SAN DIEGO STATE UNIVERSITY

XRHealth

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LETTER TO INVESTORS

Dear Investors,

With 250,000 death rates every year due to medical errors, XRHealth is creating a solution by implementing an app which provides immediate access to patients' medical information for first responders by using facial recognition based on XR technology. Away from the complex and routine procedures in the ways of treating patients and accessing their data, which were causing many medical errors and financial losses, XRHealth uses an advanced, sophisticated, and smooth technology method through the patient’s face scanning. The ability to scan the face of patients and access patient information instantly helps save time and allows for an emergency situation to be dealt with without going through routine clinic and hospital procedures. With facial recognition, one can confirm a person's identity, grant access to information, and aid in providing pertinent medical records. We monetized mainly on subscription and exclusive partnerships. Our application will be free for all the users. Our app is marketed to a broader market by collaborating with medical services insurance agencies and clinical organizations. XRHealth is simple, easy to use, and broadly accessible to the vast majority, which works with the most common way of getting to patient information by the actual patients. We strongly desire to launch our app on the market to reduce the number of deaths due to medical error, which cost the American healthcare system millions of dollars.

Regards,

XRHealth Founders

EXECUTIVE SUMMARY

Society and health are one of the most sensitive issues in the country, which must be taken into account by following up on its issues and the obstacles that people face about the issues of providing health services in an accurate and professional manner by health insurances . The increase of medical errors lead to huge losses in lives, which caused a major setback for the health sector in general and the loss of most people's confidence in health insurance companies as well. Decline in the confidence of some people in the issue of the quality and accuracy of health services is due to neglect or failure to keep pace with developments in the medical field from some health sectors such as hospitals, clinics, emergency department, emergency department, and so on. What we mean by keeping pace with scientific development in the medical field is the impact of technological progress in the medical field and to help improve medical services provided to people in general.

XRHealth is the one that brings together the world of medicine and technology. The patient's face scanning technology used in XRHealth allows first responders to access patients' information, view their medical history, and give them appropriate treatment.This technology saves a lot of time and accuracy for first responders who work in hospitals, clinics or the emergency department in providing health treatment to the patient, updating their files quickly and accurately, and protecting the patient's data. In other words, XRHealth provides first responders with immediate access to medical records, essential in moving forward with urgent treatment, by using facial recognition based on XR and Blockchain technology to protect patients' data. By implementing facial recognition, one can confirm a person's identity, grant access to information, and aid in providing pertinent medical records. XRHealth collaborates with healthcare insurance companies and large medical corporations as the incentives to promote our app to a broader market. Our application is easy, safe to use, and widely available to most people, which facilitates the process of accessing patient data by the patients themselves or the first responders.

Our competitors in the market, such as Clearview.ai, have features different from our application. For example, XRHealth guides the first responder on the way to treat patients through the treatment suggestions page by providing a list of questions. The first responder can answer these questions based on the patient's status and medical history and the system will respond with the necessary information for treatment. In addition, the cost of subscribing to our application is competitive with costs well under that of our competitors

Our commercial medical company is profitable. XRHeath's goal is to improve the health field by collaborating with health insurance companies to minimize costs while mitigating fatal medical errors that are repeated annually. Our company strives to be at the forefront of solving problems as we remain current on the latest health and technological developments.

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1. INTRODUCTION

1.1 Problem

With death rates as high as 250,000 people per year, behind Cancer and Cardiovascular disease, medical error has become the third leading cause of death. In addition, one in seven Medicare patients receiving care in a hospital are victims of a medical error. Medical errors occur daily, especially in healthcare settings such as hospitals, clinics, surgery centers, medical offices, nursing homes, pharmacies, and patients' homes. Common categories of medical error include: medication errors, errors related to anesthesia, hospital acquired infections, missed or delayed diagnosis, avoidable delay in treatment, inadequate follow-up after treatment, and failure to take proper precautions. To combat medical errors, as well as helping first responders to act faster, XRHealth provides the users with immediate access to medical records and the essential in moving forward with urgent treatment by using facial recognition based on XR technology and Blockchain technology to protect patients' data.

1.3 Solution Description

XRHealth provides first responders with immediate access to medical records, essential in moving forward with urgent treatment, by using facial recognition based on XR and Blockchain technology to protect patients' data. By implementing facial recognition, one can confirm a person's identity, grant access to information, and aid in providing pertinent medical records. Facial recognition relies on the biometric method, which uniquely identifies a person by evaluating stored data of their physical or behavioral traits based on that person's current state. As the healthcare industry moves forward with paperless systems, and with the increasing use of electronic medical records (EMR) solutions, facial recognition systems are beginning to be the preferred choice of authentication to address the need for tighter security. Additionally, by implementing AI tech, XRHealth also suggests to the users the essential in moving forward with urgent treatment based on relevant symptoms and patients' medical records. XRHealth will collaborate with healthcare insurance companies and large medical corporations as the incentives

to promote our app to a broader market. Our application is easy, safe to use, and widely available to most people, which facilitates the process of accessing patient data by the patients themselves or the first responders.

1.4 Solution Rationale

According to CNBC, medical error has become the third leading cause of death. The National Library of Medicine presented the need for medical error reduction and prevention. Noted in their articles, the Joint Commission has produced patient safety goals to assist institutions and healthcare practitioners in creating a safer practice environment for patients and providers. The Joint Commission Goals include: identifying patient safety dangers and risks, identifying patients correctly by confirming the identity in at least two ways, and improving communication such as getting test results to the correct person quickly, just to name a few. Medical error is a prominent issue in the medical field that can be addressed and mitigated by XRHealth's implementation by health care providers (i.e. insurance, medical offices, hospitals, first responders). Also, our application can evaluate facial cues to interpret the emotional state of patients including emotions such as anger, fear, disgust, or sadness to aid in providing appropriate assistance. This technology can also be used to improve patient safety by identifying patients who are at risk of unsafe behaviors like accidentally removing a breathing tube and alerting caregivers when a specific emotion is detected.Biometric solutions such as iris and palm vein scanning can also come into play here. These emerging technologies, offered by our company XRHealth, provide the flexibility for providers to reliably connect patients to their medical information at the various touch points across the healthcare continuum. While companies like Apple have introduced possible solutions to mitigate the aforementioned issues, it is inconvenient for first responders and ER doctors to find and go through a patient's phone. One of our primary focuses is to keep the application free and accessible to those who would benefit the most from it. Therefore, our main source of income would be through long-lasting partnerships with our key demographic, which are hospitals and emergency medical services.

2. ANALYSIS

2.1 Current Processes (Status Quo)

XRHealth is utilized to distinguish the patient and immediately access his/her clinical record. This would permit medical care suppliers faster admittance to data about a patient's known sensitivities, current drugs, earlier clinical history, and then some, which could prompt superior patient consideration, security, and results. One of the limitations in using the XRHealth application is to openly restrict access to patient privacy and information by first responders. In other words, there is a limit for first responders to access patient data to help the patient and receive the necessary treatment. For ongoing iterations, Facial Recognition Technology (FRT) in XRHealth can also be used to assist with confirmations and to ensure that data an individual provides to emergency clinic staff is undoubtedly accurate, thus reducing wholesale clinical fraud. One of the important things that users feel comfortable/satisfied with XRHealth is the high accuracy of the patient's face scanning process, which is one of the distinctive features of our application, which will greatly help in reducing the rate of medical errors significantly. Another advantage in our application, is to provide a precise protection system that ensures the security of users' data through the use of trained and qualified people in using our application, which will save a lot of money on health insurance companies that will deal with us and that were suffering from financial and material losses in the past due to their inability Adequately protecting users' data and accessing it in secure ways.

2.2 Requirements Analysis

Functional Requirements	
User Profile	**System must allow users to create an XRHealth profile including, but not limited to, selecting a username and password and inputting medical records. Users must be able to build, interact, and update profiles.**

Facial Recognition Scanning	**Facial Recognition Technology must be available for patients to scan their face and assign to their profile for first responders to use when treatment is necessary.**
User Authentication	**System must provide two step authentication through user ID and password or facial recognition to access information by user or by first responders.**
Database Management	**A computerized data-keeping system is essential for manipulation of data or management of the actual structure of the database system.**
Administrative Functions	**For our business to override errors or to have accessibility to change/add features.**
Levels of Authorization	**When dealing with sensitive personal information, access cannot be easily accessible, there must be different levels for privacy concerns.**
Certification Requirements	**Those who administer help and access the application of a patient's information must complete certain certifications or privacy training to ensure security and safety for patients.**

Legal Requirements	**Legal standards must be in place for liability concerns and be available for viewing. Waivers must be signed to protect companies involved and patients.**
Business Requirements	**Applications must be in place for either party to search and find profiles, information, and contacts. Application path for account set up must be in place.**
Contact	**Contact information, help-desk setup must be easily accessible for any questions or concerns.**

2.3 Feasibility Analysis

2.3.1 Market Feasibility:

Number of deaths is as high as 250,000 deaths per year, which would make medical error the third leading cause of death, behind cancer and cardiovascular disease. Medical errors cost approximately $20 billion a year. On average, hospitals externalized 70 percent of the costs of negligent injuries. Therefore, the remainder of the costs was passed on to insurers, patients, and their families.

XRHealth could reduce the number of medical errors and its costs by providing the first responders with immediate access to medical records and the essential in moving forward with urgent treatment by using facial recognition based on XR technology and Blockchain technology to protect patients' data. Our application can evaluate facial cues to interpret the emotional state of patients including emotions. This technology can also be used to improve patient safety by identifying patients who are at risk of unsafe behaviors like accidentally removing a breathing tube and alerting caregivers when a specific emotion is detected. Biometric solutions such as iris and palm vein scanning can also come into play here. These emerging technologies, offered by our company XRHealth, provide the flexibility for providers to reliably connect patients to their medical information at the various touch points across the healthcare continuum.

While companies like Apple have introduced possible solutions to mitigate the aforementioned issues, it is inconvenient for first responders and ER doctors to find and go through a patient's phone. One of our primary focuses is to keep the application free and accessible to those who would benefit the most from it. Therefore, our main source of income would be through long-lasting partnerships with our key demographic, which are hospitals and emergency medical services.

2.3.2 Economic Feasibility:

XRHealth will cover tangible costs such as employee wages, training, computer systems, equipment, office rental and supplies. Intangible costs may include customer dissatisfaction, damage to company reputation, and the time it takes for our staff to learn the system, and to adjust their work routines to the new technology.

Increased productivity through reduced paperwork, lower labor costs, lower data entry costs, faster document exchange, lower error rates (and thus lower rework to correct), streamlined processes, and the number of insurance carriers and hospitals with which we could partner are all tangible operational benefits. Reduced administrative expenditures and effective cash management result in cost saving. Intangible operational benefits arise from: increased data accuracy, higher levels of customer service, more rapid access to information, a broader range of users' data, and a higher level of accuracy of our XR and AI technology.

XRHealth development can take anywhere from three to nine months, depending on the app's complexity and project structure. To create a user-friendly application, we would need around $500K to operate per year plus $300K per year to maintain the system. That means to cover the tangible costs for the first three years, we would need a total of $2.4M. Our app is monetized through in-app advertising, subscription fees, and partnerships with insurance companies and hospitals. Our forecast is that we will generate a profit of $3,500 per day, which is approximately $1.3M per year and $3.8M over the next 3 years.

2.3.3 Technical Feasibility:

Our project XRhealth depends on the XR face recognition technology which is already available and being used in the market in several different industries including our personal phones face scan feature. XR technology is still under massive development with a current market value of 25.84 billion USD in 2020 and expected to reach 397.81 billion by 2026. Companies like Qualcomm are well known for creating software systems, such as, having patents critical to 5G, 4G, CDMA2000, mobile communications, and many others. Furthermore, it will be efficient if we pitch our project to companies that are in the process of developing XR technology like Qualcomm which has the fundamentals to efficiently build our project. XLHealth is planned to be an app which runs on a regular mobile phone to provide ease of use. The technology of XRhealth should be user-friendly and clear to use by our project founders, end-users, and clients. Moreover, the infrastructure and maintaining technology will be held by the developing company. Founders of XRhealth are in a development process for experience in business and information systems departments and may contribute to the project sustainability in the future

2.3.4 Operational Feasibility:

The project of XRhealth is planned to be a phone app that could be utilized easily by users. As our system is mainly intended for the healthcare industry, it will change the process of helping patients by having patient's information stored safely in our system and revealing it to healthcare workers (EMT) clearly and in a timely manner. Client has the similar idea infrastructure for our system applied for other industries, which will facilitate the development of our project. Project availability is not clearly stated yet but will be announced after discussion between founders and developers. User's privacy is a top priority for our project. We are implementing important practices regarding protecting patient's information, such as, educating healthcare staff, securing mobile devices, restricting the access for the project app, and several more.

2.4 Risk Analysis

2.4.1. Development risk:

Inaccurate cost and time estimates are risks that may arise throughout the development of our product. This is mainly due to the complex and innovative nature of the technology required to achieve our mission statement. In order to mitigate and possibly avoid the effects of inaccurate estimates, we plan on implementing various milestones throughout our project while also including a buffer in our timeline. The milestones would break the larger goal into smaller steps which would help in providing more accurate time estimates. The buffer would then aid in supplying leniency for unpredicted obstacles that could be encountered throughout the development of the project.

2.4.2. Deployment risk:

A lack of usability and efficiency are risks that should be accounted for before our product is deployed into real-life scenarios. First responders work in very fast-paced environments where their priority is to simply keep the patient alive. The nature of this profession requires that we take seemingly minute details into consideration since every second is valuable and could directly impact the fate of a patient. In order to avoid these risks, it is vital to utilize various prototypes and take expert opinions into account throughout our developmental process.

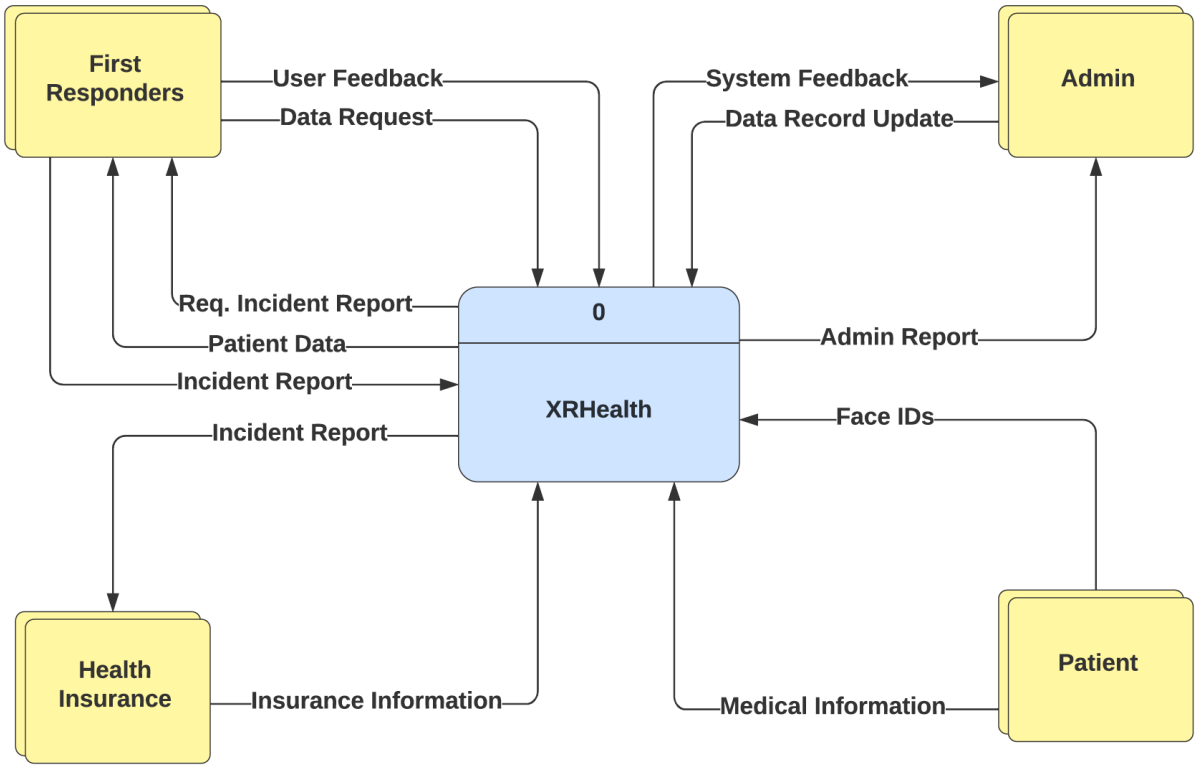
2.4.3. Operational and maintenance risk:

A potential operational risk that we could encounter is the breach of private user data. A data breach would have catastrophic consequences resulting in a damaged reputation along with the loss of sensitive personal data. In order to mitigate the possibility of this occurring, we could utilize best practices such as data encryption and regularly scheduled risk assessments conducted by third party experts. A maintenance risk related to the previously mentioned operational risk is the reliance on a third party to perform the company's cybersecurity tasks and responsibilities. This risk could be alleviated by eventually creating a data security management department once the financial means to do so have been achieved. As a result, the company would have a higher level of confidence in our internal data security department and would save money in the long run.

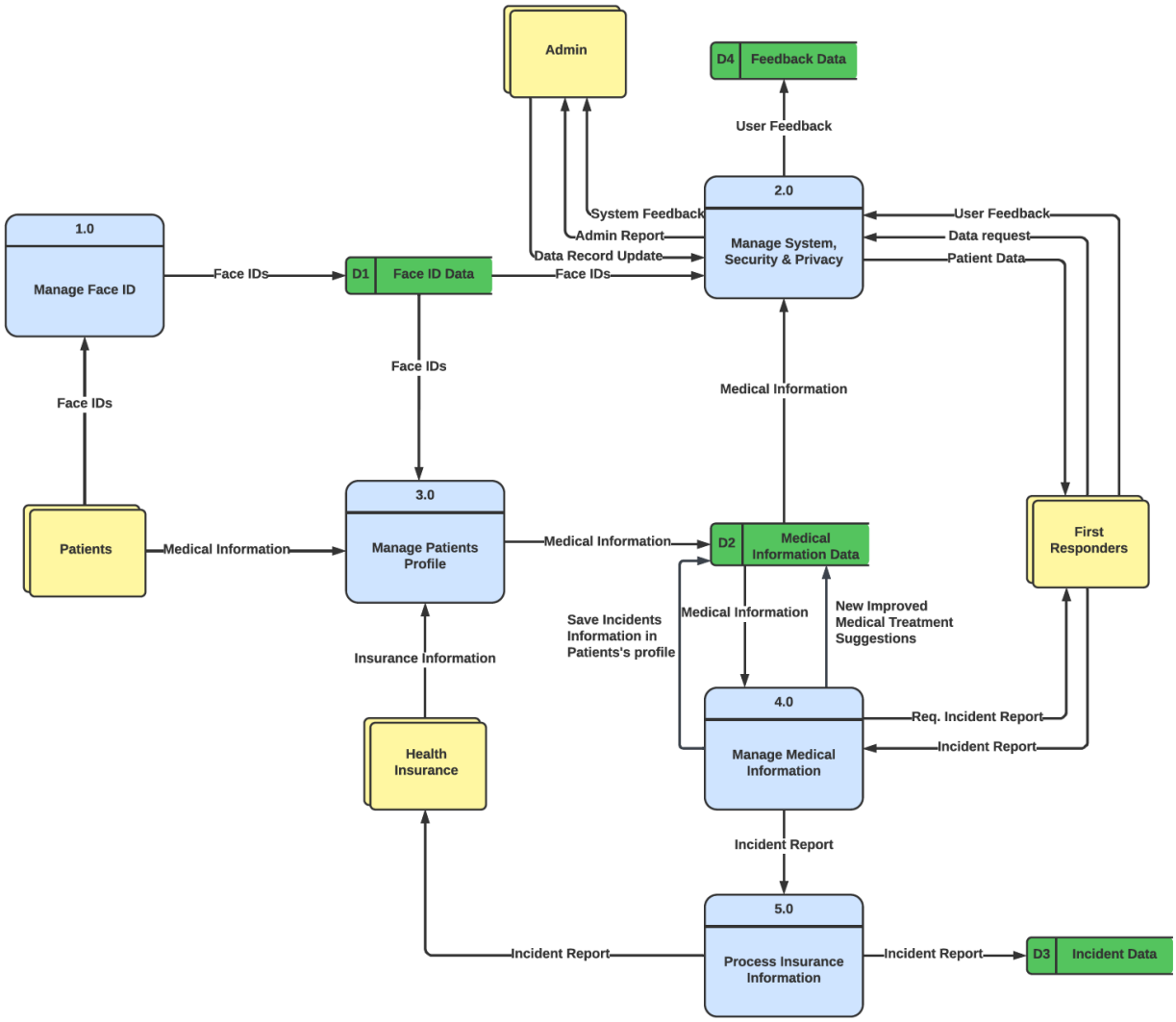
3. LOGICAL DESIGN

3.1 Data Flow Diagrams

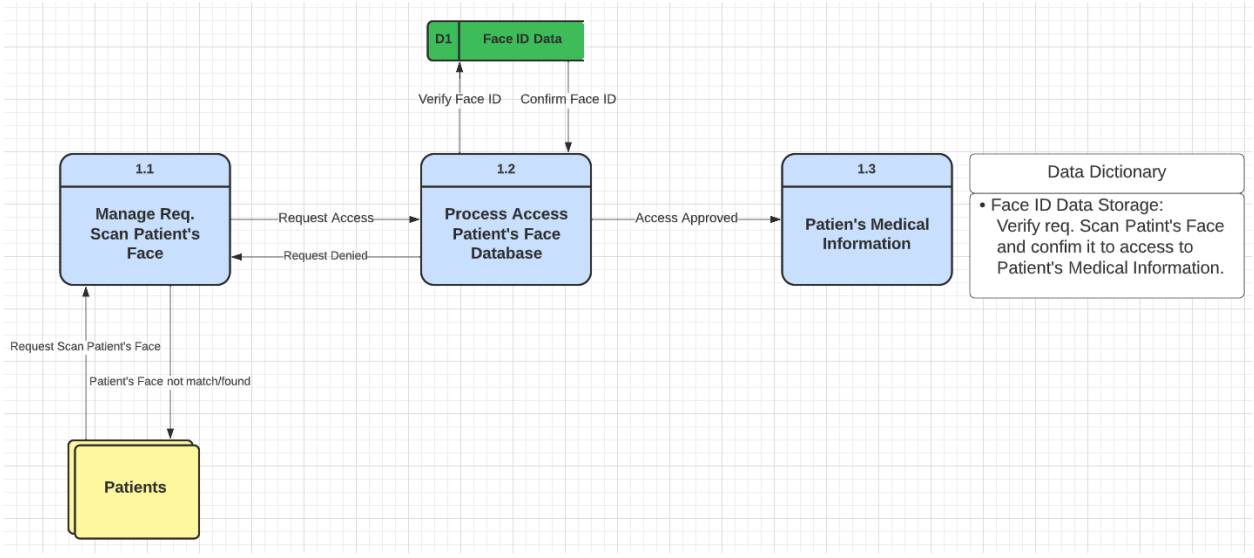
Context Diagram

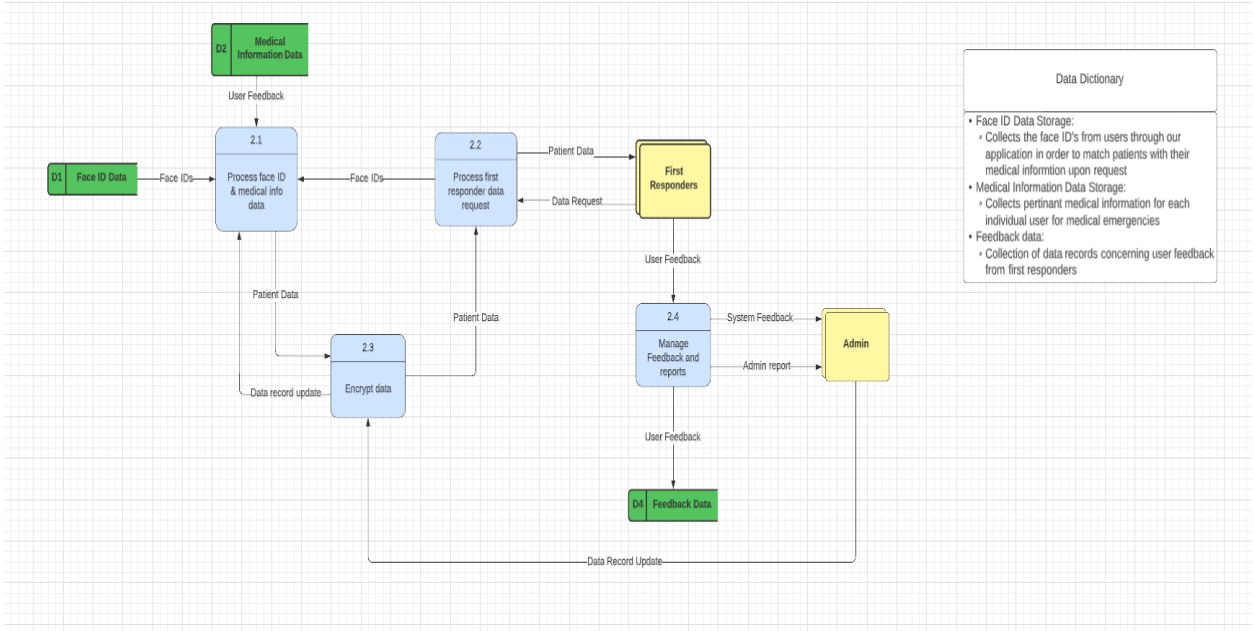


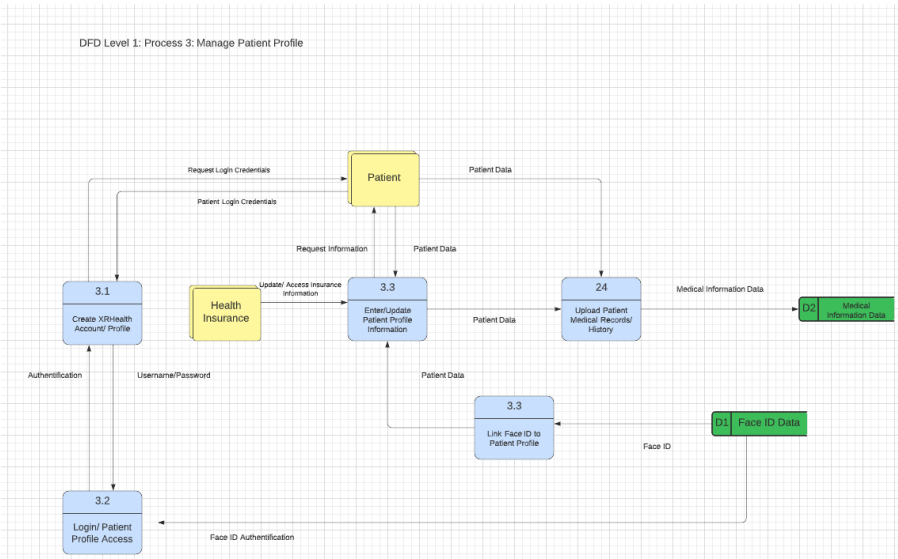
Level-0 DFD


Admin
D4 Feedback Data
User Feedback
2.0
Manage System, Security & Privacy
System Feedback
Admin Report
Data Record Update
User Feedback
Data request
Patient Data
1.0
Manage Face ID
Face IDs
D1 Face ID Data
Face IDs
Face IDs
Face IDs
Medical Information
Patients
Medical Information
3.0
Manage Patients Profile
Medical Information
D2 Medical Information Data
First Responders
Save Incidents Information in Patients's profile
Medical Information
New Improved Medical Treatment Suggestions
Insurance Information
4.0
Manage Medical Information
Req. Incident Report
Incident Report
Health Insurance
Incident Report
5.0
Process Insurance Information
Incident Report
Incident Report
D3 Incident Data

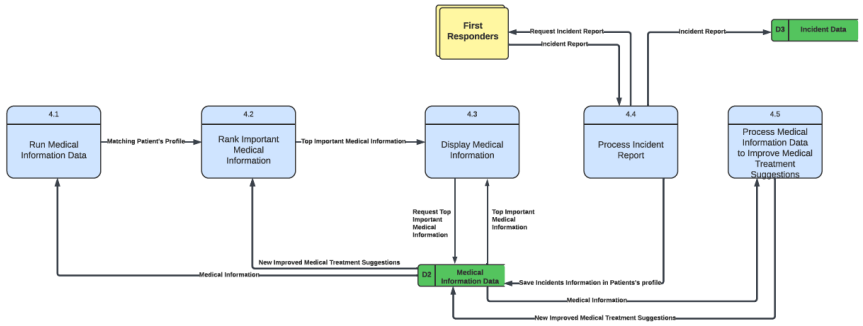
Level-1 DFDs


D1
Face ID Data
Verify Face ID
Confirm Face ID
1.1
Manage Req. Scan Patient's Face
Request Access
Request Denied
1.2
Process Access Patient's Face Database
Access Approved
1.3
Patien's Medical Information
Data Dictionary
• Face ID Data Storage:
Verify req. Scan Patint's Face and confim it to access to Patient's Medical Information.
Request Scan Patient's Face
Patient's Face not match/found
Patients

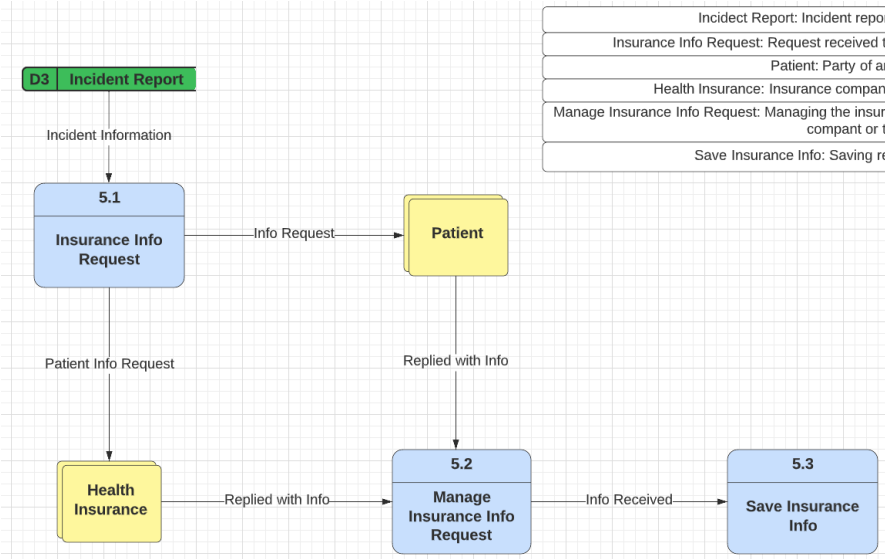

D2
Medical Information Data
User Feedback
D1
Face ID Data
Face IDs
2.1
Process face ID & medical info data
Face IDs
2.2
Process first responder data request
Patient Data
Data Request
First Responders
User Feedback
Patient Data
Patient Data
2.4
Manage Feedback and reports
System Feedback
Admin report
Admin
2.3
Encrypt data
Data record update
User Feedback
D4
Feedback Data
Data Record Update
Data Dictionary
• Face ID Data Storage:
◦ Collects the face ID's from users through our application in order to match patients with their medical informtion upon request
• Medical Information Data Storage:
◦ Collects pertinant medical information for each individual user for medical emergencies
• Feedback data:
◦ Collection of data records concerning user feedback from first responders



Data Dictionary	
Request Login Credentials	System will request Patient/User to create an account Username, Password, Email, and Phone Number
Patient Login Credentials	Patient inputs Username, Password, Email, and Phone Number to create profile After creating an account, Patients must enter Usernme and password
Username/Password	After creating an account, Patients must enter Username and Password to log into account
Authentication	Patients entering Login Credentials correctly will get their account verified and authenticated
Request Information	The system will request the Patient enter the information required including General, Medical, and Face ID information
Patient Data	Patient data is entered into the system
Update/ Access Insurance Information	Health Insurance companies can provide, access or update patient profile
Face ID	Face ID data is assigned to the Patient's profile from the database
Face ID Authentication	Face ID data used to access patient profile
Medical Information Data	Patient's medical records/history are saved to the database after being entered or updated



Data Flows Labels	Brief Defination
Matching Patient's Profile	Matching the Patient's Profile, which includes their Face ID and basic information, with the Medical Information in our database.
Top Important Medical Information	A list of the patient's most critical medical information, including medical treatment recommendations for the first responder.
Medical Information	Medical Information includes Patient's basic information, health conditions, immediate treatment suggestions for the first responder and their emergency contact.
Request Top Important Medical Information	Our Medical Information database receives a request for a list of the patient's top important medical information.
Incident Report	Incident report is a form that is filled out by the first responder in order to record details of an unusual event that occurs at the current scene, such as an injury to a patient
Request Incident Report	XRHealth requests the First Responders who engage with the patient to complete an incident report form.
Save Incidents Information in Patients's profile	The Patient's Incident Report from the First Responder is saved in the existing Patient's Profile.
New Improved Medical Treatment Suggestions	The patient's medical treatment suggestions will be reanalyzed and improved after receiving past medical information, including the patient's most current update and their most recent incident report.



Incidect Report: Incident report sent from first responders

Insurance Info Request: Request received to retreive patient's insurance Information

Patient: Party of an incident report

Health Insurance: Insurance company which holds patient's information

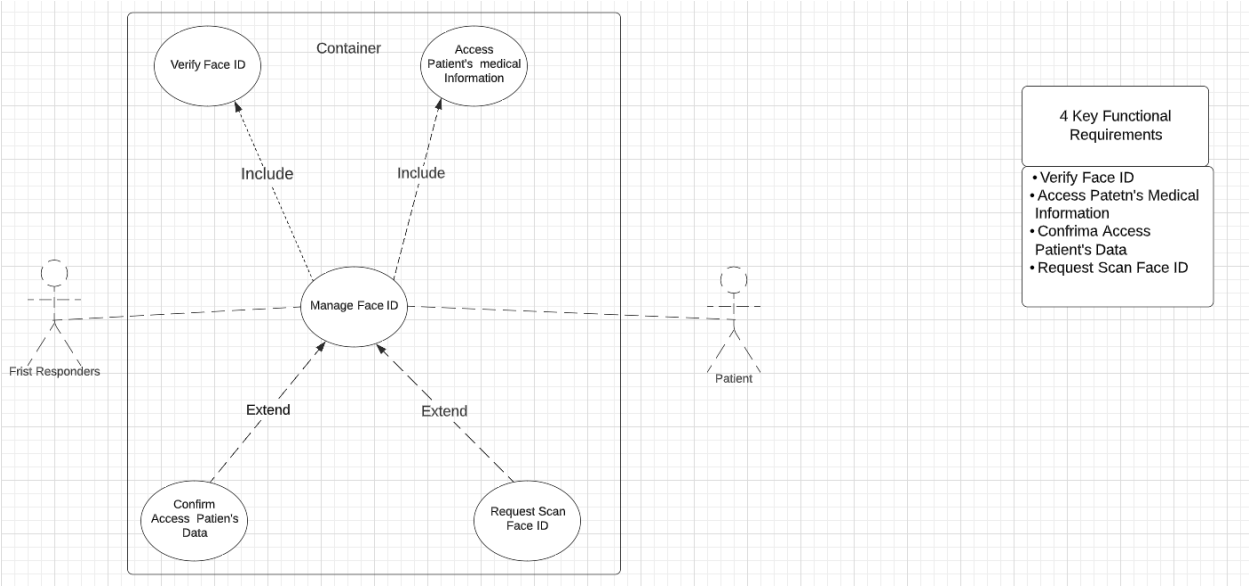
Manage Insurance Info Request: Managing the insurance information received from EITHER insurance compant or the patient

Save Insurance Info: Saving received patient's information

3.2 Use Cases and Process Models

3.2.1 Use Case 1 and its Process Models: {Robin Slaiwa}

Use Case



Use Case Narrative

USE CASE NARRATIVE

Project Name: XRHealth ***Author: Robin Slaiwa***

Use Case ID	1.0	**Version**	<1.0>
Use Case Name	Manage Face ID Data	**Date**	05/10/22
Use Case Objective	Access Patient's Database to the first responders.		
Primary User/Actor	First Responders		
Trigger	First Responders request scanning patients' face to verify and access to the patients' profiles		
Use case associations	None		
Preconditions	Scan Face ID		
Post-conditions	Verify Patient's face and access to the database.		

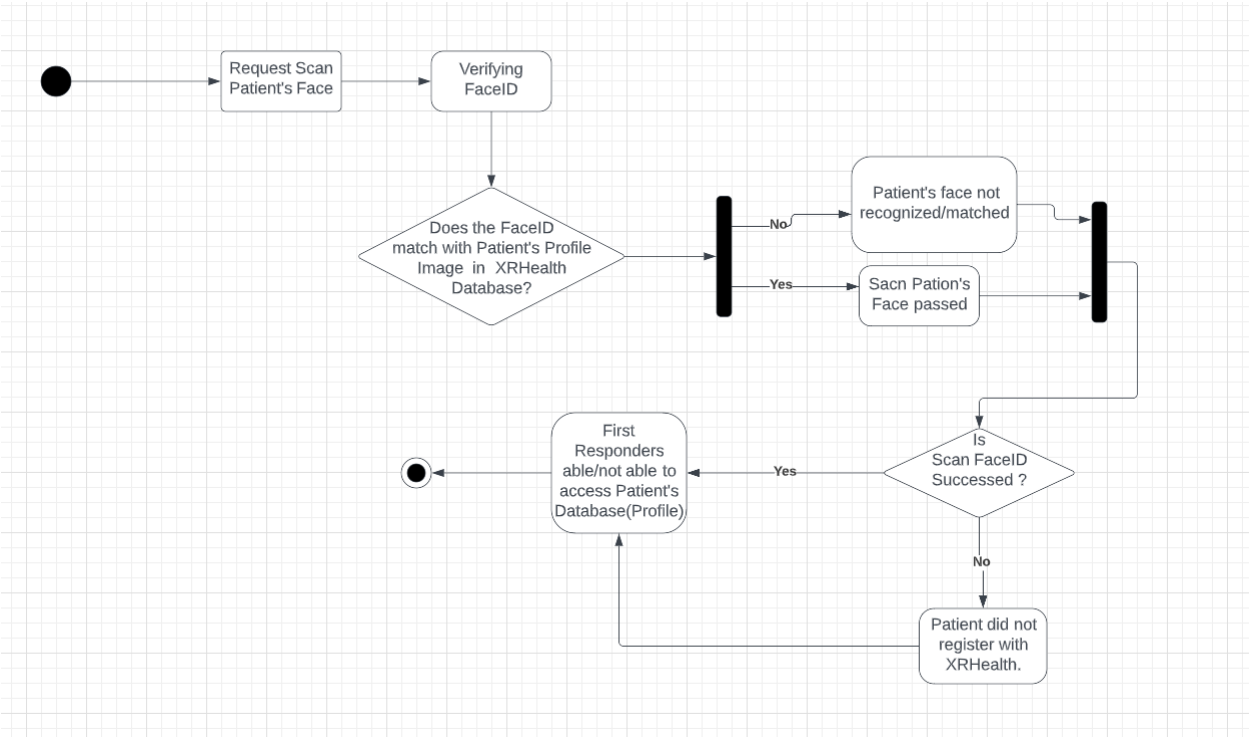
Basic Flow

Step	User Actions (Inputs)	System Response (Outputs)
1	Scan patient's face is verified	Patient's profile/database access approved
…	…	…

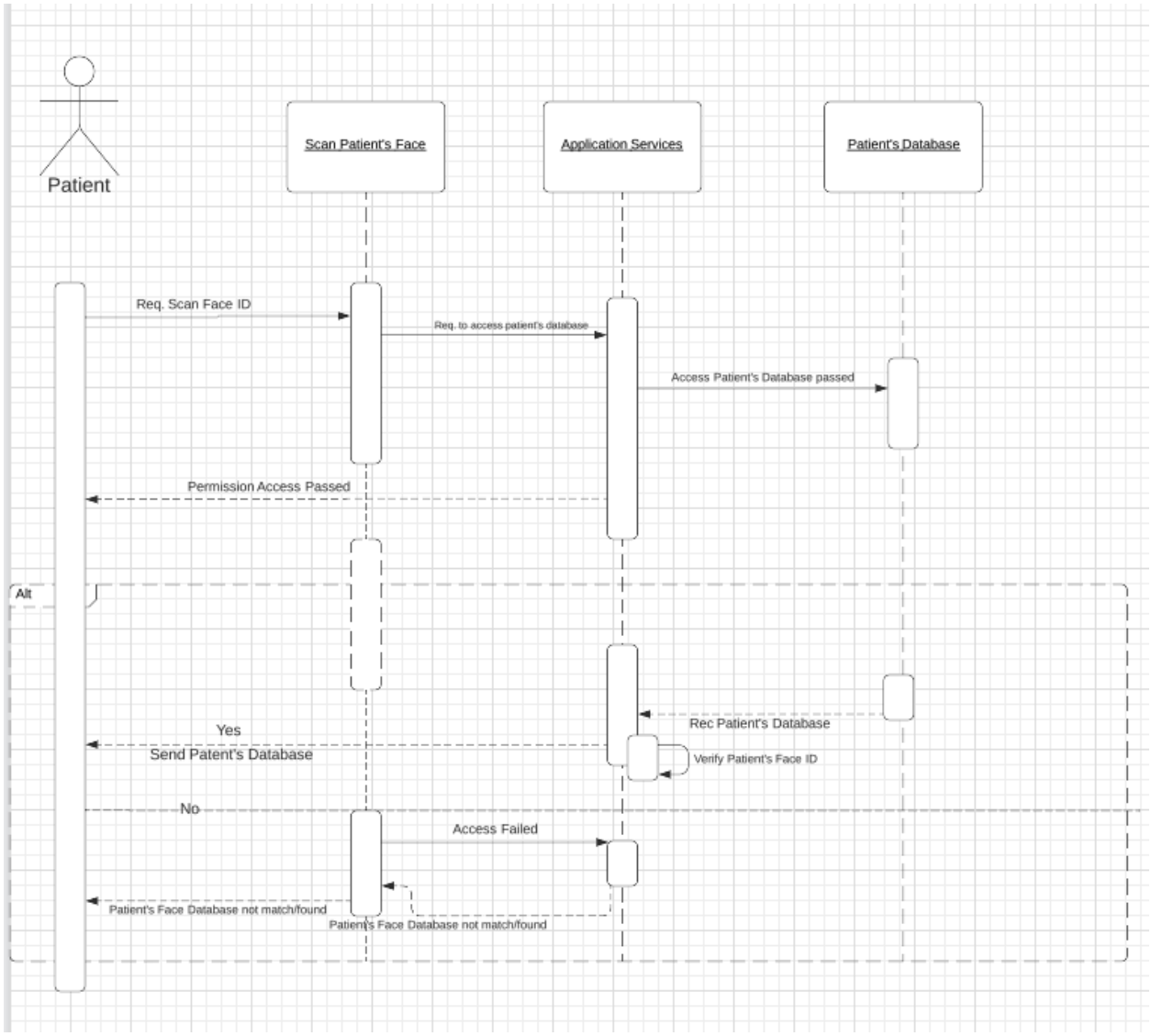
Alternate Flow

Alt	User Actions	System Actions
1	Scan patient's face Failed	Patient's database not received …
…	…	

Activity Diagram

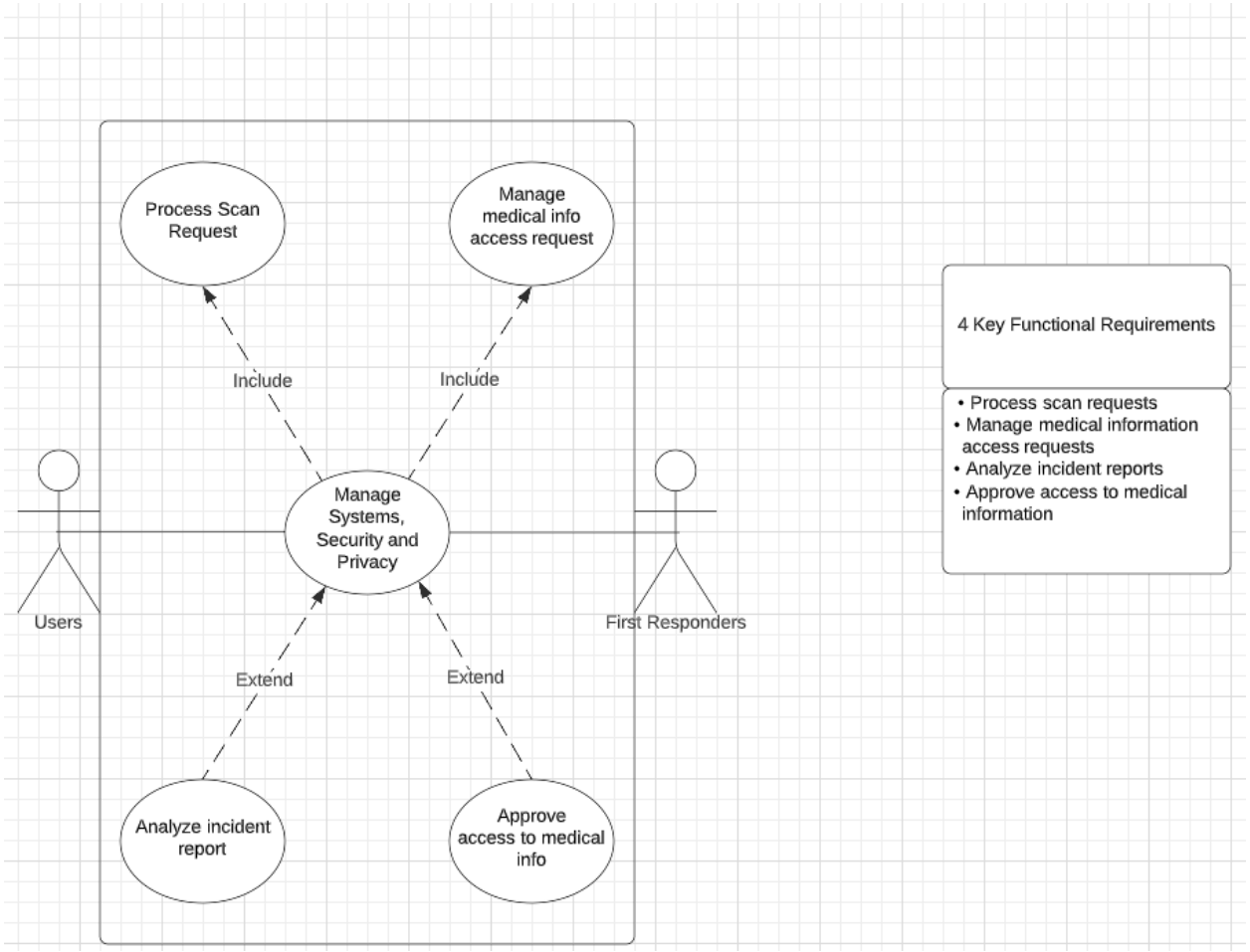


Sequence Diagram



3.2.2 Use Case 2 and its Process Models: Joseph Benitez

Use Case



Use Case Narrative

USE CASE NARRATIVE

Project Name: XRHealth ***Author: Joseph Benitez***

Use Case ID	2.0	**Version**	<1.0>
Use Case Name	Manage systems, security, and privacy	**Date**	5/10/22
Use Case Objective	Depict how the system, security, and privacy of the project will be managed		
Primary User/Actor	The administrative staff		
Trigger	The can request will be received		
Use case associations	Manage Face ID and Manage Medical Information		
Preconditions	Use Cases 1 and 4		
Post-conditions	Access to medical information is approved and incident report is analyzed		

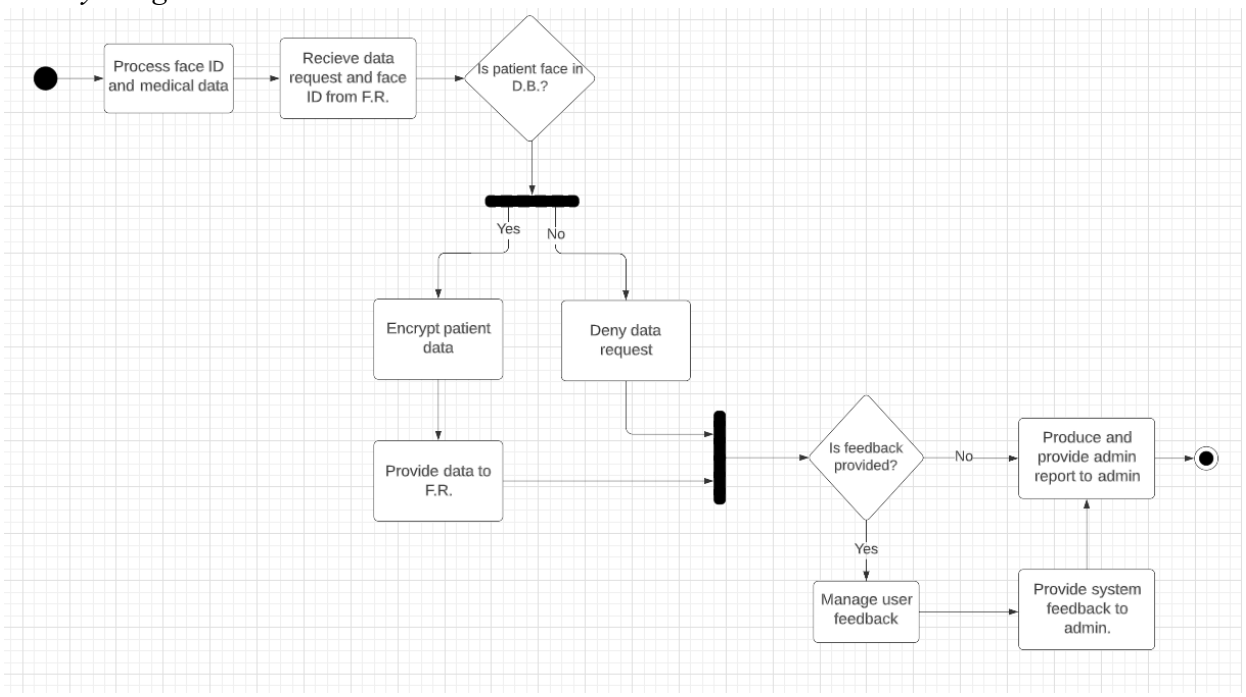
Basic Flow

Step	User Actions (Inputs)	System Response (Outputs)
1	Scan request is processed	Medical information access approved
2	Medical information access is requested	Incident Report Analyzed

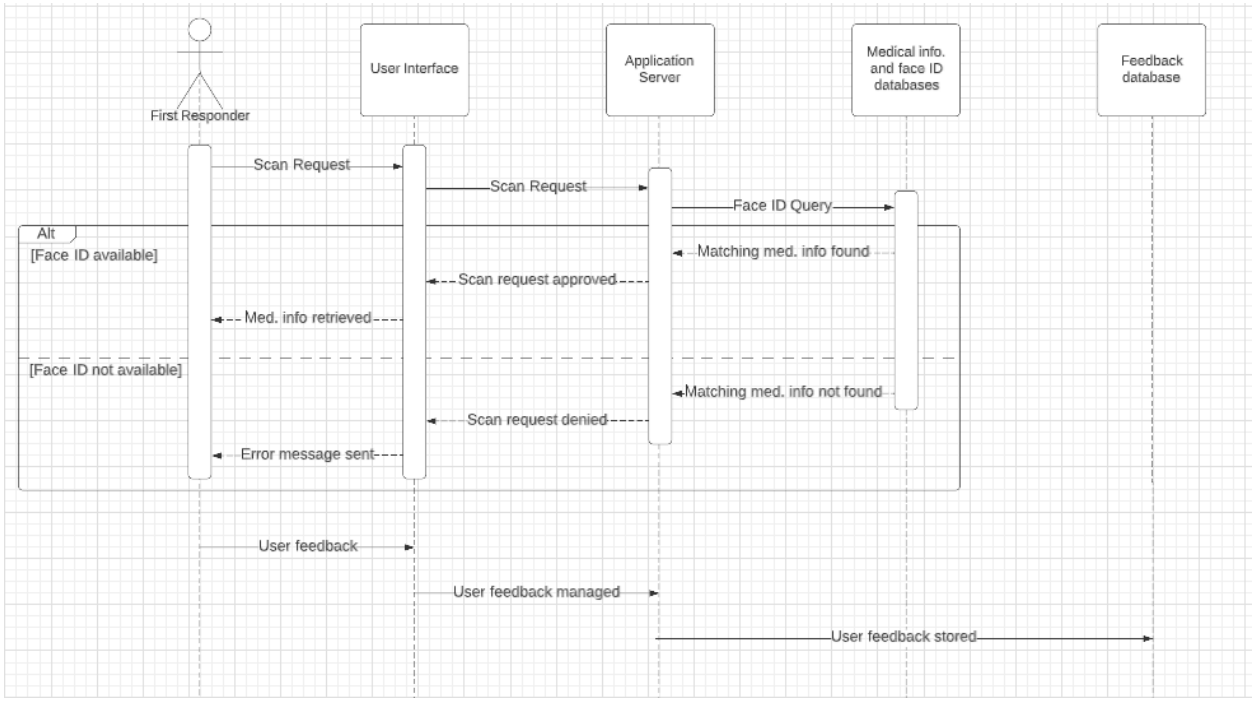
Alternate Flow

Alt	User Actions	System Actions
1	Scan request unsuccessful	Medical information not received
2	Medical information access denied	Incident Report not analyzed

Activity Diagram

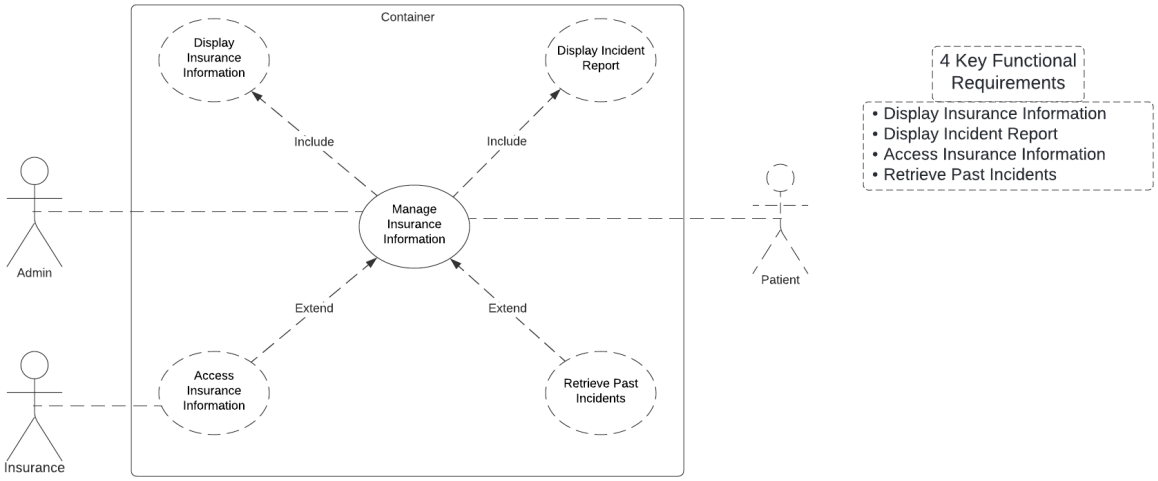


Sequence Diagram

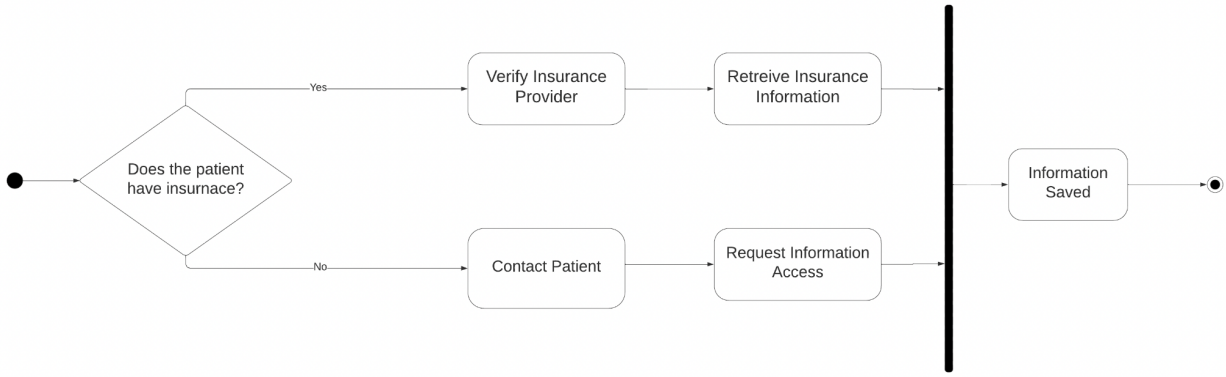


3.2.3 Use Case 3 and its Process Models: {Hasan Alaloosi}

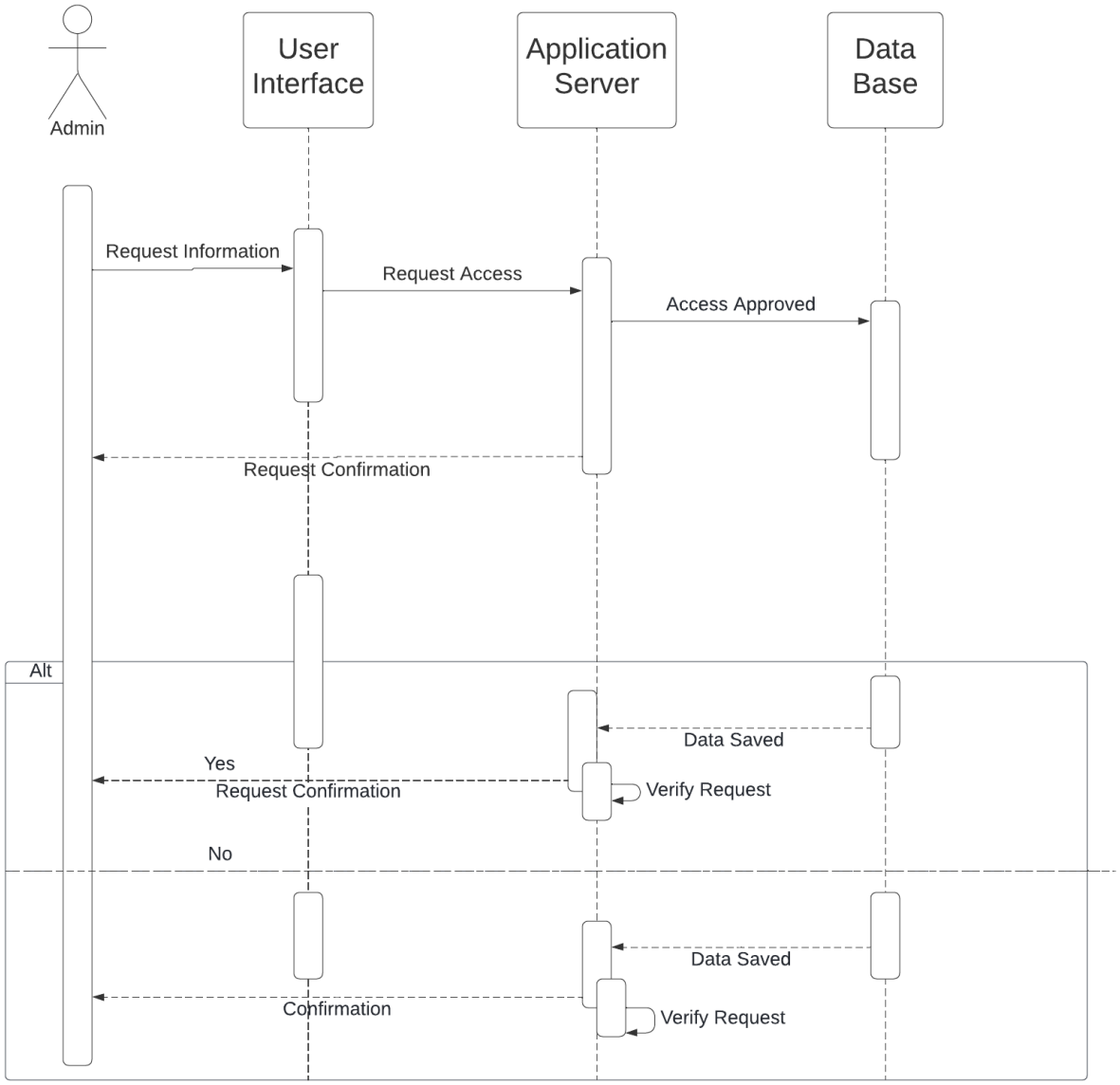
Use Case



Activity Diagram

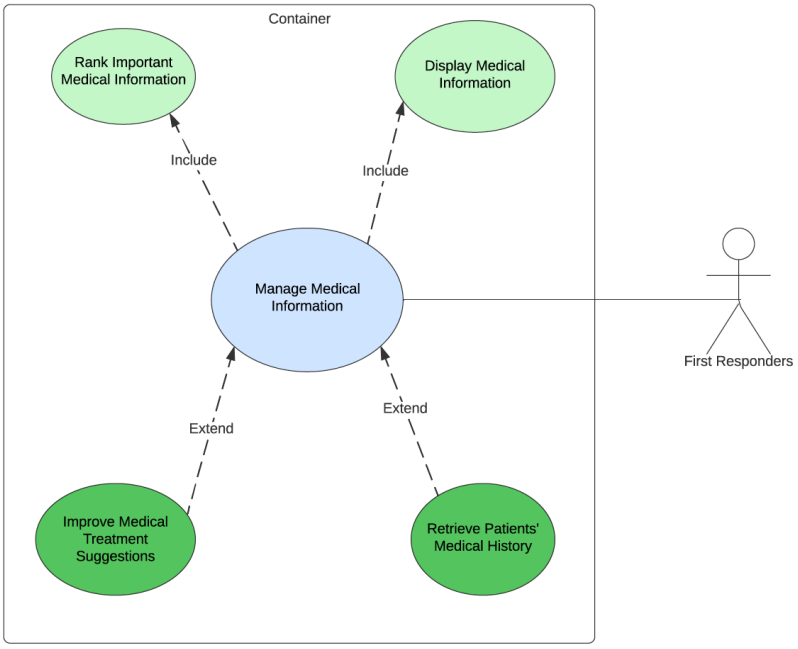


Sequence Diagram


Admin
User Interface
Application Server
Data Base
Request Information
Request Access
Access Approved
Request Confirmation
Alt
Data Saved
Yes
Request Confirmation
Verify Request
No
Data Saved
Confirmation
Verify Request

3.2.4 Use Case 4 and its Process Models: {Duyen Nguyen}

Use Case



4 Key Functional Requirements

- Rank Important Medical Information
- Display Medical Information
- Improve Medical Treatment Suggestions
- Retrieve Patients' Medical History

Use Case Narrative

USE CASE NARRATIVE

Project Name: XRHealth ***Author: Duyen Nguyen***

Use Case ID	Medical Information Management	**Version**	<1.0>
Use Case Name	Manage Medical Information	**Date**	
Use Case Objective	Deliver and improve patient's medical information to the first responders.		
Primary User/Actor	First Responders		
Trigger	First Responders scan Patient's Face ID for medical information to prevent medical error.		
Use case associations	Include: Rank important medical information; Display Medical Information Extend: Improve Medical Treatment Suggestions; Retrieve Patients' Medical History		
Preconditions	Face ID and Patient's Data is approved.		
Post-conditions	Retrieve patient's medical history and improve medical treatment recommendations.		

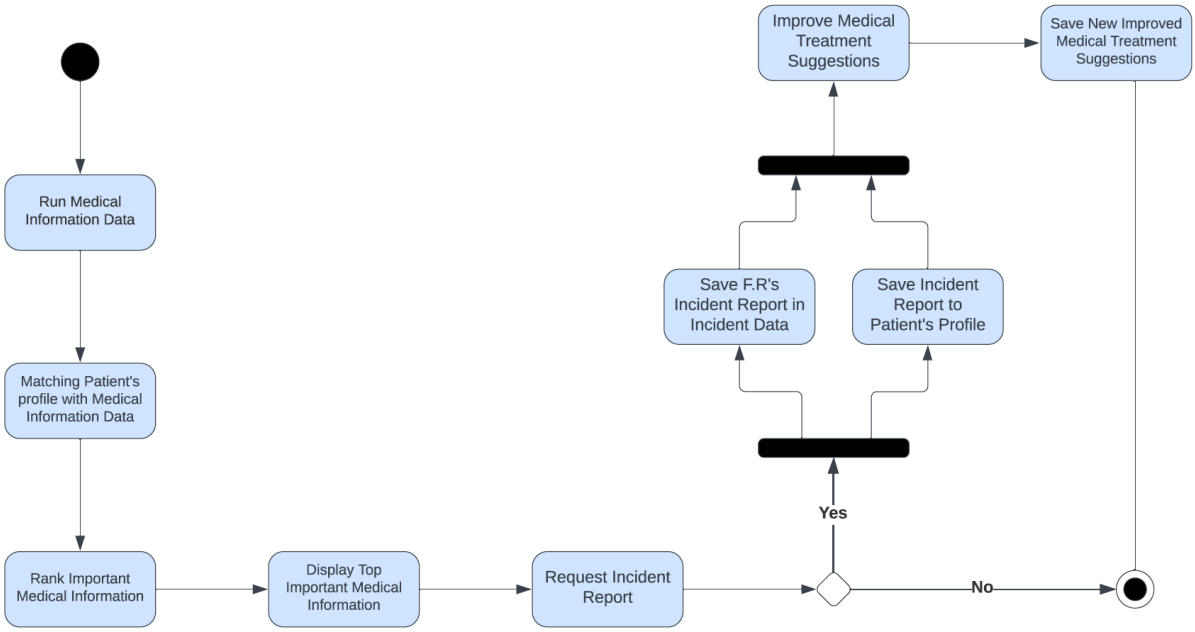
Basic Flow

Step	User Actions (Inputs)	System Response (Outputs)
1	Request Medical Information	Rank Medical Information
2	View Medical Information	Display Medical Information

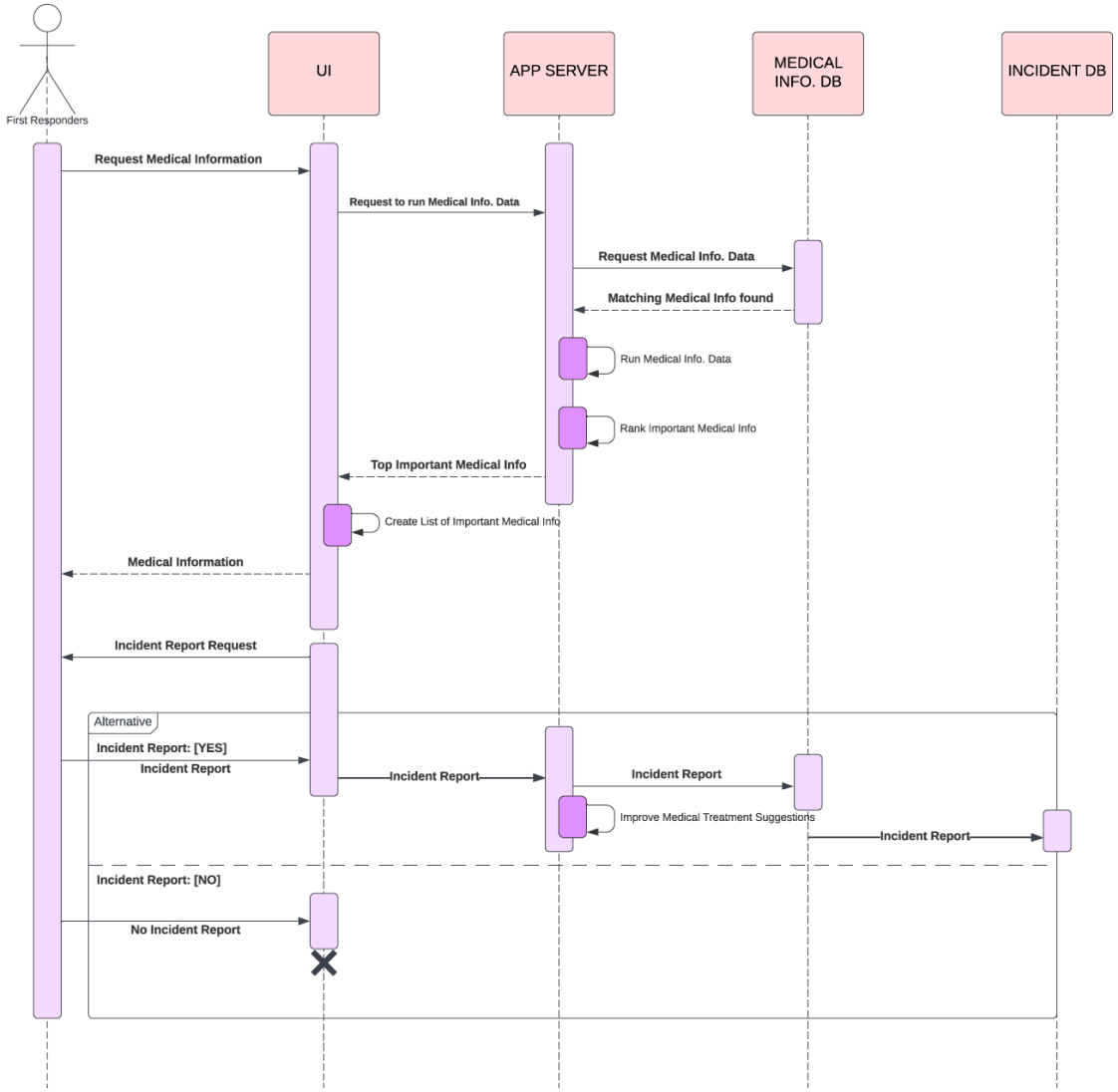
Alternate Flow

Alt	User Actions	System Actions
1	Face ID is not approved	Patient's Face ID is not matched or found. Medical Information could not be displayed.
2	Patient Data is not found	Medical Information could not be displayed.

Activity Diagram

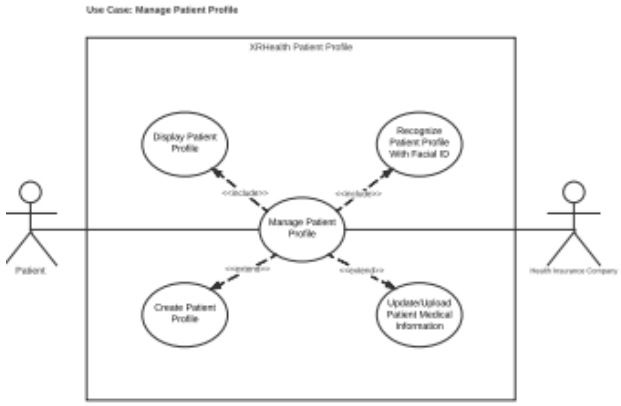


Sequence Diagram



3.2.5 Use Case 5 and its Process Models: {Charlotte Tiedt}

Use Case



4 Key Functional Requirements
1. Display Patient Profile
2. Associate Patient Profile with Facial ID
3. Create Patient Profile (Username/Password)
4. Update/Upload Patient Medical Information

Use Case Narrative

USE CASE NARRATIVE

Project Name: XRHealth ***Author: Charlotte Tiedt***

Use Case ID	3.0	Version	<1.0>
Use Case Name	Manage Patient Profile	Date	5/10/2022
Use Case Objective	Develop, Access, and Update XRHealth Patient Profile.		
Primary User/Actor	Patient, Health Insurance Company		
Trigger	Patient Registers for Account		
Use case associations	Include: Recognize Patient Profile with FaceID, Display Patient Profile Extend: Create Patient Profile, Update/Upload Patient Medical Information		
Preconditions	FaceID Data input		
Post-conditions	Retrieve Patient Account and Update Medical Information.		

Basic Flow

Step	User Actions (Inputs)	System Response (Outputs)
1	Create Patient Profile	Display Patient Profile
2	Patient Facial Recognition	Upload Profile and Update if necessary

Alternate Flow

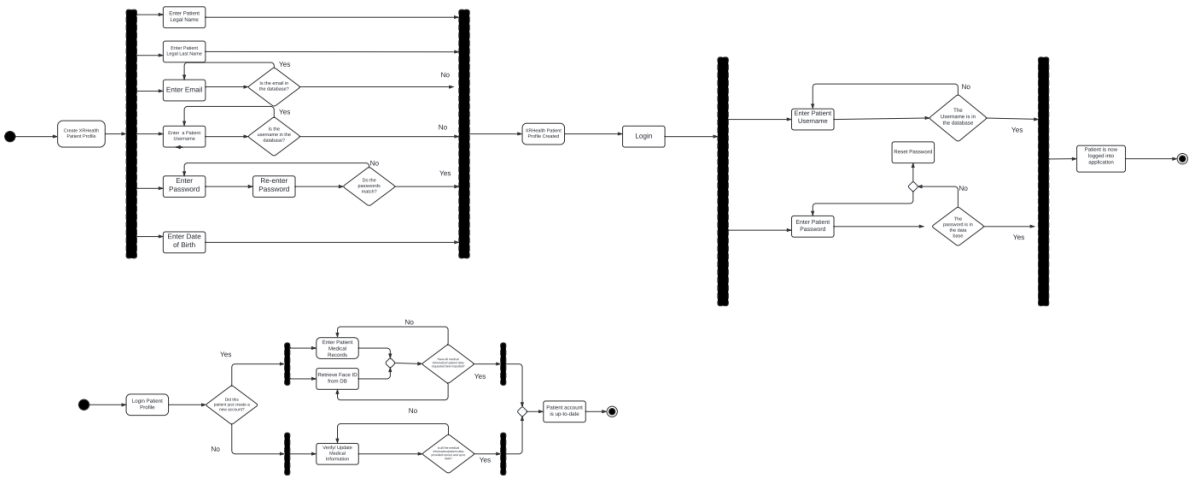
Alt	User Actions	System Actions
1	Username/Password/Email already take/wrong	Return Error/ Try New Username/Password/Email

Use Case Notes (optional)

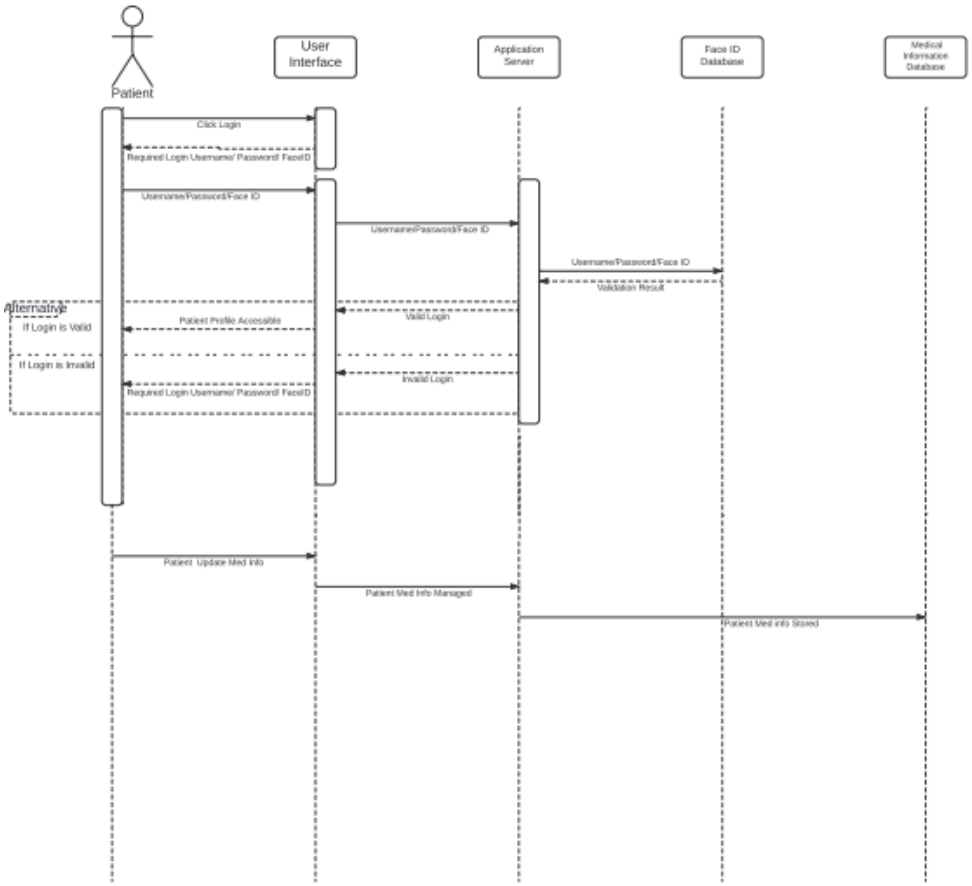
Special Requirements	Security, Usability, Speed
Business Rules	When a User creates a profile, the profile can be accessed with Face ID or Password. New Accounts Cannot Be Made With The Same User Identification.

Reviewed and Approved by: Charlotte Tiedt Date: 5/10/2022

Activity Diagram

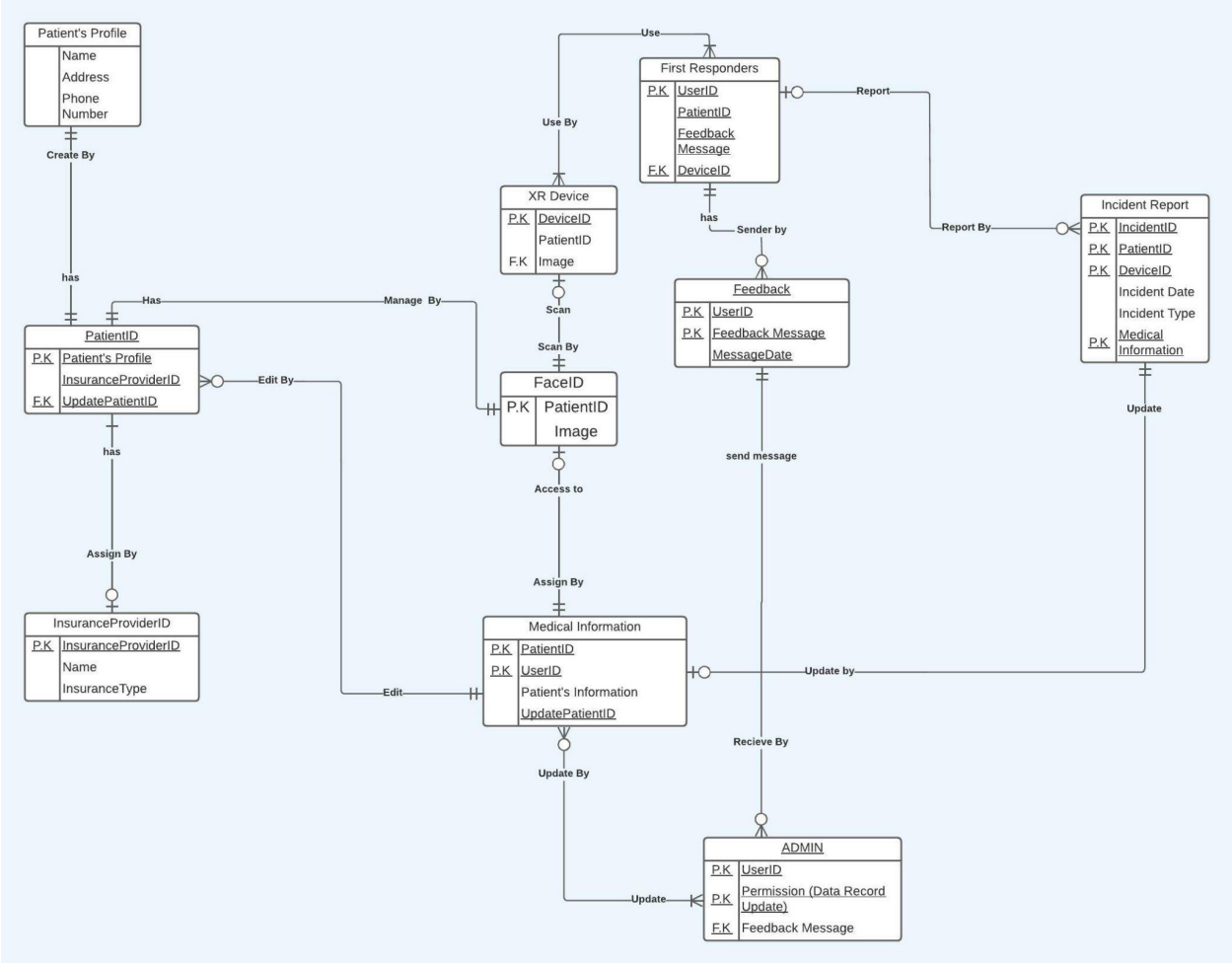


Sequence Diagram



4. SYSTEM ARCHITECTURE

4.1 Data Model and Data Model Specifications



Data Model	Realtionship's Type	With Who (Which enitity)
PatientID	1- One to one (required)	Patient's Profile
	2 - One to one/zero (optional)	InsuracneProviderID
	3 - Multie to one (reuired)	Medical Information
FaceID	1- One to one/zero (optional)	XR Device
	2 - One to One (required)	Medical Information
Medical Inormation	1- One to one/zero (optional)	PatientID
	2 - One to one (required)	Incident Report
	3 - Multie to multie (required)	Admin
Admin	1 - Multie to multie (optional)	Medical Information
	2 - Multie to one (requried)	Feedback
Feedback	1 - one to multie (optional)	Admin
	2 - Multie to one (requried)	First Responders
First Responders	1 - One to multie/zero (optional)	Feedback
	2 - One to multie/zero (optional)	Incident Reprot
incident Report	1 - multie to one/zero (optional)	First Responders
	2 - one to one/zero (optional)	Medical Information

Our data model depicts the ten relations that make up our database. Our patient profile table contains basic information for each individual user that is used to create their account. The patientID relation facilitates the relationship between a user with their insurance provider, medical information, and faceID. The faceID table is conneced to the first responders table which allows patients to be treated with a higher level of care and efficiency. After an incident has occured, the incident report table records important details which may help first responders if the same patient has to be treated again in the future. First responders also have the option to provide feedback to our feedback relation which is also connected to our administrative table.

4.2. Cloud Architecture

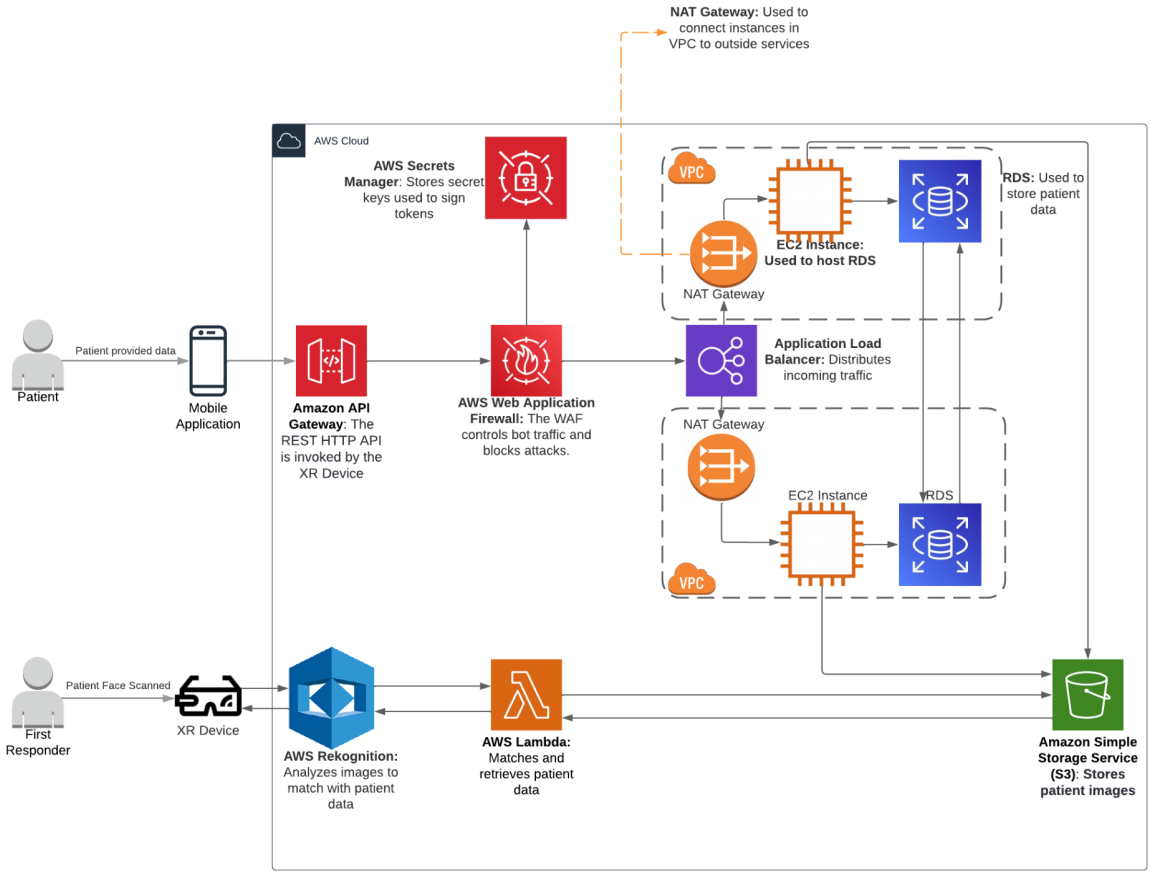
Architecture Diagram

4.2.1 Network & Web Tier

4.2.2 Application Server Tier

4.2.3 Database Tier

4.2.4 Authentication Tier and Security Configurations

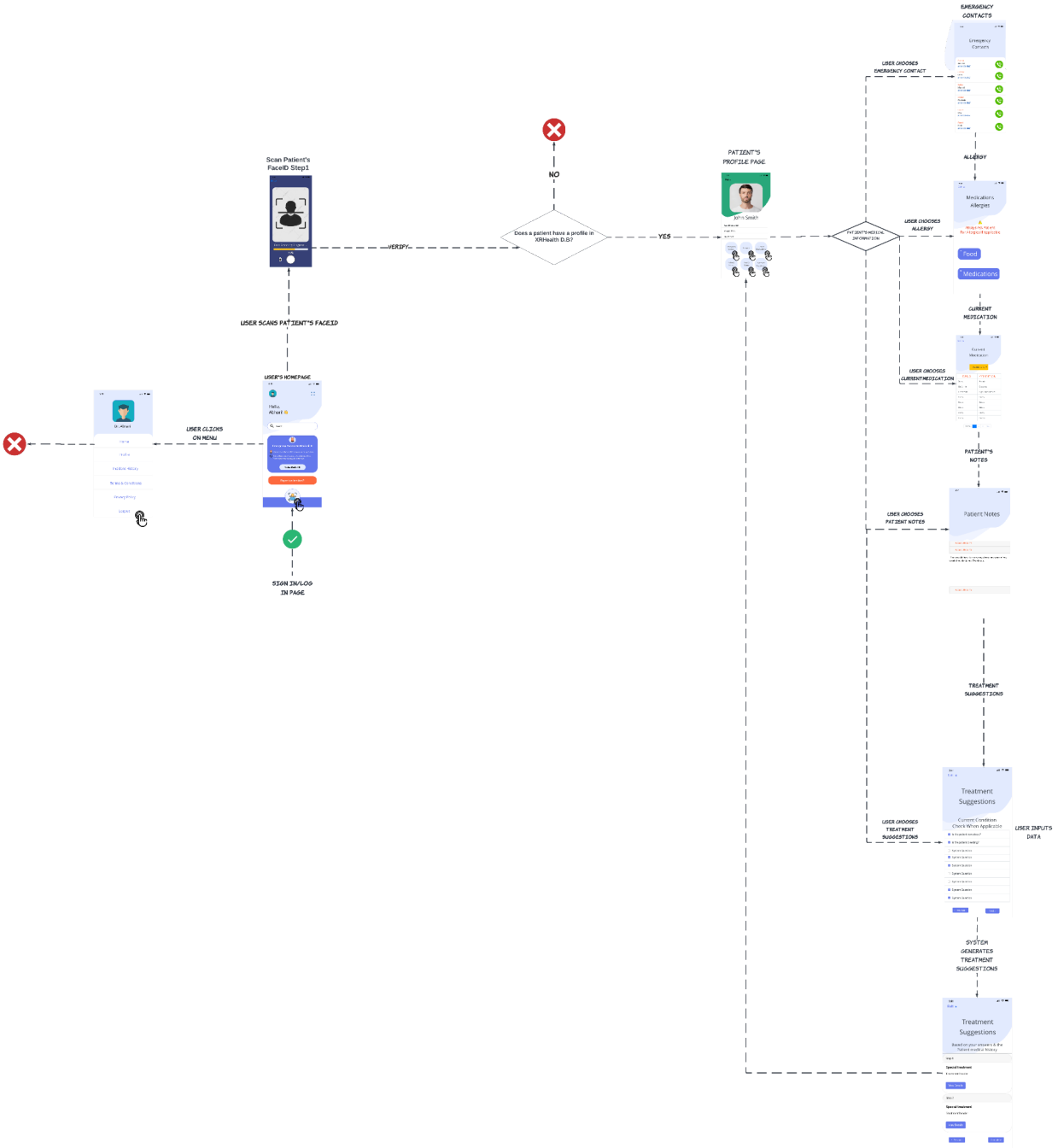


- **Network & Web Tier:** The AWS API gateway manages requests from XRHealth app users. The Web Application Firewall provides an added layer of security within the network and web tier as well. The application load balancer helps the system run smoother by routing incoming traffic.
- **Application Server Tier:** EC2 instances are used to host the relational databases which contain the patient data and medical information. We are also using Lambda paired with Rekognition to match a patient's face with their respective medical information. The EC2 instances are also connected to the S3 buckets.
- **Database Tier:** Both relational databases and S3 buckets are used to manage patient data. Facial data is stored using Simple Storage Services while medical information, personal information, and incident report data are stored in relational databases.
- **Authentication Tier:** AWS Secrets Manager is used to store secret keys to sign tokens. Vitrual private clouds are also used to increase security around the EC2 instances and relational databases.

5. USER INTERFACE AND USER EXPERIENCE

5.1 User Interface

5.1.1 Dialogue Diagram



5.2 User Experience (Prototype)

9:41

Hello,
Abhari! 👋

Search...

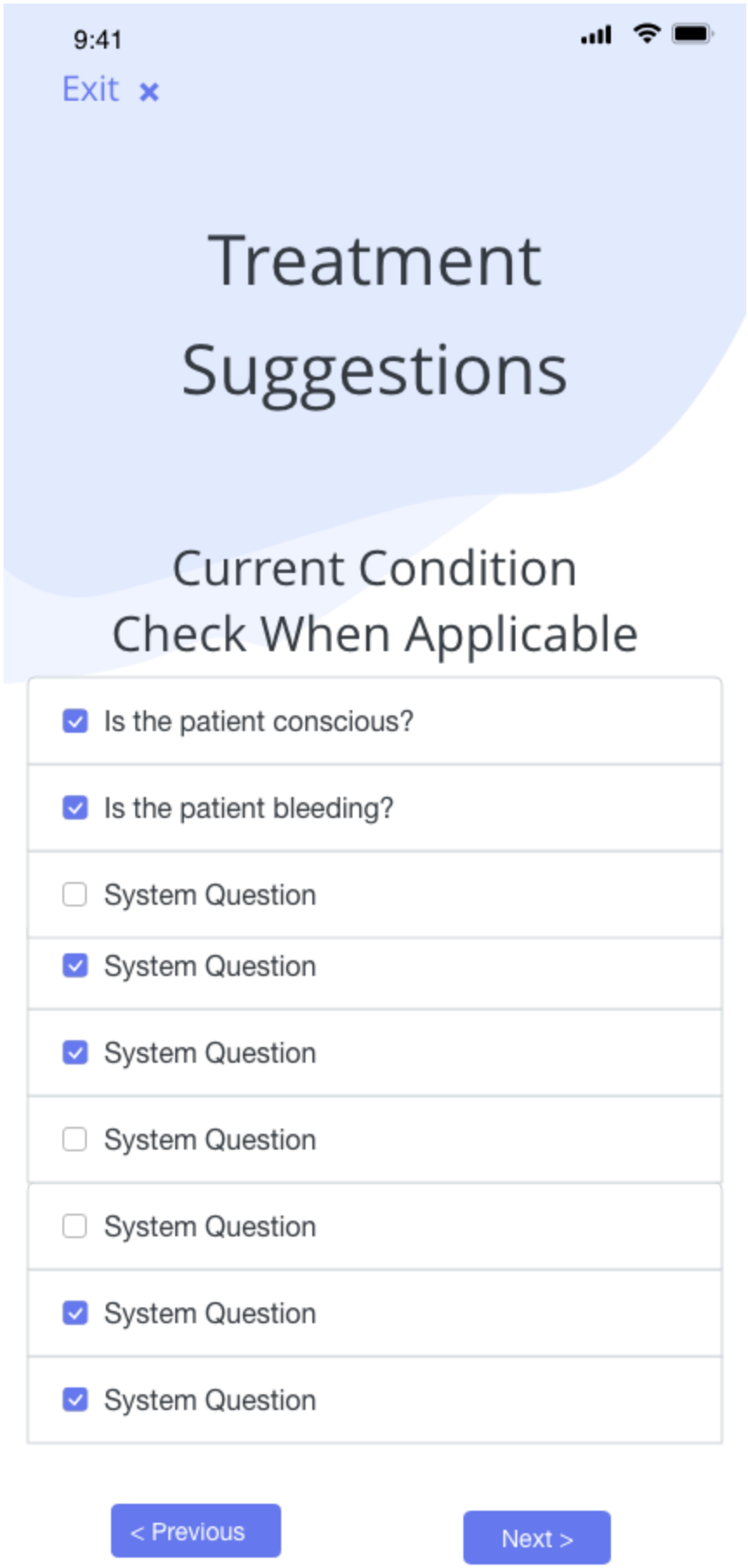
Emergency Access to Medical ID

Review your Medical ID to make sure it's up to date.

Set up Emergency Access to your Medical ID so first responders can provide better care.

Review Medical ID

Report an Incident?


9:41
Exit
Treatment Suggestions
Current Condition
Check When Applicable
Is the patient conscious?
Is the patient bleeding?
System Question
System Question
System Question
System Question
System Question
System Question
System Question
< Previous
Next >

9:41

Exit x

John Smith

Age: 25 years old

Weight: 175 lb

Height: 5’ 8”

Emergency Contact

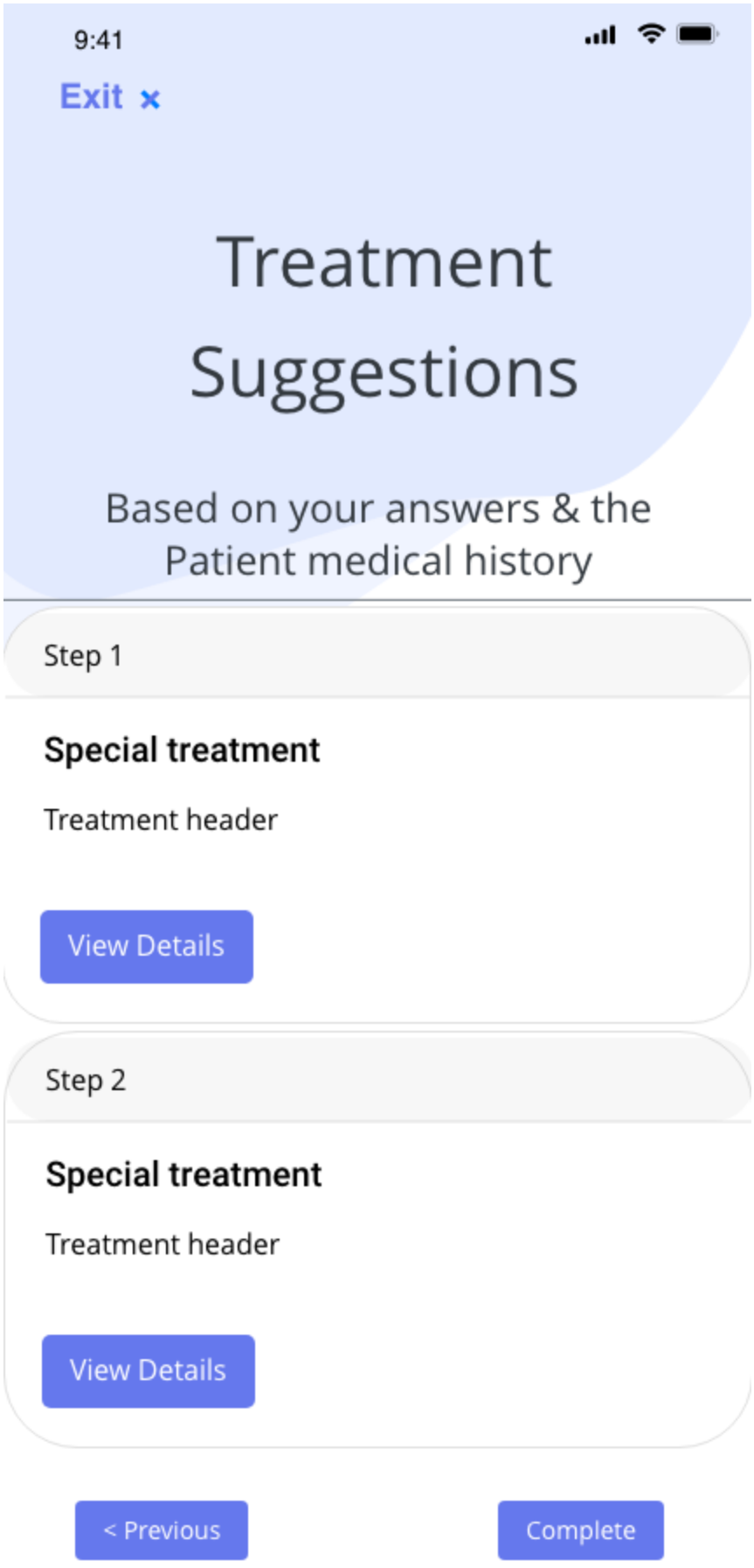
Allergies

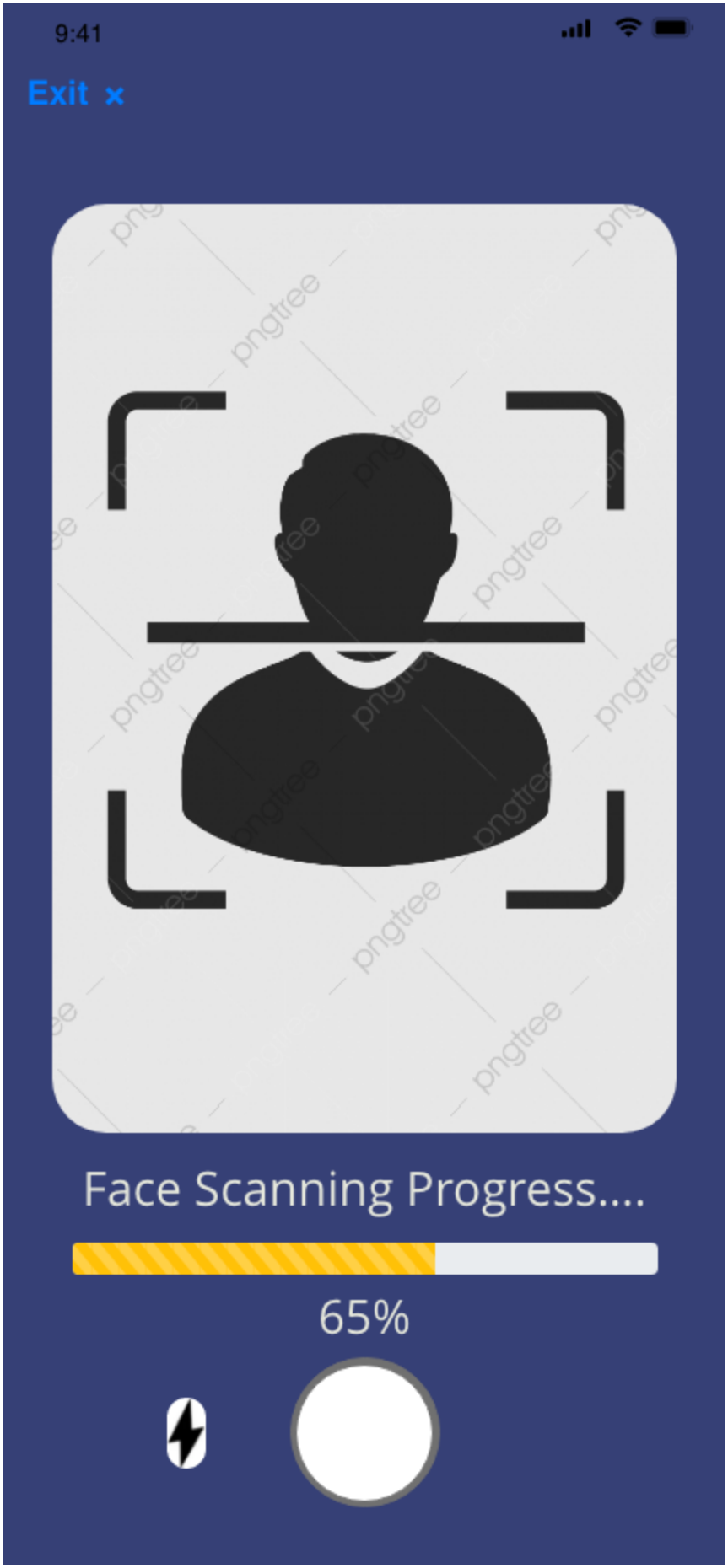
Current Medications

Patient Notes

Health Status

Treatment Suggestion


9:41
Exit
Treatment Suggestions
Based on your answers & the Patient medical history
Step 1
Special treatment
Treatment header
View Details
Step 2
Special treatment
Treatment header
View Details
< Previous
Complete


9:41
Exit
Face Scanning Progress....
65%

9:41

Dr. Abhari

Home

Profile

Incident History

Terms & Conditions

Privacy Policy

Logout

9:41

Exit ✖

Emergency Contacts

Partner
Jennifer
(619) 123-4567

Brother
Chris
(619) 123-4567

Father
Michael
(619) 123-4567

Mother
Elizabeth
(619) 123-4567

Friend
Moe
(619) 123-4567

Friend
Kevin
(619) 123-4567

9:41

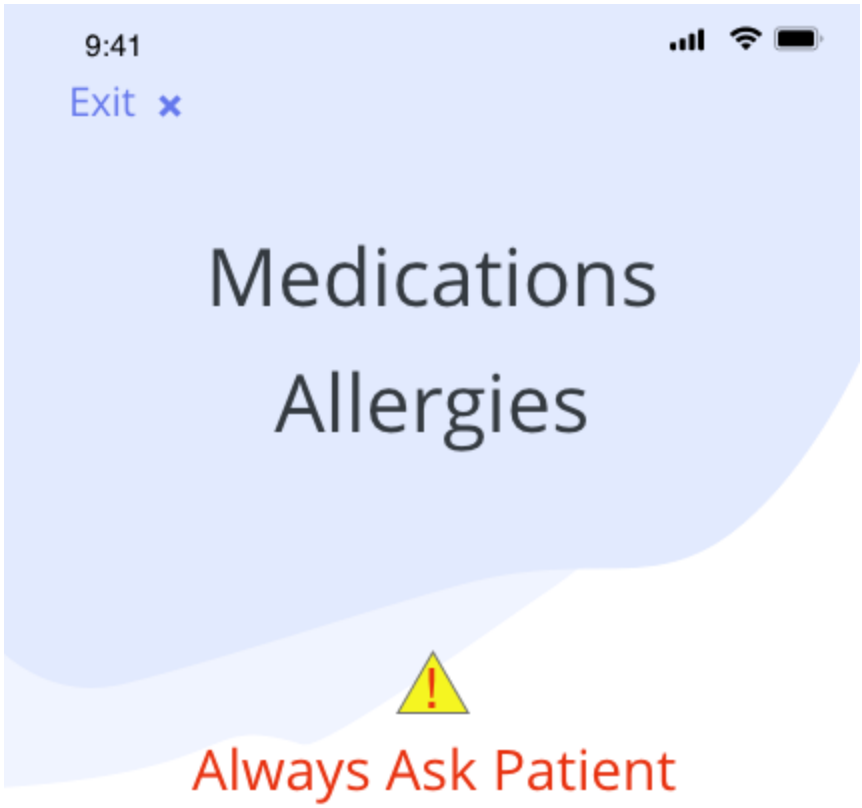
Exit ×

Current Medication

Rx History ▼

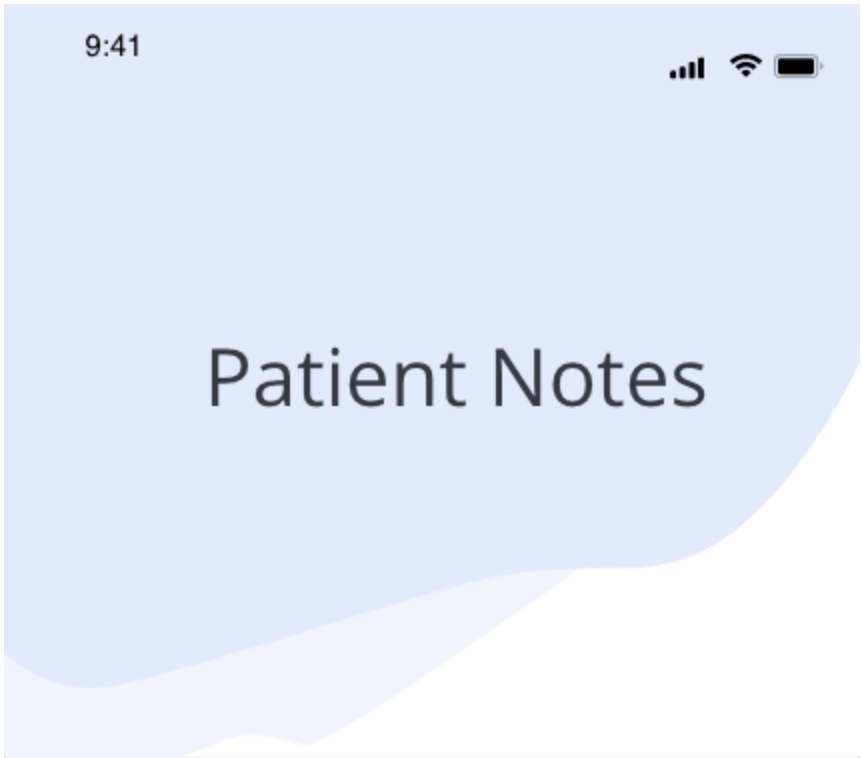
DRUG	CONDITION
Xanax	Anxiety
Metformin	Diabetese
Furosemide	High Blood Pressure
Empty	Empty
Empty	Empty
Empty	Empty
Empty	Empty
Empty	Emplty

Previous 1 2 3 Next



Food

Medications



Patient Note #1

Patient Note #2

If you would have to carry me, please be aware of my weak shoulder joints. Thank you.

Patient Note #3

6. IMPLEMENTATION AND BUDGET

6.1.Development and Test Plan

6.2 Launch, Installation, or Deployment Plan

6.3 Operation, Training, Support, and Maintenance Plan

6.4 Implementation Cost

6.4.1 Budget

6.4.2 Budget Narrative

APPENDIX A: PROJECT MANAGEMENT DOCUMENTATION

Project Management Protocol

As a team, we had a short meeting in the first two minutes of the starting of the lecture every Tuesday and Thursday . During this short discussion, we were asking each other if there were any unclear or incomprehensible matters before us to complete the project assigned to us. In addition, we agreed on distributing tasks with specific dates for their completion before presenting the final version of each task we were accomplishing. In case, if there is one of our team needs to change or has new ideas that needs to be added/updated to the assignemnt before submitting it.

Not only did we communicate in the meeting in person, we were using an app called Slack. Through this application, we were able to communicate with each other and ask questions in the chat room designated for our team. This application also enabled us to communicate with other teams, as well as the supervising professor on our projects and ask questions in case there are any things that need more clarification, which finally contributed and helped a lot in solving All obstructions and tasks are expected to be completed on time.

Zoom is another application that we used to meet with each other for long meetings. This program helped us a lot in solving many outstanding issues in accomplishing tasks by using a Screen Share. With this feature, we were able to share our ducments and work with each other and figure out where we are, and what parts need more work or where we are stuck.

Project Management Evidence

As a team, we helped each other and was a key in completing the tasks that were assigned to us. We had to work on five reports , each report was assigned to one of us to be a head of the team for that part. For all assignments, we were planning in advance by organizing and sharing tasks between us and setting up an appointment for a meeting by Zoom if we needed it. We were taking advantage of the two minutes meeting in the class by asking each other if there are any questions about the assignments like needing help in some parts, so we can go over it and fix it.

The first two reports , we sat in a Zoom Meeting to discuss the purpose of establishing the company , the requirements, and how to make it a profitable company, taking into account the risks, requirements, and so on. So, we selected a Zoom method to communicate because we believed that we need more time to figure out what tools we need in order to establish and develop our company for the future.

With report #3 , even though it was required from us to work individually for most its parts, but we were still needed to be in touch with each other for the first two main parts which

are Context Diagram and Level-0 DFD because as long as our own parts changed or updated, the first two main parts need to be updated. Slack was used for communication in this report to keep each other in touch if someone updated one of the main two parts for example. In addition, we used a new application called Lucidchart in order to finish the parts of this report which was a new tool for us. So, it took us some time to figure out how to use it by asking and getting some help from the professor.

For report #4 and #5, we made another appointment over the Zoom due to the new tools that we needed to use in order to finish the tasks of these two reprots which we were not familiar with in how to use or from where to get these tools (Tires). For example, report 2 in the second part (Architecture Diagram) we used AWS's Website to get some tires in building the Network and Web, Application Server, Database and Authentication with Security Configurations. Same with report 5 in second part (Prototype), we needed Adobe XD Application to make the main pages for our company which we needed another meeting over the Zoom.