POS SYSTEM – PROJECT PLAN



HIT Team

Consulting

Sales

Staffing

Support

**Information of document**

|  |  |
| --- | --- |
| Title | Architecture Document |
| Author(s) | All team |
| Reviewer(s) | All team |
| Team name | HIT Team |
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| Editor |  |
| Type of report | Architecture Document |
| Software used | MS Word |

**Document Reviewer Information**

|  |  |  |
| --- | --- | --- |
| Reviewer Name | Review Attendance (R/S) | Comments |
|  |  |  |
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|  |  |  |
| R/S: Required or Suggested participants or functions for the document review meeting | | |

**Document Approver Information**

|  |  |  |
| --- | --- | --- |
| Approver Name | Approver Function | Comments |
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**Document Revision History**

|  |  |  |  |
| --- | --- | --- | --- |
| Revision Number | Date of Issue | Author(s) | Brief Description of Change |
| 1.1 | 11/06/2012 |  |  |
| 1.2 | 11/06/2012 |  |  |
| 1.3 | 12/06/2012 |  |  |
|  |  |  |  |

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# Introduction

## Overview

This section of the Software Project Management Plan (SPMP) gives an overview of the purpose, scope, and objectives of the project. It also contains the assumptions and constraints, the project deliverables, the summary of the schedule and budget, and the plan for changing the SPMP.

## Project summary

Company A, a retail chain, has decided to develop a sales system (hereinafter, the system) in conjunction with its launch of a point service. Company A decided to choose the Web solution using ASP.NET MVC 3 framework, only Web browser, no local Database needed for any POS terminal. And authorized managers can display statistic reports from Internet.



## Scope and objectives

HIT Team will develop POS System on web platform with following targets:

* Quick Checkout: Each cashier will have a bar-code scanners. Products sold at stores have bar codes attached which indicate the product codes.
* Payment Options: Company A offers payment by cash or by using loyalty card point
* Control: Products are classified into product types such as food, general merchandise, etc. Not all stores carry every product type, and the range of product types carried is designated for each store.
* Competitive prices, especially on new or unique items: After analyzing sales information, the marketing department launches advertising campaigns to target individual customers based on purchasing history and budget. Because the system is capable of performing the statistical analysis on the sales records of all stores in near real-time manner.
* Update and maintain the inventory file on a routine basis and whenever a change in pricing or availability occurs. Report both regular and sales pricing data.
* Track product popularity and profitability.
* Improve customer throughput with faster service.
* Accelerate inventory turnover by being able to stock the items known to sell quickly.

## Project Deliverables

* Architecture drivers document
* Function requirements
* Quality attributes - most important and difficult
* Technical constrains
* Business constrains
* POST Architecture document
* Module View
* C&C View
* Allocation View

## Evolution of the project management plan

## Reference materials

* Project Plan Outline IEEE Template
* Anthony J. Lattanze, 2008, Architecting Software Intensive Systems

## Definitions and acronyms

|  |  |
| --- | --- |
| Acronym | Definition |
| API | Application Programming Interface |
| CCB | Configuration Control Board |
| CM | Configuration Management |
| CMU | Carnegie Mellon University |
| DB | Database |
| EOSP | End of Semester Presentation |
| LOC | Line of Code |
| OS | Operating System |
| PSP | Personal Software Process |
| QA | Quality Assurance |
| SPMP | Software Project Management Plan |
| SRE | Software Risk Evaluation |
| SRS | Software Requirements Specification |
| TSP | Team Software Process for Education |

# Project organization

## Process model

## Organizational structure

This section of the SPMP identifies the external entities structure to the project and their interaction with the project team and gives a brief description of each of the roles held by the team members, as well as internal project structure and roles and responsibilities for the project.



### Organizational Structure

All members have specified areas of responsibility and everybody contributes equally to the project. There are six roles assigned to the six team members: Project Leader, Architect Manager, Recorder, Planning Manager, and Support Manager.

All team members may provide input to all decisions that the team makes; however, greater weight will be given to the recommendations of the appropriate manager. If there is a problem, issues will be resolved within the team and all members will approve the final decision. The team members will change roles throughout the life of the project, and each member may continue to have more than one role.

### Organizational Boundaries and Interfaces

The team will meet weekly with the client (is also the lecturer) to report progress and discuss changes and progress possible and discuss possible changes and amendments. Major changes will affect the important events or major changes will affect important events must be approved by the whole team. From these documents it will be important issues are all members agree.

### Roles and responsibilities

|  |  |
| --- | --- |
| Role | Responsibilities |
| Team Leader (Thanh Giang ) | * Motivate the team to perform tasks and resolve issues * Track status of committed assignments * Check that team members have submitted the required project data * Press late team members to promptly submit the required work * Lead the team in allocating tasks to individuals * Act as facilitator in all team meetings * Report team progress and issues to mentors * Handle personnel issues * Maintain process discipline * Focus on product quality |
| Planning Manager (Phuc Nguyen) | * Lead the team in producing the task plan for the current cycle * Lead the team in producing the balanced team development plan * Track the team’s progress against the plan * Consolidates the individual plans into the team plan |
| Architecture Manager (Huy Huynh) | * Lead the team in producing the development strategy * Lead the team in producing the high-level design * Lead the team in producing the software design specification * Lead the team in implementing the product * Lead the team in developing the build, integration, and system test plans * Lead the team in developing the test materials and running the tests | |
| Support Manager (Hiep Ta) | * Lead the team in determining its support needs * Obtain the needed tools and facilities * Maintain the project notebook and HIT on SVN * Manage the configuration management system * Leads the change control board * Acts as the team reuse advocate | |
| Recorder (Giang Nguyen) | * Record Meeting Minus * Record question to ask mentor | |

## Organizational boundaries and interfaces

## Project responsibilities

# Managerial process

## Management objectives and priorities

## Assumptions, dependencies, and constraints

### Assumptions

The following assumptions will apply for the duration of the POS project:

* The development team has enough experience as a whole to complete the project.
* The development team will learn and work together to accomplish the project.
* Success or failure of the project is based on performance relative to the development process, and not the actual customer deliverables.
* The customer will respond in a timely manner to all questions and requests for information
* Team members time on the project (including class time) will be limited to approximately 20 hours per week. All learring time must be split between project work and other class activities
* All team members are supposed to inform any critical situation which can affect to the project. Mentors will be available for support and counseling.
* Overtime: Each of the store cashiers will receive overtime pay for the training, which will occur in addition to normal work hours.
* Technical Support and Training:
* The Point of Sale vendor will station a technician on-site for the Grand Opening to ensure the equipment runs.
* The trainer from the vendor will be available as needed by telephone for six weeks after training is complete. The systems support contract identifies long term support options.
* Holidays: There are no holidays or other breaks observed during the implementation of this project.

### Constraints

* The following constraints will also apply for the duration of the POS project
* Language: English
* Techniques: programming by C# language
* Due date: POS implementation is scheduled to be completed by 20th June
* Business Constrains: Points can be used in all stores.
* Technical Constrains:
* The head office server and the POS terminals are connected to each other via a network
* System will use SQL Server Database.

## Risk management

The team leader will generate a separate Risk Management Plan document.

Risks will be identified at the beginning of each phase and the team lead will assemble them into a prioritized risks list. That list will be published on the team’s project management website. During the weekly status meeting, the team members will raise risks and reassess the prioritized risks and if necessary, revise the list. HIT will use “Risk Statement.” Team members will determine mitigation plans for all identified risks and tasks that need to be completed and then these risks and tasks will be assigned as action items. The team will monitor high priority risks every week. All risks will be documented by the team.

## Monitoring and controlling mechanisms

## Staffing plan

# Technical process

## Methods, tools, and techniques

The methods and techniques listed in this table will be evaluated and applied in specific areas of the project as appropriate:

|  |  |
| --- | --- |
| Category | Methods and Techniques |
| Requirements Elicitation | * Meetings * Questionnaires * Emails * Brainstorming |
| Formal Specification and Analysis | * Use cases to define requirements |
| Estimation | * Time Log method count to effort may be used for size estimation and project scope definition. |

|  |  |
| --- | --- |
| Category | Tools |
| * Operating System | * Windows 7 |
| * Development languages and databases | * Microsoft Visual Studio 2010 * SQL Server 2008 |
| * Design | * Microsoft Visio 2010 |
| * Document | * All document will be written using Microsoft Word |
| * Project Planning and Tracking | * Master Plan * Meeting Minus * Time Log |

## Software documentation

## Project support functions

# Work packages, schedule, and budget

## Work packages

## Dependencies

## Resource requirements

## Budget and resource allocation

This project has no plan on budget.

## Schedule

The HIT planning manager will maintain the schedule in a master project. The planning manager will be responsible for gathering the individual tasks for each team member. Each team member will record all time spent working on the project by upping on SVN to the team leader by the deadline each week. This time will be recorded by the team leader. When the team goes more than two weeks without correcting any delays introduced into the schedule, members will either re-plan or take other corrective actions to ensure the team both has a reasonable schedule and follows that schedule. During each team meeting, the team meeting facilitator will go over the open action items and the support manager will modify or add to the action items database accordingly. Each team member is responsible for informing the planning manager of the updated schedule and status.

All meeting agendas and minutes will be recorded naming Meeting Minus document and will be available on the SVN team. The open action items will also be maintained on the SVN. When there are open action items, they will be reviewed during the team meetings and the client meetings accordingly and then updated online.

* 1. **Evolution of the Plan**

This SPMP is intended to be an evolving document. As the project changes from cycle to cycle, a team member will be responsible for updating the SPMP. This document is to be revisited at the beginning of each cycle. These cycle dates are approximately **thirteen** weeks in duration and will be documented in the HIT project plan. The team leader is responsible for the revisions to the project plan, although responsibility for some sections may be delegated to other members of the team.

1. **Managerial process plans**

This section contains the management objectives and priorities; the start-up plan with staffing and resource acquisition plan; the control plan for requirements, schedule control, reporting, and metrics collection; the risk management plan; the monitoring and controlling strategies; and the close out plan.

4. 1. **Management Objectives**

The primary objective of the HIT management is to ensure the successful completion of the project. To be considered successful, the team must:

* Be conducted in a manner that the team goals are considered and achieved whenever possible.
* Understand Nokia Tool for Developer
* Develop the POS architecture
* Develop a technical note and documentation for the developer and the end user

The team’s overall objective is to deliver a quality product to the client on time. In order to achieve this objective, the team has the following goals and priorities:

1. Use good software engineering methods to develop our product.

* Apply the methods learned in classes: Develop a project plan using a work break-down structure.
* Experience a new way of doing things.
* Practice reflective learning.

1. Deliver a quality product that meets the client expectation.

* Deliver a product that is stable and relatively defect-free.
* Deliver a system that addresses the client’s needs.

1. Honor our commitments.

* Meet mentor and team deadlines.
* Avoid unrealistic commitments.

1. Conduct ourselves as professionals.

* Value the time of team members, mentors, and the client.
* Accept and support team decisions.
* Communicate openly and frequently.
* Take responsibility for the success of the project.
* Be proactive.

1. Make efficient user of the resources available to us.

* Learn from each other.
* Experiment with existing tools and processes.

1. Use earns value calculations to monitor progress and track this progress against the team’s plan.
2. Develop a risk management plan to mitigate risks.
3. Develop a tracking mechanism to monitor risks.
4. Track action items to ensure that all issues and outstanding matters are addressed.
   1. **Start-up plan**

Jobs for each week will be divided into short term phase based on the delivery of the project artifacts and counted as milestones. Each phase will cover part of the Work Breakdown Structure that was created at the beginning of the project through Planning phase.

At the beginning of each phase, HIT will have Planning phase to define the tasks and the schedule. HIT will assess its status once a week and update and distribute the schedule accordingly. Every artifact will be reviewed by using formal review methods including walkthrough and inspection at the end of each phase.

Each team member must fill the every field in the report which team has agreed and upload the file into the main server by every Saturday. The planning manager will consolidate each file and make a status report. The team lead and the planning manager will assess the effect of the delay, take corrective actions, and update schedule as necessary. The status report and rearranged schedule must be informed at weekly status meeting. HIT will notify the client and mentors of any change affecting the due dates of deliverables.

* + 1. **Staffing plan**

Each team member will be available for 20 hours per week. This time includes time spent with the mentors and time spent working on class and such as team and team meetings, document preparation and inspection, and tool development.

* + 1. **Project staff training plan**

Since the team members are not familiar with ASP.NET, Windows Server 2008, to help all team members understand the requirements of the project training will also include individual readings.

HIT staff training plan includes the following guidelines:

* Team members have strengths and weaknesses with various technical and management skills; therefore, cross training will be a major instrument and principle of HIT during the project.

|  |  |
| --- | --- |
| Name | Training |
| Giang Nguyen |  |
| Huy Huynh |  |
| Dat Tran |  |
| Thanh Giang |  |
| Hiep Ta |  |
| Phuc Nguyen |  |

**Training schedule and Instructor**

* 1. **Control plan**

This section specifics the required metrics, reporting frequency, and control systems to be used on the project.

At the beginning of each phase, HIT have to define the tasks and the schedule. HIT will assess its status once a week and update and distribute the schedule accordingly.

* Will create the schedule together using Microsoft Project. Each team member must fill the every field in the tool and upload the file into the main server by every Monday. The planning manager will consolidate each file and make a status report. The team lead and the planning manager will assess the effect of the delay, take corrective actions, and update schedule as necessary. The status report and rearranged schedule must be informed at weekly status meeting.
* Will notify the mentors of any change affecting the due dates of deliverables.
  + 1. **Requirements control plan**

All requirements for the HIT project will be documented in the Architecture Drivers Document. After the ADD is formally released, all changes will be documented and approved via the guidelines established in the CM Plan, which will be developed at a later date.

* + 1. **Reporting plan**

Internal reporting for the HIT team will be relatively informal. Team members will submit individual Time Log to the planning manager on every Saturday. The planning manager will consolidate all files and make one status report and use this information to compile a team status report for discussion at the team’s weekly meeting. At the regular team lead meetings, HIT’s lead will report to the mentor regarding the team project’s current progress, unresolved issues, and need for assistance.

* + 1. **Metrics collection plan**

Each team member will submit individual reports on every Saturday about the developer’s individual progress and productivity. Each team member will report on tasks assigned, tasks done or not done, problems, hours planned, actual hours, and future plans at every weekly status meeting. The planning manager will consolidate the data and will analyze the efforts spent per developer every week.

* 1. **Risk management plan**

The team leader will generate a separate Risk Management Plan document.

Risks will be identified at the beginning of each phase and the team lead will assemble them into a prioritized risks list. That list will be published on the team’s project management website. During the weekly status meeting, the team members will raise risks and reassess the prioritized risks and if necessary, revise the list. HIT will use “Risk Statement.” Team members will determine mitigation plans for all identified risks and tasks that need to be completed and then these risks and tasks will be assigned as action items. The team will monitor high priority risks every week. All risks will be documented by the team.

* 1. **Monitoring and controlling strategies**
     1. **Stragey Criteria**
* Use Waterfall Model process because RE không thay đổi nhiều trong dự án
* The Cycle 1 product provides a base that can be easily enhanced
* The cycle products are all of high quality and can be easily tested
* The product design has a modular structure that permits the team members to work independently
* The HIT team will actively track plans and processes it has established.
  + 1. **Conceptual Design**

Sử dụng quy trình kiểm thử đánh giá kiến trúc ACDM để thực hiện các tài liệu xem phù hợp Architure Driver đã đặt ra hay chưa.

* + 1. **Weekly team meetings**

Each week, the team leader will facilitate a team meeting to update members on the status of the project and to discuss any new issues. The team meeting will also be an opportunity to brainstorm ideas and provide suggestions and comments. Each team meeting will commence with an update of the open action items so everyone will have an understanding of the status and progress of each action item. The team meeting will then continue with the objective stated for the meeting. Finally, the team meeting will end with the listing of new action items. If and when there is an open issue with the team, it will be discussed at the weekly team meeting and handled accordingly.

* + 1. **Weekly working meetings**

Each week, the developers of the HIT team will meet to discuss action items. This meeting is designed for each member to ask other team members questions, and at times team members will work together on portions of the project. This working meeting is informal and it is intended to be a learning time for each team member.

* + 1. **Document reviews and inspections**

The HIT team will conduct a document review of all required documents. First, the technical writer will read and edit the document produced by the author. The author will then make the modifications to the document. Next, the mentors and team members will review the revised document. The author will make another revision and send the revised document electronically so team members can provide input. If there are no comments or suggestions, the author will label the document with a new version number and post it on the SVN.

* 1. **Closeout plan**

Since this project has a “normal” end associated with the completion of the SPM program, the closeout plan is minimal. At the end of the project, the following actions will occur:

* The HIT team will archive on the HTT (hoctructuyen.vanlanguni.edu.vn) all documents, source code, plans, etc. generated by the team.
* HIT will make a presentation about the team’s progress at the end of the semester. The attending audience will be the mentors, other teams, and any special guests. Team will report on the project’s software development and gather ideas and suggestions from the audience.
* All team members will conduct a project postmortem. The postmortem ensures that the team has completed all of the planned tasks and has recorded all of the required data.

1. **Technical process**

This section covers the process model, tools, and methods that the HIT team will use to develop applications. This section also describes the plan for the software documentation and support functions such as quality assurance, configuration management, and validation.

1. 1. **Process model**



**Figure 2 - TSP Process for Each Cycle**

* + 1. **Modifications to TSP**

Role responsibilities will be adjusted and new roles will be created as defined in section 3. Checklists and forms are not used in practice for day-to-day activity.

* + 1. **Requirements Phase**

Team will use the product description provided in **Architecture drivers document**. To analysis RE. The Architecture drivers documentshould include at a minimum the:

* List of functional requirements, quality attributes requirements, business constraints, and technical constraints).
* Key system stakeholders and a description of how each will interact with the system.
  + 1. **High-Level Design Phase**

During the phase, HIT creates the initial architecture and high-level design for the system. The Architect Document will be the deliverable.

* + 1. **Implementation Phase**

The exact number of iterations will be determined once the high-level design phase is in progress and a clear idea of the project implementation is available.

Each iteration will contain the following mini-phases:

* Detail Design
* DLD Review
* DLD Inspection
* Code
* Code Review
* Compile
* Code Inspection
* Unit Test
  + 1. **Integration and System Test Phase**

Once the implementation has been clearly done, integration and system test phase of the project will commence. Integration test should be preceded before system test. System test will satisfy the predefined test goal.

* + 1. **Delivery Phase**

The final products from all the project phases, along with the supporting documents, will be given to the client.

* 1. **Infrastructure plan**

The team has access to four Windows 7 Workstations and limited access to four laptops that are owned by members of the team. The team stores version control documents and the team SVN. In addition, the resources from the SPM program are available to the team such as library, lab…

For communication makes use of the telephones and emails as well as chat ware like Yahoo Messenger.

1. **Supporting Process Plans**

This section of the SPMP will include the plans for the supporting processes that are part of the software project. These plans include: configuration management plan, software document, quality assurance, and process improvement plan.

1. 1. **Configuration Management Plan**

HIT configuration management plan is a part of a separate document and it will be maintained.

* 1. **Document Plan**

There are a number of documents that will be produced during the lifetime of the project. All documents are responsibility of the project team members. The list of documents that will be created and maintained under version control include:

* Work Breakdown Structure
* Architecture Drivers Document
* Architect Document
* Test scripts and test results – tests that are executed have to be recorded.
* Risk Plan – defines risks and each mitigation plan.
* Change Plan
* Defect log – log of all the defects and their current status.
* Metrics log – log of collected metrics data.
* Inspection reports – insepction results of all phases of the project.

1. **References**

[1] Humphrey, Watts. *Introduction to the Team Software Process*. 12/99.

[2] Project Plan of PAMD: Developing a Plug-In Architecture for Palm OS-Powered Devices Using Software Engineering (1998)