Fpt University

TRƯỜNG ĐẠI HỌC FPT

CAPSTONE PROJECT REPORT

Report 2 – Project Management Plan

– Hanoi, January 2023 –

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I. Record of Changes(변화의 기록)

Date	A* M, D	In charge	Change Description

*A - Added M - Modified D - Deleted

II. Project Management Plan (프로젝트 관리 계획)

1. Overview (개요)

1.1 Scope & Estimation (범위 및 추정)

- 1 man-days of team = 7 hours (From Monday to Friday 1 man-day of team = 6 hours because all members in team have to learn Korean, on Saturday and Sunday man-days of team = 10 hours so 7 hours is average man-days of the team)

- Man-days capacity of team = 15 weeks * 7 man-days * 5 members = 525 man-days
- Total Estimated Effort (man-days) of team = 431 man-days

#	WBS Item	Complexity	Est. Effort (man-days)
1	***Project Initiating***		***11***
1.1	Kick-offs meeting	Simple	1
1.2	Determine Project Scope and Features	Medium	5
1.3	Report 1 - Project Introduction	Medium	5
2	***Project Planning***		***19***
2.1	Report 2 - Project Management Plan	Medium	5
2.2	Technical Training	Complex	14
3	***Software Development***		
3.1	**Analyze & Design**		**40**
3.1.1	Create SRS - Report 3	Complex	15
3.1.2	Create SDD - Report 4	Complex	15
3.1.3	Create Test Plan	Medium	5
3.1.4	Update Report 1, 2	Medium	5
3.2	**Iteration 1**		**98**
3.2.1	Update SRS & SDD	Medium	5
3.2.2	Create Test Case	Medium	5
3.2.3	**Feature 1: Authentication**		**21**
3.2.3.1	Login	Medium	5
3.2.3.2	Logout	Simple	3
3.2.3.3	Register	Medium	5
3.2.3.4	Forgot password	Medium	5

3.2.3.5	Change password	Simple	3
3.2.4	**Feature 2: User profile management**		**11**
3.2.4.1	View profile	Medium	5
3.2.4.2	Edit profile	Simple	3
3.2.4.3	Change avatar	Simple	3
3.2.4.4	Authenticate driver license	Medium	5
3.2.5	**Feature 3: Car management**		**46**
3.2.5.1	View my car	Simple	3
3.2.5.2	View car detail	Complex	7
3.2.5.3	Register a new car	Complex	14
3.2.5.4	Edit car common informations	Simple	3
3.2.5.5	Edit image of car	Medium	5
3.2.5.6	Edit price	Simple	3
3.2.5.7	Edit schedule	Complex	5
3.2.5.8	Edit procedures and services	Simple	3
3.2.5.9	Deactivate car	Simple	3
3.2.6	Execute Unit Test	Medium	5
3.2.7	Execute Integration Test	Medium	5
3.3	**Iteration 2**		**102**
3.3.1	Update SRS & SDD	Medium	5
3.3.2	Create Test Case	Medium	5
3.3.3	**Feature 4: Search car**		**10**
3.3.3.1	Search car	Complex	7
3.3.3.2	Report car	Simple	3
3.3.4	**Feature 6: Trip management**		**32**
3.3.4.1	Send rent request	Complex	7
3.3.4.2	View list rent request	Medium	5
3.3.4.3	Trip detail	Simple	3
3.3.4.4	Accept rent request	Simple	2
3.3.4.5	Decline rent request	Simple	2

3.3.4.6	Deposit money	Simple	2
3.3.4.7	Cancel trip	Simple	2
3.3.4.8	Post car condition's confirmation	Medium	5
3.3.4.9	Confirm car received	Simple	2
3.3.4.10	Feedback and rate	Simple	2
3.3.5	**Feature 5: Request management**		**22**
3.3.5.1	View list deposit money request	Simple	3
3.3.5.2	Deposit request detail	Medium	5
3.3.5.3	Accept deposit request	Simple	2
3.3.5.4	Decline deposit request	Simple	2
3.3.5.5	List car register request	Simple	3
3.3.5.6	Car register request detail	Simple	3
3.3.5.7	Accept car	Simple	2
3.3.5.8	Decline car	Simple	2
3.3.6	**Feature 7: Transaction management**		**20**
3.3.6.1	View transaction summary	Simple	3
3.3.6.2	Send withdraw money request	Medium	5
3.3.6.3	View transaction detail	Simple	2
3.3.6.4	List withdraw money request	Simple	3
3.3.6.5	Detail of withdraw money request	Simple	3
3.3.6.6	Accept withdraw money request	Simple	2
3.3.6.7	Decline withdraw money request	Simple	2
3.3.7	Execute Unit Test	Medium	5
3.3.8	Execute Integration Test	Medium	5
3.4	**Iteration 3**		**105**
3.4.1	Update SRS & SDD	Medium	5
3.4.2	Create Test Case	Medium	5
3.4.2	**Feature 8: Account management**		**19**
3.4.2.1	View list user	Simple	3
3.4.2.2	List authenticate driver license	Medium	5

3.4.2.3	View license detail	Simple	3
3.4.2.4	Accept driver license	Simple	3
3.4.2.5	Decline driver license	Simple	3
3.4.3	**Feature 9: System management**		**24**
3.4.3.1	View list feature	Simple	3
3.4.3.2	Add car feature	Simple	3
3.4.3.3	Update car feature	Simple	3
3.4.3.4	View list brands and models	Simple	3
3.4.3.5	Add car models	Simple	3
3.4.3.6	Update car model	Simple	3
3.4.3.7	Add car brand	Simple	3
3.4.3.8	Update car brand	Simple	3
3.4.4	**Feature 10: Report Management**		**17**
3.4.4.1	View report list	Medium	5
3.4.4.2	View report detail	Simple	3
3.4.4.3	Ban car	Simple	3
3.4.4.4	Unban car	Simple	3
3.4.4.5	Send warning	Simple	3
3.4.5	**Feature 11: Admin management**		**25**
3.4.5.1	View list admin	Simple	2
3.4.5.2	Add admin	Simple	3
3.4.5.3	Deactivate admin	Complex	7
3.4.5.4	Activated admin	Simple	3
3.4.5.5	View admin work	Medium	5
3.4.5.6	Assign work to other admin	Medium	5
3.4.6	Execute Unit Test	Medium	5
3.4.7	Execute Integration Test	Medium	5
3.6	**System testing**		**20**
3.6.1	Update Report 5	Medium	5
3.6.2	Execute System Test & Fix Bugs	Complex	15

4	***Transitioning***		**34**
4.1	Report 6 - User Guide	Complex	7
4.2	Report 7 - Final Report	Complex	7
4.3	Update all report document	Complex	10
4.4	Prepare Slide Thesis Presentation and Practice presentation	Complex	10
5	***Closing***		**2**
5.2	Submit the capstone project	Complex	1
5.3	Thesis defence presentation	Complex	1

Total Estimated Effort (man-days) ***431***

1.2 Project Objectives (프로젝트 목적)

#	Testing Stage	Test Coverage	No. of Defects	% of Defect	Notes
1	Unit Test	100%	5	1.5%	Written and run by software developers to ensure that a function of an application (as the “Unit”) meets its design and behaviours as intended.
2	Integration Test	100%	17	2.28%	Individual software modules are combined and tested as a group.
3	System Test	100%	0	0%	Performed on the entire system, team not only the design but also the behaviour and even the believed expectations of the customer base on SRS.
4	Acceptance Test	100%	0	0%	Users of the system perform tests in line with what would occur in real life scenarios.

Project must be finished before 01/05/2023 with two main deliverables:

- Web App (Cover 100% requirement)
- Project presentation slides

Project must be finished before 25/04/2023 with main deliverables:

- Project documentation (FPT University capstone project)

1.3 Project Risks (프로젝트 위험)

#	Risk Description	Impact	Possibility	Response Plans
1	Team members lack knowledge and skills about the technology used in the project	High	Medium	Plan technical training for team members.
2	Requirement changes	Medium	High	Members needs to meet and discuss carefully before starting to code
3	The online meeting was interrupted because the network connection was lost.	Low	Medium	Use another way to connect to the network such as 4G

2. Management Approach (관리 접근)

2.1 Project Process (프로젝트 프로세스)

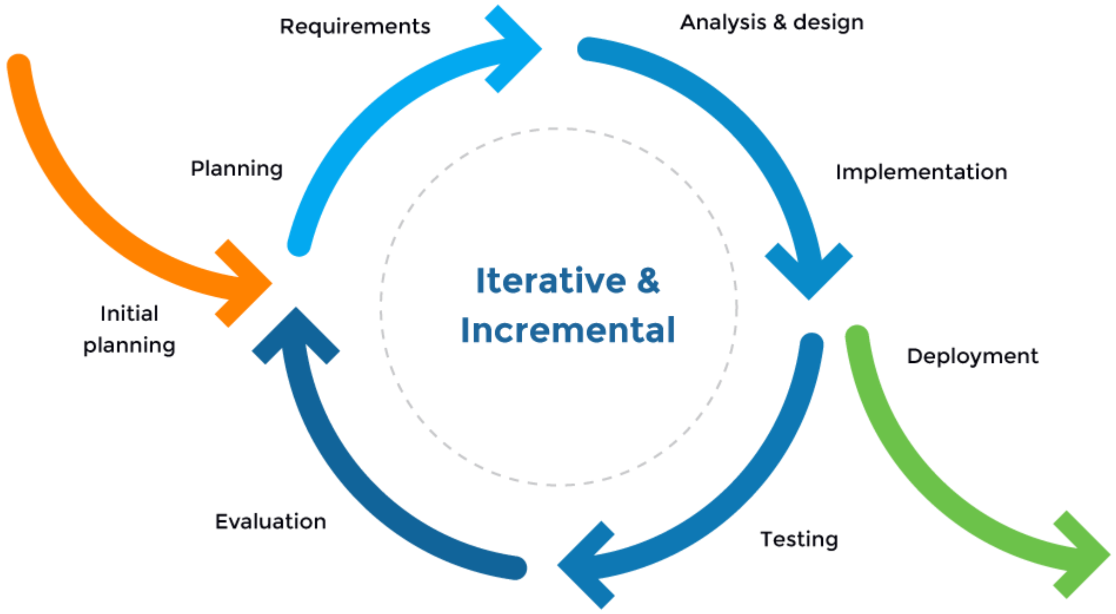


Figure 2.2.1.1: Iterative and Incremental Software Process Model

After researching the software development model carefully, the project will use the Iterative and Incremental Software Process Model. Iterative and incremental software development is a method of software development that is modelled around a gradual increase in feature additions and a cyclical release and upgrade pattern. Iterative and incremental software development begins with planning and continues through iterative development cycles involving continuous user feedback and the incremental addition of features concluding with the deployment of completed software at the end of each cycle, allowing us to take advantage of what was learned during the development of earlier parts of the system. The reasons for the project to choose this model are:

- Can develop some function prioritised requirements first.
- Requirements changes can be easily accommodated and lowers initial cost.
- Initial product delivery is faster.
- Customers get important functionality early.
- Customers can provide feedback to each product increment.

2.2 Quality Management (품질 관리)

2.2.1 Defect Prevention (불량방지)

- Estimate Expected Impact : Estimating expected impact of defect on cost is also an important part of defect prevention.
- If any defect is found, the related person must be notified immediately at that time.
- Defects must be carefully evaluated such as "How bad is the defect and how long to fix that defect ?".

2.2.2 Reviewing (리뷰)

- If there is an error, the person must immediately notify the person responsible for the defect and should be recorded on the Bug Tracking software with details such as priority.
- The person responsible for defects found must-have solutions to fix the defect as quickly as possible.

2.2.3 Unit Testing (단위 테스트)

- Analysis of possible situations for code. Can not ignore the worst possible situations.
- The test cases must match well with the system and system and architecture design.
- If there is an error, it must immediately notify the person responsible for the defect and should be recorded on the Bug Tracking software with details such as priority.
- The person responsible for defects found must-have solutions to fix the defect as quickly as possible.
- All test cases must start with the "fail" state and change the "pass" state after some reasonable or no change to the primary code.

2.2.4 Integration Testing (통합 테스팅)

- Design test scripts, cases, and scripts.
- The test cases must match well with the system and system and architecture design.
- If there is an error, it must immediately notify the person responsible for the defect and should be recorded on the Bug Tracking software with details such as priority.
- The person responsible for defects found must-have solutions to fix the defect as quickly as possible.

- All test cases must start with the "fail" state and change the "pass" state after some reasonable or no change to the primary code.
- Internal modules within the system work smoothly.

2.2.5 System Testing (시스템 테스트)

- The test cases must match well with the system and system and architecture design.
- If there is an error, it must immediately notify the person responsible for the defect and should be recorded on the Bug Tracking software with details such as priority.
- The person responsible for defects found must-have solutions to fix the defect as quickly as possible.
- All test cases must start with the "fail" state and change the "pass" state after some reasonable or no change to the primary code.
- Clearly distinguish the user's point of view from the developer's point of view, with objective evaluation.

2.2.6 Acceptance Testing (수락 테스트)

- The test cases must match well with the system and system and architecture design.
- If there is an error, it must immediately notify the person responsible for the defect and should be recorded on the Bug Tracking software with details such as priority.
- It is not the idea of being a product developer but to perform testing as a product user.
- The AT accepts to determine whether the main functions have all worked well. If the user sees a bug (error) in the main functions, the tester will need to review the test case, investigate the cause of the bug.

2.3 Training Plan (트레이닝 플랜)

Training Area	Participants	When, Duration	Waiver Criteria
Spring MVC Framework	Backend Members	16/01/2023 - 14/02/2023	Mandatory
MS SQL Server	Backend Members	06/02/2023 - 07/02/2023	Mandatory
Gitlab	All Team members	06/02/2023 - 07/02/2023	Mandatory
Testing	All Team members	19/02/2023 - 26/02/2023	Mandatory

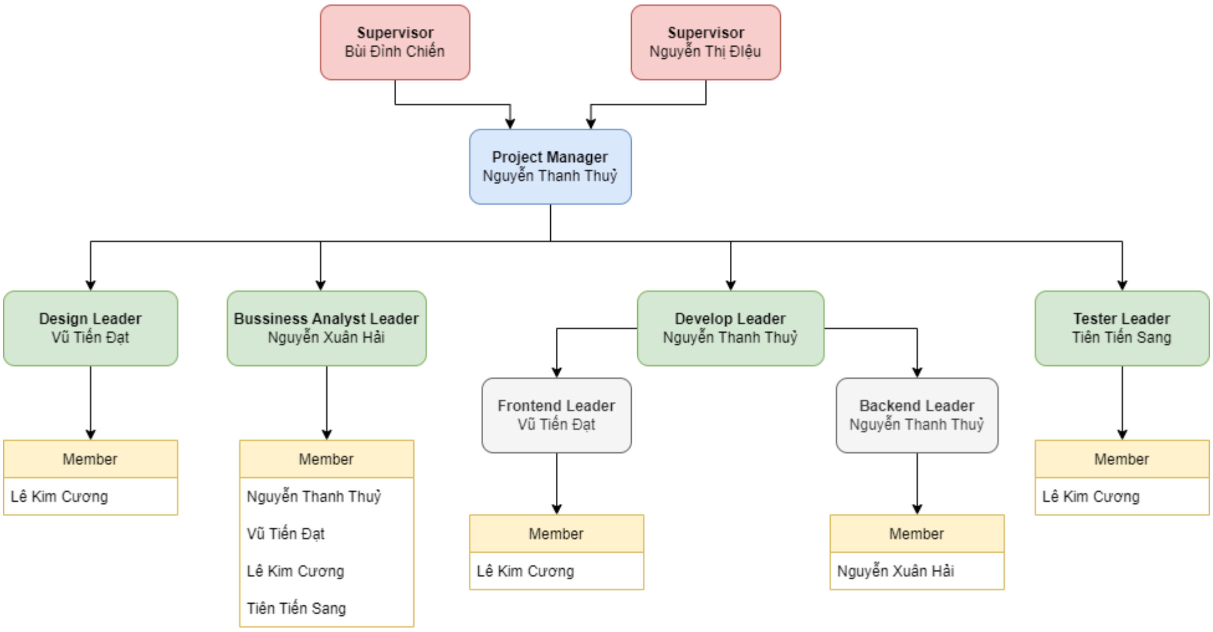
3. Project Deliverables (프로젝트 산출물)

#	Deliverable	Due Date	Notes
1	Project Introduction	8/1/2023	Prepare project ideals/ Intro
2	Project Plan	15/1/2023	Prepare Project Plan, Create Technical Prototype, Technical Training/ Self study
3	Overall Requirement Description	3/2/2023	Write SRS Document and Create Test Plan

4	Software Design Description	06/02/2023	Architecture Design, Detailed Design, Database
5	Code and Implement Iteration 1	19/02/2023	Code & Unit test, Integration test and System test
6	Code and Implement Iteration 2	12/03/2023	Code & Unit test, Integration test and System test
7	Code and Implement Iteration 3	07/04/2023	Code & Unit test, Integration test and System test
8	Report 5 (Test Document)	11/04/2023	Write test documents and synthesise test cases
9	Report 6 (User guides)	23/04/2023	Write user manuals document
10	Final code and report	23/04/2023	Final Code, System test reports

4. Responsibility Assignments (책임 할당)

4.1 Team & Structures (팀 및 구조)



D~Do; R~Review; S~Support; I~Informed; <blank>- Omitted

Responsibility	ThuyNTHE150683	HaiNXHE140359	CuongLKHE150595	DatVTHE150480	SangTTHE140074
Documentation and Report					
Project introduction document	D	S	S	S	S
Software Requirement Specification	R	D	S	S	S
Install guide and User guide	D	S	S	S	S
Software Design Document	D	S	S	D	R
Software Project Management Plan	D	D	S	S	S
Final Report	D	S	S	S	S
Software Testing Documentation	S	S	D	S	D
Presentation Slide	S	S	D	R	R
Analysis and Design					
System Architecture Design	R	D	R	S	R
Use Case Specification	S	D	S	S	I
Class Diagram	S	D	S	S	I
Sequence Diagram	S	D	S	S	I
Research Workflow	S	D	S	S	I

Use Case Specification	R	R	S	D	I
Screen Design	S	S	S	D	R
Database Design	R	D	S	S	I
Database Dictionary	D	S	R	R	R
Implement					
Decide technique and tools to be used	D	S	D	S	I
Keeping track of development work	D	S	S	S	R
Create coding convention	D	S	S	R	I
Code back-end web	D	D	R	R	I
Code front-end	R	R	D	D	I
Control source code	D	R	S	S	I
Deploy web to host server	S	S	D	S	I
Test					
Create test plan	S	S	R	S	D
Controlling testing activities	S	S	R	S	D
Create test report	R	S	D	S	R
Manage test resources	S	S	R	S	D
Create unit test and bug log	S	S	D	S	R

Create test case (Integration test)	R	S	S	S	D
Create test case (System test)	R	S	S	S	D
Create test case (Acceptance test)	R	S	S	S	D
Execute test case	R	S	S	S	D
Report test result	R	S	S	S	D

5. Project Communications (프로젝트 커뮤니케이션)

5.1 Communication Plan (커뮤니케이션 계획)

Communication Item	Who/ Target	Purpose	When, Frequency	Type, Tool, Method(s)
Quick messaging - Group chat	Team members, Supervisor	When you need to have a quick casual talk or schedule a meeting with a supervisor or among team members.	Daily	Messenger, Zalo
Daily meeting	Team Members	Report on project progress as well as the status of each team member's work every day. Discuss about plans and next work	Daily	Google meet
Weekly meeting	Team Members, Supervisor	Each week, the supervisor assists with some questions and provides an update on the project's status and the status of each team member's work.	Once a week	Google meet
Unscheduled meeting	Team Members	When there is an important problem that needs the opinion of the whole team or the Supervisor helps	Time needed	Google meet, Messenger

Meeting in class	Team Members, Supervisor	Supervisor helps on project and teaches about advance program	Monday to Friday	On Fsoft class

5.2. External Interface (외부 인터페이스)

a. FU Contacts (FU 연락처)

Function	**Contact Person (name, position)**	**Contact address (email, telephone)**	**Responsibility**
Supervisor	Bùi Đình Chiến	Chienbd@fe.edu.vn 0904232472	-Provide a template for the document. -Give project team instructions. -Check the deliverable. -Monitor the status of the project.

b. FSOFT Contacts (FSOFT 연락처)

Function	**Contact Person (name,position)**	**Contact address (email, telephone)**	**Responsibility**
Supervisor	Nguyễn Thị Điệu	dieunt.it@gmail.com 0987859835	-Give project team instructions. -Training tech knowledge for team

6. Configuration Management (구성 관리)

6.1 Document Management (문서 관리)

We use Google Docs and Google Excel as our primary tool for sharing, editing and version control of our documents, along with Weekly Reports documents.

It allows us to observe what has changed in the documents and who is accountable for that modification, as well as to compare versions of the document at the same time.

6.2 Source Code Management (소스 코드 관리)

For version control of our source code, we use GitLab. GitLab manipulates every time you need to store, upload, and download code easier. Control changes in code quickly and accurately. It easily manages, distributes work, and completes better quality programming projects.

6.3 Tools & Infrastructures (도구 및 인프라)

Category	Tools / Infrastructure
Technology	JSP (FrontEnd), Java 11, Spring MVC (BackEnd), Spring Data JPA
Database	Microsoft SQL Server
IDEs/Editors	Visual Studio Code, Eclipse
Diagramming	DrawIO
Documentation	Ms Office, Google Docs/Sheets
Version Control	GitLab (Source Codes), Google Drive (Documents)
Deployment server	Ubuntu 20.04
Project management	Trello (Schedule), GitLab (Tasks, Defects)