

Sample Test Plan

EKG Using Cloud Services

Submitted by Team 4

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Revision History

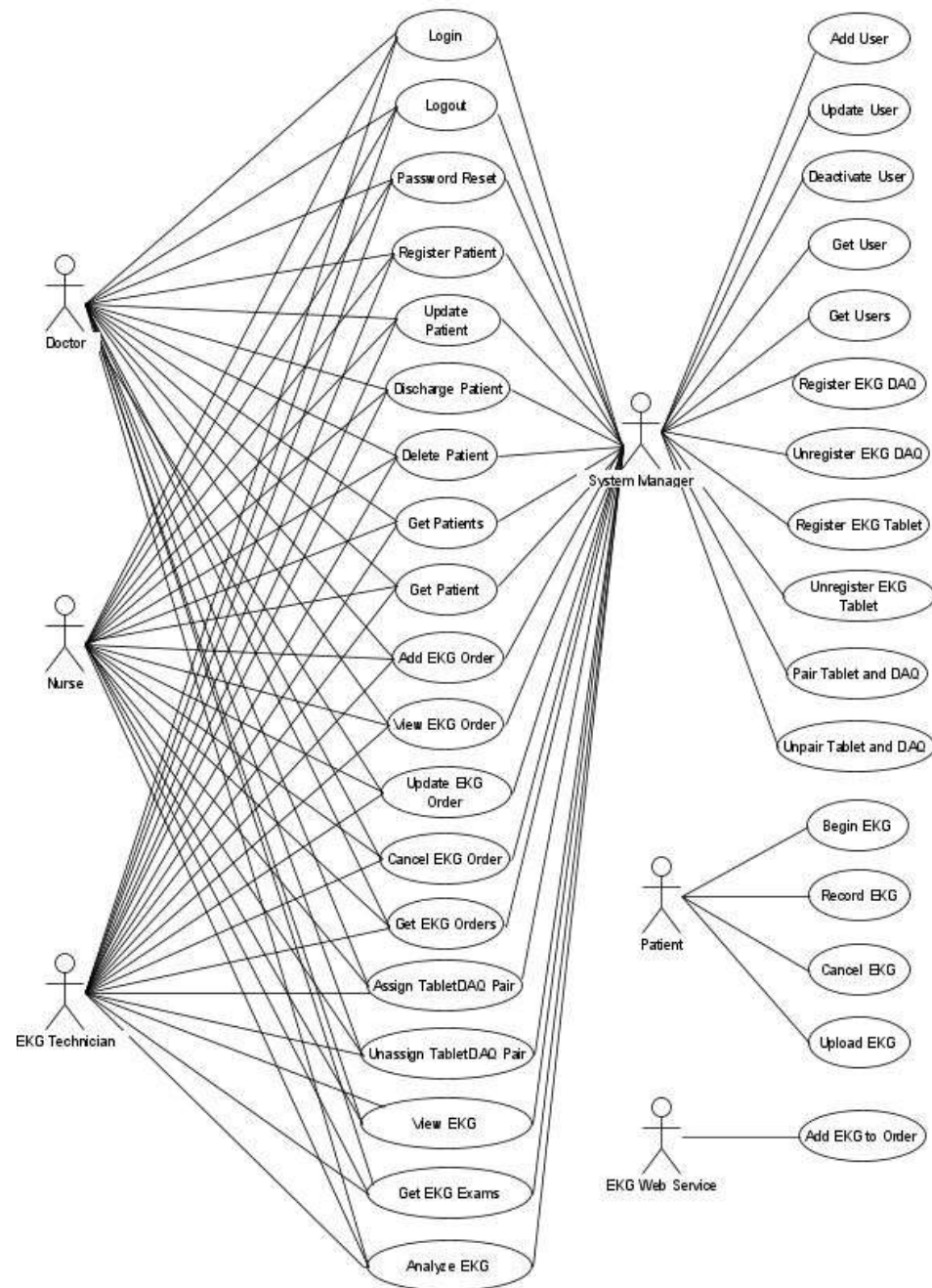
Name	Date	Remarks	Version
Version 1	10/29/2020	Released version	1.0
Version 2	11/03/2020	Test the requirements of new version	2.0

1. Introduction

The Test Plan document typically includes the techniques and processes to evaluate a product launched by an organization. The main goal of the document is to ensure the quality and efficiency of the product delivered to customers. Test plan makes the process of testing the product easy and well organized, along with saving a lot of time and effort. The document is prepared in a simple language, to ensure a clear understanding even though the person reading it has no prior technical knowledge. The testing team tests all the functionalities of product with various scenarios and prepares either bug reports or signs off the product for deployment.

Software Project Overview

The project goal is to develop a product for medical industry which deals with cloud based EKG services. Current EKG services has certain limitations with data transfer which are addressed with this new proposal in this project. In this present proposal a DAQ card is introduced to a portable EKG device which enables the data collection from patients from their homes.



Use Cases of the Test -

1.1 Objectives

Testing team usually uses these test cases to test all the functionalities of the product launched. After the report submitted by testing team, typically the client has a tester from their end to test the modules one final time ensuring the quality of functionality or product launched for customers. Testing takes place under various scenarios introduced by the testing team for EKG services which includes repeated registrations, duplicate orders, uploading large volumes of data to test the tolerance of system, matching the outcome with the expected result.

1.2 Test Approach

Functional and Integration Testing

Opacity: black-box testing

Black-Box testing: testers validate the high level design and code what it is supposed to do of the test cases to meet customer requirements specification.

Functional testing: make sure that the specific functionalities meet the requirement specification works.

Integration testing: It deals with the testing of all the modules when combined into a whole operable system to ensure successful communication among all the modules.

Performance testing: By specific performance to evaluate the acceptance of a system or component.

2. Scope

The Scope of the test plan has been divided to two parts which are feature to be tested that we emphasis and need to focus on; feature not to be tested which means the part of the existing project has been kept in the new project. Therefore, testers will only need to test the part of the changes and ensure that they are integrated well.

2.1 Features to Be Tested

- **Doctor Login**

Make sure that the doctor enters username and password and is provided access into the system if correct credentials are provided

- **Nurse Login**

Make sure that the nurse enters username and password and is provided access into the system if correct credentials are provided

- **EKG Technician Login**

Make sure that the EKG Technician enters username and password and is provided access into the system if correct credentials are provided.

- **System manager Login**

Make sure that the system manager is able enters username and password and is provided access into the system if correct credentials are provided

- **Doctor Logout**

Make sure that the doctor is able to end their session

- **Nurse Logout**

Make sure that the nurse is able to end their session

- **EKG Technician Logout**

Make sure that the EKG Technician is able to end their session.

- **System manager Logout**

Make sure that the system manager is able to end their session

- **System Manager Add User.**

Make sure that the system manager is able to create a new user account in the system and assign the new user to a role.

- **System manager Update User**

Make sure that system manager is able to update information for a given user.

- **System Manager Deactivate User**

Make sure that the system manager is able to deactivate a user account.

- **System Manager Password Reset**

Make sure that system manager is able to change their current password

- **Doctor Password Reset**

Make sure that the doctor is able to change their current password

- **Nurse Password Reset**

Make sure that the nurse is able to change their current password

- **EKG Technician Password Reset**

Make sure that the EKG Technician is able to change their current password.

- **System manager Get User**

Make sure that the system manager is able to view details for a specific user account

- **System Manager Get Users**

Make sure that the system manager is able to view a listing of all user accounts

- **System manager Register EKG DAQ.**

Make sure that system manager is able to add a new EKG DAQ into the DAQ inventory.

- **System manager Unregister EKG DAQ**

Make sure that the system manager is able to unregister an EKG DAQ to retire it from the system

- **System manager Register EKG Tablet**

Make sure that the system manager is able to add a new EKG Tablet into the Tablet inventory.

- **System manager Unregister EKG Tablet**

Make sure that the system manager is able to unregister a EKG Tablet to retire it from the system.

- **System manager Pair Tablet and DAQ**

Make sure that system manager is able to pair a specific EKG Tablet with a specific EKG DAQ.

- **System manager Unpair Tablet and DAQ**

Make sure that system manager is able to unpair a specific EKG Tablet or a specific EKG DAQ.

- **Doctor Register Patient**

Make sure that doctor is able to register a patient in preparation for potential future EKG orders.

- **Nurse Register Patient**

Make sure that Nurse is able to register a patient in preparation for potential future EKG orders.

- **EKG Technician Register Patient**

Make sure that EKG Technician is able to register a patient in preparation for potential future EKG orders.

- **System Manager Register Patient**

Make sure that the system manager is able to register a patient in preparation for potential future EKG orders.

- **Doctor Update Patient**

Make sure that the doctor is able to update information for a given patient

- **Nurse Update Patient**

Make sure that the nurse is able to update information for a given patient

- **EKG Technician Update Patient**

Make sure that the EKG Technician is able to update information for a given patient

- **System Manager Update Patient**

Make sure that the system manager is able to update information for a given patient

- **Doctor Discharge Patient**

Make sure that the doctor is able to discharge a given patient

- **Nurse Discharge Patient**

Make sure that the nurse is able to discharge a given patient

- **EKG Technician Discharge Patient**

Make sure that the EKG Technician is able to discharge a given patient

- **System Manager Discharge Patient**

Make sure that the System manager is able to discharge a given patient

- **Doctor Delete Patient**

Make sure that the doctor is able to delete a patient record from the system

- **Nurse Delete Patient**

Make sure that the nurse is able to delete a patient record from the system.

- **EKG Technician Delete Patient**

Make sure that the EKG Technician is able to delete a patient record from the system.

- **System Manager Delete Patient**

Make sure that the System manager is able to delete a patient record from the system.

- **Doctor Get Patients**

Make sure that the doctor is authorized to access Patient Management

- **Nurse Get Patients**

Make sure that the nurse is authorized to access Patient Management

- **EKG Technician Get Patients**

Make sure that the EKG Technician is authorized to access Patient Management

- **System Manager Get Patients**

Make sure that the System manager is authorized to access Patient Management.

- **Doctor Get Patient**

Make sure that the doctor is able to retrieve a certain patient record.

- **Nurse Get Patient**

Make sure that the nurse is able to retrieve a certain patient record.

- **EKG Technician Get Patient**

Make sure that the EKG Technician is able to retrieve a certain patient record.

- **System Manager Get Patient**

Make sure that the System manager is able to retrieve a certain patient record.

- **Doctor Add EKG Order**

Make sure that the doctor is able to enter a new EKG order on a patient

- **Nurse Add EKG Order**

Make sure that the nurse is able to enter a new EKG order on a patient.

- **EKG Technician Add EKG Order**

Make sure that the EKG Technician is able to enter a new EKG order on a patient.

- **System Manager Add EKG Order**

Make sure that the System manager is able to enter a new EKG order on a patient.

- **Doctor View EKG Order**

Make sure that the doctor is able to view details of an EKG order.

- **Nurse View EKG Order**

Make sure that the nurse is able to view details of an EKG order.

- **EKG Technician View EKG Order**

Make sure that the EKG Technician is able to view details of an EKG order.

- **System Manager View EKG Order**

Make sure that the System manager is able to view details of an EKG order.

- **Doctor Update EKG Order**

Make sure that the doctor is able to modify information for an EKG order.

- **Nurse Update EKG Order**

Make sure that the nurse is able to modify information for an EKG order.

- **EKG Technician Update EKG Order**

Make sure that the EKG Technician is able to modify information for an EKG order.

- **System Manager Update EKG Order**

Make sure that the System manager is able to modify information for an EKG order.

- **Doctor Cancel EKG Order**

Make sure that the doctor is able to cancel an EKG order.

- **Nurse Cancel EKG Order**

Make sure that the nurse is able to cancel an EKG order.

- **EKG Technician Cancel EKG Order**

Make sure that the EKG Technician is able to cancel an EKG order.

- **System Manager Cancel EKG Order**

Make sure that the System manager is able to cancel an EKG order.

- **Doctor Get EKG Order**

Make sure that the doctor is able to search for EKG orders.

- **Nurse Get EKG Order**

Make sure that the nurse is able to search for EKG orders.

- **EKG Technician Get EKG Order**

Make sure that the EKG Technician is able to search for EKG orders.

- **System Manager Get EKG Order**

Make sure that the System manager is able to search for EKG orders.

- **Nurse Assign TabletDAQ Pair**

Make sure that the nurse is able to assign a TabletDAQ Pair to a patient's EKG order.

- **EKG Technician Assign TabletDAQ Pair**

Make sure that the EKG Technician is able to assign a TabletDAQ Pair to a patient's EKG order.

- **System Manager Assign TabletDAQ Pair**

Make sure that the System manager is able to assign a TabletDAQ Pair to a patient's EKG order.

- **Nurse Unassign TabletDAQ Pair**

Make sure that the nurse is able to unassign a TabletDAQ Pair from currently assigned EKG order.

- **EKG Technician Unassign TabletDAQ Pair**

Make sure that the EKG Technician is able to unassign a TabletDAQ Pair from currently assigned EKG order.

- **System Manager Unassign TabletDAQ Pair**

Make sure that the System manager is able to unassign a TabletDAQ Pair from currently assigned EKG order.

- **Patient Begin EKG**

Make sure that the patient is able to begin the EKG Exam procedure.

- **Patient Record EKG**

Make sure that the patient is able to begin recording their EKG Exam.

- **Patient Cancel EKG**

Make sure that the patient is able to abort the current EKG Recording.

- **Patient Upload EKG**

Make sure that the patient is able to uploaded EKG Recording to EKG Cloud Service for analysis.

- **EKG Web Service Add EKG To Order**

Make sure that the user is able to save the newly EKG data to the proper EKG Order, and in turn, proper Patient in system.

- **Doctor View EKG**

Make sure that the doctor is able to View Recorded EKG Exam data.

- **Nurse View EKG**

Make sure that the nurse is able to View Recorded EKG Exam data.

- **EKG Technician View EKG**

Make sure that the EKG Technician is able to View Recorded EKG Exam data.

- **System Manager View EKG**

Make sure that the System manager is able to View Recorded EKG Exam data.

- **Doctor Get EKG Exam**

Make sure that the doctor is able to search for EKG orders with EKG exams.

- **Nurse Get EKG Exam**

Make sure that the nurse is able to search for EKG orders with EKG exams.

- **EKG Technician Get EKG Exam**

Make sure that the EKG Technician is able to search for EKG orders with EKG exams.

- **System Manager Get EKG Exam**

Make sure that the System manager is able to search for EKG orders with EKG exams.

- **Doctor Analyze EKG**

Make sure that the doctor is able to generate a report from an automated analysis of the EKG data.

- **Nurse Analyze EKG**

Make sure that the nurse is able to generate a report from an automated analysis of the EKG data.

- **EKG Technician Analyze EKG**

Make sure that the EKG Technician is able to generate a report from an automated analysis of the EKG data.

- **System Manager Analyze EKG**

Make sure that the System manager is able to generate a report from an automated analysis of the EKG data.

2. 2 Features not to Be Tested

- **Each container of U.S.**

The container of U.S. of version 1.0 developers Dr. Box and team has been kept in the new project so that testers will not to test this feature.

2.3 Testing Tools and Environment

- Amazon AWS EC2 virtual machine
- Amazon AWS S3 file storage
- Amazon RDS - SQL Storage
- Amazon AWS API Gateway
- Visual Studio
- CodeSmith
- Zephyr

2.4 Schedule of Tests

Task Name	Start	Finish	Effort	Comments
Test Planning	10/29/2020	10/30/2020	2 Day	Complete
Review Requirements Documents	10/31/2020	10/31/2020	1 Day	Complete
Create initial test estimates	11/1/2020	11/2/2020	2 Day	Complete
Functional and system testing	11/3/2020	11/7/2020	5 Day	Pending
Resolution of final failure and testing	11/8/2020	11/12/2020	5 Day	Pending
Production to release	11/13/2020	11/16/2020	4 Day	Pending

3. Test Cases and Procedures

3.1 Login

Profile: Doctor/Nurse/EKG Technician/System Manager

Test Data: Login

Enhancement: EKG Service

Pre-condition: User should have a Username and Password, and not already logged in.

Test Description: Steps:

1. User clicks Login command button
2. User enters username and password
3. User's credentials are verified and authorization into the system is granted. User is presented with the Main Page

Expected Result: The user is authenticated and granted access into the system

Actual Result: Successful Login.

Pass/Fail:

Comment:

Tested By:

3.2 Logout

Profile: Doctor/Nurse/EKG Technician/System Manager

Test Data: Logout

Enhancement: EKG Service

Pre-condition: The user is already activated and logged in.

Test Description: Steps:

1. User clicks Logout command button
2. User's session is terminated
3. Login Page is presented

Expected Result: The user is able to end the authorized session.

Actual Result: Successful Logout.

Pass/Fail:

Comment:

Tested By:

3.3 Add User

Profile: System Manager

Test Data: Add User

Enhancement: EKG Service

Pre-condition: The user should not be already existed in the system and there should not be other users with the same username.

Test Description: Steps:

1. User clicks on New User command button on User Management Page

2. New user form is displayed
3. User enters new user information into the form.
4. User clicks OK command button.

Expected Result: To add new user to the system.

Actual Result: Successfully a new user is added to the system.

Pass/Fail:

Comment:

Tested By:

3.4 Update User

Profile: System Manager

Test Data: Update User

Enhancement: EKG Service

Pre- condition: User should be already existed in the system.

Test Description: Steps:

1. User opens User Management Page
2. User clicks checkbox next to desired User account
3. User Details page is displayed
4. Actor modifies user information as needed
5. User click OK button to save changes

Expected Result: To update the user's information.

Actual Result: User information is updated successfully.

Comment:

Tested By:

3.5 Deactivate User

Profile: System Manager

Test Data: Deactivate User

Enhancement: EKG Service

Pre-condition: User should have an active account in the system.

Test Description: Steps:

1. User opens User Management Page
2. User clicks checkbox next to User account in User Account List
3. User clicks Deactivate command button

Expected Result: To deactivate the user account.

Actual Result: The deactivation of the user account confirmed successfully.

Pass/Fail:

Comment:

Tested By:

3.6 Password Reset

Profile: Doctor/Nurse/EKG Technician/System Manager

Test Data: Password Reset

Enhancement: EKG Service

Pre-condition: User should be already authenticated.

Test Description: Steps:

1. User clicks Password Reset command button on Main Page
2. User presented with prompt for current password as well as double-prompt to enter new password twice
3. User clicks OK command button to apply new password

Expected Result: The user is able to change their password.

Actual Result: Password changed successfully.

Pass/Fail:

Comment:

Tested By:

3.7 Get User

Profile: System Manager

Test Data: Get User

Enhancement: EKG Service

Pre-condition: User is authorized to access User Management.

Test Description: Steps:

1. User clicks Details command button for desired user

2. User Details page is displayed

Expected Result: The user is able to view details for a specific user account.

Actual Result: Specific user details retrieved successfully.

Pass/Fail:

Comment:

Tested By:

3.8 Get Users

Profile: System Manager

Test Data: Get Users

Enhancement: EKG Service

Pre-condition: The user is authorized to access User Management.

Test Description: Steps:

1. User is authorized to access User Management.

2. User Listing Grid is displayed.

Expected Result: User to be able to view and retrieve a list of all user accounts.

Actual Result: User List is retrieved successfully.

Pass/Fail:

Comment:

10/5/2020

Tested By:

3.9 Register EKG DAQ

Profile: System Manager

Test Data: Register EKG DAQ

Enhancement: EKG Service

Pre-condition: The EKG DAQ device id does not already exist in the inventory.

Test Description: Steps:

1. User clicks Register New DAQ command button on DAQ Management Page.
2. User presented with New DAQ form.
3. User scans DAQ QR Code that inserts DAQ device id and other information in to form.
4. User clicks Add DAQ command button to register new DAQ.

Expected Result: The user is able to add and register a new EKG DAQ (by device id).

Actual Result: EKG DAQ is added Successfully.

Pass/Fail:

Comment:

Tested By:

3.10 Unregister EKG DAQ

Profile: System Manager

Test Data: Unregister EKG DAQ

10/5/2020

Enhancement: EKG Service

Pre- condition: EKG DAQ device id exists already in the system.

Test Description: Steps:

User click Unregister DAQ command button on DAQ Management Page.

Unregister DAQ device id prompt displayed

3. User scans DAQ QR Code or enters device id.

4. User clicks OK command button.

Expected Result: The user is able to unregister an EKG DAQ to retire it from the system by the device ID.

Actual Result: EKG DAQ unregistered successfully.

Comment:

Tested By:

3.11 Register EKG Table

Profile: System Manager

Test Data: Register EKG Table.

Enhancement: EKG Service

Pre-condition: The EKG Tablet device ID does not exist in the inventory.

Test Description: Steps:

1. User clicks Register New Tablet command button on Tablet Management Page to add new EKG Tablet into the tablet inventory.

2. User is presented with New Tablet form.

3. User scans Tablet QR Code that inserts Tablet device id and other information into form.
4. User clicks Add Tablet command button to register new Tablet.

Expected Result: The user is able to add and register a new EKG Tablet into the Tablet inventory by the device ID.

Actual Result: EKG tablet registered successfully.

Pass/Fail:

Comment:

Tested By:

3.12 Unregister EKG Tablet

Profile: System Manager

Test Data: Unregister EKG Tablet

Enhancement: EKG Service

Pre-condition: EKG Tablet device ID exists in the system.

Test Description: Steps:

1. User click Unregister Tablet command button on Tablet Management Page
2. Unregister Tablet device id prompt displayed
3. User scans Tablet QR Code or enters device id
4. User clicks OK command button

Expected Result: The user is able to unregister EKG Tablet by the device ID to retire it from the system.

Actual Result: EKG Tablet unregistered Successfully.

Pass/Fail:

Comment:

Tested By:

3.13 Pair Tablet and DAQ

Profile: System Manager

Test Data: Pair Tablet and DAQ

Enhancement: EKG Service

Pre-condition: EKG Tablet device ID and the EKG DAQ device ID exists in the system and both are not currently a member of a pair.

Test Description: Steps:

1. User clicks Device Management command button to open the Device Management module.
2. User clicks Add Pair command button and New Pair form is displayed.
3. User scans the EKG Tablet QR Code and the EKG DAQ QR Code.
4. User clicks OK command button to save the new Pair.

Expected Result: A specific EKG Tablet is paired with a specific EKG DAQ by the user.

Actual Result: A new EKG Tablet and EKG DAQ Pair were created successfully.

Pass/Fail:

Comment:

Tested By:

3.14 UnPair Tablet and DAQ

Profile: System Manager

Test Data: UnPair Tablet and DAQ

Enhancement: EKG Service

Pre-condition: That the EKG Tablet device ID or the EKG DAQ device ID is currently a member of a pair.

Test Description: Steps:

1. The user clicks Device Management command button to open the Device Management module
2. The user clicks UnPair command button and a Pair Details form is displayed.
3. The System Manager scans or enter the EKG Tablet QR Code or the EKG DAQ QR Code, and then displays the Pair member EKG Tablet and EKG DAQ details.
4. User checks the Dissolve checkbox on the Pair Details page.
5. User clicks OK command button to OK command button to dissolve the Pair and is presented with a Dissolve confirmation dialog.
6. User clicks OK command button on the confirmation dialog to dissolve the pair.

Expected Result: The user is bale to unpair a specific EKG Tablet or a specific EKG DAQ

Actual Result: Existing EKG Tablet/EKG DAQ pair dissolved successfully.

Pass/Fail:

Comment:

Tested By:

3.15 Register Patient

Profile: Doctor/Nurse/EKG Technician/System Manager

Test Data: Register Patient

Enhancement: EKG Service

Pre-condition: Patient is not already registered in the system.

Test Description: Steps:

1. User click Register command button on Patient Management page.
2. New Registration form is displayed
3. User completes patient demographics form
4. User clicks OK command button to save the new registration

Expected Result: The user is able to register a patient in preparation for potential future EKG.

Actual Result: Patient registered successfully.

Pass/Fail:

Comment:

Tested By:

3.16 Update Patient

Profile: Doctor/Nurse/EKG Technician/System Manager

Test Data: Update Patient

Enhancement: EKG Service

Pre-condition: Patient should ne exists in the system. .

Test Description: Steps:

1. User opens Patient Management Page.
2. User clicks checkbox next to desired Patient.
3. Patient Details page is displayed.
4. User modifies patient information as needed.
5. User click OK button to save changes.

Expected Result: The user is able to update information for a given patient.

Actual Result: Patient information updated successfully.

Pass/Fail:

Comment:

Tested By:

3.17 Discharge Patient

Profile: Doctor/Nurse/EKG Technician/System Manager

Test Data: Discharge Patient

Enhancement: EKG Service

Pre-condition: Patient already exists in the system and currently registered and having no opened EKG Orders.

Test Description: Steps:

1. User opens Patient Management Page.
2. User clicks Details next to desired Patient.

3. Patient Details page is displayed.

4. User selects Discharge option in Status DropDownList.

5. User click OK button to save changes.

Expected Result: The user is able to discharge a given patient and update his information.

Actual Result: Patient is discharged successfully.

Pass/Fail:

Comment:

Tested By:

3.18 Delete Patient

Profile: Doctor/Nurse/EKG Technician/System Manager

Test Data: Delete Patient

Enhancement: EKG Service

Pre-condition: The Patient exists in the system and has no existing EKG Order History in the system.

Test Description: Steps:

1. User opens Patient Management Page

2. User clicks Delete link next to the desired patient to be deleted

3. User is presented with a Confirmation dialog

4. User clicks YES checkbox and then clicks OK command button

Expected Result: The user is able to delete a patient record from the system.

Actual Result: The Patient is deleted Successfully.

Pass/Fail:

Comment:

Tested By:

3.19 Get Patients

Profile: Doctor/Nurse/EKG Technician/System Manager

Test Data: Get Patients

Enhancement: EKG Service

Pre-condition: User is able to search for patients.

Test Description: Steps:

1. User click Patient Search command button on Main Menu.
2. Search text boxes are displayed for MRN and Patient Last, Middle, and First.
3. User enters search criteria and clicks Search command button.
4. Matching results are displayed in a grid.

Expected Result: The user is authorized to access patient Management and to get collection of patients.

Actual Result: Matching Patient results displayed successfully.

Pass/Fail:

Comment:

Tested By:

10/5/2020

3.20 Get Patient

Profile: Doctor/Nurse/EKG Technician/System Manager

Test Data: Get Patient

Enhancement: EKG Service

Pre-condition: User is able to retrieve a certain patient record.

Test Description: Steps:

1. User selects a specific patient record.
2. User is presented with the patient record details.

Expected Result: The user is able to retrieve a certain and specific patient record.

Actual Result: Patient result displayed successfully.

Pass/Fail:

Comment:

Tested By:

3.21 Add EKG Order

Profile: Doctor/Nurse/EKG Technician/System Manager

Test Data: Add EKG Order

Enhancement: EKG Service

Pre-condition: User is authorized to add an EKG order, and the patient is registered in the system.

Test Description: Steps:

1. User click Patient Search command button on Order Management page.
2. Search text boxes are displayed for MRN and Patient Last, Middle, and First.
3. User enters search criteria and clicks Search command button.
4. Matching results are displayed in a grid.
5. User selects the desired patient and clicks Details link on the row of the desired patient.
6. Patient Details page is displayed showing patient demographics as well as a list of existing EKG orders for the patient.
7. User clicks New Order command button.
8. New EKG Order page is displayed
9. User completed new EKG order form
10. User clicks Save command button to save the new EKG Order.

Expected Result: The user is able to enter and add a new EKG order on a patient.

Actual Result: New EKG order added successfully.

Pass/Fail:

Comment:

Tested By:

3.22 View EKG Order

Profile: Doctor/Nurse/EKG Technician/System Manager

Test Data: View EKG Order

Enhancement: EKG Service

Pre-condition: User is authorized to view an EKG order.

Test Description: Steps:

1. User opens either Patient Management or Order Management.
2. Search text boxes are displayed for MRN, Patient Last, Middle, and First
3. User enters search criteria and clicks Search command button.
4. Matching results are displayed in a grid
5. User selects the desired EKG order and clicks Details link on the row of the desired patient.
6. Patient Details page is displayed showing patient and EKG order details.

Expected Result: The user is able to view details of EKG order displayed.

Actual Result: EKG order details displayed successfully.

Pass/Fail:

Comment:

Tested By:

3.23 Update EKG Order

Profile: Doctor/Nurse/EKG Technician/System Manager

Test Data: Update EKG Order.

Enhancement: EKG Service

Pre-condition: User is authorized to update an EKG order.

Test Description: Steps:

1. User opens either Patient Management or Order Management.
2. Search text boxes are displayed for MRN, Patient Last, Middle, and First
3. User enters search criteria and clicks Search command button.
4. Matching results are displayed in a grid.
5. User selects the desired EKG order and clicks Details link on the row of the desired patient.
6. Patient Details page is displayed showing patient and EKG order details.
7. User clicks Edit command button to display Order Edit page.
8. User modifies the desired information.
9. User clicks Save command button.

Expected Result: The user is able to modify and update information for an EKG order.

Actual Result: EKG order information updated successfully.

Pass/Fail:

Comment:

Tested By:

3.24 Cancel EKG Order

Profile: Doctor/Nurse/EKG Technician/System Manager

Test Data: Cancel EKG Order

Enhancement: EKG Service

Pre-condition: User is authorized to cancel an EKG order.

Test Description: Steps:

1. User opens either Patient Management or Order Management
2. Search text boxes are displayed for MRN, Patient Last, Middle, and First
3. User enters search criteria and clicks Search command button
4. Matching results are displayed in a grid
5. User selects the desired EKG order and clicks Details link on the row of the desired patient
6. EKG Order Details page is displayed showing patient and EKG order details
7. User clicks Cancel command button
8. User is asked to confirm Order cancellation in a pop-up dialog
9. User checks YES checkbox and CANCEL command button on Confirmation dialog

Expected Result: The user is able to cancel an EKG order.

Actual Result: EKG order cancelled successfully.

Pass/Fail:

Comment:

Tested By:

3.25 Get EKG Orders

Profile: Doctor/Nurse/EKG Technician/System Manager

Test Data: Get EKG Order

Enhancement: EKG Service

Pre-condition: User is authorized to access orders.

Test Description: Steps:

1. User click Order Search command button on Main Menu
2. Search text boxes are displayed for MRN and Patient Last, Middle, and First, order daterange, orderingmd, orderid
3. User enters search criteria and clicks Search command button
4. Matching results are displayed in a grid

Expected Result: The user is able to search and get a collection of EKG orders.

Actual Result: Matching EKG orders results displayed successfully.

Pass/Fail:

Comment:

Tested By:

3.26 Assign TabletDAQ Pair

Profile: Nurse/EKG Technician/System Manager

Test Data: Assign TabletDAQ Pair

Enhancement: EKG Service

Pre-condition: User is authorized to assign TabletDAQ Pair to an existing EKG Order.

Test Description: Steps:

1. User clicks Order Management
2. User clicks Order Search
3. Search text boxes are displayed for MRN and Patient Last, Middle, First, Order Daterange, Order Status

4. User clicks Details link next to desired Order
5. On EKG Order Details page, User clicks Assign HW command button
6. User is presented with list of unassigned, available TabletDAQ Pairs
7. User scans EKG Tablet and EKG DAQ QR Codes to Assign Pair to Order

Expected Result: The user is able to assign a TabletDAQ pair to patient's EKG order.

Actual Result: Successfully a TabletDAQ pair assigned to a specific EKG order.

Pass/Fail:

Comment:

Tested By:

3.27 Unassign TabletDAQ Pair

Profile: Nurse/EKG Technician/System Manager

Test Data: Unassign TabletDAQ Pair

Enhancement: EKG Service

Pre-condition: User is authorized to unassign TabletDAQ Pair from an existing EKG Order.

Test Description: Steps:

1. User clicks Device Management
2. User clicks Unassign HW command button
3. User is prompted to Scan device QR Code

4. User is presented with Device Details of the scanned Tablet and/or DAQ including active pairings and EKG Order assignment history
5. User clicks Unassign Pair command button.
6. User is presented with Confirmation dialog and clicks OK to confirm removal from assignment to EKG Order.

Expected Result: The user is able to unassign TabletDAQ Pair from an existing EKG Order.

Actual Result: TabletDAQ pair unassigned from a specific EKG order successfully.

Pass/Fail:

Comment:

Tested By:

3.28 Begin EKG

Profile: Patient

Test Data: Begin EKG

Enhancement: EKG Service

Pre-condition: The Patient is prepared and able to begin the EKG exam procedure.

Test Description: Steps:

1. Patient unboxes EKG Home Kit containing EKG Tablet, EKG DAQ, EKG leads, EKG electrodes, and Quick Setup Guide
2. Patient turns on Tablet and DAQ.
3. Patient presses Start button on Tablet home screen
4. Patient watches Video Tutorial to properly connect EKG leads

Expected Result: A Tutorial Video to demonstrate to Patient/Caregiver how to properly connect EKG leads to patient and how to perform the EKG exam.

Actual Result:

Pass/Fail:

Comment:

Tested By:

3.29 Record EKG

Profile: Patient

Test Data: Record EKG

Enhancement: EKG Service

Pre-condition: Tablet has Bluetooth/USB confirmed connectivity to EKG DAQ, internet connectivity to EKG Cloud Service, and EKG signal integrity status from DAQ.

Test Description: Steps:

1. Patient presses Record EKG button on Tablet.
2. Tablet sends StartCapture command to DAQ.
3. Tablet receives digital EKG data from DAQ.

Expected Result: The user is able to begin recording their EKG exam and record data.

Actual Result: Successfully captured EKG signals displayed on Tablet screen and saved into EKG data file in Tablet RAM.

Pass/Fail:

10/5/2020

Comment:

Tested By:

3.30 Cancel EKG

Profile: Patient

Test Data: Cancel EKG

Enhancement: EKG Service

Pre-condition: Patient EKG recording is running.

Test Description: Steps:

1. Patient presses Cancel EKG button on Tablet.
2. Patient redirected to Tablet Home Screen.

Expected Result: The patient is able to abort and cancel the current EKG recording

Actual Result: The active EKG recording is stopped successfully, and the tablet home screen is displayed.

Pass/Fail:

Comment:

Tested By:

3.31 Upload EKG

Profile: Patient

Test Data: Upload EKG

Enhancement: EKG Service

10/5/2020

Pre-condition: Valid EKG Data File recorded by Tablet

Test Description: Steps:

1. Patient is presented with a dialog on Tablet that states when sufficient EKG data has been recorded.
2. Patient is prompted to upload the EKG data file to the cloud.
3. Patient presses Upload button to approve the Data Upload.

Expected Result: The Patient is able to upload EKG recording to EKG Cloud Service for analysis.

Actual Result: EKG Recorded data successfully uploaded to EKG Cloud Service.

Pass/Fail:

Comment:

Tested By:

3.32 Add EKG To Order

Profile: EKG Web Service

Test Data: Add EKG To Order

Enhancement: EKG Service

Pre-condition: EKG Data File validated and matched to valid existing EKG order.

Test Description: Steps:

1. User parses EKG data file to obtain associated orderId
2. User adds relevant EKG metadata to SQL database relating EKG exam to correct EKG Order.
3. EKG Data File stored on File Storage and checksum performed

Expected Result: The EKG Data is added to the correct EKG order and to save uploaded EKG Data to database and file system.

Actual Result: EKG Data is successfully added to the correct EKG order and uploaded to database and file system.

Pass/Fail:

Comment:

Tested By:

3.33 View EKG

Profile: Doctor/Nurse/EKG Technician/System Manager

Test Data: View EKG

Enhancement: EKG Service

Pre-condition: User is authorized to view EKG exams and desired EKG Exam exists in system.

Test Description: Steps:

1. User opens either Patient Management or Order Management.
2. Search text boxes are displayed for MRN, Patient Last, Middle, and First.
3. User enters search criteria and clicks Search command button.
4. Matching results are displayed in a grid.
5. User selects the desired EKG order and clicks Details link on the row of the desired patient.
6. Patient Details page is displayed showing patient and EKG order details.
7. Recorded EKG Exams associated with the current Order are displayed in a results listing.
8. User selects the EKG Exam desired for viewing.

9. EKG 12-lead signal data is "played".

Expected Result: The user is able to view recorded EKG data, and EKG exam data to be displayed.

Actual Result: EKG exam data displayed successfully, and the user is able to view recorded EKG data.

Pass/Fail:

Comment:

Tested By:

3.34 Get EKG Exams

Profile: Doctor/Nurse/EKG Technician/System Manager

Test Data: Get EKG Exams

Enhancement: EKG Service

Pre-condition: User is authorized to access orders.

Test Description: Steps:

1. User click Order Search command button on Main Menu.
2. Search text boxes are displayed for MRN and Patient Last, Middle, and First, order daterange, orderingmd, ordered.
3. User enters search criteria and clicks Search command button.
4. Matching Orders that contain EKG Exams are displayed in a grid.

Expected Result: The user is able to search for EKG orders with EKG exams and get collections to available EKG exams.

Actual Result: Matching EKG orders retrieved successfully.

Pass/Fail:

10/5/2020

Comment:

Tested By:

3.35 Analyze EKG

Profile: Doctor/Nurse/EKG Technician/System Manager

Test Data: Analyze EKG

Enhancement: EKG Service

Pre-condition: User is authorized to access Orders, and a valid EKG data file exists for the specified EKG exam

Test Description: Steps:

1. User opens either Patient Management or Order Management
2. Search text boxes are displayed for MRN, Patient Last, Middle, and First
3. User enters search criteria and clicks Search command button
4. Matching results are displayed in a grid
5. User selects the desired EKG order and clicks Details link on the row of the desired patient.
6. Patient Details page is displayed showing patient and EKG order details
 7. Recorded EKG Exams associated with the current Order are displayed in a result listing.
 8. User selects the EKG Exam desired for viewing
 9. EKG 12-lead signal data is made available to "play"
 10. User clicks Analyze command button
 11. An EKG Analysis Report is displayed

Expected Result: The user is able to generate a report from an automated analysis of the EKG data.

Actual Result: Analysis report of EKG record data is successfully generated.

Pass/Fail:

Comment:

Tested By:

4. Test Case Scenarios:

User case	Test Objective	Precondition	Steps	Expected Result	Pass/Fail	Comment
3.1	Authenticate user	Actor is not logged in	User clicks Login command button	The user is authenticated and granted access into the system		
			User enters username and password			
			User's credentials are verified and authorization into the system is granted. User is presented with the Main Page			
3.2	End authorized session	The user is already activated and logged in.	The user is already activated and logged in.	The user is able to end the authorized session		

			User's session is terminated			
			Login Page is presented			
3.3	Add a new user to the system	The user should not be already existed in the system and there should not be other users with the same username	User clicks on New User command button on User Management Page	To add new user to the system.		
			New user form is displayed			
			User enters new user information into the form.			
			User clicks OK command button.			
3.4	Update user's information	User exists in the system	User opens User Management Page	To update the user's information		
			User clicks checkbox next to desired User account			
			User Details page is displayed			
			Actor modifies user information as needed			
			User click OK button to save changes			

3.5	Deactivate a User account	User should have an active account in the system	User opens User Management Page	To deactivate the user account.		
			User clicks checkbox next to User account in User Account List			
			User clicks Deactivate command button			
3.6	Allow actor to change their password	User should be already authenticated	User clicks Password Reset command button on Main Page	The user is able to change their password.		
			User presented with prompt for current password as well as double-prompt to enter new password twice			
			User clicks OK command button to apply new password			
3.7	Retrieve details on specific user	User is authorized to access User Management.	User clicks Details command button for desired user	The user is able to view details for a specific user account		
			User Details			

			page is displayed			
3.8	Retrieve list of user accounts	The user is authorized to access User Management	User is authorized to access User Management. User Listing Grid is displayed.	User to be able to view and retrieve a list of all user accounts.		
3.9	Register a new EKG DAQ (by device id)	The EKG DAQ device id does not already exist in the inventory	User clicks Register New DAQ command button on DAQ Management Page	The user is able to add and register a new EKG DAQ (by device id).		
			User presented with New DAQ form.			
			User scans DAQ QR Code that inserts DAQ device id and other information in to form.			
3.10	Unregister an EKG DAQ (by device id)	The EKG DAQ device id does not already exist in the inventory	User clicks Register New DAQ command button on DAQ Management Page User presented with New DAQ form. User scans	The user is able to add and register a new EKG DAQ (by device id).		

			<p>DAQ QR Code that inserts DAQ device id and other information in to form.</p> <p>User clicks Add DAQ command button to register new DAQ.</p>			
3.11	Register a new EKG Tablet (by device id)	The EKG Tablet device ID does not exist in the inventory.	<p>User clicks Register New Tablet command button on Tablet Management Page to add new EKG Tablet into the tablet inventory.</p> <p>User is presented with New Tablet form.</p> <p>User scans Tablet QR Code that inserts Tablet device id and other information into form.</p> <p>User clicks</p>	The user is able to add and register a new EKG Tablet into the Tablet inventory by the device ID		

			Add Tablet command button to register new Tablet.			
3.12	Unregister a new EKG Tablet (by device id)	EKG Tablet device ID exists in the system	User click Unregister Tablet command button on Tablet Management Page	The user is able to unregister EKG Tablet by the device ID to retire it from the system.		
			Unregister Tablet device id prompt displayed			
			User scans Tablet QR Code or enters device id			
			User clicks OK command button			
3.13	Pair a EKG Tablet with an EKG DAQ	EKG Tablet device ID and the EKG DAQ device ID exists in the system and both are not currently a member of a pair.	User clicks Device Management command button to open the Device Management module.	The user pairs a specific EKG Tablet with a specific EKG DAQ.		
			User clicks Add Pair command button and New Pair form			

			is displayed.		
			User scans the EKG Tablet QR Code and the EKG DAQ QR Code.		
			User clicks OK command button to save the new Pair.		
3.14	UnPair a EKG Tablet with an EKG DAQ	That the EKG Tablet device ID or the EKG DAQ device ID is currently a member of a pair.	The user clicks Device Management command button to open the Device Management module	The user is bale to unpair a specific EKG Tablet or a specific EKG DAQ	
			The user clicks UnPair command button and a Pair Details form is displayed.		
			The System Manager scans or enter the EKG Tablet QR Code or the EKG DAQ QR Code, and then displays the Pair member EKG Tablet and EKG DAQ details.		

			<p>User checks the Dissolve checkbox on the Pair Details page.</p> <p>User clicks OK command button to OK command button to dissolve the Pair, and is presented with a Dissolve confirmation dialog.</p> <p>User clicks OK command button on the confirmation dialog to dissolve the pair.</p>			
3.15	Register a Patient	Patient is not already registered in the system	<p>User click Register command button on Patient Management page.</p> <p>New Registration form is displayed</p> <p>User completes patient</p>	The user is able to register a patient in preparation for potential future EKG.		

			demographics form			
			User clicks OK command button to save the new registration			
3.16	Update patient information	Patient should ne exists in the system	User opens Patient Management Page.	The user is able to update information for a given patient.		
			User clicks checkbox next to desired Patient.			
			Patient Details page is displayed.			
			User modifies patient information as needed.			
			User click OK button to save changes.			
3.17	Update patient information	Patient already exists in the system and currently registered and having no opened EKG Orders	User opens Patient Management Page.	The user is able to discharge a given patient and update his information		
			User clicks Details next to desired Patient.			
			Patient Details			

			page is displayed.			
			User selects Discharge option in Status DropDownList.			
			User click OK button to save changes.			
3.18	Delete a Patient	The Patient exists in the system and has no existing EKG Order History in the system.	User opens Patient Management Page	The user is able to delete a patient record from the system.		
			User clicks Delete link next to the desired patient to be deleted			
			User is presented with a Confirmation dialog			
			User clicks YES checkbox and then clicks OK command button			
3.19	Get Collection of Patients	User is able to search for patients.	User click Patient Search command button on Main Menu.	The user is authorized to access patient Management and to get collection		

				of patients		
			Search text boxes are displayed for MRN and Patient Last, Middle, and First.			
			User enters search criteria and clicks Search command button.			
			Matching results are displayed in a grid.			
3.20	Get a Specific Patient	User is able to retrieve a certain patient record	User selects a specific patient record.	The user is able to retrieve a certain and specific patient record.		
			User is presented with the patient record details.			
3.21	Add an EKG Order	User is authorized to add an EKG order, and the patient is registered in the system.	User click Patient Search command button on Order Management page.	The user is able to enter and add a new EKG order on a patient		
			Search text			

			boxes are displayed for MRN and Patient Last, Middle, and First.			
			User enters search criteria and clicks Search command button.			
			Matching results are displayed in a grid.			
			User selects the desired patient and clicks Details link on the row of the desired patient.			
			Patient Details page is displayed showing patient demographics as well as a list of existing EKG orders for the patient.			
			User clicks New Order command button.			
			New EKG			

			Order page is displayed			
			User completed new EKG order form			
			User clicks Save command button to save the new EKG Order.			
3.22	View an EKG Order	User is authorized to view an EKG order	User opens either Patient Management or Order Management.	The user is able to view details of EKG order displayed		
			Search text boxes are displayed for MRN, Patient Last, Middle, and First			
			User enters search criteria and clicks Search command button.			
			Matching results are displayed in a grid			
			User selects the desired EKG order and clicks Details link on the row of the desired			

			patient.			
3.23	Update an EKG Order	User is authorized to update an EKG order.	User opens either Patient Management or Order Management.	The user is able to modify and update information for an EKG order.		
			Search text boxes are displayed for MRN, Patient Last, Middle, and First			
			User enters search criteria and clicks Search command button.			
			Matching results are displayed in a grid.			
			User selects the desired EKG order and clicks Details link on the row of the desired patient.			
			Patient Details page is displayed showing patient and EKG order details.			
			User clicks			

			Edit command button to display Order Edit page.			
			User modifies the desired information.			
			User clicks Save command button.			
3.24	Cancel an EKG Order	User is authorized to cancel an EKG order.	User opens either Patient Management or Order Management	The user is able to cancel an EKG order.		
			Search text boxes are displayed for MRN, Patient Last, Middle, and First			
			User enters search criteria and clicks Search command button			
			Matching results are displayed in a grid			
			User selects the desired EKG order and clicks Details link on the row of the desired			

			patient			
			EKG Order Details page is displayed showing patient and EKG order details			
			User clicks Cancel command button			
			User is asked to confirm Order cancellation in a pop-up dialog			
			User checks YES checkbox and CANCEL command button on Confirmation dialog			
3.25	Get Collection of EKG Orders	User is authorized to access orders	User click Order Search command button on Main Menu	The user is able to search and get a collection of EKG orders		
			Search text boxes are displayed for MRN and Patient Last, Middle, and First, order daterange,			

			orderingmd, orderid			
			User enters search criteria and clicks Search command button			
			Matching results are displayed in a grid			
3.26	Assign a TabletDAQ Pair to an EKG Order	User is authorized to assign TabletDAQ Pair to an existing EKG Order.	User clicks Order Management	The user is able to assign a TabletDAQ pair to patient's EKG order.		
			User clicks Order Search			
			Search text boxes are displayed for MRN and Patient Last, Middle, First, Order Daterange, Order Status			
			User clicks Details link next to desired Order			
			On EKG Order Details page, User clicks			

			Assign HW command button			
			User is presented with list of unassigned, available TabletDAQ Pairs			
			User scans EKG Tablet and EKG DAQ QR Codes to Assign Pair to Order			
3.27	UnAssign TabletDAQ Pair from an EKG Order	User is authorized to unassign TabletDAQ Pair from an existing EKG Order.	User clicks Device Management	The user is able to unassign TabletDAQ Pair from an existing EKG Order.		
			User clicks Unassign HW command button			
			User is prompted to Scan device QR Code			
			User is presented with Device Details of the scanned			

			Tablet and/or DAQ including active pairings and EKG Order assignment history			
			User clicks Unassign Pair command button.			
			User is presented with Confirmation dialog and clicks OK to confirm removal from assignment to EKG Order.			
3.28	Prepare Patient for EKG Exam	The Patient is prepared and able to begin the EKG exam procedure	Patient unboxes EKG Home Kit containing EKG Tablet, EKG DAQ, EKG leads, EKG electrodes, and Quick Setup Guide guide	A Tutorial Video to demonstrate to Patient/Caregiver how to properly connect EKG leads to patient and how to perform the EKG exam.		
			Patient turns on Tablet and DAQ.			
			Patient presses Start button on Tablet home			

			screen			
			Patient watches Video Tutorial to properly connect EKG leads			
3.29	Record EKG Data	Tablet has Bluetooth/USB confirmed connectivity to EKG DAQ, internet connectivity to EKG Cloud Service, and EKG signal integrity status from DAQ.	Patient presses Record EKG button on Tablet	The user is able to begin recording their EKG exam and record data.		
			Tablet sends StartCapture command to DAQ			
			Tablet receives digital EKG data from DAQ.			
3.30	Cancel EKG Recording	Patient EKG recording is running.	Patient presses Cancel EKG button on Tablet.	The patient is able to abort and cancel the current EKG recording		
			Patient redirected to Tablet Home Screen			
3.31	Upload Recorded	Valid EKG Data File	Patient is presented with	The Patient is able to upload		

	EKG data to EKG Cloud Service	recorded by Tablet	a dialog on Tablet that states when sufficient EKG data has been recorded.	EKG recording to EKG Cloud Service for analysis.		
			Patient is prompted to upload the EKG data file to the cloud.			
			Patient presses Upload button to approve the Data Upload			
3.32	Save Uploaded EKG Data to Database and File System	EKG Data File validated and matched to valid existing EKG order	User parses EKG data file to obtain associated orderId	The EKG Data is added to the correct EKG order and to save uploaded EKG Data to database and file system		
			User adds relevant EKG metadata to SQL database relating EKG exam to correct EKG Order.			
			EKG Data File stored on File Storage and checksum performed			
3.33	Provide Actor with	User is authorized to	User opens either Patient	The user is able to view recorded		

	ability to View Recorded EKG Data	view EKG exams and desired EKG Exam exists in system	Management or Order Management	EKG data, and EKG exam data to be displayed.		
			Search text boxes are displayed for MRN, Patient Last, Middle, and First			
			User enters search criteria and clicks Search command button			
			Matching results are displayed in a grid.			
			User selects the desired EKG order and clicks Details link on the row of the desired patient			
			Patient Details page is displayed showing patient and EKG order details			
			Recorded EKG Exams			

			associated with the current Order are displayed in a results listing.			
			User selects the EKG Exam desired for viewing			
			EKG 12-lead signal data is "played".			
3.34	Get Collections to Available EKG Exams	User is authorized to access orders	User click Order Search command button on Main Menu	The user is able to search for EKG orders with EKG exams, and get collections to available EKG exams		
			Search text boxes are displayed for MRN and Patient Last, Middle, and First, order date range, ordering and, ordered.			
			User enters search criteria and clicks Search command button.			
			Matching Orders that			

			contain EKG Exams are displayed in a grid.			
3.35	Analyze Performed EKG Exam Data	User is authorized to access Orders, and a valid EKG data file exists for the specified EKG exam	User opens either Patient Management or Order Management	The user is able to generate a report from an automated analysis of the EKG data.		
			Search text boxes are displayed for MRN, Patient Last, Middle, and First			
			User enters search criteria and clicks Search command button			
			Matching results are displayed in a grid			
			User selects the desired EKG order and clicks Details link on the row of the desired patient.			
			Patient Details page is			

			displayed showing patient and EKG order details			
			Recorded EKG Exams associated with the current Order are displayed in a result listing.			
			User selects the EKG Exam desired for viewing			
			EKG 12-lead signal data is made available to "play"			
			User clicks Analyze command button			
			An EKG Analysis Report is displayed			

5. Policy to Handle Failure

Policy to handle failure is based on the design and development of the product. After the testing team is done with the testing of product, they prepare a bug document which includes the functions that have failed the test plans. These bugs are addressed based on the complexity, criticalness, and priority of the functionality. Developers then analyze these bugs and gives the time frame to fix, and then send it back to testers to test it again. Testing team uses the same test plan/ test cases to evaluate and deploy the functionality.