Developing a Community of RapidPro Users and Developers in the Health Sector

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A. Executive Summary

For the past 10 years UNICEF has invested in developing and deploying innovative solutions to overcome the traditional bottlenecks of time, distance and coordination - to build more resilient and responsive health systems that reach every child. In 2014, building on earlier SMS-based systems, UNICEF launched RapidPro : an open-source platform that allows anyone to design a messaging service that can send and receive information directly with users. RapidPro works on the most basic mobile phones as well as on smart devices, and communicates via SMS and digital channels. It analyzes and presents the data collected in real-time, enabling UNICEF and partners to tackle fundamental development challenges including more effective exchange of data, better communication with front line workers, and community education and engagement. RapidPro has become UNICEF's common platform for developing and sharing information that can be adapted for different contexts and sectors.

RapidPro has been deployed in 51 countries across multiple sectors, including 18 countries currently using RapidPro to power their digital health solutions. Its applications for health include patient identification and registration, maternal reminders for social and behaviour change, health services demand generation, communication with health workers, improved transparency and strengthened accountability of governments, and tracking stock of essential medicines and health supplies. Some notable highlights can be found:

- In Indonesia, where RapidPro is used to monitor the rollout of a large-scale (70 million child) immunization campaign, as well as to gather info on individual immunization in the most underserved communities

- In Uganda, the mTrac system operates at national scale to support the government's Health Management Information System with real-time data collected from community health workers on disease prevalence and medicine stock-outs, and from community members on quality of health services

- In Senegal, health workers trained in RapidPro, which powers that country's mInfoSante tool, built their own mobile service to coordinate emergency medical transportation and referral. This has made a life-saving difference and has been used regularly since its launch in 2017.

Through its implementation work, UNICEF has supported the growth of a new community of developers, technical experts, designers, development professionals and government employees who will lead the development and future use of RapidPro for health interventions. That community now needs investment to consolidate and improve the resources and training available, and turn it into a lively coordinated community of practice. As a result of the investment from Digital Square in a strengthened community, RapidPro will become a technically stronger and more accessible global good, allowing a wider range of users to design and scale RapidPro systems to improve health interventions. It will also support RapidPro's ongoing integration with other tools that make up the global ecosystem of open source digital health solutions.

B. Consortium Team

UNICEF's Office of Innovation (which will serve as the lead for this program) spearheaded the development and deployment of RapidPro; they recently initiated the mainstreaming of deployment and technical support responsibilities into UNICEF ICT's global team which is also supporting this initiative. The design, testing and deployment of RapidPro for programmatic outcomes involves these teams working closely with the relevant Program section (e.g. Health), as well as with the involved Country Offices and Regional Offices. The Innovation and Health teams regularly cooperate on strategy and guidelines.

The Scale team of the Office of Innovation - a lean distributed group of technical professionals available to advise UNICEF Country Offices and partner governments on the design and deployment of national scale systems - is the group focused on innovations ready to be deployed at scale. The staff of the Scale team have a range of skills and expertise, including:

- Product and Software Development Management

- Service Design and Deployment

- Community Engagement

- Curriculum Development and Delivery

- Monitoring & Evaluation

- Thematic Expertise, e.g. Digital Health Service Design + Deployment

- Key data analysis and communications

The team has years of experience working directly with country-based specialists to design, implement and monitor digital solutions alongside national stakeholders (government institutions and civil society organizations). They are also versed at working at the global level: UNICEF has played an active role in the global conversations around digital health since beginning the work in 2007. Staff are geographically spread between West Africa, Southeast Asia, and Europe to ensure adequate support coverage is given to Country Offices, and to allow efficient deployability to countries when needed. Innovation has a strong leadership and support presence at New York HQ - where the Director of Innovation and support staff for partnerships, communications, design, and events sit.

In addition to the technical skills across the teams involved in digital health work, UNICEF's strong field presence and convening power with governments and civil society lay solid groundwork for the sustainability for ICT-based solutions. UNICEF's global leadership in child health-focused data collection and use means that data is put to action, including to galvanize greater accountability and transparency in ensuring all children are reached with high quality health services

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C. Project Description

The RapidPro community is composed of program implementers and developers from a range of backgrounds including technology, government, and the humanitarian and NGO spheres. UNICEF launched a set of community resources in 2014 to support anyone wanting to implement RapidPro as a solution, as well as to encourage the development and continued growth of an active community. The resources are built around three tools:

- The Community Website: a knowledge management platform for RapidPro with documentation, online courses, use cases and stories;

- The User Forum: for users to share experiences, ask questions, and learn from other RapidPro users;

- A public repository of all RapidPro source code on GitHub in order to support and encourage development and bug reporting on the source code.

UNICEF also organized community building activities, including two RapidPro developer convening events in 2015 and 2016. These were primarily to introduce the developer community to the technical evolution of RapidPro's architecture, and to promote a competitive, geographically diverse vendor ecosystem to ensure best-value and sustainability for UNICEF and partner governments managing or considering RapidPro-based tools.

For practitioners using RapidPro, Innovation and   UNICEF's Health division have recently developed a set of practical guidance resources. The soon-to-be-launched Approach to Digital Health reflects the input from more than 30 technical experts, and outlines a common vision for digital health at UNICEF and identify strategic priorities for investments in digital health . Accompanying it is a practical toolkit, Designing Digital Interventions for Lasting Impact, which serves as a human-centered design guide for countries who are considering using new digital tools, in particular RapidPro, to improve their national health systems.

Taking inspiration from the growth of coordination and knowledge-sharing in the digital health ecosystem, and the successful dedicated communities of users around specific open tools like DHIS2 , OpenHIE , iHRIS, we know that the RapidPro community and the resources available to it could be strengthened even more, which would result in a more diverse and skilled set of users, better implementations and more effective use of the system in strengthening health programs.

We have recognized the following challenges which we would design the project to address:

- Lack of in-country capacity to conduct and lead RapidPro deployment

- Need for stronger ownership by Ministries of Health

- Interoperability with national HMIS and other digital health platforms requires a technical and programmatic understanding of all platforms, and coordination with HIS communities

- The scalability of RapidPro rests on having more technical stakeholders in the health sector with the expertise to support Ministries' of Health in ICT and Information Management

Project concept:

Based on learnings from other successful digital health communities, and from our own experiences with building and supporting the RapidPro developer community, UNICEF plans to design and implement a model to build new capacity and community for the broader base of all users of RapidPro for Health, including:

1. Strengthen community engagement, management, activities and resources with a dedicated community manager, and redesign of existing RapidPro community tools;

2. Design dedicated curricula for basic, advanced and expert users , which could be delivered in a variety of online or face-to-face settings;

3. Strengthen the online RapidPro platform by providing self-directed courses specifically targeted for deployments in the health sector;

4. Design and deliver two experimental, 5-day regional "academies" for RapidPro users (UNICEF, government partners, CSOs, technical experts);

This investment in the community of RapidPro users operating in the global health sector will:

1. Strengthen RapidPro users' capacity to design, develop and improve their RapidPro deployments for Health;

2. Reinforce and facilitate sharing of experiences, and build a user network across Ministries of Health;

3. Accelerate the scale-up of RapidPro for Health across the Health Information System Manager community;

4. Influence and contribute to the RapidPro development roadmap, and support interoperability with existing platforms through linkages with other technical communities;

5. Create a long-term support community for Ministries of Health for in-country deployment and development support

In the Global Good Maturity Model, this will specifically improve RapidPro in the areas of Developer, Contributor and Implementor Community Engagement, Community Governance, User Documentation, Multi-Lingual Support and Software Roadmap.

Activities to include:

Strengthen Community :

- Design and implement a community engagement strategy
- Redesign community tools (user forum, RapidPro Community website, online course platform)

Design Curricula/Courses for RapidPro for Health :

- Develop curricula on human-centred design approaches for digital health, data visualization, other high-demand topics
- Create related online courses available on the RapidPro online platform
- Develop baseline of introductory documents on RapidPro health initiatives

Set up RapidPro Academies:

- Co-design Academy concept with current community
- Build the technical partnerships to support RapidPro Academies in Africa and South-East Asia
- Run initial RapidPro Academies for Health in 2 regions: including bootcamps for local developers and universities
- Develop capacity and support for Ministry of Health from design to in-country implementation stage

D. Use Cases, User Stories and Activities

Use Case 1:

Deepen capacity of ICT staff in the Ministry of Health to more effectively support the design and deployment of digital health interventions

Focus of Intervention: Ministry of Health, Principal ICT Officer

User Stories and Activities:

- As the MoH Principal ICT Officer, I need to enhance the capacity of my ICT staff to support MoH programme staff in utilizing RapidPro and related digital health tools. Through the online courses offered by UNICEF, my staff will be able to familiarize themselves with the RapidPro platform and with the process of adapting it to a particular digital health intervention.

- As the MoH Principal ICT. Officer, I need to have a rich understanding of how RapidPro can be deployed and scaled within a broader digital health ecosystem in my country. Through the RapidPro Academy, my team and I can both gain hands-on experience in designing and deploying RapidPro-powered digital health interventions and, in turn, learn from the experience of counterparts from other countries in our region.

Use Case 2:

Enable quick deployment of RapidPro tool for decision-making and emergency response

Focus of intervention: Ministry of Health, Director of the Health Emergency Operation Center

User Stories and Activities:

- As the MoH Emergency Operation Center Director, I am using RapidPro as coordination and communication tool to address response to an unpredictable situation. Through engagement with the RapidPro Health Community, my team and I will learn from other RapidPro users' experience (including accessing existing flows, learning from different case studies, and sharing questions with the community for feedback) and be better able to quickly adapt and deploy appropriate RapidPro-based solutions for emergency response ourselves.

- As the MoH Emergency Operation Center Director, I need to understand how RapidPro could be integrated with other epidemiology surveillance mechanisms and monitoring systems. By participating in the RapidPro Academy for Health, my team will gain hands-on knowledge and experience with experts in DHIS2, RapidPro, and other systems to better approach interoperability and integrated deployments.

Use Case 3:

Empower more UNICEF health specialists to integrate RapidPro as a tool for supporting national health systems

Focus of intervention: UNICEF Health Specialists working with Ministries of Health

User Stories and Activities:

- As a UNICEF Health Specialist, I need to understand how RapidPro could support our Health System Strengthening Strategy and be able to identify new opportunities to solve programmatic challenges. Through the RapidPro Academy for Health, I will be able to explore and learn from health-focused use cases for understanding technical requirements and implementation guidance alongside my Ministry and civil society counterparts. This will improve the quality of our collaboration and also empower me to more effectively and swiftly embed capacity and leadership of digital health interventions into the MoH.

- As a UNICEF Health Specialist, I need to access and, in turn, offer my MoH counterparts targeted technical support throughout the implementation of our RapidPro deployment to ensure sustainability and scalability as well as continued due process. The RapidPro Health Community will offer this technical support, while also enabling me to link my MoH counterparts with a strong and collaborative user community to improve understanding of how best to address programmatic, technical, and system-level challenges in the health sector through digital interventions.

Use Case 4:

Empower civil society actors to identify opportunities, adapt and deploy RapidPro for a specific purpose

Focus of intervention: NGO/CSO Partner

User Story and Activities:

- As an NGO partner of the MoH, I need support in assessing the potential application of particular tools in my country context. The new and improved RapidPro Health Community will serve as a key resource for learning from other deployments and teams about how they adapted and deployed this platform within a broader digital health ecosystem.

- In addition to understanding how to most effectively adapt and deploy RapidPro through the strategic/programmatic and technical guidance available centrally and via the community, I would also be able to seek and forge new partnerships to expand the reach and impact of my intervention(s) through this network of global digital health practitioners.

Supporting the growth and improved capacity of the RapidPro Health Community will have a cascading impact. Ministry of Health personnel, the UNICEF health specialists who support them, and civil society actors involved in implementation are directly targeted with RapidPro for Health curricula, online courses and the two bootcamps. Children and families will benefit from a strengthened health system that is able to reach their communities with critical health information and services. Examples of these indirect beneficiaries are included in the Annex (attached as a Supporting Document).

E. Digital Health Technologies

RapidPro: Overview & Technical Architecture

Since 2017, UNICEF has developed and deployed innovative mobile messaging solutions to overcome the traditional bottlenecks of time, distance and coordination: to build more resilient and responsive programmes that reach every child. In 2014, inspired by earlier SMS-based systems, UNICEF launched RapidPro: an open-source platform that allows anyone to design a messaging service that can send and receive information directly with users. RapidPro works on the most basic mobile phones as well as on smart devices via SMS, voice, social media, and other digital channels. RapidPro analyzes and presents the data collected in real-time, enabling UNICEF and partners to tackle fundamental development challenges including more effective exchange of data, better communication with front line workers, and community engagement.

RapidPro has been deployed in 51 countries across multiple sectors, including 18 countries currently using RapidPro to power their digital health solutions and 41 using RapidPro to power youth engagement and community participation

Multi-tenant: RapidPro is designed as a cloud-hosted, multi-tenant, scalable platform. RapidPro logically separates user access, custom business logic, data storage, and configuration into independent 'organizations' or 'workspaces' to ensure privacy, security, and high performance at scale.

Flows: At the core of RapidPro lies the Flow Engine and Flow Editor. The Flow Editor is the interface that allows users to visually build and modify the logic behind their application. Each interaction in RapidPro is defined by a step. By drawing arrows from one step to another, users have the ability to visually define how their application interacts with their end-users. At any point in the flow, actions can be triggered, such as sending an SMS, email or even calling an external API. Additionally, the flow editor allows users to execute their flows in an emulator to simulate interactions with end-users, encouraging rapid prototyping and testing of new ideas.

APIs: RapidPro serves as the communication engine for a variety of use-cases and contexts. RapidPro's extensive RESTful APIs and event-driven webhooks enable deep integration with external systems and tools. RapidPro flows can retrieve information from other platforms, update contact database fields, trigger or schedule events on other systems, or expose data for further analysis. RapidPro's API documentation can be found at https://rapidpro.io/api/v2

Channels: While SMS remains the most popular messaging channel, RapidPro ships with a variety of channels for mobile interaction: voice, Facebook Messenger, Twitter, Line, Android app, and more.
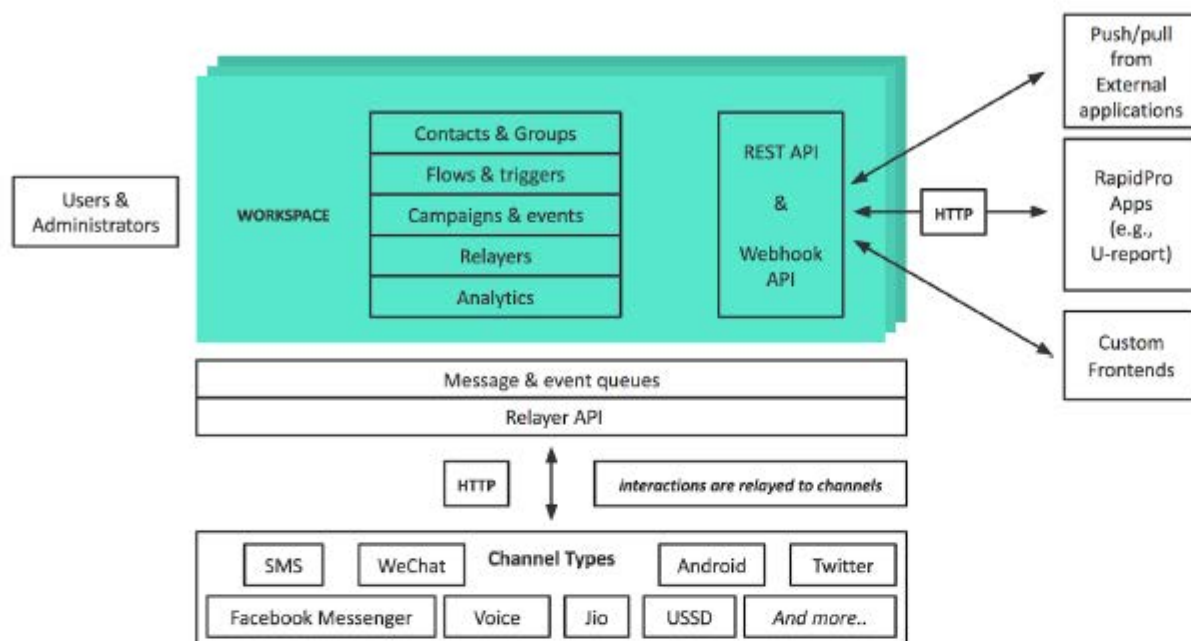
F. Community Feedback

The RapidPro for Health community will solicit community input regularly - both internally and from its counterparts in the broader digital health community. Internally, our community feedback mechanisms currently include two Google group forums, one for developers and the other for the broader set of RapidPro users. UNICEF hosts webinars and virtual office hours to support users, and this is another mechanism through which we hear back from the internal community of users. We also run periodic user surveys to formalize community input and drill down into specific areas where we need feedback: through the last survey we were able to better understand user needs vis-a-vis capacity development, training, and support.

With the development of the RapidPro for Health community, there will be an expanded set of users to input to the RapidPro development roadmap, including more non-technical users. The RapidPro for Health community manager will establish a dedicated communication channel with the community, via a mailing list and Facebook group or other social media, to capture feedback and needs: from use cases that may impact the development roadmap of RapidPro, to training requests that will help us to provide the right learning resources to health sector colleagues.

To connect regularly to the broader digital health community, RapidPro for Health will have active engagement with the Global Digital Health Network, led by the Community Manager. We will link our work in organizing the RapidPro for Health Bootcamps to the learnings and community around the DHIS2 Academies organized by Health Information Systems Program network. RapidPro for Health community leaders will participate in key global and regional digital health gatherings / workshops, such as those organized by the Health Data Collaborative, and its working groups, including the Interoperability working group. In turn, targeted efforts will be made to connect to relevant regional (digital)

health networks, such as the West Africa Health Organization and Asia eHealth Information Network, to promote broader awareness and uptake of RapidPro as a core digital health platform.

UNICEF will soon be launching a RapidPro for Health website which will be able to provide specific information for health-related use cases, highlight examples of work, and provide technical materials for deployment.

On a rotating basis, countries will be asked to showcase their region's triumphs, lessons learned and emerging strategies to the community - on the website and on a global or regional Skype call. Users can share best practices with one another and the Community Manager can use these calls as another opportunity to gather feedback on potential health solutions and implications for RapidPro's development roadmap.

G. Global Good Maturity Model Self-Assessment of RapidPro

RapidPro self-assessment   **here**.

H. Workplan, Project Deliverables & Schedule
LINK TO WORKPLAN

I. Budget Narrative

Detailed Full Budget for 07/01/2018 – 06/30/2020 (24 months)

Full budget total: $977,557

**(See below for notes on a modified Phase 1 Budget and Outputs)

1.   Salaries - Consultants

In order to achieve the program's four key objectives (listed in our budget as "Outputs"), it is anticipated that the following consultants will be needed:

- Full-time (100%) Community Manager whose time will be concentrated on Output #1 (Strengthened community engagement), with some time given to oversight of Outputs #2 (Design dedicated curricula/strengthen the online platform) and #3 (Design and deliver two regional academies), and more involvement in guiding Output #4 (Interoperability). The budgeted rate represents a competitive consultant day rate for a position of this level, and is in line with recent hires of similar technical consultants. It is equivalent to a P4 level staff job.

- Part-time (25%) Digital Health Deployment Specialist whose time will be fully devoted to Output #4 (Interoperability). The budgeted rate represents the current salary of the consultant in this role, and is consistent with UNICEF's personnel policies and the rate set for this position.

- Part-time Online Designer whose time will be fully devoted to Output #1 (Strengthened community engagement - focus on Activity 1.1.2, redesigning community tools), and whose work will be overseen by the Community Manager, with input as needed from key staff from UNICEF's Health and ICTD teams. He/she will work 10 days/month during a 6 month period.

- Part-time E-learning Specialist whose time will be fully devoted to Output #2 (Design dedicated curricula/strengthen the online platform), and whose work will be overseen by the Community Manager, with input as needed from key staff from UNICEF's Health and ICTD teams. He/she will work a total of 60 days over the 24 month period.

- Part-time Academy Coordinator whose time will be fully devoted to Output #3 (Design and deliver two regional academies). He/she will work a total of 40 days over the 24 month period.

- This work will be minimally supported by UNICEF's relevant Regional Offices, who will link the consultants to the relevant local partners to plan and execute the Academies.

All consultant salaries are in accordance with UNICEF's regular practices and policies, which are consistently applied to all donors/programs. All salaries are based on current earnings, salary history, recent hires of equivalent technical consultancies, etc.

2. Travel and Transport

(a) Air Travel

The following international air travel is identified as being necessary and needed in support of the project implementation:

Objective	#of Trips	#of Travelers	Destination	Position/Purpose
Coalition meeting (#1)	1	1	New York	Community Manager
Global Health meetings (#1)	2	1	TBD	Community Manager
Interoperability workshop (#4)	1	1	TBD	Community Manager
Regional Academies (#3)	2	11	West Africa, SE Asia	Community Manager + Academy Co-ordinator + 9 additional facilitators

(b) Per Diem (Days)

In conjunction with each round-trip flight, it is estimated that per diem (DSA in UNICEF terminology) will be required for the consultants who participate. An average per diem rate of $332 per day has been used for estimating and budgeting purposes (based on average of current DSA rates in four of the likely locations for the identified events - 1 in North America, 1 in Europe, 1 in West Africa, 1 in SE Asia).

Objective	#of Days	#of Travelers	Destination	Position/Purpose
Coalition meeting (#1)	5	1	New York	Community Manager
2 Global Health meetings (#1)	10	1	TBD	Community Manager
Interoperability workshop (#4)	4	21	TBD	Community Manager +

Regional Academies (#3)	7	11	West Africa, SE Asia	Community Manager +
				Academy Co-ordinator + 9 additional facilitators

3. Program Supplies and Equipment

(a) Academies (Output 3 – Design and deliver two regional academies)

Costs include Academy materials, venue, food, translators, a/v and additional miscellaneous costs for regional RapidPro for Health Academy, est. 100 participants - based on costs of similar events of comparable size. Two Academies take place within the 24 month project period.

(b) Interoperability Design Workshop (Output 4 – Interoperability):

Costs include workshop materials, venue, food, translators, a/v and additional miscellaneous costs for Interoperability Workshop, est. 20 participants - based on costs of similar events of comparable size.

(c) Web hosting (Output 2 - Design dedicated curricula/strengthen the online platform):

Based on current costs, the recurring costs of hosting an expanded RapidPro community site.

4. Vendor Contracts

Based on actual expenditures incurred under similar projects in this region, quotes received, historical records, etc., and the goals and objectives of the program, it is anticipated that the following contracts with vendors will be needed:

- There will be one vendor contract with a web development company to upgrade the RapidPro community website and products - at a price estimate based on recent quote(s) for comparable work. The contract will be awarded competitively. The costs will be allocated to Output 1 (Strengthened community engagement).

- There will be one vendor contract with an e-learning company to develop RapidPro online courses - at a price estimate based on recent comparable work. The contract will be awarded competitively. The costs will be allocated to Output 2 (Design dedicated curricula/strengthen the online platform)).

- There will be two vendor contracts with events companies run all logistics for the Academies - at a price estimate based on recent comparable work. The contract will be awarded competitively. The costs will be allocated to Output 3 (Design and deliver two regional academies).

- There will be one vendor contract with a software development company to do the Interoperability layer development work - at a price estimate based on recent quote(s) for comparable work. The contract will be awarded competitively. The costs will be allocated to Output 4 (Interoperability).

5. Indirect Costs

As an indirect cost rate we have allocated 10%, representing UNICEF's standard HQ recovery cost of 8% as well as Office of Innovation's shared services recovery cost at 2%.

** BUDGET NOTE:

The above represents the scope and budget for a full investment in growing and supporting the RapidPro for Health community.

A smaller initial commitment could support Phase 1 of the work, with a modified budget of $596,132, and slightly modified outcomes.

Both budgets are included in the attachment, as separate Sheets.