

Kanban Board

Software Testing Document (STD)

Version: 1.0

Team#7

| Name | ID | E-mail |
|-------------|-----------|--------------------------|
| 邱嘉香 | 104590049 | gyauxd@gmail.com |
| 林大衛 | 104590050 | davidrosas29@hotmail.com |
| 陳立宸 | 104590021 | ahm12345@gmail.com |
| 林育成 | 104590023 | a0929290419@gmail.com |
| 王奕翔 | 104590002 | qaz154443@gmail.com |

**Department of Computer Science & Information Engineering
National Taipei University of Technology**

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Section 1 Objectives and Acceptance Criteria

1.1 Test Scope

The Project Management System is designed to help organize the development of projects and to make it easier to manage tasks distribution among group members. The system consists of three subsystems designed in order to comply with the following functionalities:

1. PGMS: manages account's permissions in a group
2. AMS: manages the user account's information
3. PDMS: manages the tasks that are displayed and assigned

The tests will mainly test if all the functions are normal, if the integration between subsystems is normal, whether the system functions comply with the functional requirements. This report focuses most on integration test and acceptance test.

1.2 Test Acceptance Criteria

The following test criteria has to be met:

- All test results must meet the expected test results.
- The testing must be done for the entire system
- The tests need to be carried out in accordance with the procedures established in the plan.

Section 2 Personnel and Responsibility

2.1 Personnel

| Name | Initials | Responsibility | Remarks |
|------|----------|-------------------------------|-----------------------------------|
| 邱嘉香 | GY | Project manager and developer | System development and management |
| 林大衛 | DR | Developer | System development and testing |
| 陳立宸 | LC | Tester | Testing |
| 林育成 | YC | Tester | Testing |
| 王奕翔 | YX | Tester | Testing |

2.2 Testing Schedule

■Dates

| Item | Start date | Over date |
|----------------------------|------------|------------|
| Acceptance test | 2018/12/18 | 2018/12/26 |
| Subsystems validation test | 2018/12/24 | 2019/01/01 |
| Integration test | 2018/12/15 | 2018/12/31 |

■Iterations

| Item | Start date | Over date |
|-------------|------------|------------|
| Prototyping | 2018/10/30 | 2018/12/25 |
| Increment 1 | 2018/11/15 | 2018/11/29 |
| Increment 2 | 2018/12/01 | 2019/01/01 |

■Check points

| Item | Start date | Over date |
|-----------------------------|------------|------------|
| Subsystem verification test | 2018/12/25 | 2018/12/31 |
| System acceptance test | 2018/12/20 | 2018/12/25 |
| System integration test | 2018/12/25 | 2019/01/01 |

2.3 Responsibility

■PMS System

| Testing activity | Personnel | Time |
|------------------|-----------|------------|
| PMS-TC01 | YX | 0.5 hours |
| PMS-TC02 | YX | 0.25 hours |
| PMS-TC03 | YX | 1.5 hours |
| PMS-TC04 | YX | 1 hours |

■AMS

| Testing activity | Personnel | Time |
|------------------|-----------|------------|
| AMS-TC01 | YX | 0.25 hours |
| AMS-TC02 | YC | 0.25 hours |
| AMS-TC03 | YC | 1.5 hours |
| AMS-TC04 | YC | 1.5 hours |

■PGMS

| Testing activity | Personnel | Time |
|------------------|-----------|---------|
| PGMS-TC01 | YX | 1 hours |
| PGMS-TC02 | YX | 1 hours |

■PDMS

| Testing activity | Personnel | Time |
|------------------|-----------|------------|
| PDMS-TC01 | LC | 2 hours |
| PDMS-TC02 | LC | 1 hours |
| PDMS-TC03 | LC | 0.75 hours |
| PDMS-TC04 | LC | 0.75 hours |
| PDMS-TC05 | YX | 0.5 hours |

Section 3 Testing Environment

3.1 Operational Environment

3.2 Hardware Specification and Configuration

| Item | Name | Quantity | Specification | Remarks |
|------|---------------|----------|---------------|---------|
| 1 | Intel core i5 | 5 | 2.67 GHz | |
| 2 | Network | 1 | Wi-fi | |

3.3 Software Specification and Configuration

| Item | Name | Quantity | Specification | Remarks |
|------|-------------------|----------|---------------|---------|
| 1 | Microsoft windows | 4 | Windows 10 | |
| 2 | Angular | 4 | Angular 6 | |
| 3 | Google Chrome | 4 | 71.0.3578.98 | Client |

3.4 Test Data Sources

- Testing PMS system data: test data written by testers
- Testing PGMS subsystem data: group information provided by the user
- Testing PDMS subsystem data: dashboard, tasks, tables data created by the user
- Testing AMS subsystem data: personal basic information entered provided by the user

3.5 Tools and Equipments

- Unit test: The testing for this system uses Angular + Karma. The test program is done by the testers as soon as as the developers finish writing a function.
- System test: Firebase sends us a report in case there's any problem.
- Written information: All the information will be written on Microsoft Word 2013.

Section 4 Test Cases

4.1 Definition of Severity Number

| Severity Number | Definition |
|-----------------|------------|
| 1 | Critical |
| 2 | Mirror |

4.2 Project Management System

- **Test objective:** Test the ability of the PMS system to integrate the subsystems and to operate normally.

Test cases

| No | PMS-TC01 |
|-----------------|---|
| Name | Manage group's members |
| Tested target | Project Management System |
| Reference | |
| Severity | 1 |
| Instructions | 1. Log in with e-mail and password 2. Select the group 3. Change the member's permission |
| Expected result | 1. Display the e-mail normally and asterics "*" instead of the password while it's been input. 2. Enter the homepage after logging in. 3. Access the page of Group Management 4. Offer roles/permissions for the group members |
| Cleanup | Log out |

| No | PMS-TC02 |
|-----------------|---|
| Name | Display the groups that the use belongs to and the dashboards of each group |
| Tested target | Project Management System |
| Reference | |
| Severity | 1 |
| Instructions | 1. Log in with e-mail and password 2. Display the groups and dashboards on the homepage |
| Expected result | 1. Display the e-mail normally and asterics "*" instead of the password while it's been input. 2. Enter the homepage after logging in. |
| Cleanup | Log out |

| No | PMS-TC03 |
|-----------------|--|
| Name | Create a new group |
| Tested target | Project Management System |
| Reference | |
| Severity | 1 |
| Instructions | <ol style="list-style-type: none"> 1. Log in with e-mail and password 2. Display the groups and dashboards on the homepage 3. Click “create group” on the homepage 4. Fill in the popup window with a new name for the group 5. Click create 6. Close the popup window |
| Expected result | <ol style="list-style-type: none"> 1. Display the e-mail normally and asterics “*” instead of the password while it’s been input. 2. Enter the homepage after logging in. 3. Display popup window to create the group 4. Display the new group on the homepage |
| Cleanup | Log out |

| No | PMS-TC04 |
|-----------------|--|
| Name | Create a new group dashboard |
| Tested target | Project Management System |
| Reference | |
| Severity | 1 |
| Instructions | <ol style="list-style-type: none"> 1. Log in with e-mail and password 2. Display the groups and dashboards on the homepage 3. Click “create new dashboard” on the homepage 4. Fill in the popup window with a new name for the dashboard 5. Click create 6. Close the popup window |
| Expected result | <ol style="list-style-type: none"> 1. Display the e-mail normally and asterics “*” instead of the password while it’s been input. 2. Enter the homepage after logging in. 3. Display popup window to create the dashboard 4. Display the new dashboard on the homepage |
| Cleanup | Log out |

4.3 Account Management Subsystem

▪**Test objective:** Test the ability of the AMS subsystem to create and modify user accounts.

Test cases

| No | AMS-TC01 |
|-----------------|---|
| Name | Create a new account |
| Tested target | Account Management System |
| Reference | |
| Severity | 1 |
| Instructions | 1. Click “register” on the log in page 2. Fill in the user information 3. Click “create account” |
| Expected result | 1. Display the information being input, while “*” instead of the password. 2. Enter the homepage after signing in. |
| Cleanup | Log out |

| No | AMS-TC02 |
|-----------------|--|
| Name | Sign in |
| Tested target | Account Management System |
| Reference | |
| Severity | 1 |
| Instructions | 1. Log in with e-mail and password |
| Expected result | 1. Enter the homepage after logging in |
| Cleanup | Log out |

| No | AMS-TC03 |
|-----------------|--|
| Name | Sign out |
| Tested target | Account Management System |
| Reference | |
| Severity | 1 |
| Instructions | 1. Log in with e-mail and password 2. Click “log out” on the navigation bar |
| Expected result | 1. Enter the homepage after logging in 2. Enter the log in page after logging out |
| Cleanup | Log out |

| No | AMS-TC04 |
|-----------------|---|
| Name | Edit user information |
| Tested target | Account Management System |
| Reference | |
| Severity | 1 |
| Instructions | <ol style="list-style-type: none"> 1. Log in with e-mail and password 2. Click “user profile” on the navigation bar 3. Click “edit” button 4. Modify the user information 5. Click “save” button |
| Expected result | <ol style="list-style-type: none"> 1. Enter the homepage after logging in 2. Enter the user profile page after clicking “user profile” in the navigation bar 3. Display the information changed after saving the changes |
| Cleanup | Log out |

4.4 Project Group Management System

- **Test objective:** Test the ability of the PGMS subsystem to create and manage groups.

Test cases

| No | PGMS-TC01 |
|-----------------|---|
| Name | Delete group member |
| Tested target | Project Group Management System |
| Reference | |
| Severity | 1 |
| Instructions | <ol style="list-style-type: none"> 1. Log in with e-mail and password 2. Click on the group name 3. Click on the group name on the dashboard 4. Delete a member |
| Expected result | <ol style="list-style-type: none"> 1. Display the information being input, while “*” instead of the password. 2. Enter the homepage after signing in. 3. Enter the dashboard page after clicking on the group name 4. Enter the group management page after clicking the group name on the dashboard page |

| | |
|---------|--|
| | 5. Show the changes after the deletion |
| Cleanup | Log out |

| No | PGMS-TC02 |
|-----------------|--|
| Name | Invite group member |
| Tested target | Project Group Management System |
| Reference | |
| Severity | 1 |
| Instructions | <ol style="list-style-type: none"> 1. Log in with e-mail and password 2. Click on the group name 3. Click on the group name on the dashboard 4. Input username or password of the user who wants to be invited |
| Expected result | <ol style="list-style-type: none"> 1. Display the information being input, while “*” instead of the password. 2. Enter the homepage after signing in. 3. Enter the dashboard page after clicking on the group name 4. Enter the group management page after clicking the group name on the dashboard page 5. Display the new user invited to the group on the group management page |
| Cleanup | Log out |

4.5 Project Dashboard Management System

- **Test objective:** Test the ability of the PDMS subsystem to create and delete tasks, add additional information to the tasks, create dashboards, delete and edit tables.

Test cases

| No | PDMS-TC01 |
|-----------------|--|
| Name | Create a new task |
| Tested target | Project Dashboard Management System |
| Reference | |
| Severity | 1 |
| Instructions | 1. Log in with e-mail and password 2. Click on the dashboard name 3. Click “add task” under the table 4. Input the new task content 5. Click “create task” |
| Expected result | 1. Display the information being input, while “*” instead of the password. 2. Enter the homepage after signing in. 3. Enter the dashboard page after clicking on the group name 4. Show the task created on the dashboard |
| Cleanup | Log out |

| No | PDMS-TC02 |
|-----------------|---|
| Name | Create a new column |
| Tested target | Project Dashboard Management System |
| Reference | |
| Severity | 1 |
| Instructions | 1. Log in with e-mail and password 2. Click on the dashboard name 3. Click “add table” |
| Expected result | 1. Display the information being input, while “*” instead of the password. 2. Enter the homepage after signing in. 3. Enter the dashboard page after clicking on the group name 4. Show the table created on the dashboard |
| Cleanup | Log out |

| No | PDMS-TC03 |
|-----------------|---|
| Name | Edit task |
| Tested target | Project Dashboard Management System |
| Reference | |
| Severity | 1 |
| Instructions | <ol style="list-style-type: none"> 1. Log in with e-mail and password 2. Click on the dashboard name 3. Click on the task 4. Modify the info in the pop up window 5. Click save |
| Expected result | <ol style="list-style-type: none"> 1. Display the information being input, while “*” instead of the password. 2. Enter the homepage after signing in. 3. Enter the dashboard page after clicking on the group name 4. Show the changes made on the task |
| Cleanup | Log out |

| No | PDMS-TC04 |
|-----------------|---|
| Name | Edit column |
| Tested target | Project Dashboard Management System |
| Reference | |
| Severity | 1 |
| Instructions | <ol style="list-style-type: none"> 1. Log in with e-mail and password 2. Click on the dashboard name 3. Select edit on the column 4. Input the new name 5. Click save |
| Expected result | <ol style="list-style-type: none"> 1. Display the information being input, while “*” instead of the password. 2. Enter the homepage after signing in. 3. Enter the dashboard page after clicking on the group name 4. Show the changes made on the column |
| Cleanup | Log out |

| No | PDMS-TC05 |
|-----------------|---|
| Name | Delete column |
| Tested target | Project Dashboard Management System |
| Reference | |
| Severity | 1 |
| Instructions | <ol style="list-style-type: none"> 1. Log in with e-mail and password 2. Click on the dashboard name 3. Select delete on the column |
| Expected result | <ol style="list-style-type: none"> 1. Display the information being input, while “*” instead of the password. 2. Enter the homepage after signing in. 3. Enter the dashboard page after clicking on the group name 4. Show the changes made on the column |
| Cleanup | Log out |

Section 5 Test Procedure and Schedule

5.1 Testing Schedule

| Name | Initials | Responsibility |
|------|----------|-------------------------------|
| 邱嘉香 | GY | Project manager and developer |
| 林大衛 | DR | Developer |
| 陳立宸 | LC | Tester |
| 林育成 | YC | Tester |
| 王奕翔 | YX | Tester |

| Deliverable | Responsibility | Completion Date |
|--|------------------------------------|-----------------|
| Develop Test Cases | Tester | 2018/12/25 |
| Test Cases Review | Developer 、Tester 、Project Manager | 2018/12/28 |
| Requirements Validation Matrix | Project Manager | 2018/12/30 |
| Execute manual | Tester 、Project Manager | 2019/01/01 |
| Complete Defect Reports | Everyone testing the product | 2019/01/02 |
| Document and communicate test status/coverage | Project Manager | 2019/01/02 |
| Document and communicate Beta test status/coverage | Project Manager | 2019/01/02 |
| Execute User Acceptance Tests | Customer | 2018/12/24 |
| Document and communicate Acceptance test status/coverage | Customer | 2018/12/22 |
| Final Test Summary Report | Project Manager | 2018/12/30 |

5.2 Project Management System(PMS)

5.2.1 Schedule

| Deliverable | Responsibility | Completion Date |
|---|---|-----------------|
| Develop Test Cases | Tester | 2018/12/25 |
| Test Cases Review | Developer 、 Tester 、 Project Manager | 2018/12/28 |
| Requirements Validation Matrix | Project Manager | 2018/12/30 |
| Execute manual | Tester 、 Project Manager | 2019/01/01 |
| Test Case PMS-TC01 ~ Test Case PMS-TC04 | Tester 、 Project Manager | 2019/01/01 |

5.2.2 Initialization Condition

1. Complete the establishment of a database interface
2. PMS is validated
3. AMS Verification is complete

5.2.3 Test Cases Sequences

| Test Cases Sequences |
|----------------------|
| PMS-TC01 |
| PMS-TC02 |
| PMS-TC03 |
| PMS-TC04 |

5.2.4 Termination Condition

1. No defects are found
2. Defects are fixed ahead

5.3 Account Management Subsystem(AMS)

5.3.1 Schedule

| Deliverable | Responsibility | Completion Date |
|---|---|-----------------|
| Develop Test Cases | Tester | 2018/12/25 |
| Test Cases Review | Developer 、 Tester 、 Project Manager | 2018/12/28 |
| Requirements Validation Matrix | Project Manager | 2018/12/30 |
| Execute manual | Tester 、 Project Manager | 2019/01/01 |
| Test Case AMS-TC01 ~ Test Case AMS-TC04 | Tester 、 Project Manager | 2019/01/01 |

5.3.2 Initialization Condition

1. Complete the establishment of a database interface
2. AMS is validated

5.3.3 Test Cases Sequences

| Test Cases Sequences |
|----------------------|
| AMS-TC01 |
| AMS-TC02 |
| AMS-TC03 |
| AMS-TC04 |

5.3.4 Termination Condition

1. No defects are found
2. Defects are fixed ahead

5.4 Project Group Management System(PGMS)

5.4.1 Schedule

| Deliverable | Responsibility | Completion Date |
|---|---|-----------------|
| Develop Test Cases | Tester | 2018/12/25 |
| Test Cases Review | Developer 、 Tester 、 Project Manager | 2018/12/28 |
| Requirements Validation Matrix | Project Manager | 2018/12/30 |
| Execute manual | Tester 、 Project Manager | 2019/01/01 |
| Test Case PGMS-TC01 ~ Test Case PGMS-TC02 | Tester 、 Project Manager | 2019/01/01 |

5.4.2 Initialization Condition

1. Complete the establishment of a database interface
2. PGMS is validated
3. AMS Verification is complete

5.4.3 Test Cases Sequences

| Test Cases Sequences |
|----------------------|
| PGMS-TC01 |
| PGMS-TC02 |

5.4.4 Termination Condition

1. No defects are found
2. Defects are fixed ahead

5.5 Project Dashboard Management System(PDMS)

5.5.1 Schedule

| Deliverable | Responsibility | Completion Date |
|---|---|-----------------|
| Develop Test Cases | Tester | 2018/12/25 |
| Test Cases Review | Developer 、 Tester 、 Project Manager | 2018/12/28 |
| Requirements Validation Matrix | Project Manager | 2018/12/30 |
| Execute manual | Tester 、 Project Manager | 2019/01/01 |
| Test Case PDMS-TC01 ~ Test Case PDMS-TC0g | Tester 、 Project Manager | 2019/01/01 |

5.5.2 Initialization Condition

1. Complete the establishment of a database interface
2. AMS Verification is complete
3. PDMS is validated

5.5.3 Test Cases Sequences

| Test Cases Sequences |
|----------------------|
| PDMS-TC01 |
| PDMS-TC02 |
| PDMS-TC03 |
| PDMS-TC04 |
| PDMS-TC05 |

5.5.4 Termination Condition

1. No defects are found
2. Defects are fixed ahead

Section 6 Test Results and Analysis

6.1 Project Management System(PMS)

| Test Case # | Results (PASS/FAIL) | Comment |
|-------------|---------------------|---------------------------------------|
| PMS-TC01 | FAIL | Cannot change the member's permission |
| PMS-TC02 | PASS | |
| PMS-TC03 | PASS | |
| PMS-TC04 | PASS | |

6.2 Account Management system(AMS)

| Test Case # | Results (PASS/FAIL) | Comment |
|-------------|---------------------|---------|
| AMS-TC01 | PASS | |
| AMS-TC02 | PASS | |
| AMS-TC03 | PASS | |
| AMS-TC04 | PASS | |

6.3 Project Group Management System(PGMS)

| Test Case # | Results (PASS/FAIL) | Comment |
|-------------|---------------------|------------------------|
| PGMS-TC01 | FAIL | Cannot delete a member |
| PGMS-TC02 | PASS | |

6.4 Project Dashboard Management System(PDMS)

| Test Case # | Results (PASS/FAIL) | Comment |
|-------------|---------------------|---------|
| PDMS-TC01 | PASS | |
| PDMS-TC02 | PASS | |
| PDMS-TC03 | PASS | |
| PDMS-TC04 | PASS | |
| PDMS-TC05 | PASS | |

Glossary

Database：記錄資料的地方，提供新增、刪除、更新記錄的功能。

UI：用戶介面 (User Interface) 是介於使用者與硬體而設計彼此之間互動溝通相關軟體，目的在使得使用者能夠方便有效率地去操作硬體以達成雙向之互動。

Firebase: 同時支援 Android、iOS 及網頁的 app 雲端開發平台，協助 app 開發者在雲端快速建置後端服務，提供即時資料庫，有效縮短 app 開發時間，並幫助開發者更專注在前端的優化。

MVC: An architectural pattern that separates an application into three main logical components: the model, the view, and the controller. Each component is built to handle specific development aspects of an application.

Capability Maturity Model Integration: Process and behavioral model that helps organizations streamline process improvement and encourage productive, efficient behaviors that decrease risks in software, product and service development.

Open Close Principle: An entity that can allow its behaviour to be extended without modifying its source code.

References

- [1] White, Sarah K. "What Is CMMI? A Model for Optimizing Development Processes." CIO, CIO, 16 Mar. 2018, www.cio.com/article/2437864/developer/process-improvement-capability-maturity-model-integration-cmmi-definition-and-solutions.html.

Traceability Matrix

A Traceability Matrix of Test Cases vs Requirements

| | PMS-TC01 | PMS-TC02 | PMS-TC03 | PMS-TC04 |
|----------|----------|----------|----------|----------|
| PMS-N-01 | ● | ● | ● | ● |
| PMS-N-02 | ● | ● | ● | ● |
| PMS-N-05 | | | ● | ● |
| PMS-N-06 | ● | | ● | ● |
| PMS-N-07 | | ● | ● | ● |
| PMS-N-08 | ● | ● | ● | ● |
| PMS-N-09 | | ● | | |
| PMS-N-10 | | ● | | |
| PMS-N-11 | | ● | | |
| PMS-N-12 | ● | ● | ● | ● |
| PMS-N-13 | ● | ● | ● | ● |
| PMS-N-14 | | ● | | |
| PMS-N-15 | | | | |
| PMS-N-16 | | ● | ● | ● |
| PMS-N-17 | | ● | ● | ● |
| PMS-N-18 | ● | ● | ● | ● |
| PMS-N-19 | ● | ● | ● | ● |
| PMS-N-20 | | ● | ● | ● |
| PMS-N-21 | ● | ● | ● | ● |
| PMS-N-22 | ● | | | |
| PMS-N-23 | ● | ● | ● | ● |
| PMS-N-24 | ● | ● | ● | ● |
| PMS-N-27 | ● | ● | ● | ● |
| PMS-N-28 | | | | |
| PMS-N-32 | ● | ● | ● | ● |
| PMS-N-34 | | ● | ● | ● |
| PMS-F-01 | ● | | ● | ● |
| PMS-F-02 | ● | ● | ● | ● |
| PMS-F-03 | | ● | | |

| | AMS-TC01 | AMS-TC02 | AMS-TC03 | AMS-TC04 |
|----------|----------|----------|----------|----------|
| AMS-N-01 | ● | ● | ● | ● |
| AMS-N-02 | ● | ● | ● | ● |
| AMS-N-03 | ● | ● | ● | ● |
| AMS-N-04 | ● | ● | ● | ● |
| AMS-N-05 | ● | ● | ● | ● |
| AMS-N-06 | ● | ● | ● | ● |
| AMS-N-07 | ● | ● | ● | ● |
| AMS-N-08 | ● | ● | ● | ● |
| AMS-N-09 | ● | ● | ● | ● |
| AMS-N-10 | | | | |
| AMS-N-11 | | | | |
| AMS-N-14 | ● | ● | ● | ● |
| AMS-N-15 | ● | ● | ● | ● |
| AMS-N-16 | ● | ● | ● | ● |
| AMS-N-20 | ● | ● | ● | ● |
| AMS-N-21 | ● | ● | ● | ● |
| AMS-F-01 | ● | ● | ● | ● |
| AMS-F-02 | ● | ● | ● | ● |
| AMS-F-03 | ● | ● | ● | ● |

| | PGMS-TC01 | PGMS-TC02 |
|-----------|-----------|-----------|
| PGMS-N-01 | | |
| PGMS-N-02 | ● | |
| PGMS-N-03 | ● | |
| PGMS-N-04 | ● | |
| PGMS-N-07 | ● | ● |
| PGMS-N-08 | ● | ● |
| PGMS-N-09 | ● | ● |
| PGMS-N-10 | ● | ● |
| PGMS-N-11 | ● | ● |
| PGMS-N-12 | | |
| PGMS-N-13 | | |
| PGMS-N-14 | | |
| PGMS-N-15 | | |

| | PDMS-TC01 | PDMS-TC02 | PDMS-TC03 | PDMS-TC04 | PDMS-TC05 |
|-----------|-----------|-----------|-----------|-----------|-----------|
| PDMS-N-01 | ● | | | | |
| PDMS-N-02 | ● | | | | |
| PDMS-N-03 | ● | | | | |
| PDMS-N-04 | ● | ● | ● | ● | ● |
| PDMS-N-05 | ● | ● | ● | ● | ● |
| PDMS-N-06 | ● | ● | ● | ● | ● |
| PDMS-N-11 | ● | ● | ● | ● | ● |
| PDMS-N-12 | ● | ● | ● | ● | ● |
| PDMS-N-13 | ● | ● | ● | ● | ● |
| PDMS-N-14 | ● | ● | ● | ● | ● |
| PDMS-N-15 | ● | ● | ● | ● | ● |
| PDMS-N-16 | ● | ● | ● | ● | ● |
| PDMS-N-17 | ● | ● | ● | ● | ● |
| PDMS-F-01 | | ● | | ● | ● |
| PDMS-F-02 | | | | | |
| PDMS-F-03 | ● | | ● | | |
| PDMS-F-04 | | | | | |
| PDMS-F-05 | | | | | |

B Traceability Matrix of Test Cases vs Use Cases

| | AMS-TC01 | AMS-TC02 | AMS-TC03 | AMS-TC04 |
|----------|----------|----------|----------|----------|
| AMS-UC01 | | ● | ● | ● |
| AMS-UC02 | ● | | | |
| AMS-UC03 | | | | ● |

| | PGMS-TC01 | PGMS-TC02 |
|-----------|-----------|-----------|
| PGMS-UC01 | ● | ● |
| PGMS-UC02 | | ● |
| PGMS-UC03 | ● | |
| PGMS-UC04 | ● | ● |
| PGMS-UC05 | ● | ● |
| PGMS-UC06 | | ● |

| | PDMS-TC01 | PDMS-TC02 | PDMS-TC03 | PDMS-TC04 | PDMS-TC05 |
|-----------|-----------|-----------|-----------|-----------|-----------|
| PDMS-UC01 | | ● | | | |
| PDMS-UC02 | | | | | ● |
| PDMS-UC03 | | | | ● | |
| PDMS-UC04 | | | | ● | |
| PDMS-UC05 | ● | | | | |
| PDMS-UC06 | | | ● | | |
| PDMS-UC07 | | | ● | | |
| PDMS-UC08 | ● | | | | |