

TERMS OF REFERENCE - FOR CAPACITY BUILDING, IMPLEMENTATION, MAINTENANCE AND TROUBLESHOOTING OF COMMUNITY HEALTH INFORMATION SYSTEM IN RWANDA

Background

Rwanda has largely been regarded as one of Africa's success stories that made tremendous progress in improving child and maternal health. In addition to various other factors, Rwanda's success in reducing maternal and child mortality can be partly attributed to the innovative short messaging service (SMS)-based technology called "RapidSMS. Developed in 2009, RapidSMS is used as real-time monitoring tool to ensure high-quality antenatal care, childbirth, and postnatal care for babies and mothers. The platform was implemented to facilitate communication between Community Health Workers (CHWs) and the broader health system, including the ambulance system, health facilities, and the central government. As part of this initiative, CHWs were equipped with mobile phones and other tools that enabled them to collect and use real-time data on key maternal, neonatal, and child health indicators. RapidSMS was upgraded (to RapidPro) and expanded based on the government need and the recent version tracks maternal and child health from the start of pregnancy until 5 years of age and includes a broad range of child health services (antenatal care, delivery, postnatal care, growth monitoring, as well as maternal, neonatal and child mortality). It also tracks malaria in both children and adults using real-time data. RapidSMS generates automatic reminders for clinical appointments, delivery notification, and post-natal care visits, with the intent of increasing attendance at antenatal care and postnatal care visits. As the data is recorded at real-time it enables CHW supervisors at health centres, hospitals and central level to analyse and provide timely feedback to improve quality of Maternal, newborn and child health services in the community and at health facilities. RapidSMS is currently implemented in all 30 districts of Rwanda and is addressing critical barriers related to poor follow-up, gaps in data, and delays in hospital referrals. It also complements other electronic reporting tools like Health Management Information System (HMIS) by providing cohort data with individual case records, while HMIS currently generates only aggregate data.

The SMS platform requires continuous upgrades and integration with other electronic platforms to meet the needs of the changing country context. The platform faced several technical challenges due to system expansion over the years, making it hardly impossible to track, coordinate and analyse the accumulated data. This resulted in a deterioration of its use to drive quality services, and as the platform becomes complex, more time is needed to resolve each subsequent technical challenge. This has led to multiple upgrades that have been done over the years with the most recent one being in 2016. Moreover, dependency on external technical support, even for simple fixes or minor changes to the platform is a cause for frustration for managers as those changes and/or fixes always require to be implemented as fast as the program demands. Currently, the platform (RapidSMS) is unstable, and there have been increasing instances of non-scalability causing message lagging (dropping) and unresponsive web pages.

Justification.

As the RapidSMS program has continued to grow over the years, the platform got expanded as well in terms of the required modules but also the volume of data stored. Rwanda RapidSMS system is currently managed by over 58,000 community health workers (CHWs), over 515 health centers (HCs) and 38 District hospitals.

Overall, at present there are over 20 million messages/reports sent by CHWs into Rwanda RapidSMS system. To measure and address healthcare challenges at the community and household levels in real-time requires continuous upgrades and integration of the RapidSMS initiative with other electronic platforms to a capable and userfriendly CHIS that would help to meet the needs of the changing country context. Hence, the government of Rwanda made a decision to switch from RapidSMS to RapidPro as a robust communication tool with strong integration and interactive messaging functions. Together with electronic medical systems (EMR), the development of the RapidPro systems has been completed pending implementation scale-up. UNICEF intends to hire a consultancy firm to assist the MoH and partners to implement and scale up the newly developed RapidPro and other associated community health information systems.

Objectives of the consultancy

- To review the existing RapidPro platform and identify gaps that would inform (minimal) additional platform design and development, and use a Human-Centered Design (HCD) approach to arrive to a scalable design of RapidPro.
- To enable incoming and outgoing reports and specifically an escalation/get feedback of reminders messages due to the next appointment from pregnancies cycle, delivery notifications, postnatal care visits, vaccines series, community case management and case management responses, nutrition and feedback in case of all emergencies (Red Alert notifications) and high risks reports.
- To assess gaps and create a detailed data migration assessment and plan with a view to migrating an optimal level of data from the current legacy RapidSMS system and set up an archival and retrieval plan with tools to facilitate the use of legacy RapidSMS data migrated to RapidPro.
- To assess and set up a functional data warehouse that integrates both the new RapidPro data stream and the legacy RapidSMS data system, develop a migration plan to align with this model of migration, data archival and retrieval architecture.
- To conduct automatic and manual data migration from the RapidSMS system to the new RapidPro.
- To design a framework and specifications for interoperability and implement the interoperability of the new RapidPro platform with other platforms in alignment with ongoing Health information exchange (HIE) development.
- To support and participate in the rollout of the RapidPro activities including
 - a. Development of implementation-specific support documentation
 - i. General project documentation and reporting
 - ii. End-user manuals
 - iii. System administration manuals
 - iv. Troubleshooting guides
 - v. Code card review adoption to specific RapidPro needs.

- b. Capacity assessment to produce a long-term capacity/training plan that will equip the MoH with long term capacity to maintain, upgrade and support RapidPro in the existing eHealth architecture including;
 - i. Training of Trainers to facilitate training of end users (CHWs).
 - ii. Training of Trainers and capacity transfer to MoH/RBC Technical staff.
- c. Data collection and visualization - the system should be able to support various technologies and media including feature phones, tablets and smart phones, and interactive communication including voice recording.
- Identify and attach technical experts (IT and programme) in the digitalization department of the MoH.

Scope of work:

The institutional consultant shall:

- Conduct a human-centered design interacting with MoH, users and key partners to understand and gather/consolidate specific indicators.
- Review, reengineer/construct/set up and configure a scalable centrally RapidPro infrastructure/hosting at the national data center (NDC)
- Re-design/reengineer/construct/set up and configure RapidPro flows, campaigns, webhooks, any intermediary tools/software layers and other necessary workflows in case needed or the one developed needs some enhancements in line with the new comprehensive digital health system design.
- Complete migration of all the data that remain in the legacy RapidSMS system to RapidPro, fully implemented and executed on both production and testing RapidPro environment.
- Develop new workflows, whenever need be, strengthen, re-design/reengineer/construct and configure tools/software to support a robust data archival warehouse and retrieval tools/plans. This plan shall take in data from the legacy RapidSMS and the new RapidPro and allow stakeholders to visualize/analyze legacy and new data streams for a composite/longitudinal view of cases/data from the legacy system and the new system,
- Review/ configure / construct dashboards comprising analytics / visualizing of customized indicators.
- Consolidate project documentation leveraging on available technical documentation not limited to;
 - i. General project documentation and reporting
 - ii. End-user manuals, reference cards/Code cards and training manuals
 - iii. System administration manuals
 - iv. Troubleshooting guides
- In collaboration with MoH prepare test cases from use cases of any new software before going live
- Conduct and document outcomes of a final User Experience Test (UET) for the project in addition to intermediate UETs to be conducted throughout the maintenance phase of this project.

- The consulting firm shall strengthen functionalities of available RapidPro, develop and get an approved service level agreement with MoH/RBC which will include a long-term capacity/skill transfer plan. The service level agreement shall seek to build capacity according to the below broad/over-arching requirements.
 - a. Service levels I and II (user support and application configuration both remote and onsite where need be) capacity should be built in-house at program level and health facilities ICT units and ensure the optimum and system performance in terms of system accessibility
 - b. Service level III (RapidPro engineering and development) should be built and/or focus on MOH digitalization team, familiarize with indicators, dashboards, message flows, reminders and provide routine systems administration, maintenance, regular support and fix bugs and errors whenever they occur. Enhance reporting with aggregate indicators by administrative boundaries, drilldown, charts and export to Excel and CSV capabilities,
- Facilitate/support and participate in rollout / field implementation activities to replace functions of the RapidSMS with the new Rwanda RapidPro according to the roll-out / cut-over plan including.
 - a. Cascade Training of trainers (Technical)
 - b. Cascade Training of trainers (Programs)
- Hand-on skills to MoH staff/digitalization team on the system backend (customization), maintenance, troubleshooting and administration, and integration with relevant systems when need be.
- A proper system accuracy process with full validation control during the user's creation.
- Plan and implement a backup system to prevent the risk of data loss (off-site backup) as well as testing of backups on regular basis.
- Working hand in hand with telecommunication and hosting companies to set site-by-site configurations when needed.
- Successful integration of SMS feedback and reminders to pregnant women for ANC as well as CHWs in their catchment villages.
- Be responsible for:
 - a. Ensuring levels 11 and 111 support on escalation
 - b. Create, commit all changes to a shared RapidPro git-hub and ensure that MoH team has full access to the backend.
 - c. Check-ins with MoH team every 2 weeks to discuss and make recommendations on existing/or arising system issues, on-going maintenance, improvement of reports and system troubleshooting
 - d. Able to expand the system on new requests when required.
- Attachment of IT technical/programme expert in the digitalization department.

General Assignment: The main tasks and deliverables of the consultancy firm will be to facilitate implementation of the new community health information systems (CHISs). The consultancy firm is expected to hire technical experts who will be seconded to the Ministry of Health and will assist in to ensure capacity building, maintenance, troubleshooting and implementation of Rapid-pro, and guiding planning, implementation of CHISs with other key stakeholders. Implementation will be under direct supervision of Digitalization Directorate General in MOH and UNICEF. All deliverables submitted by the technical experts shall be approved by the Ministry of Health.

Specific tasks.

1. Be responsible for the management of the RapidPRO and ongoing development of Community health solutions.
2. Ensure effective channels of communication between the Chief Digital Officer, CHIS Taskforce and implementing partners including convening the Taskforce meetings, documenting minutes and dissemination of information to all partners.
3. Regular briefing of Updates on CHIS to the task force and Digitalization Directorate
4. Coordinate, supervise, organize training and re-training of end-users as needed as well as conduct regular training needs assessments and plan trainings accordingly, and follow-up the training course for CHWs ensuring a high level of hands skill acquisition and document observations and activities
5. Observe usage patterns and challenges encountered by end-users, review rejected messages and modify code when necessary.
6. Provide level one end-user support when necessary, end-user support service helpdesk.
7. Conduct monthly supervision to different districts and review the implementation process.
8. Analyze monthly incoming data to produce monthly critical indicators of RapidPRO including but not limited to ANC registrations, number of ANC visits, and initiation of labor in the community.
9. Analyze incoming data and identify non-responding or alert prone CHWs, consult their supervisor at the Health center or district level and initiate appropriate follow-up
10. Regular co-ordination meetings of the RapidPRO Taskforce
11. Ensure RapidPRO is fully operational and overseeing integration with other information systems
12. Provide monthly progress reports to the task force and digitalization directorate team
13. Train users and facilitate knowledge transfer and technical handover
14. Deployment/Rollout of RapidPro in 30 districts of Rwanda
15. Continuously monitor activities related to Rapidpro, coordinating with other stakeholders, identifying, and reporting all challenges to ensure timely troubleshooting
16. Overseeing and providing guidance to the development of community EMR

Key Deliverables for the institutional consultant and Timelines.

Deliverable	Timeline
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1) Inception report - to propose a comprehensive project / support plan that includes milestones, implementation schedule and other details visa-a-vis TORs provisions.	10 Days
2) Report on the migration of RapidSMS legacy data, testing of new developed RapidPro system and technical validation	2 months
3) Final user acceptance test report	20 days
4) Training of users and knowledge transfer	2 months
5) Deployment/Rollout	6 months
6) Technical documentation, training materials, user guide and final report on RapidPro implementation.	1 month

All deliverables need to be developed under the guidance of MoH/RBC technical experts and in consultation with UNICEF and approved by MOH digitalization department/RBC.

The expected duration to complete all these deliverables is 12 months (April 2022 to March 2023).

Mandatory Qualification Requirements

- Consulting firm with proven knowledge and skills in developing real-time data monitoring systems in the health sector
- An institution with staff proven and successful similar experience of 7 years supporting digital health initiatives
- Audited Financial Statements – last 2 years
- Team Members’ experience as stipulated below:

The key persons’ qualification:

Given the complexity of the activities described, the expertise needed to produce the deliverables is advanced and varied. As many as 5 persons who have advanced degree(s) in computer sciences or relevant field or equivalent professional experience are required. Outlined below are the number, possible titles and expertise of staff that are recommended for these activities.

1. RapidPRO Software developers (2 consultants)

- At least 2+ years of working with RapidPRO community
- Understand RapidPRO technology stack
- Understand Django and Python technologies
- Knowledge of Postgres DBMS
- Documented expert-level understanding of interoperability profiles as published by IHE (Integrating the Healthcare Enterprise), with emphasis on profiles implemented in OpenHIE, and profiles that are relevant to public health reporting
- Knowledge of Java, angular Js, MySQL and other related technologies

- Experience in writing software technical documentation

2. Network, hosting and security expert (1 consultant)

- At least 2+ years working in network, security, and system interconnectivity area
- Have technological knowledge and strategies for cloud or colocation hosting
- Experience on setting up an optimized solution (managing high load and full accessibility)
- Experience in writing technical documentation

3. System or Business analyst (1 consultant)

- Expert level experience with the use of UML in system design
- 3+ years of commercial experience in Systems Development Life Cycle
- Documented experience with business process reengineering in large scale enterprise information system projects
- Documented experience with implementation of enterprise software solutions

4. Required Profile and qualifications for the IT technical/program expert to be attached in the MoH digitalization department.

1. A University Degree in Computer Science Information Communication Technology, Business Information Technology, Information Management or another related field,
2. At least three years of progressively professional experience in data and database management and management for public health programs.
3. Sound knowledge and understanding of Maternal and Child Health service delivery and indicators.
4. Experienced in mobile solution application for public health.
5. Proven skills in communication, networking, systematic thinking, and ability to conceptualize, plan and execute ideas,
6. Having analytical skills to assess the current requirements and enhancement needed
7. Experience in using RapidPro or equivalent software is an asset.
8. Creative, innovative thinker who can also translate ideas into practical applications.
9. Experience in managing projects with strong technology components.
10. Proven experience in training medium-size groups of technical experts is an asset.
11. Fluency in English is required, Knowledge of Kinyarwanda and French will be an advantage/an asset.

Types of reports and technical documents to be prepared and validated by RBC/MOH and UNICEF as part of the deliverables are:

- Inception report
- Individual deliverable reports.

- Monthly progress reports.
- Report on full migration of RapidSMS legacy data, testing of new developed RapidPro system and technical validation
- Final user acceptance test report.
- Reports on the training of users and knowledge transfer
- Deployment/Rollout reports
- Technical documentation, training materials, user guide and final report on RapidPro implementation.
- Report on system development road map with clear and comprehensive functional and non-functional requirements.
- A report with the new RapidPro system able to integrate all existing modules and draft detailed technical documentation with clear and comprehensive alignment with health sector enterprise architecture (functional and technical architecture).
- Minutes of strategic and technical meetings.
- Mission Reports.
- Technical Reports.
- Draft and Final Report.
- Training materials.
- Presentations.
- Workshop/training evaluation reports.

NB: The institution should be aware that this list may require changes during the consultancy period. These changes may happen in cases when the priority of tasks change, or a specific stakeholder / user requires the changes to be implemented.

Evaluation process and methods.

The criterion to be used for the evaluation of proposals is outlined below;

Separate Technical and Financial proposals should be submitted in sealed envelopes. A two-stage procedure shall be utilized in evaluating proposals, with evaluation of the technical proposal being completed prior to any financial proposal being compared. A 80/20 assessment model for the technical and financial proposal respectively will be adapted. Applicants must score a minimum of 64 points on the Technical Proposal and meet the mandatory qualifications to be considered technically compliant for the component, and for the Financial Proposals to be opened. The average weight (technical and financial) will be used to determine the most suitable vendor.

Description of review and selection of the suitable vendor:

1. Technical proposal:

a) Narrative proposal of maximum 10 pages including at least: Firm expertise and experience, Proposed approach and methodology including the proposed timeframe for each deliverable, Proposed team structure/responsibilities and expertise/experience. The technical proposal should include a staffing structure, including details of days per team member articulated against a workplan of activities. Specifically, the technical proposal should indicate the following:

- A description of the proposed solution reviews, troubleshooting, maintenance and upgrades to be conducted.
- A description of how the solution will be implemented and rolled at national level highlighting requirements (financial and technical resources).
- An implementation work plan with timeline, methodology, roles and responsibilities
- A clear sustainability and handover plan
- The technical and organizational capabilities of the vendor, highlighting past projects that are most relevant for this work.

b) Annexes - Workplan of scheduled activities and CVs of all team members should be included as Annexes, in addition to the maximum 10 pages of narrative.

2. Financial proposal:

All applicants must submit a stand-alone document as per the following template:

- Professional fee
- Direct Costs,

Financial Proposal Format

- Programme support costs and
- Operational Costs.

	Description	Item cost	# of items	Total expense
Professional fee				
	List Each Person (s)			
	List Each Person (s)			
Direct Costs				
	List Each Line item (s)			
Programme support costs				
	List Each Line item (s)			
Operational Costs				

Evaluation Scoring:

TECHNICAL EVALUATION		Vendor 1	Vendor 2	Vendor 3
1. Proposed Solution	Max score			
Understanding of scope and objectives	10			
The proposal communicates an understanding of the project structure and localities	10			
The proposed technical solution is feasible	5			
The proposed technical solution is complete, addressing all the requirements outlined in the request for proposal	5			
The proposal presents a logical system of when and where different modes of communication technology will be used (e.g.: Short text message vs unstructured supplementary service data vs general packet radio service vs wired internet)	5			
The vendor proactively identified technical or functional challenges and proposed solutions	5			
S/Total	40			
2. Proposed methodology, work plan and timeline				
The proposed methodology reflects an approach of high communication with business owner and users	5			
The proposed work plan includes ample time for project requirements (functional and nonfunctional) definition and design	5			
The proposal includes all the keys deliverables listed as required in the request for proposal	1			
The proposed work plan fits within the timeline	1			
The proposed work plan includes time for testing/feedback/iterative development	5			
The vendor proactively identified issues and risks to the proposed work plan/timeline and offered solutions to mitigate them	2			
The proposal reflects the requirements related to warranty, pilot support, and maintenance contracts	1			
S/Total	20			
3. Organizational capability				
Software development and deployment capabilities with required architecture, languages, and tools is evident (Java, .net, C/C#, SQL, etc.)	5			
The proposal refers to previous work relevant to our project methods and objectives	5			
Sufficient staff who have appropriate skills and experience are proposed	1			
The proposal contains guarantee for documentation, maintenance, warranty, and ownership transfer	1			

The quality of written proposal indicates the vendor's capability to document appropriately and communicate in language of interest	4			
The proposal provides some evidence that the vendor has experience working with organization similar to UN/UNICEF or Governments	4			
S/Total	20			
TOTAL MARKS FOR TECHNICAL COMPONENT	80			
4. FINANCIAL PROPOSAL Full points are allocated to the lowest priced proposal that meets the minimum score on the technical proposal. The financial scores of the other proposals will be in inverse proportion to the lowest price				
The proposed terms and conditions are reasonable and acceptable under contracting policies	20			
TOTAL MARKS	100			
5. Other				
Level of effort – total work identified in each vendor's proposal (in days)				

Only vendors who scores a minimum of 64 points in technical evaluation will be considered for financial evaluation

Administrative Issues.

- The institution will be responsible for all logistical arrangements associated with this contract. Where necessary UNICEF / MOH will provide a letter of support to facilitate obtaining visa and for support field visits where needed (for quality assurance). Other expenses such as international and local travels, visas, banking/cash services, or office space and equipment (including computers and photocopiers) shall be under the responsibility of the institution.
- The institution will use its own equipment, including computers. UNICEF premises will be available for the meetings and collecting inputs from other partners

Contractual Managements.

- For all contractual issues, the institution shall report to UNICEF. All technical documents shall be validated by the steering committee and programme technical working groups, then approved by RBC/MOH to be considered final.
- The contractor will work closely with RCB/MOH technical team (developers and implementers), digitalization technical working group/CHIS sub-group and UNICEF ICT specialist/Health Specialist for design, development and implementation quality assurance.
- The institution shall not make use of any unpublished or confidential information, made known while performing duties under the terms of this agreement, without written authorization from RBC/MOH. The products of this assignment will not be the property of the institution and cannot be shared without the permission of RBC/MOH.

- The contracted institution shall abide by and be governed by UNICEF Procedure on Ethical Standards in its duties
- All materials developed by the institution will remain the copyright of RBC/MoH/UNICEF, who will be free to adapt and modify the materials for future use.

Reporting and payment.

- UNICEF will issue the contract and pay the institution, based on the below payment schedule and after the approval of the deliverables by RBC/MOH. The contractor will primarily report to the UNICEF Health Specialists together with procurement specialist will be the focal points for all contractual matters.
- Payment will only be made for work satisfactorily completed and accepted by RBC. UNICEF reserves the right to withhold all or a portion of payment if performance is unsatisfactory, if work/deliverables is incomplete, not delivered or for failure to meet deadlines.

Payment schedule:

Deliverable	Payment proportion
Deliverable 1	10%
Deliverable 2	15%
Deliverable 3	10%
Deliverable 4	20%
Deliverable 5	35%
Deliverable 6	10%

Other relevant information.

- How to apply:** Qualified institutions are requested to submit a full proposal, consisting of technical and financial parts to the provided email to send to proposals : rwasupply@unicef.org
- General conditions - procedures and logistics:** The institutions will be required to have experts aware of analysis, developing and managing health information systems with specific knowhow of RapidPro and Electronic Medical Recors (EMR). In some circumstances, particular logistic arrangements shall be required to ensure time delivery of assigned tasks in quality deserved.

Therefore, in presenting proposals, bidders should take these elements into serious consideration that UNICEF will not be responsible for any unexpected additional cost or arrangement required during the implementation of the assignment. UNICEF will hire one institution for this assignment, and the contracted firm shall be responsible for hiring and paying own sub-contractors (developers or desingers) as will be necessary.

- Policy - both parties should be aware of:** No contract activities may commence unless the contract is signed by both UNICEF and the institution.

How to apply

Complete proposals, including technical and financial proposals should be sent to rwasupply@unicef.org by 5th May 2022

Any request for clarification related to this proposal shall be addressed to emanzi@unicef.org copying dmupenzi@unicef.org by 2nd May 2022