Community Health Outreach App

Project #: 123

Business Requirements Document (BRD)

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# Introduction

## Document Purpose

The purpose of this document is to describe the business requirements for the Community Health Outreach App completely, accurately, and unambiguously in a technology-independent manner. This document strives to use primarily business terminology and language to ensure clarity for all stakeholders involved. Minimal technical terminology is used, only where commonly understood. A use-case/designer approach has been employed to model and define the business requirements of the application in this document.

## Intended Audience

The main intended audience for this document is the business owners and decision-makers within the Ministry of Health responsible for the development and deployment of the Community Health Outreach App. This document should be easily readable by business stakeholders, ensuring that the business requirements of the proposed system are captured completely, accurately, and unambiguously.

In addition, Data Architects, Application Architects, and Technical Architects will find the content useful as they design solutions to meet the business needs outlined in this document.

Since the requirements are presented in a technology-independent manner, end-users and healthcare service providers will also be able to comprehend the requirements effectively from this document.

## Project Background

The business requirements outlined in this document are the result of various initiatives and discussions held by the Ministry of Health to address healthcare accessibility challenges faced by rural and underserved communities. Several meetings were conducted with healthcare professionals, community leaders, and government officials to understand the pressing needs in healthcare service delivery.

This project also aligns with government legislation and policy initiatives aimed at improving healthcare equity and promoting digital health services in rural areas. Additionally, recent surveys and studies on healthcare access have highlighted the need for a technology-driven solution to bridge the gap between healthcare providers and remote communities, prompting the development of this app.

Mention here briefly if these business requirements are as a result of any previous meetings, correspondence, legislations etc.

## Purpose of the Business Requirements

This section describes the purpose of the Business Requirements.

Tick one or more of the appropriate check boxes and describe the purpose of the Business requirements briefly underneath.

Business requirements for major enhancements to an existing application.

Business requirements for new application development.

Business requirements for replacement application development.

Business requirements for a request for proposals (RFP).

## Business Goals/Objectives to be achieved

The implementation of the Community Health Outreach App aims to achieve the following major business goals and objectives:

1. Improve Access to Healthcare Services:

Enable individuals in rural and remote areas to easily access healthcare services, including appointment scheduling and telemedicine consultations, reducing the need for physical travel to medical facilities.

1. Promote Preventive Healthcare:

Encourage preventive care by providing users with timely reminders for vaccinations, regular health check-ups, and educational content about maintaining a healthy lifestyle.

1. Reduce Overcrowding at Health Facilities:

Decrease the burden on physical health clinics and hospitals by offering virtual consultations and self-service features that streamline access to non-urgent care.

1. Enhance Health Information Dissemination:

Provide a centralized platform for sharing public health announcements, community health event details, and emergency alerts, ensuring that health information reaches underserved communities.

1. Support Government Health Initiatives:

Align with government policies aimed at closing the healthcare gap between urban and rural populations, supporting the overall goal of equitable healthcare distribution.

State major business goals/objectives that the implementation of these Business Requirements will achieve. Avoid describing Technical goals.

## Benefits/Rationale

The implementation of the Community Health Outreach App will deliver the following key benefits:

1. **Increased Healthcare Accessibility**:  
   By providing a mobile platform for accessing healthcare services, the app will significantly improve the availability of healthcare for rural and remote communities, reducing geographical barriers.
2. **Cost Savings for Patients and Government**:  
   The app will reduce the need for physical travel to healthcare facilities, saving time and money for both patients and the government. It will also alleviate the burden on crowded clinics by allowing for remote consultations.
3. **Improved Health Outcomes**:  
   Through reminders for preventive care (e.g., vaccinations, health screenings), the app will help reduce the incidence of preventable diseases and improve overall public health outcomes.
4. **Efficient Resource Utilization**:  
   Health professionals can manage appointments more efficiently and handle non-emergency consultations through the app, allowing better allocation of resources to patients with urgent needs.
5. **Enhanced Communication and Health Awareness**:  
   The app will provide a direct line of communication between health authorities and citizens, helping to disseminate critical health information, emergency updates, and public health announcements.
6. **Support for Government Health Initiatives**:  
   This project aligns with government efforts to promote digital transformation in public services, addressing the healthcare needs of underserved populations and reducing inequality in healthcare access.

State the major benefits that the implementation of these Business Requirements will result in. Mention both tangible and intangible benefits expected.

## Stakeholders

The following individuals and groups have a vested interest in the Community Health Outreach App project and must be considered throughout the project lifecycle:

1. **Ministry of Health**:  
   The primary sponsor and decision-maker, responsible for funding the project and ensuring alignment with national health policies and initiatives.
2. **Healthcare Providers (Doctors, Clinics, Hospitals)**:  
   These stakeholders will use the app to provide services, manage appointments, and engage with patients, particularly in rural and underserved areas.
3. **Community Members (End-Users)**:  
   The individuals in rural and remote regions who will access healthcare services via the app. Their ease of use and satisfaction are critical for the app's success.
4. **IT and Development Team**:  
   The group responsible for designing, developing, and maintaining the app. This includes software developers, UI/UX designers, and system architects.
5. **Public Health Agencies**:  
   These agencies will use the app to promote public health campaigns, share information, and manage health emergencies.
6. **Government Officials/Policymakers**:  
   They oversee the project to ensure it meets public service requirements and legal regulations, especially in terms of data privacy and healthcare access.
7. **Emergency Services Providers**:  
   Entities like ambulance services and emergency response teams that may be integrated into the app for immediate access during health crises.
8. **Data Security Experts**:  
   Responsible for ensuring that the app complies with government regulations on data privacy and healthcare information security.

List Stakeholders – that is, the individuals or groups who have a vested interest in this project and whose interests need to be considered throughout the project. Identify their roles in the project and commitment to the project.

## Dependencies on existing systems

The Community Health Outreach App will depend on several existing systems and infrastructure for its successful operation. These dependencies include:

1. **Government Health Information System (HIS)**:  
   The app will need to integrate with the existing Health Information System (HIS) used by the Ministry of Health. This will allow healthcare providers to access and update patient health records through the app.
2. **Appointment Scheduling System**:  
   The app will integrate with the appointment management system currently used by clinics and hospitals to ensure that booked appointments are synced across platforms.
3. **Telemedicine Infrastructure**:  
   The app will leverage the government’s existing telemedicine infrastructure, including video conferencing tools and secure communication channels, for virtual consultations.
4. **Emergency Services Network**:  
   The app will depend on the existing emergency services network for direct access to ambulance dispatch, hotlines, and other emergency response services.
5. **Payment Systems (if applicable)**:  
   If the app allows for any form of payment (for services or consultations), it will need to integrate with government-approved payment gateways or financial systems.
6. **Public Health Communication Systems**:  
   The app will rely on existing public health systems to disseminate health alerts, updates, and campaigns to users, ensuring that real-time information is delivered effectively.
7. **Data Security and Privacy Systems**:  
   The app must adhere to the existing cybersecurity framework and data protection systems in place to ensure patient data is handled in compliance with healthcare regulations.

Describe the dependencies between this Application (for which these Business Requirements are written) and other existing systems.

## References

The following documents and correspondence are referenced in relation to the business requirements outlined in this document:

1. **Ministry of Health Digital Transformation Plan (2022)**:  
   A government-issued plan detailing the strategy for digital transformation in the healthcare sector, including objectives for improving rural healthcare access through technology.
2. **Public Health Accessibility Report (2021)**:  
   A report commissioned by the Ministry of Health analyzing the challenges faced by rural and underserved communities in accessing healthcare services.
3. **Government Telemedicine Initiative (2020)**:  
   Documentation related to the national telemedicine initiative, which is aimed at providing virtual health consultations to rural and remote populations.
4. **Correspondence from Ministry of Health, April 2024**:  
   Email exchanges and meeting notes discussing the initial proposal and approval of the Community Health Outreach App project.
5. **Health Data Privacy Guidelines (2023)**:  
   The guidelines issued by the government regarding the handling of patient data in digital healthcare applications, which will be adhered to in this project.

List here all the external reference documentation, hyperlinks to web pages etc. that are directly related to these Business Requirements.

## Assumptions

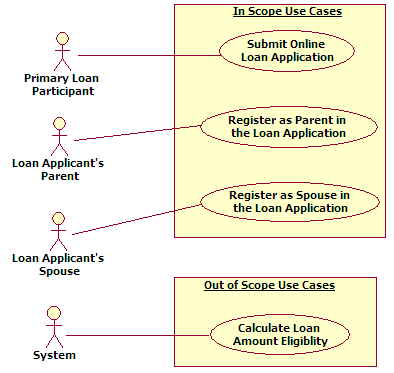
The following assumptions were made prior to and during the gathering and documentation of the business requirements for the Community Health Outreach App:

1. **Internet Connectivity**:  
   It is assumed that the majority of rural and remote communities will have access to reliable internet services, allowing them to use the app for telemedicine and other online services.
2. **Government Support and Funding**:  
   It is assumed that the Ministry of Health will continue to provide the necessary financial support for both the development and maintenance of the application.
3. **Willingness of Healthcare Providers**:  
   It is assumed that healthcare providers, including doctors and clinics, will adopt the app to manage appointments and provide telemedicine services.
4. **Compliance with Legal and Privacy Regulations**:  
   It is assumed that the app will be developed in full compliance with existing healthcare data privacy laws and regulations, and that no legal barriers will prevent the deployment of the app.
5. **Technical Infrastructure Availability**:  
   It is assumed that the necessary technical infrastructure, including cloud services and integration points with existing health systems, is available and can be utilized for the project.
6. **User Adoption**:  
   It is assumed that sufficient efforts will be made to promote the app to the target user base, and that a significant portion of the community will adopt the app within a reasonable time after launch.

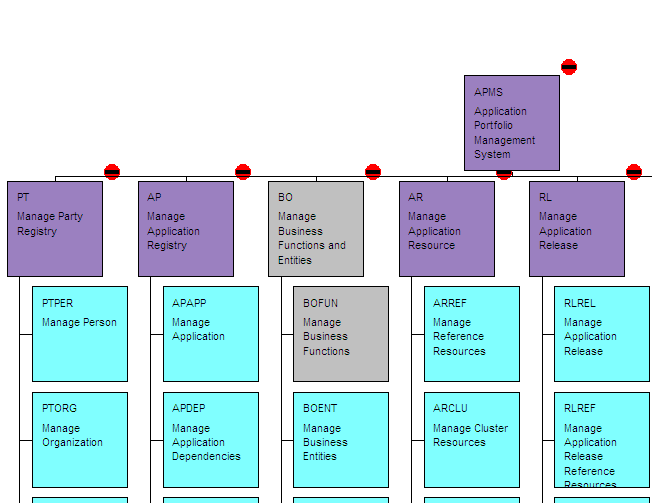
Describe major assumptions that were made (or exist) for these Business Requirements.

# Requirements Scope

Include an overall high-level Use case diagram indicating which use cases are out of scope for Implementation. Draw separate boundary boxes around “in scope” use cases and “out of scope” use cases. See the example below :



If Function Hierarchy Diagram (FHD) modeling is done using Oracle Designer for these Business Requirements instead of Use case modeling, then include an overall high-level Function Hierarchy diagram indicating which Functions are out of scope for Implementation. Please draw the “out of scope” Function boxes in **grey** **color** as shown in the example below :

**

## In Scope

The following items are within the scope of the Community Health Outreach App project:

1. **Development of a mobile application**:  
   A cross-platform mobile app (iOS and Android) that provides health services such as appointment scheduling, health education, and telemedicine consultations.
2. **Integration with existing government health systems**:  
   The app will integrate with the Ministry of Health’s existing Health Information System (HIS) to allow healthcare providers to access and update patient health records.
3. **Telemedicine functionality**:  
   The app will provide virtual consultations, allowing users to schedule and attend remote healthcare appointments.
4. **Emergency services access**:  
   The app will offer a direct line to emergency services, such as ambulance requests and access to health hotlines.
5. **Health reminders and notifications**:  
   Automated notifications for vaccinations, medication adherence, and appointment reminders will be included.
6. **User-friendly interface**:  
   A simple and intuitive design that supports multiple languages, including English and local languages, will be provided to ensure ease of use for a wide range of users.

List the use cases/business functions that are **in scope**. Mention the name and a brief 2-3 lines short description for each use case/business function that is in scope.

List the system/organizational interfaces that are **in scope**. Mention the name and a brief 2-3 lines short description for each interface that is in scope.

## Out of Scope

The following items are outside the scope of the Community Health Outreach App project:

1. **Development of physical healthcare infrastructure**:  
   The app will not address the construction of new healthcare facilities or medical centers in remote regions.
2. **Specialized medical equipment integration**:  
   Integration with advanced or specialized medical devices (e.g., medical scanners, diagnostic tools) is out of scope.
3. **Offline functionality**:  
   While the app may offer some limited features offline, most critical functionalities such as telemedicine and appointment scheduling will require an active internet connection.
4. **Comprehensive billing and payment system**:  
   Detailed billing and payment systems for healthcare services, beyond basic payment gateways, are not included in this phase of the project.

List the use cases/business functions that are **out of scope**. Mention the name and a brief 2-3 lines short description for each use case/business function that is out of scope.

List the system/organizational interfaces that are **out of scope**. Mention the name and a brief 2-3 lines short description for each interface that is out of scope.

# Functional Requirements

## Actor Profiles Specification

This section describes the actors (users and systems) that will interact with the Community Health Outreach App. Actors are defined as external entities that provide input to or receive output from the system.

**Actors:**

1. **Community Member (End-User)**:
   * **Role**: A person residing in a rural or underserved area who will use the app to access healthcare services, including appointment scheduling, telemedicine consultations, and health records.
   * **Goal**: Access and manage healthcare services efficiently and receive important health notifications and reminders.
2. **Healthcare Provider (Doctors, Nurses, Clinics)**:
   * **Role**: A medical professional or institution providing health services, managing appointments, and conducting virtual consultations through the app.
   * **Goal**: Deliver healthcare services to community members and update health records within the app.
3. **Ministry of Health Administrator**:
   * **Role**: A government official overseeing the app's operations, monitoring user adoption, managing public health alerts, and ensuring data compliance.
   * **Goal**: Ensure the app runs smoothly and complies with government health regulations, and that users receive important public health information.
4. **Emergency Services Provider**:
   * **Role**: A subsystem connected to the app to handle emergency requests such as ambulance dispatch or providing emergency hotline assistance.
   * **Goal**: Respond to emergency requests made through the app and provide immediate assistance.
5. **Telemedicine Platform**:
   * **Role**: An external system integrated into the app to facilitate virtual health consultations.
   * **Goal**: Enable video and audio communication between healthcare providers and community members for remote consultations.
6. **Payment Gateway (if applicable)**:
   * **Role**: An external system responsible for processing payments for services provided through the app.
   * **Goal**: Handle secure transactions for healthcare services or consultations made through the app.

In Use case approach, please use the following template to document the Actor profiles for the Business Requirements.

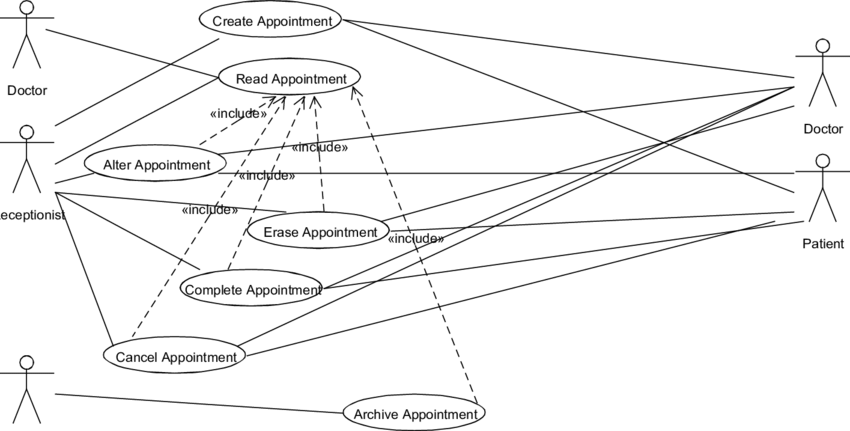
**Internet: http://www.bced.gov.bc.ca/imb/downloads/cdmdt/dt\_aps.doc**

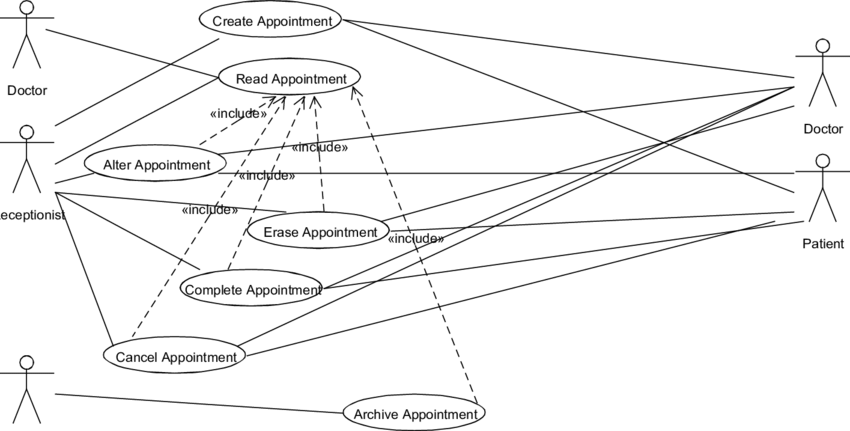
**Intranet:** [**http://gww.msd.gov.bc.ca/itmb/adestandards/downloads/cdmdt/dt\_aps.doc**](http://gww.msd.gov.bc.ca/itmb/adestandards/downloads/cdmdt/dt_aps.doc)

Alternately, if the number of actors is small, then instead of filling in the “Actor Profile Specification” template, you may provide the Actor profile information in the BRD itself in the following table.

If Function Hierarchy Diagram (FHD) modeling is done using Oracle Designer for these Business Requirements instead of Use case modeling, then please document the Actor Profile information under **“Business Units”** folder of the Designer and then generate and attach the **“Business Units Definition”** report from Oracle Designer. This report is available under **“Repository Reports | Enterprise Modeling”** sub folders of the Oracle Designer.

## Essential Use Case Diagram



Please include here the Essential Use Case Diagram for the Business Requirements. You may also provide additional context description below the diagram, if required. The Standards and Guidelines for Essential Use Case Diagram modeling are available at the following link on the ADE web site :

**Internet: http://www.bced.gov.bc.ca/imb/downloads/essentialusecasestandards.pdf**

**Intranet:** [**http://gww.msd.gov.bc.ca/itmb/adestandards/downloads/essentialusecasestandards.pdf**](http://gww.msd.gov.bc.ca/itmb/adestandards/downloads/essentialusecasestandards.pdf)

## Essential Use Case Specifications

If the number of use cases is greater than 15, please attach the Essential Use case specifications document with this BRD. Please use the following template in describing each Essential Use case in narrative style.

Internet: http://www.bced.gov.bc.ca/imb/downloads/cdmdt/dt\_euc.doc

Intranet: <http://gww.msd.gov.bc.ca/itmb/adestandards/downloads/cdmdt/dt_euc.doc>

If the number of use cases is less than 15, please describe the Essential Use case specifications in narrative form in the BRD itself as per the following tabular format. Each use case should be described in a separate table.

**Use Case Id : UC-001**

|  |  |  |  |
| --- | --- | --- | --- |
| **Use Case Name** | | Schedule Appointment | |
| **Description** | | This use case describes how a community member schedules a healthcare appointment with a healthcare provider through the app. The system will display available time slots, allow the user to select a suitable slot, and confirm the appointment with both the community member and the healthcare provider. | |
| **Actors** | | Community Member, Healthcare Provider | |
| **Business Rules** | | BR-001: Appointments can only be scheduled within the working hours of the healthcare provider. BR-002: Appointment confirmation must be sent to both the community member and the healthcare provider. | |
| **Basic Flow** | | **Alternate Flows** | |
| 1. The community member opens the app and selects the 'Schedule Appointment' option.  2. The app displays available healthcare providers and appointment slots.  3. The community member selects a provider and time slot.  4. The app sends a confirmation to both the community member and the healthcare provider. | | 1. If no time slots are available, the app displays a message and allows the user to choose a different provider or date.  2. If the healthcare provider cancels the appointment, the app sends a notification to the community member and provides options to reschedule. | |
| **Non-Functional Requirements** | | 1. The appointment scheduling feature must be available 24/7.  2. The system must handle up to 10,000 simultaneous users. | |
| **Pre-Conditions** | | 1. The community member must be registered in the app.  2. The healthcare provider must have available appointment slots. | |
| **Post-Conditions** | | |  | | --- | |  |  |  | | --- | | 1. The appointment is successfully scheduled, and notifications are sent to both parties. | | |
| **Extension Points** | **Extension Condition** | | **Extending Use Case** |
| None | None | | None |
| **List of <<included>> use cases** | **List of <<extended>> use cases** | | **List of “inherited from (parent)” use cases** |
| None | None | | None |

If Function Hierarchy Diagram (FHD) modeling is done using Oracle Designer for these Business Requirements instead of Use case modeling, then include here the Function hierarchy diagram from the Designer. You may also provide additional context description below the diagram, if required. The Standards and Guidelines for Function modeling in Oracle Designer are available at the following link on the ADE web site :

Internet: http://www.bced.gov.bc.ca/imb/downloads/reqmodstd.pdf

Intranet: <http://gww.msd.gov.bc.ca/itmb/adestandards/downloads/reqmodstd.pdf>

*If Function Hierarchy Diagram (FHD) modeling is done using Oracle Designer for these Business Requirements instead of Use case modeling, then attach the Function Definition Report from the Designer containing the following information :*

* *Function Name*
* *Function Description*

*The Standards and Guidelines for Function modeling in Oracle Designer are available at the following link on the ADE web site :*

Internet: http://www.bced.gov.bc.ca/imb/downloads/reqmodstd.pdf

Intranet: <http://gww.msd.gov.bc.ca/itmb/adestandards/downloads/reqmodstd.pdf>

## Business Rules

This section lists and describes the business rules applicable to the proposed system.

|  |  |  |  |
| --- | --- | --- | --- |
| **Business Rule Id** | **Rule Name** | **Rule Description** | **Rule Source** |
| BR001 | Appointment Scheduling Window | Appointments can only be scheduled during the healthcare provider’s available working hours. | Policy Manual |
| BR002 | Appointment Confirmation | The system must send confirmation notifications to both the community member and the healthcare provider. | Contractual Obligations |
| BR003 | Data Privacy Compliance | All personal health data must be encrypted and stored according to government health data regulations. | Strategic Decisions |
| BR004 | Emergency Services Availability | Emergency services must be available 24/7 and the app must allow direct access to emergency services. | Subject Matter Experts |
| BR005 | Health Record Access | Community members must have access to their health records via the app, and healthcare providers must update records after consultations. | Strategic Decisions |
| BR006 | Notification System | Users must receive notifications for upcoming appointments, medication adherence, and health reminders. | Policy Manual |

If Use case approach is followed, please describe the business rules in the following tabular format. If the number of Business Rules is quite large, then you may also document Business rules in a separate document in the following tabular format and attach the rules document with this BRD.

*If Function Hierarchy Diagram (FHD) modeling is done using Oracle Designer for the Business Requirements instead of Use case modeling, then please refer to “*[*Requirements Modeling and Specification Guidelines and Standards*](http://www.bced.gov.bc.ca/imb/downloads/reqmodstd.pdf)*” for standards and guidelines on modeling Business Rules in Designer.Please refer to the following guidelines on business rule documentation :*

* *Document only Business rules here. Do not document workflow rules.*
* *There is no need to document rules (particularly structural rules) that are naturally expressed in the models and that are shown in the models.*
* *Document only semantic and explicit business rules or “unstructured” rules that do not appear in the models.*

# Data Requirements

This section describes the Data requirements part of the Business Requirements.

## Data Architecture

The **Data Architecture** for the Community Health Outreach App defines how the data will be structured, stored, managed, and accessed to support the application’s functionality. The data architecture is critical for ensuring the security, scalability, and efficiency of the app.

**1. Data Storage**

* **Cloud-Based Database**: All user, healthcare provider, and appointment data will be stored in a cloud-based relational database, ensuring scalability and access across various locations.
* **Data Encryption**: Sensitive data such as health records, personal information, and emergency requests will be encrypted both at rest and in transit to ensure compliance with data privacy laws.
* **Data Backup**: Regular automated backups will be scheduled to prevent data loss in case of a system failure or disaster.

**2. Data Access and Retrieval**

* **Role-Based Access Control (RBAC)**: The app will implement RBAC to ensure that different types of users (e.g., community members, healthcare providers, administrators) have appropriate access levels. For instance, healthcare providers can access patient health records, while community members can only access their own data.
* **API Integration**: The app will use secure APIs to retrieve and update data from the healthcare provider's systems, government health databases, and third-party telemedicine platforms.
* **Audit Logs**: All data access and modification events will be logged to ensure traceability and accountability.

**3. Data Synchronization**

* **Real-Time Updates**: The app will provide real-time data updates for appointment scheduling, health notifications, and emergency requests.
* **Data Replication**: Critical data, such as emergency requests and health records, will be replicated across multiple servers to ensure high availability and disaster recovery.

**4. Data Model**

* **Entity Relationship Model (ERM)**: The database will follow an entity-relationship model, with key entities including Users (community members, healthcare providers), Appointments, Health Records, Emergency Requests, and Notifications. Relationships between entities will ensure seamless data flow within the app.

**5. Data Privacy and Compliance**

* **Compliance with Healthcare Regulations**: The app's data architecture will comply with government health data regulations (e.g., HIPAA, GDPR). All personal health information (PHI) will be stored and processed securely, with access restricted to authorized personnel.
* **Anonymization for Analytics**: Non-identifiable data will be used for health analytics and reports to improve services, with sensitive data anonymized to protect user privacy.

### Domain Class Diagram

A diagram of a software model

Description automatically generated

Please include here the Domain Class Diagram showing the following information :

* Class Name
* Attribute (field) Name
* Interrelationships between the classes (association, composition, aggregation and generalization)

The Standards and Guidelines for Domain Class Diagram modeling are available at the following link on the ADE web site :

**Internet: http://www.bced.gov.bc.ca/imb/downloads/classdiagramstandards.pdf**

**Intranet:** [**http://gww.msd.gov.bc.ca/itmb/adestandards/downloads/classdiagramstandards.pdf**](http://gww.msd.gov.bc.ca/itmb/adestandards/downloads/classdiagramstandards.pdf)

Alternately, even in Use case approach, you may provide Data models in ERD notation instead of Domain Class notation. In that case, delete section 4.1.1 (Domain Class Diagram) and proceed to next section (section 4.1.2).

### Entity Relationship Diagram

A diagram of a schedule

Description automatically generated

If Entity Relationship Diagram (ERD) modeling is done using Oracle Designer for these Business Requirements instead of Domain Class modeling, then include here the conceptual ERD generated from Oracle Designer showing the following information :

* Entity Name
* Attribute (field) Name
* Interrelationships between the Entities (association, composition, aggregation and generalization)

The Standards and Guidelines for Entity Relationship Diagram (ERD) modeling are available at the following link on the ADE web site :

Internet: http://www.bced.gov.bc.ca/imb/downloads/reqmodstd.pdf

Intranet: <http://gww.msd.gov.bc.ca/itmb/adestandards/downloads/reqmodstd.pdf>

## Data Volumes

This section outlines the estimated initial data volumes and expected annual growth percentages for each conceptual class or entity in the Community Health Outreach App.

|  |  |  |  |
| --- | --- | --- | --- |
| Conceptual Class/Entity | Initial Data Volume | Annual Growth (%) | Description |
| Community Member | 100,000 records | 15% | Represents the number of registered users (community members) initially expected to use the app, with an estimated annual growth as more users from rural areas adopt the app. |
| Healthcare Provider | 10,000 records | 10% | Represents the number of healthcare providers (doctors, clinics) available through the app. This includes doctors, nurses, and clinics offering telemedicine and in-person services. |
| Appointment | 500,000 records | 20% | Represents the number of appointments (both scheduled and completed) initially anticipated. Each community member may schedule multiple appointments annually. |
| HealthRecord | 100,000 records | 15% | Represents the health records created for each community member. As healthcare services grow, the number of records will increase with ongoing consultations and updates. |
| EmergencyRequest | 5000 records | 10% | Represents emergency requests such as ambulance dispatch or emergency hotline calls. This volume is expected to grow as more regions adopt the app. |
| Notification | 1,000,000 records | 25% | Represents the notifications (appointment reminders, health tips, etc.) sent to users. The volume is expected to increase with the user base and more health campaigns. |

In Oracle Designer, there is facility to record the data volumes during the Entity-Relationship (E-R) modeling. Please document the “Initial Volume” and “Annual Growth Rate (in %)” for each Business Entity and ensure that these two fields are included in the “Entity Definition Report” (refer section 4.6.2).

In Use case approach, if your UML tool provides facility to record data volumes information for each Conceptual Class, then record that information in the specific fields and ensure that those fields are included in the “Domain Class Definition Report” (refer section 4.6.1). If there is no such explicit facility to record the data volumes information, then please record the “Initial Volume” and “Annual Growth Rate (in %)” in the “Notes” field for each Conceptual Class and ensure that the “Notes” field is included in the “Domain Class Definition Report” (refer section 4.6.1).

## Data Conversion

The **Community Health Outreach App** may require data conversion as part of its implementation to ensure a smooth transition from existing systems to the new platform. This section describes the high-level data conversion requirements:

1. **Source Systems**:
   * The app will need to import and convert data from the following existing systems:
     + **Government Health Information System (HIS)**: Patient health records, healthcare provider details, appointment histories.
     + **Telemedicine Platforms**: Historical virtual consultation data, telemedicine provider records.
     + **Emergency Services Databases**: Emergency response records and contact details.
2. **Data Conversion Process**:
   * **Data Mapping**: Data fields from the source systems will need to be mapped to the corresponding fields in the Community Health Outreach App's database. For example, patient information (name, date of birth, contact details) from the HIS will be mapped to the community member records in the app.
   * **Data Cleansing**: Historical data may contain inaccuracies, duplicates, or outdated information. A data cleansing process will be applied before importing the data to ensure accuracy and reliability.
   * **Data Transformation**: Some data may require transformation to fit the format of the new system. For instance, date formats, measurement units, or record structures might differ between the old systems and the app’s database.
3. **Data Volume Considerations**:
   * The volume of data to be converted may be significant, especially for health records and appointment histories. Batch processing may be used to ensure that large data sets are converted efficiently without impacting system performance.
4. **Validation and Testing**:
   * After data conversion, validation procedures will be carried out to ensure the accuracy and completeness of the converted data. Sample data from each source will be verified against the records in the new system to ensure fidelity.
5. **Data Integrity and Security**:
   * All data conversion processes will be carried out in compliance with health data privacy regulations. Encryption will be applied during data transfer, and only authorized personnel will have access to the data during the conversion process.
6. **Fallback and Rollback Plan**:
   * A rollback plan will be implemented in case any issues arise during the data conversion process, ensuring the system can revert to a stable state if required.

*Please describe the following high-level Data Conversion issues in this section :*

* *Data that is required to be converted (list of conceptual entities in the source database)*
* *High-level mapping between source and target “to be converted” conceptual data structures*
* *PIA/FOI and other compliance issues needed to be taken into consideration during data conversion*
* *Critical success factors*
* *Risks associated with the data conversion and contingency plans*
* *Data Conversion Acceptance criteria*

## Data Retention and Archiving

The **Community Health Outreach App** will require clear data retention and archiving policies to ensure that data is managed efficiently, complies with legal regulations, and remains accessible when needed.

**1. Data Retention Time Frames:**

* **User Data (Community Member, Healthcare Provider)**: Personal data, such as contact information and profiles, will be retained as long as the user remains active in the system. If a user becomes inactive, their data will be retained for 7 years before being archived or deleted, in compliance with government health data regulations.
* **Appointment Data**: Appointment records will be retained for 5 years from the date of the appointment. After this period, they will be archived, except in cases where appointments are linked to health records that require longer retention.
* **Health Records Data**: Health records will be retained for the lifetime of the patient, plus an additional 10 years after their last interaction with the healthcare system, in accordance with healthcare regulations.
* **Emergency Requests**: Emergency request records will be retained for 3 years, after which they will be archived unless they are part of ongoing investigations or cases requiring extended retention.
* **Notification Data**: Notifications (e.g., appointment reminders, health tips) will be retained for 1 year from the time of generation. Older notifications will be archived after this period.

**2. Archiving Process:**

* **Online Data to Archived Data**: Data that surpasses its retention period will be moved from the active database to an archive database. This process will be automated and conducted monthly.
* **Archive Database**: The archived data will be stored in a separate, secure database that allows for easy retrieval in case data is needed for auditing or legal purposes.
* **Access to Archived Data**: Only authorized users, such as system administrators and auditors, will have access to the archived data. Community members and healthcare providers will not have direct access to archived data unless requested through a legal or administrative process.

**3. Data Deletion:**

* **Permanent Deletion**: Once data reaches the end of its retention and archiving period, it will be permanently deleted from both the active and archive databases. This process will ensure compliance with data privacy laws and regulations.
* **Data Deletion Requests**: Users may request the deletion of their personal data, provided the data is not required for ongoing healthcare services or legal purposes. These requests will be processed in accordance with the applicable data protection regulations.

Please describe the time frames in number of years/months/days for online Data retention before the data is archived and purged.

Please describe if there are any other special data archiving requirements exist and the PIA/FOI and other compliance issues that need to be taken into consideration during data archival and for the archived data.

## FOI/Privacy Implications

This section describes the sensitivity levels of each class of data. The following criteria are used in determining the sensitivity level of each conceptual class/entity in line with the Government Core Policy Manual).

* ***Non-sensitive*** *information that would not reasonably be expected to cause injury (harm) if released to the public;*

* ***Protected A****: information that, if compromised, could reasonably be expected to cause injury (harm), e.g. loss of privacy;*
* ***Protected B****: information that, if compromised, could reasonably be expected to cause serious injury (harm), e.g. the conduct of a court proceeding would be adversely affected;*

* ***Protected C****: information that, if compromised, could reasonably be expected to cause extremely grave injury (harm), e.g. loss of life.*

Please describe the FOI/Privacy Implications for each conceptual Class or Entity in terms of the criteria described above. Please use the following table. Add more rows as necessary.

|  |  |
| --- | --- |
| **Conceptual Class / Entity Name** | **Data Sensitivity Level**  **(Non-sensitive,**  **Protected A,**  **Protected B,**  **Protected C)** |
| Community Member | Protected A |
| Healthcare Provider | Protected A |
| Appointment | Non-sensitive |
| Health Record | Protected B |
| Emergency Request | Protected C |
| Notification | Non-sensitive |
|  |  |
|  |  |
|  |  |

For more information on Government FOI/Privacy policies and guidelines, please refer to the Core Policy Manual at the following link on the MSD web site :

[**http://www.cio.gov.bc.ca/prgs/core.htm**](http://www.cio.gov.bc.ca/prgs/core.htm)

## Data Definition Reports

This section describes the Data Architecture / definition in a report format.

### Domain Class Definition Report

This section is applicable only to Use case approach. This section describes Data Architecture / definition (Domain Class model) in narrative text form.

*Please generate and attach the Domain Class report. Most UML tools that support Class modeling will also provide facilities for generating the Class Definition report from the Domain Class Diagram. The Report should contain the following information :*

* *Class Name*
* *Brief Description of the Class*
* *Initial Data Volume of the Class (Approx.)*
* *Annual Data Growth Rate of the Class (in approx. %)*
* *Attributes (fields) of the Class : Attribute Name and brief description*

*If the number of Domain Classes is less than 15, you may provide the Class Definition information in the BRD itself as per the following tabular format.*

Alternately, even in Use case approach, you may provide Data definition report in ERD notation instead of Domain Class notation. In that case, delete section 4.6.1 (Domain Class Definition Report) and proceed to next section (Section 4.6.2).

|  |  |
| --- | --- |
| **Class Name** | Community Member |
| **Class Description** | This class represents a community member registered in the system. A community member is a person who uses the app to schedule appointments, access health records, and receive notifications. |
| **Initial Data Volume (approx.)** | 100,000 records |
| **Annual Data growth rate (in approx. %)** | 15% |
| **Attributes (fields) of the class** | Name :Lily Domian  Description : XXX |
| Name :  Description : |
| Name :  Description : |
| Name :  Description : |
| Name :  Description : |
| Name :  Description : |

*Please generate and attach the Entity-Attributes Definition Report for Oracle Designer. Oracle Designer provides a standard Entity-Attributes Definition Report that can be generated for an ERD. The Report should contain the following information :*

* *Entity Name*
* *Brief Description of the Entity*
* *Initial Data Volume of the Entity*
* *Annual Data Growth Rate of the Entity (in %)*
* *Attributes (fields) of the Entity : Attribute Name and brief description*

*If the number of Entities is less than 15, you may provide the Entity Definition information in the BRD itself as per the following tabular format.*

# Non-Functional requirements

## Security Requirements

This section describes the Security requirements part of the Business Requirements.

### Authentication

This section describes the Authentication requirements part of the Business Requirements. Authentication is the process of verifying the genuineness of claims that a person/group makes to establish identity/eligibility for access to services. In order to ascertain the Authentication requirements of the Application, it is required to analyse the type of transactions that different Use cases/Business Functions trigger within the Application. The following criteria is used in determining transaction types of each use case/function (in line with the Government Core Policy Manual) :

***Level 0 : Anonymous transaction*** *– triggers transactions that do not require or allow a person to be identified, or transactions which require protection of a person's identity. For example, access to online information about government programs or services or protecting a person's identity. Combining the transaction data with other data must not allow identification of a particular individual.*

***Level 1 : Pseudonymous transaction*** *– triggers transactions that do not require a person to be identified but do require a means for further contact to deliver a product or service. For example, a note from someperson@internet.ca can not be readily translated into an individual’s name, but it may be sufficient to request information, to provide some services, or on-going follow up.*

***Level 2 : Identified transaction*** *– triggers transactions that require that a person be specifically identified. The nature of the transaction may require confirmation of a person's identity (e.g., name, address, birth date, etc.) and/or data linking the person to a transaction (e.g., invoice number, personal health number, etc.).*

***Level 3 : Verified transaction*** *– triggers transactions that require: the person to be specifically identified; verification of the integrity of the data exchanged and the exchange itself; and, the creation of sufficient evidence to indicate that the person agreed to be bound by the transaction. For example, a note signed with a digital certificate, audit trails and security logs may provide sufficient evidence that a specific person intended to conduct a transaction.*

Please describe Authentication requirements for each Use Case or Business Function in terms of the criteria described above. Please use the following table. Add more rows as necessary.

|  |  |
| --- | --- |
| **Use Case / Business Function Name** | **Transaction type triggered**  **(Level 0 : Anonymous,**  **Level 1 : Pseudonymous,**  **Level 2 : Identified,**  **Level 3 : Verified)** |
|  |  |
| Schedule Appointment | Level 2: Identified |
| Conduct Virtual Consultation | Level 3: Verified |
| Access Health Records | Level 3: Verified |
| Receive Health Notifications | |  | | --- | |  |   Level 1: Pseudonymous |
| Emergency Services Access | Level 3: Verified |
| Register as Community Member | Level 2: Identified |
| Register as Healthcare Provider | Level 3: Verified |

For more information on Government FOI/Privacy policies and guidelines, please refer to the Core Policy Manual at the following link on the MSD web site :

[**http://www.cio.gov.bc.ca/prgs/core.htm**](http://www.cio.gov.bc.ca/prgs/core.htm)

### Authorization and Access Controls

This section describes the Authorization and Access Control requirements part of the Business Requirements at a high-level. Authorization is the process of determining if the person/group, once identified through the “Authentication process”, is permitted to have access to certain services. The Authorization and Access Control requirements are best described through a matrix.

Please specify the Authorization and Access Control requirements between the various Actors/Business Units and the Domain Classes/Business Entities in the table below. Add more rows as necessary.

|  |  |  |
| --- | --- | --- |
| **Actor / Business Unit Name** | **Conceptual Class / Business Entity Name** | **Type of Access Control needed on the Conceptual Class / Business Entity :**  **C 🡪 Create**  **R 🡪 Read**  **U 🡪 Update**  **D 🡪 Delete** |
| Community Member | Appointment | C, R, U, D |
| Community Member | HealthRecord | R |
| Community Member | Notification | R, D |
| Healthcare Provider | Appointment | C, R, U, D |
| Healthcare Provider | HealthRecord | C, R, U |
| Ministry of Health Administrator | HealthRecord | R, U |
| Ministry of Health Administrator | EmergencyRequest | R, U |
| Emergency Services Provider | EmergencyRequest | C, R, U |
|  |  |  |

### Information Security Classification and labelling

This section is provided for information purposes only. Please do not delete this section while creating the Business requirements Document from this template.

The “*Information security classification and labeling* of information assets” is a process published and managed by OCIO. According to this process, all government “records” as defined in the Interpretation Act need to be classified. (“record” includes books, documents, maps, drawings, photographs, letters, vouchers, papers and any other thing on which information is recorded or stored by any means whether graphic, electronic, mechanical or otherwise).

There are no business requirements (functional or non-functional requirements) applicable to the *Information security classification* of the application/project/initiative for which the BRD is being written. Hence there is no need to fill-in anything in this section.

However, please be aware that the finished application/initiative/project and all its output deliverables (such as documents, models, diagrams etc) need to be classified and labelled in accordance with the OCIO guidelines. This will help in determining how much protection the finished application and its data will need commensurate with its sensitivity levels determined during information security classification process. It will also help in evaluation of risks associated with authorized and unauthorized disclosures of the application’s data.

## Availability Requirements

This section describes the system availability requirements.

Please specify the availability requirements for each Use Case or Business Function in the table below. Add more rows as necessary. If all use cases / business functions (the system as a whole) have the same uniform availability requirements, then describe this in the space below and delete the table below.

|  |  |
| --- | --- |
| **Use Case / Business Function Name** | **Availability Requirements**  **- Regular work hours**  **- 24x7**  **- Any other (please describe)** |
| Schedule Appointment | 24x7 |
| Conduct Virtual Consultation | 24x7 |
| Access Health Records | 24x7 |
| Receive Health Notifications | 24x7 |
| Emergency Services Access | 24x7 |
| System Maintenance | Regular work hours |
|  |  |
|  |  |
|  |  |

## Usability Requirements

The **Community Health Outreach App** must meet the following usability requirements to ensure that users can interact with the system easily, efficiently, and with minimal effort.

**1. Ease of Use:**

* **Requirement**: The system must be simple and intuitive for users of all technical skill levels, including those in rural or underserved areas with limited exposure to technology.
* **Target**: Community members should be able to complete core tasks (e.g., scheduling an appointment, accessing health records) within 3 to 5 clicks.

**2. Accessibility:**

* **Requirement**: The app must be accessible to users with disabilities, following Web Content Accessibility Guidelines (WCAG) 2.1 standards.
* **Target**: The app should support screen readers, voice commands, and provide scalable text for visually impaired users.

**3. Multi-Language Support:**

* **Requirement**: The app must support multiple languages, including English and local Indigenous languages, to cater to the diverse user base.
* **Target**: Users should be able to switch between languages easily within the app settings.

**4. Minimal Learning Curve:**

* **Requirement**: The system should be designed to minimize the learning curve, with clear instructions, tutorials, and tooltips provided where necessary.
* **Target**: Users should be able to learn how to use the app effectively within 10 minutes of initial use.

**5. Responsive Design:**

* **Requirement**: The app must be responsive, adapting to various screen sizes (e.g., mobile phones, tablets) without loss of functionality or readability.
* **Target**: The app should maintain optimal performance and layout on all device types and screen resolutions.

**6. User Feedback Mechanism:**

* **Requirement**: A user feedback mechanism (e.g., a feedback form or rating system) should be integrated into the app to allow users to report issues or suggest improvements.
* **Target**: User feedback should be actionable and reviewed regularly to improve the user experience.

Please describe the expectation levels of various usability factors for the system. Examples of usability factors are : Ease of learning, task efficiency, understandability, subjective satisfaction, Target users’ technical expertise levels, education levels etc.

## System Help Requirements

This section describes what kind of System Help features are needed to be built into the system.

Please specify the Online/Offline Help requirements for each Use Case or Business Function in the table below. Add more rows as necessary. If all use cases / business functions (the system as a whole) have the same uniform Help requirements, then describe this in the space below and delete the table below.

|  |  |
| --- | --- |
| U**se Case / Business Function Name** | **Help Requirements**  **- Field level (online)**  **- Screen level (online)**  **- Help Printing Options**  **- Operations Manual (Offline)**  **- Any other (please describe)** |
| Schedule Appointment | Field level (online), Screen level (online), Help Printing Options |
| Conduct Virtual Consultation | Field level (online), Screen level (online), Help Printing Options |
| Access Health Records | Screen level (online), Operations Manual (Offline) |
| Receive Health Notifications | Screen level (online), Help Printing Options |
| Emergency Services Access | Field level (online), Screen level (online), Operations Manual (Offline) |
| General App Navigation | |  | | --- | |  |  |  | | --- | | Field level (online), Screen level (online), Help Printing Options, Operations Manual (Offline), Tutorials (Online) | |
|  |  |
|  |  |
|  |  |

## Performance Requirements

This section describes system performance expectation levels (response times).

Please specify the expected system response time (in seconds or minutes) for each Use Case or Business Function or a significant critical transaction within a use case/business function in the table below. Add more rows as necessary. If all use cases / business functions (the system as a whole) have the same uniform response time requirements, then describe this in the space below and delete the table below.

|  |  |
| --- | --- |
| **Use Case Name / Business Function Name / Transaction description** | **Performance Requirements (response time)**  **(in seconds or minutes)** |
| Schedule Appointment | Response time must be within 5 seconds. |
| Conduct Virtual Consultation | Response time must be within 2 seconds. |
| Access Health Records | Response time must be within 3 seconds. |
| Receive Health Notifications | Response time must be within 1 second. |
| Emergency Services Access | Response time must be within 2 seconds. |
| General App Navigation | Response time must be within 3 seconds. |

## Scalability Requirements

This section describes how the system is expected to scale to new higher or lower levels. Both user and application scalability requirements are described here. *Data scalability is not described here as it is already described in the “data volumes” section earlier*.

### User Scalability

* **Initial User Base**: The app will launch with an expected user base of 100,000 community members and 10,000 healthcare providers.
* **Scalability Target**: The system must be able to scale to accommodate up to 1,000,000 community members and 50,000 healthcare providers over the next 5 years, with minimal degradation in performance.
* **Concurrency Requirements**: The system must support up to 10,000 concurrent users without noticeable performance degradation, particularly during peak usage hours (e.g., early mornings or during health campaigns).
* **Load Balancing**: The app will implement load balancing mechanisms to distribute user requests across multiple servers to maintain response times as user numbers grow.

Please describe how the user volumes are likely to grow in a given number of months or years. Example : 1000 new users are expected to use this internet system in the next 6 months.

### Application Scalability

* **Feature Scalability**: The app must be built on a modular architecture that allows new features (e.g., additional health services, new types of appointments) to be easily added without impacting the core functionality.
* **Infrastructure Scalability**: The app must be deployable across a scalable cloud infrastructure, such as AWS or Azure, that allows for automatic scaling of computing resources (e.g., servers, databases) based on demand.
* **Performance Scalability**: The system should maintain its performance benchmarks (response times, data retrieval, etc.) as the number of transactions and data volume increases.
* **Third-Party Integration Scalability**: The app must be able to scale with third-party systems, such as telemedicine platforms or payment gateways, without performance bottlenecks.

Please describe if any new major functionality/interface is likely to be added to the application in the next given number of months or years. Example : This system will have a new public facing (internet) interface in the next 1 year.

# Interface Requirements

This section describes User and System Interface requirements for the proposed system.

## User Interface Requirements

1. **Mobile-Friendly Design**:
   * **Requirement**: The app must feature a responsive mobile-first design, ensuring optimal usability on mobile devices, tablets, and desktops.
   * **Reason**: The majority of users, especially in remote areas, will access the app via mobile phones. The interface must adapt to various screen sizes without loss of functionality.
2. **Simple Navigation**:
   * **Requirement**: The interface must have intuitive navigation menus that allow users to quickly find key features like scheduling appointments, accessing health records, or contacting emergency services.
   * **Reason**: Many users may have limited experience with digital systems, and the app must be designed for ease of use with minimal guidance.
3. **Multi-Language Support**:
   * **Requirement**: The app should provide a seamless language-switching feature that supports English and local Indigenous languages.
   * **Reason**: To accommodate diverse users in rural areas who may prefer accessing health services in their native language.
4. **Consistent Design Standards**:
   * **Requirement**: The user interface (UI) must follow consistent design patterns (e.g., form fields, buttons, icons) to minimize confusion and maintain a uniform experience across all screens.
   * **Reason**: A consistent design reduces cognitive load, making it easier for users to interact with the app.
5. **Error Handling and Feedback**:
   * **Requirement**: The app must provide clear error messages and guidance when a user encounters an issue (e.g., form validation errors, failed appointment booking).
   * **Reason**: Users need immediate feedback and solutions when something goes wrong to ensure smooth operation and minimize frustration.Please describe here the user interface requirements. Include or attach a screen prototype diagram here.

## System Interface Requirements

1. **Health Information System (HIS) Integration**:

* **Requirement**: The app must integrate seamlessly with the government’s existing **Health Information System (HIS)** to retrieve and update patient health records.
* **Protocol**: Integration via RESTful APIs with secure data transmission protocols (e.g., HTTPS) to ensure privacy and confidentiality of health records.
* **Reason**: To allow healthcare providers to access and update patient records in real-time.

1. **Telemedicine Platform Integration**:

* **Requirement**: The app must interface with third-party telemedicine platforms for conducting virtual consultations.
* **Protocol**: Secure API integration with support for video and audio communication.
* **Reason**: To ensure virtual healthcare consultations can be conducted without the need for additional apps or platforms.

1. **Emergency Services Integration**:

* **Requirement**: The app must provide a direct interface to the **Emergency Services Network** for real-time dispatch and communication during emergency requests.
* **Protocol**: Integration with emergency service systems via API, ensuring secure transmission of emergency data (e.g., location, contact information).
* **Reason**: To facilitate quick response to emergencies, including ambulance requests.

1. **Notifications System**:

* **Requirement**: The app must interface with a notification service (e.g., push notifications, SMS gateways) to send appointment reminders, health alerts, and emergency notifications.
* **Protocol**: Integration with third-party notification services via API, supporting real-time messaging.
* **Reason**: To ensure timely communication with users regarding critical health-related events.

Please list and describe here what other external systems/business functions are required to be interfaced with the proposed system from Business Requirements perspective. Example : This system needs to interface with the CAS in order to receive some input data. Please avoid describing system design and technical issues.

# Business Glossary

Please include here complete glossary of business terms used in this document.

# APMS Update

APMS update required?  Yes  No

APMS updated/to be updated on (date):

Comments:

# Revision Log

| Date | Version | Change Reference | Reviewed by |
| --- | --- | --- | --- |
|  |  |  |  |
| [date] |  |  |  |
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# Appendices

Each Appendix must have:

A separate header, numbered A-Z, with an appropriate descriptive title. Use the Heading 1 Style for each Appendix Header. This style will automatically insert a page break.

A lead in paragraph that states the importance of the data to this report

A closure, centred on a separate line, that repeats the header, such as End of Appendix A – Title.

Enter content here.

# Approval

This document has been approved as the official Business Requirements Document for the Project Name project.

Following approval of this document, changes will be governed by the project’s change management process, including impact analysis, appropriate reviews and approvals, under the general control of the Master Project Plan and according to Project Support Office policy.

|  |  |  |
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| Prepared by | Signature | Date |
| Author's Name  [Title]  [Organization] |  |  |
| Approved by | Signature | Date |
| [Client Acceptor’s Name]  [Title]  [Organization] |  |  |
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