



Harmonizing Digital Health Assessment Tools and Maturity Models

Outputs from the Digital Health & Interoperability
Working Group

Digital Health & Interoperability Working Group

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Abbreviations

CDC	US Centers for Disease Control and Prevention
DHA	Digital Health Atlas
DH&I WG	Digital Health & Interoperability Working Group
HIS	Health Information System
GDHI	Global Digital Health Index
USAID	US Agency for International Development
WHO	World Health Organization
WG	Working Group

Introduction

This case study was developed to better understand the outputs and impact of the Maturity Model Small Working Group, a body that is part of the Health Data Collaborative's Digital Health & Interoperability Working Group. Through the Maturity Model Small Working Group, digital health peers have collaborated on the design and implementation of digital health assessment tools and maturity models. This case study documents the enabling factors and the steps that organizations took to facilitate the harmonization of these tools. It is informed by interviews with individuals who supported the development of the four tools and the co-chairs of the Digital Health & Interoperability Working Group. These interviews took place in July and August 2019.

Digital Health & Interoperability Working Group

Background

Since 2016, the Digital Health & Interoperability Working Group (DH&I WG) has enabled a collaborative, community-based approach to implementing digital systems that support global health.¹ The DH&I WG brings together nearly 250 technical partners from more than a dozen countries to standardize the way governments describe their paths to establishing operational national digital health systems and developing a common terminology in digital health. Early in its existence, the members of the DH&I WG recognized that countries participating in the group were at various levels of progression along their health system digitization journeys, and consequently turned its efforts toward co-creating a suite of tools that help articulate, assess, and plan for digital health interventions. Tools that have benefited from the support of the DH&I WG and, in particular, support from its Maturity Model Small Working Group are the Global Digital Health Index,² Digital Health Atlas,³ Health Information Systems Interoperability Maturity Toolkit,⁴ and Health Information System Stages of Continuous Improvement Toolkit.⁵ The collaboration on these tools has strengthened both the individual products and continuity in the digital health sector, thereby reducing fragmentation and misalignment in the ecosystem. These tools are available for use by policymakers, donors, and practitioners alike to improve the design and delivery of digital health activities.

Structure

In 2016, the DH&I WG formed an affiliation with the World Health Organization (WHO)-hosted Health Data Collaborative. Digital Square, a partnership of the world's leading digital health experts from 40-plus organizations working together with countries to strengthen digital health systems, serves as the secretariat. The DH&I WG is run by three co-chairs: Garrett Mehl, PhD (WHO), Paul Biondich, MD (Regenstrief Institute), and Adele Waugaman (US Agency for International Development).

The DH&I WG holds monthly virtual meetings for all members and a yearly in-person meeting every December in conjunction with the Global Digital Health Forum. Meeting minutes are recorded and shared via Google Docs. To join the DH&I WG, an individual contacts the secretariat and is provided with the group's objectives and shared values. Once that individual assents to the objectives and shared values, he or she is invited to the monthly meetings and is given access to the group's shared spaces, just as the Google Drive and Slack channel.

Maturity Model Small Working Group

Background

Following the establishment of the DH&I WG, members from different countries began discussing the different levels of maturity within their health information systems (HIS). Through these discussions, it became clear that countries needed tools that could guide them on their next steps for their HIS regardless of their level of development and deployment. The co-chairs also noted that multiple organizations had funding to develop tools for assessing health information system maturity and prescribing immediate next steps based on the outcomes of the assessment. Starting in 2017, the Maturity Model Small Working Group was founded to bring together the organizations working on maturity models in order to identify opportunities for alignment. The goal was to prevent duplicative efforts that would be a waste of scarce resources and also cause confusion for countries as to what tools to use and when. The group has monthly calls that allow for reporting on progress of tools, seeking feedback, and discussing implementation learnings and sustainability plans.

Digital Health & Interoperability Working Group Objectives

1. Optimize the meaningful use and reuse of health information technology in low- and middle-income countries to support achievement of Sustainable Development Goals through the implementation of foundational digital health infrastructures.
2. Actively promote the development, use, and long-term support of digital health “global public goods.”
3. Increase, in a measurable way, the level and alignment of country and partner investments in support of Objectives 1 and 2.

Efforts to harmonize digital health assessment tools and maturity models

Health Information System Stages of Continuous Improvement Toolkit

The Health Information System Stages of Continuous Improvement Toolkit establishes a systematic basis of measurement for describing HIS components, setting goals for future levels of maturity, and informing the development of improvement plans to realize the next stage of progress toward a strong HIS. The tool is the result of collaboration between the US Agency for International Development (USAID)-funded MEASURE Evaluation project and the US Centers for Disease Control and Prevention (CDC). Both organizations recognized how countries could benefit from having a tool that is explicit about describing different scenarios of where they may be in developing HIS and putting them in a matrix that gives a sense of how to move from one stage to the next.

Representatives from both the CDC and MEASURE Evaluation were members of the DH&I WG and had been sharing information about their work with the co-chairs and group members. Both groups had started to develop a tool for countries to assess their HIS maturity levels to support them in determining their next steps. After reviewing what CDC and MEASURE Evaluation were working on, the two organizations, along with the DH&I WG co-chairs, saw that there was a lot of similarity in terms of intent and actual structure of the tools. Co-chair Dr. Paul Biondich helped to facilitate conversations with the CDC and MEASURE Evaluation teams about bringing their efforts together under the umbrella of the Maturity Model Small Working Group.

This led to the two organizations having an in-person meeting where they discussed the details of how to bring together their efforts into one concept and toolkit and continued to have a biweekly call for the next year to continue co-development efforts. Both organizations would regularly update the Maturity Model Small Working Group to share their progress and obtain feedback on the tool. Through the small working group, they were able to build relationships that led to the first implementation of the toolkit in Uganda. In addition, the team members working on the toolkit have been able to have continuous interactions with the teams working on other maturity model-based tools, such as those featured in this case study, helping them to ensure that their toolkit has unique components that add value, while also harmonizing with the other tools.

“Once the Health Information System Stages of Continuous Improvement became part of the work of the Maturity Model Small Working Group, it was no longer just a MEASURE Evaluation product or a CDC product. It now is a working group product and through that we have expanded ownership and use.” —Manish Kumar, Senior Technical Specialist, Health Systems Strengthening at the University of North Carolina at Chapel Hill

Health Information Systems Interoperability Maturity Toolkit

A key step in improving HIS is for countries to ensure that data can be shared between disparate systems, or that systems are interoperable. A challenge for many countries has been how to assess the current state of their HIS and understand the steps needed to make various systems interoperable. The HIS Interoperability Maturity Toolkit includes a maturity model that identifies the major components of interoperability: an HIS interoperability assessment tool for a country to determine its interoperability maturity level systematically and a user guide.

The MEASURE Evaluation project was in the early stages of development of the HIS Interoperability Maturity Toolkit when the DH&I WG was founded. The Maturity Model Small Working Group made this toolkit a high-priority project because of the opportunity for a diverse group of stakeholders to work together to standardize the language that is used to talk about HIS maturity and interoperability. Through collaboration with the DH&I WG, the developers of the toolkit were able to obtain feedback on the model in order to harmonize it with other complementary tools. For example, the Global Digital Health Index was also in development at this time. Since developers of both tools were members of the DH&I WG, they were able to realize that they were not using the same terminology, and if a country government were to review both tools, it could find the differing terms to be confusing. The developers of both tools agreed to hold a meeting in an effort to define the key terms and maturity levels. This ultimately resulted in better alignment of the two tools. “That kind of harmonization helped, and now that the two tools are finished, there is a semblance of collaboration between the two,” said Christina Villella, Senior Health Informatics Specialist at ICF International. “That is still a work in progress, but much of the harmonization came after comparing notes with the two groups, which started in the DH&I Working Group.”

As the HIS Interoperability Maturity Toolkit has been implemented in various countries in Africa—including Ghana, Kenya, Uganda, and Rwanda—country representatives themselves have shared their

experiences with using the tool with the DH&I WG. This is helping to encourage continued uptake of the tool and discussions about how to ensure it is aligned with other tools.

Global Digital Health Index

The Global Digital Health Index (GDHI) is an interactive web-based resource that aims to track, monitor, and assess the enabling environment for digital health throughout the world. Maturity levels for each participating country are displayed on the GDHI site. The GDHI is a multi-stakeholder initiative hosted by the Global Development Incubator and a representative secretariat that includes ministries of health, WHO, digital health networks and associations, the private sector, and donors. HealthEnabled serves as the technical lead for the development of the tool in response to countries' request for help benchmarking and assessing their current digital health states to inform creation and strengthening of national strategies to prioritize investments and measure digital health progress. The GDHI uses the WHO/International Telecommunication Union eHealth Strategy Toolkit as the underlying framework and has standardized 19 indicators with a five-point rating scale that allows countries to understand their current states and how to progress to the next level on the scale. The GDHI was created through a highly participatory design process and collaboration with a wide range of stakeholders, including individuals from ministries of health, donor organizations, nongovernmental organizations, and the private sector.

The GDHI team has actively participated in the DH&I WG through providing updates on the tool and seeking feedback on the indicators, maturity model, and overall design. Through this sharing, as described in the previous section, colleagues at the MEASURE Evaluation project were able to see connections between the goals of the GDHI and the HIS Interoperability Maturity Toolkit. They encouraged the GDHI team to adopt a similar scale as their interoperability model so that they would align and provide governments with complementary information. Through the meetings of the DH&I WG and Maturity Model Small Working Group, the GDHI team has also been able to engage with WHO to align with the Digital Health Atlas and look at integrating the GDHI data into the Atlas. Through the DH&I WG, the GDHI team was also able to work with MEASURE Evaluation to include the platform as part of a package of assessment processes being undertaken in East Africa through Digital Reach.

Digital Health Atlas

The Digital Health Atlas (DHA) is a global technology registry platform aiming to strengthen the value and impact of digital health investments, improve coordination, and facilitate institutionalization and scale. In addition to the platform for registering and viewing digital health projects in a country, it includes tools to support planning digital health interventions and the mHealth Assessment and Planning for Scale toolkit. Ministries of health, technologists, implementing partners, and donors have had a challenging time knowing what digital systems are already in place in a country or details about existing systems, such as a particular system's intended purpose, how many users are benefiting, and where it is being used. The DHA is an attempt to create a global registry for information and communications technology investments that speaks a common language across those groups with a consistent way to describe them and their maturity, purpose, and users.

To create the DHA, WHO brought together various stakeholder groups, including representatives of ministries of health, in numerous meetings to contribute to the vision. Members of the DH&I WG have also helped refine the purpose of the DHA and how to increase its value and usability so that various stakeholders would be motivated to utilize the DHA and refer to it when planning digital health interventions.

The DH&I WG also proved valuable support in the creation of the Classifications for Digital Health Interventions, a shared language to describe the uses of digital technology for health, which is used to categorize projects registered in the DHA. By presenting the Classifications to the DH&I, WHO was able to obtain input and consensus from a diverse and influential group of stakeholders. Since the launch of the DHA, the developers have reported on the continuing evolution of the tool and members have provided comments on different features or functions that would further strengthen the tool. This includes the recognition of the benefit of connecting the DHA and GDHI, described in the section above.

“The [Digital Health & Interoperability Working Group] membership represents the diversity of the constituencies that are the users of the Digital Health Atlas,” said Dr. Garrett Mehl, Scientist, Digital Innovations and Research, Department of Reproductive Health and Research, World Health Organization and developer of the Digital Health Atlas. “By being able to have all those groups feed into it, we have been confident that the requirements and functions of the tools will represent the wider community to help evolve it into a global good that does represent the different needs of the diverse community.”

Table 1. Digital health assessment tools and maturity models at a glance⁶

	Developers	Purpose
Global Digital Health Index	Global Development Incubator and Health Enabled	An interactive digital resource to assess, monitor, and improve the environment for effective use of digital health technology, to strengthen health systems and improve health outcomes. It uses digital health performance indicators, with a five-point rating scale, to allow countries to set a baseline, generate a scorecard and a benchmark against global averages.
Digital Health Atlas	World Health Organization	A global technology registry platform aiming to strengthen the value and impact of digital health investments, improve coordination, and facilitate institutionalization and scale.
Health Information Systems Interoperability Maturity Toolkit	MEASURE Evaluation	This toolkit identifies major components of interoperability for health information systems and lays out a path to meet goals in leadership and governance, human resources, and information technology to support digital health.
Health Information System Continuous Stages of Improvement Toolkit	MEASURE Evaluation and United States Centers for Disease Control and Prevention	The Health Information System Stages of Continuous Improvement Toolkit was designed to help countries or organizations holistically assess, plan, and prioritize interventions and investments to strengthen an HIS. The assessment measures current and desired HIS status and maps a path toward improvement.

Enabling Factors

The stakeholders interviewed for this case study noted several factors that have made the DH&I WG a productive forum for collaboration.

Fulfilled a need in the global digital health sector

The global digital health community has interacted through groups including the Global Digital Health Network and working groups that existed under the mHealth Alliance. After the mHealth Alliance completed its operations in 2014, there was a period where no group met monthly for the purpose of prioritization and collaboration on digital health initiatives. Overall the DH&I WG has provided a needed and valuable place where people feel they can efficiently engage and learn from a trusted group of digital health experts, both through regular virtual and in-person meetings.

“It was exciting to have a platform for collaboration within the Digital Health & Interoperability Working Group that has a clear vision for how to advance digital health progress. We have ended up with working group–supported products and tools that are being used increasingly as a package to inform digital health interventions and related enablers that are strengthening health systems and improving health outcomes.” —Patricia Mechael, Principle and Policy Lead at HealthEnabled

Commitment to collective ownership

The DH&I WG is an all-volunteer group, where people have assented to the values of being open, user centered, and collaborative, including the belief in the power of community and harnessing the wisdom of the working group by creating a safe space to raise concerns, improve existing ideas, and solve problems. Key informants agree that members are part of the group because they are committed to learning and contributing. Given the open and collaborative nature of the group, members who are not directly a part of the organizations producing a tool feel a sense of ownership for it and want to see it used.

Trusted environment for giving and receiving feedback

When the DH&I WG first formed, it gained legitimacy through being championed and co-chaired by respected organizations, including WHO and USAID. Key informants also explained that as individuals joined the group, they found that it was very welcoming, with co-chairs and members very committed to participating actively and giving constructive feedback. They expressed feeling confident that the feedback they were getting was genuine and that the group is a neutral, safe space to have critical reflection and discussion. Also, because the DH&I WG brings together a diversity of individuals that represent different geographies and types of organizations, including nongovernmental organizations, donors, and multilateral organizations, members feel that the feedback is representative of all stakeholders in the digital health community.

Regular meetings

Key informants noted that with the monthly virtual and annual in-person meeting, the group meets regularly enough to be useful and to efficiently move work forward. The meetings provide a forum for regular feedback and accountability for making progress and regularly reporting back. It was noted that this regular cadence also provides efficiencies for members, because rather

than having to organize and convene their own meetings, they can use the DH&I WG meetings to provide updates and seek feedback.

Small working groups

The small working groups have a focused mandate, which helps work to get done quickly and create a community of people passionate about the same topics. The expectations for participation are clear and all are encouraged to share their perspectives and expertise.

Shared drive for reference and collaboration

Through its secretariat role, Digital Square curates minutes and documents for each general DH&I WG meeting and each small working group meeting. Key informants emphasized that even if they were not able to attend a meeting, they were able to stay up to date because there is the repository that shows previous discussions. Having shared minutes available on an ongoing basis has made WG time particularly productive because even those who did not attend the previous meeting can come to the next meeting informed of what was discussed and ready to fully participate.

Lessons learned

Lessons for Implementers

The DH&I WG has supported digital health implementers in working in accordance with the Principles for Digital Development.⁷ Principles supported by active participation in the working group include Build for Sustainability, Reuse and Improve, and Be Collaborative. The following lessons learned from participation in the DH&I WG have been shared by the key informants:

Before creating a tool, consult with a working group or other forum to determine if a similar tool already exists. Implementers sometimes make presumptions that a tool does not exist without consulting with peers. Working groups allow for discovery of what others are working on and where tools are being implemented. Reducing duplicative tools and harmonizing complementary tools helps to reduce confusion for countries and ensure that existing tools can be reused and used together for maximum impact.

“One of the successes we have noted in this process is, through working with the Digital Health & Interoperability Working Group, people find the tool credible enough to use it. From the MEASURE Evaluation website, we see the toolkit is downloaded several thousand times. I believe this is especially because the toolkit is backed by the Working Group.” —Sam Wambugu, Health Informatics Advisor, MEASURE Evaluation project, ICF

Collaboration leads to higher-quality tools. Bringing a tool to stakeholders outside of one's organization takes extra time and resources, but this collaboration allows for reflection and improvement. Outside perspectives can help illuminate overlaps with other tools or how a tool can be modified so that it has for value different constituencies. Also, when other organizations contribute to the development of a tool, they feel invested in making sure it gets used and can help ensure it reaches its target users.

Coordination outside of working groups can be limited and is costly. Working groups, such as the DH&I WG, provide an efficient way to reach a diverse group of stakeholders. Without using this established forum, key informants would have had a more challenging time getting feedback on their tools efficiently or from individuals that represented a wide range of organizations and geographies.

Lessons for donors

The Principles of Donor Alignment for Digital Health were created to help reduce fragmentation and duplication in digital health initiatives.⁸ Donors that endorse these principles show their support for collaboration with other agencies, investing in digital health global goods, and sharing and peer learning. The lessons for donors shared through interviews reflect these principles.

Support working groups and convening spaces. Collaboration has a cost: it takes time to organize meetings and can be costly if meetings need to be organized in person. When a working group already exists, it takes some of the time and cost out of collaborating. Key informants said that it would have taken more resources to collaborate with others outside the DH&I WG, and without it they would have run out of time and resources to consult with such a wide group of experts.

Encourage time and project resources to be used to collaborate. Ample resources are typically provided to complete the work, but time and funds are not given to allow for collaboration and alignment with other tools and stakeholders. Work with funded projects to develop work plans that include steps for collaboration.

Participate in working groups to understand what is out there and avoid funding duplicative efforts. Working groups and other similar forums are excellent for implementing organizations to align efforts and also for donors to learn about what other organizations are working on and already funding. By participating in these forums, donor organizations can look for opportunities to align investments with other donors and existing digital health initiatives.

Support efforts for communications and raising awareness of tools. When a new resource or tool is created, the funding sometimes ends when it simply has been published on a website or resource library. Allow for extra time and funding after the product is complete to allow for active dissemination efforts to ensure others are aware of its existence and do not create duplicative tools and that it is used as intended.

Conclusion

Since its inception, a key success of the DH&I WG has been the formation of the Maturity Model Small Working Group and its contributions to the creation of tools and resources that are better harmonized. The developers of the four tools featured in this case study have worked together to prevent the creation of duplicative tools and to ensure that different tools use aligned language and rating systems so that countries are able to get information that is not confusing or contradictory. Going forward, the stakeholders interviewed for this case study expressed they will continue to work toward better integration, coordination, and clarification on what each tool should be used for as well as how they complement each other and can be used together as a package of tools. Key informants expressed that they have already found opportunities to present together at conferences to raise awareness and are going to continue to look at what guidance can be published to further this effort.

Interview List

Paul Biondich, Director, Global Health Informatics Program, Regenstrief Institute, Inc.; co-chair, DH&I WG

James Kariuki, Informatics Service Fellow, Center for Global Health, Centers for Disease Control and Prevention

Manish Kumar, Senior Technical Specialist-Health Systems Strengthening, MEASURE Evaluation Project, University of North Carolina at Chapel Hill

Patricia Mechael, Principal and Policy Lead at HealthEnabled

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Christina Villella, Senior Health Informatics Specialist, MEASURE Evaluation project, ICF

Sam Wambugu, Health Informatics Advisor, MEASURE Evaluation project, ICF

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