

PRD Version 1

Company: Intouch Health

Team: Intouch With My Health

Team Members:

Calvin Wang: calvin_wang@ucsb.edu *Team Lead*

Vicki Chen: vchen@ucsb.edu *Scribe*

David Halman: david_halman@ucsb.edu

Matthew Mitchell: matthewmitchell@ucsb.edu

Henry Jeng: henryjeng@ucsb.edu

Introduction & Problem

The InTouch operating system provides a simple and reliable communication platform between physicians and patients. Although patient data is collected during a session, to further track a patient's health and enhance current methods of life-saving interventions, data should be collected on a regular basis. With the power of modern wearable devices, vitals can be taken remotely and much more often in comparison to the occasional hospital visits.

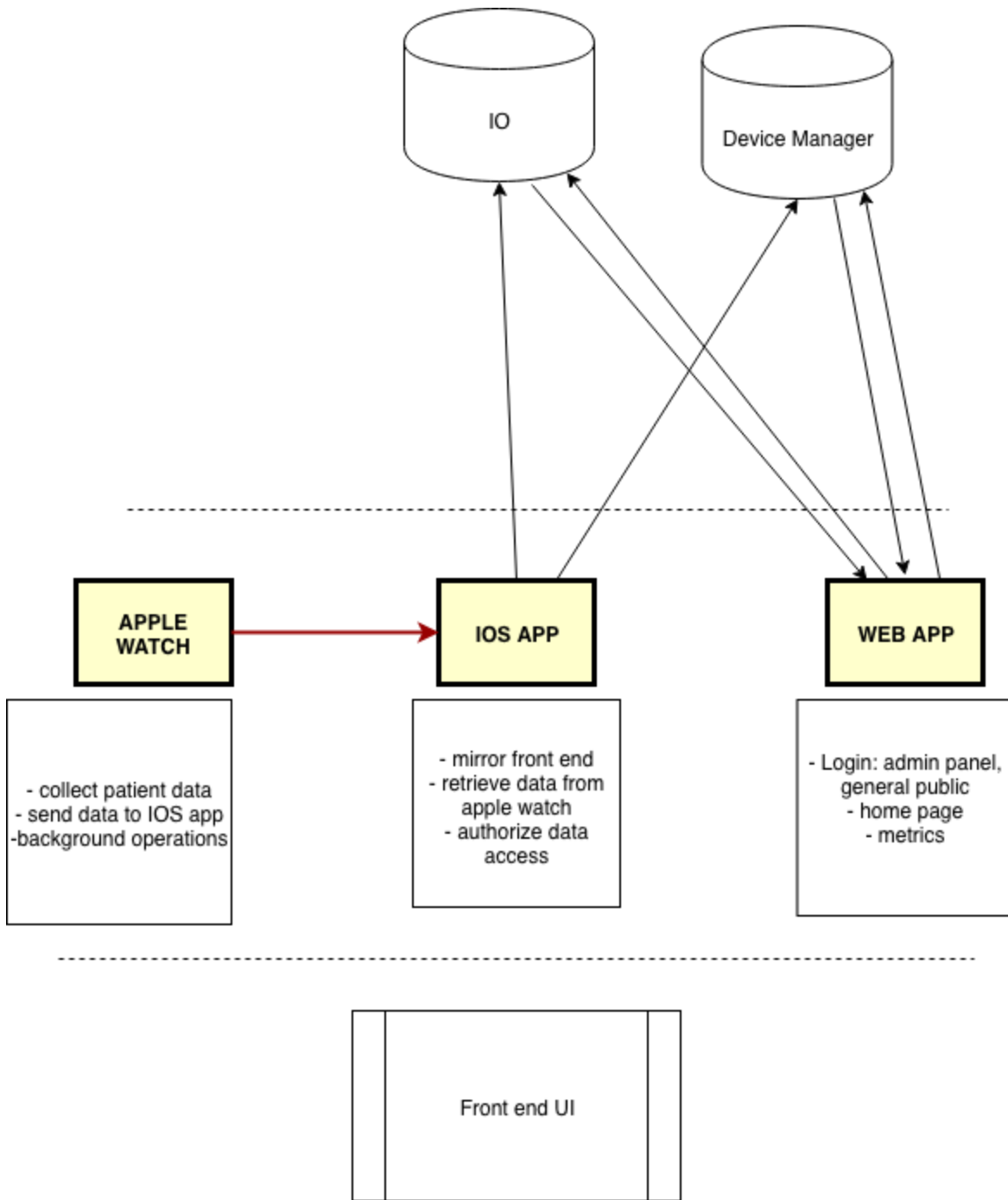
With the newest release of the Apple Watch Series 4, specifically with the electrocardiography (ECG) capability, wearable devices take a step further in the direction towards medical appliances. This important feature allows more real-time and frequent measurements to be collected and provide physicians with supplementary data points, leading to a more accurate diagnosis and treatment for the patient.

The problem with traditional healthcare is that doctor's only get a glimpse of the patient's condition through hospital visits. With the help of wearable technology, doctors are now able to view vitals over time and able to observe trends and gain a further insight into the patient's data

For our group project, we will leverage apple watch engineering to utilize medical data including heart rate, ECG, and patient symptoms to access during a doctor's session and provide further clinical data for diagnostic assessment. This will not only provide live data which can alert medical assistants once measurements reach abnormal rates, but the watch integration will also build a health history for each patient that can later be used by the physician.

Project Outcome

We will collect ECG and heart rate data from the Apple Watch and send it through an iOS app to the Intouch IO backend before being able to be displayed and viewed by physicians on the web app.



To implement each section of the diagram, we will be using XCode and Swift to implement the Apple Watch and iOS app. In terms of the web app, we will be using React.js and Firebase.

User stories / Use cases

Users:

- Physicians: Intouch Health contract physicians
- Patients: anyone using an apple watch to monitor their data
- Admins

In Order of Priority / Prerequisites:

Web App User Cases:

1. As an admin, I can authenticate new accounts for physicians.
 - a. Actors: Admin
 - b. Preconditions: The admin is logged in.
 - c. Flow: The admin has access to an authenticate account screen and can create an account
 - d. Postconditions: The account is created and store successfully and can be used by the intended physician. An email is sent to the physician with a temporary password.
2. As a physician, I can set a password for my new account.
 - a. Actor: Physician
 - b. Preconditions: An admin has created an account for me and an email has been sent with a username and temporary password
 - c. Flow: The user logs in and is greeted with a set new password screen. The user is able to create a new password.
 - d. Postcondition: The user is able to log into the site with the created password, and is no longer able to log in with the temp password.
3. As a physician, I can reset my password after being logged in.
 - a. Actor: Physician
 - b. Preconditions: A user already has an account and is able to successfully log in.

- c. Flow: The user clicks a button on the home screen or in a menu which redirects them to a screen that lets them reset their password.
 - d. Postconditions: The user is able to log in with the new password that they created, and the old password no longer works. Also, an email is sent to the user's email address saying that their password was recently changed.
- 4. As a physician, I can invite a new user (patient) to allow their data to be tracked.
 - a. Actors: Physician, Patient
 - b. Precondition: The physician already has an account and is able to successfully log in.
 - c. Flow: The physician logs into an account, clicks the "Add a new patient" button. The physician is then redirected and then prompted for the user email (and any other appropriate information).
 - d. Postcondition: The patient receives an invitation email with an authorization code allowing him or her to create an account on the
 - e. InTouch Health mobile app.
- 5. As a physician I can see a summary of all devices of patients that I have access to.
 - a. Actors: The physician
 - b. Preconditions: The patient has been onboarded on to the system.
 - c. Flow of Events: The physician clicks the device page from the navigation bar
 - d. Postcondition: The physician can see a list of devices in a list, with a small amount of information shown, including the owner of the device.
- 6. As a physician, I can search for a specific patient.
 - a. Preconditions: The patient has been onboarded and the physician has signed in.
 - b. Flow: The physician navigates to the page that shows the list of patients. The user clicks on the search bar and types in the name of the patient or the patient ID.
 - c. Postcondition: Anything related to that patient that matches the user's search are visible.
- 7. As a physician, I can filter through different types of data collected by a patient.
 - a. Actors: Physician
 - b. Precondition: The physician has created an account and invited at least one new patient to register. The iOS / Apple Watch application have

begun to collect this patients data. The physician should be logged in to the web interface.

- c. Flow: The physician selects a device type that corresponds to the patient he is trying to access data for. A data filter list is visible. The physician can choose one type of data to view exclusively. (Heart rate, ECG, Symptoms)
 - d. Postcondition: A data filter is applied so the physician only sees the relevant data that he is looking for on the web interface.
8. As a user, I can look at heart rate data for a specific device as a graph.
- a. Actors: Physician
 - b. Preconditions: The patient is logged in.
 - c. Flow: The user finds a device they want to know more about by either scanning down the list of devices or by searching for a device. The user clicks on the device in the list.
 - d. Postcondition: A graph is displayed to the user which shows heart rate if there is there is sufficient data present (>10 data points). Otherwise, the user sees an image saying there is currently not enough data for the device and to check back later
9. As any user, the site looks like an ITH product
- a. Actors: any user
 - b. Precondition: None
 - c. Flow:
 - i. The user logs in and views pages
 - ii. The user only sees the login page
 - d. Postcondition: The user feels that the design of the website is in line with other ITH products
10. As a physician, I am able to filter through the collected data
- a. Actors: Physician
 - b. Precondition: The patient has created the account on the watch app and data has been collected for a period of time
 - c. Flow: Physician logs onto the web app, selects patient and can filter the heart rate data by outliers or time periods (days, weeks, month)
 - d. Postcondition: A graph is displayed showcasing the filtered data
11. As a physician, I am able to view my assigned patients when I log into the web app
- a. Actors: Physician
 - b. Precondition: All the patients assigned to the physician have created accounts on the watch app

- c. Flow: Physician logs into web app and a list of patient's image along with their names will be presented
- d. Postcondition: Once the patient is clicked, all patient information will be displayed on the web app

iOS User Cases:

1. As a patient, I can authorize the use of my HealthKit data
 - a. Actors: Patient
 - b. Preconditions: The patient has downloaded the Apple Watch and iOS app and the user has created an account
 - c. Flow: From the iOS app, the user logs into his or her patient account. If it is the first time logging in, the user will be prompt to allow data access permissions.
Alternative Flow: The user has logged in before and has declined access to health permissions. The app would the give a list of steps to allow these permissions from the Settings app.
 - d. Postcondition: The application is able to access and upload the heart rate data to the InTouch database
2. As a user with accessibility concerns, I am able to use the iOS/Apple Watch app intuitively.
 - a. Actors: Patient
 - b. Preconditions: The patient has downloaded the app onto their phone.
 - c. Flow of Events: The patient goes through the onboarding flow of agreeing to terms and conditions with all of the correct buttons getting focus at the right times.
 - d. Postcondition: The user is able to agree to let the IOS app to collect data and transmit it to the ITH servers.
3. As a patient, I can authorize the use of my HealthKit data after previously rejecting.
 - a. Actors: Patient
 - b. Precondition: The user has created an account and has logged in already, but has rejected HealthKit usage permissions.
 - c. Flow: The user reopens the app after having rejected HealthKit permissions. The application prompts the user to allow access again in order to access any of the other features of the app,

- d. Postcondition: The application is able to access and upload the heart rate data to the InTouch database
4. As a patient, I can view the physician I have been assigned with
 - a. Actors: Patient
 - b. Precondition: The user is already signed up and has an account with previously collected data
 - c. Flow: User goes into IOS app, clicks on the icon that will show physician information and contact information
 - d. Postcondition: The user is able to view information regarding the Physician as well as contact information?
 5. As a patient, I can view my profile information
 - a. Actors: Patient
 - b. Precondition: The user has been invited by a physician to make an account and has registered for that account.
 - c. Flow: User logs in on the iPhone app and clicks the profile icon.
 - d. Postcondition: The patients user information (Name, contact information, etc) is displayed for review.
 6. As a patient, I can reset my account password.
 - a. Actors: Patient
 - b. Precondition: The user has created an account on the iOS platform and allowed HealthKit access permissions.
 - c. Flow: Once logged in, the patient clicks the profile icon to view account information. A "Change Password" button is visible that the user should click. Once clicked, the user is prompted for the old password, new password, and confirmed new password.
 - d. Alternate Flow: The user enters a new password that does not meet the conditions. He or she is prompted again.
Alternate Flow: The user enters an incorrect old password. He or she is prompted again.
 - e. Postcondition: If the user enters an acceptable new password, he or she will be informed that the password has been changed successfully.
 7. As a patient, I can report a symptom to my physician through apple watch functionality.
 - a. Actors: Patient

- b. Precondition: The user has created an ITH account and allowed access to HealthKit data.
 - c. Flow: On the apple watch app, the user clicks “Report a Symptom” button. This initiates a speech to text functionality in which the patient can speak into the apple watch to report what he or she is feeling.
 - d. Postcondition: The apple watch will record this data and store it for viewing by the physician at the next consultation.
8. As a patient, I am able to schedule an appointment with my physician
- a. Actors: Patient
 - b. Precondition: The user has created a account on the IOS app
 - c. Flow: On the iOS app, the user presses “schedule an appointment” on the dashboard and selects a date.
 - d. Postcondition: The physician the patient has been assigned with will receive a notification of the scheduled appointment