then stored as hard and/or soft copies which are stored in the SPSO office.

The existing process has apparent inconveniences and disadvantages. Tracking of records is not an easy task since the SPSO personnel have to manually locate the records in their computers and/or in their filing cabinets. Data retrieval can prove to be a slow process. Also, anyone who has access to the computers can readily edit or delete stored records and documents. Disadvantages also include high risk of data inconsistency since a certain record may have multiple copies (soft and hard) and changes introduced to one copy may not be reflected in other copies.

The Inventory and Annual Procurement Plan Stock Availability Monitoring (IAPPSAM) System is a web-based application that aims to assist and improve the efficiency of the SPSO by providing a database that will store data relevant to the (a) Inventory and (b) Annual Procurement Plan Stock Availability Monitoring functions of the said office. Also, the system shall facilitate convenient completion and validation of processes that can span across multiple other departments /offices in UPVTC.

The system will provide an account-based security feature through login username and password for the SPSO Personnel to limit access to data stored in the IAPPSAM System database. With regards to forms, the system will provide an auto-fill feature, searching capability and export as Portable Document Format (PDF) and Excel (.xls) to assist the SPSO personnel, Remote database backup will also be made available.

The developers will employ the use of Java language; Hibernate (Relational Persistence); HTML and JavaServer Pages (Java Web Technology); Apache

Tomcat (Web Servlet Container), Apache Lucene (Searching); and Git (Version Control System).

B. Objective Of The Work To Be Accomplished

The objective of the IAPPSAM System is to assist the SPSO personnel in tasks pertaining to the Inventory and Annual Procurement Plan Stock Availability Monitoring. As the project is web-based in nature, the SPSO Personnel can fill-up and save the forms to a database given that they are logged in to the system. The auto-fill feature aims to allow the SPSO personnel to choose from existing employees in the database as the signatory for a certain form. Also, general properties of items will also be filled in automatically so that the user will only input form-specific content. Lastly, SPSO personnel can opt to view and save the forms in either Excel or PDF format.

C. Timetable

Days	Activities
April 15-20, 2011	• Gave a questionnaire and set an appointment with the SPSO personnel. • Interviewed the client as to the process flow of the Inventory and Annual Procurement Plan Stock Availability Monitoring. • Procured the necessary forms that are accomplished as part of the Inventory and APP Stock Availability Monitoring. • Discussed the current process flow of two processes, and the important features that the SPSO personnel want the developers to make available. • Constructed flow diagrams for the two processes which were verified by the SPSO personnel. • Procured installer and documentation CDs of the separate systems developed by the two CMSC 198 (OJT) groups. • Conducted an interview to our client about his wants regarding the software we are going to make. • Constructed a Statement of User Requirements (SUR) which includes the flow charts simulating the Inventory and APP Stock Availability Monitoring

	Processes. • Constructed a Software Requirement Specifications (SRS) outlining the system features.
April 21-24, 2011	• Holy Week Break
April 25 - May 1, 2011	• Assigned tasks to the group members for the expected output at the end of the week. • Clarified the SPSO personnel as to some issues raised by our professor. • Inquired as to which fields in the forms are required and which are not. • Constructed the Data Flow Diagram (DFD), Use Case Diagram, EER Diagram (in lieu of ER) and the Class Diagrams. • Started research on technologies that will best fit the IAPPSAM System.
May 2-8, 2011	• Dropped forms relevant to the Purchase Process except for the Purchase Request and Purchase Order as the group saw that these were not integral to the Inventory and APP Stock Availability Monitoring. • Convened with the SPSO personnel to update them of the changes. • Constructed the Database View, Database Schema, SQL Definition For Each Table and the Data Dictionary.
May 9-16, 2011	• Coding of back-end (persistence) of the System. • Updated EER. • Designed the User Interface and Navigation. • Continued research.
May 17, 2011	• Demonstration of the User Interface via HTML pages.
May 18-31, 2011	• Continued coding. • Continued research. • Improved user interface. • Tested for bugs. • Deployment.

D. Results and/or Accomplishments

At the time of writing, we've been able to finish the major functions of our system. First and foremost, it will now be able to provide future users of the system the web-based interface that is needed to help streamline Supply and Property Services Office operations within the office itself and across different offices and divisions of University of the Philippines Visayas Tacloban College.

Second, we managed to develop an Inventory System for the SPSO. It allows for an easier and more convenient way of managing equipment properties, generation of some documents and reports and document storage and retrieval.

Third, our group has also come up with another desired system for the Supply Office, which is the Annual Procurement Plan Stocks Availability Monitoring System, which has built-in functionalities that work associatively in order to meet the objectives of the system accurately.

Finally, as part of the functionalities of the Inventory System, our system can automatically update the number of stocks accordingly for every item acquired by or supplied to every office. Moreover, this monitoring system provides a view on the list of products and/or materials held available in stock as well as on the consolidation of Annual Procurement Plan of all offices.

E. Problems Encountered and Solutions Offered

Problems	Solutions
Relatively steep learning curve for the new technologies (mostly web) being implemented.	Make use of various resources available in the internet.
Running, testing and simulating the web-based environment.	Use of Apache Tomcat and Eclipse EE
Source Code documentation, integration, history and management.	Use of Git and Source-code hosting site (www.github.com)
Construction of UML Diagrams.	Use of MS Visio and MagicUML.
Construction of Database Schema and SQL Definition For Each Table.	Use of MySQL Workbench.

Slow testing pace for the system caused by the need to (1) restart the server once major modifications are introduced to the source code and (2) refresh and redeploy the project to ensure data synchronization.	None.
User interface designing.	Use of Adobe Dreamweaver and Photoshop.
Updating and communication with group members.	Creating a Facebook group dedicated for the IAPPSAM System development.
Late creation of a running instance due to the need for ample research.	None.
Slow debugging pace of the JSP pages and Http Servlets due to relatively difficult and (sometimes misleading) error messages.	None.
Frequent changes made to the Database Schema.	Making the necessary internal and external changes to the system.

F. Contributions of the Work to the Cooperating Agency

The result of this work which is the Inventory and Annual Procurement Plan Stock Availability Monitoring System shall be able to contribute to faster, easier, more convenient, and more organized transactions of the cooperating agency. The effort required in generating reports and documents for these transactions, which originally consist of manual searching through previous records and typing out everything in an Excel document, shall now be considerably reduced via auto retrieval of information from the database system and auto filling of the said reports and documents. The yearly Inventory of Equipment Report would also be generated more easily. The system would also provide the office with easy and reliable storage and retrieval of documents.

The system will be of a great help to the Supply Office personnel in charge in stocks monitoring for many reasons. They shall no longer have to perform the manual procedures of managing stocks, because the system will handle transactions and the storage of data in a computerized manner. Thus, it shall be considerably less demanding on effort and less time consuming. Also, some of the needed forms are automatically generated, read and recorded by the system

and can be saved as an Excel document for portability and manual editing (if required) and printing. The Supply Office personnel shall now have quick access/view to a particular item/product with the product's information form, etc. via a search function. More of the underlying advantages can be revealed with continued hands on use of the IAPPSAMS.

G. Conclusions and/or Recommendations

The software still lacks some things of relative importance to the system. They include the ability to encrypt and decrypt saved backups of the database, which would be a great addition to the security measures of the system. There are also remaining forms that aren't yet integrated to the system for auto-generation via retrieval of information from the database system. It is aimed to finish all of the said forms for a major automation of the SPSO processes

Our group recommends that the guidelines for the development of a web-based application like the IAPPSAM System be more flexible in order to adapt to frequent changes being introduced. We further recommend that the agile philosophy and practices be used in the development of a web-based application so as to cope with increasing complexity and to ensure a running instance given limited time to comprehend and implement new technologies.