mHero and the Principles for Digital Development: Development Done Right

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IntraHealth International and UNICEF launched the mHero platform in late 2014 in the midst of the Ebola outbreak in West Africa. Originally designed to help Ministries of Health connect with frontline health workers via SMS messages to collect and share information helpful for a rapid response to Ebola, mHero is now a tool embraced by Ministries of Health to support two-way communication for a wide-range of health services.

mHero is different than many other mHealth applications – it is not an application designed to address a single
programmatic purpose. Rather, mHero provides infrastructure which is adaptable to a Ministry’s needs and which leverages information the Ministry is already managing on health workers. Deploying mHero is not about deploying a software technology, it is about people and processes – the organizational development needed to govern and manage such a powerful tool.

mHero is not a wholly new technology. Rather it is a system that embraces various open source health information systems such as iHRIS – IntraHealth’s human resources information system – and RapidPro – UNICEF’s two-way interactive messaging system – and DHIS2 to facilitate communication to health workers. Behind those communications, mHero’s technology allows system integration and information sharing leveraging components of OpenHIE, a set of technologies that allows data systems to speak to each other using open international standards for data exchange.

From its inception, the organizations supporting mHero have aligned the development and deployment alongside each of the nine Principles for Digital Development, a living set of guidelines intended to help development practitioners integrate established best practices into digital health programs. Here are the nine ways that illustrate how mHero was created and continues to evolve to ensure that digital development is done right.

**Design with the User**

With support from UNICEF and USAID, mHero’s small-scale pilot project took place in Liberia in November 2014, but before a single SMS message was sent, IntraHealth and UNICEF worked closely with Ministry of Health (MOH) officials to ensure every aspect of the system was designed to meet their needs. This included using the technologies the Ministry was already implementing (iHRIS, DHIS 2, and RapidPro) and creating a series of questions developed into SMS texts that sought information the MOH identified as a priority early in the response. Today, mHero is used in a variety of ways (such as the MOH’s mental health unit using mHero to speak directly with clinicians treating depression), and IntraHealth continues to collaborate with the Ministry of Health to adapt, pivot and adjust its implementation to meet the needs of the different users.

**Understand the Ecosystem**

There are a several ways that IntraHealth ensures that mHero is aligned with like-minded technologists in the health information system (HIS) ecosystem to communicate technology enhancements and build consensus for data exchange standards. Communication is key, especially in a rapidly evolving technology environment, and we are committed to sharing with our global colleagues how they may embrace the mHero platform. For example, a recent call of the OpenHIE Architecture Group highlighted how mHero could carry out the Mobile Alert Communication Management (mACM) standard: communication for crisis response and providing care reminders for patients with cell phones. These types of discussions – virtual or in person – are important to understanding the needs that mHero can meet in the HIS ecosystem.

By adopting the OpenHIE architecture we allow for the various components of mHero to be swapped out. If the MOH does not use iHRIS to manage their health workforce, they can simply adopt the data exchange standards in the mHero Workflow and enjoy the benefits. Currently, connections with communications platforms such as CommCare and ODKCollect are in the work which gives a Ministry the choice to use the tools they are comfortable as part of their mHero implementations.
Understanding the ecosystem requires appropriate avenues for sharing and engaging with stakeholders. We use many of these communication tools including Google Groups, GitHub, Wikis, Skype channels, Slack and participate in Hackathons.

**Design for Scale**
Interoperability – the ability of programs to communicate, exchange data and use that data with one another – is the backbone of mHero. This approach ensures that no matter which health worker information system or SMS tool is used in a country, as long as it meets the technology standards, the interoperability layer of OpenHIE can be harnessed to link these components together to instantiate mHero. This systemic approach does not limit a MOH to use any one health information or communication system such as iHRIS or RapidPro; rather mHero provides a roadmap for the MOH to bring these things together.

At the heart of mHero is an Interlinked Health Worker Registry, which brings together facility data and health worker data from all the various sources within in a country – from the MOH itself, from the professional councils, from a Master Facility List. As mHero leverages these existing national scale data systems, mHero lets the MOH connect with the entire health workforce.

Photo by Emily Nicholson of IntraHealth International

**Build for Sustainability**
IntraHealth’s support for mHero during the Liberia pilot moved at the pace of the MOH. We committed to ensure that the MOH owned the system, determined the direction mHero would grow, and guided its use. Rather than establishing mHero as an IntraHealth project, we built the capacity of the MOH staff to own the entire process. This included providing tools such as templates for standard operating procedures and use case prioritization processes. But ultimately it has been the MOH to utilize these resources and iterate them based on their needs. This has been a success as the MOH has adapted mHero including it recently in the Liberia ICT Strategy and Plan. Building capacity for ownership has been a recipe for success that is being replicated in other mHero implementation countries.

**Be Data Driven**
mHero is about the communication between MOH and health workers, and that data collected from those
communications is the crux of what makes mHero a useful tool. Through mHero implementation, IntraHealth assists the MOH to determine what data they need so that SMS seek to address those needs. This data may be a one-time survey or a routine data collection; it can target a small cohort of health workers or all health workers in a cadre. A key part of this process is for the MOH determine the best way to use that data to respond to health workers’ needs. Building a culture of data demand and use is an ongoing and integral part of the mHero platform.

Use Open Data, Open Source, Open Innovation

As mentioned earlier, mHero embraces open innovation – sharing ideas, resources and knowledge with HIS experts. Open source programs are those whose source code is made available for use or modification as users or other developers see fit. This type of software is usually developed as a public collaboration and made freely available. Open source is a requirement for the technologies operating through mHero. Systems like iHRIS ensure that MOH will avoid software and licensure fees. Our work ensures that we continuously engage with the HIS ecosystem such as OpenHIE to ensure that standards are understood and used through mHero. For example, a new standard mACM and a reference implementation of the standard emNUTT, was unveiled and tested to expand mHero’s reach to a variety of target lists including health providers, patients and health facilities by connecting with Facility Registries, Client Registries and Health Worker Registries.

Reuse and Improve

On the backend, mHero’s modular approach – integrating different systems, linking them with DHIS 2 and other HIS – allows for flexibility that is essential for the future of useful information systems. Sharing specific workflows and country implementation tools allows for users on the front end – those MOH stakeholders involved in the day-to-day running of mHero – to save time and focus on information needs from health workers. This also promotes shared learning experiences and lessons learned of implementation practices from country to country.

Address Privacy and Security

mHero’s data exchange ensures that privacy and security of health worker and MOH data is addressed. Leveraging the OpenHIE’s architectural model of an interoperability layer (in this case the OpenHIM), a component which adds a security later providing access control, and audit log as well as a data router and transformer to ensure systems communicate effectively. In building capacity at MOH to use mHero, we include this important discussion of privacy and security to help stakeholders understand not just that data is secure but how the system works to ensure data privacy and security is addressed.

Be Collaborative

mHero embraces the spirit of stakeholder collaboration, including national governments, experts in the ICT4D community and donors to plan how best to foster robust communications with health workers. The partnership for mHero extends far and wide to facilitate a meaningful conversation and collaboration to ensure successful operationalization and implementation in country, and continuously adapt the technology behind the platform to meet technology standards and changes. To ensure dissemination, the mHero website shares a plethora of information about mHero including a robust toolkit for implementers.

mHero does not just embrace the 9 Principles for Digital Development – it only works because every day it adheres to these principles. Implementation of mHero has the potential to impact health systems improvement and save lives.

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