Release / Acceptance Tests

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1. Version History

Version	Date	Change
1.0	17/5/17	Initial version
1.1	19/5/17	Added test scripts for the use case "Create Account".
1.2	20/5/17	Added activation test scripts for "Create Account" and fixed this section's tabular formatting.
1.3	25/5/17	Added NFR tests, tests for "Check Battery Status" and "Send Battery Status" and readjusted tests for "Create Account" to be consistent with its use case description.
1.4	31/5/17	All NFR tests completed and functional tests for "Create Account", "Check Battery Status", "Send Battery Status" and "Pay Service Station through Kiosk" completed.

2. Functional Test Scripts

2.1 Create Account

Sequence of Events	Typical account creation, using EFTPOS as a billing option.
Success Criteria	An account for the vehicle owner is created with one vehicle and EFTPOS as the billing option, and will be billed once each month from the date of account creation.
Pre-Requisites	Vehicle owner has clicked on the "Sign Up" link to indicate they would like to create an account. The test data being used for personal information is real. The eVehicle ID ev4567 is already recognised by the system. The test data being used for EFTPOS payment details corresponds to a valid bank card.
Known Issues	Does not check to see if the given street address(es) are actually valid ones.

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Enter the following types of personal information: email address, password (in two places), first name, middle name, last name, one address, mobile phone number and home phone number.	System accepts all of the provided information and now asks for eVehicle IDs.	Email = sGarland23@gmail.com Password = NeTcHiLL89 Confirm Password = NeTcHiLL89 First Name = Steven Middle Name = James Last Name = Garland Address = 345 Melrose Lane, Cedar Heights QLD 4532 Mobile Phone = 0456777888 Home Phone = (07)33214567		
2	Enter an ID corresponding to a valid eVehicle.	System accepts that the given ID is one for a valid eVehicle and now asks for a billing option to be chosen.	eVehicle ID = ev4567		
3	Select EFTPOS as the method used for billing and fills in the relevant details.	System accepts the vehicle owner's choice, creates a set of payment details from the card chosen, adds all of the provided details to its database and sends an email to the	Payment Option = EFTPOS Card Type = MasterCard Card Number = 4578782912345672 Cardholder Name = Steven J Garland		

		vehicle owner to specify their ID as part of the system.	Start Date = 02/17 End Data = 02/20 CCV = 889		
4	Click on the activation link given in the email.	Link redirects new vehicle owner to the system's login screen, prompting for their ID and password.	N/A		
5	Vehicle owner enters their ID and password.	System displays the home page for their account.	Vehicle Owner ID = VO3456 Password = NeTcHiLL89		

Sequence of Events	Typical account creation, using PayPal as a billing option.
Success Criteria	An account for the vehicle owner is created with one vehicle, EFTPOS as the billing option and a gift card as the app payment options, and will be billed once each month from the date of account creation.
Pre-Requisites	Vehicle owner has clicked on the "Sign Up" link to indicate they would like to create an account. The test data being used for personal information is real. The eVehicle ID ev4567 is already recognised by the system. The test data being used for PayPal account details belongs to an existing PayPal account, along with the card details stored within it.
Known Issues	Does not check to see if the given street address(es) are actually valid ones.

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Enter the following types of personal information: email address, password (in two places), first name, middle name, last name, one address, mobile phone number and home phone number.	System accepts all of the provided information and now asks for eVehicle IDs.	Email = sGarland23@gmail.com Password = NeTcHiLL89 Confirm Password = NeTcHiLL89 First Name = Steven Middle Name = James Last Name = Garland Address = 345 Melrose Lane, Cedar Heights QLD 4532 Mobile Phone = 0456777888 Home Phone = (07)33214567		

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
2	Enter an ID corresponding to a valid eVehicle.	System accepts that the given ID is one for a valid eVehicle and now asks for a billing option to be chosen.	eVehicle ID = ev4567		
3	Select PayPal as the method used for billing, login to PayPal account and choose a card.	System accepts the vehicle owner's choice, creates a set of payment details from the card chosen, adds all of the provided details to its database and sends an email to the vehicle owner to specify their ID as part of the system.	Payment Option = PayPal Card Type = MasterCard Card Number = 4578782912345672 Cardholder Name = Steven J Garland Start Date = 02/17 End Data = 02/20 CCV = 889		
4	Click on the activation link given in the email.	Link redirects new vehicle owner to the system's login screen, prompting for their ID and password.	N/A		
5	Vehicle owner enters their ID and password.	System displays the home page for their account.	Vehicle Owner ID = VO3456 Password = NeTcHiLL89		

Sequence of Events	Account not created due to a missing email address
Success Criteria	The vehicle owner gets stopped and is notified of their mistake - an account is not created.
Pre-Requisites	Vehicle owner has clicked on the "Sign Up" link to indicate they would like to create an account. The test data being used for personal information is real, apart from the error being tested for here.
Known Issues	Does not check to see if the given street street address(es) are actually valid ones.

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Enter the following types of personal information: password (in two places), first name, middle name, last	System asks the user again to fill in their details, with the email field highlighted in red	Email Address = ' ' Password = NeTcHiLL89 Confirm Password = NeTcHiLL89		

	name, one address, mobile phone number and home phone number. Leave out the email address.	and text at the bottom of the screen saying: "You have left out some of your details."	First Name = Steven Middle Name = James Last Name = Garland Address = 345 Melrose Lane, Cedar Heights QLD 4532 Mobile Phone = 0456777888 Home Phone = (07)33214567		

Sequence of Events	Account not created due to trying to use an email address that is already associated with an existing vehicle owner account
Success Criteria	The vehicle owner gets stopped and is notified of their mistake - an account is not created.
Pre-Requisites	Vehicle owner has clicked on the "Sign Up" link to indicate they would like to create an account, and an account using the email address sTherne321@hotmail.com has already been created. The test data being used for personal information is real, apart from the error being tested for here.
Known Issues	Does not check to see if the given street street address(es) are actually valid ones.

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Enter the following types of personal information: an email already linked to another account, password (in two places), first name, middle name, last name, one address, mobile phone number and home phone number.	System asks the user again to fill in their details, with red text at the bottom of the screen saying: "The email address you have entered is already associated with an account."	Email Address = sTherne321@hotmail.com Password = NeTcHiLL89 Confirm Password = NeTcHiLL89 First Name = Steven Middle Name = James Last Name = Garland Address = 345 Melrose Lane, Cedar Heights QLD 4532 Mobile Phone = 0456777888		

			Home Phone = (07)33214567		

Sequence of Events	Account not created due to a missing password
Success Criteria	The vehicle owner gets stopped and is notified of their mistake - an account is not created.
Pre-Requisites	Vehicle owner has clicked on the "Sign Up" link to indicate they would like to create an account. The test data being used for personal information is real, apart from the error being tested for here.
Known Issues	Does not check to see if the given street address(es) are actually valid ones.

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Enter the following types of personal information: email, first name, middle name, last name, one address, mobile phone number and home phone number. Leave out the passwords.	System asks the user again to fill in their details, with the first password field highlighted in red and text at the bottom of the screen saying: "You have left out some of your details."	Email = sGarland23@gmail.com Password = '' Confirm Password = '' First Name = Steven Middle Name = James Last Name = Garland Address = 345 Melrose Lane, Cedar Heights QLD 4532 Mobile Phone = 0456777888 Home Phone = (07)33214567		

Sequence of Events	Account not created due to the first and second password fields not matching.
Success Criteria	The vehicle owner gets stopped and is notified of their mistake - an account is not created.
Pre-Requisites	Vehicle owner has clicked on the "Sign Up" link to indicate they would like to create an account. The test data being used for personal information is real, apart from the error being tested for here.
Known Issues	Does not check to see if the given street address(es) are actually valid ones.

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Enter the following types of personal information: email, two different passwords, first name, middle name, last name, one address, mobile phone number and home phone number.	System asks the user again to fill in their details, with the second password field highlighted in red and text at the bottom of the screen saying: "The given passwords do not match."	Email = sGarland23@gmail.com Password = NeTcHiLL89 Confirm Password = NetcHiLL89 First Name = Steven Middle Name = James Last Name = Garland Address = 345 Melrose Lane, Cedar Heights QLD 4532 Mobile Phone = 0456777888 Home Phone = (07)33214567		

Sequence of Events	Account not created due to a missing first name
Success Criteria	The vehicle owner gets stopped and is notified of their mistake - an account is not created.
Pre-Requisites	Vehicle owner has clicked on the "Sign Up" link to indicate they would like to create an account. The test data being used for personal information is real, apart from the error being tested for here.
Known Issues	Does not check to see if the given street address(es) are actually valid ones.

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Enter the following types of personal information: email, password (in two	System asks the user again to fill in their details, with	Email = sGarland23@gmail.com Password = NeTcHiLL89		

places), middle name, last name, one address, mobile phone number and home phone number. Leave out the first name.	the first name field highlighted in red and text at the bottom of the screen saying: "You have left out some of your details."	Confirm Password = NeTcHiLL89 First Name = '' Middle Name = James Last Name = Garland Address = 345 Melrose Lane, Cedar Heights QLD 4532 Mobile Phone = 0456777888 Home Phone = (07)33214567		

Sequence of Events	Account not created due to a missing last name
Success Criteria	The vehicle owner gets stopped and is notified of their mistake - an account is not created.
Pre-Requisites	Vehicle owner has clicked on the "Sign Up" link to indicate they would like to create an account. The test data being used for personal information is real, apart from the error being tested for here.
Known Issues	Does not check to see if the given street address(es) are actually valid ones.

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Enter the following types of personal information: email, password (in two places), first name, middle name, one address, mobile phone number and home phone number. Leave out the last name.	System asks the user again to fill in their details, with the last name field highlighted in red and text at the bottom of the screen saying: "You have left out some of your details."	Email = sGarland23@gmail.com Password = NeTcHiLL89 Confirm Password = NeTcHiLL89 First Name = Steven Middle Name = James Last Name = '' Address = 345 Melrose Lane, Cedar Heights QLD 4532 Mobile Phone = 0456777888 Home Phone = (07)33214567		

Sequence of Events	Account not created due to a missing street address
Success Criteria	The vehicle owner gets stopped and is notified of their mistake - an account is not created.
Pre-Requisites	Vehicle owner has clicked on the "Sign Up" link to indicate they would like to create an account. The test data being used for personal information is real, apart from the error being tested for here.
Known Issues	Does not check to see if the given street address(es) are actually valid ones.

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Enter the following types of personal information: email, password (in two places), first name, middle name, last name, mobile phone number and home phone number. Leave out the street address.	System asks the user again to fill in their details, with the street address field highlighted in red and text at the bottom of the screen saying: "You have left out some of your details."	Email = sGarland23@gmail.com Password = NeTcHiLL89 Confirm Password = NeTcHiLL89 First Name = Steven Middle Name = James Last Name = Garland Address = '' Mobile Phone = 0456777888 Home Phone = (07)33214567		

Sequence of Events	Account not created due to a missing phone number
Success Criteria	The vehicle owner gets stopped and is notified of their mistake - an account is not created.
Pre-Requisites	Vehicle owner has clicked on the "Sign Up" link to indicate they would like to create an account. The test data being used for personal information is real, apart from the error being tested for here.
Known Issues	Does not check to see if the given street address(es) are actually valid ones.

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Enter the following types of personal information: email, password (in two places), first name, middle name, last	System asks the user again to fill in their details, with the phone number field	Email = sGarland23@gmail.com Password = NeTcHiLL89 Confirm Password = NeTcHiLL89		

	name and one address. Leave out the phone number.	highlighted in red and text at the bottom of the screen saying: "You have left out some of your details."	First Name = Steven Middle Name = James Last Name = Garland Address = 345 Melrose Lane, Cedar Heights QLD 4532 Mobile Phone = ''		

Sequence of Events	Account not created due to a missing eVehicle ID.
Success Criteria	The vehicle owner gets stopped and is notified of their mistake - an account is not created.
Pre-Requisites	Vehicle owner has clicked on the "Sign Up" link to indicate they would like to create an account. The test data being used for personal information is real.
Known Issues	Does not check to see if the given street address(es) are actually valid ones.

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Enter the following types of personal information: email address, password (in two places), first name, middle name, last name, one address, mobile phone number and home phone number.	System accepts all of the provided information and now asks for eVehicle IDs.	Email = sGarland23@gmail.com Password = NeTcHiLL89 Confirm Password = NeTcHiLL89 First Name = Steven Middle Name = James Last Name = Garland Address = 345 Melrose Lane, Cedar Heights QLD 4532 Mobile Phone = 0456777888 Home Phone = (07)33214567		
2	Leave out the eVehicle ID.	System asks the user again to enter an eVehicle ID, with its field highlighted in red and text at the bottom of the screen saying: "Please enter	eVehicle ID = ''		

		a valid eVehicle ID."			

Sequence of Events	Account not created due to an eVehicle ID being provided that is not for an eVehicle.
Success Criteria	The vehicle owner gets stopped and is notified of their mistake - an account is not created.
Pre-Requisites	Vehicle owner has clicked on the "Sign Up" link to indicate they would like to create an account. The test data being used for personal information is real. The test data representing an invalid eVehicle ID does not exist in the system as an eVehicle ID.
Known Issues	Does not check to see if the given street address(es) are actually valid ones.

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Enter the following types of personal information: email address, password (in two places), first name, middle name, last name, one address, mobile phone number and home phone number.	System accepts all of the provided information and now asks for eVehicle IDs.	Email = sGarland23@gmail.com Password = NeTcHiLL89 Confirm Password = NeTcHiLL89 First Name = Steven Middle Name = James Last Name = Garland Address = 345 Melrose Lane, Cedar Heights QLD 4532 Mobile Phone = 0456777888 Home Phone = (07)33214567		
2	Provide an eVehicle ID for a vehicle other than an eVehicle.	System asks the user again to enter an eVehicle ID, with its field highlighted in red and text at the bottom of the screen saying: "This ID is not for an eVehicle. Please try again."	eVehicle ID = rt0311		

Sequence of Events	Account not created due to an eVehicle ID being provided that someone else already has registered.
Success Criteria	The vehicle owner gets stopped and is notified of their mistake - an account is not created.
Pre-Requisites	Vehicle owner has clicked on the "Sign Up" link to indicate they would like to create an account, an eVehicle with eVehicle ID ev4537 already exists in the system by being registered to another vehicle owner account. The test data being used for personal information is real.
Known Issues	Does not check to see if the given street address(es) are actually valid ones.

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Enter the following types of personal information: email address, password (in two places), first name, middle name, last name, one address, mobile phone number and home phone number.	System accepts all of the provided information and now asks for eVehicle IDs.	Email = sGarland23@gmail.com Password = NeTcHiLL89 Confirm Password = NeTcHiLL89 First Name = Steven Middle Name = James Last Name = Garland Address = 345 Melrose Lane, Cedar Heights QLD 4532 Mobile Phone = 0456777888 Home Phone = (07)33214567		
2	Enter an eVehicle ID for an eVehicle that another account already has associated with it.	System asks the user again to enter an eVehicle ID, with its field highlighted in red and text at the bottom of the screen saying: "This ID is for an eVehicle already registered to another account. Please try again."	eVehicle ID = ev4537		

Sequence of Events	Account not created due to the email not reaching the vehicle owner.
Success Criteria	The email does not reach the vehicle owner within ten minutes.
Pre-Requisites	Vehicle owner has already confirmed that they want to create their account based on the information they gave, and an email sending attempt has been made.
Known Issues	The email may still arrive, even if it is late.

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Run a stopwatch until ten minutes has been reached.	The email that the system has sent has not managed to reach the user in time.	N/A		

Sequence of Events	Attempted account activation, but not logging in due to a missing ID.
Success Criteria	The vehicle owner gets stopped and is notified of their mistake - the process of billing will not begin.
Pre-Requisites	Vehicle owner has created their account and has been sent the activation email for it.
Known Issues	Does not take into account the activation email not being received.

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Click on the activation link given in the email.	Link redirects new vehicle owner to the system's login screen, prompting for their ID and password.	N/A		
2	Vehicle owner enters their password, leaving out their ID.	System login screen displays again with the ID field highlighted in red and the following text at the bottom: "You have left out some of your login details."	Vehicle ID = '' Password = NeTcHiLL89		

Sequence of Events	Attempted account activation, but not logging in due to a missing password.
Success Criteria	The vehicle owner gets stopped and is notified of their mistake - the process of billing will not begin.
Pre-Requisites	Vehicle owner has created their account and has been sent the activation email for it.
Known Issues	Does not take into account the activation email not being received.

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Click on the activation link given in the email.	Link redirects new vehicle owner to the system's login screen, prompting for their ID and password.	N/A		
2	Vehicle owner enters their ID, leaving out their password.	System login screen displays again with the password field highlighted in red and the following text at the bottom: "You have left out some of your login details."	Vehicle ID = VO3456 Password = NeTcHiLL89		

Sequence of Events	Attempted account activation, but not logging in due to using an ID that does not exist in the system.
Success Criteria	The vehicle owner gets stopped and is notified of their mistake - the process of billing will not begin.
Pre-Requisites	Vehicle owner has created their account and has been sent the activation email for it.
Known Issues	Does not take into account the activation email not being received.

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Click on the activation link given in the email.	Link redirects new vehicle owner to the system's login screen, prompting for their ID and password.	N/A		
2	Vehicle owner enters their usual password and an ID which is not recorded in the system.	System login screen displays again with the ID field highlighted in red and the following text at the bottom: "The ID provided is not recognised by the system."	Vehicle ID = VO34543 Password = NeTcHiLL89		

Sequence of Events	Attempted account activation, but not logging in due to entering an incorrect password.
Success Criteria	The vehicle owner gets stopped and is notified of their mistake - the process of billing will not begin.
Pre-Requisites	Vehicle owner has created their account and has been sent the activation email for it.
Known Issues	Does not take into account the activation email not being received.

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Click on the activation link given in the email.	Link redirects new vehicle owner to the system's login screen, prompting for their ID and password.	N/A		
2	Vehicle owner enters their ID and an incorrect password.	System login screen displays again with the password field highlighted in red and the following text at the bottom: "The password provided is incorrect."	Vehicle ID = VO34543 Password = NeTcHiLL85		

2.2 Check Battery Status

Sequence of Events	Finding out the status of a chosen battery.
Success Criteria	Vehicle owner has acknowledged of the battery status they are looking for.
Pre-Requisites	The vehicle owner has a high-quality Internet connection and has successfully logged into the system. Test data given is real.
Known Issues	Vehicle owner cannot automatically be notified when their battery has expired.

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Click "Check Battery Status" link.	System displays battery identification screen and prompts for battery ID.	N/A		
2	Enter the ID of the battery to be checked.	System displays the details of the battery information and status on the battery status page.	Battery ID 1457 6365 678		
3	Check all the information and status of the battery shown on the page.	All the data are correct and up-to-date.	Battery Usage: 46% left Times of Cycling: 3 times Total Capacity: 2 million watts Expiry Date: 20/05/2017		
4	Log out.	System displays home page	N/A		

Sequence of Events	Providing a battery ID that does not exist in the system.
Success Criteria	Battery status cannot be accessed for an ID that does not exist in the system.
Pre-Requisites	The actor has a good Internet connection and has successfully logged in the system. Test data is real and given battery ID does not already exist in the system.
Known Issues	Vehicle owner cannot automatically be notified when their battery has expired.

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Click "Check Battery Status" link.	System displays battery identification screen and prompts for battery ID.	N/A		
2	Enter the ID of the battery to be checked - however, this ID does not exist in the system.	System responds by letting the vehicle owner know that the ID they gave is not in the system.	Battery ID 2567 8970 345		

Sequence of Events	Identifying problems with incorrect battery status information.
Success Criteria	Vehicle owner is able to get help for their perception of incorrect battery status information being seen.
Pre-Requisites	The actor has a good Internet connection and has successfully logged in the system. Test data is real, and the given battery ID exists in the system.
Known Issues	Vehicle owner cannot automatically be notified when their battery has expired.

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Click "Check Battery Status" link.	System displays battery identification screen and prompts for battery ID.	N/A		
2	Enter the ID of the battery to be checked.	System displays the details of the battery information and status on the battery status page.	Battery ID 2356 68d9 456		
3	Check all the information and	System still displays the same	Battery Usage: 43% left		

	status of the battery shown on the page - however, the vehicle owner thinks that this information is incorrect.	information on screen.	Times of Cycling: 8 times Total Capacity: 4.5 million watts Expiry Date: 20/05/2017		
4	Contact assistant to modify the incorrect data.	Assistant modifies the incorrect data, checking the identification of the actor.			

2.3 Send Battery Status

Sequence of Events	Typical sending battery status.
Success Criteria	Service station selects the right request which is corresponding to the battery status report and upload the report successfully.
Pre-Requisites	Service station has checked the battery status and gotten the generated report before sending it
Known Issues	

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Click "Send Battery Status Report" link.	Link leads to request list page.	N/A		
2	Check a list of requests.	Find the wanted request	N/A		
3	Select the request that the battery status report corresponds to.	The process of uploading report is getting started.	N/A		
4	Click on "Send" link.	There is a progress bar when the report is being uploaded.	N/A		
5	Check sending result and click "Ok" link.	The progress bar disappears and screen a success result.	N/A		

Sequence of Events	Service station cancels the sending process.
Success Criteria	The report sending is stopped and the part of data that transferred to the server is deleted.
Pre-Requisites	Service station has checked the battery status and gotten the generated report before sending it
Known Issues	

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Click "Send Battery Status Report" link.	Link leads to request list page.	N/A		
2	Check a list of requests.	Find the wanted request	N/A		
3	Select the request that the battery status report	The process of uploading report is getting started.	N/A		

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
	corresponds to.				
4	Click on "Send" link.	There is a progress bar when the report is being uploaded.	N/A		
5	Click on "Cancel"link.	The progress bar disappears and screen a cancel result.	N/A		

Sequence of Events	Service Station selects the request which is not corresponding to the wanted battery.
Success Criteria	The sending is not started and back to the request list page.
Pre-Requisites	Service station has checked the battery status and gotten the generated report before sending it
Known Issues	

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Click "Send Battery Status Report" link.	Link leads to request list page.	N/A		
2	Check a list of requests.	Find a request	N/A		
3	Select the request that the battery status report which does not correspond to.	The process of uploading report is not started and a message of noncorresponding report is popped up.	N/A		

Sequence of Events	Service Station wants to send the report to another technician.
Success Criteria	Back to the request list page.
Pre-Requisites	Service station has checked the battery status and gotten the generated report before sending it
Known Issues	

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Click "Send Battery Status Report" link.	Link leads to request list page.	N/A		
2	Check a list of requests.	Find the wanted request	N/A		
3	Click on "Send" link.	There is a progress bar when the report is being uploaded.	N/A		

| 4 | Check sending result. | The progress bar disappears and screen a success result. | N/A | | |
| 5 | click "Send to other" link | Show the request list page. | N/A | | |

2.4 Swap Battery

Sequence of Events	Typical Battery Swap, using App.
Success Criteria	The battery is swapped successfully and payment is fulfilled.
Pre-Requisites	Vehicle and its installed battery are currently registered in the eVehicle Swap System. Unreserved batteries are available, and the vehicle owner has not reserved any batteries. The Vehicle Owner currently has an installation of the app running and connected to the eVehicle main server, and have no other vehicles tied to their account which are ready to be swapped.
Known Issues	

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Position vehicle into the swapping zone.	Swapping machine correctly detects that the vehicle is positioned within the valid set of dimensions appropriate for swapping, scans the vehicle's number plate, confirms the vehicle is registered to an eVehicle account, correctly detects which Vehicle Owner account the vehicle is tied to, correctly detects which connections to the eVehicle main server are logged in as the Vehicle Owner, sends signal alerting each app that a vehicle is ready for swapping, containing the correct service station and swapping machine ID, enable the selection of 'Swap Battery' on kiosk.	Vehicle vertex coordinates = [(200,3824), (530, 3983), (2428, 3706), …] Licence plate = CSS330 eVehicle ID = ev4568 Vehicle Owner ID = vo3456 service station ID = ss9938 swapping machine ID = sm8322		
2	Send ready signal to app	App receives correct message, including the correct eVehicle ID. adds vehicle to list of vehicles ready for swapping, enables the selection of 'Swap Battery' in app.	eVehicle ID = ev4568		
3	Select 'Swap Battery' on app.	App detects only one vehicle ready for swapping, displays swapping message, sends swap signal containing the correct vehicle ID.	eVehicle ID = ev4568		

| 4 | Send swap signal to service station. | Correct swapping machine receives swapping signal, scans the vehicle's battery barcode, correctly determines the battery's id from the barcode, determines that the vehicle ID matches the vehicle that last swapped out the battery, identifies that the Vehicle Owner has not reserved a battery, detects operational, fully charged and unreserved batteries in storage, removes battery from vehicle, correctly measures battery charge, correctly calculates swap cost based on service station pricing and old battery charge, display payment request on app. | swapping machine ID = sm8322
battery barcode = [machine-readable image]
battery ID = 1457 6365 678
eVehicle ID (vehicle at swapping station) = ev4568
eVehicle ID (vehicle that last swapped battery) = ev4568
available batteries = [1932 6365 679, …]
batteryReserved(all batteries in reserved list) = false
battery charge (all batteries in reserved list) = 100
battery charge (old battery) = 67
station pricing = 50c/kWh | | |
| 5 | Send payment confirmation. | Insert an operation, fully charged, non-reserved battery, return to default home screen. | Payment confirmed = true | | |

Sequence of Events	Typical Battery Swap, using Kiosk
Success Criteria	The battery is swapped successfully and payment is fulfilled.
Pre-Requisites	Vehicle and its installed battery are currently registered in the eVehicle Swap System, Vehicle is correctly positioned.
Known Issues	

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Click 'Swap Battery' on kiosk	Kiosk displays swapping message. Swapping machine begins swapping process, correctly calculates swap cost based on service station pricing and old battery charge, display payment request on kiosk.	battery charge (old battery) = 67 station pricing = 50c/kWh		
2	Send payment confirmation.	Insert a battery into the vehicle, return to default home screen on kiosk.	Payment confirmed = true		

Sequence of Events	Battery swap using app, with other vehicles ready to be swapped
Success Criteria	Vehicle Owner decides which vehicle to swap
Pre-Requisites	Vehicle and its installed battery are currently registered in the eVehicle Swap System. The Vehicle Owner has the app running and connected to the eVehicle main server.
Known Issues	

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Select 'Swap Battery' on app.	App detects multiple vehicles are ready for swapping, displays a correct list of all vehicles registered under the Vehicle Owner that are ready to swap for the Vehicle Owner to choose from.	eVehicle ID = ev4568		
2	Select the vehicle to commence swapping on.	displays swapping message, sends swap signal containing the correct vehicle ID.	eVehicle ID = ev4568		

Sequence of Events	Vehicle Owner is not Connected to Server in app
Success Criteria	No communication is sent to any apps.
Pre-Requisites	Vehicle and its installed battery are currently registered in the eVehicle Swap System. Unreserved batteries are available, and the vehicle owner has not reserved any batteries.
Known Issues	

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Position vehicle into the swapping zone.	Swapping machine correctly detects that the vehicle is positioned within the valid set of dimensions appropriate for swapping, scan the vehicle's number plate, confirms the vehicle is registered to an eVehicle account, correctly detects which Vehicle Owner account the vehicle is tied to, detects that no apps are connected to the eVehicle main server as the Vehicle Owner, does not send any ready to swap signal.	Vehicle vertex coordinates = [(200,3824), (530, 3983), (2428, 3706), …] Licence plate = CSS330 eVehicle ID = ev4568 Vehicle Owner ID = vo3456 service station ID = ss9938 swapping machine ID = sm8322		

Sequence of Events	Battery is Reserved
Success Criteria	The battery is swapped successfully and payment is fulfilled.
Pre-Requisites	Vehicle and its installed battery are currently registered in the eVehicle Swap System. The Vehicle Owner has reserved a battery, and the swapping machine has received the swap battery signal.
Known Issues	

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Send swap signal to swapping machine	Swapping machine scans the vehicle's battery barcode, correctly determines the battery's id from the barcode, determines that the vehicle ID matches the vehicle who last swapped out the battery, identifies that the Vehicle Owner has reserved a battery, detects operational, fully charged and unreserved batteries in storage, removes battery from vehicle, correctly measures battery charge.	battery barcode = [machine-readable image] battery ID = 1457 6365 678 reserved batteries = [1932 6365 679, …] batteryReserved(all batteries in reserved list) = true battery charge percentage (all batteries in reserved list) = 100 eVehicle ID (vehicle at swapping station) = ev4568 eVehicle ID (vehicle that last swapped battery) = ev4568		
2	Send payment confirmation.	Insert an operation, fully charged and reserved battery, mark battery as no longer reserved, return to default home screen.	N/A		

Sequence of Events	Vehicle is not positioned correctly
Success Criteria	The swapping machine does not allow the vehicle owner to initiate the swap
Pre-Requisites	N/A
Known Issues	

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Position a vehicle such that it sits just outside the acceptable swapping zone on the left side,	At no point in time does the swapping machine detect that the vehicle is positioned within the valid set of dimensions appropriate for swapping.	Vehicle vertex coordinates		
2	Drive the vehicle back until it is positioned fully outside of the zone,				
3	Drive the vehicle forward until it is positioned fully outside of the zone,				
4	Repeat steps 1-3, but sitting just outside the acceptable swapping zone on the right hand side				
5	Position a vehicle such that it sits outside the acceptable swapping zone for each possible combination of sides.				

Sequence of Events	Vehicle moves out of position
Success Criteria	Vehicle swapping becomes disabled again.
Pre-Requisites	Vehicle is correctly positioned, Vehicle owner is connected to server in app, and 'swap battery' is able to be selected.
Known Issues	

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Move vehicle forward out of position	Swapping machine correctly detects that the vehicle is no longer within the valid set of dimensions appropriate for swapping, sends signal alerting each app that a vehicle is no longer ready for swapping, containing the correct service station and swapping machine ID, disables the selection of 'Swap Battery' on kiosk.	Vehicle vertex coordinates = [(200,3824), (530, 3983), (2428, 3706), …] Licence plate = CSS330 eVehicle ID = ev4568 Vehicle Owner ID = vo3456 service station ID = ss9938 swapping machine ID = sm8322		
2	Send not ready signal to app	App receives correct message, including the correct eVehicle ID. removes vehicle from list of vehicles ready to be swapped, disables the selection of 'Swap Battery' in app.	eVehicle ID = ev4568		
3	Repeat step 1, but leaving the swapping zone in each possible direction.	same as step 1	same as step 1		

Sequence of Events	Vehicle is not Registered to an eVehicle Account
Success Criteria	The swapping machine does not allow the vehicle owner to initiate the swap
Pre-Requisites	Vehicle is correctly positioned.
Known Issues	

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Position vehicle into the swapping zone.	Swapping machine correctly detects that the vehicle is positioned within the valid set of dimensions appropriate for swapping, scans the vehicle's number plate, detects that the vehicle is not registered to an eVehicle account, alerts the user, displays "Request Assistance" on the kiosk.	Vehicle vertex coordinates = [(200,3824), (530, 3983), (2428, 3706), …] Licence plate = CSS330 eVehicle ID = ev4568 Vehicle Owner ID = vo3456 service station ID = ss9938 swapping machine ID = sm8322		
2	Vehicle leaves the swapping zone	Return to home screen.	Vehicle vertex coordinates = NULL		

Sequence of Events	Battery has no scannable barcode.
Success Criteria	Vehicle Owner cannot swap, is alerted to the issue and alternative actions.
Pre-Requisites	Vehicle is currently registered in the eVehicle Swap System and is positioned correctly.
Known Issues	

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Send swap signal to swapping machine using app	Swapping machine attempts scans the vehicle's battery barcode, detects no barcode, alerts user that their battery is invalid on app, displays "Request Assistance", "Try again" and "cancel" on app	battery barcode = NULL		
2	Select try again	Attempt to scan barcode again.	N/A		
3	Select cancel	return to home screen	N/A		
4	Repeat steps 1-3 using kiosk	(same as steps 1-3, but interaction occurs on kiosk rather than in app)	battery barcode = NULL		

Sequence of Events	Battery's ID differs from what was last placed in the vehicle
Success Criteria	Vehicle Owner cannot swap, is alerted to the issue and alternative actions.
Pre-Requisites	Vehicle is currently registered in the eVehicle Swap System. The swapping machine is ready to swap the battery..
Known Issues	

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Send swap signal to service station.	Swapping machine receives swapping signal, scans the vehicle's battery barcode, correctly determines the battery's id from the barcode, determines that the vehicle ID differs from the vehicle that last swapped out the battery, alerts user that their battery is invalid on app, displays "Request Assistance", "Try again" and "cancel"	swapping machine ID = sm8322 battery barcode = [machine-readable image] battery ID = 1457 6365 678 eVehicle ID (vehicle at swapping station) = ev1337 eVehicle ID (vehicle that last swapped battery) = ev4568		

Sequence of Events	Vehicle Owner has not reserved a battery, and only reserved batteries are available.
Success Criteria	Battery swap is cancelled
Pre-Requisites	Vehicle and its installed battery are currently registered in the eVehicle Swap System. The Vehicle is positioned correctly
Known Issues	

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	All available batteries are marked as reserved	Swapping station displays a message saying all batteries are reserved.	N/A		
2	Send swap signal to swapping machine originating from app	Swapping machine scans the vehicle's battery barcode, correctly determines the battery's id from the barcode, determines that the vehicle ID matches the vehicle that last swapped out the battery, identifies that the Vehicle Owner has not reserved a battery, detects only reserved batteries which are operational and fully charged in storage, alerts Vehicle Owner in app.	battery barcode = [machine-readable image] battery ID = 1457 6365 678 eVehicle ID (vehicle at swapping station) = ev4568 eVehicle ID (vehicle that last swapped battery) = ev4568		
3	Select "OK"	Return to home screen.	N/A		

Sequence of Events	Vehicle Owner Cancels Payment
Success Criteria	Old battery is returned.
Pre-Requisites	Vehicle and its installed battery are currently registered in the eVehicle Swap System. The battery has successfully been removed from the vehicle and is currently displaying required payment successfully.
Known Issues	

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Select "Cancel Payment" on app	The battery previously in the vehicle before swapping is returned to the vehicle.	battery ID = 1457 6365 678		
2	Repeat step 1, but form the kiosk	Same as step 1	Same as step 1		

2.5 Pay Service Station through Kiosk

Sequence of Events	The Typical Scenario, payment with EFTPOS
Success Criteria	Payment is received by kiosk.
Pre-Requisites	Vehicle Owner is already in the middle of the service to be provided (such as swapping).
Known Issues	

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Select "pay".	Kiosk displays correct fee due. Kiosk presents payment options (EFTPOS, gift card, or PayPal), as well as the option to cancel the transaction.	Fee = $56		
2	Select EFTPOS payment option.	Kiosk displays EFTPOS payment screen.			
3	Pay using the EFTPOS payment screen	Kiosk receives confirmation of payment. Kiosk asks if a receipt should be sent to the email on the account.			
4	Select "Yes"	Kiosk emails receipt to the email on the account.			

Sequence of Events	Vehicle Owner pays with PayPal
Success Criteria	Payment is received by kiosk.
Pre-Requisites	Vehicle Owner is already in the middle of the service to be provided (such as swapping).
Known Issues	

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Select "pay".	Kiosk displays correct fee due. Kiosk presents payment options (EFTPOS, gift card, or PayPal), as well as the option to cancel the transaction.	Fee = $56		

2	Select PayPal payment option.	Kiosk displays PayPal payment screen.			
3	Pay using the PayPal payment screen	Kiosk receives confirmation of payment. Kiosk asks if a receipt should be sent to the email on the account.			
4	Select "Yes"	Kiosk emails receipt to the email on the account.			

Sequence of Events	Vehicle Owner pays, confirmation of payment is not received
Success Criteria	Kiosk does not proceed with next service, presents alternate options instead.
Pre-Requisites	Vehicle Owner is already in the middle of the service to be provided (such as swapping).
Known Issues	

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Select "pay".	Kiosk displays correct fee due. Kiosk presents payment options (EFTPOS, gift card, or PayPal), as well as the option to cancel the transaction.	Fee = 56		
2	Select EFTPOS payment option.	Kiosk displays EFTPOS payment screen.			
3	Pay using the EFTPOS payment screen with invalid payment details.	Kiosk does not receive confirmation of payment. Kiosk does not proceed with next service. Kiosk presents options for payment.			
4	Repeat steps 1-3	(same as steps 1-3, but			

		interaction occurs with PayPal rather than EFTPOS)			
5	Repeat steps 1-3	(same as steps 1-3, but interaction occurs with PayPal rather than PayPal)			

Sequence of Events	Vehicle Owner pays with Gift Card
Success Criteria	Payment is received by kiosk.
Pre-Requisites	Vehicle Owner is already in the middle of the service to be provided (such as swapping).
Known Issues	

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Select "pay".	Kiosk displays correct fee due. Kiosk presents payment options (EFTPOS, gift card, or PayPal), as well as the option to cancel the transaction.	Fee = 56		
2	Select Gift Card payment option.	Kiosk displays Gift Card payment screen.			
3	Pay using the Gift Card payment screen	Kiosk receives confirmation of payment. Kiosk asks if a receipt should be sent to the email on the account.			
4	Select "Yes"	Kiosk emails receipt to the email on the account.			

Non-Functional Test Scripts

3.1 NFR01: All data pertaining to the number of batteries are needed for different car makes and models shall be kept up-to-date.

Success Criteria	All data are up-to-date.
Pre-Requisites	Previous battery's amount has been recorded and there is a change on the total amount of batteries now.
Known Issues	The system may not update immediately.

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Login to the system.	System displays "Successfully logged in" and goes to home page.	Username: 'sjfk' Password: '234990'		
2	Check current battery stock.	The amount of batteries that displays should be different compared to the previous amount.	The amount of batteries now is '230'.		

3.2 NFR02: Password needs to be secure

Success Criteria	The password needs security and must be more than 8 digital number with special characters
Pre-Requisites	The users are making their accounts
Known Issues	

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Enter a username	System displays "OK, the username has not been used"	Username: 'apple'		
2	Enter a password	System displays "Cool, your password is good to go."	Password: '123456789!'		

Success Criteria	The password needs security and must be more than 8 digital number with special characters
Pre-Requisites	The users are making their accounts
Known Issues	

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail

| 1 | Enter a username | System displays "Ok, the username has not been used" | Username: 'banana' | | |
| 2 | Enter a password | System displays "Sorry your password is invalid, it has to be more than 8 digital numbers and special characters" | Password: '233zzz' | | |

Success Criteria	The password needs security and must be more than 8 digital number with special characters
Pre-Requisites	The users are changing their passwords
Known Issues	

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Enter the previous password	System displays "This is correct"	Password: '123456789!'		
2	Enter a new password	System displays "Please enter your new password"	Password: '233333333*'		

3.3 NFR03: The data needs to be backed up in 20 minutes

Success Criteria	The data is backed up successfully and can be used as a recovery point.
Pre-Requisites	The system is running for at least an hour.
Known Issues	Does not check the integrity of the data.

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Go to the backup directory.	The backup directory exists and is not empty.	Enter command "ls backupdir"		
2	Check the last modified time of the backup data.	At least one data file is modified in less than 20 minutes	N/A		

3.4 NFR04: Use SSL encryption

Success Criteria	The system data are encrypted with SSL
Pre-Requisites	Users have opened the browser
Known Issues	

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Enter the URL of our system in SSL check website	The checker will show that the website is under SSl encryption	URL: www.evehiclegionit.com.au		

3.5 NFR05: Provide different languages for operation manual

Success Criteria	There is an option for changing language in operation manual
Pre-Requisites	The users have logged in successfully
Known Issues	

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Click "operation manual"	System displays operation manual page			
2	Check if there is changing language options	There should be a dropdown list with different languages			

3.6 NFR06: The system needs to be accessible for visually impaired people

Success Criteria	The system has strong contrast colours, enlarged text in a 'special' surf mode. (There will be an enlarged text button which says 'Easy View' which will make the website displayed in more contrast colours and enlarged text)
Pre-Requisites	Users has opened the main page
Known Issues	

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Click the 'Easy View' button	The website will be more contrasting colours and enlarged text			

3.7 NFR07: The system needs to be available 24/7

Success Criteria	The system is available for 24 hours a day.

Pre-Requisites	Users have opened their browsers
Known Issues	

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Enter 'www.evehiclegionit.com.au' in the browser at different times of the day	Every time system displays login page	URL 'www.evehiclegionit.com.au'		

3.8 NFR08:The time spent in swapping battery in a vehicle shall be less than 3 minutes .

Success Criteria	The time spent in swapping battery in a vehicle shall be less than 3 minutes.
Pre-Requisites	
Known Issues	

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail

1	Drive a vehicle on the swap machine	The swap machine is ready to swap battery	N/A		
2	Start up a timer	The timer starts to count	N/A		
3	Stops the timer when the swapping process is finished.	The time used in swapping is less than 3 minutes.	N/A		

3.9 NFR09: The date of birth must be in the past

Success Criteria	The data of birth must be in the past
Pre-Requisites	Users are managing their account info or creating accounts
Known Issues	

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Enter past time in the 'date of birth 'field when creating accounts	System displays 'Valid date of birth, please continue'	Date of birth: 13/02/1995		

Success Criteria	The data of birth must be in the past
Pre-Requisites	Users are managing their account info or creating accounts
Known Issues	

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Enter future time in the 'date of birth 'field when creating accounts	System displays 'You must enter the time in the past'	Date of birth: 13/02/2550		

3.10 NFR10: all the pages on the website must be loaded in 2 seconds

Success Criteria	All the pages on the website must be loaded in 2 seconds
Pre-Requisites	Users have opened the browser
Known Issues	It depends on your internet speed as well.

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Enter 'www.evehiclegionit.com.au'	System displays home page in less than 2 second	'www.evehiclegionit.com.au'		
2	Click navigation buttons to go to other pages	All the pages should be loaded in less than 2 seconds			

3.11 NFR11: The time of the system must be accurate

Success Criteria	The system time should be synchronized to the time server.
Pre-Requisites	The system is running and have set up NTP (Network Time Protocol) server.
Known Issues	

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Check network time	Screen result 0 which means the clock is synchronized.	ntpstat		

	synchronisation status				
2	Check the time and standard world time.	Screen the two same time from server and official time server.	ntpq -p		

3.12 NFR12: The system log files are handled properly and automatically

Success Criteria	The system should be able to deal with log files automatically.
Pre-Requisites	The system is running for at least one month.
Known Issues	

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Go to the eVehicle system's log directory "/var/log/evhicle"	The directory exists and is not empty.	cd /var/log/evhicle		
2	Check the size of log files and creation time.	Check the log files which are created more than a month has been compressed in gzip format	ls -al		

3.13 NFR13: The temporary files shall be handled properly

Success Criteria	There are a decent amount of temporary file operations recorded in the log.
Pre-Requisites	The system is running for at least one month.
Known Issues	Hard to track all the temporary files are handled appropriately.

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Go to the eVehicle system's log directory "/var/log/evhicle"	The directory exists and is not empty.	cd /var/log/evhicle		
2	Find the tmp.log file.	The file for recording all the temporary file operations exists.	ls | grep tmp		
3	Check the tmp.log	There are continuous records for log operations from the system start date and current date.	cat tmp.log		

3.14 NFR14: the system should be able to resume interrupted transactions

Success Criteria	The system should be able to resume interrupted transactions
Pre-Requisites	Users are in transaction process

Known Issues	Resume speed will not be ensured

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Close the browser when in transactions	System displays 'You are closing the transaction, do you want to save the process so far?'			
2	Open the browser again and enter URL of the system website	Home page is displayed	'www.evehiclegionit.com.au '		
3	Click 'transaction' button	System displays 'You got an interrupted transaction saved, do you want to continue the transaction? '			

Success Criteria	The system should be able to resume interrupted transactions
Pre-Requisites	Users are in transaction process
Known Issues	Resume speed will not be ensured

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail

1	The computer crashed during transaction				
2	Open the browser again and enter URL of the system website	Home page is displayed	'www.evehiclegionit.com.au'		
3	Click 'transaction' button	System displays 'We inspected that the browser closed accidentally, we have saved the previous transaction for you, do you want to continue the transaction? '			

3.15 NFR15: Customer can get refund if they pay the bill but doesn't get what they want

Success Criteria	Customer can get refund if they pay the bill but doesn't get what they want
Pre-Requisites	Users have logged in the main page of the system
Known Issues	Not all the refund request can be processed

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail

1	Click 'contact customer assistant' button	System displays assistant number and email			
2	Dial the number or email the assistant	The assistant will respond and deal with the refund request	Phone no: 04356788954 Email: 234kk@gmail.com		

3.16 NFR16: The system should allow 2000 users to start a transaction concurrently.

Success Criteria	2000 users start transaction at the same time will not corrupt the system
Pre-Requisites	Set up virtual machine to send 2000 requests at the same time for help test
Known Issues	The speed may not be ensured

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail

1	Click 'transaction' button at almost the same time	System still work and deals with the transactions			

3.17 NFR17: The system should prevent DOS attack.

Success Criteria	The system must stop sending response to more than 50 requests from one IP address in less than 10 seconds to prevent DoS attack.
Pre-Requisites	Get a simple python programme which can send 50 requests at the same time
Known Issues	

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail

1	Run the programme	System will stop responding and displays 'Too much requests from one IP address in a certain time, system will not responding, please try again'			

3.18 NFR18: The system should notify users when their IP addresses change

Success Criteria	When a user log in with a different IP address than usual, the system will notify through email or message
Pre-Requisites	One user get a different computer to log in
Known Issues	May not notify the user immediately logged in

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Enter username and password	System will stop responding and displays 'We inspected you are not logging in with your usual IP address, a notification text message/email have been sent to your linked phone number/email address!'	Username: zzssdd Password: @23145514ss		

3.19 NFR19: The account shall be locked when there are more than 5 unsuccessful login attempts to this account

Success Criteria	When a user log fail more than 5 times, account will be locked and can only be unlocked through verification message or email
Pre-Requisites	User is logging in and entered wrong username or password 4 times
Known Issues	May be a delay in sending verification messages or emails

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Enter wrong username and password	System displays 'Wrong username or password more than 5 times, your account has been locked! Please click verify button to unlock'	Username: zzssssdd Password: 223145514ss		
2	Click verify	User has received verification text message and email			

3.20 NFR20: Only the administrators are able to change the application data

Success Criteria	The privileges for changing data including updating, altering, deleting are not granted to users which are not administrators.
Pre-Requisites	The database has already set up.
Known Issues	

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Find all the grant information for all the created users	All the users are showed.	show GRANTS		
2	Check the granted privileges for all the users.	Non-administrator users are not granted to update, alter and delete data.			

3.21 NFR21: Account will be signed out automatically within 20-minute inactivity.

Success Criteria	After logging in with 20 minutes of inactivity, the account will be logged out by the system
Pre-Requisites	User has logged in
Known Issues	

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Don't do anything for 20 minutes	System displays 'Your account will log out due to 20 minutes of inactivity, please login again'			

3.22 NFR22: System must maintain full traceability of transactions.

Success Criteria	Log in through administrator account and will be able to see all the transaction's application name, location, time, IP address, etc.
Pre-Requisites	User has an administrator account and have logged in
Known Issues	Only back-end administrators can view these data

Step	Execution Steps	Expected Result	Test Data	Comments	Pass / Fail
1	Check transaction traceability	System displays all the attributes of transactions			