

Supporting the Establishment of an Organizational Home for the mPowering Frontline Health Workers Initiative

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Executive Summary

mPowering Frontline Health Workers is a USAID-funded public-private partnership that is working to accelerate the use of mobile technology to improve the performance of frontline health workers around the world. Its mission is to contribute to the elimination of preventable child and maternal deaths by applying mobile technology to improve the skills and performance of this critical workforce around the world. mPowering's objectives are to:

- Partner with governments and organizations to build understanding of the power of mobile technology to strengthen child and maternal health services;
- Support scale-up of effective mHealth programs to improve the skills and performance of frontline health workers; and
- Generate evidence and information on the use of mobile technology by frontline health workers in order to mobilize resources and improve the design of mHealth programs.

mPowering currently supports two primary initiatives: 1) the ORB content library that connects frontline health workers and trainers to a library of quality assured, openly licensed, free and mobile-ready content such as videos, job aids and courses, available at <http://www.health-orb.org/> and 2) Open Deliver represents a sustainable distance education platform and process for coordinating the sharing, conversion, mobile distribution and certification of basic, digital education and training resources on a national scale where traditional education, by itself, is unaffordable, inadequate or difficult to implement. To learn more, visit [the Open Deliver web page](#).

ORB has three unique features: It brings into one space multimedia materials from multiple content developers with a current focus on maternal and child health. It allows training implementers to modify and re-use the training materials, saving cost and time. It provides a unifying platform for a global collaborative network of organizations to share and review content, integrate content into programs, and share user experiences.

The Open Deliver platform consists of 3 distinct and integrated open source technologies: a digital content library (ORB) for content storage and sharing; a Learning Management system for creating courses; and an Android based application for distributing the courses onto a mobile device such as a smartphone or tablet. *Together these technologies provide a centralized platform for and end-to-end process for storing, validating, adapting, distributing and evaluating digital educational content.* These technologies have been applied effectively in multiple countries (e.g. Ethiopia, Nigeria) and states within countries (e.g. Sindh in Pakistan and Ondo in Nigeria). The Open Deliver platform is designed to evolve with changes in technology, to accommodate government ownership and institutionalization and to meet the criteria associated with a global public good.

mPowering is comprised of 16 partners from both public and private sectors, and the USAID-funded [Maternal and Child Survival Program](#) (MCSP) serves as the partnership secretariat and funder. In September 2018, MCSP will close out mPowering activities and the funding for mPowering will come to a close. In preparation for this transition, the mPowering Steering Committee is currently evaluating options to sustain the partnership moving forward, given the significant support for mPowering's work. As the current secretariat for mPowering, Jhpiego is submitting this concept note to fund an organizational home for mPowering.

Consortium team

Jhpiego is the organizational management lead on this proposal, through Jhpiego's role as the lead implementing partner of MCSP. Jhpiego

employs the mPowering team and also provides administrative and financial support. Members of the mPowering Steering Committee include representatives from USAID, DAI, Frontline Health Workers Coalition, Intel, Palladium, Qualcomm, UNICEF, and World Vision (see www.mpoweringhealth.org for a full list).

Project description

Funding from Digital Square will support the establishment of an organizational home for mPowering beyond September 2018. This will enable the continuation of the mPowering secretariat to:

1. Assist country programs to support the vital skills and performance of frontline health workers. mPowering works with governments and organizations to help utilize the power of mobile technology to strengthen health services at scale.
 - Expand ORB content beyond the current scope of maternal and child health, such as to non-communicable diseases and HIV/AIDS. Additionally, the ORB website will be translated into French or other languages as demand dictates.
 - Complete implementation of Open Deliver in Uganda, Pakistan and Sierra Leone. The current work in each country will contribute to a replicable and repeatable process and framework to be used in other countries and integration of global goods, such as:
 - Uganda: institutionalize the technology and related processes building upon the great progress made by the Ministry of Health and its technical agents Makerere University and Uganda Chartered HealthNet (UCH) in attracting stakeholder support for the Open Deliver platform and demonstrate the potential for a peer-to-peer network of national libraries for the sharing of digital training content within the East Africa region.
 - Pakistan: work with local technology partner Interactive Health Solutions and social impact telehealth startup Sehat Kahani (<https://www.techjuice.pk/sehat-kahani-closes-500000-seed-funding-round/>) to integrate [OpenSRP](#) (the open source client registry system) with Open Deliver, integrating two global goods, to provide access to relevant clinical and educational information during the delivery of health services, at the point of care, provider to patient.
 - Sierra Leone: test the replicability of the work in Uganda and Pakistan through work with the MoH and their partners to demonstrate the viability of a national library of digital training resources, the Open Deliver platform and related process to deliver multimedia educational content, in support of a blended approach to training all cadres of health workers including community health extension workers (CHEWs).

These efforts lay the groundwork for potential regional implementations of the technology, if the appropriate initiatives (such as the Digital Reach Initiative within the East African Community (EAC)) agree to the approach and the technology. A regional implementation involves linking the national libraries of digital training content (based on the ORB platform) into a peer-to-peer network, forming a regional digital library network. This network will provide each member state the means to leverage and reuse content from other members' libraries and share digital educational content with their own population and health workforce, providing more efficient and faster access to content in preparation for future outbreaks. It will also provide digital access to resources that support a minimally acceptable level of primary care instruction.

2. Document and share the implementation experience to provide guidance in the adaptation of ORB and Open Deliver in other countries so that Ministries of Health and their implementing partners can ultimately deploy blended education programs on a national scale. Specifically:
 - Evaluate specific training programs delivered via Open Deliver to measure effectiveness and impact on health worker knowledge, skills and attitudes. By connecting frontline health workers and trainers to a library of quality assured, openly licensed, free content, workers can share information via mobile phones and amongst various communities.
 - Document the institutional process for the Open Deliver platform in Uganda and Pakistan. This effort will result in written guidance for this process in other countries. This will include: the process for conducting successful multi-stakeholder collaboratives to ensure support in the elimination of duplicative efforts, policies used to coordinate content submission, curation, review and deployment of digital resources, guidelines for the content review process to ensure submissions meet national criteria for acceptance, and an evaluation framework so that administrators know how to determine what content works and what does not based on usage analytics.
3. Build collaborations between governments, civil society, the private sector, and others to help combine skills, expertise, and resources for

greater impact. For example:

- Explore partnerships to provide content to continuing professional development and accreditation programs to expand the platform's reach and potentially generate a revenue stream for both the medical professional associations and mPowering.
 - Create a community of users and developers for ORB and Open Deliver (such as other implementing partners and country government staff, and developers in the open source community) to ensure the continuation of materials development and sharing and to evolve as the technology options evolve, beyond the life of any single funding mechanism
4. Advocate for more effective training, supervision and support of frontline health workers, and connect them to the resources they need.
 5. Promote, fundraise and expand partnerships to nurture additional technical and financial support for mPowering, ORB and Open Deliver.
 6. Provide management, technical and administrative support staff, and overall coordination of mPowering.

As mPowering is a public-private partnership, fundraising to support these initiatives is an ongoing activity, but the Digital Square investment will demonstrate the value of ORB and Open Deliver as an emerging global good and enable mPowering to establish an organizational home for the management and technical teams that will continue to carry out mPowering's initiatives.

Use Cases

Use Case A - Rapid Response

During the Ebola response, many health workers (HWs) found themselves without the knowledge and skills required to properly protect themselves and provide clinical care in the middle of an emergency epidemic response. In many cases, training content and resources needed to be developed, adapted, translated and delivered in a short time. If Ebola or another outbreak (for example Zika) strikes again, governments and responders will need validated, Ministry-approved training content to deliver to health workers as quickly as possible. The ability to deliver training content directly to a health worker's mobile phone or a shared phone or tablet at a facility will equip health workers more quickly with the most accurate, up-to-date information and contribute to a more rapid and effective crisis response.

Another issue during the Ebola response is that information about who was trained, what they were trained in, current competencies and the facility where they work was often not systematically recorded, stored and shared with the ministries. With mPowering's ORB and Open Deliver, we will be able to collect this information and be able to smartly and more efficiently target the right training where the need is greatest. With the future integrations planned with iHRIS, OpenHIE (e.g. the facility registry) and other training information systems, stakeholders will have a holistic view that will enable governments to deploy health workers more dynamically during a crisis.

Use Case B - Ministry Ownership

Many Ministries of Health are overloaded with the number and range of organizations working in their country. Organizations are often delivering health worker training to limited groups, potentially duplicating efforts (in both the creation of training content and resources), with ministries only having superficial ownership of the training given in their countries.

Ministries are keen to have much more direct ownership over the training resources used with their health workers, and the ability to manage/validate/approve resources according to their needs, priorities and policies. Additionally, ministries would like to be able to share, adapt and translate on either a global or a regional basis. The technology adaptations being made through Open Deliver enable the country-level versions of ORB to share content with other country-level ORBs as well as the current ORB.

Use Case C - Content Sharing and Reuse

Implementing organizations are looking to make more use of digital resources in their training programs, but digital training resources can be expensive to create (especially video and animations) and can require specific skills. Although a large number of digital training resources exist, the clinical and pedagogical quality of the content is not readily apparent (whether it adheres to national or international guidelines and best

practices for the clinical area covered as well as educational principles). It is also unclear if the content is up to date and if licensing conditions permit free access.

All resources on the ORB content library are openly licensed (Creative Commons) and have been vetted through a content review process, evaluating the content from a global public health, training and technology perspective, using primarily experts from the USAID-funded [Maternal and Child Survival Program](#) (MCSP) that currently serves as the partnership secretariat and funder. Before the MCSP funding ends in September 2018, mPowering will leverage its broad network of public and private partners to identify experts to add to the content reviewer pool on the assumption that some of the current experts will not be available post-MCSP. Implementing organizations can be confident that any content they use from ORB is up-to-date and validated. Additionally, they can freely reuse, redistribute and adapt the content as required, thus saving time, effort and cost. Short case studies can be found here: https://drive.google.com/open?id=1zwUMXGBT7O2S7hpiGbbwc2btOT6CTc_fpaHjpABNvss

Digital Health Technologies

The key technologies used for Open Deliver are ORB, Moodle and OppiaMobile. The open architecture of Open Deliver allows Moodle and OppiaMobile to be switched for other course management and mobile learning platforms, in case for example a ministry of health has an existing investment in a course management platform that they wish to continue using.

ORB - Content library of openly licensed and validated health worker training content

Technologies used:

- MySQL database (can utilize other database formats supported by Django)
- Django web framework
- Apache Solr (for search functionality)

Moodle - Course management system to organize the training resources from ORB into a course structure, with narrative and assessment/test activities

Technologies used:

- MySQL (other database systems are also supported)
- PHP

OppiaMobile - Offline mobile learning platform for final delivery of courses created to Moodle to health workers. Training content created in Moodle can be exported to OppiaMobile for loading into the OppiaMobile app on users devices. The training content is then available offline for health workers, sending back tracking/usage information to the OppiaMobile server whenever a connection is available.

Technologies used:

- MySQL (although can utilize other database formats supported by Django)
- Django web framework
- Android application framework

xAPI and Learning Record Store (LRS) - The standard repository for recording the learning experiences of health workers. So far, only a proof of concept has been developed to export Open Deliver data to an LRS. With additional funding, we envisage xAPI being used more extensively by other systems and platforms to build a complete picture of a health worker's continuous professional development.

Technologies used:

xAPI is a learning technology specification (the 'next generation' of SCORM) - <https://xapi.com/overview/>

Architecture diagram (attached to this submission) and overview:

<https://docs.google.com/drawings/d/1jox8dvI6vLfYc3VksWt-vZ7PB1GSXUs6eC4UR9HKkqk/edit>

ORB can be installed as part of a network of ORBs, creating a peer-to-peer network (see 1) for sharing of content between peers. A peer may be set up on global, regional, country or sub-national level basis. The administrator of each peer can configure which peers to link to and which content should be pulled in from these peers. When our first implementation of Open Deliver goes live (Uganda), this peer-to-peer network becomes possible.

Resources in ORB can be exported to Moodle (see 2 & 3) for constructing courses, and the courses are subsequently delivered offline to health workers (see 4 & 5) via Oppia Mobile.

Data on the health workers' usage of the content can be exported from Open Deliver using the xAPI specification (see 6) to a Learning Record Store (LRS - see 7). The LRS can be used by the MoH to track all the health workers' learning experiences, not only from Open Deliver, but also linking to other systems and platforms involved in tracking health worker training. Some examples have been included in the diagram:

- iHRIS (see 8) - health worker registry records can be exported to the LRS
- Other Digital Learning Platforms (see 9) - where other digital learning platforms may be used, the health worker learning experiences can also be exported to the LRS
- OpenSRP (see 10) - how health workers apply their training (eg tracking number of PNC visits) would be useful to include in the LRS - as this then allows analysis of how different training programs/courses/content impact on the health workers day-to-day work performance
- Face to Face training records (see 11) - Given that training will still take place in classroom or blended approaches (not digital only), xAPI and LRS will allow this training data to still be included (via export from spreadsheet records), such as training attendance and exam/test results, even if it is less granular than may be obtained from a purely digital training platform.

Combining training data from various sources using xAPI and an LRS allow ministries to build a complete picture of the training their health workers are receiving.

Community Feedback

Current methods

The mPowering community consists of a range of stakeholders, each of whom play different but complementary roles:

- Government (ministries of health)
- Implementers

- Technologists (software developers, digital health and digital learning professionals)
- Global health experts in various clinical areas
- Health education and communications experts

Currently, the primary engagement method for community feedback is through working directly with health ministries and running workshops/presentations, such as in Uganda, Sierra Leone and Pakistan. This allows mPowering to develop the use cases and determine the priorities for technical development. mPowering has also been engaging with country programs within the Maternal and Child Survival Program (MCSP), Instrat (a Nigerian company), Jhpiego, and with the University of Zambia and Intrahealth.

mPowering is also engaged with the iHRIS and OpenSRP developer communities to define the software interface between their systems and Open Deliver and will continue that engagement to improve the functionality between the systems.

Proposed methods:

With the Open Deliver technology implementations in Uganda, Sierra Leone and Pakistan, mPowering will build off this work to formalize the approach to engaging with each type of stakeholder. mPowering will adapt the frameworks, guidelines, tools and templates created for these country deployments, such as for multi-stakeholder engagement, to create versions that can be applied in any country.

WmPoweringe also envisions linking ORB/Open Deliver into the OpenHIE architecture. This will allow information about who was trained, what they were trained in, their current competency and the facility to be linked together and used for strategic deployment of human resources and training interventions. other digital learning platforms and training information systems.

Global Good Maturity Model

The completed Global Good Maturity Model can be found

here: https://docs.google.com/spreadsheets/d/10onMPHBjDAqkbBLRXGDrrELse_v6vvMUr1IXSk07rnw/edit#gid=249752520

Workplan, Project Deliverables and Timeline

Attached to this submission and also here:

<https://docs.google.com/document/d/1YKxhQ0AUmYuBK1qq1vWJtvpEgvc9dpZ65wp0...>

- Supporting Documents:**
-  [mPowering overview slide deck](#)
 -  [ORB Open Deliver Architecture diagram](#)
 -  [mPowering Activity Matrix](#)
 -  [User Stories](#)
 -  [Global Goods Maturity Model](#)
 -  [Budget narrative](#)