Requirements Specification

For

Implementation of E-commerce workflows using Apache OFBiz ERP

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1. Introduction

This document is a Requirement Specification for Implementation of the E-commerce workflows using Apache OFBiz. This is the initial draft for the requirement specification and it will be used for the extensions. This document is prepared by following IEEE conventions for software requirement specification.

1.1 Purpose

The aim of this document is to provide detailed requirements specification of the project. Through this document, the workload needed for development, validation and verification will ease. To be specific, this document is going to describe required functionality, detailed description of the E-commerce workflows that should be implemented, external interfaces, internal interface, performance, attributes.

1.2 Project Scope

The aims of the project is:

- To design workflows representing shopping, payment and delivery processes in the SNAP-V online shop.
- To implement them using Apache OFBiz ERP.
- To extend the existing OFBiz system by a component that enables publishing data as linked data.

1.3 Definitions

There are some roles which are used inside this document, so the aim of this section is to clarify these roles within this document.

- **Customer:** customers of system are customers of SNAP-V E-commerce Company who interact with E-commerce website.
- **Client:** clients are E-commerce employees who interact with Apache OFBiz.

2. Overall Description

2.1 Product Perspective

Three workflows: Shipping, Payment and Delivery will be implemented using OFBiz ERP component. The report generated from these workflows will be converted into linked data in order to make it computer readable. Three workflows of SNAP-V E-commerce are illustrated in Figure 2. According to these workflows, one can make use of the ERP system and use it. The figure 1 illustrates the concept of an ERP system [2].

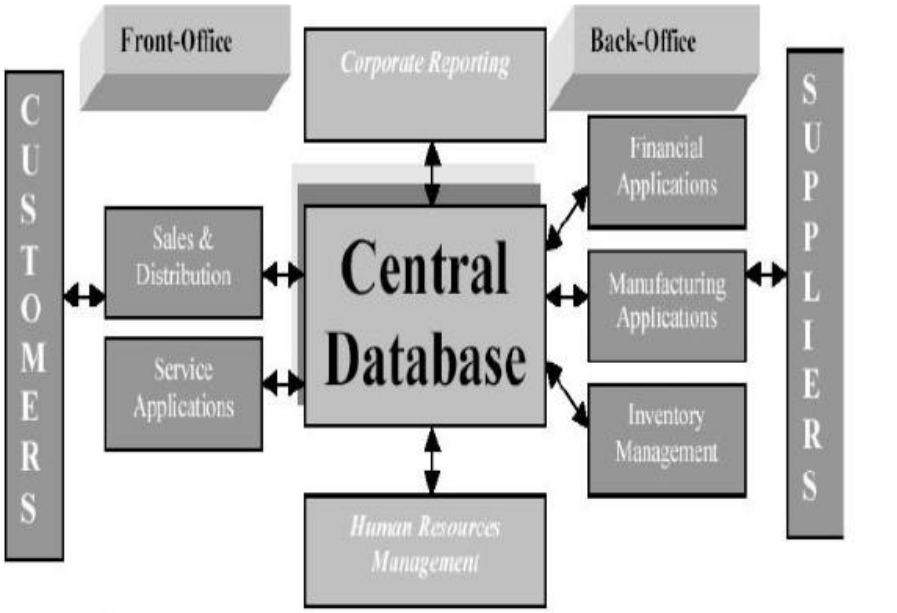

Figure 1: ERP systems concept

2.2 Apache OFBiz

Apache OFBiz (The Apache Open for Business Project) is an open source enterprise automation software project licensed under the Apache License Version 2.0. Being open source Apache OFBiz offers both flexibility by design and by access to code, and a solution where one can work with many others [1].
The main functionalities of Apache OFBiz (ERP-system) includes [1]:

- Advanced E-commerce
- Catalog management
- Order management (sales & purchase)
- Customer management
- Fulfillment (pack & ship)
- Accounting (invoice, payment & billing accounts, fixed assets)
- General work effort management (events, tasks, projects, requests)

2.3 Operating Environment

This project can run on Windows and Linux. The Apache OFBiz runs as a backend and a browser (IE, Firefox, and Chrome) is required as a front-end. The client needs a text reader/editor to read the generated reports. Then to convert The OFBiz report format to RDF report, RDB to RDF mapping language tools will be used. OFBiz includes and is configured for an embedded Java database called Derby.

2.4 Workflow Description

The boundary of this project covered by three workflows as shown in Figure-2 which are Shopping, Payment and Delivery. The other workflows such as Accountings, Human Resource Management etc. may covered as a part of future projects. The generated reports can be converted into the Linked Data by using the RDB to RDF mapping tool, which will be in machine readable format, and the client can used this data on different operating system or platforms.

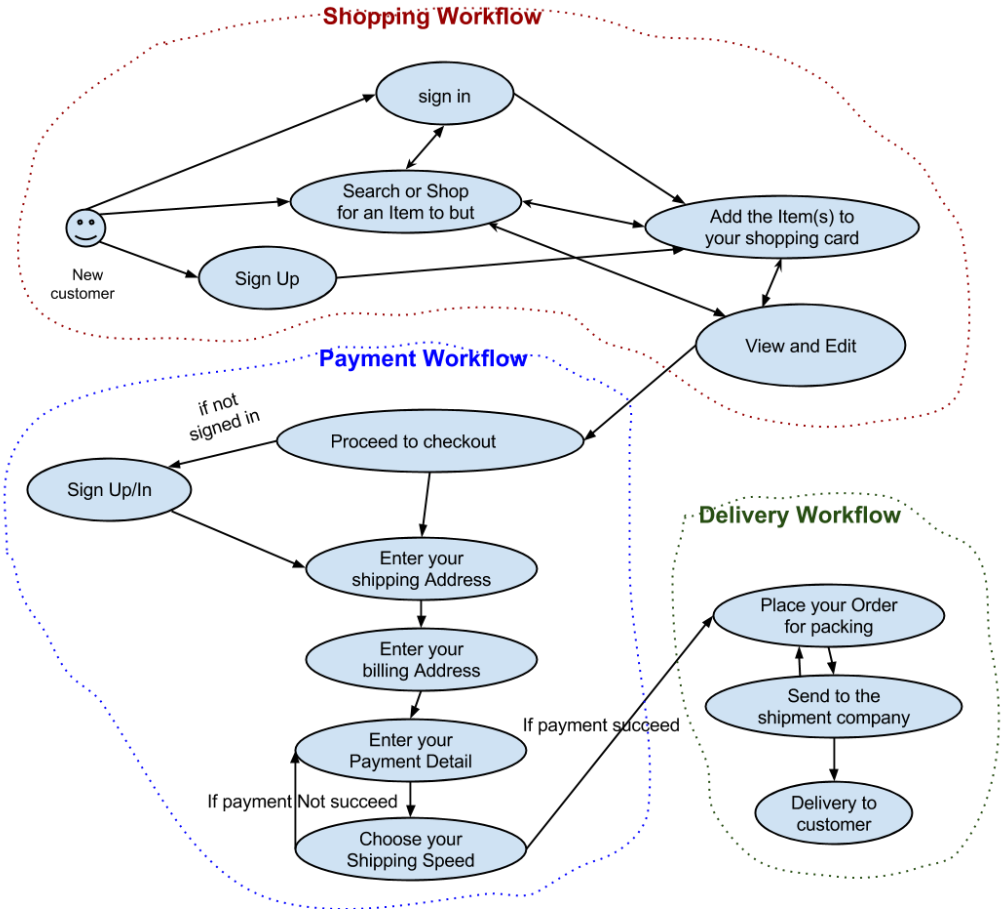

Figure 2: Three workflows of SNAP-V

2.4.1 Shopping workflow

The customer should follow certain steps in order to complete selecting a product online:

1. The customer should browse the main page containing the catalog.
2. If the customer is already a member, can sign in to the webpage.
3. If the customer is not already a member, can sign up to the webpage.
4. The customer can select or search for the desired product.
5. The customer can add the selected product into the shopping basket/cart.
6. The customer can continue to select other products, and add more to the basket/cart.
7. After finishing the selection of products, he/she can move to the payment webpage.

2.4.2 Payment workflow

The customer can complete her/his shopping procedure with going through the payment workflow, including the below steps:

1. The system checks if the customer is already signed in.
2. If the customer is already a member and not signed in, he/she should sign in webpage.
3. If the customer is not a member, he/she should sign up to the system.
4. The customer can now selects a shipping method.
5. The amount of payment will change depending to the shipping method.
6. The customer has the option of entering another address, different from billing address, in order to get the product in a different location.
7. The customer can select a payment method.
8. After finishing the payment procedure, the customer will get notified if the shopping is succeed or not.

2.4.3 Delivery workflow

The E-commerce should go through the below steps to complete the delivery of the product, bought by the customer:

1. Customer order will go to the database of the received orders.
2. The order will be packed.
3. The delivery company will collect the packages.
4. The E-commerce will sent the customer an email regarding the product shipping.
5. If the customer send the product back to change or to return.
6. The delivery company will bring the packet back to the sender.
7. The E-commerce will send a confirmation of taking the product back to the customer.
8. If the customer wants to change the product, the process of the sending package repeats.
9. If the customer wants to return the product, the E-commerce will pay the amount back to the customer depending on the payment method she/he has already selected.
10. The system will send the customer a notification of the return of the payment.

2.5 User Documentation

The project includes user documentation components (such as user manuals, online help and tutorials) that will be delivered to the clients. If required, a demo or a face to face tutorial would be given by the technical team.

3. Functional Requirement

3.1 Customer Management

The ERP system will be able to manage all the customer related information. The information about the customer such as his/her identity, billing address, phone number, e-mail address, payment options and orders will be managed in the ERP. The client should be able to easily access these data via GUI.
The following functionalities are required from the system:

- Add a new customer
- Delete a customer
- Modify the customer information
- Change the payment options etc.
- Listing all the customers registered in the particular period.
- Add a list of orders.
- Delete the orders.
- Listing the orders for a specific time period.

3.2 Payment Management

The different types of payment mode will be managed by the ERP Product. The customer may have many ways to pay like cash-on-delivery, EMI (Equated Monthly Installment), visa card, credit card, online banking. The ERP system will store the payment mode related to each order placed by the customer. The following task can be done:

- Storing different type of payment modes.
- Different payment mode used by an individual customer.
- Listing the payments made by an individual customer for a specific period of time.
- List of all the payments made at a particular time period.

3.3 Delivery Management

The ERP system will also keep the data of all the items which are delivered and it will manage and provide the information about the below queries:

- Add a list of deliveries.
- List all the deliveries happened for a particular period of time.
- List all the orders delivered to a particular person.

4. External Interface Requirements

4.1 Hardware Interfaces

Since this ERP system (OFBiz) runs on a browser and it does not need any designated hardware, so it does not have any direct hardware interfaces. Also the hardware connection to the database server is managed by the underlying operating system and ERP system.

4.2 Software Interfaces

There will be a connection between ERP system and database but there would be an internal connection, Because OFBiz uses embedded Java database which is named Derby. This connection consists of some operations concerning both reading and modifying the data w.r.t the functional requirements. Also there would be a connection between ERP system and RDB to RDF mapping language tools to convert ERP system reports to the RDF format to be readable for computer.

5. Non-functional Requirements

5.1 Security Requirements

The ERP systems are secure enough to handle the following tasks:

- The ERP system requires strong passwords.
- There is a low overhead and secure method to change passwords.
- Stored passwords are encrypted.
- Customers are not allowed to have access to the database.
- Roles can be tied to position categories
- Roles can be established that allow a client to process sensitive data in the ERP but restrict that client from downloading the data
- All data fields that are required by federal law to be protected come with encryption enabled.
- All data fields that are required by federal law to be protected come with auditing enabled.
- Data fields can be encrypted at the database level as well as at the form or table level.
- The generated reports show who has requested data exports including sensitive data, such as SSNs, credit card numbers, and so forth.
- The system prevents the creation of duplicate records during batch transactions.

6. Reference

[1]
http://ofbiz.apache.org/

[2]
http://www.ijser.org/researchpaper%5CHardware_and_Software_Requirements_for_Implementation_of_ERP_in_Technical_Education_Institutes_in_India.pdf