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# **Software Requirements Specification**

**for**

## **<Autonomy Dementia Support App>**

**Version 1.0 approved**

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**<19/9/20>**

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## Revision History

Name	Date	Reason For Changes	Version

# **1. Introduction**

## **1.1 Purpose**

The product is based on a dementia autonomy support app which comes with an artefact (smart bracelet). The key features which this app is built on is GPS tracking, heart rate monitor, and an AI virtual assistant. These are crucial features because dementia patients are the primary users of this product. In addition, these requirements also help the caretaker to monitor the patient effectively. The key features and requirements listed in this SRS is primarily focused on the practical and commonly used ones by caretakers and dementia patients. The release number of this product is 1.0 as there have not been any released versions previously.

## **1.2 Product Scope**

The scope of the software is to assist dementia patients to live with greater independence and security. The benefits of this software are to help caretakers to monitor the patient remotely, receive updates about the patient's condition, provides reminders to patients, and connect first-responders with the patients in emergencies efficiently. In terms of corporate goals, this product stands out in the market place because of its unique features tailored to dementia patients. There are not many products in the market that have features that are tailored for dementia and future-proofed in terms of product lifespan. With the unique offerings of the product, market potential and shares are set to grow in the coming years and knowing that this is a relatively new market, in terms of autonomy dementia support products, the potential outweighs the risk for growth and profitability.

## **1.3 References**

fintechnews.org. 2020. *The 2020 Cybersecurity Stats You Need To Know - Fintech News*. [online] Available at: <<https://www.fintechnews.org/the-2020-cybersecurity-stats-you-need-to-know/>> [Accessed 19 September 2020].

Loc.gov. 2020. *Online Privacy Law: Australia | Law Library Of Congress*. [online] Available at: <<https://www.loc.gov/law/help/online-privacy-law/2012/australia.php>> [Accessed 19 September 2020].

sslshopper.com. 2020. *Why SSL? The Purpose Of Using SSL Certificates*. [online] Available at: <<https://www.sslshopper.com/why-ssl-the-purpose-of-using-ssl-certificates.html#:~:text=The%20primary%20reason%20why%20SSL,intended%20recipient%20can%20access%20it.&text=When%20an%20SSL%20certificate%20is,are%20sending%20the%20information%20to.>> [Accessed 19 September 2020].

Topic 5 – Lecture Notes

## **2. Overall Description**

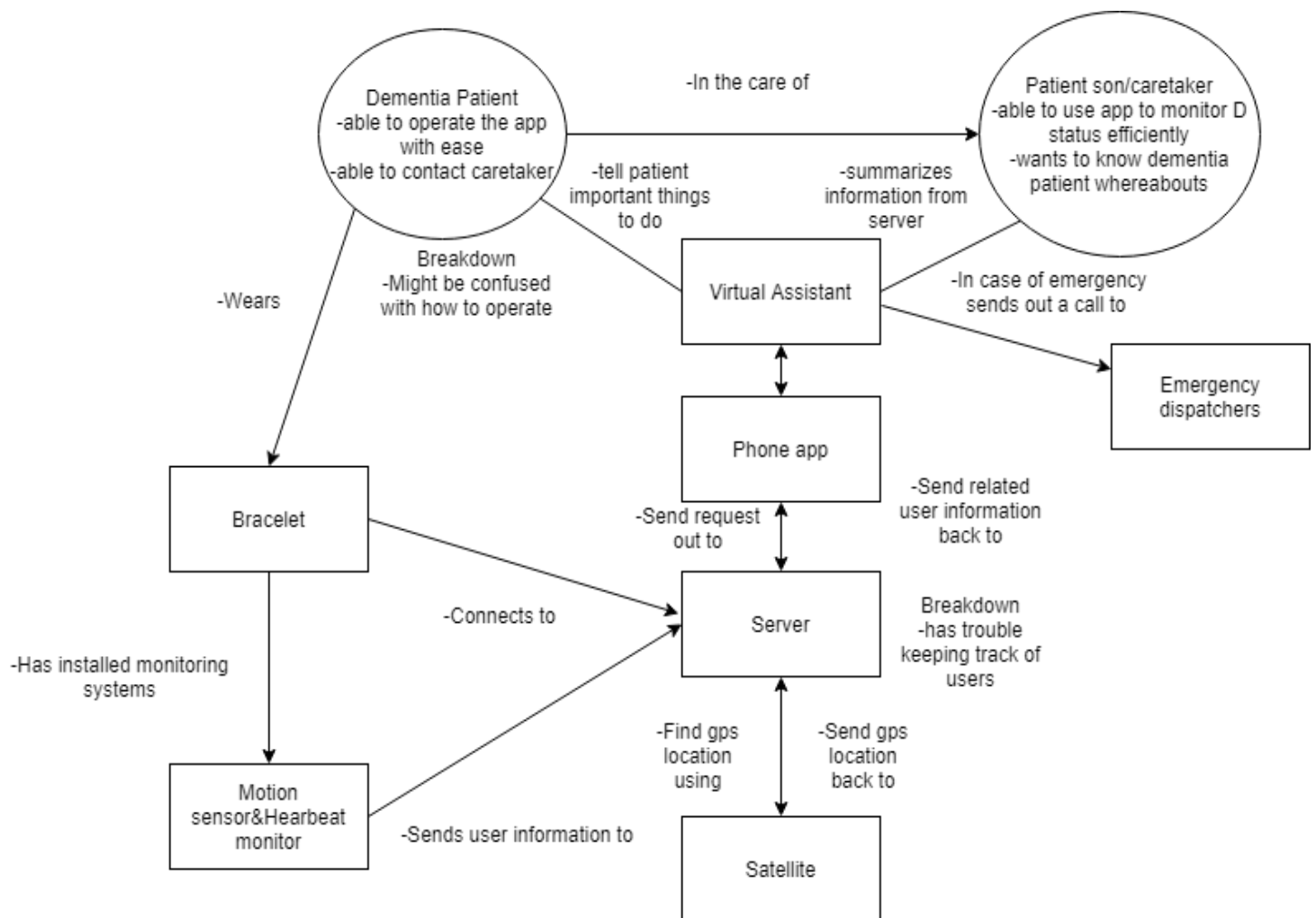
### **2.1 Product Perspective**

This product originated from the need of caretakers to monitor dementia patients remotely because they may not always be there physically because of work commitments and etc. Currently, there are not many products in the market which is tailored to dementia patients who generally are the elderly people. This product is designed with this age group in mind. This product is a newly launched and an independent product. It does not follow any product family or replaces any system and solely self-contained. The purpose of this product is to allow dementia patients to live with greater independence and security

## 2.2 Product Functions

### Major Functions

- Allow the caretaker to monitor the dementia patient remotely
- Provides real time GPS tracking features
- Has an inbuilt virtual AI assistant
- Allows multiple accounts to be created for different caretakers, if the patients have multiple caretakers for example, family members, close friends, and et



### **2.3 User Classes and Characteristics**

The classes of user are mainly the dementia patients and their caretakers. Based on the primary users, who are dementia patients, they have the highest frequency of usage in terms of the artefact that comes with the product. Most of the app functions will be used by the caretaker except for emergencies functions where both users use it. This product does not require high technical expertise because it is designed for caretakers who are not tech savvy. In terms of security, account creation is mandatory to protect the privacy and identity of the caretaker and patient. The characteristics of the primary user, are elderly people, forget things easily, needs help consistently, and are at risk of getting into troubles. On the other hand, secondary users, who are the caretakers, are younger, have other commitments, and are normally tech savvy. Dementia patients are the target user class for this product and the secondary class are the caretakers.

### **2.4 Design and Implementation Constraints**

In terms of constraints, there are design constraints mainly from the user's part such as having good WIFI connectivity, good GPS signal, and making sure the security features are properly activated to ensure privacy and identity is kept. Hardware limitations are also an issue because the user has to have the latest OS installed on their device and it has met the hardware requirements for the app to function properly. In terms of implementation constraints, there are no constraints from this perspective because the product is designed to be used outside the box.

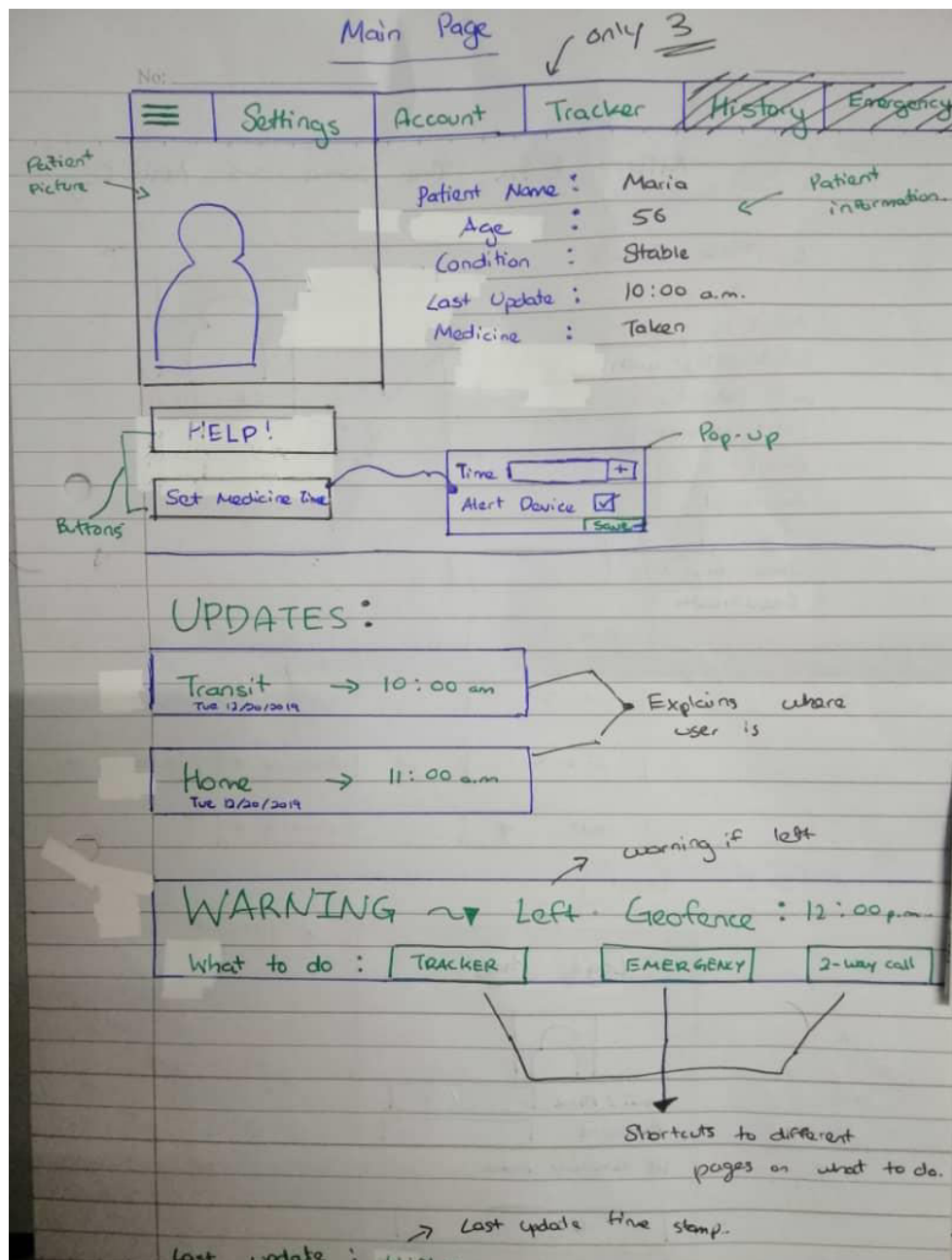
### 3. External Interface Requirements

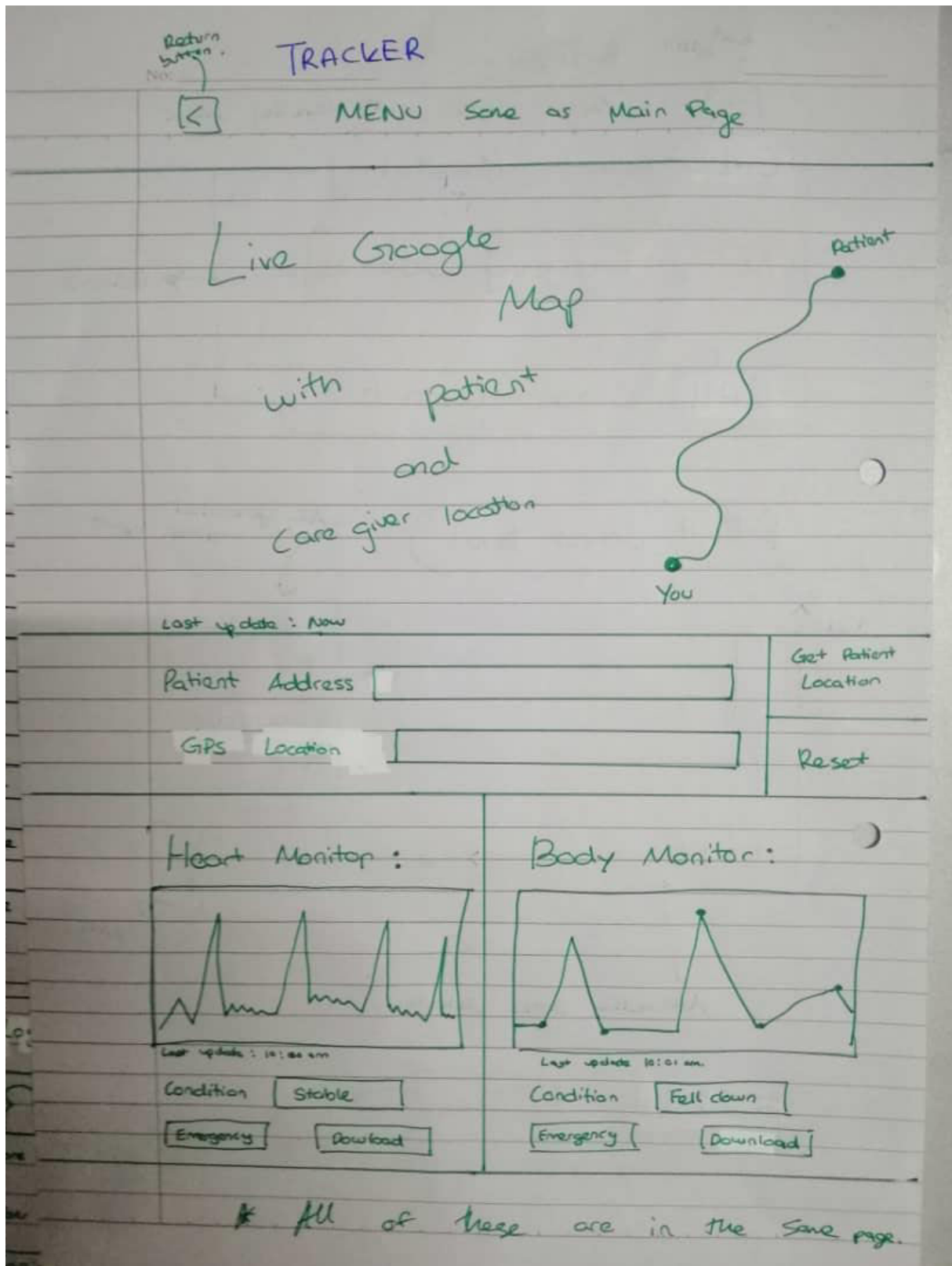
#### 3.1 User Interfaces

Sample screen images and interfaces are inserted below. The interfaces are hand-drawn.

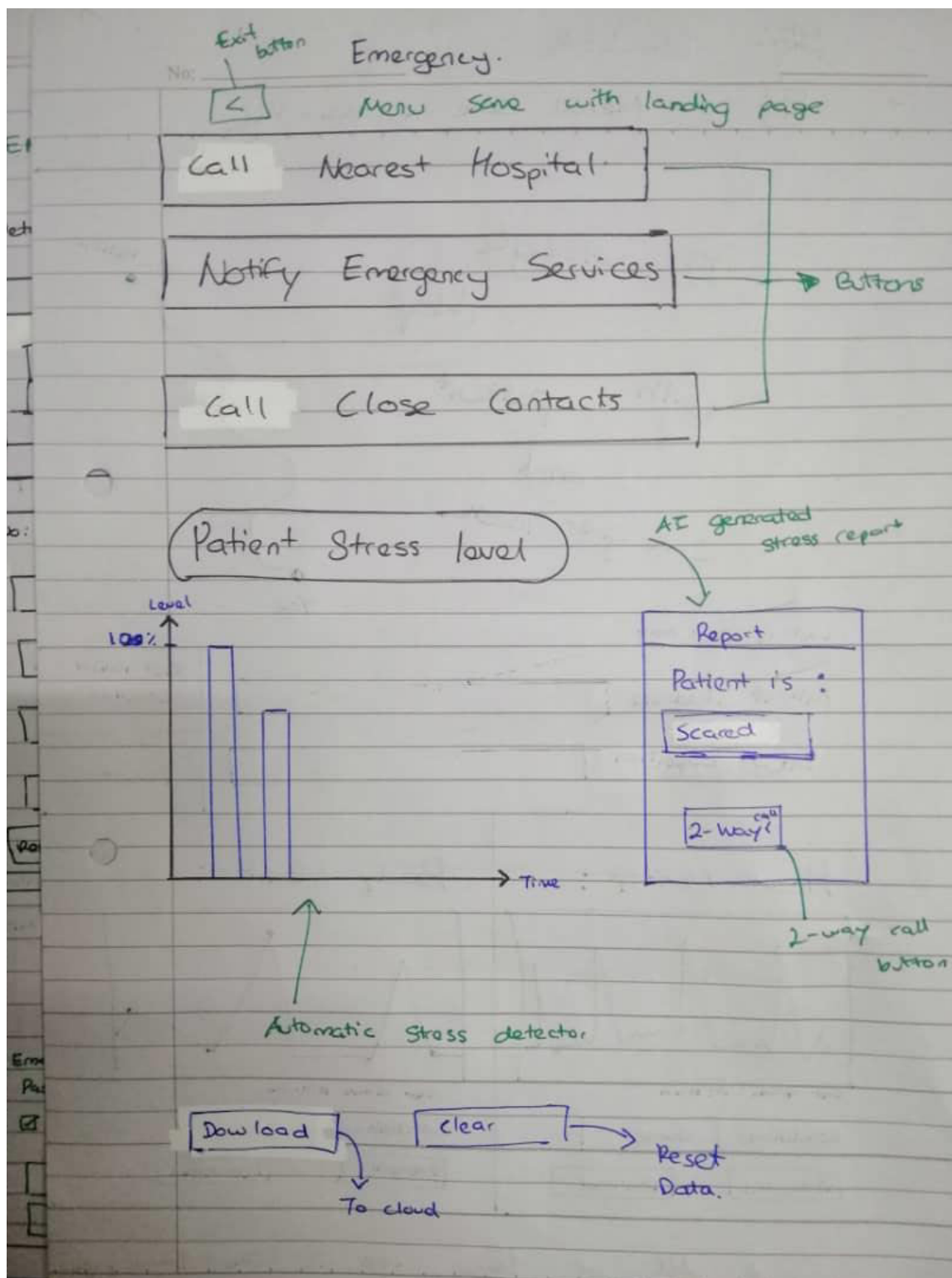
In terms of software components, majority of the features have a user interface including pop-ups. This is because majority of the interface is graphical and allows new users to be comfortable.

Components which do not require a user interface are button clicks to trigger functions, connection to the cloud, data resets because most of these functions are done in the backend and databases. It does not disturb the user.









## **4. System Features**

### **4.1 GPS Tracking**

#### **4.1.1 Description and Priority**

A GPS tracking feature. It connects to the server then forwards the location of the dementia patient to the caretaker via the phone app on request. This feature should be *High priority* because it concerns the safety of the dementia patient. The reasoning behind this is that the main feature of the product is to be able to ensure the safety of the dementia patient who will be wearing it, minimizing the risk that they will get lost while they are out and about. The risk of the elderly going missing is 9/10.

#### **4.1.2 Functional Requirements**

##### **REQ 1:**

**GPS LOCATOR** – A GPS locator embedded into the bracelet. This enables the satellite to pinpoint the location of the dementia patient using this as an anchor point, allowing us to ensure the safety and whereabouts of the dementia patient. By doing so the caretaker will be able to easily locate the dementia patient and thus ensuring their safety.

##### **REQ-2:**

**Bracelet** – A bracelet that will house the GPS locator. The dementia patient wears this whenever they go out to ensure that they will be able to be found using the GPS locator that is embedded within the bracelet. The location of the dementia patient will be ping to the right caretaker by ensuring each bracelet is unique (i.e. a unique serial code, barcode or QR code) thus minimizing the risk of potential server issues.

**REQ-3:**

Server – To handle request and send out location. The server will handle the request from the caretaker if they are looking for the GPS location of the dementia patient. After the server has receive the request. It sends out a signal to the satellite for the location of the dementia patient. When the location is found, the data will be sent back to the server and then back to the caretaker.

**REQ-4:**

Satellite Connectivity – Used to pinpoint the GPS location. It will be responsible for finding the GPS location of the dementia patient. By using the GPS locator that is embedded into the bracelet, the satellite should be able to easily pinpoint their location. After it has been successfully done so, it will forward the data back to the server and then forwarded back to the caretaker.

**REQ-5:**

Phone –To receive the GPS location. It will be used by the caretaker to install the app necessary to run this feature. The phone will act as the receiver for the app when it finds the location of the dementia patient. It will also be the one requesting for the location of the dementia patient using the app.

**REQ-6:**

App – The app that will send out the request to the server. The caretaker will use the app in order to send out a request to the server in order to find the location of the dementia patient. The app will show the current status of the process when this is happening so the caretaker will know what exactly is happening at any given moment. Once the server has sent out the data back to the app, it will display the whereabouts of the dementia patient to the caretaker.

## **4.2 Heartrate monitor**

### **4.2.1 Description & Priority**

A Heartrate monitor embedded into the bracelet. This feature should be High priority because it concerns the safety of the dementia patient.

### **4.2.2 Functional Requirements**

#### **REQ-1:**

Heartrate monitor – A heartrate monitor embedded into the bracelet. This enables the caretaker to check the current heartrate of the dementia patient. If the dementia patient heartrate starts to be abnormal, it sends out a distress signal to the caretaker on the current condition. It will also sends out a distress call to an emergency center in order to get help from the corresponding authorities via the server.

#### **REQ-2:**

Server – A server to handle request and send out the heartrate. The server will handle the request from the caretaker if they are looking for the heartrate of the dementia patient. After the server has receive a request. It will send out a signal to the heartrate monitor that is located on the bracelet for the heartrate of the dementia patient. When the location is found, the data will be sent back to the server and then back to the caretaker. If it receives a signal from the heartrate monitor that the dementia patient is experiencing abnormal heartrates, it will send out a distress call to the nearest corresponding authorities to seek for help.

#### **REQ-3:**

Bracelet – A bracelet that will house the heartrate monitor. The dementia patient will be wearing this whenever they go out to ensure that they are not experiencing any abnormalities on their heartrate using the heartrate monitor embedded within the bracelet. The heartrate of the dementia patient will be ping to the right caretaker by ensuring each

bracelet is unique (exp with a unique serial code, barcode or QR code) thus minimizing the risk of sending the wrong information to the wrong person.

**REQ-4:**

Phone – A phone in order to receive the heartrate. It will be used by the caretaker in order to install the app necessary to run this feature. The phone will act as the receiver for the app when it finds the heartrate of the dementia patient. It will also be the one requesting for the heartrate of the dementia patient using the app.

**REQ-5:**

App – The app that will send out the request to the server. The caretaker will use the app in order to send out a request to the server in order to find the heartrate of the dementia patient. The app will show the current status of the process when this is happening so that the caretaker will know what exactly is happening at any given moment. Once the server has sent out the data back to the app, it will display to the caretaker on the whereabouts of the dementia patient.

## **4.3 Smart Assistant**

### **4.3.1 Description & Priority**

A Smart Assistant embedded into the bracelet and the phone. It is an AI that will respond to the request of the user and then forward the instructions to the server. It will also send out important reminders to the user in case, they forget. The feature should be *Medium priority* because, even though it doesn't directly concern the safety of the user, it will help users who are technologically illiterate use the other features.

### **4.3.2 Functional requirements**

**REQ-1:**

Bracelet – A bracelet that will house the Smart Assistant. The dementia patient will wear this whenever they go out to ensure that they can request for help whenever they need using the smart AI embedded within the bracelet.

**REQ-2:**

Smart AI – A smart AI that will be embedded into the bracelet and the app. The smart AI will handle and interpret the instructions of the user and after processing, sends out the request to the server. The smart AI also will remind the user on any important things that they might have to do in case they forget about it.

**REQ-3:**

Server – A server to handle request and send out location. The server will handle the request from the smart AI. After the server has receive a request. It will send out the corresponding requested date back to the app using the Smart AI as a check before showing it to the user. Any request from the smart AI will handled here.

**REQ-4:**

Phone – A phone in order to house the app with the Smart AI. It will be used by the caretaker in order to install the app necessary to run this feature. The phone will act as the receiver for the app when the app receives the information requested from the smart AI.

**REQ-5:**

App – The app that will send out the request to the server. The caretaker will use the app in order to send out a request for information to the server. Once the server has sent out the data back to the app via the Smart AI, it will display it to the caretaker on the whereabouts of the dementia patient.

## **5. Other Nonfunctional Requirements**

### **5.1 Security Requirements**

Among the many important security requirements, is the distribution of sensitive data among third parties. This product handles rather sensitive information, in the form of medical (*condition of dementia patient*) and personal information (*relationship to dementia patient*). Users will not allow these types of information to be shared with anyone outside the product development team. This is also very important to note, since this is a requirement under the federal *Privacy Act* 1988 in Australia. A breach of this requirement could lead to legal action taken against the product.

The second security requirement is that any sensitive information stored and no longer needed will be destroyed. This is to prevent misuse or loss of these data and also a requirement under the *federal Privacy Act of 1988*. Therefore, this product will have a system built in place to identify and safely erase/delete any sensitive information that is no longer needed.

Thirdly, this product will have a strong firewall and encryption to prevent hackers from hacking into the software and stealing user's information. This is also an important requirement, because in recent years, the number of data breaches and hackings have significantly increased. In 2020, about 43% of data breaches involved cloud-based web applications (*The 2020 Cybersecurity stats you need to know - Fintech News, 2020*), and our product is similar to it, hence, there is a high risk of our product being susceptible to data breaches, therefore this product requires strong firewalls and good encryption method to overcome this. Moreover, from a legal aspect, there is no need for security or data certifications for this application. However, to increase the user's trust in the product. The security and/or data certification will made as a priority.

Security and/or data certifications are also crucial requirements in the product, and it will be embedded in the product to show users that they can trust it. Recommended security certifications would be the **SSL** certification which stands for “Secure Sockets Layer”. This certification is a protocol for internet browsers and servers which permit the authentication, encryption, and decryption of information/data sent over the web. With this certification, users would see the reliability of the product, be comfortable, and confident when using it.

## **Appendix A: Analysis Models**

The sample user interface images are taken from the 5.2P Conceptual Design assignment. The workflow model is taken from the 4.2P WorkFlow model assignment.