



UTM
UNIVERSITI TEKNOLOGI MALAYSIA

SECJ2203: Software Engineering

System Documentation

Project Title: FABU Alumni System

Version 3.0

30th June 2021

School of Computing, Faculty of Engineering

Prepared by: Seventh

Revision Page

a. Overview

The software design in this report is the first version of the alumni management system. This report consists of the introduction, system-specific requirement, system architectural design, detailed description of components, data design, user interface design, requirement matrix, test cases, and test approach analysis.

b. Target Audience

The target audiences of the alumni management system are the alumni in the Faculty of Built Environment and Surveying(FABU) and the FABU staff in the University of Technology Malaysia (UTM).

c. Project Team Members

Name	Matric Number	Role	Task	Status
Goh Jo Ey	A19EC0047	Team Leader	Requirement Matrix, Test Case, Test Approach Analysis	Completed
Ng Jing Er	A19EC0115	Member	Requirement Matrix, Test Case, Test Approach Analysis	Completed
Chiam Wooi Chin	A19EC0034	Member	Requirement Matrix, Test Case, Test Approach Analysis	Completed
Ong Yin Ren	A19EC0204	Member	Requirement Matrix, Test Case, Test Approach Analysis	Completed
Siti Fatimah Az Zahra	A19EC3032	Member	Requirement Matrix, Test Case, Test Approach Analysis	Completed

d. Version Control History

Version	Primary Author(s)	Description of Version	Date Completed
Version 1.0	Ng Jing Er Goh Jo Ey Ong Yin Ren	This version includes interface requirements, system features, performance requirements, design	25th May 2021

	Chiam Wooi Chin Siti Fatimah Az Zahra	constraints, software system attributes and other requirements of the alumni system.	
Version 2.0	Ng Jing Er Goh Jo Ey Ong Yin Ren Chiam Wooi Chin Siti Fatimah Az Zahra	This version includes the system architecture design(architecture style and rationale, component model), detailed description of components(package diagram, detailed description, class diagram and sequence diagram for each package), data design(data description, data dictionary) as well as the user interface design(overview and the screen images)	10th May 2021
Version 3.0	Ng Jing Er Goh Jo Ey Ong Yin Ren Chiam Wooi Chin Siti Fatimah Az Zahra	This version includes Requirement Matrix, Test Case and Test Approach Analysis.	

Table of Contents

8. Test Cases	1
8.1 TC001: Test <User> Subsystem: <Add User (UC0001)>	1
8.1.1 TC001_01: Test <Add User (SD001)>	2
8.1.1 TC001_02: Test <Add User (SD001)>	3
8.2 TC002: Test <User> Subsystem: <Create Account (UC0002)>	4
8.2.1 TC002: Test <Create Account (SD002)>	5
8.2.1 TC002_02: Test <Create Account (SD002)>	6
8.3 TC003: Test <User> Subsystem: <Login (UC0003)>	7
8.3.1 TC003_01: Test <Login (SD003)>	8
8.4 TC004: Test <User> Subsystem: <Remove User (UC0004)>	9
8.4.1 TC004: Test <Remove User (SD004)>	10
8.5 TC005: Test < Mobile> Subsystem: <View News (UC0005)>	11
8.5.1 TC005_01: Test <View News (SD004)>	12
8.6 TC006: Test < Mobile> Subsystem: <View Event (UC0006)>	13
8.6.1 TC006_01: Test <View Event with no information (SD005)>	14
8.7 TC007: Test < Mobile> Subsystem: <View Charity (UC0007)>	15
8.7.1 TC007_01: Test <View Charity with no information (SD006)>	16
8.8 TC008: Test <Mobile> Subsystem: <View Report (UC0008)>	17
8.8.1 TC008_01: Test <View Report with no information (SD007)>	18
8.9 TC009: Test <Alumni> Subsystem: <Filter Friend (UC0013)>	19
8.9.1 TC009_01: Test <Filter Friend (SD010)>	20
8.9.2 TC009_02: Test <Filter Friend (SD010)>	21
8.10 TC010: Test <Alumni> Subsystem: <Add Friend (UC0014)>	22
8.10.1 TC010_01: Test <Add Friend (SD007)>	23
8.11 TC011: Test <Alumni> Subsystem: <Delete Friend (UC0015)>	24
8.11.1 TC011_01: Test <Delete Friend (SD008)>	25
8.12 TC012: Test <Alumni> Subsystem: <Search Friend (UC0016)>	26
8.12.1 TC012_01: Test <Search Friend (SD009)>	27
8.13 TC013: Test <Alumni> Subsystem: <Update Profile (UC0017)>	28
8.14 TC014: Test <Alumni> Subsystem: <View Status (UC0017)>	29
8.15 TC015: Test <Alumni> Subsystem: <Upload Status (UC0019)>	30
8.16 TC016: Test <Alumni> Subsystem: <Edit Status (UC0020)>	32
8.17 TC017: Test <Alumni> Subsystem: <Delete Status (UC0021)>	33
8.18 TC018: Test <Alumni> Subsystem: <Update Architecture Licensing (UC0009)>	35
8.18.1 TC018_01: Test <Update architecture license (SD001)>	36
8.19 TC019: Test <Mobile> Subsystem: <View Alumni List (UC0010)>	36
8.19.1 TC019_01: Test <View Alumni List (SD001)>	37
8.20 TC020: Test <Mobile> Subsystem: <View Alumni Profile (UC0011)>	38

8.20.1	TC020_01: Test <View Alumni Profile (SD002)>	39
8.21	TC021: Test <Mobile> Subsystem: <View Dashboard (UC0012)>	39
8.21.1	TC021_01: Test <View Dashboard (SD003)>	40
9.	Test Approach Analysis	42
9.1.1	TC018_01 for license available date (day)	43
9.1.2	TC018_01 for license available date (month)	44
9.1.3	TC018_01 for license available date (year)	44
Appendix A: Traceability Matrix		46

8. Test Cases

8.1 TC001: Test <User> Subsystem: <Add User (UC0001)>

This test contains the following test cases:

(a) TC001: Test <Add User (SD001)>

Test Case ID	TC001	Test Case Description	Add User to the System						
Created By	Goh Jo Ey	Reviewed By	Chiam Wooi Chin	Version		1.0			
<u>QA Tester's Log</u>									
Tester's Name	Chiam Wooi Chin	Date Tested	June 22, 2021	Test Case (Pass/Fail/Not Executed)		Pass			
S #	Prerequisites:			S #	Test Data Requirement				
1	Connect to active network			1	Valid User ID				
2				2	Valid Info				
3				3					
4				4					
<u>Test Conditions</u>									
Step #	Step Details	Expected Results	Actual Results		Pass / Fail / Not executed / Suspended				
1	Select "Add User"	The system displays add user page							
2	Select the category of the user	The system displays add user page for specific role							
3	Enter Valid User ID	The system displays the add user info column							
4	Enter Valid User Info	The system displays a successful add user message							

8.1.1 TC001_01: Test <Add User (SD001)>

This test contains the following alternate or exception scenarios:

(a) TC001_01: Test < Invalid User ID(SD001)>

Test Case ID		TC001_01	Test Case Description		Add User to the System				
Created By		Goh Jo Ey	Reviewed By		Chiam Wooi Chin	Version		1.0	
QA Tester's Log									
Tester's Name		Chiam Wooi Chin	Date Tested		June 22, 2021	Test Case (Pass/Fail/Not Executed)		Pass	
S #		Prerequisites:		S #		Test Data Requirement			
1		Connect to active network		1		Invalid User ID			
2				2		Valid Info			
3				3		Valid User ID			
4				4					
Test Conditions									
Step #	Step Details	Expected Results	Actual Results			Pass / Fail / Not executed / Suspended			
1	Select "Add User"	The system displays add user page							
2	Select the category of the user	The system displays add user page for specific role							
3	Enter Invalid User ID	The system display the error message to the user about the id entered existed in the system							

8.1.1 TC001_02: Test <Add User (SD001)>

This test contains the following alternate or exception scenarios:

(a) TC001_02: Test <Wrong Input Format (SD001)>

Test Case ID		TC001_02	Test Case Description		Add User to the System						
Created By		Goh Jo Ey	Reviewed By		Chiam Wooi Chin		Version		1		
QA Tester's Log											
Tester's Name		Chiam Wooi Chin		Date Tested		June 22, 2021		Test Case (Pass/Fail/Not Executed)		Pass	
S #		Prerequisites:			S #		Test Data Requirement				
1		Connect to active network			1		Valid User ID				
2					2		Invalid Info				
3					3						
4					4						
Test Conditions											
Step #		Step Details		Expected Results		Actual Results		Pass / Fail / Not executed / Suspended			
1		Select "Add User"		The system displays add user page							
2		Select the category of the user		The system displays add user page for specific role							
3		Enter Valid User ID		The system displays the add user info column							
4		Enter Invalid User Info		The system displays an error message of wrong input format							

8.2 TC002: Test <User> Subsystem: <Create Account (UC0002)>

This test contains the following test cases:

(a) TC002: Test <Create Account (SD002)>

Test Case ID	TC002	Test Case Description	Create Account in the System						
Created By	Goh Jo Ey	Reviewed By	Chiam Wooi Chin	Version	1.0				
<u>QA Tester's Log</u>									
Tester's Name	Chiam Wooi Chin	Date Tested	June 23, 2021	Test Case (Pass/Fail/Not Executed)	Pass				
S #	Prerequisites:		S #	Test Data Requirement					
1	Connect to active network		1	Valid UserID					
2			2	Valid Account Details					
3			3						
4			4						
<u>Test Conditions</u>									
Step #	Step Details	Expected Results	Actual Results		Pass / Fail / Not executed / Suspended				
1	select "Create Account"	The system displays the Create Account Page							
2	Enter the valid user id	The system continue to display create account form and ask the user to enter account details							
3	Enter the valid account details	The system display successful create account message							

8.2.1 TC002: Test <Create Account (SD002)>

This test contains the following alternate or exception scenarios:

(a) TC002_01: Test <User ID not found(SD002)>

Test Case ID	TC002_01	Test Case Description	Create Account in the System			
Created By	Goh Jo Ey	Reviewed By	Chiam Wooi Chin	Version	1.0	
QA Tester's Log						
Tester's Name	Chiam Wooi Chin	Date Tested	June 23, 2021	Test Case (Pass/Fail/Not Executed)	Pass	
S #	Prerequisites:		S #	Test Data Requirement		
1	Connect to active network		1	Invalid UserID		
2			2			
3			3			
4			4			
Test Conditions						
Step #	Step Details	Expected Results	Actual Results		Pass / Fail / Not executed / Suspended	
1	select "Create Account"	The system displays the Create Account Page				
2	Enter the invalid user id	The system displays the error message to show the id entered in not found in the database				

8.2.1 TC002_02: Test <Create Account (SD002)>

This test contains the following alternate or exception scenarios:

(a) TC002_02: Test <Invalid Account Details(SD002)>

Test Case ID		TC002_02	Test Case Description		Create Account in the System						
Created By		Goh Jo Ey	Reviewed By		Chiam Wooi Chin		Version		1.0		
QA Tester's Log											
Tester's Name		Chiam Wooi Chin		Date Tested		June 22, 2021		Test Case (Pass/Fail/Not Executed)		Pass	
S #		Prerequisites:			S #		Test Data Requirement				
1		Connect to active network			1		Valid UserID				
2					2		Invalid Account Details				
3					3						
4					4						
Test Conditions											
Step #		Step Details		Expected Results		Actual Results			Pass / Fail / Not executed / Suspended		
1		select "Create Account"		The system displays the Create Account Page							
2		Enter the valid user id		The system continue to display create account form and ask the user to enter account details							
3		Enter invalid account details		The system detect the invalid data type for the account details and display error message							

8.3 TC003: Test <User> Subsystem: <Login (UC0003)>

This test contains the following test cases:

(a) TC003: Test <Login (SD003)>

Test Case ID	TC003	Test Case Description	Login to the System			
Created By	Goh Jo Ey	Reviewed By	Chiam Wooi Chin	Version	1.0	
QA Tester's Log						
Tester's Name	Chiam Wooi Chin	Date Tested	June 25, 2021	Test Case (Pass/Fail/Not Executed)	Pass	
S #	Prerequisites:		S #	Test Data Requirement		
1	Connect to active network		1	Valid Username		
2			2	Valid Password		
3			3			
4			4			
Test Conditions						
Step #	Step Details	Expected Results	Actual Results	Pass / Fail / Not executed / Suspended		
1	Select "Login"	The system displays the login page				
2	Enter username and password	The system displays the main page				

8.3.1 TC003_01: Test <Login (SD003)>

This test contains the following alternate or exception scenarios:

(a) TC003_01: Test <Invalid Username and Password(SD003)>

Test Case ID	TC003_01	Test Case Description	Login to the System							
Created By	Goh Jo Ey	Reviewed By	Chiam Wooi Chin	Version				1.0		
QA Tester's Log										
Tester's Name		Chiam Wooi Chin	Date Tested		June 25, 2021		Test Case (Pass/Fail/Not Executed)			Pass
S #	Prerequisites:				S #	Test Data Requirement				
1	Connect to active network				1	Invalid Username				
2					2	Invalid Password				
3					3	Valid Username				
4					4					
Test Conditions										
Step #	Step Details		Expected Results		Actual Results			Pass / Fail / Not executed / Suspended		
1	Select "Login"		The system displays the login page							
2	Enter invalid username and invalid password		System display error message and ask the user to enter valid username							
3	Enter valid username and invalid password		System display error message and ask the user to enter valid password							

8.4 TC004: Test <User> Subsystem: <Remove User (UC0004)>

This test contains the following test cases:

(a) TC004: Test <Remove User (SD004)>

Test Case ID	TC004	Test Case Description	Remove User from System						
Created By	Goh Jo Ey	Reviewed By	Chiam Wooi Chin	Version	1.0				
QA Tester's Log									
Tester's Name	Chiam Wooi Chin	Date Tested	June 25, 2021	Test Case (Pass/Fail/Not Executed)	Pass				
S #	Prerequisites:		S #	Test Data Requirement					
1	Connect to active network		1	Valid Remove User ID					
2	Must have the account		2						
3			3						
4			4						
Test Conditions									
Step #	Step Details	Expected Results	Actual Results		Pass / Fail / Not executed / Suspended				
1	User select "remove user"	The system displays the remove user page							
2	Enter remove user id	The system displays the confirmation remove message							
3	User select "confirm remove"	The system display successful remove user message							

8.4.1 TC004: Test <Remove User (SD004)>

This test contains the following alternate or exception scenarios:

(a) TC004_01: Test <Invalid User ID(SD004)>

Test Case ID	TC004_01	Test Case Description	Remove User from System							
Created By	Goh Jo Ey	Reviewed By	Chiam Wooi Chin	Version			1.0			
QA Tester's Log										
Tester's Name		Chiam Wooi Chin	Date Tested		June 25, 2021		Test Case (Pass/Fail/Not Executed)		Pass	
S #	Prerequisites:			S #	Test Data Requirement					
1	Connect to active network			1	Invalid remove user id					
2	Must have the account			2						
3				3						
4				4						
Test Conditions										
Step #	Step Details		Expected Results		Actual Results			Pass / Fail / Not executed / Suspended		
1	User select "remove user"		The system displays the remove user page							
2	Enter invalid remove user id		The system displays the error message about the user id entered not found in the system							

8.5 TC005: Test < Mobile> Subsystem: <View News (UC0005)>

This test contains the following test cases:

(a) TC005: Test <View News (SD004)>

Test Case ID	TC005	Test Case Description	Functionality opening News Info page					
Created By	Ng Jing Er	Reviewed By	Goh Jo Ey	Version	1			
<u>QA Tester's Log</u>								
Tester's Name	Goh Jo Ey	Date Tested	20th June 2021	Test Case (Pass/Fail/Not Executed)	Pass			
S #	Prerequisites:		S #	Test Data Requirement				
1	User accessed to news page		1	Valid NewsID(with information)				
2			2					
<u>Test Conditions</u>	Verify on view news							
Step #	Step Details	Expected Results	Actual Results	Pass / Fail / Not executed / Suspended				
1	Access to News page	News page should display news						
2	Click view button	News info page should open						

8.5.1 TC005_01: Test <View News (SD004)>

This test contains the following alternate:

(a) TC005_01: Test <View News with no information (SD004)>

Test Case ID	TC005_01	Test Case Description	Functionality opening News Info page					
Created By	Ng Jing Er	Reviewed By	Goh Jo Ey	Version	1			
<u>QA Tester's Log</u>								
Tester's Name	Goh Jo Ey	Date Tested	20th June 2021	Test Case (Pass/Fail/Not Executed)	Pass			
S #	Prerequisites:		S #	Test Data Requirement				
1	User accessed to news page		1	Invalid NewsID(without information)				
2			2					
<u>Test Conditions</u>	Verify on view news							
Step #	Step Details	Expected Results	Actual Results	Pass / Fail / Not executed / Suspended				
1	Access to News page	News page should display news						
2	Click view button	The system display a 'No information' message to the user						

8.6 TC006: Test < Mobile> Subsystem: <View Event (UC0006)>

This test contains the following test cases:

(a) TC006: Test <View Event (SD005)>

Test Case ID	TC006	Test Case Description	Functionality opening Event Info page						
Created By	Ng Jing Er	Reviewed By	Goh Jo Ey	Version			1		
<u>QA Tester's Log</u>									

8.6.1 TC006_01: Test <View Event with no information (SD005)>

This test contains the following alternate:

(a) TC006_01: Test <View Event with no information (SD005)>

Test Case ID	TC006_01	Test Case Description	Functionality opening Event Info page			
Created By	Ng Jing Er	Reviewed By	Goh Jo Ey	Version	1	
QA Tester's Log						
Tester's Name	Goh Jo Ey	Date Tested	20th June 2021	Test Case (Pass/Fail/Not Executed)	Pass	
S #	Prerequisites:		S #	Test Data Requirement		
1	User accessed to event page		1	Invalid EventID(without information)		
2			2			
Test Conditions	Verify on view event					
Step #	Step Details	Expected Results	Actual Results	Pass / Fail / Not executed / Suspended		
1	Access to Event page	Event page should display events				
2	Click view button	The system display a 'No information' message to the user				

8.7 TC007: Test < Mobile> Subsystem: <View Charity (UC0007)>

This test contains the following test cases:

(a) TC007: Test <View Charity (SD006)>

Test Case ID	TC007	Test Case Description	Functionality opening Charity Info page				
Created By	Ng Jing Er	Reviewed By	Goh Jo Ey	Version	1		
<u>QA Tester's Log</u>							
Tester's Name	Goh Jo Ey	Date Tested	20th June 2021	Test Case (Pass/Fail/Not Executed)	Pass		
S #	Prerequisites:		S #	Test Data Requirement			
1	User accessed to Charity page		1	Valid CharityID(with information)			
2			2				
<u>Test Conditions</u> Verify on view charity							
Step #	Step Details	Expected Results	Actual Results	Pass / Fail / Not executed / Suspended			
1	Access to Charity page	Charity page should display charity					
2	Click view button	Charity info page should open					

8.7.1 TC007_01: Test <View Charity with no information (SD006)>

This test contains the following alternate:

(a) TC007_01: Test <View Charity with no information (SD006)>

Test Case ID	TC007_01	Test Case Description	Functionality opening Charity Info page			
Created By	Ng Jing Er	Reviewed By	Goh Jo Ey	Version	1	
<u>QA Tester's Log</u>						
Tester's Name	Goh Jo Ey	Date Tested	20th June 2021	Test Case (Pass/Fail/Not Executed)	Pass	
S #	Prerequisites:		S #	Test Data Requirement		
1	User accessed to Charity page		1	Invalid CharityID(without information)		
2			2			
<u>Test Conditions</u>		Verify on view charity				
Step #	Step Details	Expected Results	Actual Results	Pass / Fail / Not executed / Suspended		
1	Access to Charity page	Charity page should display charity				
2	Click view button	The system display a 'No information' message to the user				

8.8 TC008: Test <Mobile> Subsystem: <View Report (UC0008)>

This test contains the following test cases:

(a) TC008: Test <View Report (SD007)>

Test Case ID	TC008	Test Case Description	Functionality opening Report Info page					
Created By	Ng Jing Er	Reviewed By	Goh Jo Ey	Version	1			
QA Tester's Log								
Tester's Name	Goh Jo Ey	Date Tested	20th June 2021	Test Case (Pass/Fail/Not Executed)	Pass			
S #	Prerequisites:		S #	Test Data Requirement				
1	User accessed to Report page		1	Valid ReportID(with information)				
2			2					
Test Conditions	Verify on view report							
Step #	Step Details	Expected Results	Actual Results	Pass / Fail / Not executed / Suspended				
1	Access to Report page	Report page should display report						
2	Click view button	Report info page should open						

8.8.1 TC008_01: Test <View Report with no information (SD007)>

This test contains the following alternate:

(a) TC008_01: Test <View Report with no information (SD007)>

Test Case ID	TC008_01	Test Case Description	Functionality opening Report Info page			
Created By	Ng Jing Er	Reviewed By	Goh Jo Ey	Version	1	
QA Tester's Log						
Tester's Name	Goh Jo Ey	Date Tested	20th June 2021	Test Case (Pass/Fail/Not Executed)	Pass	
S #	Prerequisites:		S #	Test Data Requirement		
1	User accessed to Report page		1	Invalid ReportID(without information)		
2			2			
Test Conditions						
Verify on view report						
Step #	Step Details	Expected Results	Actual Results	Pass / Fail / Not executed / Suspended		
1	Access to Report page	Report page should display report				
2	Click view button	The system display a 'No information' message to the user				

8.9 TC009: Test <Alumni> Subsystem: <Filter Friend (UC0013)>

This test contains the following test cases:

(a) TC009: Test <Filter Friend (SD010)>

Test Case ID	TC009	Test Case Description	Filter friend from the system					
Created By	Ong Yin Ren	Reviewed By	Siti Fatimah Az Zahra	Version	1			
QA Tester's Log								
Tester's Name	Siti Fatimah Az Zahra	Date	June 27, 2021	Test Case (Pass/Fail/Not Executed)	Pass			
S #	Prerequisites:		S #	Test Data Requirement				
1	Accessed to the friend page		1	Valid FriendID				
2			2					
3			3					
4			4					
Test Conditions								
Step #	Step Details	Expected Results	Actual Results			Pass / Fail / Not executed / Suspended		
1	Select "filter friend"	System retrieves the friend information	As Expected					
2	Select the filter criteria	System display result of friend	As Expected					

8.9.1 TC009_01: Test <Filter Friend (SD010)>

This test contains the following alternate or exception scenarios:

(a) TC009_01: Test <Friend ID not found(SD010)>

Test Case ID	TC009_01	Test Case Description	Filter friend from the system			
Created By	Ong Yin Ren	Reviewed By	Siti Fatimah Az Zahra	Version	1	
QA Tester's Log						
Tester's Name	Siti Fatimah Az Zahra	Date Tested	June 27, 2021	Test Case (Pass/Fail/Not Executed)	Pass	
S #	Prerequisites:		S #	Test Data Requirement		
1	Accessed to the friend page		1	Invalid friendID		
2			2			
3			3			
4			4			
Test Conditions						
Step #	Step Details	Expected Results	Actual Results			Pass / Fail / Not executed / Suspended
1	Select "filter friend"	System retrieves the friend information				
2	Select the filter criteria	System display no friend found				

8.9.2 TC009_02: Test <Filter Friend (SD010)>

This test contains the following alternate or exception scenarios:

(a) TC009_02: Test <Friend ID not match(SD010)>

Test Case ID	TC009_02	Test Case Description	Filter friend from the system						
Created By	Ong Yin Ren	Reviewed By	Siti Fatimah Az Zahra	Version	1				
QA Tester's Log									
Tester's Name	Siti Fatimah Az Zahra	Date Tested	June 27, 2021	Test Case (Pass/Fail/Not Executed)	Pass				
S #	Prerequisites:		S #	Test Data Requirement					
1	Accessed to the friend page		1	Invalid FriendID					
2			2						
3			3						
4			4						
Test Conditions									
Step #	Step Details	Expected Results	Actual Results			Pass / Fail / Not executed / Suspended			
1	Select "filter friend"	System no retrieves the friend information							
2	Select the filter criteria	System no match result							

8.10 TC010: Test <Alumni> Subsystem: <Add Friend (UC0014)>

This test contains the following test cases:

TC010: Test <Add Friend (SD007)>

Test Case ID	TC010	Test Case Description	Add Friend to the System							
Created By	Ong Yin Ren	Reviewed By	Siti Fatimah Az Zahra	Version			1			
<u>QA Tester's Log</u>										
Tester's Name		Siti Fatimah Az Zahra	Date Tested		June 27, 2021		Test Case (Pass/Fail/Not Executed)		Pass	
S #	Prerequisites:				S #	Test Data Requirement				
1	Connect to active network				1	Valid Friend ID				
2	Must have the account				2					
3					3					
4					4					
<u>Test Conditions</u>										
Step #	Step Details		Expected Results		Actual Results		Pass / Fail / Not executed / Suspended			
1	Select "Add Friend"		The system displays add friend page							
2	Select the category of the friend		The system retrieve user info for specific role							
3	Select friend want to be added		The system add the friend into the system							

8.10.1 TC010_01: Test <Add Friend (SD007)>

This test contains the following alternate or exception scenarios:

(a) TC010_01: Test <Invalid Friend ID(SD007)>

Test Case ID	TC010_01	Test Case Description	Add Friend to the System							
Created By	Ong Yin Ren	Reviewed By	Siti Fatimah Az Zahra	Version			1			
QA Tester's Log										
Tester's Name		Siti Fatimah Az Zahra	Date Tested		June 27, 2021		Test Case (Pass/Fail/Not Executed)		Pass	
S #	Prerequisites:			S #	Test Data Requirement					
1	Connect to active network			1	Invalid Friend ID					
2	Must have the account			2						
3				3						
4				4						
Test Conditions										
Step #	Step Details		Expected Results		Actual Results			Pass / Fail / Not executed / Suspended		
1	Select "Add User"		The system displays add user page							
2	Select the wrong category of the user		The system displays error to retrived the user info							

8.11 TC011: Test <Alumni> Subsystem: <Delete Friend (UC0015)>

This test contains the following test cases:

TC011: Test <Delete Friend (SD008)>

Test Case ID		TC011	Test Case Description		Delete Friend from System						
Created By		Ong Yin Ren	Reviewed By		Siti Fatimah Az Zahra		Version		1		
QA Tester's Log											
Tester's Name		Siti Fatimah Az Zahra	Date Tested		June 27, 2021		Test Case (Pass/Fail/Not Executed)		Pass		
S #	Prerequisites:				S #	Test Data Requirement					
1	Connect to active network				1	Valid Remove Friend					
2	Must have the account				2						
3					3						
4					4						
Test Conditions											
Step #	Step Details		Expected Results		Actual Results		Pass / Fail / Not executed / Suspended				
1	User select "delete friend"		The system displays the delete friend page								
2	Enter delete friend id		The system displays the confirmation remove message								
3	User select "confirm delete"		The system display successful remove user message								

8.11.1 TC011_01: Test <Delete Friend (SD008)>

This test contains the following alternate or exception scenarios:

TC011_01: Test <Invalid Friend ID(SD008)>

Test Case ID		TC011_01	Test Case Description		Delete friend from System				
Created By		Ong Yin Ren	Reviewed By		Siti Fatimah Az Zahra	Version		1	
QA Tester's Log									
Tester's Name		Siti Fatimah Az Zahra	Date Tested		June 27, 2021	Test Case (Pass/Fail/Not Executed)		Pass	
S #	Prerequisites:			S #	Test Data Requirement				
1	Connect to active network			1	Invalid friend id				
2	Must have the account			2					
3				3					
4				4					
Test Conditions									
Step #	Step Details		Expected Results		Actual Results		Pass / Fail / Not executed / Suspended		
1	User select "delete friend"		The system displays the delete friend page						
2	Enter invalid friend id		The system displays the error message about the user id entered not found in the system						

8.12 TC012: Test <Alumni> Subsystem: <Search Friend (UC0016)>

This test contains the following test cases:

TC012: Test <Search Friend (SD009)>

Test Case ID		TC012	Test Case Description		Search Friend from System						
Created By		Ong Yin Ren	Reviewed By		Siti Fatimah Az Zahra		Version		1		
<u>QA Tester's Log</u>											
Tester's Name		Siti Fatimah Az Zahra	Date Tested		June 27, 2021		Test Case (Pass/Fail/Not Executed)		Pass		
S #	Prerequisites:				S #	Test Data Requirement					
1	Connect to active network				1	Valid Friend ID					
2	Must have the account				2						
3					3						
4					4						
<u>Test Conditions</u>											
Step #	Step Details		Expected Results		Actual Results			Pass / Fail / Not executed / Suspended			
1	User select "search friend"		The system displays the search friend page								
2	Enter friend id		The system displays the friend information								

8.12.1 TC012_01: Test <Search Friend (SD009)>

This test contains the following alternate or exception scenarios:

TC012_01: Test <Invalid Friend ID(SD009)>

Test Case ID	TC012_01	Test Case Description	Search Friend from System						
Created By	Ong Yin Ren	Reviewed By	Siti Fatimah Az Zahra	Version			1		
<u>QA Tester's Log</u>									
Tester's Name		Siti Fatimah Az Zahra	Date Tested		June 27, 2021		Test Case (Pass/Fail/Not Executed)		Pass
S #	Prerequisites:				S #	Test Data Requirement			
1	Connect to active network				1	Invalid Friend ID			
2	Must have the account				2				
3					3				
4					4				
<u>Test Conditions</u>									
Step #	Step Details		Expected Results		Actual Results			Pass / Fail / Not executed / Suspended	
1	User select "search friend"		The system displays the search friend page						
2	Enter invalid friend id		The system displays the no id found						

8.13 TC013: Test <Alumni> Subsystem: <Update Profile (UC0017)>

This test contains the following test cases:

(a) TC013_01: Test <Update Successful (SD002)>

Test Case ID	TC013_01	Test Case Description	Test the update profile page when the input is valid						
Created By	Siti Fatimah Az Zahra	Reviewed By	Ong Yin Ren	Version	1				
<u>QA Tester's Log</u>									
Tester's Name	Ong Yin Ren	Date Tested	June 22, 2021	Test Case (Pass/Fail/Not Executed)	Pass				
S #	Prerequisites:		S #	Test Data Requirement					
1	Must connect to the Internet		1	Valid data					
2	User has logged into the account		2						
3			3						
4									
<u>Test Conditions</u>									
Step #	Step Details	Expected Results	Actual Results	Pass / Fail / Not executed / Suspended					
1	View user profile	Display user profile							
2	Choose update profile	Display update profile page							
3	User insert valid data	System update information with new data and display successful message							

(b) TC013_02: Test <Wrong Input Format(SD002)>

Test Case ID	TC013_02	Test Case Description	Test the update profile page when the input is invalid					
Created By	Siti Fatimah Az Zahra	Reviewed By	Ong Yin Ren	Version	1			
QA Tester's Log								
Tester's Name	Ong Yin Ren	Date Tested	June 22, 2021	Test Case (Pass/Fail/Not Executed)	Pass			
S #	Prerequisites:		S #	Test Data Requirement				
1	Must connect to the Internet		1	Invalid data				
2	User has logged into the account		2					
3			3					
4			4					
Test Conditions								
Step #	Step Details	Expected Results	Actual Results		Pass / Fail / Not executed / Suspended			
1	View user profile	Display user profile						
2	Choose update profile	Display update profile page						
3	User insert invalid data	System display error message						

8.14 TC014: Test <Alumni> Subsystem: <View Status (UC0017)>

This test contains the following test cases:

(a) TC014_01: Test <View Status (SD003)>

Test Case ID	TC014	Test Case Description	Test the function to view status			
Created By	Siti Fatimah	Reviewed By	Ong Yin Ren	Version	1	

	Az Zahra								
<u>QA Tester's Log</u>									
Tester's Name		Ong Yin Ren	Date Tested		June 22, 2021		Test Case (Pass/Fail/Not Executed)		Pass
S #	Prerequisites:				S #	Test Data Requirement			
1	Must connect to the Internet				1	valid alumniID			
2	User has logged into the account				2				
3					3				
4					4				
<u>Test Conditions</u>									
Step #	Step Details		Expected Results		Actual Results		Pass / Fail / Not executed / Suspended		
1	User open an alumni page with valid alumniID		Display profile page						
2	Select view status		Display status						

8.15 TC015: Test <Alumni> Subsystem: <Upload Status (UC0019)>

This test contains the following test cases:

(a) TC015_01: Test <Confirm Upload Status (SD005)>

Test Case ID	TC015_01	Test Case Description	To test upload status functionality						
Created By	Siti Fatimah Az Zahra	Reviewed By	Ong Yin Ren	Version		1			
<u>QA Tester's Log</u>									

Tester's Name		Ong Yin Ren	Date Tested	June 22, 2021	Test Case (Pass/Fail/Not Executed)	Pass
S #	Prerequisites:		S #	Test Data Requirement		
1	Must connect to the Internet		1	Valid statusText		
2	User has logged into the account		2			
3			3			
<u>Test Conditions</u>						
Step #	Step Details	Expected Results	Actual Results		Pass / Fail / Not executed / Suspended	
1	View user profile	Display user profile				
2	Choose upload status	Display upload status page				
3	User insert valid statusText and confirm to upload	System upload status and display successful message				

(b) TC015_02: Test <Cancel Upload Status (SD005)>

Test Case ID	TC015_02	Test Case Description	To test upload status functionality when user cancel to upload new status						
Created By	Siti Fatimah Az Zahra	Reviewed By	Ong Yin Ren	Version	1				
<u>QA Tester's Log</u>									
Tester's Name	Ong Yin Ren	Date Tested	June 22, 2021	Test Case (Pass/Fail/Not Executed)	Pass				
S #	Prerequisites:		S #	Test Data Requirement					
1	Must connect to the Internet		1	Invalid statusText					
2	User has logged into the account		2						
3			3						

Test Conditions				
Step #	Step Details	Expected Results	Actual Results	Pass / Fail / Not executed / Suspended
1	View user profile	Display user profile		
2	Choose upload status	Display upload status page		
3	User insert invalid statusText and cancel to upload	Display upload status cancel message		

8.16 TC016: Test <Alumni> Subsystem: <Edit Status (UC0020)>

This test contains the following test cases:

(a) TC016_01: Test <Edit Status (SD004)>

Test Case ID	TC0016	Test Case Description	To test edit status functionality			
Created By	Siti Fatimah Az Zahra	Reviewed By	Ong Yin Ren	Version	1	
<u>QA Tester's Log</u>						
Tester's Name	Ong Yin Ren	Date Tested	June 22, 2021	Test Case (Pass/Fail/Not Executed)		
S #	Prerequisites:		S #	Test Data Requirement		
1	Must connect to the Internet		1	Valid statusText		
2	User has logged into the account		2			
3	User must has a status already		3			
4			4			
<u>Test Conditions</u>						

Step #	Step Details	Expected Results	Actual Results	Pass / Fail / Not executed / Suspended
1	View user profile	Display user profile		
2	Choose edit status	Display edit status page		
3	User insert valid statusText and confirm to upload	System update new status		

8.17 TC017: Test <Alumni> Subsystem: <Delete Status (UC0021)>

This test contains the following test cases:

(a) TC017_01: Test <Confirm Delete Status (SD006)>

Test Case ID	TC017_01	Test Case Description	To test delete status functionality						
Created By	Siti Fatimah Az Zahra	Reviewed By	Ong Yin Ren	Version	1				
QA Tester's Log									
Tester's Name	Ong Yin Ren	Date Tested	June 22, 2021	Test Case (Pass/Fail/Not Executed)	Pass				
S #	Prerequisites:		S #	Test Data Requirement					
1	Must connect to the Internet		1	valid alumniID					
2	User has logged into the account		2						
3	User must has a status already		3						
4			4						
Test Conditions									
Step #	Step Details	Expected Results	Actual Results		Pass / Fail / Not executed / Suspended				
1	View user profile	Display user profile							
2	Choose delete status	Display delete status							

		page		
3	User click delete status	Display confirmation message		
4	User confirm deletion	System delete status and display successful message		

(b) TC017_02: Test <Cancel Delete Status (SD006)>

Test Case ID	TC017_02	Test Case Description	To test delete status functionality when user cancel deletion		
Created By	Siti Fatimah Az Zahra	Reviewed By	Ong Yin Ren	Version	1

QA Tester's Log

Tester's Name	Ong Yin Ren	Date Tested	June 22, 2021	Test Case (Pass/Fail/Not Executed)	Pass
----------------------	-------------	--------------------	---------------	---	------

S #	Prerequisites:	S #	Test Data Requirement
1	Must connect to the Internet	1	valid alumniID
2	User has logged into the account	2	
3	User must has a status already	3	
4		4	

Test Conditions

Step #	Step Details	Expected Results	Actual Results	Pass / Fail / Not executed / Suspended
1	View user profile based on valid alumniID	Display user profile		
2	Choose delete status	Display delete status page		
3	User click delete status	Display confirmation message		
4	User cancel to delete	System redirect to status page		

8.18 TC018: Test <Alumni> Subsystem: <Update Architecture Licensing (UC0009)>

This test contains the following test cases:

(a) TC018: Test <Update architecture license (SD001)>

Test Case ID		TC_0018	Test Case Description		Test Update Architecture Licensing when valid license			
Created By		Chiam Wooi Chin	Reviewed By		Ng Jing Er		Version	2.1
QA Tester's Log								
Tester's Name		Ng Jing Er	Date Tested		June 22, 2021		Test Case (Pass/Fail/Not Executed)	Pass
S #	Prerequisites:			S #	Test Data			
1	Accessor already logged on			1	licenseType = state architecture			
2	Accessor select update architecture licensing from menu			2	licenseAvailableDate= 01/01/2025			
3				3				
4				4				
Test Scenario	Verify on update architecture licensing							
Step #	Step Details		Expected Results		Actual Results		Pass / Fail / Not executed / Suspended	
1	Select update architecture licensing from menu		System display existing architecture licensing page					
2	Enter license type and available date		licenseType and available date can be entered					
3	Click Update		Update latest architecture license					
			display updated architecture licensing page					

8.18.1 TC018_01: Test <Update architecture license (SD001)>

This test contains the following alternate or exception scenarios:

(a) TC018_01: Test <Invalid license (SD001)>

Test Case ID		TC_0018_01	Test Case Description		Test Update Architecture Licensing when invalid license			
Created By		Chiam Wooi Chin	Reviewed By		Ng Jing Er		Version	2.1
QA Tester's Log								
Tester's Name		Ng Jing Er	Date Tested		June 22, 2021		Test Case (Pass/Fail/Not Executed)	Pass
S #	Prerequisites:				S #	Test Data		
1	Accessor already logged on				1	licenseType = degree architecture		
2	Accessor select update architecture licensing from menu				2	licenseAvailableDate= 20/10/2050		
3					3			
4					4			
Test Scenario	Verify on update architecture licensing							
Step #	Step Details		Expected Results		Actual Results		Pass / Fail / Not executed / Suspended	
1	Select update architecture licensing from menu		System display existing architecture licensing page					
2	Enter invalid license type and available date		licenseType and available date can be entered					
3	Click Update		display error message					

8.19 TC019: Test <Mobile> Subsystem: <View Alumni List (UC0010)>

This test contains the following test cases:

(a) TC019: Test <View Alumni List (SD001)>

Test Case ID	TC_0019	Test Case Description	Test View Alumni List			
Created By	Chiam Wooi Chin	Reviewed By	Ng Jing Er	Version	2.1	

QA Tester's Log										
Tester's Name	Ng Jing Er	Date Tested	June 22, 2021	Test Case (Pass/Fail/Not Executed)	Pass					
S #	Prerequisites:		S #	Test Data						
1	Accessor already logged on		1	valid alumniID						
2			2							
3			3							
4			4							
Test Scenario		Verify on view alumni list								
Step #	Step Details	Expected Results	Actual Results	Pass / Fail / Not executed / Suspended						
1	Select alumni list from menu	System display alumni list page								
2	View alumni list	show alumni list								

8.19.1 TC019_01: Test <View Alumni List (SD001)>

This test contains the following alternate or exception scenarios:

(a) TC019_01: Test <View Alumni List with no update (SD001)>

Test Case ID	TC_0019_01	Test Case Description	Test View Alumni List with no update							
Created By	Chiam Wooi Chin	Reviewed By	Ng Jing Er	Version	2.1					
QA Tester's Log										
Tester's Name	Ng Jing Er	Date Tested	June 22, 2021	Test Case (Pass/Fail/Not Executed)	Pass					
S #	Prerequisites:		S #	Test Data						
1	Accessor already logged on		1	invalid alumniID						
2			2							
3			3							

Test Scenario	Verify on view alumni list								
Step #	Step Details	Expected Results	Actual Results	Pass / Fail / Not executed / Suspended					
1	Select alumni list from menu	System display alumni list page							
2	View no update message	show no update message							

8.20 TC020: Test <Mobile> Subsystem: <View Alumni Profile (UC0011)>

This test contains the following test cases:

(a) TC020: Test <View Alumni Profile (SD002)>

Test Case ID	TC_0020	Test Case Description	Test View Alumni Profile						
Created By	Chiam Wooi Chin	Reviewed By	Ng Jing Er	Version	2.1				
QA Tester's Log									
Tester's Name	Ng Jing Er	Date Tested	June 22, 2021	Test Case (Pass/Fail/Not Executed)	Pass				
S #	Prerequisites:		S #	Test Data					
1	Accessor already logged on		1	valid alumniID					
2			2						
3			3						
4			4						
Test Scenario	Verify on view alumni profile								
Step #	Step Details	Expected Results	Actual Results	Pass / Fail / Not executed / Suspended					
1	Select alumni profile from menu	System display alumni profile page							
2	View alumni profile	show alumni profile							

8.20.1 TC020_01: Test <View Alumni Profile (SD002)>

This test contains the following alternate or exception scenarios:

(a) TC020_01: Test <View Alumni Profile with no update (SD002)>

Test Case ID	TC_0020	Test Case Description	Test View Alumni Profile with no update						
Created By	Chiam Wooi Chin	Reviewed By	Ng Jing Er	Version	2.1				
QA Tester's Log									
Tester's Name	Ng Jing Er	Date Tested	June 22, 2021	Test Case (Pass/Fail/Not Executed)	Pass				
S #	Prerequisites:		S #	Test Data					
1	Accessor already logged on		1	invalid alumniID					
2			2						
3			3						
4			4						
Test Scenario	Verify on view alumni profile								
Step #	Step Details	Expected Results	Actual Results	Pass / Fail / Not executed / Suspended					
1	Select alumni profile from menu	System display alumni profile page							
2	View no update message	show no update message							

8.21 TC021: Test <Mobile> Subsystem: <View Dashboard (UC0012)>

This test contains the following test cases:

(a) TC021: Test <View Dashboard (SD003)>

Test Case ID	TC_0021	Test Case Description	Test View Dashboard						
Created By	Chiam Wooi Chin	Reviewed By	Ng Jing Er	Version	2.1				

<u>QA Tester's Log</u>										
Tester's Name		Ng Jing Er	Date Tested		June 22, 2021		Test Case (Pass/Fail/Not Executed)		Pass	
S #	Prerequisites:				S #	Test Data				
1	Accessor already logged on				1	valid dashboardID				
2					2					
3					3					
4					4					
<u>Test Scenario</u>	Verify on view dashboard									
Step #	Step Details		Expected Results		Actual Results		Pass / Fail / Not executed / Suspended			
1	Select dashboard from menu		System display dashboard page							
2	View dashboard info		show dashboard info							

8.21.1 TC021_01: Test <View Dashboard (SD003)>

This test contains the following alternate or exception scenarios:

(a) TC021_01: Test <View Dashboard with no update (SD003)>

Test Case ID		TC_0021_01	Test Case Description		Test View Dashboard with no update					
Created By		Chiam Wooi Chin	Reviewed By		Ng Jing Er		Version		1.0	
QA Tester's Log										
Tester's Name		Ng Jing Er	Date Tested		June 22, 2021		Test Case (Pass/Fail/Not Executed)		Pass	
S #	Prerequisites:				S #	Test Data				
1	Accessor already logged on				1	invalid dashboardID				
2					2					
3					3					
4					4					

Test Scenario	Verify on view dashboard								
Step #	Step Details	Expected Results	Actual Results	Pass / Fail / Not executed / Suspended					
1	Select dashboard from menu	System display dashboard page							
2	View no update message	show no update message							

9. Test Approach Analysis

Test Case ID	Step #	Input Data	Valid	Invalid
TC001_01	2	Username and Password	Valid username and password	Invalid username and password
TC001_02	2	Username and Password	Valid username and password	Invalid username and password
TC002_01	2	User ID	Valid User ID	Invalid User ID
	3	Account Details	Valid Account Details	Invalid Account Details
TC002_01_01	2	User ID	Valid User ID	Invalid User ID
TC003_01	2	User role choice	Valid role choice	Null role choice
	3	User ID	Valid User ID	Invalid User ID
	4	User Info	Valid User Info	Invalid User Info
TC003_01_01	2	User role choice	Valid role choice	Null role choice
	3	User ID	Valid User ID	Invalid User ID
TC004_01	2	User ID	Valid User ID	Invalid User ID
TC005_01	2	NewsID	NewsID with info	NewsID without info
TC006_01	2	EventID	EventID with info	EventID without info
TC007_01	2	CharityID	CharityID with info	CharityID without info
TC008_01	2	ReportID	ReportID with info	ReportID without info
TC009_01	2	FriendID	Valid FriendID	Invalid FriendID
TC009_02	2	FriendID	Valid FriendID	Invalid FriendID
TC010_01	2	FriendID	Valid FriendID	Invalid FriendID
TC011_01	2	FriendID	Valid FriendID	Invalid FriendID
TC012_01	2	FriendID	Valid FriendID	Invalid FriendID
TC013_01	3	password, email, address	Valid information	Invalid information

TC013_02	3	password, email, address	Valid information	Invalid information
TC014_01	2	AlumniID	Valid alumniID	Invalid alumniID
TC015_01	3	statusText	Valid status text	Invalid status text
TC015_02	3	statusText	Valid status text	Invalid status text
TC016_01	3	statusText	Valid status text	Invalid status text
TC017_01	4	Valid alumniID	Valid alumni ID	Invalid alumni ID
TC017_02	4	Valid alumniID	Valid alumni ID	Invalid alumni ID
TC018_01	2	licenseType and licenseAvailableDate	valid licenseType and licenseAvailableDate	Invalid licenseType and licenseAvailableDate
TC019_01	2	alumniID	Valid alumniID	Invalid alumniID
TC020_01	2	alumniID	Valid alumniID	Invalid alumniID
TC021_01	2	dashboardID	Valid dashboardID	Invalid dashboardID

9.1.1 TC018_01 for license available date (day)

- Suppose the specifications for the day of architecture license available date must be able to handle any number of records from 1 through 31.

Case No.	Equivalence Class	Status	Representative (BVA)	Expected Result
TC018_01	Day < a (1)	Invalid	0	Invalid data
TC018_01	a (1) <= day <= b (31)	Valid	1	Data valid
TC018_01	a (1) <= Day <	Valid	31	Data valid

	= b (31)			
TC018_01	Month > b (31)	Invalid	32	Invalid data

9.1.2 TC018_01 for license available date (month)

- Suppose the specifications for month of architecture license available date must be able to handle any number of records from 1 through 12.

Case No.	Equivalence Class	Status	Representative (BVA)	Expected Result
TC0018_01	Month < a (1)	Invalid	0	Invalid data
TC018_01	a (1) <= month <= b (12)	Valid	1	Data valid
TC018_01	a (1) <= month <= b (12)	Valid	12	Data valid
TC018_01	Month > b (12)	Invalid	13	Invalid data

9.1.3 TC018_01 for license available date (year)

- Suppose the specifications for the year of architecture license expiration date must be able to handle any number of records from 20 through 40.

Case No.	Equivalence Class	Status	Representative (BVA)	Expected Result
TC018_01	Year < a (20)	Invalid	19	Invalid data
TC018_01	a (20) < = year <= b (40)	Valid	20	Data valid
TC018_01	a (20) < = year <= b (40)	Valid	40	Data valid
TC018_01	Year > b (40)	Invalid	41	Invalid data

Appendix A: Traceability Matrix

Test Case ID	Use Case ID/ Sequence Diagram ID	Package ID
TC001 <User> Subsystem · TC001_01	UC001 · SD001	P002
TC002 <User> Subsystem · TC002_01	UC002 · SD002	P002
TC003 <User> Subsystem · TC003_01	UC003 · SD003	P002
TC004 <User> Subsystem · TC004_01	UC004 · SD004	P002
TC005 <Mobile> Subsystem · TC005_01	UC005 · SD004	P003
TC006 <Mobile> Subsystem · TC006_01	UC006 · SD005	P003
TC007 <Mobile> Subsystem · TC007_01	UC007 · SD006	P003
TC008 <Mobile> Subsystem · TC008_01	UC008 · SD007	P003
TC009 <Alumni> Subsystem · TC009_01	UC0013 · SD010	P001
TC010 <Alumni> Subsystem · TC010_01	UC0014 · SD007	P001
TC011 <Alumni> Subsystem · TC011_01	UC0015 · SD008	P001
TC012 <Alumni> Subsystem · TC012_01	UC0016 · SD009	P001
TC013 <Alumni> Subsystem · TC013_01	UC0017 · SD002	P001
TC014 <Alumni> Subsystem · TC014_01	UC0018 · SD003	P001
TC015 <Alumni> Subsystem · TC015_01	UC0019 · SD005	P001
TC016 <Alumni> Subsystem · TC016_01	UC0020 · SD004	P001
TC017 <Alumni> Subsystem	UC0021	P001

· TC017_01	· SD006	
TC018 <Alumni> Subsystem · TC018_01	UC0009 · SD001	P001
TC019 <Mobile> Subsystem · TC019_01	UC0010 · SD001	P003
TC020 <Mobile> Subsystem · TC020_01	UC0011 · SD002	P003
TC0021 <Mobile> Subsystem · TC021_01	UC0012 · SD003	P003