Functional Requirements Document
Washington State Alcohol and Drug Clearinghouse System Development

Commissioned by: Washington State Alcohol and Drug Clearinghouse

Services Provided by: Team Success

Team Success members: Robert Permenter
Arthur Maschio
Jasmita Maharaj
Rikki Nelson
George Maiski

Project Duration: September 23rd, 2011 to December 7th, 2011

CONTENTS

1 INTRODUCTION

The Compiere Enterprise Resource Planning (ERP) system is a complete system solution that will provide greatly improved functionality to the Washington State Alcohol and Drug Clearinghouse (WSADC) operation. It is a very user-friendly system and will easily accommodate future growth. All users of the system including clients, management, and staff will benefit through efficiency gains and automation of manual processes. Some of the greatest benefits that will be realized soon after implementation are complete reporting capabilities of client activity and product distribution as well as funding agency accessibility to reports on demand.

1.1 Purpose

This document will state in detail the functional requirements necessary for the Compiere system to be successfully implemented and accepted by the WSADC. It will serve as reference for stakeholders as well as the development team. By identifying everything the system must provide for the business, it can be used in the future to evaluate the success of the completed system.

1.2 Scope

The outcome of this project will be a stable, well-functioning, user-friendly, and expandable system. The system will provide web ordering capabilities as well as reporting functionality that will meet, or exceed all state and federal contract specifications. It will allow for efficiency improvements in business processes, thus reducing manual effort and cost of operations. Though Compiere is capable of providing complete web services and point-of sale billing systems, those capabilities and enhancements are not currently part of this project.

This document will provide a clear picture of the functional and non-functional requirements of the new system as requested by the project stakeholders. It will outline the methods used in identifying these requirements, and provide a plan for the direction we will take in the design and implementation phases.

1.3 Background

The WSADC, originally known as the Alcohol Drug Resource Center (ADRC), was founded in the early 1980's. The purpose of the WSADC was to be a repository and distribution center for information and resources pertaining to drug and alcohol abuse and treatment. The material and literature consisted of drug and alcohol studies, reports, posters, laws, flyers, pamphlets and booklets. Clients are licensed treatment facilities, schools, colleges, DSHS regional offices, county agencies and general public. Materials were free of charge and requested from the client by phone. Materials were then shipped free of charge to the requester. WSADC was moved to Seattle to provide better availability and service to clients. It was located in a portable trailer in

the Columbia City. A small area in the facility was for material display and open and available to general public.

At the request of the primary stakeholders, a preliminary investigation was undertaken to explore system alternatives to address the ongoing challenges facing the WSADC. Team Success was then commisioned by the stakeholders to evaluate, recommend and implement a new system solution. Team Success consists of a group of Business Systems Analysts from various backgrounds. Robert Permenter, Arthur Maschio, Jasmita Maharaj, George Maiski, and Rikki Nelson make up the team and are contributors to all the documentation contained in this report.

1.4 Document Overview

The Functional Requirements Document (FRD) is organized into sections beginning with the methodology used to identify the functional requirements followed by a context diagram of the system. The functional requirements are then discussed followed by non-functional requirements. Lastly, the document includes a project plan and appendices containing the various data models referenced within the document.

1.5 Assumptions and Constraints

.1 Assumptions

The availability of funding to pursue the proposed solution and begin design and implementation is assumed. Without this funding, the project cannot move forward.

There is currently a vacancy in the position of Clearinghouse Manager. It is assumed that the new manager, once hired, will find the proposed solution satisfactory and will accept the functional requirements of the system.

.2 Constraints

Funding for this project as well as for ongoing IT support will be very limited and therefore any solution must operate within this economic constraint. In addition, new funding is contingent upon meeting the system deliverables.

1.6 References

See Appendix H for Preliminary Investigation Report / Feasibility Study

2 METHODOLOGY

During the systems analysis phase, Team Success used the following tools in the research and development of this project. Detailed models can be found in the applicable appendix for further reference.

⦿ A preliminary investigation was conducted that consisted of the following:

- Root Cause Analysis and Problem Definition: An Ishikawa (Fishbone) Diagram was used to look at the business and identify the source of the challenges faced by the stakeholders.(See Appendix H)
- Interviews of key stakeholders(See Appendix H)
- Research of potential technical solutions: using the information provided by the Root Cause analysis and Interviews, research was performed to identify potential system solutions.(See Appendix H)
- Feasibility Study: Technical, Economical and Operational feasibility was performed for each of the potential solutions leading to the proposed solution. (See Appendix H).

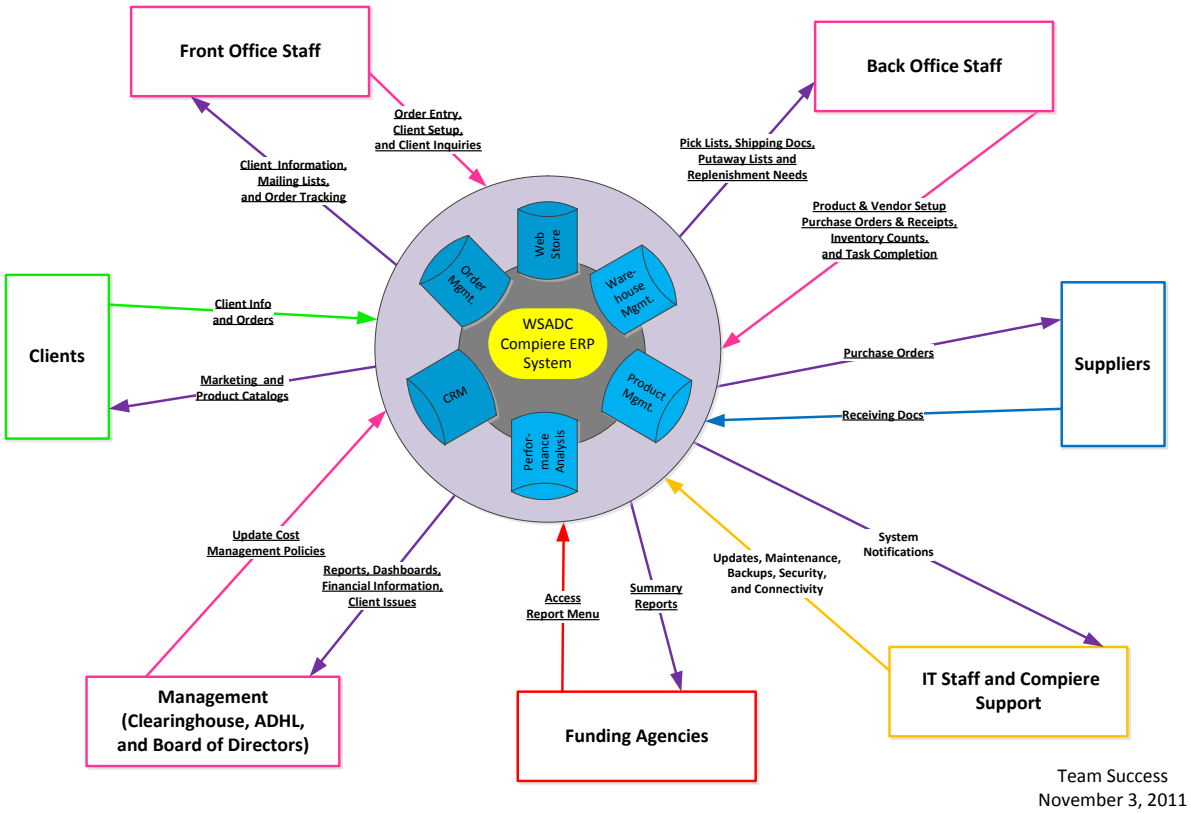
⦿ Comprehensive requirements modeling was performed consisting of the following:

- Context Diagram: A Context Diagram was created to show how the system interacts with the external entities or actors (See Section 3.1)
- Data Flow Diagrams (DFD): DFD's were then created to depict flow of data through the system and specific processes performed by the system. (See Appendix B)
- Functional Decomposition Diagram (FDD): An FDD was created to show the hierarchical organization of the business functions that comprise the operation. (See Appendix C)
- Swim Lane Diagram: A Swim Lane Diagram was created to show each step in a task sequence within a "lane" that represents an actor or user of the system. (See Appendix D)
- Use Cases: Lastly, Use Cases were developed to define the interactions between the users and the system. It is from the Use Cases that Functional Requirements were captured. (See Appendix E)

3 FUNCTIONAL REQUIREMENTS

3.1 Context

Context Diagram



Team Success
November 3, 2011

3.2 List of Users/Stakeholders

- Primary Stakeholders:
  - Clearinghouse manager and other members of management including ADHL management and the board of directors. Management is an actor as shown in the context diagram as it will interact with the system to receive reports, monitor operations, and address client issues.

  - Each applicable Funding Agency is an actor as shown in the context diagram as it will be able to access the reporting module directly to receive available reports and download supporting data as needed.

- IT Stakeholders:
  - IT staff as the liaison to Compiere Support is an actor as shown in the context diagram. The local IT staff provides connectivity to the system and is notified of updates, maintenance, backup, and security issues.
  - Database developers
- User Stakeholders:
  - Clearinghouse Staff – Both front office and back office staff are actors as shown in the context diagram performing key functions of order entry and tracking, managing client information, shipping and receiving product, inventory control, and product management.
  - Volunteers/Interns fill in for clearinghouse staff and therefore perform similar but more limited roles as the permanent clearinghouse staff
  - Clients are actors as shown in the context diagram placing orders for product, providing client information, and receiving marketing mailings.

3.3 Functional Requirements Determination

The functional requirements as outlined in the subsequent sections represent the expected functionality or behavior of the new system. The process requirements are presented in the form of "must haves" and "should haves", identifying the essential functionality of the proposed system, as well as the preferred functionality of the proposed system.

These requirements are the culmination of our systems analysis procedures which began with a Root Cause Analysis of the problem, and ended with the creation of Use Cases for each critical process of the proposed solution (see Methodology section for a complete list of tools and procedures). Various models were created throughout the systems analysis phase that assisted us in documenting the primary actors as discussed above, and how each actor will interact with the system.

The above Context Diagram was decomposed into Data Flow Diagrams (DFD - see Appendix B) that identify specific system processes, data flows, data stores, and the actors' roles in each process. A Functional Decomposition Diagram (FDD - see Appendix C) was created to identify each functional area of the system. The functional requirements below are categorized by functional area based on the FDD. Swim Lane diagrams (see Appendix D) were created identifying the sequence of processes arranged by actor. From these diagrams, a Use Case (see Appendix E) was created for each process, outlining the detailed steps of the process and ultimately the functional requirements of the system.

3.4 Functional Process Requirements

Order Management

Order management staff must be able to:

- Search for a client by name and populate the order with client information
- Search for a topic within the product catalog by choosing a category/subcategory
- Search for a title within the product catalog based on keyword(s)
- Select chosen titles from the product catalog and add them to the order
- Submit an order containing specific fields as defined in data dictionary
- Track an order and obtain its status (open, picked, backordered, closed)

The System must:

- Store the new order as an "open" order
- Generate a backorder notification to client via email or paper mail
- Generate an invoice (paper or email)based on closed order status

Additional Functionality Preferred:

- Staff should be able to assign an optional priority level to an order
- Backorder notification should contain an estimated ship date
- Staff should be able to forward special product requests directly within the system for follow up by management via the CRM module

Client Relationship Management (CRM)

Client management staff must be able to:

- Set up a new client record with specific fields as defined in data dictionary
- Maintain clients by updating fields with new information
- Perform mass mailings to clients

Additional Functionality Preferred:

- Office staff should be able to enter requests from clients for information or assistance
- Management should be able to access the above requests for follow up within the system
- Management should be able to create targeted marketing campaigns

Warehouse Management

The System must:

- Generate a consolidated pick list for all orders for which inventory is available
- Generate a backorder list for products that are not available in inventory and update order status to "backordered"
- Decrement inventory and update order status to "picked" based on inventory scans
- Generate a packing slip to place in the shipment container
- Update order status to "closed" based on completion of shipping process

Warehouse staff must be able to:

- Designate a specific time interval for running a pick list (hourly, daily, etc)
- Scan the inventory contained on the pick list and upload to system
- Flag inventory inaccuracies that prevent a product from being picked
- Create individual shipments for each order contained in the pick list
- Designate orders as shipped once the shipping process is completed
- Receive incoming product against purchase orders
- Perform cycle counts and physical inventories based on inventory reports
- Scan inventory as it is moved within the warehouse and upload to the system
- Set restocking points and obtain replenishment needs

Additional Functionality Preferred:

- Warehouse staff should be able to create shipment schedules based on order priority and time constraints
- System should generate directed put away reports identifying rack locations for incoming product
- System should assist staff with warehouse space optimization

Product Management

Product management staff must be able to:

- Set up a new product record with specific fields as defined in data dictionary
- Maintain products by updating fields with new information
- Create a product catalog organized by category and subcategory
- Include images within the product catalog
- Run backorder report and replenishment reports
- Create purchase orders for product
- Set up a new vendor record with specific fields as defined in data dictionary

E-Commerce (Web Ordering)

- Client must be able to create an online profile
- Online profile must capture all fields contained in the client record (see new client setup under CRM)
- Client must be able to create or reset user name and password
- Web order screen must have same search functionality as office order screen (see topic/title search under Order Management)
- Client must be able to receive notifications via e-mail (Confirmations, Invoices, Backorder Notices, etc.)
- Product Catalog must be accessible online
- Product availability must be accessible online

Reporting Management

- Standard forms must be available (to print or save) directly from each relevant screen (order detail, invoice, packing slip, purchase order, etc.)
- Ad hoc system queries must be able to be performed using real-time data
- Management must be able to select from a menu of customized management reports
- Management must be able to export report data to a local application
- Funding agencies must be able to create an online profile
- Funding agencies must be able to select from a menu of customized agency reports
- Funding agencies must be able to export report data to a local application

Additional Functionality Preferred:

- Management should be able to create dashboards and KPI's based on specified time periods

3.5 Other Functional Requirements

3.5.1 Hardware/Software Requirements

The Compiere system will be accessed solely via web browser. The software will be licensed via Software as a Service (SaaS) model and will reside on vendor hardware maintained in the Cloud. Therefore, there will be no local server or other hardware requirements. Individual user PC's may need to be upgraded or replaced depending on age and capabilities. All PC's will be required to have updated web browsers and add-ons.

3.5.2 Software Interfaces

The Compiere system will be required to interface with Jaspersoft reporting software. Jaspersoft is an open source business intelligence application that is recommended for use with the Compiere system. It will run locally and will need to access real-time data in order to produce management and funding agency reports.

The barcode scanning software in use by the warehouse must interface with the Compiere inventory module in order to upload inventory transactions that occur via handheld scanning devices.

3.4.3 Data Conversion Requirements

The existing system contains client records and product records that must be transferred to the new system. The data will require extensive cleaning and transformation to conform to the Compiere system. The Jaspersoft ETL program will be used to perform the data conversion process.

4 NON-FUNCTIONAL REQUIREMENTS

4.1 Non-Functional Requirements Definition

The non-functional requirements as outlined in the subsequent sections represent qualities of the system and are expressed in terms of how the system "shall be". The non-functional requirements specify criteria that can be used to judge the operation of the system rather than specific behaviors (per Wikipedia).

4.2 List Non-Functional Requirements

Security and Privacy

The system does not have complex security or privacy requirements. The system shall be reasonably secure to a degree that would be considered standard for a web-based ERP system. The system shall be safe from intrusions with malicious intent and shall be not be accessible by unauthorized users.

Reliability

The system shall be reasonably reliable; however there are no significant impacts that would result from brief periods of system downtime. If the system were down frequently, the main impact would be general dissatisfaction among clients and staff and a reduction in service levels.

Recoverability

Similar to reliability, the system shall be recoverable from downtime reasonably quickly and to a reasonable degree of currency. The system shall be backed up on a reasonable schedule.
As undesirable as it would be, there are no catastrophic effects to a short term loss of data.

System Availability

The system shall be available at a minimum during normal business hours Pacific time and there are not any explicit needs for availability beyond what would be considered standard for a web-based ERP system.

5 PROJECT PLAN

The WSADC project began with a Systems Request on September 23rd, 2011. Team Success was contracted to perform a complete analysis consisting of Systems Panning, Systems Analysis, Systems Design, Systems Implementation, and set up of Systems Support and Security.

The Systems planning phase of this project began at request on September 23rd 2011 and continued through the first milestone and presentation of the Preliminary investigation Report on October 28th 2011. The next phase of Systems Analysis began on November 4th 2011, and will conclude with the Functional Requirements Document and presentation on December 7th 2011. From this point the next phase of Systems Design will being and span the next month. This will be followed by Systems Implementation and finally the Systems Support and Security phase will commence, which will be ongoing throughout the life of the system.

See Appendix G for complete details of the schedule and milestones.

APPENDIX A - GLOSSARY

Cloud [computing]: *noun*; Internet-based computing in which large groups of remote servers are networked so as to allow sharing of data-processing tasks, centralized data storage, and online access to computer services or resources.[1]

Context Diagram: A top-level view of an information system that shows the boundaries and scope.[2]

Data Flow Diagrams (DFD): A diagram that shows how the system stores, processes, and transforms data into useful information.[2]

Enterprise Resource Planning (ERP): A process that establishes an enterprise-wide strategy for IT resources. ERP defines a specific architecture, including standards for data, processing, network, and user interface design.[2]

ETL software program: ETL is an acronym for 'Extract, Transform, Load'. ETL is a process in database usage, especially data warehousing, that involves extracting data from outside sources, transforming data to fit needs, and loading it into end target (a database or data warehouse).[3]

Economical Feasibility: Economic feasibility is achieved if the projected benefits of the proposed system outweigh the estimated costs involved in acquiring, installing, and operating it.[2]

Feasibility Study: An initial investigation to clearly identify the nature and scope of the business opportunity or problem. Also called a preliminary investigation.[2]

Functional Decomposition Diagram (FDD): A top-down representation of business functions and processes. Also called a structure chart.[2]

Functional Requirements Document (FRD): Defines the capabilities and functions that a system must be able to perform successfully. Also called Functional Specifications or Functional Requirement Specifications document.[4]

Ishikawa (Fishbone) Diagram: An analysis tool that represents the possible causes of a problem as a graphical outline.[2]

Operational Feasibility: A system that has operational feasibility is one that will be used effectively after it has been developed.[2]

Root Cause Analysis: Finding the real cause of a problem in order to deal with it directly, instead of continuing to react to symptoms.[5]

Software as a Service (SaaS): Software that is developed and hosted by the SaaS vendor, which the end-user customer accesses over the internet.[6]

Swim Lane Diagram: A Swim Lane Diagram is a type of Flowchart, and it can be used to display the same type of information. What makes a Swim Lane Diagram unique is that the Flowchart objects are kept in lanes (that is, columns), grouping them together. These lanes help visualize stages, employees, departments, or any other set of separated categories.[7]

Technical Feasibility: A project or request is said to have technical feasibility if the organization has the resources to develop or purchase, install, and operate the system.[2]

Unified Modeling Language(UML): A widely used method of visualizing and documenting software design. UML uses object-oriented design concepts, but it is independent of any specific programming language and can be used to describe business processes and requirements generally.[2]

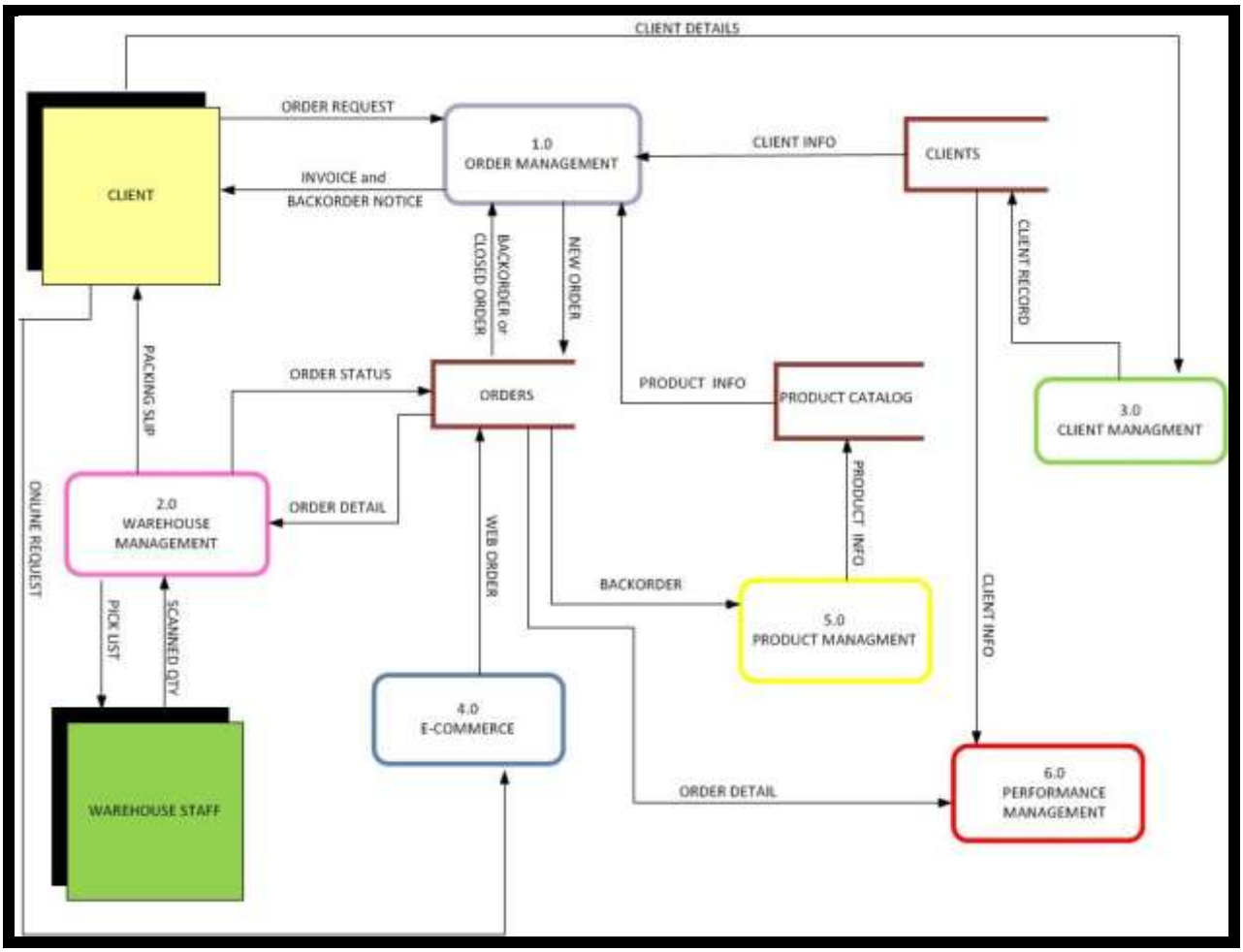
Use Case: Represents the steps in a specific business function or process in Unified Modeling Language.[2]

References:

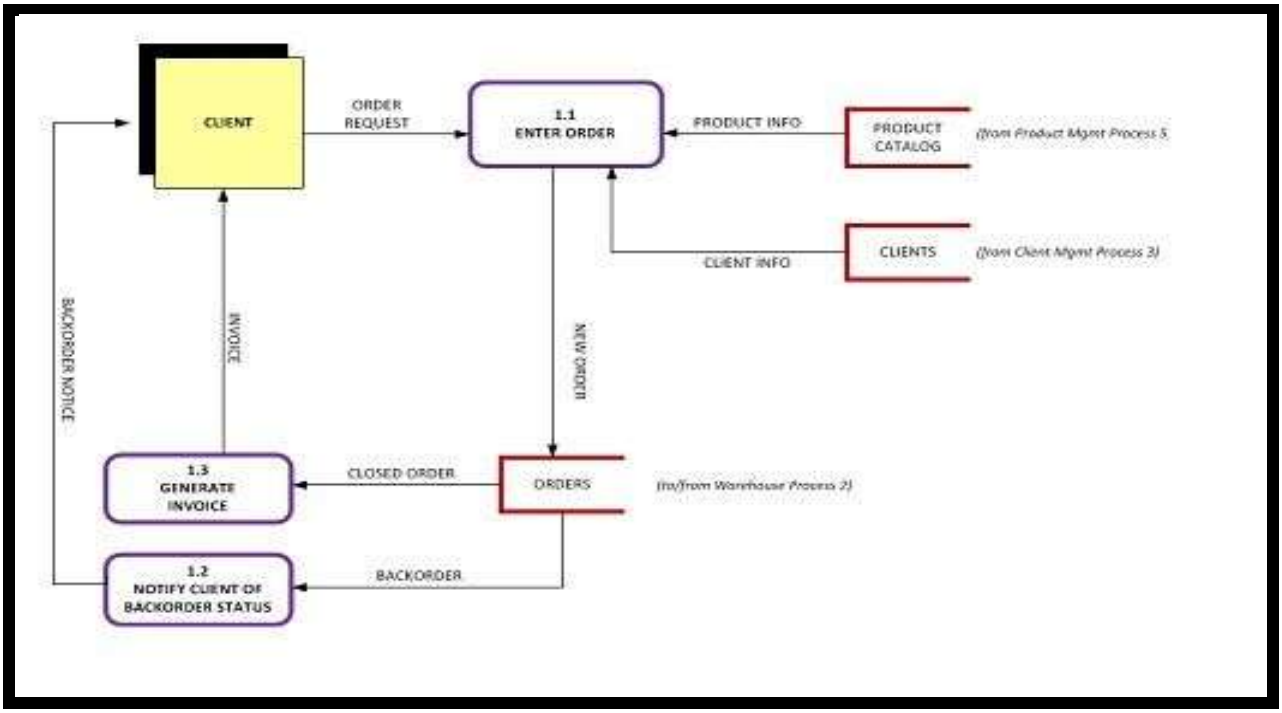
1. "Cloud computing". Dictionary.com.
2. Shelly, Gary B.; Harry J. Rosenblatt. Systems Analysis and Design, Ninth Edition.
3. "Extract, Transform, Load". Wikipedia.org.
4. "Functional Requirements". OfniSystems.com.
5. "Root Cause Analysis". Systems-Thinking.org.
6. "Software as a Service (SaaS) Definition and Solution". Cio.com.
7. "Swim Lane Diagram". SmartDraw.com.

APPENDIX B - Data Flow Diagrams

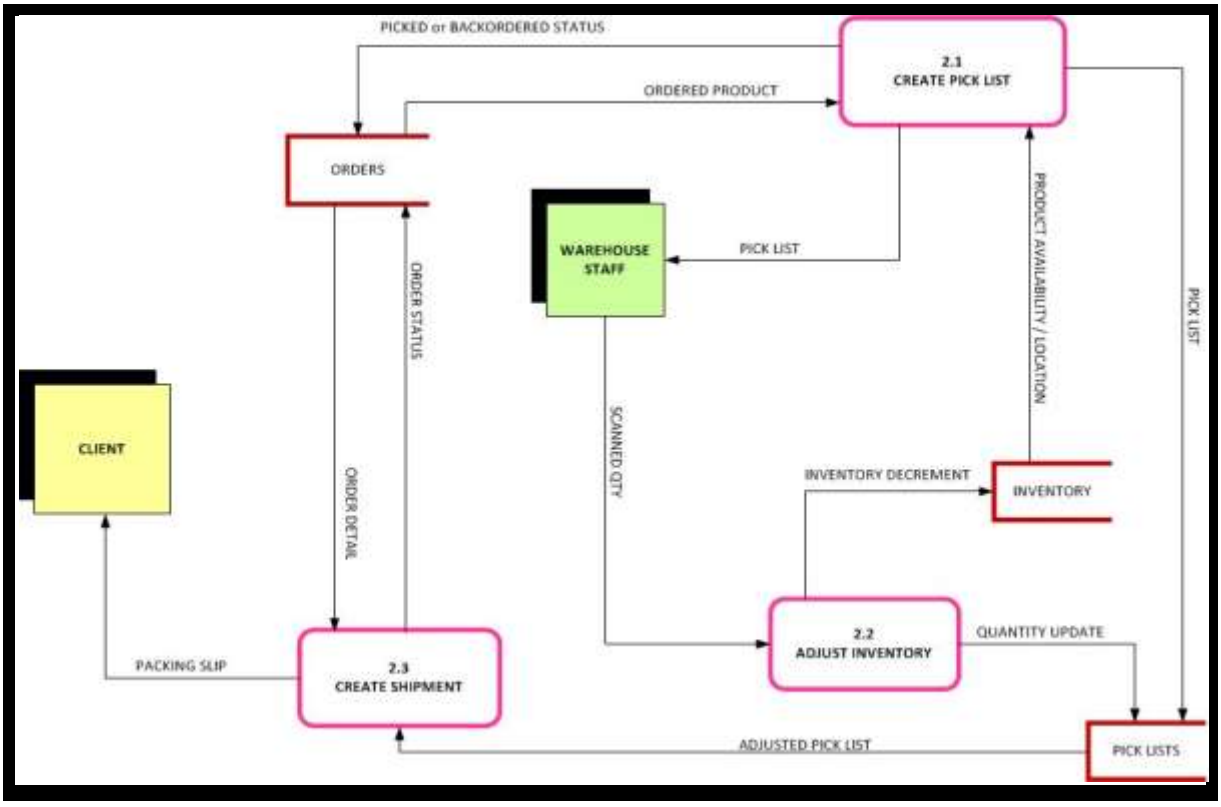
Partial Level 0 Diagram (of Order Management Process)



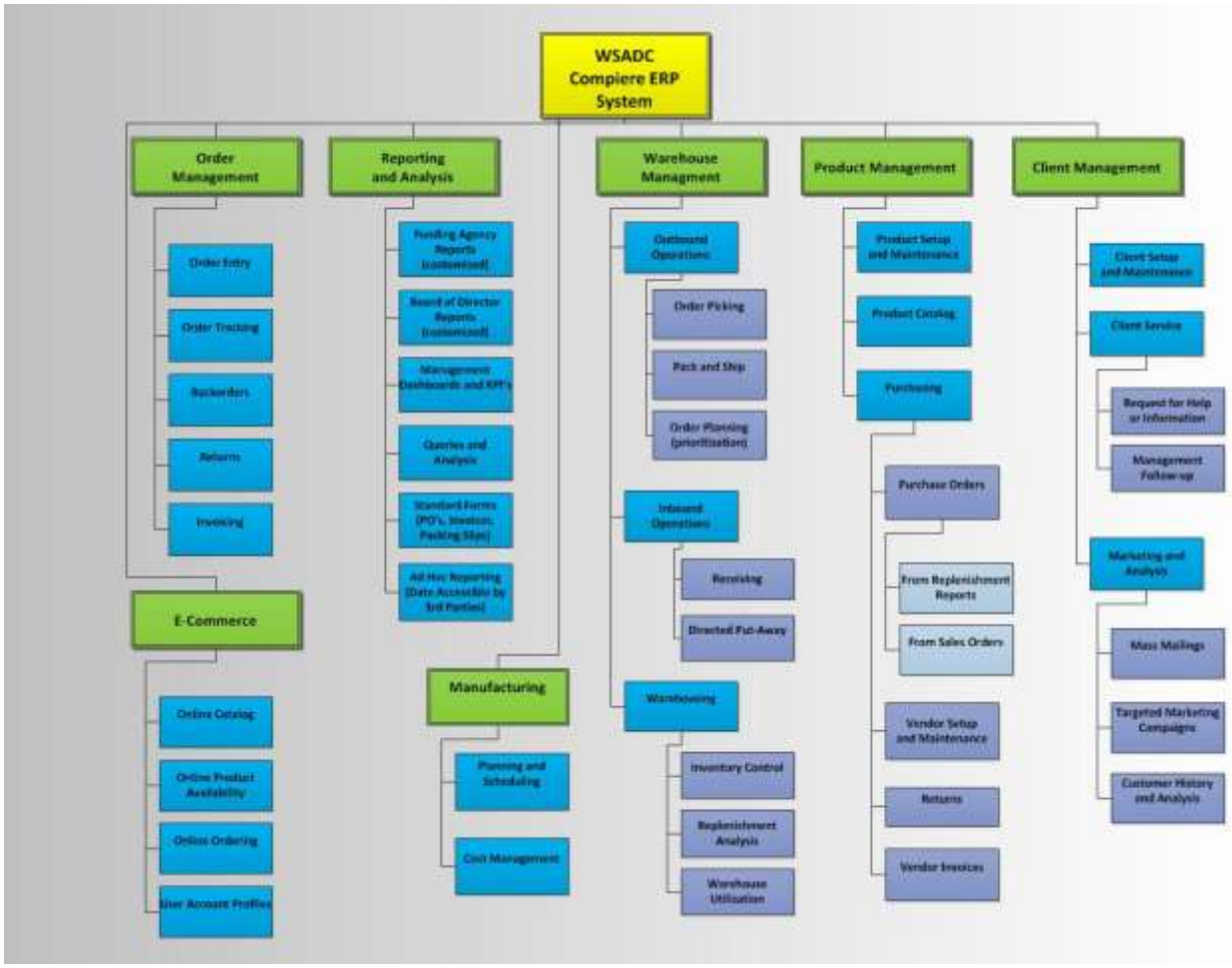
Level 1 Diagram of Order Management Process



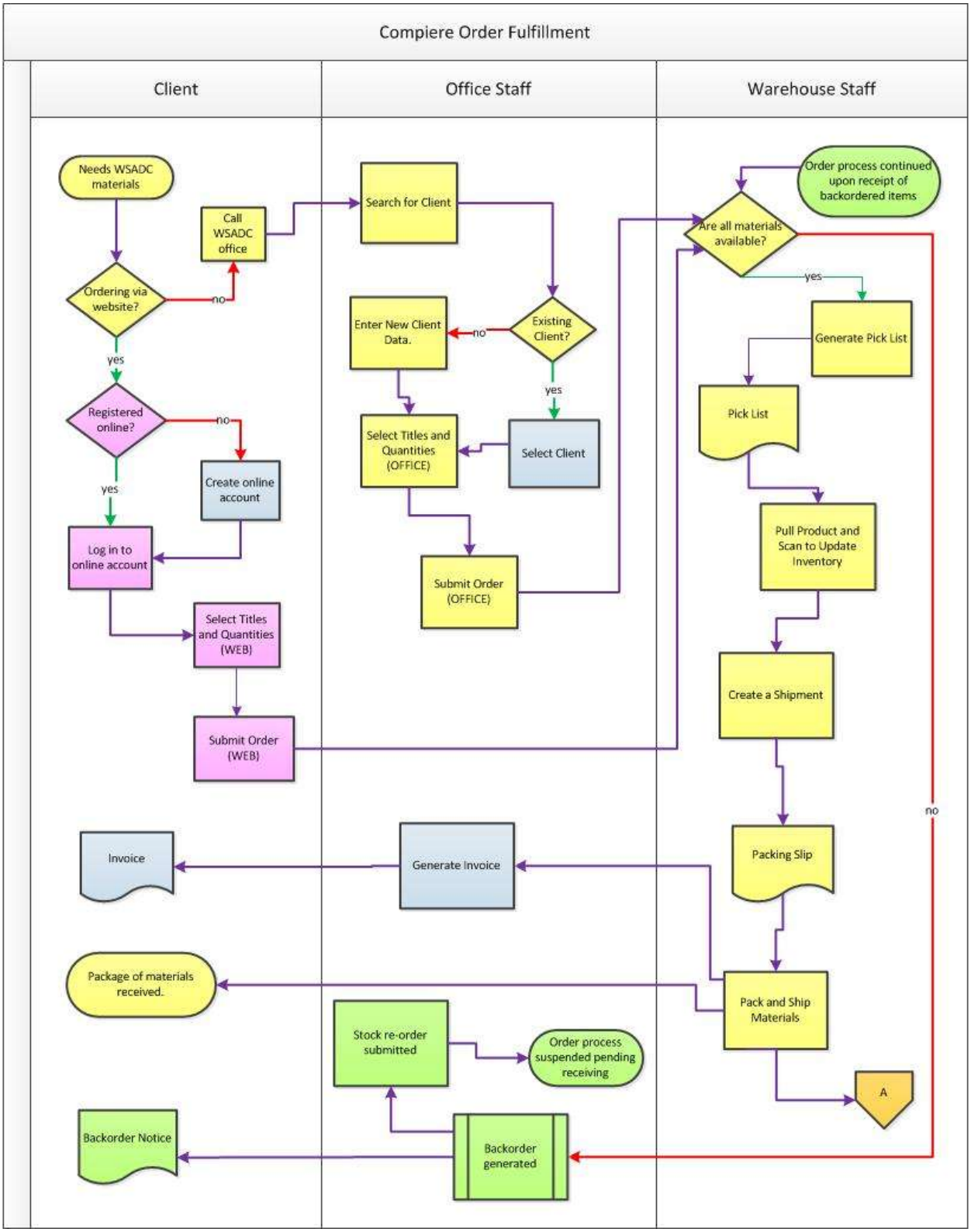
Level 1 Diagram of Warehouse Process



APPENDIX C – Functional Decomposition Diagram



APPENDIX D – Swim Lane Diagram of Order Management Process



APPENDIX E - Use Cases

List of Use Cases

1.0 Order Management

- **1.1 Select Client**
- **1.2 Select Titles and Quantities (Office)**
  (Fully dressed Use Case supplied following this list)
- **1.3 Submit Order (Office)**
- **1.4 Track Order**
- **1.5 Notify Client of Backorder**
- **1.6 Generate Invoice**
- **1.7 Forward Special Product Request to Management**

2.0 Client Management (CRM)

- **2.1 Set up new Client**
- **2.2 Enter Request for Info or Help**
- **2.3 Follow up on Request for Info or Help**
- **2.4 Perform Mass Mailing**
- **2.5 Create Targeted Marketing Campaign**

3.0 Warehouse Management

- **3.1 Generate Pick List**
- **3.2 Pull & Scan Inventory**
- **3.3 Create a Shipment**
- **3.4 Plan Shipment Schedule**
- **3.5 Receive Incoming Product**
- **3.6 Put away Incoming Product**
- **3.7 Perform Physical Inventory/Cycle Counts**
- **3.8 Analyze Replenishment Needs**
- **3.9 Set Restocking Points**

4.0 Product Management

- **4.1 Set up a Product**
- **4.2 Create Product Catalog**
- **4.3 Order Product**
- **4.4 Set up a New Vendor**
- **4.5 Manage Backorders**
- **4.6 Manage Replenishment Needs**

5.0 E-Commerce (Web Ordering)

- **5.1 Create Online Profile**
- **5.2 Login to Online Account**
- **5.3 Select Titles and Quantities (Web)**
- **5.4 Submit Order (Web)**
- **5.5 Create Online Catalog**
- **5.6 Post Online Availability**

6.0 Reporting Management

- **6.1 Print Standard Forms**
- **6.2 Perform System Queries**
- **6.3 Create Dashboards and KPIs**
- **6.4 Select Management Reports**
- **6.5 Select Funding Agency Reports**
- **6.6 Export Data to Local Program**

Fully Dressed Use Case

USE CASE NAME:	SELECT TITLES AND QUANTITIES (Office)	ID: 1.2
Primary Actor:	Order Entry staff	
Brief Description:	This use case describes the steps for selecting titles and quantities, from the time the client requests a general topic of interest or a specific title until all desired titles have been selected and added to the order.	
Trigger:	Client requests a general topic of interest or a specific title.	
Related Use Cases:	This use case is used by SUBMIT ORDER	
Normal Flow of Events:	1. Order Entry staff person determines appropriate category or categories to search based on topic client has requested. 2. Staff person opens the online product catalog and chooses a category and subcategory. 3. The system displays all available titles within the category or subcategory. 4. Staff person identifies relevant titles and notifies client of various titles available. 5. Client chooses titles that best suit their needs. 6. Staff person selects the chosen titles and adds them to the order along with the requested quantity of each.	
Exceptions:	If client requests a specific title rather than a general topic: 1. Order Entry staff person performs a title search based on keywords. 2. The system displays title matches. 3. Staff person chooses correct title and confirms with client. 4. Skip to step 6 of the normal flow above. If no relevant titles are found in step 5 of the normal flow or in step 3 of the above alternative: 1. Staff person notifies client that requested titles could not be found. 2. Staff person forwards information to management to determine if appropriate materials can be obtained.	
Pre-condition(s):	Client wishes to order materials. Client is properly set up in the Client Management module.	
Post-condition(s):	Order now contains titles and quantities requested by the client.	
Functional Requirements:	1. Search for a client by name 2. Populate the order with client information 3. Search for a topic within the product catalog 4. Search for a title within the product catalog based on keyword(s) 5. Populate order with chosen titles	
Assumptions:	Client desires to place an order for product being searched	
Business Rules:	Client can request a specific title or if not known, can request products by specifying a general topic of interest.	

APPENDIX F - Data Dictionary

Future Deliverable

APPENDIX G – Schedule

WSADC Project Schedule

Systems Planning	
9/23/2011	Received Systems Request
9/30/2011	Ishikawa Diagraming, and Root Cause Analysis
10/7/2011	Working Days
10/12/2011	Team Meeting Finalize Interview Questions
10/14/2011	Pre Interview Team Meeting
10/14/2011	Preformed Stakeholder Interviews
10/21/2011	Team Meeting Compile Preliminary Investigation
10/24/2011	Team Meeting
10/26/2011	Finalize Preliminary Investigation
10/28/2011	Presentation of Preliminary Investigation Report

Systems Analysis	
11/4/2011	Context diagraming
11/11/2011	Working Days
11/18/2011	Data Flow Diagrams
11/25/2011	Working Days
12/2/2011	Swim Lane and Use Cases
12/7/2011	Deliver Functional Requirments Document

Systems Design	
Week1	Physical Models
Week2	User Interface Design
Week3	Outputs, Inputs, and Processes
Week4	Design Internal and External Controls

Chart Legend	
	System Phase
	Milestone
	Complete Project

Systems Implementation	
Week5 & 6	System Construction
Week7	Testing and Documentation
Week8	Completed System Delivered
	System Support

APPENDIX H - Preliminary Investigation

Preliminary Investigation Report is on file.