

**BUSINESS REQUIREMENTS DOCUMENT (BRD)**

**Project Title:** Telehealth System Transformation for the University of Lagos (UNILAG)

**Prepared By** Patricia Chukwu

**Role:** Business Analyst

**Date:** 2025

**Document history**

Version	Date	Author	Description
1.0	August, 2025	Patricia	Initial draft of BRD
2.0			

DO NOT COPY

## 1. EXECUTIVE SUMMARY

The University of Lagos (UNILAG) currently relies heavily on traditional in-person healthcare delivery through its Medical Centre. A recent study conducted on 150 students revealed **low awareness (only 29%)** and **high unawareness (71%)** of telehealth services and digital healthcare options. This has resulted in long wait times, low service accessibility, poor health-seeking behaviour, and underutilisation of medical services.

This project aims to design, develop, and implement a **telehealth ecosystem** that enhances access to quality care, reduces physical congestion, supports remote consultations, and integrates telemedicine into the student healthcare experience.

The BRD outlines the business need, objectives, scope, stakeholders, process gaps, and detailed business and functional requirements for implementing a modern telehealth system.

## 2. BUSINESS NEED (PROBLEM STATEMENT)

Based on a 6-year observation as a Kinesiologist and findings from the pilot study:

- Students lack awareness of telehealth services.
- Access to medical care is slow and inconvenient due to physical-only consultations.
- There is no remote triage or digital consultation option.
- The Medical Centre operates with manual processes and paper documentation.
- There is no digital channel for health education or public health alerts.
- Communication between students and health personnel is poor.

### Therefore:

UNILAG requires a structured telehealth solution to improve accessibility, reduce operational stress, and modernise healthcare delivery.

## 3. BUSINESS OBJECTIVES

### Primary Objectives

1. Increase awareness and utilisation of telehealth services among students.
2. Reduce physical congestion and wait times at the Medical Centre.
3. Improve access to quality healthcare using digital tools.
4. Implement a remote consultation system for non-emergency cases.
5. Enhance medical record management through digital integration.

6. Provide health education and early interventions through digital channels.

### **Secondary Objectives**

1. Improve patient satisfaction and overall student health outcomes.
2. Strengthen data-driven decision-making in university healthcare.
3. Enhance emergency response workflow using early triage.

## **4. PROJECT SCOPE**

### **IN SCOPE**

- Development of a Telehealth Platform (Web + Mobile); Integration with UNILAG student portal.
- Online Appointment Booking.
- Remote Consultation (Video, Audio, Live Chat with medical personnel).
- Digital Medical Records Management (EMR-lite): Consultation notes, Prescriptions, Follow-up plans
- Health Awareness Push Notifications: SMS/in-app alerts, Public health campaigns, Appointment reminders
- Digital Triage Form + Priority-ranking system (low/medium/high) + Symptom checker and Automated routing based on urgency.
- Training for staff and onboarding students.
- **Reporting & Analytics Dashboard:** Usage statistics, Health trends and Operational performance metrics

### **OUT OF SCOPE**

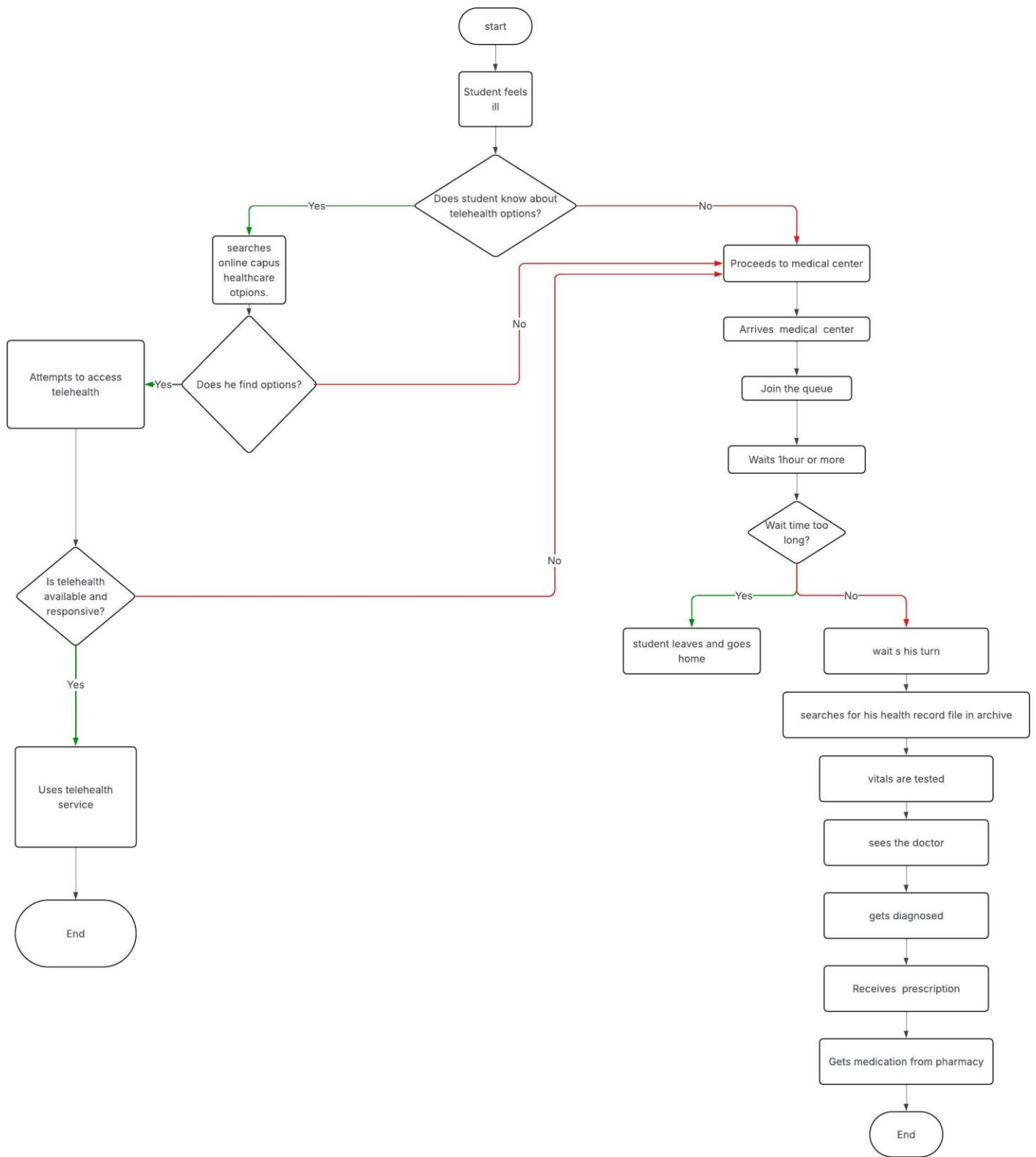
- AI-based diagnosis or clinical decision support
- Full EMR migration for CMUL Teaching Hospital
- Procurement of specialised hardware (MRI, surgical robots, etc.)
- Integration with national health insurance platforms
- Offline telemedicine kiosks or physical telehealth stations

## 5. KEY STAKEHOLDERS

Stakeholder	Category	Role in Project
<b>University Management (VC, DVC, Registrar)</b>	Executive	Sponsor, Approver
<b>Medical Centre Director (UNILAG Health Centre)</b>	Operational Leadership	Project Champion, Decision Maker
<b>Doctors &amp; Nurses</b>	Primary Users	Healthcare Providers
<b>Students (Undergraduate &amp; Postgraduate)</b>	End Users	Service Consumers
<b>College of Medicine (CMUL Specialists)</b>	Secondary Providers	Referral Recipients
<b>ICT/IT Services Department (UNILAG)</b>	Technical Stakeholders	System Integrators, SSO Admin
<b>Telehealth Platform Vendor / Developers</b>	External Vendor	Designers, Developers, Implementers
<b>UNILAG Health Records Unit</b>	Operational Staff	EMR Support
<b>Nursing/Clinic Admin Staff</b>	Supporting Users	Scheduling, Booking, Front Desk
<b>Student Union Government (SUG)</b>	Influencer	Student Body Representative
<b>UNILAG ICT Security &amp; Compliance Unit</b>	Governance	Compliance Oversight
<b>Finance Department</b>	Support	Budget Approvals
<b>Project Manager / Business Analyst (You)</b>	Internal	Planning, analysis, coordination

## **6. AS-IS PROCESS (CURRENT STATE)**

1. **Student falls ill**
  - Begins looking for available healthcare options.
2. **Student searches online or asks peers about telehealth availability**
  - Information is unclear; awareness is low, and telehealth visibility is limited.
3. **If the student becomes aware of telehealth services**
  - Attempts to access the telehealth link or phone line.
  - Availability is inconsistent and fluctuates.
4. **Student proceeds to the Medical Centre for consultation**
  - Encounters long queues and wait times.
  - Depending on congestion, the student is either attended, leaves to or asked to return later.
5. **Student is attended to using manually stored paper health records**
  - Records are retrieved manually; no digital system supports patient history.
6. **Consultation occurs (when successful)**
  - No structured digital follow-up, reminders, or continuity-of-care system.
7. **Consultation records are manually updated**
  - Documentation remains paper-based and is not synchronised with any digital health record or student portal.



## **7. TO-BE PROCESS (FUTURE STATE)**

### **1. Awareness & Access**

- A centralised telehealth portal is integrated into the UNILAG website, student portal, and mobile app.
- Automated onboarding for new students and annual university-wide awareness campaigns ensure consistent visibility.

### **2. User Authentication**

- Students access the telehealth platform through a secure Single Sign-On (SSO) using their student portal credentials.

### **3. Service Selection**

Students can choose from multiple service options:

- **“Consult Now”** for real-time assistance
- **“Book Appointment”** for scheduled consultations
- **“Health Education Materials”** for digital health resources and self-care content

### **4. Digital Triage Module**

- AI-assisted symptom checker categorises health issues, helping reduce unnecessary physical visits.
- Critical cases are automatically redirected to emergency services or flagged for urgent attention.

### **5. Remote Consultation**

- Secure video or voice consultations are conducted through an encrypted telehealth system.
- Healthcare providers access integrated electronic student health records during the session.

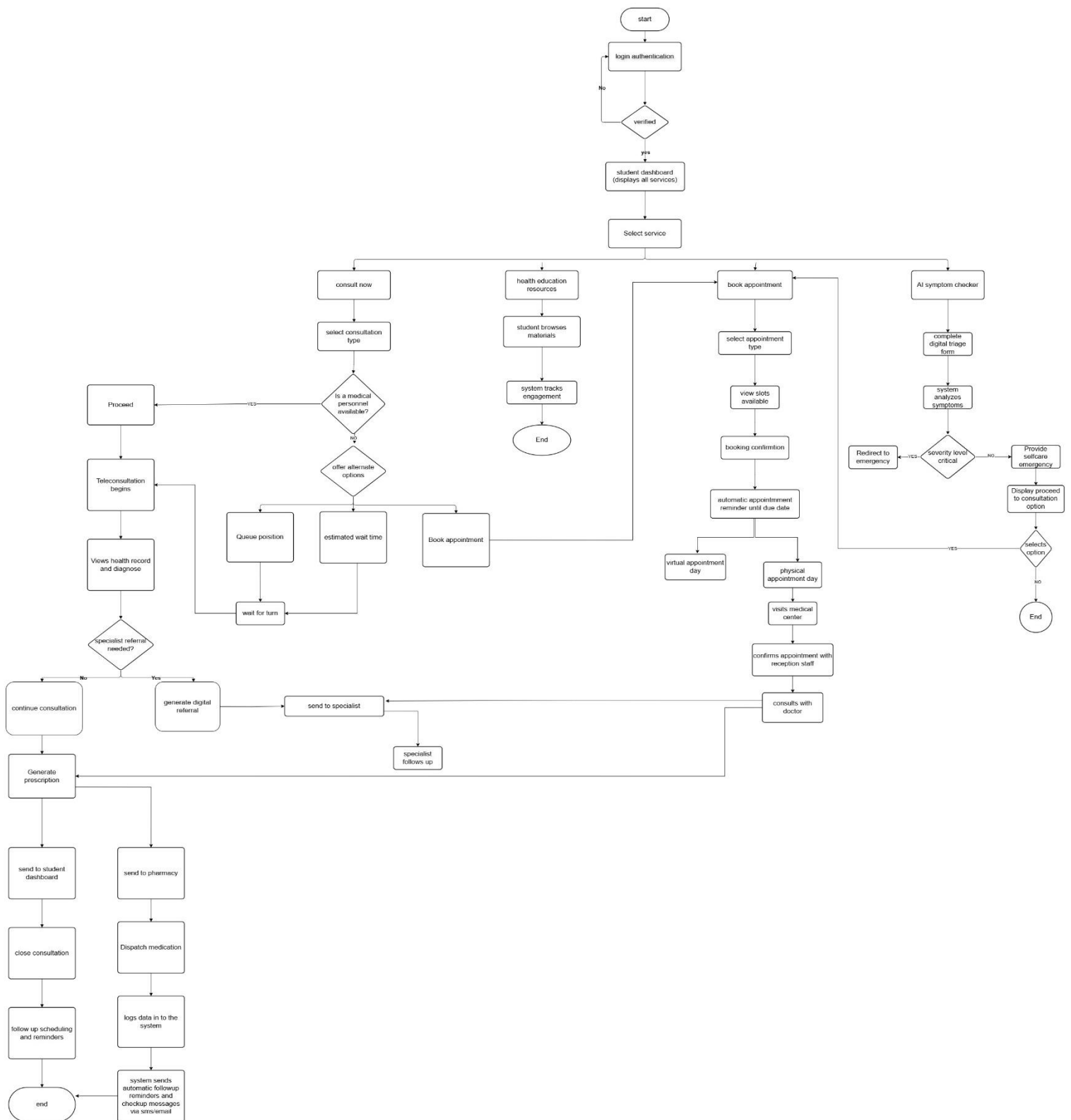
### **6. Follow-Up & Care Continuity**

- Automated reminders for medications, follow-up appointments, or monitoring tasks.
- Referral letters and specialist recommendations are generated and sent digitally.

### **7. Data & Reporting**

- A centralised dashboard presents real-time telehealth metrics, usage statistics, and performance reports.

- Daily/weekly analytics support decision-making and service improvement.





## Pain Points Mapped to Improvements

AS-IS Pain Points	TO-BE Improvements (Future State)
<b>Low awareness of telehealth services</b> → Students don't know where or how to access care digitally.	<b>Centralised telehealth portal + automated student orientation</b> ensures every student knows how to access services.
<b>Inconsistent access to telehealth links/phone lines</b> → Students rely on unreliable, unclear contact points.	<b>Secure, stable web/mobile telehealth platform</b> integrates all services in one place with 24/7 access.
<b>Students rely on manual physical visits</b> → Long queues, overcrowding, and delays.	<b>Digital triage + online appointments</b> significantly reduce unnecessary walk-ins and optimise clinic flow.
<b>No prioritisation of urgent cases</b> → Slow service for emergencies and high-risk symptoms.	<b>AI-assisted triage system</b> categorises urgency and redirects critical cases immediately.
<b>Paper-based medical records</b> → Slow retrieval, errors, and poor continuity of care.	<b>EMR-lite digital records</b> allow doctors to access the student's health history instantly during consultations.
<b>Manual consultation process</b> → Inefficient, prone to delays, and dependent on physical presence.	<b>Remote consultation (video/audio/chat)</b> provides fast, convenient access to medical professionals.
<b>No follow-up system</b> → Students forget appointments or treatment plans; conditions worsen.	<b>Automated reminders &amp; monitoring tools</b> support continuity of care and improve treatment adherence.
<b>No digital referrals</b> → Students must move physically between clinics/hospitals.	<b>Auto-generated digital referral letters</b> streamline collaboration with CMUL specialists.
<b>Lack of health education communication channels</b> → Students rely	<b>In-app health education centre + push notifications</b> deliver verified health content directly to students.

AS-IS Pain Points	TO-BE Improvements (Future State)
on informal sources for health information.	
<b>No data system for decision-making</b> → Management lacks insight into health service utilisation.	<b>Analytics dashboard</b> provides real-time metrics, trends, and reports for continuous improvement.

## 8. FUNCTIONAL REQUIREMENTS

Requirement ID	Functional Requirement (What the System Shall Do)	Business Need Addressed
FR1.1	Support SSO login using UNILAG student portal credentials.	Ensure secure, seamless authentication.
FR1.2	Provide role-based access control (Student, Nurse, Doctor, Admin).	Prevent unauthorized access and ensure correct permissions.
FR1.3	Verify student enrolment status with university database.	Ensure only eligible users access telehealth.
FR1.4	Enforce secure session management and automatic logout.	Improve security and protect student data.
FR2.1	Display directory of all telehealth services and operating hours.	Improve awareness and access to information.
FR2.2	Show announcements for health campaigns and updates.	Strengthen public health communication.
FR3.1	Enable booking of physical or virtual appointments.	Reduce queues and optimise clinic efficiency.
FR3.2	Display real-time availability of doctors and consultation slots.	Increase transparency and reduce wait times.
FR3.3	Allow students to reschedule appointments.	Improve flexibility and reduce missed sessions.

Requirement ID	Functional Requirement (What the System Shall Do)	Business Need Addressed
FR3.4	Allow students to cancel appointments.	Enhance efficient use of consultation slots.
FR3.5	Generate automated virtual queues for consultations.	Reduce manual queue handling and waiting times.
FR4.1	Provide 24/7 AI-assisted digital symptom checker.	Reduce unnecessary clinic visits and improve triage.
FR4.2	Require students to complete digital triage form.	Improve diagnostic accuracy and consultation readiness.
FR4.3	Auto-classify risk: Low, Medium, High.	Prioritize urgent cases and streamline flow.
FR4.4	Redirect high-risk cases to emergency services.	Prevent delays in critical medical situations.
FR5.1	Support secure encrypted <b>video consultations</b> .	Enable remote diagnosis and reduce physical visits.
FR5.2	Support <b>audio consultations</b> for low-bandwidth users.	Increase accessibility across student population.
FR5.3	Provide <b>live chat consultations</b> with healthcare staff.	Offer flexible and alternative communication channels.
FR5.4	Provide a <b>virtual waiting room</b> before consultation.	Structure patient flow and reduce confusion.
FR5.5	Allow file sharing during consultations (images, reports).	Support accurate diagnosis and exchange of medical information.
FR6.1	Allow doctors to enter digital consultation notes.	Modernize documentation and reduce errors.

<b>Requirement ID</b>	<b>Functional Requirement (What the System Shall Do)</b>	<b>Business Need Addressed</b>
<b>FR6.2</b>	Automatically update health records after each consultation.	Maintain complete and updated patient history.
<b>FR6.3</b>	Allow students to view prescriptions and instructions.	Improve treatment adherence and self-management.
<b>FR6.4</b>	Allow providers to view past medical records.	Support continuity and improve quality of care.
<b>FR7.1</b>	Send appointment reminders via SMS/email/app notifications.	Reduce no-shows and improve punctuality.
<b>FR7.2</b>	Send follow-up and medication reminders.	Improve recovery outcomes and adherence.
<b>FR7.3</b>	Send public health alerts and announcements.	Enhance emergency response and awareness.
<b>FR8.1</b>	Generate and send digital referral letters to specialists.	Reduce paper use and specialist access delays.
<b>FR8.2</b>	Allow students to track referral status.	Improve transparency and reduce lost referrals.
<b>FR9.1</b>	Provide admin dashboard with key telehealth metrics.	Enable data-driven decision-making.
<b>FR9.2</b>	Export reports (daily/weekly/monthly) in CSV/PDF formats.	Better administration and compliance reporting.
<b>FR9.3</b>	Record and track complaints and system issues.	Improve service quality and accountability.
<b>FR10.1</b>	Provide an in-app support ticketing system.	Improve issue reporting and support access.
<b>FR10.2</b>	Provide a knowledge base/FAQ for self-help.	Reduce support burden and improve user independence.

Requirement ID	Functional Requirement (What the System Shall Do)	Business Need Addressed
FR10.3	Enable live chat with support team during working hours.	Improve user satisfaction and quick problem resolution.
FR11.1	Enable user management (roles, permissions, profile updates).	Maintain system integrity and operational control.
FR11.2	Allow admin to configure clinic hours, doctor availability.	Provide operational flexibility.
FR11.3	Allow uploading and updating of health education materials.	Keep platform content accurate and up to date.

## 9. NON-FUNCTIONAL REQUIREMENTS

NFR Category	NFR ID	Non-Functional Requirement (What the System Must Achieve)	Business Need Addressed / Rationale
1. Performance & Efficiency	NFR1.1	System shall load all primary pages (Dashboard, Consultation, Booking) in <b>≤ 3 seconds</b> under normal network conditions.	Ensures smooth user experience and reduces drop-offs.
	NFR1.2	The teleconsultation module shall support <b>at least 500 concurrent users</b> without degradation in quality.	Supports peak student usage during outbreaks/exam periods.
	NFR1.3	The system must process triage results and risk categorization in <b>≤ 5 seconds</b> .	Enables timely emergency intervention.

NFR Category	NFR ID	Non-Functional Requirement (What the System Must Achieve)	Business Need Addressed / Rationale
	NFR1.4	Video calls shall automatically adjust quality based on bandwidth.	Ensures accessibility for students with low network quality.
2. Security & Data Protection	NFR2.1	All data in transit must be encrypted using <b>TLS 1.3 or higher</b> .	Protects sensitive student health information.
	NFR2.2	All stored medical information must be encrypted using <b>AES-256 encryption</b> .	Meets global medical data protection standards.
	NFR2.3	System must implement MFA (Multi-Factor Authentication) for medical staff.	Prevents unauthorized access to medical records.
	NFR2.4	System must comply with <b>NDPR</b> (Nigeria Data Protection Regulation).	Ensures legal compliance with national privacy laws.
	NFR2.5	Automatic session timeout after <b>10 minutes of inactivity</b> .	Prevents unauthorized access on shared devices.
3. Usability & Accessibility	NFR3.1	The interface must comply with <b>WCAG 2.1 AA accessibility standards</b> .	Supports visually impaired and physically challenged users.
	NFR3.2	Platform must be mobile-friendly and accessible on <b>Android, iOS, tablets, and web</b> .	Increases reach for all students.
	NFR3.3	Digital forms must be easy to complete with a maximum of <b>5 clicks</b> to complete triage.	Reduces user fatigue and improves adoption.

NFR Category	NFR ID	Non-Functional Requirement (What the System Must Achieve)	Business Need Addressed / Rationale
	<b>NFR3.4</b>	System must support English and optionally Pidgin for health education content.	Enhances comprehension for diverse student population.
<b>4. Reliability &amp; Availability</b>	<b>NFR4.1</b>	System uptime must be <b>≥ 99.5%</b> , excluding scheduled maintenance.	Ensures dependable access to telehealth services.
	<b>NFR4.2</b>	System must gracefully handle network interruptions and reconnect automatically.	Prevents consultation disruptions.
	<b>NFR4.3</b>	System must have full failover and backup mechanisms in case of server outage.	Maintains continuity of health services.
<b>5. Scalability</b>	<b>NFR5.1</b>	System must scale horizontally to support <b>up to 10,000 users</b> across UNILAG and CMUL.	Accommodates future growth and multi-campus expansion.
	<b>NFR5.2</b>	Consultation servers must auto-scale during high demand (e.g., epidemics).	Prevents system crashes during spikes.
<b>6. Maintainability &amp; Modularity</b>	<b>NFR6.1</b>	System must follow modular design (microservices preferred).	Simplifies modifications and troubleshooting.
	<b>NFR6.2</b>	All code must be documented to <b>industry standard documentation practices</b> .	Ensures long-term system maintainability.

NFR Category	NFR ID	Non-Functional Requirement (What the System Must Achieve)	Business Need Addressed / Rationale
	NFR6.3	System updates must not cause downtime longer than <b>15 minutes</b> .	Ensures stable usage throughout the year.
<b>7. Interoperability &amp; Standards</b>	NFR7.1	System must support <b>HL7 / FHIR</b> standards for medical data exchange.	Ensures compatibility with future hospital systems.
	NFR7.2	The EMR-lite module must integrate seamlessly with existing UNILAG Medical Centre databases.	Enables continuous, unified health record access.
	NFR7.3	API endpoints must allow integration with external labs and pharmacies.	Enables automation of test results and prescriptions.
<b>8. Auditability &amp; Logging</b>	NFR8.1	System must maintain audit logs of all medical staff actions.	Ensures accountability and traceability.
	NFR8.2	Logs must be retained securely for <b>at least 7 years</b> .	Supports compliance and medico-legal requirements.
	NFR8.3	Automatic anomaly detection (e.g., unusual login patterns).	Detects potential data breaches.
<b>9. Backup &amp; Disaster Recovery</b>	NFR9.1	Data backups must run <b>daily</b> , with 30-day retention.	Protects against data loss.
	NFR9.2	Disaster recovery plan must restore the system within <b>4 hours (RTO)</b> .	Ensures telehealth continuity in emergencies.
	NFR9.3	Maximum allowable data loss (RPO) shall be <b>≤ 1 hour</b> .	Minimises loss of medical consultations/records.



## USE CASES FOR TELEMEDICINE SYSTEM

### USE CASE 1 — USER AUTHENTICATION (SSO LOGIN)

Use Case ID: 1.01	Use Case Name: Student Secure Login via SSO
Actors	Student, Authentication System
Pre-Conditions	<ul style="list-style-type: none"><li>• Student has an active UNILAG portal account.</li><li>• System is online.</li></ul>
Primary Steps	<ol style="list-style-type: none"><li>1. Student navigates to the telemedicine portal.</li><li>2. Student selects “Login with UNILAG Credentials (SSO)”.</li><li>3. System redirects to UNILAG identity provider.</li><li>4. Student enters matric number + password.</li><li>5. System validates credentials.</li><li>6. Access is granted and student dashboard loads.</li></ol>
Alternate Steps	<ul style="list-style-type: none"><li>• Invalid Credentials: System displays error and prompts retry.</li><li>• Account Locked: Student is redirected to password reset page.</li></ul>
Business Objective	Ensure secure, seamless access for students and protect patient health data.

#### Scenario ID: 1.02

Scenario Name: Student Logs In Successfully

GIVEN student has valid portal credentials

WHEN they attempt to log in via SSO

THEN the system grants access to their telemedicine dashboard

#### Business Objective:

Enable authenticated access to telehealth services.

### USE CASE 2 — APPOINTMENT BOOKING SYSTEM

Use Case ID: 2.01	Use Case Name: Book Telehealth or Physical Appointment
Actors	Student, Doctor, Booking System
Pre-Conditions	<ul style="list-style-type: none"><li>• Student is logged into the system.</li></ul>
Primary Steps	<ol style="list-style-type: none"><li>1. Student navigates to “Book Appointment”.</li></ol>

	<ol style="list-style-type: none"> <li>2. System displays available doctors and time slots.</li> <li>3. Student selects appointment type (Video/Audio/Physical).</li> <li>4. Student confirms date/time.</li> <li>5. System sends confirmation via email/SMS.</li> </ol>
Alternate Steps	<ul style="list-style-type: none"> <li>• No available slots: Student joins waitlist.</li> <li>• Doctor unavailable: System suggests alternative providers.</li> </ul>
Business Objective	Enable efficient scheduling and reduce clinic congestion.

## Scenario ID: 2.02

Scenario Name: Student Books a Video Consultation

GIVEN appointment slots are available

WHEN student selects a date/time

THEN the system books and sends a confirmation

### Business Objective:

Improve access and convenience for students.

## USE CASE 3 — DIGITAL TRIAGE SYSTEM

<b>Use Case ID: 3.01</b>	<b>Use Case Name: Symptom Checker &amp; Triage</b>
Actors	Student, AI Triage Engine
Pre-Conditions	<ul style="list-style-type: none"> <li>• Student is authenticated.</li> </ul>
Primary Steps	<ol style="list-style-type: none"> <li>1. Student opens Symptom Checker.</li> <li>2. System presents a structured symptom form.</li> <li>3. Student inputs symptoms.</li> <li>4. AI analyses data.</li> <li>5. System categorises case: <i>Low, Medium, High Risk</i>.</li> <li>6. Recommendations are displayed (self-care, teleconsultation, emergency).</li> </ol>
Alternate Steps	<ul style="list-style-type: none"> <li>• Incomplete information: System requests missing data.</li> </ul>
Business Objective	Reduce unnecessary clinic visits and prioritize critical cases.

**Scenario ID: 3.02**

Scenario Name: AI Flags a High-Risk Case  
GIVEN student enters severe symptoms  
WHEN the AI runs triage  
THEN system recommends urgent medical attention

**Business Objective:**  
Ensure timely medical response.

**USE CASE 4 — REMOTE CONSULTATION**

Use Case ID: 4.01	Use Case Name: Conduct Remote Consultation
Actors:	Student, Doctor
Pre-Conditions:	<ul style="list-style-type: none"><li>Booking completed.</li><li>Student and doctor have data connection.</li></ul>
Primary Steps:	<ol style="list-style-type: none"><li>Student clicks Join Consultation.</li><li>Doctor opens consultation room.</li><li>Video/Audio session begins.</li><li>Doctor reviews health records.</li><li>Doctor provides diagnosis and prescription.</li></ol>
Alternate Steps:	<ul style="list-style-type: none"><li>Low connectivity: Switch to audio or live chat.</li><li>Doctor unavailable: System reschedules automatically.</li></ul>
Business Objective:	Provide convenient, remote access to certified healthcare.

**Scenario ID: 4.02**

Scenario Name: Video Consultation  
GIVEN a scheduled session  
WHEN both parties join  
THEN consultation is carried out successfully

**Business Objective:**  
Enhance accessibility of healthcare.

## USE CASE 5 — ELECTRONIC MEDICAL RECORDS (EMR-LITE)

<b>Use Case ID: 5.01</b>	<b>Use Case Name: Update and Retrieve EMR</b>
Actors	Doctor, Student, EMR System
Pre-Conditions	<ul style="list-style-type: none"><li>Real or tele-consultation completed.</li></ul>
Primary Steps	<ol style="list-style-type: none"><li>Doctor enters consultation notes.</li><li>EMR auto-updates student record.</li><li>Student views prescriptions in dashboard.</li></ol>
Alternate Steps	<ul style="list-style-type: none"><li>Network outage: Records saved to sync later.</li></ul>
Business Objective	Ensure accurate, integrated medical documentation.

### Scenario ID: 5.02

Scenario Name: Viewing Updated Records

GIVEN consultation was completed

WHEN student opens their health record page

THEN updated notes and prescriptions are visible

#### **Business Objective:**

Improve continuity of care.

## USE CASE 6 — NOTIFICATION & ALERT SYSTEM

<b>Use Case ID: 6.01</b>	<b>Use Case Name: Send Alerts &amp; Reminders</b>
Actors	System, Student
Pre-Conditions	<ul style="list-style-type: none"><li>Student has notification settings enabled.</li></ul>
Primary Steps	<ol style="list-style-type: none"><li>System monitors upcoming events.</li><li>Sends appointment reminders.</li><li>Sends follow-up reminder or drug reminders.</li></ol>
Alternate Steps	SMS fails: Email is sent as fallback.
Business Objective	Increase adherence and follow-up compliance.

### Scenario ID: 6.02

Scenario Name: Appointment Reminder

GIVEN student has an appointment

WHEN reminder time is reached

THEN system notifies student via SMS/Email

**Business Objective:**

Ensure students show up and follow through with care.

**USE CASE 7 — REPORTING & ANALYTICS DASHBOARD**

<b>Use Case ID: 7.01</b>	<b>Use Case Name: Generate Telehealth Metrics</b>
Actors	Admin, System
Pre-Conditions	<ul style="list-style-type: none"><li>Admin logged in.</li></ul>
Primary Steps:	<ol style="list-style-type: none"><li>Admin selects report type.</li><li>System compiles usage statistics.</li><li>Dashboard displays charts &amp; insights.</li></ol>
Alternate Steps:	<ul style="list-style-type: none"><li>Invalid date range: System prompts correction.</li></ul>
Business Objective:	Support data-driven decisions for health service improvement.

**Scenario ID: 7.02**

**Scenario Name: Admin Views Weekly Activity Report**

**GIVEN** admin selects “Weekly Report”

**WHEN** system processes analytics

**THEN** dashboard displays metrics

**Business Objective:**

Improve operational planning.

**USE CASE 8 — REFERRAL SYSTEM**

<b>Use Case ID: 8.01</b>	<b>Use Case Name: Digital Referral to Specialist</b>
Actors	Doctor, Student, Specialist
Pre-Conditions	<ul style="list-style-type: none"><li>Consultation completed.</li></ul>
Primary Steps	<ol style="list-style-type: none"><li>Doctor identifies need for referral.</li><li>System opens referral form.</li><li>Doctor selects specialist and attaches notes.</li></ol>

	4. System sends referral.
Alternate Steps	<ul style="list-style-type: none"> <li>Specialist unavailable: Suggests alternative dates.</li> </ul>
Business Objective	Improve care continuity across departments.

## Scenario ID: 8.02

### Scenario Name: Specialist Receives Referral

**GIVEN** referral submitted

**WHEN** specialist logs in

**THEN** referral and notes are visible

#### Business Objective:

Ensure seamless information flow.

## USE CASE 9 — HELP DESK / SUPPORT

<b>Use Case ID: 9.01</b>	<b>Use Case Name: Submit Support Ticket</b>
Actors	Student, Support Team
Pre-Conditions	<ul style="list-style-type: none"> <li>Student logged in.</li> </ul>
Primary Steps	<ol style="list-style-type: none"> <li>Student opens Help Desk.</li> <li>Student submits complaint or request.</li> <li>Support receives and responds.</li> </ol>
Alternate Steps	Incomplete ticket: System requests more details.
Business Objective	Ensure smooth user experience and issue resolution.

## Scenario ID: 9.02

Scenario Name: Student Submits Complaint

**GIVEN** student encounters an issue

**WHEN** they submit a ticket

**THEN** support team responds within SLA

#### Business Objective:

Maintain high system reliability.

## USE CASE 10 — HELP DESK & SUPPORT MODULE

Use Case ID: 10.01	Use Case Name: In-App Support, Knowledge Base & Live Chat
Actors	Student (or Staff), Support Agent, System (Help Desk Module)
Pre-Conditions	<ul style="list-style-type: none"><li>• User is logged into the telehealth platform.</li><li>• Help Desk service is online and staffed (for live chat during working hours).</li><li>• Knowledge Base content has been published by Admin.</li></ul>
Primary Steps	<ol style="list-style-type: none"><li>1. User selects Help / Support from the menu.</li><li>2. System displays options: Search Knowledge Base, Create Support Ticket, Start Live Chat (if available).</li><li>3. If user selects Knowledge Base: user enters keywords → system returns relevant articles/resources.</li><li>4. If user selects Create Ticket: user completes ticket form (category, description, attachments) → user submits → system assigns ticket ID and routes to support queue → auto-confirmation sent to user (SMS/email/in-app).</li><li>5. If user selects Live Chat (during working hours): system connects user to available support agent → live chat begins → agent provides assistance or escalates to ticket if needed.</li><li>6. Support Agent updates ticket status and resolution notes; system notifies user of status changes.</li></ol>
Alternate Steps	<ul style="list-style-type: none"><li>• Live chat is unavailable (outside working hours) → system offers “Leave a Ticket” or schedules chat → user creates ticket.</li><li>• Knowledge Base returns no match → system suggests submitting a ticket and/or offers contact options.</li><li>• Ticket requires escalation to IT/Doctor/Admin → support agent reassigns ticket; user receives updated timeline.</li></ul>

Business Objective	Improve issue reporting & resolution, reduce support burden via self-help, and provide timely assistance to maintain high user satisfaction.
--------------------	--

### Scenario ID: 10.02

Scenario Name: User Submits Support Ticket

GIVEN the user encounters an issue and is logged in

WHEN they select “Create Support Ticket” and submit the form

THEN the system creates a ticket, assigns an ID, routes it to support, and sends confirmation to the user

**Business Objective:** Ensure problems are captured, tracked and resolved with accountability.

### Scenario ID: 10.03

Scenario Name: User Searches Knowledge Base

GIVEN the user wants self-help information

WHEN they enter a search term in the Knowledge Base

THEN the system returns relevant articles or suggests submitting a ticket if none found

**Business Objective:** Reduce repetitive support requests and empower users to self-serve.

### Scenario ID: 10.04

Scenario Name: User Connects to Live Chat (During Working Hours)

GIVEN it is within live-chat operating hours and an agent is available

WHEN user selects “Live Chat”

THEN the system connects to an agent and the conversation begins; if unresolved, a ticket is created and linked to the chat

**Business Objective:** Provide rapid, real-time support to improve user satisfaction and speed resolution.



## USE CASE 11 — SYSTEM ADMINISTRATION

Use Case ID: 11.01	Use Case Name: User & Service Administration (Roles, Schedules, Content)
Actors	System Administrator, Medical Centre Admin, Content Manager, System
Pre-Conditions	<ul style="list-style-type: none"><li>• Admin user is authenticated with administrator privileges.</li><li>• Admin console is accessible (secure network).</li></ul>
Primary Steps	<ol style="list-style-type: none"><li>1. Admin logs into Admin Console.</li><li>2. User Management: Admin navigates to User Management → create/edit user profiles → assign/remove roles and permissions → save changes → system enforces role-based access (e.g., Doctor, Nurse, Support, Student).</li><li>3. Clinic Hours &amp; Doctor Availability: Admin navigates to Scheduling → configures clinic hours, adds/removes doctor availability, sets holidays/blocked dates → publishes schedule → system updates booking availability.</li><li>4. Content Management (Health Education): Admin opens Content Manager → upload new health education material (PDF, video, infographic), tag content, set visibility (public, students only), and publish → system notifies content subscribers (optional).</li><li>5. Admin reviews logs and confirms changes; system records audit trail for compliance.</li></ol>
Alternate Steps	<ul style="list-style-type: none"><li>• Attempt to assign a role that conflicts with policy (e.g., assign Admin role to non-authorized account) → system warns and requires secondary approval.</li><li>• Scheduling conflict (double-booked slot) → system highlights conflict and prompts resolution.</li><li>• Content fails validation (format/size) → system rejects upload with error and instructions.</li></ul>

Business Objective	Maintain system integrity and operational control through robust user role management, flexible scheduling, and up-to-date educational content.

#### **Scenario ID: 11.02**

Scenario Name: Admin Creates a New User with Role

GIVEN Admin is authenticated and has HR/authorization to add users

WHEN Admin creates a user account and assigns the “Doctor” role

THEN the system creates the account, assigns permissions, and the user can access Doctor-specific features after first login

**Business Objective:** Ensure correct permissions and secure onboarding for staff.

#### **Scenario ID: 11.03**

Scenario Name: Admin Updates Clinic Hours / Doctor Availability

GIVEN Admin needs to change clinic hours for a holiday week

WHEN Admin updates the schedule in the scheduling module and saves changes

THEN the system updates booking availability and notifies impacted patients/providers of schedule changes

**Business Objective:** Provide operational flexibility and avoid booking conflicts.

#### **Scenario ID: 11.04**

Scenario Name: Content Manager Uploads Health Education Material

GIVEN content is reviewed and ready for publishing

WHEN Content Manager uploads material and marks it as “Published”

THEN the system stores the content, tags it appropriately, and makes it visible in the Health Education section; subscribers may be notified

**Business Objective:** Keep health content accurate, current, and accessible for student education.

## 10. ASSUMPTIONS & CONSTRAINTS

### A. TECHNICAL ASSUMPTIONS

#### 1. Student Device Access

**Assumption:**  $\geq 85\%$  of students have access to a smartphone or computer capable of running the telehealth app/portal.

**Impact if false:** Lower adoption and equity gaps; many students unable to use digital services.

**Mitigation:** Provide lightweight (low-bandwidth) web version; set up campus kiosks; phased hybrid model.

#### 2. Campus Network Availability

**Assumption:** UNILAG ICT will provide stable campus Wi-Fi with reasonable bandwidth in student hubs.

**Impact if false:** Poor user experience, failed video sessions, increased no-shows.

**Mitigation:** Implement adaptive video, audio-only fallbacks, partner with telcos for student data bundles.

#### 3. Integration Feasibility with Existing Systems

**Assumption:** The student information system (SIS) and any existing clinic databases expose APIs or secure export methods for SSO and enrollment verification.

**Impact if false:** Manual user provisioning, higher administrative overhead, potential data sync issues.

**Mitigation:** Build middleware for scheduled batch syncs; negotiate limited API access.

#### 4. Vendor Capability & Standards Support

**Assumption:** Selected telehealth vendor(s) will support required standards (TLS, AES, FHIR/HL7) and scalability.

**Impact if false:** Delays, potential rework, data interoperability issues.

**Mitigation:** Include standards compliance in RFP; require proof-of-concept and security attestations.

## B. OPERATIONAL ASSUMPTIONS

### 5. Staffing Availability

**Assumption:** Medical Centre and support staff will allocate time for telehealth duties and training.

**Impact if false:** Inability to staff consultations; degraded service levels.

**Mitigation:** Define roles & rosters, incentives, phased onboarding, external vendor staffing as temporary cover.

### 6. Student Engagement for Training & Onboarding

**Assumption:** Students will participate in orientation and awareness campaigns (freshers' orientation, email, SMS).

**Impact if false:** Low awareness and adoption.

**Mitigation:** Multi-channel campaigns, in-person demos, faculty champions.

### 7. Clinical Acceptance of Remote Care

**Assumption:** Clinicians accept teleconsultation workflows for non-emergency care.

**Impact if false:** Resistance, low provider participation.

**Mitigation:** Clinical governance, training, pilot with champions, collect outcome metrics to build evidence.

## C. BUSINESS & FINANCIAL ASSUMPTIONS

### 8. Budget Approval

**Assumption:** University will approve the initial budget for platform deployment, training, and 12 months operational costs.

**Impact if false:** Scale-down, delayed rollout, or phased minimal viable product.

**Mitigation:** Propose phased implementation, seek donor/PPP support, present ROI and student impact data.

### 9. Affordability for Students

**Assumption:** Teleconsultation fees (if any) will be subsidised or set to be affordable for students.

**Impact if false:** Low uptake due to out-of-pocket cost barriers.

**Mitigation:** Subsidies, free/basic-tier services, partnerships with insurers or sponsors

## D. LEGAL, COMPLIANCE & DATA ASSUMPTIONS

### 10. Regulatory Environment

**Assumption:** Telehealth services for students are permitted under national health regulations and university policies.

**Impact if false:** Legal constraints, service limitations, need for policy changes.

**Mitigation:** Early legal review, align with NDPR, seek regulatory guidance, obtain approvals.

### 11. Data Privacy & Consent

**Assumption:** Students will provide informed consent for digital health records and teleconsultations as part of onboarding.

**Impact if false:** Legal risk, restricted features (e.g., no remote prescriptions).

**Mitigation:** Clear consent flows, privacy notice, opt-in mechanisms, anonymised analytics.

## E. QUALITY & USABILITY ASSUMPTIONS

### 12. Minimum Digital Literacy

**Assumption:** Majority of students possess basic digital literacy to navigate web/app interfaces.

**Impact if false:** Increased support burden and poor service use.

**Mitigation:** Simplified UI, guided onboarding, student help desks, video tutorials.

### 13. Language & Accessibility

**Assumption:** English (and optionally Pidgin) is adequate for most student content; WCAG compliance will cover accessibility needs.

**Impact if false:** Exclusion of some users.

**Mitigation:** Add multilingual options, iterative UX testing with diverse student groups.

## F. TIMELINE & DELIVERY ASSUMPTIONS

### 14. Timely Stakeholder Decisions

**Assumption:** University stakeholders (ICT, Medical Centre, Management) provide timely approvals and feedback.

**Impact if false:** Schedule delays and cost overruns.

**Mitigation:** Defined RACI, governance board, scheduled review cycles.

#### 15. **Pilot Will Demonstrate Key Benefits**

**Assumption:** Pilot across selected faculties will produce positive engagement metrics to justify full rollout.

**Impact if false:** Rework of approach/requirements, possible project pause.

**Mitigation:** Flexible pilot design, success criteria, iterative improvements.

### **G. EXTERNAL DEPENDENCY ASSUMPTIONS**

#### 16. **Third-Party Integrations**

**Assumption:** External labs, pharmacies, or third-party services will cooperate for integrations (where required).

**Impact if false:** Manual processes remain; limited automation.

**Mitigation:** Start with minimal integrations; use manual import/export interfaces initially.

#### 17. **Telecom & Payment Partners**

**Assumption:** Telcos and payment gateways will support student data bundles and payment processing.

**Impact if false:** Students may decline usage due to data cost or payment friction.

**Mitigation:** Negotiate student bundle offers; include offline payment/waiver options.

### **CONSTRAINTS**

These are limiting conditions the project must accept or work around.

#### **1. BUDGET CONSTRAINT**

- **Description:** Project funding is limited and must be approved within the fiscal year; no open-ended budgets.
- **Impact:** Scope must be prioritised; some features (e.g., full EMR migration, AI diagnostics) excluded.
- **Mitigation:** Adopt phased implementation (MVP → enhancements), seek PPP/donor funding for phase 2.

## 2. TIMEBOX & ACADEMIC CALENDAR

- **Description:** Implementation must align with academic timetable (avoid exam periods and long vacation gaps).
- **Impact:** Limited windows for pilots, training, and rollouts.
- **Mitigation:** Plan major launches at start of semester; schedule off-peak maintenance during vacations.

## 3. TECHNICAL CONSTRAINTS

- **Description:** Existing SIS/legacy systems may lack modern APIs; campus network bandwidth varies.
- **Impact:** Integration complexity; may need batch syncs instead of real-time.
- **Mitigation:** Build middleware, allow asynchronous syncs, optimize for low bandwidth.

## 4. HUMAN RESOURCE CONSTRAINT

- **Description:** Medical Centre staffing levels are fixed and clinical time is limited.
- **Impact:** Limited teleconsultation slots; possible clinician overload.
- **Mitigation:** Stagger schedules, hire dedicated telehealth nurse or partner with external clinicians for overflow.

## 5. REGULATORY & POLICY CONSTRAINT

- **Description:** Must comply with NDPR and other national health regulations; sensitive patient data handling required.
- **Impact:** Requires legal review, consent management, security controls; could limit some features (e.g., cross-border teleconsultations).
- **Mitigation:** Early compliance checks, privacy-by-design, and secure hosting arrangements.

## 6. INFRASTRUCTURE CONSTRAINT

- **Description:** Some student hostels and off-campus areas have low or unreliable connectivity.
- **Impact:** Video consultations may be impractical for affected students.
- **Mitigation:** Provide audio/chat fallbacks; schedule on-campus kiosks; partner with telcos.

## 7. SCOPE CONSTRAINT

- **Description:** Project excludes full hospital EMR replacement, surgical telepresence, and major hardware procurement.
- **Impact:** Limits certain capabilities; ensures deliverable focus.
- **Mitigation:** Document clear roadmap for future phases and integration points.

## 8. DATA RETENTION & STORAGE LOCATION

- **Description:** Institutional policy may require data to be stored within specified jurisdictions or approved cloud providers.
- **Impact:** May limit vendor choice and increase cost.
- **Mitigation:** Select compliant hosting that meets NDPR and university standards.

## 9. SECURITY CONSTRAINT

- **Description:** Minimum security standards (TLS, AES) must be met; penetration testing is required before go-live.
- **Impact:** Additional time and cost for security reviews.
- **Mitigation:** Include security budget and schedule in project plan.

## 10. CHANGE MANAGEMENT CONSTRAINT

- **Description:** Resistance to change among staff, and approvals needed from multiple departments.
- **Impact:** Slower adoption and additional training needs.
- **Mitigation:** Stakeholder engagement plan, pilot success champions, incentives.

## 11. RISKS & MITIGATION

Risk ID	Description	Impact	Level	Mitigation Strategies
R1	System downtime, slow performance, failed video/audio sessions	High	High	Use cloud hosting with auto-scaling; implement monitoring tools; create fallback audio mode; set up redundancy/failover systems
R2	Poor internet/bandwidth for students	High	High	Enable low-bandwidth mode; adaptive video; partner with



				telcos for student bundles; provide on-campus telehealth kiosks
R3	Failure integrating SSO/SIS or clinic systems	High	High	Conduct early feasibility analysis; use middleware; batch sync methods; collaborate closely with ICT
R4	Cyberattacks, data breaches, unauthorized access	Very High	Critical	Implement encryption (TLS/AES-256), RBAC, MFA (optional), audit logs, penetration testing, staff cyber training
R5	Triage tool misclassifies symptoms	High	High	Use clinically validated algorithms; manual review for high-risk cases; continuous retraining and updates; clear disclaimers
R6	Staff resistance or low adoption of telehealth	Medium	Medium	Provide training, onboarding; appoint champions; present pilot results; offer incentives
R7	Insufficient help desk or teleconsultation staffing	Medium–High	High	Stagger schedules; expand knowledge base; automate initial responses; hire support during peak periods
R8	Low awareness leading to low usage	High	High	Run orientation programs; targeted awareness campaigns; integrate telehealth links across student portals
R9	Incorrect or incomplete data entry by staff	High	High	Provide structured templates; training; validation checks;

				mandatory fields; periodic data audits
R10	Budget delays or insufficient funding	High	High	Phased implementation; strong ROI justification; explore donor or PPP partnerships
R11	Delays due to multi-department approvals	Medium–High	High	Establish governance board; weekly steering committee; RACI matrix; defined escalation path
R12	Vendor underperformance or delays	High	High	Use strict SLAs; require POC; penalty clauses; maintain backup vendor options
R13	Non-compliance with NDPR / health regulations	Very High	Critical	Legal compliance review; privacy-by-design; consent workflows; secure cloud hosting
R14	Failure to meet clinical/ethical standards	Very High	High	Strong clinical governance; licensed providers only; routine quality audits
R15	Poor user interface and navigation issues	Medium	Medium	Conduct UX testing; simplify UI; provide in-app guides
R16	Too many notifications cause users to disengage	Low–Medium	Low	Allow user control of notification frequency; optimize alert logic
R17	Poor data quality or missing records	High	High	Implement validation rules; mandatory fields; staff training; data quality audits
R18	Misinterpretation of analytics dashboards	Medium	Medium	Provide admin training; add explanations/legends; automated summaries

R19	Long-term abandonment of system after pilot	High	High	Continuous feature updates; incentives; embed in medical centre policy
R20	Staff turnover affecting operations	High	High	Cross-training; documentation; succession planning; knowledge transfer processes

12. SUCCESS METRICS (KPIs)

Success Metrics

KPI	Baseline (Your Data)	Target
Awareness Rate	29.3%	80% within 6 months
Telehealth Usage	Very low	50% of clinic consultations virtual
Patient Satisfaction	Moderate	>90% satisfaction
Average Consultation Time	Untracked	< 10 minutes
System Uptime	Untracked	99.5%
Health Worker Load Reduction	Unknown	40% reduction

13. APPROVAL SIGN-OFF

- Project Supervisor- Prof Grace Otinwa
- Business Analyst- Patricia Chukwu