ImmuniCare Project Documentation

Table of Contents

Members (Group 3):	Contribution
1. Chol Daniel Deng Dau	Worked on the project plan & UI
2. Branis Sumba	Conducted market research
3. Collins Junior	Developed the app's major functions
4. Nhial Riak	Created the project summary
5. Thierry Maridadi	Provided feedback on the proposal & UI

1. Summary

ImmuniCare is a mobile-based immunization management solution designed to increase child vaccination rates in South Sudan. The app enables healthcare providers to register newborns, schedule vaccinations, and send automated notifications reminders to mothers in their preferred local languages. ImmuniCare also includes offline functionality for remote areas and real-time analytics for policymakers.

2. Problem Statement

2.1 Identifying the Problem

South Sudan has one of the lowest child immunization rates, with only **26% of children fully vaccinated by their first birthday** (UNICEF, 2023). This results in preventable diseases such as measles and polio, leading to high child mortality rates. Challenges include:

- Low literacy levels among caregivers
- Lack of awareness and poor healthcare communication
- Inconsistent record-keeping and missed vaccination appointments

2.2 Addressing the Problem

ImmuniCare addresses these challenges through:

- **Personalized immunization schedules** based on WHO & Ministry of Health guidelines
- **Automated notifications reminders** in local languages
- **Offline support** for healthcare workers in rural areas
- **Real-time analytics** to track vaccination rates and coverage

ImmuniCare is positioned as a **humanitarian initiative under the Healthcare GCGO,** with a mission to leverage technology to ensure no child in South Sudan is left unvaccinated.

2.3 Project Scope

- Develop a healthcare-centric mobile app for hospitals and clinics
- Enable immunization tracking and scheduling
- Provide automated notifications and multilingual support
- Offer analytics dashboards for policymakers

2.4 Purpose and Impact

- Increase child immunization rates and reduce mortality
- Enhance vaccination adherence through timely reminders
- Improve public healthcare data for government agencies

3. Deliverables

- Fully functional mobile application (Android and iOS)
- Documentation of the app's design, development, and user guides
- Marketing materials for public awareness
- Post-launch support and maintenance plan

4. Project Phases

- Research and Planning
- Design and Development
- Testing and Deployment
- Public Launch and Optimization

5. Key Components

User Side

- User Registration and Authentication
- Dashboard
- Baby Registry
- Scheduling and Notifications
- Community Engagement Features

6. Key Functionalities

6.1 User Authentication

- Sign In: Healthcare providers log in after being added by an admin
- Sign Out: Secure logout feature

6.2 Splash Screen

- Displays the ImmuniCare logo and loading animation before transitioning to authentication

6.3 Home Screen Navigation

- Main sections:
    - Dashboard
    - Baby Registry
    - Scheduling & Notifications
    - Community Engagement
    - Profile

6.4 Dashboard

- Provides statistics on total registered children, vaccinated children, and upcoming vaccinations

6.5 Baby Registry

- Registers newborns with details such as:
    - Name, DOB, gender

    - Mother’s contact details and language preference
    - Hospital/clinic affiliation

6.6 Scheduling & Notifications

- Generates a vaccination schedule based on health guidelines
- Sends automated **notifications call reminders**
- Allows healthcare providers to manually adjust schedules

6.7 Community Engagement

- Educational vaccine awareness campaigns
- Emergency broadcast alerts

7. Detailed App Flow

7.1 Example Use Case

1. A **hospital nurse logs into the system** and registers a newborn.
2. The system **generates an immunization schedule** based on the child’s birth date.
3. **One day before the vaccination, the mother receives an SMS and a voice call reminder** in her preferred language.
4. **On the vaccination day, the nurse logs in and marks the dose as completed** in the system.
5. The process **repeats for every scheduled vaccine** until the child completes all required immunizations.

7.2 User Personas

Primary Users: Healthcare Providers (Doctors, Nurses, Hospital Admins)

Persona 1: Nurse Achol (Frontline Vaccinator)

- **Age:** 35 | **Location:** Rural South Sudan
- **Goals:** Ensure every registered child completes their vaccination.
- **Pain Points:** Mothers often forget vaccination schedules, leading to missed doses.
- **How ImmuniCare Helps:** Sends automated reminders, reducing no-show rates.

Persona 2: Dr. Ajang (Hospital Administrator)

- **Age:** 45 | **Location:** Urban Health Facility
- **Goals:** Track immunization rates and ensure efficient scheduling.
- **Pain Points:** Lack of real-time data for reporting to government agencies.
- **How ImmuniCare Helps:** Provides an analytics dashboard for better resource allocation.

Secondary Users: Mothers (Receive SMS & Calls)

Persona 3: Nyandeng (First-Time Mother in a Rural Village)

- **Age:** 22 | **Education:** No formal education
- **Goals:** Keep her child healthy but struggles with remembering vaccination dates.
- **Pain Points:** No access to printed schedules, relies on verbal reminders.
- **How ImmuniCare Helps:** Voice calls in her native language remind her of vaccination appointments.

7.3 Detailed App Flow

7.1 Launching the App

- The app starts with a **Splash Screen** before moving to the **Authentication Screen**

7.2 User Authentication

- Sign-in required for healthcare providers
- Admins must register new users

7.3 Home Screen Navigation

- Users can navigate between sections using a button-based menu

7.4 Dashboard

- Displays immunization statistics and trends
- Allows quick searching of patient records

7.5 Baby Registry

- Healthcare providers enter child and mother details
- Schedule is auto-generated based on WHO recommendations

7.6 Notifications

- Automated notifications calls are sent one day before and on the vaccination date

7.7 Community Engagement

- Health tips, vaccine education, and emergency notifications

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8.0 Market Analysis

8.1 Key Market Overview

South Sudan faces one of the lowest child immunization rates in the world, with only 26% of children fully vaccinated by their first birthday (UNICEF, 2023). The country struggles with low literacy rates, poor healthcare infrastructure, and high child mortality due to vaccine-preventable diseases like measles and polio.

Key Market Factors:

- **Growing Digital Health Adoption:** Governments and NGOs are increasingly **investing in digital health solutions** to improve vaccine coverage.
- **High Mobile Penetration:** Despite limited smartphone access in rural areas, **notifications-based solutions** have proven effective for healthcare communication.
- **Need for Localized Solutions:** Most global immunization apps lack **multilingual support and offline functionality**, making them inaccessible to many South Sudanese caregivers.

8.2 Target Audience

Primary Users (Healthcare Providers & Administrators)

- **Demographics:** Healthcare workers, including doctors, nurses, and vaccination officers, working in hospitals and clinics across South Sudan.
- **Behavior:** Responsible for **registering newborns, scheduling vaccinations, and ensuring immunization compliance**.
- **Needs:** A **digital tool to track immunization progress**, send reminders to caregivers, and generate vaccination reports.

Secondary Users (Mothers & Caregivers)

- **Demographics:** Women aged **18-45**, particularly in rural and underserved areas.
- **Behaviour:** Many rely on **verbal reminders from clinics** and often miss vaccination dates due to a lack of formal education or access to printed schedules.
- **Needs: Timely reminders** to ensure they bring their children for vaccinations.

8.3 Market Size Estimation for ImmuniCare in South Sudan

Total Addressable Market (TAM)

- **Population of South Sudan**: 11.1 million (World Bank, 2023).
- **Birth rate**: ~34.6 births per 1,000 people (UNICEF, 2023).

- **Total newborns per year**: ~**384,000 babies** require vaccination annually.
- **Estimated caregivers needing reminders**: ~**70% of mothers** (approx. **268,000 caregivers**) lack formal immunization tracking.

Serviceable Available Market (SAM)

- **Target healthcare facilities**: Government hospitals, local clinics, and NGO-run health centers.
- **Estimated adoption rate in the first phase**: 50% of major healthcare providers in urban and semi-urban areas.
- **Projected SAM**: **134,000 caregivers** in the first rollout phase.

Serviceable Obtainable Market (SOM)

- **Realistic initial adoption rate**: Assuming **10% of the SAM** adopts ImmuniCare within the first 2 years.
- **Projected SOM**: **13,400 active caregivers receiving SMS & voice call reminders through ImmuniCare** in the initial implementation phase.

8.4 Competitor Analysis

Competitor Analysis:

1. **VacTrack**
    - Features: Digital records, appointment reminders.
    - Limitations: No voice call support, no offline mode.
    - ImmuniCare Advantage: Provides voice calls in local languages and offline tracking.
2. **WHO Immunization Reminder**
    - Features: WHO-compliant schedules, alerts.
    - Limitations: No SMS/voice reminders, lacks local adaptation.
    - ImmuniCare Advantage: Offers localized communication and compliance with national policies.
3. **Baby Immunization Tracker**
    - Features: Vaccine tracking, push notifications.
    - Limitations: No SMS/voice call integration, no analytics.
    - ImmuniCare Advantage: Includes automated reminders and real-time analytics.

8.5 SWOT Analysis

Strengths:

✔ **Localized Approach:** Supports **Arabic, Dinka, and Nuer** for notifications call reminders, increasing accessibility for low-literacy users.
✔ **Offline Functionality:** Healthcare providers in **remote areas** can register and track vaccinations **without internet access**.
✔ **Automated SMS & Voice Call Reminders:** Reduces **missed vaccinations**, ensuring higher immunization rates.
✔ **Real-time Analytics:** Helps **policymakers track immunization rates** and identify low-coverage regions.
✔ **Integration with WHO & South Sudan Ministry of Health Guidelines:** Ensures **compliance with national immunization programs**.

Weaknesses:

✘ **Dependence on Mobile Network Operators:** Relying on **notifications call services** may introduce delays.
✘ **Initial Training Requirement:** Healthcare providers need **onboarding sessions** to fully utilize the app's features.

Opportunities:

🚀 **Government & NGO Partnerships:** Collaborations can **accelerate adoption** and provide funding support.
🚀 **Expansion Beyond South Sudan:** The app's model can be **adapted for other underserved regions**.
🚀 **Integration with EHR Systems:** Linking with **electronic health records** can enhance efficiency.

Threats:

⚠ **Low Smartphone Penetration in Rural Areas:** Limited access to **smartphones** may slow down adoption.
⚠ **Competition from Large HealthTech Organizations:** Bigger players could develop similar solutions.
⚠ **Regulatory Challenges:** Compliance with **data privacy laws and health regulations** may require frequent updates.

9.0 How ImmuniCare Differentiates Itself

1. Multilingual Voice & SMS Reminders

- Unlike competitors, **ImmuniCare offers automated voice call reminders** in **Dinka, Arabic, and Nuer**, making it accessible for low-literacy caregivers.

2. Offline Functionality

- **Healthcare providers in remote areas can use the app without internet access**, ensuring continuous immunization tracking.

3. Real-Time Analytics for Policymakers

- Unlike most apps that focus only on **reminders**, ImmuniCare **provides real-time immunization data** to help governments track and improve vaccine coverage.

4. Integration with National Health Guidelines

- While competitors use **general WHO guidelines**, **ImmuniCare aligns with South Sudan's Ministry of Health** policies for localized vaccine tracking.

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10. Monetization & Sustainability Strategy

Since ImmuniCare is a **humanitarian initiative**, its revenue model focuses on **partnerships and funding support** rather than direct user payments.

Funding Sources:

- **Government Health Programs:** Collaboration with South Sudan's **Ministry of Health** to integrate ImmuniCare into national immunization initiatives.
- **NGO & International Health Organizations:** Seeking grants from **UNICEF, WHO, Gavi, and Bill & Melinda Gates Foundation**.
- **Private Sector & CSR Sponsorships:** Partnering with telecom providers to subsidize **SMS & voice call services**.
- **Institutional Research & Data Licensing:** Providing **anonymized immunization data** to global health research organizations.

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11. Success Metrics & Strategic Goals

User Adoption & Retention:

🎯 **Short-term Goal (Year 1):** Onboard **5,000 healthcare providers** in South Sudan's urban and semi-urban areas.
🎯 **Long-term Goal (Year 3):** Scale adoption to **100,000 caregivers receiving SMS & voice reminders**.

Impact Measurement:

📊 **Increase in Vaccination Rates:** Aim for a **20-30% improvement** in child immunization adherence.
📊 **Reduction in Missed Vaccinations:** Target a **40% reduction in missed vaccine appointments** through automated reminders.
📊 **Healthcare System Efficiency:** Improve **immunization data accuracy** for government health agencies.

Conclusion

ImmuniCare provides a **localized, tech-driven approach** to solving **South Sudan's immunization challenges**. By integrating **voice-based reminders, offline tracking, and real-time analytics**, it **fills critical gaps left by global competitors**. The app's **humanitarian focus**, combined with **government and NGO partnerships**, positions it as a **sustainable solution to improve child vaccination rates and reduce preventable diseases**.

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12. References

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13. Link To Figma Design
