

Web-based Ordering & Ingredient Estimating for Bakery Manufacturer

Project Management Plan

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***NM = Nontra Mahachanont**

***PP = Parinya Panyanak**

***PS = Phudinan Singkhamfu**

Document Name	Web-based Ordering & Ingredient Estimating for Bakery Manufacturer – PMP_V.3.0.docx	Owner	PP, NM	Page	2 / 26
Document Type	Project Management Plan	Release Date	1 December 2014	Print Date	1 December 2014

Table of contents

Chapter One Introduction.....	5
1.1 Identification	5
1.2 Scope.....	5
1.3 Document Overview	5
1.4 Objective	6
1.5 Work Products to be Develop	6
1.5.1 Deliverables and Delivery Instruction	6
1.5.2 Non-Deliverables	9
1.6 Acronyms and Definitions	9
1.6.1 Acronyms	9
1.6.2 Definitions.....	10
Chapter Two Infrastructure	13
2.1 Software Development Life Cycle	13
2.2 Software Acquisition Plans	14
2.2.1 Design Tools	14
2.2.2 Development Tools	14
2.2.3 Configuration Management Tools	14
2.2.4 Document Tools.....	14
2.2.5 Operating System.....	14
2.3 Hardware and Material Resources	15
Chapter Three Management Procedures.....	16
3.1 Project Team Structure	16
3.2 Project Responsibility	16
3.3 Change Management.....	16
Chapter Four Quality Standard	17
4.1 ISO29110 for Very Small Entity (VSE).....	17
4.1.1 Project Management Process	17
4.1.2 Software Implementation Process.....	17
Chapter Five Quality Planning.....	18
5.1 Reviews/Responsibility.....	18
5.3 Testing.....	18

Document Name	Web-based Ordering & Ingredient Estimating for Bakery Manufacturer – PMP_V.3.0.docx	Owner	PP, NM	Page	3 / 26
Document Type	Project Management Plan	Release Date	1 December 2014	Print Date	1 December 2014

Chapter Six Schedule and Milestones	19
6.1 Project Schedule.....	19
Chapter Seven Software Configuration Management.....	22
7.1 Software Configuration Management	22
7.2 Filename Format	22
7.3 Project Repository	22
7.4 Software Configuration Item Table.....	23
Chapter Eight Risk Management	24
8.1 Risk Management Process	24
8.2 Risk Identification and Solutions	25
Chapter Nine References	26

Document Name	Web-based Ordering & Ingredient Estimating for Bakery Manufacturer – PMP_V.3.0.docx	Owner	PP, NM	Page	4 / 26
Document Type	Project Management Plan	Release Date	1 December 2014	Print Date	1 December 2014

Chapter One | Introduction

Project Name: Web-based Ordering & Ingredient Estimating for Bakery Manufacturer

As a result of quantity demand, the Phungnoi bakery manufacturer becomes an important source among wholesalers. Some bakery manufacturer has many wholesalers and orders, for example, many branches ordered bakery products more than ten thousand baths. These leads to the problems that the bakery manufacturer cannot manage or handle the information easily because of many factors such as time, communication and system. So we have an idea to create a new system that able to manage information easily and provide convenient order process on the wholesale side. Then also helps the manufacturer control their ingredient usage in each manufacturing. These will make the managing process more reliable and convenient because the system provides managing system function such as order management, bakery product management, member management, recipe management, ingredient estimation and report system.

1.1 Identification

This document is the software project management plan, which described the process of the Web-based Ordering & Ingredient Estimating for Bakery Manufacturer. This document included planning, scheduling, activities, evaluating overall of the project and the risk that may possible for managing the software process activities.

1.2 Scope

Web-based Ordering & Ingredient Estimating for Bakery Manufacturer is a management system that helps the admin to manage ordering information and estimate ingredient usage. Then the system also helps the wholesaler to manage order and record ordered history. The project focuses on implementation of general order management system. The objective of this project is to develop management system that used with the Phungnoi bakery manufacturer for controlling their ingredient usage. Another objective is to develop a system that support web-based ordering for the Phungnoi bakery's wholesalers.

1.3 Document Overview

The purpose of the Web-based Ordering & Ingredient Estimating for Bakery Manufacturer development plan is to guide the developer while develop the system. This project has developed in the process of making the project and all documents according to the software quality assurance. In this project will use the ISO29110 standard that suit with very small entity.

Document Name	Web-based Ordering & Ingredient Estimating for Bakery Manufacturer – PMP_V.3.0.docx	Owner	PP, NM	Page	5 / 26
Document Type	Project Management Plan	Release Date	1 December 2014	Print Date	1 December 2014

1.4 Objective

Firstly, the implement a software management system which would be include many management features, such as member management, product management, order management, ingredient estimation, report management, etc.

Second objective is to develop web-based online ordering for the wholesalers. This objective is to provide order management system and other service support wholesale side.

Third objective is to develop ingredient estimating function for control budget and standard of the Phungnoi bakery manufacturer.

Where the last objective is to study the iterative development process and adapt the software engineering methodologies and knowledge that we have learned from the previous courses for the senior project.

1.5 Work Products to be Develop

1.5.1 Deliverables and Delivery Instruction

No.	Deliverable	Media	No. of Copies	Date
4	The Final Progress Report <ul style="list-style-type: none"> Project Management Plan V.3.0 Web-based Ordering & Ingredient Estimating for Bakery Manufacturer Web Application V.3.0 <p>Final Progress: Web-based Ordering & Ingredient Estimating for Bakery Manufacturer web application provides ingredient estimation system and report management system functions</p> <p><u>Features</u></p> <ul style="list-style-type: none"> Add menu recipe information; <ul style="list-style-type: none"> - bakery product name - bakery product ID - bakery product picture - ingredient id - ingredient name - ingredient quantity - category View menu recipe list View menu recipe information; 	Document Software	3 1	11 December 2014

Document Name	Web-based Ordering & Ingredient Estimating for Bakery Manufacturer – PMP_V.3.0.docx	Owner	PP, NM	Page	6 / 26
Document Type	Project Management Plan	Release Date	1 December 2014	Print Date	1 December 2014

	<ul style="list-style-type: none"> - bakery product name - bakery product ID - bakery product picture - ingredient id - ingredient name - ingredient quantity - category • Edit menu recipe information; <ul style="list-style-type: none"> - bakery product name - bakery product ID - bakery product picture - ingredient id - ingredient name - ingredient quantity - category • Remove existing menu recipe • Search menu recipe information; <ul style="list-style-type: none"> - bakery product name - bakery product ID - bakery product picture - ingredient id - ingredient name - category • Calculate ingredient usage • Calculate real number of bakery product • Search filter keywords of calculation; <ul style="list-style-type: none"> - wholesaler name - wholesaler ID - bakery product name - bakery product ID - delivery date - ingredient quantity - ingredient name list • Select keyword type for different estimation • View all ingredient usage; <ul style="list-style-type: none"> - wholesaler name - wholesaler ID - bakery product name - bakery product ID - delivery date - ingredient quantity - ingredient name list • Mark progressive of order status while the order in the manufacturing stage • View progress order status while the order in the manufacturing stage • Search ingredient estimation history; <ul style="list-style-type: none"> - bakery product name 			11 December 2014
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Document Name	Web-based Ordering & Ingredient Estimating for Bakery Manufacturer – PMP_V.3.0.docx	Owner	PP, NM	Page	7 / 26
Document Type	Project Management Plan	Release Date	1 December 2014	Print Date	1 December 2014

	<ul style="list-style-type: none"> - bakery product ID - ingredient name - ingredient ID - wholesaler name - wholesaler ID - order ID - delivery date • View order history list; <ul style="list-style-type: none"> - wholesaler ID - wholesaler name - delivery date • View order history information; <ul style="list-style-type: none"> - wholesaler ID - wholesaler name - delivery date - bakery product list - bakery product quantity - total price of the order - discount of order • Search filter keywords of report types • Select report type for different summary • View all summary report • Print out all summary report • Convert summary report file to PDF file • Search filter keywords of graph type; <ul style="list-style-type: none"> - pie chart - column chart - bar chart - stock chart - line chart - area chart • Select graph type for different graph • Convert report statistic to be a graph • View all statistic graph data; <ul style="list-style-type: none"> - graph picture - statistic portion - summary • Print out all graph as a picture • Save graph in a picture file <p><u>Documentation</u></p> <ul style="list-style-type: none"> • Software Requirement Specification Document V.3.0 • Software Design Document V.3.0 • Software Test Plan Document V.3.0 • Software Test Record V.3.0 				11 December 2014
		Document	3		
		Document	3		
		Document	3		
		Document	3		

Document Name	Web-based Ordering & Ingredient Estimating for Bakery Manufacturer – PMP_V.3.0.docx	Owner	PP, NM	Page	8 / 26
Document Type	Project Management Plan	Release Date	1 December 2014	Print Date	1 December 2014

	• Traceability Record V.3.0	Document	3	11 December 2014
	• Project Status Report V.3.0	Document	3	
	• Executive Summary V.3.0	Document	3	

1.5.2 Non-Deliverables

No.	Non-Deliverable	Media	No. of Copies	Date
1	30 Seconds Video Presentation	File	1	17 September 2014
2	Abstract 150 words	File	1	17 September 2014
3	Poster Presentation	Poster	1	18 September 2014

1.6 Acronyms and Definitions

1.6.1 Acronyms

SRS	Software Requirement Specification
URS	User Requirement Specification
SDD	Software Design Document
OS	Operation System
VSE	Very Small Entity
PMP	Project Management Plan
SI	Software Implementation
IDP	Iterative Development Process
SCI	Software Configuration Item
SCM	Software Configuration Management
SQA	Software Quality Assurance
AD	Activity Diagram
UC	Use Case
IEEE	Institute of Electrical and Electronics Engineers
RTM	Requirement Traceability Matrix
UI	User Interface
UTR	Unit Testing Record
STR	System Testing Record

Document Name	Web-based Ordering & Ingredient Estimating for Bakery Manufacturer – PMP_V.3.0.docx	Owner	PP, NM	Page	9 / 26
Document Type	Project Management Plan	Release Date	1 December 2014	Print Date	1 December 2014

1.6.2 Definitions

Feature	Transformation of input parameters to output parameters based on a specified algorithm. It describes the functionality of the product in the language of the product. Used for requirements analysis, design, coding, testing or maintenance. ^[8] [IEEE90]
IEEE	Institute of Electrical and Electronics Engineers. Biggest global interest group for engineers of different branches and computer scientists. ^[8] [IEEE90]
Plan	A documented series of tasks requires meeting and objective, typically including the associated schedule, budget, resources, organizational description and work breakdown structure. [IEEE90]
Project Management	The application of knowledge, skills, tools, and techniques to project activities in order to meet or exceed stakeholder needs and expectations from a project. ^[8] [IEEE90]
Project Plan	A formal, approved document used to guide both project execution and project control. The primary uses of the project plan are to document planning assumptions and the decision, to facilitate communication among stakeholders, and to document approved scope, cost, and schedule baseline. ^[8] [IEEE90]
Risk Management	The systematic application of management policies, procedures and practices to the tasks of identifying, analyzing, evaluating treating and monitoring risk. ^[8] [IEEE90]
Validation	Confirmation by examination and provision of objective evidence that the particular requirements for a specified intended use fulfilled. Part of quality control. ^[9] [IEEE90]
Verification	Confirmation at the end of the process by examination and provision of objective evidence that specified requirements to the process has fulfilled. Part of quality control. ^[8] [IEEE90]

Document Name	Web-based Ordering & Ingredient Estimating for Bakery Manufacturer – PMP_V.3.0.docx	Owner	PP, NM	Page	10 / 26
Document Type	Project Management Plan	Release Date	1 December 2014	Print Date	1 December 2014

Traceability	The ability to trace the history, application or location of an item or activity, or work products or activities, by means of recorded identification. The establishment and maintenance of relationships between such items. Horizontal traceability describes the relationship between work products of the same type (e.g., customer requirements). Vertical traceability describes the relationship between work products which build upon each other or are derived from each other (e.g., from customer requirements to qualification test cases). Bidirectional reliability allows to directly following relationship in both directions. ^[8] [IEEE90]
Configuration Management	A was discipline applying technical and administrative direction and surveillance to: identify and document the functional and physical characteristics of a configuration item, control change processing implementation status, and verify compliance with specified requirements. ^[10] [IEEE90]
Design	The period the software life cycle during which the design for architecture, software components, interfaces, and design are created, documented, and verified to satisfy the requirement. [IEEE90]
Implementation	The period the software life cycle during which a software product is create a documentation and debugged. [IEEE90]
Work Product	Any tangible item that results from a project function, activity, or task. Examples of work products include customer requirement, project plan, design documents, source and object code, user's manuals.
Software	Computer programs, procedures, and associated documentation and data pertaining to the operation of a computer system. ^[11] [IEEE90]

Document Name	Web-based Ordering & Ingredient Estimating for Bakery Manufacturer – PMP_V.3.0.docx	Owner	PP, NM	Page	11 / 26
Document Type	Project Management Plan	Release Date	1 December 2014	Print Date	1 December 2014

Software Engineering	The application of a systematic, disciplined, quantifiable approach to the development, operation, and maintenance of software; that is, the application of engineering to software. ^[8] [IEEE90]
Quality Assurance	<p>(1) A planned and systematic pattern of all actions necessary to provide adequate confidence that an item or product conforms to established technical requirement. ^[12] [IEEE90]</p> <p>(2) A set of activities designed to evaluate the process by which producers developed or manufactured. ^[12] [IEEE90]</p>
Admin	The person is responsible for the installation, configuration, upgrade, administration, monitoring, and maintenance. (Abbreviated admin)

Document Name	Web-based Ordering & Ingredient Estimating for Bakery Manufacturer – PMP_V.3.0.docx	Owner	PP, NM	Page	12 / 26
Document Type	Project Management Plan	Release Date	1 December 2014	Print Date	1 December 2014

Chapter Two | Infrastructure

2.1 Software Development Life Cycle

The Iterative process model is iterating on steps as the project development with requirements. Iterative model iterates Requirement, Design, Development (Implement), Test phases and Deployment (Evaluate, Feedback) for each requirement and builds up quality until complete. The advantage of iterative model is building and improving the product step by step. Thus, developer can track the defects at early stages and avoid flow of defects.

Web-based Ordering & Ingredient Estimating for Bakery Manufacturer project using iterative development process, because it does not attempt to start with a full specification of requirements. We needed to develop the iterative way to review and improve the software and its documents for each development progress until it has finished. ^[7]

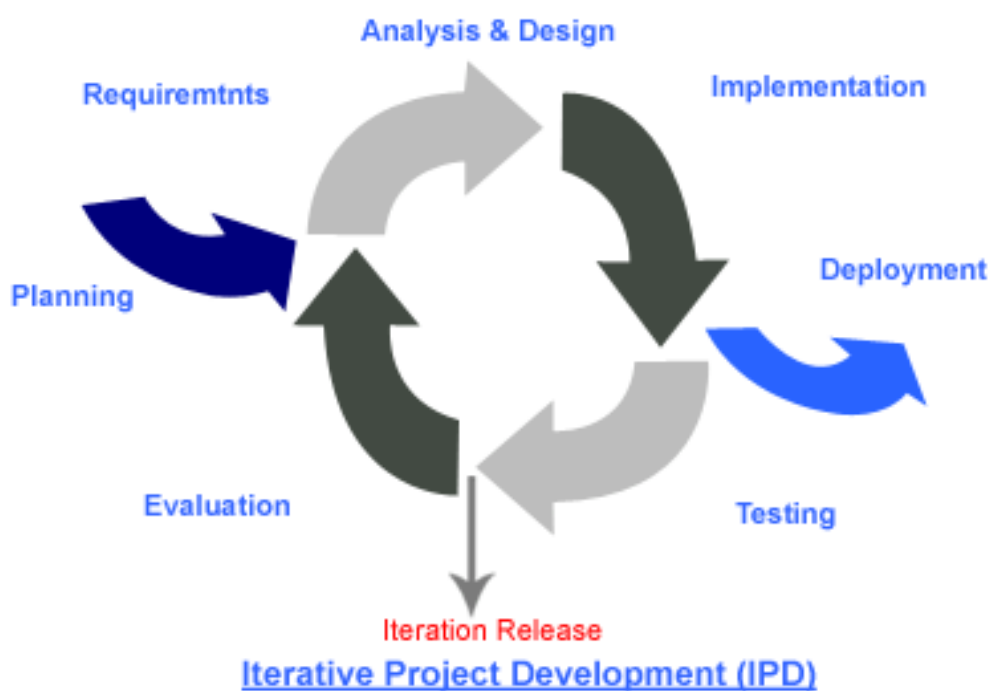


Figure 1: Iterative Development Model ^[1]

Document Name	Web-based Ordering & Ingredient Estimating for Bakery Manufacturer – PMP_V.3.0.docx	Owner	PP, NM	Page	13 / 26
Document Type	Project Management Plan	Release Date	1 December 2014	Print Date	1 December 2014

2.3 Software Acquisition Plans

2.2.1 Design Tools

- Smart Draw 2013
- Visual Paradigm for UML 10.2
- Adobe Photoshop Elements 7.0
- Paint

2.2.2 Development Tools

- Microsoft SQL Server Management Studio
- Microsoft Visual Studio Ultimate
- Tortoise SVN

2.2.3 Configuration Management Tools

- Github
- Google Chrome
- Firefox

2.2.4 Document Tools

- Microsoft Office Word
- Microsoft Office PowerPoint
- Notepad ++
- Adobe Reader 9

2.2.5 Operating System

- Windows 7, Window 8

Document Name	Web-based Ordering & Ingredient Estimating for Bakery Manufacturer – PMP_V.3.0.docx	Owner	PP, NM	Page	14 / 26
Document Type	Project Management Plan	Release Date	1 December 2014	Print Date	1 December 2014

2.3 Hardware and Material Resources

- Computers
 - **Name:** Sony VAIO-VAIO

Processor: Intel® Pentium® Processor T4300 (2.10 GHz)

Memory: 2.00 GB

Graphics: Intel® Graphics Media Accelerator HD

Operating System: Window® 7 Home Basic (64-bit)
 - **Name:** Sony VAIO

Processor: Intel® Core (TM) I3-3120M (2.5 GHz)

Memory: 4.00 GB

Graphics: Radeon Graphics System

Operating System: Window® 8 Based Processor (64-bit)

Document Name	Web-based Ordering & Ingredient Estimating for Bakery Manufacturer – PMP_V.3.0.docx	Owner	PP, NM	Page	15 / 26
Document Type	Project Management Plan	Release Date	1 December 2014	Print Date	1 December 2014

Chapter Three | Management Procedures

3.1 Project Team Structure

No.	Participants	Roles
1	Miss. Nontra Mahachanont	Development Team Member
2	Mr. Parinya Panyanak	Development Team Member
3	Aj. Phudinan Singkhamfu	Project Advisor

3.2 Project Responsibility

No.	Participants	Responsibility
1	Miss. Nontra Mahachanont	Feasibility Study
	All members	Project Proposal
	Miss. Nontra Mahachanont	Project Requirements Specification
	Miss. Nontra Mahachanont	Project Management Plan
	Mr. Parinya Panyanak	Project Software Design Document
	Mr. Parinya Panyanak	Implementation
	Mr. Parinya Panyanak	Software Test Report Document
2	Aj. Phudinan Singkhamfu	Review Document
		Approve The Document
		Approve Change Document

3.3 Change Management

Change Management manages all of the changes in the project during the development process. All of the change requests will be recording into the change management document.

We have a strategy for managing the changes by following these rules:

- Create requirement traceability to trace change document.
- Specify version of each document.
- Determine baseline document version.
- Approving the change request by project advisor.

Document Name	Web-based Ordering & Ingredient Estimating for Bakery Manufacturer – PMP_V.3.0.docx	Owner	PP, NM	Page	16 / 26
Document Type	Project Management Plan	Release Date	1 December 2014	Print Date	1 December 2014

Chapter Four | Quality Standard

4.1 ISO29110 for Very Small Entity (VSE)

ISO29110 is a guide applies to a Very Small Entity (VSE), enterprise, organisation, department or project up to 25 people, dedicated to software development. The Guide provides Project Management and Software Implementation processes which integrate practices based on the selection of ISO/IEC 12207 - *Systems and Software Engineering — Software Life Cycle Processes* and ISO/IEC 15289 *Software Engineering – Software Life Cycle Process – guidelines for the content of software life cycle process information products (documentation)* standards elements. ^[4]

4.1.1 Project Management Process

The purpose of the Project Management Process is to improve the success rate of projects in all areas of knowledge, which allows complying with the project's objectives in the expected quality, time and cost. ^[3]

Activities

- Project Planning Process
- Project Plan Execution Process
- Project Assessment and Control Process
- Project Closer Process

4.1.2 Software Implementation Process

The purpose of the Software Implementation Process is the systematic performance of the analysis, design, construction, integration and tests activities for new or modified software products according to the specified requirements. ^[4]

Activities

- Software Implementation Initiation Process
- Software Requirements Analysis Process
- Software Architectural Design Process
- Software Construction Process
- Software Integration and Test Process
- Software Delivery Process

Document Name	Web-based Ordering & Ingredient Estimating for Bakery Manufacturer – PMP_V.3.0.docx	Owner	PP, NM	Page	17 / 26
Document Type	Project Management Plan	Release Date	1 December 2014	Print Date	1 December 2014

Chapter Five | Quality Planning

5.1 Reviews/Responsibility

Stage Exit Review				
No.	Stage	Review Item	Responsibility	Reviewer
1	Project Planning	Project Management Plan	NM	All members Advisor
2	Requirements Specification	Project Proposal	All members	All members Advisor
		Software Requirement Specification	NM	All members Advisor
3	Architecture and Detailed Design	Software Design Document	PP	All members Advisor
4	Development	Implementation	PP	All members Advisor
		Unit Test Report	PP	All members Advisor
5	Software Testing	System Test Report	PP	All members Advisor
6	Project Monitoring and Control	Traceability Record	NM	All members Advisor
		Project Status Report	NM	All members Advisor
		Change Request	NM	All members Advisor

5.3 Testing

Test Process			
No.	Test	Verification	Responsibility
1	Unit Testing	All members Advisor	Parinya Panyanak
2	System Testing	All members Advisor	Parinya Panyanak

Document Name	Web-based Ordering & Ingredient Estimating for Bakery Manufacturer – PMP_V.3.0.docx	Owner	PP, NM	Page	18 / 26
Document Type	Project Management Plan	Release Date	1 December 2014	Print Date	1 December 2014

Chapter Six | Schedule and Milestones

6.1 Project Schedule

According from Figure 2 was show the schedule and milestones of Web-based Ordering & Ingredient Estimating for Bakery Manufacturer. During period of time, there are work terminologies. And the description is shown below that:

➤ **Feature#5: Ingredient Estimation**

- Admin can manage menu recipe information by provides the bakery product ID, bakery product name, ingredient ID, ingredient name, ingredient quantity, category and bakery product picture.
- Admin can search menu recipe information by filter keywords of bakery product ID, bakery product name, ingredient ID, ingredient name and category.
- Admin can view menu recipe list such as bakery product name.
- Admin can view menu recipe information such as ingredient quantity.
- An application provides menu recipe information such as bakery product ID, bakery product name, ingredient ID, ingredient name, category and bakery product picture.
- An application provides ingredient estimation function.
- Admin can search ingredient estimation by filter keywords of wholesaler name, wholesaler ID, bakery product ID, bakery product name, ingredient ID, ingredient name, delivery date and category.
- Admin can select different estimation keywords to calculation.
- Admin can know the actual number of bakery product after manufacturing.
- Admin can view ingredient usage results such as wholesaler name, wholesaler ID, bakery product ID, bakery product name, ingredient ID, ingredient name, delivery date and category.
- An application provides a real number in bakery product manufacturing stage.
- Admin can mark progressive of order status while the order in the manufacturing stage.
- Wholesaler can view own order status at the manufacturing stage.
- Admin can search ingredient estimation history by filter keywords of wholesaler name, wholesaler ID, bakery product ID, bakery product name, ingredient ID, ingredient name, delivery date and category.
- Admin can view ingredient estimation history list such as wholesaler name, wholesaler ID and delivery date.
- Admin can view ingredient estimation history information such as wholesaler name, wholesaler ID, bakery product ID, bakery product name, ingredient ID, ingredient name, delivery date and category.

Document Name	Web-based Ordering & Ingredient Estimating for Bakery Manufacturer – PMP_V.3.0.docx	Owner	PP, NM	Page	19 / 26
Document Type	Project Management Plan	Release Date	1 December 2014	Print Date	1 December 2014

Feature#6: Report Management System

- Admin can manage report type information by provides the report ID, report name, description, users types and example picture.
- User can view summary report list consist of the report ID and report name.
- User can view summary report information consist of the report ID, report name, description, users types and report example.
- User can search report type by filter keywords of order history information and ingredient estimation information.
- User can select different summary report types.
- User can view all summary report information such as statistic data.
- User can print out summary report.
- User can save all summary report as a PDF format file.
- An application provides summary report management system.
- An application provides summary report information consist of the report ID, report name, description, users types and report example.
- User can search graph type by filter keywords of a pie chart, bar chart, column chart, stock chart and area chart.
- User can select different graph types.
- User can view all graph information such as graph picture and statistic data.
- User can save the graph as a picture.
- User can print out all graph picture.
- An application provides converter statistic data to be a graph.
- User can search order history by filter keywords of wholesaler name, wholesaler ID, bakery product ID, bakery product name, ingredient ID, ingredient name, delivery date and category.
- User can view order history list such as wholesaler name, wholesaler ID and delivery date.
- User can view order history information such as wholesaler name, wholesaler ID, bakery product ID, bakery product name, ingredient ID, ingredient name, delivery date and category.

Document Name	Web-based Ordering & Ingredient Estimating for Bakery Manufacturer – PMP_V.3.0.docx	Owner	PP, NM	Page	20 / 26
Document Type	Project Management Plan	Release Date	1 December 2014	Print Date	1 December 2014

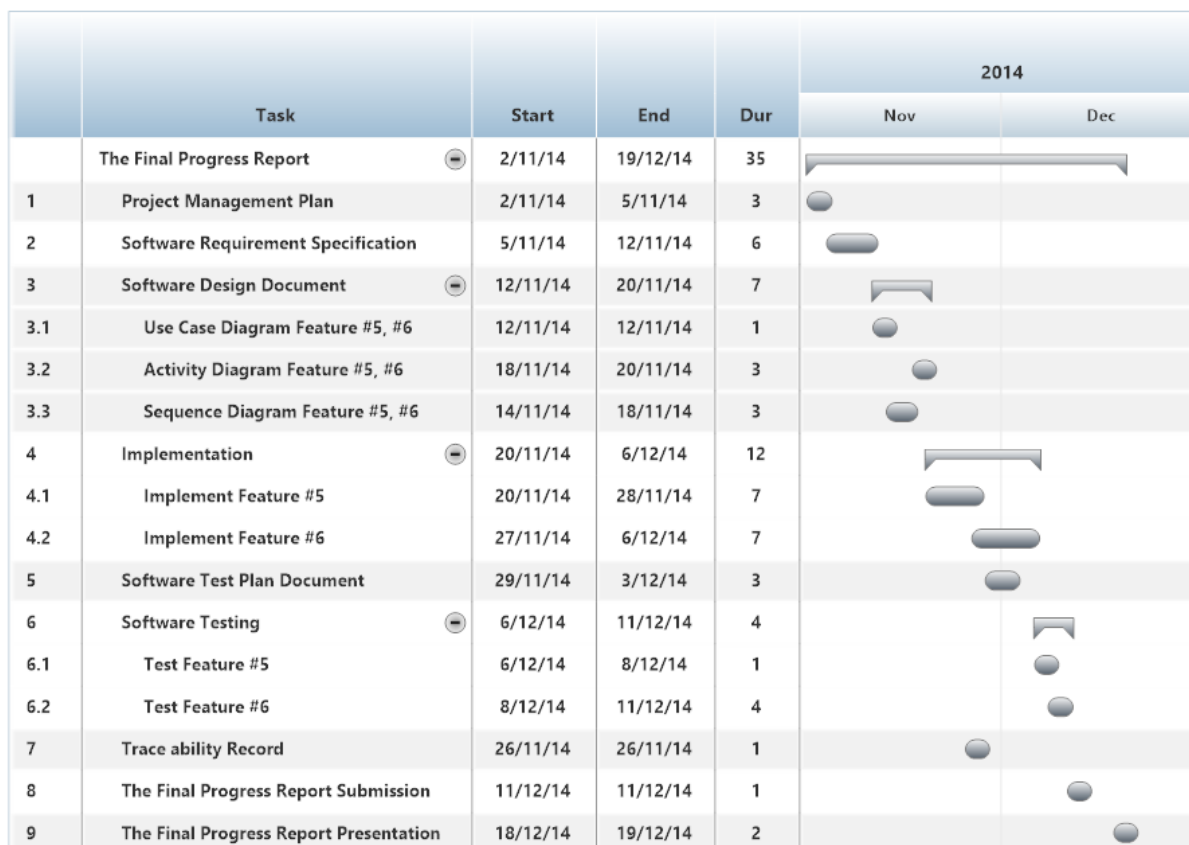


Figure 2: Final Progress Report Milestone

As shown in figure 2, We will start develop the feature#5 and #6. In addition we will also start to do the development plan, quality plan, software requirement specification, software design, test plan and traceability record which represent by form of start date, end date and duration.

Document Name	Web-based Ordering & Ingredient Estimating for Bakery Manufacturer – PMP_V.3.0.docx	Owner	PP, NM	Page	21 / 26
Document Type	Project Management Plan	Release Date	1 December 2014	Print Date	1 December 2014

Chapter Seven | Software Configuration Management

7.1 Software Configuration Management

Software Configuration Management is a set of activities designed to control change by identifying the work products that are likely to change, establishing relationships among them, defining mechanisms for managing different versions of these work products, controlling the changes imposed, and adding and reporting on the changes made. In other words, SCM is a methodology to control and manage software development project. ^[6]

7.2 Filename Format

For the filename format that we using for all project document is:
[Project name]-[Document name]_[Version].file type

7.3 Project Repository

C:\Users\VAiO\Desktop\Senior Project

Document Name	Web-based Ordering & Ingredient Estimating for Bakery Manufacturer – PMP_V.3.0.docx	Owner	PP, NM	Page	22 / 26
Document Type	Project Management Plan	Release Date	1 December 2014	Print Date	1 December 2014

7.4 Software Configuration Item Table

No.	Item name	File name	File Type	Owner (Role)	Repository (Path)	Baseline Version
1	Project Proposal	Web-based Ordering & Ingredient Estimating for Bakery Manufacturer – Project Proposal_V.1.4	.docx	PP, NM	C:\Users\VAiO\Desktop\Senior Project\Project Plan	1.4
2	Project Management Plan	Web-based Ordering & Ingredient Estimating for Bakery Manufacturer – PMP_V.3.0	.docx	PP, NM	C:\Users\VAiO\Desktop\Senior Project\PMP	3.0
3	Software Requirement Specification	Web-based Ordering & Ingredient Estimating for Bakery Manufacturer – SRS_V.3.0	.docx	PP, NM	C:\Users\VAiO\Desktop\Senior Project\SRS	3.0
4	Software Design Document	Web-based Ordering & Ingredient Estimating for Bakery Manufacturer – SDD_V.3.0	.docx	PP, NM	C:\Users\VAiO\Desktop\Senior Project\SDD	3.0
5	Software Test Plan Document	Web-based Ordering & Ingredient Estimating for Bakery Manufacturer – Test Plan_V.3.0	.docx	PP, NM	C:\Users\VAiO\Desktop\Senior Project\Test Plan	3.0
6	Traceability Record	Web-based Ordering & Ingredient Estimating for Bakery Manufacturer – TR_V.3.0	.docx	PP, NM	C:\Users\VAiO\Desktop\Senior Project\TR	3.0
7	Software Source Code	Web-based Ordering & Ingredient Estimating for Bakery Manufacturer – Code_V.3.0	.zip	PP, NM	C:\Users\VAiO\Desktop\Senior Project\Code	3.0
8	30 Seconds Video Presentation	Web-based Ordering & Ingredient Estimating for Bakery Manufacturer – VDO_V.1.0	.mp4	PP, NM	C:\Users\VAiO\Desktop\Senior Project\VDO	1.0
9	Poster Size A1	Web-based Ordering & Ingredient Estimating for Bakery Manufacturer – Poster_V.1.0	.png	PP, NM	C:\Users\VAiO\Desktop\Senior Project\Poster	1.0
10	Software Product	Web-based Ordering & Ingredient Estimating for Bakery Manufacturer – Software_V.3.0	.zip	PP, NM	C:\Users\VAiO\Desktop\Senior Project\Software	3.0

Document Name	Web-based Ordering & Ingredient Estimating for Bakery Manufacturer – PMP_V.3.0.docx	Owner	PP, NM	Page	23 / 26
Document Type	Project Management Plan	Release Date	1 December 2014	Print Date	1 December 2014

Chapter Eight | Risk Management

Risk management is concerned with identifying risks and drawing up plans to minimize their effect on the project. ^[5]

A risk is probability that some adverse circumstance will occur. ^[13]

- Project risks affect schedule or resources.
- Product risks affect the quality or performance of the software being developed.
- Business risks affect the project team during developing or procuring the software.

Identified risks at the start of the project and the start of the development phase. All identified risks are documented and assessed in the Risk Management Process by the Project Development Team. In the Risk Management Process defines the possible risks and solution of them, and who is responsible for. ^[14]

8.1 Risk Management Process

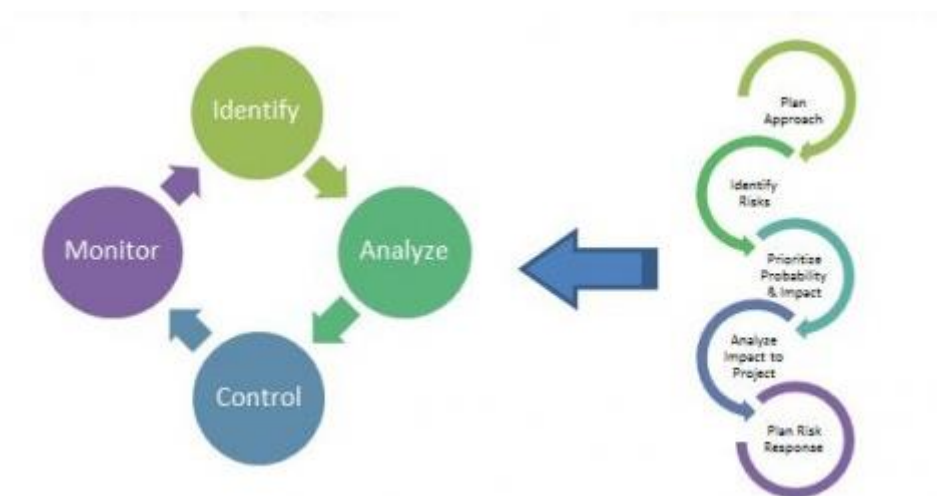


Figure 3: Risk Management Process Model ^[2]

1. Risk identify: identify the project, product and business risks.
2. Risk analyze: Assess the likelihood and consequences of the risks.
3. Risk controlling: Draw up plans to avoid or minimize the effects of the risks.
4. Risk monitoring: Monitor the risks throughout the project.

Document Name	Web-based Ordering & Ingredient Estimating for Bakery Manufacturer – PMP_V.3.0.docx	Owner	PP, NM	Page	24 / 26
Document Type	Project Management Plan	Release Date	1 December 2014	Print Date	1 December 2014

8.2 Risk Identification and Solutions

No.	Risk Statement	Risk Solution	Priority
1	The requirements might be change.	<ul style="list-style-type: none"> • Meeting and discuss the impact of the changed requirements with the team member and project advisor. • Design system which changed requirements and related with the other requirements. • Use software configuration management and follow change management step. 	High
2	During the implementing, the internet maybe out of order or slow.	<ul style="list-style-type: none"> • Change the working place. 	Medium
3	The deliverables maybe delay.	<ul style="list-style-type: none"> • Try to study more hard than previous work. • Ask a professional to make faster understand. • Try to follow the schedule and milestone. 	High
4	Team member maybe get engaged and can't develop the project.	<ul style="list-style-type: none"> • Assign work to left team member who doesn't get involved. 	Low
5	Budget of developing may not enough.	<ul style="list-style-type: none"> • Ask for more budgets from project advisor. 	Low
6	Work products are not submitted on time.	<ul style="list-style-type: none"> • Establish the project plan. • Develop project follow the project plan. 	High
7	Work products are not traceable.	<ul style="list-style-type: none"> • Create the traceability record. 	Medium
8	Team member lack skill and knowledge.	<ul style="list-style-type: none"> • Team member is tutoring implementation. • Ask for assistance and support from textbooks, websites, experienced developer and advisor. 	High
9	Ambiguous responsibility.	<ul style="list-style-type: none"> • Always discuss the work together. 	Medium
10	Team member misunderstand system work.	<ul style="list-style-type: none"> • The member's review system before development phase and use diagram to explain system working. 	High
11	Human resource not enough.	<ul style="list-style-type: none"> • Planning schedule and hard working. 	Medium
12	Unfamiliar with testing process.	<ul style="list-style-type: none"> • Study testing technique during the test design. 	Medium
13	The computer crash.	<ul style="list-style-type: none"> • Always save all file in Github repository. 	Medium
14	Bad communication between team members	<ul style="list-style-type: none"> • Try to understand each other and exchange more information together. 	Medium

Document Name	Web-based Ordering & Ingredient Estimating for Bakery Manufacturer – PMP_V.3.0.docx	Owner	PP, NM	Page	25 / 26
Document Type	Project Management Plan	Release Date	1 December 2014	Print Date	1 December 2014

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Document Name	Web-based Ordering & Ingredient Estimating for Bakery Manufacturer – PMP_V.3.0.docx	Owner	PP, NM	Page	26 / 26
Document Type	Project Management Plan	Release Date	1 December 2014	Print Date	1 December 2014