Call for Innovators to deliver a Telemedicine solution for Abortion Care Project

Glossary

Nurse: Healthcare professional stationed at health centres providing primary care services.

Doctor: Medical practitioner stationed at district hospitals providing specialized care and support to health centers.

Telemedicine: Delivery of healthcare services remotely using telecommunications technology.

Encryption Algorithm: Mathematical procedure used to encode and decode sensitive information to prevent unauthorized access.

Regulations: Legal guidelines governing the practice of telemedicine and protection of patient data privacy and security.

Software requirement specification (SRS) for the abortion care telemedicine system.

Introduction

The Rwanda Health Initiative for youth and women and UNFPA, in collaboration with the Rwanda Biomedical Centre has embarked on a journey of development of a telemedicine system that will act as a bridge between the health centres and hospitals in providing abortion services with a help of a remote doctor at a district hospital that provide the services at the health centres.

Overall objectives

The system should be able to perform following actions:

- Call from a nurse of a health centre to a doctor on a district hospital.
- Record calls between a nurse and doctor.
- Message chat functionalities between a doctor and nurse.
- Record video call between a nurse and doctor.
- Exporting a video call from a nurse/ a doctor.
- Provide a patient demographics.
- Upload images and other attachments by nurse at health centres and doctors at hospital.
- Make and generate reports for both nurse, hospital, and a third-party institution.
- Implement a complex high-level security feature.
- Implement algorithm to ensure data security and privacy.

Software Requirements Specification (SRS) for Telemedicine System

2. Overall description

The system will be a web-based platform with a mobile app version accessible through a secure login for authorized personnel. It will provide functionalities to support communication, collaboration, and data management for abortion services.

3. Requirements Description

3.1 Functional Requirements

Process Step	Requirement ID	Description	Priority
User management	User.req.1	Register and Manage user accounts for nurses, doctors, and authorized third-party personnel	M
User management	User.req.2	Define user roles and permissions for access control.	M
Communication	Com.req.1	**Real time calling**: Initiate and manage voice calls between nurses and doctors	M
Communication	Com.req.2	**Chat**: Facilitate text-based chat communication between nurses and doctors	M
Communication	Com.req.3	**Video Conferencing:** Enable secure video calls for consultation and guidance.	M
Patient Management	Pat.req.1	Securely store and manage patient demographic and medical information.	M
Data Sharing		Upload and share images relevant to the abortion procedure (with patient consent).	M
Data Sharing		Upload and share attachment, such reports and lab results.	M
Reporting		Generate reports for nurses, hospitals, and Rwanda Biomedical Centre. Reports may include: ● Number of consultations. ● Types of services provided.	M

		• Success rates. • Follow-up data (anonymized)	

Security		• Implement a robust security feature including:
		  ○ User authentication and authorization.
		  ○ Data encryption in transit and at rest.
		  ○ Secure communication protocols.
		  ○ Regular security audits and penetration testing.
			M

Data Privacy		• Comply with relevant data privacy regulations Like the Rwandan Data protection and privacy law, and Health Insurance Portability Accountability (HIPAA). • Implement algorithms to anonymize patient data where appropriate.	M

Non-Functional Requirements

Performance

- The system shall have low latency to ensure real-time communication between nurses and doctors.
- It should support many concurrent users without degradation in performance.

Reliability

- The system shall have high availability to ensure uninterrupted access for users.
- It should be resilient to failures and capable of recovering from system crashes or network disruptions.

Scalability

- The system architecture should be scalable to accommodate future growth and increasing demand for telemedicine services

Usability

- The user interface shall be intuitive and user-friendly to facilitate easy adoption by nurses and doctors.
- Adequate training and support materials shall be provided to assist users in utilizing system functionalities effectively.

Compliance

- The system shall comply with relevant healthcare regulations and standards regarding patient data privacy and security.
- It should adhere to ethical guidelines and best practices in telemedicine service delivery.

4. Constraints

- The system should be compatible with existing hardware and network infrastructure available at health centres and district hospitals.
- It should operate within the legal and regulatory framework governing telemedicine services in the respective region.

5. Assumptions

- It is assumed that both nurses and doctors will have access to appropriate devices (e.g., smartphones, tablets, and computers) and internet connectivity to utilize the system effectively.
- Users will undergo training to familiarize themselves with the system's functionalities and security protocols.

6. Dependencies

- The successful implementation of the telemedicine system depends on the availability of reliable internet connectivity and technical support for system maintenance and upgrades.

7. Evaluation Methodology

The competition will be conducted in form of hackathon organized between innovators from different universities and health tech hub. The information session will be organized to help innovators to understand the scope of work. After an 8-day hackathon, innovators will be

required to submit their proposed solution for evaluation. The evaluation will be in form of demonstration and interview and thereafter one successful group of innovators will be supported financially to deliver and finalize the product.

8. ICT Profiles Recommended to Apply

- ✓ **Full-Stack Developers**: Proficient in both front-end (user interface) and back-end (server-side) technologies.
- ✓ **Mobile App Developers**: Experienced in developing iOS and Android apps for patient and provider interfaces.
- ✓ **Web Developers**: Skilled in creating user-friendly and secure web portals for accessing telehealth services.
- ✓ **Network Engineers**: Ensure secure and reliable connectivity for video conferencing, data transfer, and remote monitoring.
- ✓ **Cloud Architects**: Design and implement cloud-based infrastructure for scalability and cost-effectiveness.
- ✓ **Security Specialists**: Protect sensitive patient data and ensure compliance with healthcare regulations (e.g., HIPAA)
- ✓ **Database Administrators**: Responsible for managing and maintaining the patient data and health records.
- ✓ **UX Designers**: Create intuitive and user-friendly interfaces for patients and healthcare providers.
- ✓ **UI Designers**: Develop visually appealing and engaging designs for the telehealth platform.
- ✓ **Machine Learning Engineers**: Develop AI-powered features for diagnosis support, data analysis, or personalized treatment recommendations.
- ✓ **Data Scientists**: Analyze large datasets to identify trends, improve patient outcomes, and optimize the telehealth platform.
- ✓ **Hardware Engineers**: If developing specialized medical devices for remote monitoring. Healthcare professionals and project managers are also encouraged to apply.

More clarification will be provided in the information session.