digital square

THE GLOBAL GOODS GUIDEBOOK

An overview of the software global goods ecosystem.

VERSION 4.0
MAY 2023

Acknowledgements

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Endorsements

The Principles of Donor Alignment for Digital Health describe the importance of aligning around scalable, sustainable, accessible, interoperable, and evidence-based digital public goods for health that meet country priorities. By better coordinating the development of digital public goods for health, such as those presented in this guidebook, stakeholders can play a crucial role in moving the global health sector from a past era of funding characterized by pilots and other proof-of-concept demonstrations, to a future guided by investments in country-led and country-managed digital health strategies and systems that can be independently operated, expanded, and sustained by host governments and local partners over time.

This guidebook is endorsed by:

Bill & Melinda Gates foundation

USAID FROM THE AMERICAN PEOPLE

BAYER | Foundation

the ELMA philanthropies

german cooperation DEUTSCHE ZUSAMMENARBEIT

unicef for every child

digital impact alliance

Digital Public Goods Alliance

Norad

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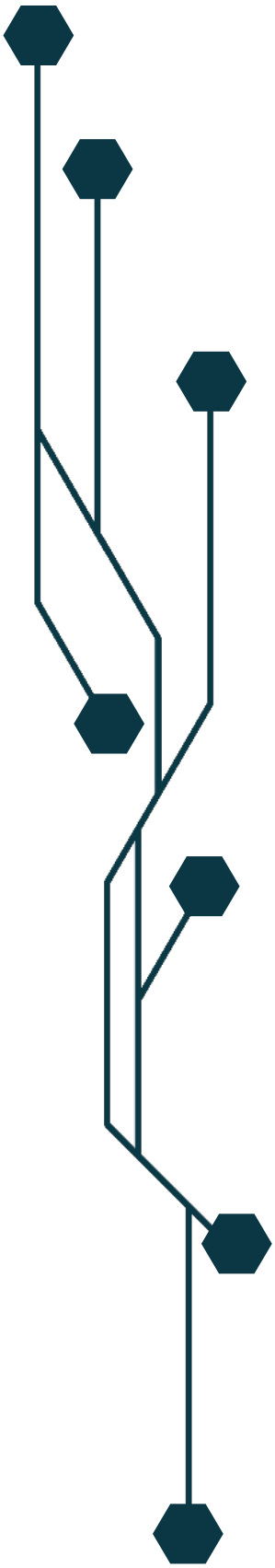


APPENDICIES

INTRODUCTION

"We have already seen evidence that [digital health] increases equity, increases quality of care, improves resource efficiency, enables local capacity, and fosters resilience at the local level."

Atul Gawande, Assistant Administrator for Global Health, USAID

"A true [digital] infrastructure revolution is going to take more investment, more collaboration across sectors, and authentic partnership with low-income countries that are already pioneering the technology needed."

Statement from Bill & Melinda Gates Foundation CEO Mark Suzman: Why we need digital infrastructure

About Digital Square

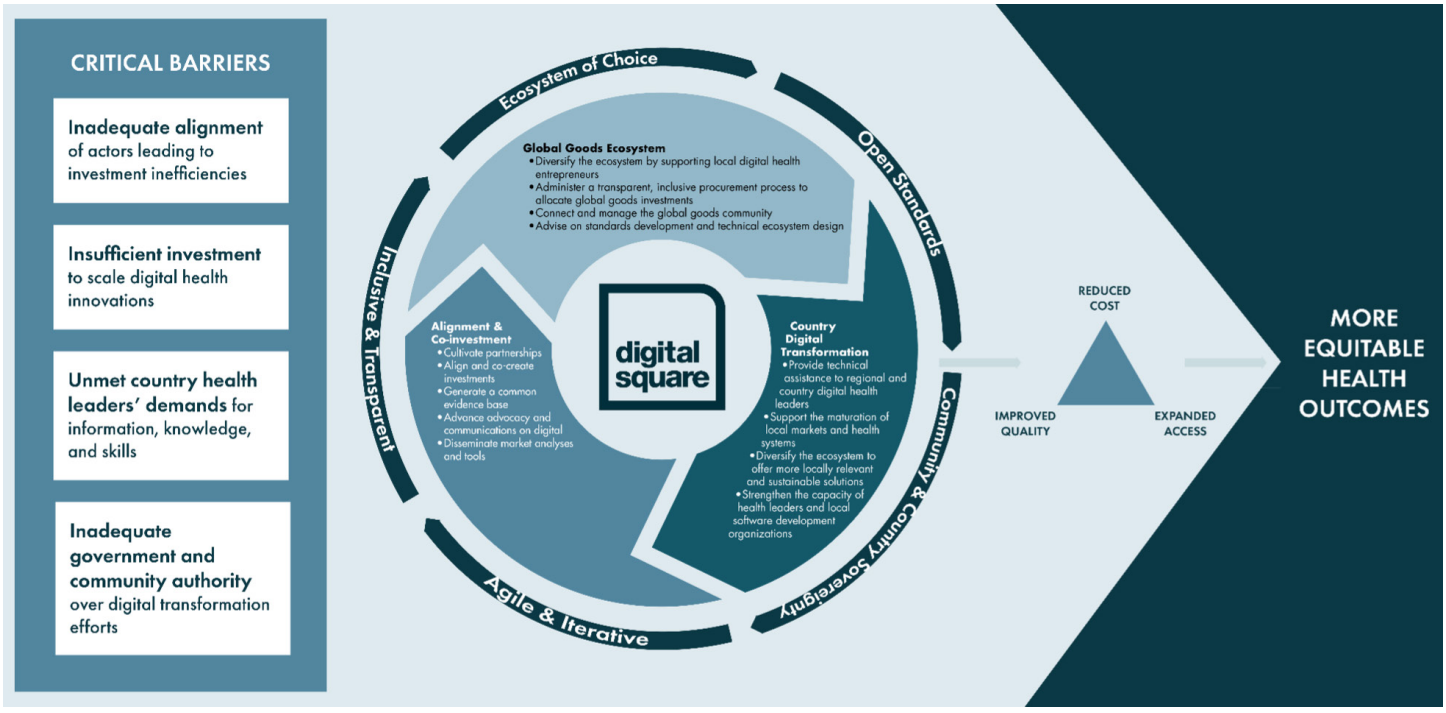
Digital Square is a digital health marketplace–or 'square'–where supply and demand come together to accelerate health equity. We do this by: (1) aligning investors and government bodies around a shared digital health vision based on country needs and priorities; (2) promoting the development, adoption, and reuse of digital public goods for health; and (3) working with regional and country bodies to strengthen national-level digital health governance to support country digital transformation.

Digital Square plays a unique role in the digital health ecosystem, leading as a neutral convenor of donors, government leaders, technical innovators, and entrepreneurs. We advocate for and support global goods, promote open standards and open architecture in health systems design, strengthen regional and national capacity, and support local ownership and decision-making to facilitate the long-term sustainability of digital health solutions.

Since Digital Square launched in 2016, we have partnered with hundreds of stakeholders in local communities across 33 countries to improve how the global community designs, uses, and pays for digital health tools and approaches. Through our Open Application Process, we have approved and supported 36 mature global goods which are accelerating the speed and scale of digital health interventions, growing a dynamic community of technologists who come together to advance digital health solutions.

To join us or to learn more, visit www.digitalsquare.org.

Figure 1: *Digital Square Theory of Change*



About the guidebook

The Global Goods Guidebook is a living document updated regularly and designed to serve as a reference of global goods approved through Digital Square. It also includes information on what global goods are, how to use and procure them, and how global goods are situated within the wider digital health ecosystem. In this fourth edition of the guidebook, we focus on software global goods. We have also added several new sections which reflect the current and evolving needs of the digital health ecosystem: standards and interoperability, security and data-privacy, and the benefits of using global goods. The guidebook will soon be offered in a web-based version, allowing users to sort and filter global goods according to their needs. The digital version will be updated more frequently to include new global goods as they are approved, and will expand to include content and service global goods. These updates are expected to be shared publicly by the end of 2023.

The guidebook is designed in alignment with the World Health Organization's (WHO) Classification of Digital Health Interventions (CDHI) v1.0. While the WHO framework describes three interlocking areas—the health system challenge, the digital health intervention, and the system category—the guidebook is organized based on the system categories (Figure 2). System categories represent the types of Information and Communications Technology (ICT) applications and information systems designed to deliver one or more digital health interventions—this categorization is critical as it serves as the starting point for interoperability considerations. WHO is in the process of updating the Classification, and version 2 of the CDHI will contain updates to the System Categories section. We will update future editions of this guidebook to align with CDHI updates. You can read more about how the WHO classification of health systems applies to global goods in Appendix D.

This guidebook is also an excellent resource to accompany the WHO's Digital Implementation Investment Guide (DIIG), which aims to help governments and technical partners plan a digital health implementation that focuses on one or more health programs to support national health system goals. Specifically, Chapter 4 of the DIIG, which helps governments determine appropriate digital interventions, aligns with and references the Digital Square Global Goods Guidebook.

Figure 2. *Digital health technology system categories as classified by the World Health Organization*

How to use the guidebook

The guidebook is a freely available resource to anyone interested in learning about Digital Square global goods and their uses. To provide a better sense of how the information in this guidebook might be used, we have included some example use cases here:

COUNTRY-LEVEL STAKEHOLDER

USER DESCRIPTION

A person within a specific country who wants to implement/deploy a global good for a project. This could include a Ministry of Health member, Government representative, or staff person at an International Non-Governmental Organization (INGO)

EXAMPLE USE CASES

- Selecting a global good for implementation that fits the needs of a specific country, including intervention, system category and standards supported
- Learn about other complementary components for a Health Enterprise Architecture

IMPLEMENTER

USER DESCRIPTION

A person who implements or oversees the implementation of a global good at the program level.

EXAMPLE USE CASES

- Easily identify and select a global good available based on an intervention
- Access resources or support information for a global good
- Learn about best practices in the implementation of global goods

DEVELOPER

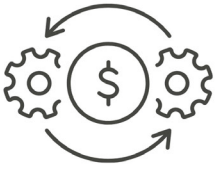
USER DESCRIPTION

A person who writes or customizes code for a particular global good.

EXAMPLE USE CASES

- Access source code and application technical documentation
- Understand what major technologies the global good makes use of
- Learn about best practices in the design and implementation of global goods and standards for interoperability with other components across the Digital Health ecosystem

DONOR



USER DESCRIPTION

A person or entity who provides funds for the development or evolution of a global good or is interested in investing in future global goods

EXAMPLE USE CASES

- Learn about global goods and identify areas for advocacy and investment.

INNOVATOR

USER DESCRIPTION

A custodian or developer of a global good (someone who owns, manages, or contributes to the product)

EXAMPLE USE CASES

- Gain familiarity with other global goods in their classification category
- Publish their current global good development focus
- Find info about current trends in digital health

Defining global goods

Digital Square global goods are health-focused digital public goods that are impactful, scalable, and adaptable to different countries and contexts. In addition, they have an active focus on becoming more interoperable, deployable, and better serving of low- and middle-income country (LMIC) strategies.

Digital Square's process for approving global goods addresses the three core properties of global goods: non-rivalry, non-excludability, and worldwide availability, with some variation in the specific requirements which align with the Principles of Digital Development.

Global goods have the following attributes:

- **They are open source and freely accessible content, services, or software.** This enables greater flexibility for countries when adapting or adopting global goods and reduces the cost of tool creation and maintenance.
- **They are aligned to the Digital Public Goods (DPG) Standard** and are either nominated or registered as DPGs (only relevant to software and content global goods).
- **They have a strong community and clear governance structure.** Global goods are updated to reflect the changing technology and consumer ecosystem and have a growing number of implementers and supporters.
- **They are funded by multiple sources.** This ensures that digital tools are supported by an ecosystem of donors whose overall commitment remains constant and can meet the needs of the community.
- **They can be deployed at a significant scale.** Global goods have the proven functionality, capability, and security to be deployed with minimal risk and have an impact at population or national scale.
- **They are designed to be interoperable.** Global goods are standards-based and can communicate and share information with each other so that tools can be focused and part of a larger ecosystem.

While this guidebook focuses on software global goods, there are three types of global goods that digital square supports:

- **Software:** A software tool that is open source, and used to manage, analyze, or transmit health-related data, with proven utility in several settings.
- **Services:** A service that is used to provide, manage, transmit, or analyze health-related or relevant data that can be freely accessed as a software service and adheres to open data principles.
- **Content:** A resource, toolkit, or data standard that is available under an open license and that is used to improve or analyze the capabilities required to manage health data. Capabilities includes those related to resource allocation, people, hardware, software, infrastructure, and operations.

"Regardless of their level of digital maturity or economic development, countries across the globe are already demonstrating how including digital health as part of their Universal Health Care approach can lead to expanded coverage of health services and improved health outcomes."

Transform Health, The Case for Digital Health: Accelerating Progress to Achieve UHC (2021)

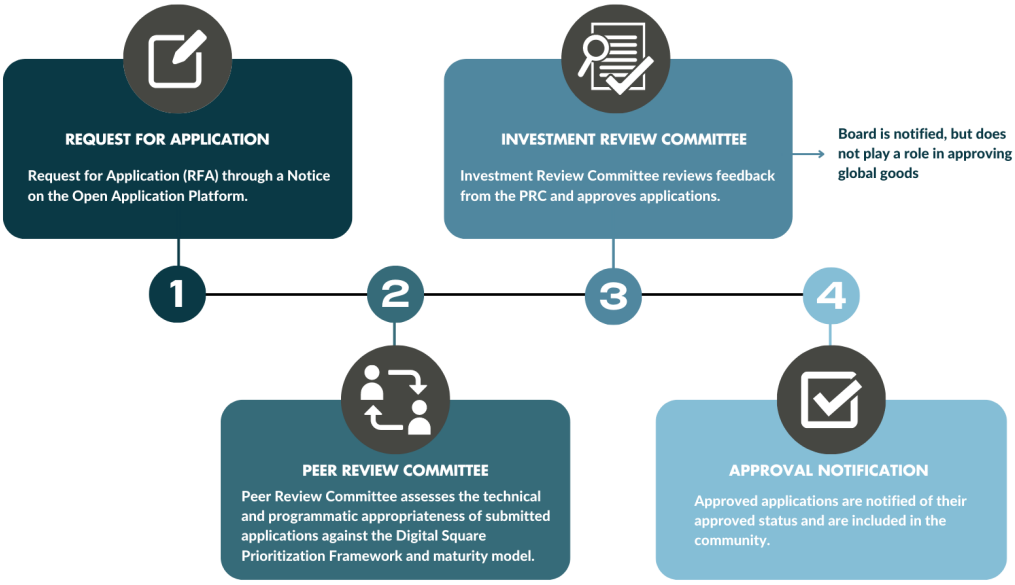
How a digital health tool becomes a Digital Square global good

Digital Square identifies global goods using an inclusive Open Application Process (OAP). Through this process, Digital Square launches a global call for applications to identify and promote digital health technologies to be approved as global goods. The solicitation period is open for six to eight weeks, giving potential global goods ample time to complete the required application.

Once the solicitation period is closed, applications are subject to several rounds of external technical review. First, the Peer Review Committee (PRC) evaluates applications according to a Prioritization Framework and Maturity Model. Their combined reviews indicate to what extent the application meets the requirements of being a global good. The compiled PRC evaluations are then sent to the Investment Review Committee (IRC) who make the final decision on approving global goods. The PRC and IRC are comprised of a diverse set of the foremost leaders and thinkers in digital health technology, including from country governments, donor organizations, implementing organizations, technology vendors, and the United Nations Development Programme (UNDP), and The World Bank. These groups play a critical role in assessing the technical appropriateness of submitted applications, ensuring the global goods approval process is transparent, inclusive, and collaborative. The Digital Square Board is notified of the approved global goods. For Notice process that have funding associated with them, such as previous Notices A–F, the Board ratifies the investment package developed by the IRC.

Our most recent cycle, Notice G, differs from past Notices in that it is divided into three rounds of opportunity, with each round focusing on procuring global goods from one of three categories: software, content, or services. In 2022, Digital Square undertook updating and creating separate definitions and maturity models for each type of global good with the help of the digital health community. The global goods featured in this version of the guidebook were approved through the Notice G0 cycle, which focused specifically on identifying software global goods for health which are currently in use on a global scale. All previously approved software global goods were required to re-apply so they could be evaluated against the revised maturity model and evaluation criteria.

Figure 3: *Digital Square Open Application Process*



To stay informed of upcoming Notice cycles, join the Digital Square Mailing List or visit: www.digitalsquare.org/digital-health-global-goods.

Benefits of using global goods

There are multiple benefits to using global goods, each of which serves a unique purpose in improving how digital health technologies are implemented, scaled, and sustained:

- Many developers can contribute to a single global good, thereby reducing the risk of vendor lock-in; a situation in which customers are unable to switch providers/developers without a substantial cost.
- The source code for global goods is available and modifiable, creating more opportunities for collaboration across organizations and health program areas.
- Global goods are funded by multiple sources, ensuring product sustainability.
- The cost of new feature development and software maintenance is more likely to be shared across users and supporters of global goods, freeing up resources for adaptation and implementation.
- Global goods align with software development best practices in requirements gathering and undergo user acceptance testing, so resources can be focused elsewhere during implementation.
- Interoperability of global goods leads to improved data analysis and synthesis, enhanced support for continuity of care as clients engage at multiple points of service across the health care system, and reduced costs for data acquisition and management.
- The interoperable and open source nature of global goods support an ecosystem of choice in which decision-makers can select the tool that is appropriate for implementation in a specific country or context.

Relationship between global goods and digital public goods for health

"Digital Public Goods represent an unprecedented opportunity to fundamentally alter power balances and knowledge asymmetries by enabling countries to access cutting edge features by default, drive their own digital transformation processes, and grow their local ecosystems to derive value."

Digital Public Goods Alliance Strategy (2021-2026)

Digital public goods (DPGs) are open source software, open data, open artificial intelligence (AI) models, open standards, and open content that adhere to privacy and other applicable laws and best practices, do no harm by design, and help attain the Sustainable Development Goals (SDGs). DPGs include all 17 SDGs and are therefore across several sectors including agriculture, education, finance, climate, etc.

Digital Square global goods have a close relationship to DPGs in that they also meet the 9 indicators outlined in the DPG Standard, which establishes the baseline requirements that must be met in order to earn recognition as a digital public good. However, Digital Square global goods differ from DPGs in that they exclusively focus on SDG 3 (Health and Wellness) and primarily within LMICs. Global goods are also tools with an identified drive towards strengthening the maturity, interoperability, and shelf readiness–qualities which are not required of DPGs.

In short, all Global Goods are Digital Public Goods, but not all Digital Public Goods are Global Goods.

As part of the revised global goods application process, all applicants must first apply to become a DPG nominee. While most Digital Square global goods will meet the standards required for approval as a DPG, there are several reasons why not all DPGs will be Digital Square global goods:

- Digital Square exclusively evaluates solutions relevant to the health sector whereas DPGs are for all SDGs and across multiple sectors.
- Digital Square facilitates a peer review process that assesses maturity and aligns and weighs in on "awarding" the title of Digital Square global good. In contrast, DPGs have no maturity requirement.
- While Digital Square closely coordinates with the Digital Public Goods Alliance (DPGA) to align the approval processes for global goods and DPGs, a DPG nominee may not be approved by the DPGA, but could still possibly become a Digital Square global good.

You can read more about how Digital Square aligns with the DPGA in Appendix B.

Global Good Maturity Models

To help identify areas where investment is needed in global goods, Digital Square collaborates with the digital health community, including the Health Data Collaborative's Digital Health & Interoperability Working Group, to develop and update the Global Good Maturity Models for digital health software, content and services. A Global Good Maturity Model specifies common metrics for understanding how advanced a global good is so that we can compare and prioritize the most promising global goods for investment. Each model assesses the maturity of the global good as low, medium, or high across three dimensions:

1. **Global Utility:** Assesses how widely it is used, how well it is funded, and other metrics measuring its adoption and potential for use.
2. **Community Support:** Assesses both support for a community of users and engagement of the user community with the global good.
3. **Maturity:** Assesses the level of maturity of **the global good.**

The Global Good Maturity Model provides at-a-glance ratings of global goods and a framework used by:

- **Peer Review Committee (PRC) and Investment Review Committee (IRC):** During the Digital Square solicitation process, the maturity models are used to identify the digital health tools with the most potential for scaling, adaptation, and sustainability, and to prioritize investments.
- **Innovators** may use the maturity models as a self-evaluation tool to provide guidance on potential improvements to their product to better support areas such as community engagement, user documentation or software scalability.
- **Implementers** can leverage the maturity models to understand the level of community resources available to them.
- **Decision-makers** are able to get a better sense of the maturity of the global good and its broader use prior to evaluating and approving it for use in their context.
- **Donors** are able to evaluate the level of maturity across key areas, and how previous investments have led to improved maturity, leading to a stronger vision of where investment would be well suited for adopting or scaling global goods.

For more information on the Global Good Maturity Models for software, content and services, please visit the Digital Square wiki.

Benefits of becoming a Digital Square approved global good

Global goods approved by Digital Square are eligible to receive a number of benefits, both financial and in-kind:

- **Recognition as a global good:** Successful applications will be recognized as a Digital Square approved global good and will gain an approved status, which can be used to garner donor support.
- **Membership in the global goods community:** This includes free access to webinars throughout the year and sponsorship to attend our annual global good innovators summit. The summit serves as an opportunity to connect, learn, and gain insights from the broader global digital health community, including donors, key ministries leveraging global goods, and countries interested in implementing global goods.
- **Access to Digital Square technical experts:** Digital Square staff provide deep technical management of grants and contracts throughout the open application process, ensuring alignment with global standards and architectures, and identifying synergies between projects. We also offer advice and guidance to the global goods community on data privacy, information and cybersecurity best practices, including assistance in identifying know Common Vulnerabilities and Exploits (CVEs) and existing solutions for them.
- **Global visibility:** All successfully classified global goods will be featured in the Global Goods Guidebook. The guidebook is widely circulated throughout the global digital health community, including with donors, governing bodies, and other global health NGOs.

Procuring global goods

Because global goods are open source, their code can be accessed free of charge; however, governments and health systems will undoubtedly incur costs to procure services to configure, extend, or model the tool within an existing architecture. There may also be costs associated with aligning the tool to existing and emerging national and local policies and strategies, and costs to ensure the ongoing operation and maintenance of the tool. Resources such as Digital Square's Total Cost of Ownership (TCO) tool can be used by countries as they develop budgets for digital health transformation, ensuring global goods are scaled and sustained over time.

> *Digital health should be an integral part of health priorities and benefit people in a way that is ethical, safe, secure, reliable, equitable and sustainable. It should be developed with principles of transparency, accessibility, scalability, replicability, interoperability, privacy, security and confidentiality.*
>
> *World Health Organization, Global Strategy on Digital Health (2020-2025)*

The importance of open standards and interoperability

Digital health technology is at the core of modern, equitable health care systems. When designed and employed effectively, digital health systems can seamlessly exchange information, leading to improved clinical decisions and outcomes, care coordination, and operational efficiency. This interoperability is made possible through health data standards for digital technologies, which ensure data is uniformly and efficiently exchanged across systems. Digital Square supports the global digital health community—including our global goods partners—in understanding, aligning, and applying these standards.

A majority of the global goods represented in this guidebook already support interoperability standards, in particular the standards identified in the OpenHIE architecture described in Appendix C. Digital Square is a leading advocate for the widespread adoption of HL7 Fast Healthcare Interoperability Resources (FHIR) standard. As an initiative that closely collaborates with both standards committees and country implementation teams, Digital Square is uniquely positioned to feed insights back from on-the-ground implementers to committee members. This feedback loop helps ensure that standards are realistic and valuable to country teams and technologists alike—attributes which are essential for seamless implementation and long-term sustainability of digital health interventions.

For more information on interoperability, we suggest reading the Stepwise Toolkit for Planning & Budgeting Interoperability of Digital Health Solutions, produced by the Digital Health Centre of Excellence (DICE).

Ensuring data-privacy and security of global goods

Managing cyber security and data protection while pursuing digital health transformation requires implementing policies and procedures to ensure data confidentiality, integrity, and availability while protecting against unauthorized access, use, disclosure, modification, or destruction. To help achieve digital security preparedness, Digital Square partners and shares expertise with innovators, country governments, and implementers across the globe.

Digital Square strengthens capacity among our global goods partners to embrace process-driven approaches and practices integrated into digital health technologies for security transformation through a series of webinars. These webinars aim to provide participants with practical and actionable information on cybersecurity and best practices to open source security management coupled with useful resources to advance their cybersecurity journey. Digital Square also advises technical teams on how to approach secure development and deployment, and documents the technical steps required to achieve better data privacy and security, which are then shared with the global goods community.

GLOBAL GOODS

"Digital ecosystems—the stakeholders, systems, and enabling environments that together empower people and communities to use digital technology to gain access to services, engage with each other, or pursue economic opportunities—hold immense potential to help people live freer, healthier, more prosperous lives."

USAID, A Vision for Action in Digital Health (2020-2024)

Note: the information about specific global goods was provided by global goods developers and has not been validated by Digital Square.

OpenCRVS

OVERVIEW

OpenCRVS is an open-source software solution for civil registration designed specifically for use in low resource contexts.

The core function of OpenCRVS is to formally record the occurrence and characteristics of all vital events. This is done through a process of notification (from the health facility), declaration of the vital event by the informant, validation of the submitted data with supporting documentation, registering the event, and issuing a certificate (e.g., birth certificate) by authorized actors. The system also allows the export of vital statistics data for further analysis and the compilation of statistical reports (e.g., disaggregated by age, sex, and location).

Digital Public Goods Alliance nomination/registration: OpenCRVS - DPGA Details (digitalpublicgoods.net)

Contact: team@opencrvs.org

WHO System Classification: Civil registration and vital statistics

Website: https://www.opencrvs.org

Demo: https://www.loom.com/share/a3dca72ea7404a7db08c0b3f59c9d4bc

Primary users: Civil registrars, Registration Officers, Statisticians, Community health workers, community leaders

GLOBAL UTILITY

Source code: https://github.com/opencrvs/opencrvs-core

License the tool is published under (OSI): MPL-2.0

Known implementations of the tool by geography:

Cameroon	Mauritius	Philippines
Madagascar	Nigeria	
Mali	Niue	

Impact of the tool: In Bangladesh, a pilot of OpenCRVS enabled Community Health Assistants to send digital notifications of birth and death, is leading to large increases in the birth and death registration completeness rates (from 14% to 63% and from 2% to 47%, respectively).

Offline functionality: Yes

COMMUNITY SUPPORT

Public-facing tool roadmap and documentation: Yes

Technical and developer documentation: https://documentation.opencrvs.org/technology/architecture

https://github.com/opencrvs/opencrvs-core

Languages available: English, French

Community engagement overview: The Implementation Community meets once every quarter to explore priority areas where the OpenCRVS organization can provide support and services to support effective implementations. This is managed through direct email engagement with the community—informing them of events in good time and following up on multiple occasions before the event. The Product Council meets every six weeks to discuss requirements for specific priority features in the product roadmap. The Technical Committee meets every six months to review and advise on architectural decisions.

Product council meetings: https://www.opencrvs.org/resources/connect/news-and-events/product-council-meeting-15th-february-2023

Technical committee meeting: https://www.opencrvs.org/resources/connect/news-and-events/technical-advisory-committee-meeting-22nd-february-2023

Mailing lists: https://community.opencrvs.org

SOFTWARE MATURITY

Interoperability standards: HL7 FHIR

RapidPro

OVERVIEW

RapidPro is an open source platform that allows anyone to build an interactive messaging system using an easy visual interface. RapidPro was "designed to send and receive data using basic mobile phones, manage complex workflows, automate analysis and present data in real-time".

RapidPro can be used for sending out health promotion messages, health facility reporting and supporting immunization campaigns. It is used by national governments to establish cost effective communication and management channels with their entire health workforce.

Digital Public Goods Alliance nomination/registration: RapidPro - DPGA Details (digitalpublicgoods.net)

Contact: join@rapidpro.io

WHO System Classification: Client communication system

Website: https://community.rapidpro.io

Demo: https://www.youtube.com/watch?v=JZBsNg6BP2g

GLOBAL UTILITY

Source code: https://github.com/rapidpro

License the tool is published under (OSI): APGL-3.0-only

Known implementations of the tool by geography:

Afghanistan
Angola
Argentina
Armenia
Bangladesh
Belize
Benin
Bolivia
Bosnia and Herzegovina
Botswana
Brazil
Burundi
Cameroon
Canada
Central African Republic
Chad
Costa Rica
Cote d'Ivoire
Democratic Republic of the Congo
Ecuador
Egypt
Fiji
Gabon
Gambia
Ghana
Greece
Guatemala
Haiti
Honduras
India
Iraq
Italy
Jamaica
Jordan
Kenya
Kiribati
Lebanon
Lesotho
Liberia
Malawi
Malaysia
Mali
Mexico
Micronesia
Mozambique
Myanmar
Nepal
Nicaragua
Niger
Nigeria
Pakistan
Panama
Papua New Guinea
Republic of Moldova
Romania
Rwanda
Saudi Arabia
Senegal
Serbia
Sierra Leone
Solomon Islands
South Africa
South Sudan
Syrian Arab Republic
Thailand
Togo
Trinidad and Tobago
Turkey
Uganda
Ukraine
United Republic of Tanzania
United States of America
Uzbekistan
Vietnam
Zambia
Zimbabwe

Impact of the tool: RapidPro is in use in over 116 countries. In 2022, over 1 billion messages were exchanged (sent and received) using RapidPro.

Offline functionality: Yes

COMMUNITY SUPPORT

Public-facing tool roadmap and documentation: Yes

Technical and developer documentation: https://rapidpro.github.io/rapidpro

User guide documentation: https://help.textit.com/en

Languages available: English, Czech, Spanish, French, Mongolian, Portuguese, Russian

Mailing lists: https://groups.google.com/forum/#!forum/rapidpro; https://groups.google.com/g/rapidpro-dev

Open Concept Lab

OVERVIEW

Open Concept Lab (OCL) is an open source, FHIR-enabled health terminology management system. OCL facilitates the collaborative management, publication and use of custom medical terminology resources such as diagnoses, observations, lab measurements, reporting indicators, and more. OCL also provides access to standardized reference terminologies like the International Classification of Diseases (ICD) and is a primary distributor of the Columbia International eHealth Laboratory (CIEL) interface terminology.

Organizations use OCL to serve as a central source of truth for data standards and definitions, supporting the normalization of clinical data to achieve semantic interoperability. Common use cases include using OCL as a foundation for a national health data dictionary, building FHIR value sets and concept maps, or managing a concept dictionary for an electronic medical record like OpenMRS. OCL is designed to be used in a shared, cloud-based environment alongside the global community or as a self-hosted architectural component within an organization's data exchange architecture.

Digital Public Goods Alliance nomination/registration: Open Concept Lab - DPGA Details (digitalpublicgoods.net)

Contact: info@openconceptlab.org

WHO System Classifications: Clinical terminology and classifications

Website: https://openconceptlab.org

Primary users: Publishers who manage and publish original terminology resources, implementers who adapt and repackage terminology resources from terminology publishers, and consumers who search, compare, and export terminology resources.

GLOBAL UTILITY

Source code: https://github.com/OpenConceptLab/oclapi2

https://github.com/OpenConceptLab/oclweb2

License the tool is published under (OSI): MPL-2.0

Known implementations of the tool by geography:

Bangladesh	Dominica	Kenya	Sri Lanka
Botswana	Ethiopia	Malawi	Uganda
Chile	India	Nigeria	United States of America

COMMUNITY SUPPORT

Public-facing tool roadmap and documentation: Yes

Technical and developer documentation: https://docs.openconceptlab.org/en/latest/oclapi/developer/index.html

User guide documentation: https://docs.openconceptlab.org/en/latest/index.html

Training videos for the TermBrowser are available on OCL's YouTube channel: https://www.youtube.com/channel/UCQoBIq9xSlvNQeIncJM0cHg

Community engagement overview: OCL hosts weekly calls: https://openconceptlab.org/community-resources/ocl-architecture-call/; https://openconceptlab.org/community-resources/ocl-dev-community

OpenHIE Terminology Services Implementer Series: https://wiki.ohie.org/display/resources/2022-08-05+Terminology+Service+Call

OCL Office Hours: https://docs.google.com/document/d/1hpMz_XRB1pvmTf9ZyyjeVktPDDOPxQm9cKLJqQdZbFs/edit

Mailing lists: Mailing list: https://openconceptlab.org/list

SOFTWARE MATURITY

Health standards: CIEL; ICD-9, ICD-10, ICD-11; LOINC; SNOMED; HL7 Terminologies; PEPFAR MER

Interoperability standards: HL7 FHIR

Android FHIR SDK

OVERVIEW

The Android FHIR SDK is a set of Kotlin libraries for building offline-capable, mobile-first healthcare applications using the HL7 FHIR standard on Android. The Android FHIR SDK significantly reduces the barriers to adoption of FHIR and enables developers with Android skills to build FHIR compliant applications. Developed in collaboration with the World Health Organization, the Android FHIR SDK provides the necessary capabilities for deploying and running FHIR Clinical Guidelines content such as the (L3) WHO SMART Guidelines content. This is a specific use case to enable clinical workflows through on-device decision support and analytics based on CQL and FHIRPath.

The Android FHIR SDK is a component of Google Health's Open Health Stack, which is designed to make it easier for local developers in countries everywhere to leverage FHIR in new or existing digital health projects or solutions for any number of common or advanced use cases.

Digital Public Goods Alliance nomination/registration: Android FHIR SDK - DPGA Details (digitalpublicgoods.net)

Contact: android-fhir@google.com

WHO System Classification: Community-based information system

Website: https://github.com/google/android-fhir

Demo: https://github.com/google/android-fhir/wiki/FEL%3A-Demo-app

Primary users: Software developers and system integrators who want to leverage the open FHIR specification and data model in new or current offline-first mobile health solutions for community or facility based health workers. The Android FHIR SDK supports a range of use cases from simple data collection on FHIR to enabling complex clinical workflows for delivering coordinated patient centered care on FHIR and everything in-between.

GLOBAL UTILITY

Source code: https://github.com/google/android-fhir

License the tool is published under (OSI): Apache-2.0

Known implementations of the tool by geography:

Indonesia	Liberia	Uganda
Iraq	Malawi	United States of America
Kenya	Nigeria	Zambia

Impact of the tool: Technical partners around the world (including in India, Kenya, Malawi, US, and Indonesia) have been developing solutions and platforms on the Android FHIR SDK. There are a number of projects that been deployed in Sub Saharan Africa (Kenya, Nigeria) with others in active pre-deployment testing or early pilots (across multiple geographies). Using the Android FHIR SDK, developers have been able to save valuable development time leading to standards compliant solutions getting to the field faster. We have published case studies highlighting the impact for developers at https://developers.google.com/open-health-stack/stories.

Offline functionality: Yes

COMMUNITY SUPPORT

Public-facing tool roadmap and documentation: Yes

Technical and developer documentation: https://github.com/google/android-fhir/wiki

User guide documentation: https://github.com/google/android-fhir/wiki

Community engagement overview: Bi-weekly developer calls are held online at 9am GMT / 10am EAT / 12:30pm India Time. Contact android-fhir@google.com to be added to the calendar invite. The Android FHIR SDK team also participates in the weekly WHO SMART Guidelines Implementers calls.

SOFTWARE MATURITY

Interoperability standards: HL7 FHIR

OVERVIEW

The Community Health Toolkit (CHT) is a digital public good that supports health workers as they deliver care in reimagined health systems. CHT includes a collection of open-source software (OSS) frameworks and applications, with resources to help partners design and deploy digital tools ("apps") for care teams with the support of an active community of collaborators. CHT's modular tools work together as an integrated platform for infectious disease preparedness, surveillance, and response as well as routine community health services, and can be quickly configured for specific partner needs.

Digital Public Goods Alliance nomination/registration: Community Health Toolkit - DPGA Details (digitalpublicgoods.net)

Contact: hello@medic.org

WHO System Classification: Community-based information system

Website: https://communityhealthtoolkit.org

Demo: https://www.youtube.com/watch?v=Gxf0xNvZPG8

Primary users: Frontline community health workers (CHWs), CHW supervisors, nurses, and facility-based teams implementing community health systems.

GLOBAL UTILITY

Source code: https://github.com/medic/cht-core

License the tool is published under (OSI): APGL-3.0-only

Known implementations of the tool by geography:

Burundi	India	Nepal	Togo
Cote d'Ivoire	Kenya	Niger	Uganda
Democratic Republic of the Congo	Malawi	Philippines	United Republic of Tanzania
	Mali	South Africa	Zimbabwe

Impact of the tool: Digital health applications built with the CHT are deployed in 13 countries in Africa and Asia and support more than 41,000 health workers. Collectively, this cadre has used CHT-powered apps 92 million times while providing care in the communities where they live and work.

Offline functionality: Yes

COMMUNITY SUPPORT

Public-facing tool roadmap and documentation: Yes

Technical and developer documentation: https://docs.communityhealthtoolkit.org/core

User guide documentation : https://docs.communityhealthtoolkit.org

Languages available: English, French, Hindi, Nepali, Spanish, Swahili, Indonesian (*ability to add new languages)

Community engagement overview: Monthly Round Up calls: https://forum.communityhealthtoolkit.org/c/community/community-calls/33

Mailing lists: The CHT community engages through the Community Health Toolkit Forum, a place for implementers, developers, contributors and users to share ideas and best practices, ask questions, or meet others who work in digital health. The online community incudes resources supporting implementation, research, design, product features, technical support, Covid-19, and more. https://forum.communityhealthtoolkit.org/

SOFTWARE MATURITY

Interoperability standards: HL7 FHIR

OpenSRP

OVERVIEW

OpenSRP is an open source mobile health platform that allows frontline health workers to electronically register and track the health of their entire client population.

OpenSRP provides the core functionalities needed for both community health workers (CHWs) and facility based health workers to provide primary health services. This includes registering patients and households, entering them into scheduled care plans where provision of care can be tracked and guiding the health worker through World Health Organization (WHO)-designed clinical assessments to ensure quality of care. At the community level, OpenSRP provides the core CHW modules to provide care primarily around Reproductive, Maternal, and Child Health (RMNCH). At the facility, OpenSRP provides support for core health modules including Immunization, antenatal care, prenatal care, Family Planning, Labor and Delivery and outpatient services.

Digital Public Goods Alliance nomination/registration: OpenSRP - DPGA Details (digitalpublicgoods.net)

WHO System Classification: Community-based information system

Website: https://smartregister.org

Primary users: Community health workers and health facility staff such as nurse midwives, doctors, or medical officers.

GLOBAL UTILITY

Source code: https://github.com/opensrp/fhircore

License the tool is published under (OSI): Apache-2.0

Known implementations of the tool by geography:

Bangladesh
Brazil
Democratic Republic of the Congo
Guinea
Indonesia
Lesotho
Liberia
Malawi
Mauritania
Mozambique
Nigeria
Rwanda
Thailand
Tunisia
Uganda
United Republic of Tanzania
Zambia

COMMUNITY SUPPORT

Public-facing tool roadmap and documentation: Yes

Technical and developer documentation: https://github.com/opensrp/fhircore/wiki

User guide documentation: https://github.com/opensrp/fhircore/wiki

Languages available: Any language you want including right to left text.

Community engagement overview: OpenSRP holds a bi-monthly governance call with the community. Weekly technical meetings are held via on video calls and slack as scheduled as needed. Contact info@smartregister.org to receive the recurring calendar invite to join.

Mailing lists: Slack, https://join.slack.com/t/opensrp/shared_invite/zt-1gqdlgdbb-37T3FTAmP56vxKN5du9PoQ

SOFTWARE MATURITY

Health standards: CIEL, ICD-9, ICD-10, ICD-11, LOINC, SNOMED

Interoperability standards: HL7 FHIR

mHero

OVERVIEW

mHero is a two-way, mobile phone-based communication system that connects ministries of health and health workers. mHero brings together existing health information systems with locally popular communication platforms to facilitate the exchange of important health information. It reduces the barriers that can exist between health workers and their support systems, playing a critical role in ensuring effective and efficient responses, particularly in a crisis.

Digital Public Goods Alliance nomination/registration: mHero - DPGA Details (digitalpublicgoods.net)

Contact: digitalhealth@intrahealth.org

WHO System Classification: Data interchange interoperability and accessibility

Website: www.mHero.org

Primary users: Ministry of health and healthcare workers in facilities, labs, and other sites, as well as training participants.

GLOBAL UTILITY

Source code: https://github.com/intrahealth/mhero.git

License the tool is published under (OSI): LGPL-3.0-only

Known implementations of the tool by geography:

Democratic Republic of the Congo
Kenya
Liberia
Mali
Uganda

Impact of the tool: mHero has been deployed in seven countries to date and was used during the pandemic response in Kenya and Liberia to send guidance to health workers about COVID-19 including urgent alerts, new testing and treatment guidelines, and to train health workers on infection prevention and control and risk communication.

Offline functionality: No

COMMUNITY SUPPORT

Public-facing tool roadmap and documentation: Yes

Technical and developer documentation: https://www.mhero.org/technology, https://intrahealth.github.io/emNutt/dev/prerequisites_normal

User guide documentation: https://www.mhero.org/resources, https://www.mhero.org/faq

Languages available: Any language available in Google Translate, e.g., French, Chinese, Spanish, etc.

Mailing lists: You can join the OpenCR slack channel by visiting https://ihris.slack.com and selecting #general as the channel

SOFTWARE MATURITY

Health standards: SNOMED

Interoperability standards: HL7 FHIR; IHE mCSD

OpenCR
OPEN CLIENT REGISTRY

OVERVIEW

Open Client Registry (OpenCR) is an open source and standards-based client registry. Client registries use sophisticated record linkage processes to uniquely identify patients across multiple health information systems in facilities, pharmacies, lab systems, and elsewhere. As a critical component of an interoperable health information exchange (HIE), it allows patients to be tracked across facilities and decreases instances of duplicate and incomplete records, as well as interruptions in treatment. OpenCR helps manage patient safety and care coordination, monitoring, reporting, surveillance, and medical research.

Digital Public Goods Alliance nomination/registration: OpenCR - DPGA Details (digitalpublicgoods.net)

Contact: digitalhealth@intrahealth.org

WHO System Classification: Data interchange interoperability and accessibility

Website: https://www.openclientregistry.org

Primary users: Data administrators within a central ministry of health.

GLOBAL UTILITY

Source code: https://github.com/intrahealth/client-registry

License the tool is published under (OSI): MIT

Known implementations of the tool by geography:

Botswana
Haiti
Uganda

Impact of the tool: OpenCR has been deployed in Botswana, Haiti, and Uganda and is part of DATIM's Data Aggregation Services for Health architecture.

Offline functionality: No

COMMUNITY SUPPORT

Public-facing tool roadmap and documentation: Yes

Technical and developer documentation: https://intrahealth.github.io/client-registry/admin/architecture/

User guide documentation: https://intrahealth.github.io/client-registry/user/introduction/

Community engagement overview: The OpenHIE Patient identify management sub-community hosts monthly meetings the last Wednesday of the month at 1 pm UTC. https://wiki.ohie.org/display/resources/Patient+Identity+Management+Subcommunity+Calls

Mailing lists: OpenHIE Discourse - https://wiki.ohie.org/display/SUB/Patient+Identity+Management+Community

You can join the OpenCR slack channel by visiting https://ihris.slack.com and selecting #opencr as the channel

SOFTWARE MATURITY

Health standards: SNOMED

Interoperability standards: HL7 FHIR; IHE PDQm; IHE PIXm

OpenFn

OVERVIEW

OpenFn is a workflow automation tool. It is used by governments and NGOs in 40+ countries to securely automate business processes, exchange critical information, and achieve interoperability. Integration strengthens existing health systems and automation decreases the costs (in time and money) and error-rate (by eliminating human-error) of complex, multi-step processes, allowing organizations to focus more of their resources on the critical, human aspects of their work.

Digital Public Goods Alliance nomination/registration: OpenFn - DPGA Details (digitalpublicgoods.net)

Contact: admin@openfn.org

WHO System Classification: Data interchange interoperability and accessibility

Website: https://openfn.org

Demo: https://www.youtube.com/watch?v=PTRRZBYtqyc&list=PL1pD3-abjHJ2fNDk0g3A0jrowIVwTZyhR&index=14

Primary users: Health and IT professionals responsible for designing, managing, and delivering technology implementations that facilitate health interventions.

GLOBAL UTILITY

Source code: Lightning (upcoming V2 of OpenFn platform app): https://github.com/OpenFn/Lightning

All repos available in the OpenFn Integration Toolkit: https://github.com/OpenFn

License the tool is published under (OSI): LGPL-3.0-only

Known implementations of the tool by geography:

Afghanistan
Bangladesh
Bolivia
Brazil
Cambodia
Chile
Democratic Republic of the Congo
Dominica
Ecuador
Ethiopia
Finland
Gambia
Ghana
Guinea
Haiti
India
Indonesia
Kenya
Liberia
Madagascar
Mali
Myanmar
Nepal
Nicaragua
Nigeria
Norway
Paraguay
Peru
Philippines
Senegal
South Africa
Sri Lanka
Switzerland
Thailand
Uganda
United Kingdom of Great Britain and Northern Ireland
United Republic of Tanzania
United States of America
Vietnam
Zimbabwe

Impact of the tool: As of April 2023, OpenFn automates 8 million workflow runs per year, processing approximately 40 million records across 40+ countries. OpenFn users report that automation saves time and money and provides other benefits, including improved data security and quality, reduced errors, enhanced service delivery, and other project-specific outcomes.

Offline functionality: Yes

COMMUNITY SUPPORT

Public-facing tool roadmap and documentation: Yes

Technical and developer documentation: https://docs.openfn.org/documentation/getting-started/integration-toolkit/#architecture-for-implementation. For developers, there's also a specific toolkit to help build, run, and test OpenFn jobs (integration scripts that automate workflow steps) locally: https://docs.openfn.org/documentation/devtools/home

User guide documentation: https://docs.openfn.org; https://docs.openfn.org/documentation/build/jobs

Mailing lists: A public community forum based on Discourse - https://community.openfn.org

SOFTWARE MATURITY

Interoperability standards: HL7 v2, v3; HL7 FHIR; ADX

OpenHEXA

OVERVIEW

OpenHexa is an open-source data analysis and integration platform for public health projects.

The primary functionality of OpenHexa is to facilitate the integration of health data coming from multiple sources, such as: HMIS systems (DHIS2), LMIS software (OpenLMIS / M-Supply), ERP systems (Odoo) and data collections tools (ODK, Kobo, Iaso). It allows users to explore data coming from a variety of sources; schedule data pipelines for extraction and transformation operations; perform collaborative data analysis and modelization in interactive code notebooks; and easily connect data to third-party visualization tools.

Digital Public Goods Alliance nomination/registration: OpenHexa - DPGA Details (digitalpublicgoods.net)

Contact: openhexa@bluesquarehub.com

WHO System Classification: Data interchange interoperability and accessibility

Website: https://www.bluesquarehub.com/openhexa/

Demo: https://drive.google.com/file/d/1mzGE7A3avP9Txon4FFkUSDsz8AJb-4BI/view?usp=sharing

Primary users: Health data experts (data analysts and data scientists), as well as decision makers and program managers.

GLOBAL UTILITY

Source code: https://github.com/BLSQ/openhexa

License the tool is published under (OSI): MIT

Known implementations of the tool by geography:

Burkina Faso
Burundi
Cameroon
Cote d'Ivoire
Democratic Republic of the Congo
Mali
Niger
Rwanda
Senegal

Impact of the tool: As of April 2023, OpenHexa has almost 400 users, powers 20 visualization dashboards, and runs more than 50 different data workflows.

Offline functionality: No

COMMUNITY SUPPORT

Public-facing tool roadmap and documentation: Yes

Technical and developer documentation: https://github.com/BLSQ/openhexa

https://github.com/BLSQ/openhexa/wiki/Installation-instructions

User guide documentation: https://github.com/BLSQ/openhexa/wiki/User-manual

Mailing lists: https://github.com/BLSQ/openhexa/discussions

OpenHIM

OVERVIEW

The OpenHIM is a middleware component designed to ease interoperability between disparate information systems. It provides secure communications and data governance as well as support for routing, orchestrating, and translating requests as they flow between systems.

WHO System Classification: Data interchange interoperability and accessibility

Website: http://openhim.org

Primary users: Developers and implementers of interoperability, health information exchange and data exchange solutions in low-resource settings.

GLOBAL UTILITY

Source code: https://discourse.ohie.org/#openhim

http://openhim.org/help/

https://github.com/jembi/openhim-core-js

License the tool is published under (OSI): MPL-2.0

Known implementations of the tool by geography:

Ethiopia
Rwanda
South Africa
United States of America

COMMUNITY SUPPORT

Public-facing tool roadmap and documentation: Yes

Technical and developer documentation: http://openhim.org/docs/api/introduction/welcome

http://openhim.org/docs/dev-guide/design-overview

http://openhim.org/mediator-library

User guide documentation: http://openhim.org/docs/user-guide/overview

Community engagement overview: Monthly call for the Interoperability Layer every third Tuesday of the month (excluding holidays) from 4:00 - 5:00 PM GMT+2. (https://wiki.ohie.org/display/resources/Interoperability+Layer+Subcommunity+Calls)

Mailing lists: The community uses OpenHIE Discourse (https://discourse.ohie.org/) to facilitate communications and support for OpenHIM. Users should post questions or content using the #openhim tag. Also used are #interoperability-layer and #technical-assistance tags.

SOFTWARE MATURITY

Interoperability standards: HL7 FHIR; ADX

SantéMPI

OVERVIEW

SantéMPI is a proven, next-generation, fully featured Master Patient Index/Client Registry (MPI/CR) platform designed to overcome barriers to leveraging person-centered data as a catalyst for transforming health systems. It is a national digital health infrastructure component that leverages unique identity to facilitate data consolidation, harmonization, sharing, and building health information exchanges (e.g., OpenHIE) to establish interoperability across multiple software solutions. It is a flexible architecture with online and offline capability, which supports large scale registration programs such as COVID-19 vaccination registration and birth and death updates to a CRVS.

Digital Public Goods Alliance nomination/registration: SantéMPI - DPGA Details (digitalpublicgoods.net)

Contact: info@santesuite.com

WHO System Classification: Data interchange interoperability and accessibility

Website: https://help.santesuite.org/product-overview/santesuite-products/master-patient-index-santempi

Demo: https://www.youtube.com/channel/UCpt09LqYEgML_sVAQ6ovPDA

Primary Users: Digital health architects, data base managers, software integrators, those responsible for identity management, health information exchange implementers, and users of any digital health application that depends on uniquely identifying a person or patient.

GLOBAL UTILITY

Source code: https://github.com/santedb/SanteMPI

License the tool is published under (OSI): Apache-2.0

Known implementations of the tool by geography:

Fiji	Myanmar	United Republic of Tanzania
Kiribati	Solomon Islands	

Impact of the tool: Myanmar leveraged SantéMPI and its Mobile Registration App to support a comprehensive, nationwide COVID-19 response for the country's population of 54 million people. Myanmar also integrated SantéMPI into its national digital health architecture blueprint/roadmap and implement a "twinning" strategy by rolling out SantéMPI along with the SantéIMS Electronic Immunization Registry.

Offline functionality: Yes

COMMUNITY SUPPORT

Public-facing tool roadmap and documentation: Yes

Technical and developer documentation: https://help.santesuite.org/developers/getting-started

User guide documentation : https://help.santesuite.org/user-guides-and-training/santedb-user-guides

Languages available: Burmese, Italian

Community engagement overview: SantéMPI leverages specific meetings to bring the community together through the Asia e-Health Informatics Network. https://www.asiaehealthinformationnetwork.org/

The OpenHIE Patient identify management sub-community hosts monthly meetings the last Wednesday of the month at 1 pm UTC. https://wiki.ohie.org/display/resources/Patient+Identity+Management+Subcommunity+Calls

SOFTWARE MATURITY

Health standards: ICD-9; ICD-10; ICD-11; LOINC; GS1; SNOMED; CPT

Interoperability standards: HL7 v2, v3; HL7 FHIR; ATNA - Audit Trail and Node Authentication; BPPC - Basic Patient Privacy Consents; HL7 FHIR R4; HL7 v2; JSON PDQ; PDQm - (Mobile) Patient Demographics Query; PIX or PIXm - (Mobile) Patient Identifier Cross Reference

OVERVIEW

Bahmni is an open source Hospital Information System (HIS) and Electronic Medical Record (EMR) product led by the Bahmni Coalition, a group of companies and non-profit organizations that provide leadership to Bahmni. It is a project of the OpenMRS Foundation.

Bahmni's mission is to provide a high-quality, free, open source, comprehensive Health Information Management System (HIMS) solution to improve patient care in low-resource settings. The information that Bahmni makes accessible helps healthcare providers to improve efficiency and quality of patient care, reduce errors in clinical encounters, and advocate for issues related to public health.

Digital Public Goods Alliance nomination/registration: Bahmni - DPGA Details (digitalpublicgoods.net)

Contact: info@bahmni.org

WHO System Classification: Electronic medical record

Website: https://www.bahmni.org

Demo: https://bahmni.atlassian.net/wiki/spaces/BAH/pages/36700378/Bahmni+Video+Catalogue

Primary users: Clinicians, Hospital Staff, Medical Technicians, and Hospital Administrators.

GLOBAL UTILITY

Source code: https://github.com/bahmni

https://bahmni.atlassian.net/wiki/spaces/BAH/pages/1867786/List+of+Repositories+needed+for+Development+on+Bahmni

License the tool is published under (OSI): AGPL-3.0-only

Known implementations of the tool by geography:

Armenia
Bangladesh
Belarus
Bhutan
Burundi
Cambodia
Cameroon
Democratic People's Republic of Korea
Democratic Republic of the Congo
Dominica
Dominican Republic
Ecuador
Egypt
Eswatini
Ethiopia
Gambia
Georgia
Ghana
Haiti
Honduras
India
Indonesia
Iraq
Israel
Jordan
Kazakhstan
Kenya
Kyrgyzstan
Laos
Lesotho
Liberia
Malawi
Mozambique
Myanmar
Nepal
Nigeria
Pakistan
Papua New Guinea
Peru
Philippines
Sierra Leone
South Africa
South Sudan
Sudan
Syrian Arab Republic
Tunisia
Uganda
Ukraine
United Republic of Tanzania
United States of America
Vietnam
Zambia
Zimbabwe

Impact of the tool: Bahmni eHospital is an HIS/EMR tool designed to meet the needs of low-resource environments. This tool covers a large geographic area from countries like India, Bangladesh, and Haiti to African countries like Kenya, South Sudan, Uganda, and Ethiopia. Bahmni has over 4000 users and its cost-effective nature makes it a reliable tool. Bahmni offers a MVP which allows for basic hospital workflows, and can be customized further if need be. This reduces the cost of implementation and creates a more sustainable solution.

Offline functionality: No

COMMUNITY SUPPORT

Public-facing tool roadmap and documentation: Yes

Technical and developer documentation: https://bahmni.atlassian.net/wiki/spaces/BAH/pages/2812969012/Architecture+Technical+Documentation

https://bahmni.atlassian.net/wiki/spaces/BAH/pages/1310748/Developer+s+Guide

User guide documentation : https://bahmni.atlassian.net/wiki/spaces/BAH/pages/32014338/User+Guide

https://bahmni.atlassian.net/wiki/spaces/BAH/pages/32604183/Feature+Guide

Languages available: Out-of-the-box in product: English, French, Spanish and Brazilian Portuguese. Please see: https://bahmni.atlassian.net/wiki/spaces/BAH/pages/34439351/Product+Internationalization for details.

Implementers can add additional languages. The public transifex project for Bahmni has more languages including Chinese. See here: https://explore.transifex.com/openmrs/bahmni/

Community engagement overview: Product Architecture Team (PAT) Calls are scheduled weekly are a synchronous forum where the community gets together to discuss how the evolution of the Bahmni product. These calls are open for anyone to attend. The agenda for these calls are proposed by community members and are posted on the discussion forum and the Slack channel. More information about the PAT calls can be found here: https://bahmni.atlassian.net/wiki/spaces/BAH/pages/587956241/Product+Architecture+Team

The Bahmni events calendar lists other calls that are scheduled: https://bahmni.atlassian.net/wiki/spaces/BAH/pages/32604523/Bahmni+Events+Calendar

Mailing lists: The Bahmni community comprises Developers, Health Informatics experts, hospitals, and implementation partners. The community engages using:

- OpenMRS Talk Discussion forum (talk.openmrs.org)
- Slack Channel https://bahmni.atlassian.net/wiki/spaces/BAH/pages/414646273/Communication+Channels+and+Tools+Discourse+Slack
- Discourse https://bahmni.atlassian.net/wiki/spaces/BAH/pages/414646273/Communication+Channels+and+Tools+Discourse

SOFTWARE MATURITY

Health standards: CIEL; ICD-9, ICD-10, ICD-11; LOINC; SNOMED; India's ABDM - Federated Health Records protocols and data standards including profiles

Interoperability standards: HL7 FHIR; ADX

DIVOC
by eGov Foundation

OVERVIEW

The Digital Infrastructure for Verifiable Open Credentialing (DIVOC) is an open source platform that enables countries to digitally orchestrate large-scale health campaigns such as vaccination and certification programs.

DIVOC is a flexible and extendable software that can be used across multiple health programs. Its scalable and data-driven architecture allows it to deal with diverse country-specific scenarios. The platform is modular, enabling countries to use the components together or as an individual standalone solution, according to their need, for end-to-end vaccination and certification. The certificates, which are WHO Digital Documentation of COVID-19 Certificates (DDCC) and EU-compliant, are accepted in 120 countries. The platform can be hosted centrally by the nodal agency and supports the generation of credentials for multiple departments in various formats, avoiding the duplication of cost and effort to manage it.

Digital Public Goods Alliance nomination/registration: DIVOC - DPGA Details (digitalpublicgoods.net)

Contact: partner@egovernments.org

WHO System Classification: Electronic medical record

Website: https://divoc.egov.org.in

Demo: https://divoc.digit.org/divoc-demo

Primary users: Ministries, Departments of Health, or other entities providing any certifications, citizens, and health professionals.

GLOBAL UTILITY

Source code: https://github.com/egovernments/DIVOC

License the tool is published under (OSI): MIT

Known implementations of the tool by geography:

India	Jamaica	Sri Lanka
Indonesia	Philippines	

Impact of the tool: Every fifth person in the world today carries a certificate issued via DIVOC. The platform's vaccination certificate module went live in India in January 2021 and was subsequently successfully adopted by four more countries – Sri Lanka, the Philippines, Jamaica, and Indonesia. As of July 2022, over 2 billion vaccination certificates have been issued via DIVOC across 5 countries.

Offline functionality: Yes

COMMUNITY SUPPORT

Public-facing tool roadmap and documentation: Yes

Technical and developer documentation: Architectural documentation: https://divoc.digit.org/platform/divoc-architecture

Developer Machine Setup: https://divoc.digit.org/platform/tech-docs/setting-up-divoc-development-environment

User guide documentation: https://divoc.digit.org/divoc-demo

Mailing lists: Following are the details of community engagement platforms.

1. Git Communication Channel: https://github.com/egovernments/DIVOC/discussions
2. Git Issue reporting channel: https://github.com/egovernments/DIVOC/issues
3. Email ID: support.divoc@egovernments.org

SOFTWARE MATURITY

Health standards: ICD-9, ICD-10, ICD-1; Standards followed in DIVOC for VC - W3C; Standard for vaccination VC - WHO-DDCC; Adaptor for - SHC, EU COVID-19 Certificate

Interoperability standards: HL7 FHIR

Everwell

OVERVIEW

The Everwell Hub is a patient management platform designed for high-burden public healthcare programs globally.

The Everwell Hub supports the entire digital cascade of care from diagnosis through treatment support and completion, including fully integrated modules for diagnostics (both lab-generated results and AI diagnostic solutions), digital adherence technologies, virtual care and patient engagement, and digital payments.

Digital Public Goods Alliance nomination/registration: Everwell Hub - DPGA Details (digitalpublicgoods.net)

Contact: contact@everwell.org

WHO System Classification: Electronic medical record

Website: https://hub.everwell.org/dashboard/overview

Demo: https://everwellhub.atlassian.net/wiki/spaces/EH/pages/292192308/Frequently+Asked+Questions

Primary users: Healthcare staff, patients, and caregivers.

GLOBAL UTILITY

Source code: https://gitlab.com/everwell/hub-foss

License the tool is published under (OSI): MIT

Known implementations of the tool by geography:

Bangladesh	Ethiopia	Nigeria	Ukraine
Burkina Faso	India	South Africa	United Republic of
Democratic Republic of the Congo	Myanmar	Uganda	Tanzania

Impact of the tool: As of April 2023, The Everwell Hub supports over 2.4 million cases per year, is used by over 400,000 health care providers, is deployed in over 17 countries, and is adapted for four different public health diseases. The citizen facing app has over 350,000 downloads, and $350 million has been transferred by way of social benefits to TB citizens in India. Everwell developed Ni-kshay, the national TB case management platform for India, which has enrolled over 14 million patients to-date, making it the largest case management platform for TB in the world.

Offline functionality: No

COMMUNITY SUPPORT

Public-facing tool roadmap and documentation: No

Technical and developer documentation: https://gitlab.com/everwell/hub-foss

User guide documentation : https://everwellhub.atlassian.net/l/cp/ZnJxrBhB

Languages available: Ukranian; Burmese; Russian; Kiswahili; French; Filipino; Hindi; Tamil; Marathi; Telugu; Bengali; Gujarati

Mailing lists: The community group for support on implementation, reach, and usability is by invitation as of March 2023. Please send an email to contact@everwell.org with details of the community you would like to join or the support you are looking for. The Everwell team will assess the context and invite you to the WhatsApp group or mailing list that is most suited to your needs. You could also send an email requesting to join the generic mailing list which entails updates, newsletters and other product and

SOFTWARE MATURITY

Interoperability standards: HL7 FHIR (currently only for certain modules)

OpenEyes

OVERVIEW

OpenEyes is an open-source electronic patient record (EPR) for ophthalmology. It has been designed by clinicians to be fast in delivering content, fast to navigate, and easy (and fun) to use. OpenEyes provides an ophthalmic patient record, enabling clinicians to support clinical pathways such as cataracts, glaucoma, and retinopathy in regions that previously may have had limited access to the tools and resources.

OpenEyes is owned by the community and not by any individual or corporate entity. It can be customized to suit local needs and will scale to seamlessly connect primary and secondary eye care. It is governed, assured, and maintained through the novel Custodian Model, under the custodianship of the Apperta Foundation.

Digital Public Goods Alliance nomination/registration: OpenEyes - DPGA Details (digitalpublicgoods.net)

WHO System Classification: Electronic medical record

Website: https://openeyes.apperta.org

Primary users: Ophthalmologists, clinical and non-medical nursing staff based in secondary care and in some cases in the community.

GLOBAL UTILITY

Source code: https://github.com/AppertaFoundation/openeyes

License the tool is published under (OSI): AGPL-3.0-only

Known implementations of the tool by geography:

Australia
Greece
Hungary
Pakistan
South Africa
Trinidad and Tobago
United Kingdom of Great Britain and Northern Ireland

COMMUNITY SUPPORT

Public-facing tool roadmap and documentation: No

Technical and developer documentation: https://openeyes.atlassian.net/wiki/spaces/OPD/pages/1570209809/Developer+Guidelines

User guide documentation: The Apperta Foundation act as Custodians of the OpenEyes product following the novel 'Custodian Model.' As part of this model, Apperta appoint Accredited Professional Service Partners (APSPs) to undertake implementations of OpenEyes. The APSPs meet the high standards set by the Custodians to ensure that implementations are safe and successful. APSPs are expected to offer training support including user guide documentation. This is unique to the service offering of the APSPs.

Community engagement overview: The OpenEyes community meets monthly to discuss design, development, implementation, support, and safety aspects of the product.

There is also online community engagement through existing chat channels. The design groups are further split into specialist groups for ophthalmic specialties and technical aspects.

Mailing lists: Engagement with the community, including discussions can be accessed by email Apperta at openeyes@apperta.org.

SOFTWARE MATURITY

Health standards: ICD-9; ICD-10; ICD-11; SNOMED

Interoperability standards: HL7 v2; v3; HL7 FHIR

OpenMRS
MEDICAL RECORD SYSTEM

OVERVIEW

OpenMRS is a scalable, modular, interoperable, open-source electronic medical records platform (EMR), designed for use with other health information systems and in resource-constrained settings. OpenMRS provides health care workers with easier and greater access to data from longitudinal patient records that can inform patient care. Increasingly, data from OpenMRS is also used by digital health leaders to inform the public health decisions needed to achieve the UN Sustainable Development Goals, measure progress towards UNAIDS 95-95-95 targets for HIV epidemic control, respond to outbreaks such as Ebola and COVID-19, and achieve universal health coverage.

Digital Public Goods Alliance nomination/registration: OpenMRS - DPGA Details (digitalpublicgoods.net)

Contact: grants@openmrs.org

WHO System Classification: Electronic medical record

Website: https://openmrs.org/product

Demo: https://openmrs.org/demo

Primary users: Health care providers

GLOBAL UTILITY

Source code: https://github.com/openmrs

License the tool is published under (OSI): MPL-2.0

Known implementations of the tool by geography:

Bangladesh
Botswana
Burundi
Cambodia
Cameroon
Chile
Cote d'Ivoire
Ethiopia
Ghana
Guatemala
Haiti
Hungary
India
Indonesia
Kazakhstan
Kenya
Kiribati
Lesotho
Liberia
Malawi
Mexico
Mozambique
Namibia
Nepal
Nigeria
Pakistan
Peru
Philippines
Rwanda
Sierra Leone
South Africa
Sri Lanka
Tajikistan
Uganda
United Republic of Tanzania
Vietnam
Zambia

Impact of the tool: Since OpenMRS launched in 2007, more than 6,700 healthcare clinics in over 35 countries are using OpenMRS to provide improved healthcare to 15.8 million patients.

As a result of better healthcare information technology, countries where OpenMRS is predominantly used have seen a reduction in AIDS infection rates as well as deaths of both AIDS and malaria. Countries such as Kenya, Nigeria, Mozambique, Haiti, Rwanda, and Uganda have widely adopted OpenMRS as their premier EMR platform or have declared it to be their official EMR.

Offline functionality: Yes

COMMUNITY SUPPORT

Public-facing tool roadmap and documentation: Yes

Technical and developer documentation:

OpenMRS Platform & Reference Application: http://devmanual.openmrs.org/en/Technology/architecture.html

OpenMRS 3: https://o3-dev.docs.openmrs.org/#/under_the_hood/architecture

OpenMRS Platform & Reference Application Developer Guide: https://wiki.openmrs.org/display/docs/Developer+Guide_

OpenMRS 3 Implementer Guide: https://wiki.openmrs.org/pages/viewpage.action?pageId=224527013

OpenMRS 3 Developer Guide: https://o3-dev.docs.openmrs.org/#/

User guide documentation: Each distribution or implementation of OpenMRS has its unique end user guide, usually created and maintained by those responsible for deployment activities. The OpenMRS Community makes a basic user guide for the Reference Application available as a starting point: https://wiki.openmrs.org/display/docs/Reference+Application+2.10.0

Languages available: OpenMRS can be used in any language. Currently it is translated into English, followed by Spanish (86%), Portuguese (78%), French (58%), Polish (51%), Sinhala (50%), and German (48%). For a more up to date list of languages and their current percentage of translation, please see our transifex page: https://explore.transifex.com/openmrs/OpenMRS

Community engagement overview: OpenMRS Community (https://wiki.openmrs.org/display/RES/Communication+Channels)

OpenMRS Calendar (https://wiki.openmrs.org/x/ggAz). Each OpenMRS Committee, Team, and Squad determines when they meet and have their own, dedicated Zoom meeting room, which is published on their project page on the live OpenMRS calendar, as well as in a weekly ""What's Happening"" Talk post (https://talk.openmrs.org/)

Since 2006, the OpenMRS Community has organized more than 15 OpenMRS Annual Implementer Meetings, Virtual Meetings, Town Halls, and Hackathons. These meetings are opportunities for developers to collaborate and improve their technical skills in OpenMRS, implementers to share their best practices from implementations, and users to propose and prioritize their top features in future releases of the software. (https://wiki.openmrs.org/display/RES/OpenMRS+Annual+Meetings%2C+Mini-Meetings%2C+and+Hackathons).

Mailing lists: The OpenMRS Community uses three communication platforms to openly engage the community, facilitate collaborative work, and document community artifacts: the OpenMRS Wiki, Talk, and Slack.

- The Wiki houses our long form content (https://wiki.openmrs.org/).
- Talk is the OpenMRS community's version of a mailing list (https://talk.openmrs.org/). "If it isn't on Talk, it didn't happen". Talk facilitates discussion and collaboration across time zones.
- Slack is the community's main channel for real-time conversation or quick Q&A (https://slack.openmrs.org/?src=sidebar). Groups looking for a place for real-time conversation on a specific issue and for rapid iteration will often set up a dedicated channel in the OpenMRS Slack workspace to move work ahead on a day-to-day basis.

SOFTWARE MATURITY

Health standards: CIEL; ICD-9, ICD-10, ICD-11; SNOMED

Interoperability standards: HL7 v2, v3; HL7 FHIR; ADX

OVERVIEW

Tamanu is a free and open-source patient-level electronic health record (EHR) for desktop and mobile. It allows health workers to track individual patients and provide clinical support. Designed specifically for remote settings and the Asia-Pacific context, Tamanu allows health workers to monitor patients in hospitals, health centers, clinics, and even out in the community, enabling consistent, long-term management of patient conditions.

Digital Public Goods Alliance nomination/registration: Tamanu - DPGA Details (digitalpublicgoods.net)

Contact: contact@beyondessential.com.au

WHO System Classificationl: Electronic medical record

Website: https://www.beyondessential.com.au/products/tamanu/

Demo: https://beyondessential.com.au/tamanu

Primary users: Frontline healthcare workers, hospital and clinic administrative staff, bilateral partners, and donors.

GLOBAL UTILITY

Source code: https://github.com/beyondessential/tamanu-open

License the tool is published under (OSI): GPL-2.0

Known implementations of the tool by geography:

Fiji	Nauru	Samoa
India	Palau	Tonga
Kiribati	Papua New Guinea	Tuvalu

Impact of the tool: Tamanu is now being used as an EHR in tertiary, primary, and public health settings across five countries. In four of these, it is now the national EHR system. It is the only fully featured, free-and-open-source EHR that is sync-enabled (offline-first) across both desktop and mobile, and where desktop and mobile versions seamlessly integrate 'out-of-the-box.' Tamanu has supported more than 500,000 patient encounters in the last 12 months across all clinical areas.

Offline functionality: Yes

COMMUNITY SUPPORT

Public-facing tool roadmap and documentation: Yes

Technical and developer documentation: Open-source repository: https://github.com/beyondessential/tamanu-open; data sheet:

https://www.beyondessential.com.au/wp-content/uploads/2022/01/Tamanu-data-sheet_May-2021.pdf

User guide documentation: Desktop user manual: https://beyond-essential.slab.com/posts/tamanu-desktop-user-manual-2022-oicqoz5h; Mobile user manual: https://beyond-essential.slab.com/posts/tamanu-mobile-user-manual-p86f4i89

Languages available: Tamanu supports multiple languages through our program module. Clinical forms generated using this feature can be translated to any required language and we have previously translated forms to Arabic and Samoan.

Community engagement overview: Beyond Essential (BES) holds monthly community demonstrations to show new features, functionalities, or modules within Tamanu. Demonstrations are held via a standing zoom invitation and are recorded and shared on the BES YouTube channel for the public to view freely. https://www.youtube.com/channel/UCrqx5WxULXZrVKt4bOjrpPQ

Mailing lists: BES has a free subscription newsletter with regular updates about our latest projects, partnerships, and products from our awesome team of experts in procurement, pharmacy, public health, geospatial epidemiology, software and international development.

SOFTWARE MATURITY

Health standards: ICD-9, ICD-10, ICD-11; LOINC; SNOMED; CPT; mSupply Universal Medicines

Interoperability standards: HL7 FHIR

OpenClinic GA

Hospital Information Systems

OVERVIEW

OpenClinic GA is an open-source integrated hospital information management system covering management of administrative, financial, clinical, lab, x-ray, pharmacy, meals distribution and other data. OpenClinic GA has extensive statistical and reporting capabilities.

Digital Public Goods Alliance nomination/registration: OpenClinic GA - DPGA Details (digitalpublicgoods.net)

Contact: openclinic@ict4d.be

WHO System Classification: Facility management information system

Website: https://sourceforge.net/projects/open-clinic

Demo: https://openclinic.hnrw.org

Primary users: All health facility staff.

GLOBAL UTILITY

Source code: https://sourceforge.net/projects/open-clinic/files/Development/code/openclinic.code.tar.gz/download

License the tool is published under (OSI): GPL-2.0

Known implementations of the tool by geography:

Albania
Argentina
Belgium
Benin
Bolivia
Bulgaria
Burkina Faso
Burundi
Cameroon
Canada
Central African Republic
Chile
Comoros
Congo
Cote d'Ivoire
Democratic Republic of the Congo
Egypt
Ethiopia
France
Gabon
Ghana
Guinea
India
Italy
Kenya
Lebanon
Madagascar
Mali
Morocco
Niger
Nigeria
Papua New Guinea
Peru
Poland
Portugal
Rwanda
Senegal
South Africa
Spain
Switzerland
Togo
Uganda
United Republic of Tanzania
United States of America
Vietnam
Zimbabwe

Impact of the tool: OpenCR has been deployed in Botswana, Haiti, and Uganda and is part of DATIM's Data Aggregation Services for Health architecture.

Offline functionality: Yes

COMMUNITY SUPPORT

Public-facing tool roadmap and documentation: Yes

Technical and developer documentation: https://sourceforge.net/projects/open-clinic/files/Development/OpenClinic_architecture.pdf/download

User guide documentation: https://sourceforge.net/projects/open-clinic/files/Documentation/EN/openclinic_manual_en_adt.pdf/download

Languages available: English, French, Spanish, Portuguese, Dutch

Community engagement overview: Regular calls are held by countries.

The OpenClinic Academy encompasses the entire curriculum of training courses for OpenClinic GA offered by VUB-ICT4D and OpenClinic Foundation. The training is offered in various formats and in-person courses hosted by countries and partners. The Academy offers several tracks for building specialized OpenClinic GA skills and includes Fundamentals and other levels courses.

Mailing lists: https://sourceforge.net/p/open-clinic/discussion

SOFTWARE MATURITY

Health standards: ICD-9, ICD-10, ICD-1; LOINC; SNOMED; DICOM; RxNorm; ATC; HL7 FHIR; ICPC2; DSM4

Interoperability standards: HL7 v2, v3; HL7 FHIR; CLINIX; ASTM; DXF2

GOFR
GLOBAL OPEN FACILITY REGISTRY

OVERVIEW

The Global Open Facility Registry (GOFR) lets health data administrators analyze, de-duplicate, and curate lists of facilities. By reconciling data sets maintained by multiple sources, it helps health officials develop registries of all the unique health facilities in a country.

Digital Public Goods Alliance nomination/registration: GOFR - DPGA Details (digitalpublicgoods.net)

Contact: digitalhealth@intrahealth.org

WHO System Classification: Facility management information system

Website: https://www.openclientregistry.org

Demo: https://www.facilitymatch.net/disclaimer

Primary users: Data managers at a central level ministry of health, managers of facility information, and the general public.

GLOBAL UTILITY

Source code: https://github.com/intrahealth/gofr

License the tool is published under (OSI): Apache-2.0

Known implementations of the tool by geography:
Ethiopia
Liberia
Sierra Leone
United Republic of Tanzania

Impact of the tool: GOFR has been used to support the PEPFAR Data for Accountability, Transparency and Impact Monitoring (DATIM) project to match 80,000 facilities across numerous administrative levels in 21 countries. It has also been used by the Ministries of Health in Ethiopia, Guinea, Liberia, and Sierra Leone to reconcile facility lists.

Offline functionality: No

COMMUNITY SUPPORT

Public-facing tool roadmap and documentation: Yes

Technical and developer documentation: https://intrahealth.github.io/gofr/developer_guide/architechture

https://intrahealth.github.io/gofr/developer_guide/getting_started

User guide documentation : https://intrahealth.github.io/gofr/user_guide/introduction

Languages available: Any language available in Google Translate

Community engagement overview: GOFR holds monthly calls every fourth Thursday (excluding holidays) from 11:00 AM - 12:00 PM Eastern Time through the OpenHIE Facility Registry Subcommunity. https://wiki.ohie.org/display/resources/Facility+Registry+Subcommunity+Calls

Mailing lists: OpenHIE Discourse Facility Registry Subcommunity - https://wiki.ohie.org/display/SUB/OHIE+Facility+Registry+Documentation

You can join the GOFR slack channel by visiting https://ihris.slack.com and selecting #gofr as the channel

SOFTWARE MATURITY

Health standards: LOINC; SNOMED

Interoperability standards: HL7 FHIR, IHE mCSD

GeoPrism Registry

OVERVIEW

GeoPrism Registry is an open-source Common Geo-Registry (CGR) implementation that utilizes spatial knowledge graphs to provide a single source of truth for managing geographic data over time across multiple organizations and information systems. It is used to host, manage, share, and regularly update lists, associated hierarchies, and geospatial data. These data are geographic objects core to spatial data infrastructure, sustainable development, and public health (e.g., administrative divisions, settlements, health facilities, schools, and other relevant physical and non-physical geographic features).

Digital Public Goods Alliance nomination/registration: GeoPrism Registry - DPGA Details (digitalpublicgoods.net)

Contact: info@terraframe.com

WHO System Classification: Geographic information system (GIS)

Website: https://terraframe.atlassian.net/wiki/spaces/GGR/overview

Demo: https://demo-georegistry.geoprism.net

Primary users: Government ministries.

GLOBAL UTILITY

Source code: GeoPrism Registry source: https://github.com/terraframe/geoprism-registry

GeoPrism Registry uses GeoPrism for visualizations - https://github.com/terraframe/geoprism

GeoPrism Registry is built on RunwaySDK and uses its metadata-driven spatial knowledge graph framework - https://github.com/terraframe/Runway-SDK

The Disease Data Management System (DDMS) has been deployed in multiple countries over the past 12 years and is still being used today in three provinces in India. DDMS is built on GeoPrism and RunwaySDK - https://github.com/terraframe/DDMS

License the tool is published under (OSI): LGPL-3.0-only

Known implementations of the tool by geography:

India Laos Mozambique United States of America

Impact of the tool: In the Lao People's Democratic Republic, 513 health facility locations have been updated, validated, and imported into GeoPrism Registry by the head office and center staff since June 2022. In June of 2020, 43% of health facilities had accurate geographic coordinates, and by March of 2023, that number rose to 94%. Accurate health facility information from GPR is already being utilized in GIS-based physical accessibility analyses to support immunization microplanning and health facility investment reallocations.

COMMUNITY SUPPORT

Public-facing tool roadmap and documentation: Yes

Technical and developer documentation: https://github.com/terraframe/common-geo-registry-specification/blob/master/resources/high-level-design-v1.png

https://terraframe.atlassian.net/wiki/spaces/GGR/pages/901513246/Developer+APIs

User guide documentation: https://docs.geoprismregistry.com

Languages available: English, Laotian, French

Community engagement overview: The GeoPrism Registry Partner's call is managed by Clinton Health Access Initiative (CHAI) and meets roughly every two weeks: https://docs.google.com/document/d/1IhdtP275yseqUHELGqtHxLOZ6FpdpGmOS-K3pDth3dw/edit#heading=h.32w5fk7e92uf

SOFTWARE MATURITY

Interoperability standards: HL7 FHIR; mCSD

OVERVIEW

openIMIS is a versatile, open source software which supports the administration of health financing and social protection schemes. It is designed to manage the complex, high-volume data flows which are required to operate such schemes by seamlessly integrating beneficiary, provider, and payer data in a single platform.

Digital Public Goods Alliance nomination/registration: openIMIS - DPGA Details (digitalpublicgoods.net)

Contact: contact@openimis.org

WHO System Classification: Health finance and insurance information system

Website: www.openimis.org

Demo: https://openimis.org/demo

Primary users: Scheme operators (payer), hospital administrators (provider), and field staff (facing beneficiaries).

GLOBAL UTILITY

Source code: https://github.com/openimis

License the tool is published under (OSI): AGPL-3.0-only

Known implementations of the tool by geography:

Cameroon
Chad
Democratic Republic of the Congo
Gambia
Mauritania
Nepal
Niger
United Republic of Tanzania
Zambia

Impact of the tool: As of April 2023, more than 10 million beneficiaries' health insurance schemes in nine countries are managed by openIMIS.

Offline functionality: Yes

COMMUNITY SUPPORT

Public-facing tool roadmap and documentation: Yes

Technical and developer documentation: Modular architecture: https://openimis.atlassian.net/wiki/spaces/OP/pages/494338053/Modular+Transformation

Modules: https://openimis.atlassian.net/wiki/spaces/OP/pages/589561955/openIMIS+Modules

Developers Starter-kit: https://openimis.atlassian.net/wiki/spaces/OP/pages/1277493249/Developer+Starter+Kit

User guide documentation: https://docs.openimis.org/en/latest

Languages available: English, French, Nepali, Swahili

Community engagement overview: The openIMIS Initiative hosts community meetings and workshops on a regular basis, partly piggy backing on larger events (e.g., openHIE in Addis Ababa). A list of upcoming and past events can be found here: https://openimis.atlassian.net/wiki/spaces/OP/pages/189595649/Events. More information on the openIMIS community can be found here: https://openimis.atlassian.net/wiki/spaces/OP/pages/40534019/openIMIS+Community

Mailing lists: Overview of communication channels: https://openimis.atlassian.net/wiki/spaces/OP/pages/653656382/Communication+Channels

SOFTWARE MATURITY

Health standards: ICD-9, ICD-10, ICD-11

Interoperability standards: HL7 FHIR; ADX

OVERVIEW

DHIS2 is an open source, web-based platform for data collection, visualization, analysis, sharing and management of both aggregate and individual-level data, including mobile and offline data collection using the DHIS2 Android app. DHIS2 is mostly used as a Health Management Information System (HMIS), but it is increasingly used in related domains such as health logistics and supply chain management.

DHIS2 is designed for interoperability and is commonly integrated with other software and data sources, allowing it to serve as a data warehouse and platform for triangulation and cross-program data analysis. The core DHIS2 software development is managed by the HISP Centre at the University of Oslo, which coordinates a global network of 17 in-country and regional HISP groups that provide long-term direct support and capacity building to ministries of health and local implementers of DHIS2.

Digital Public Goods Alliance nomination/registration: DHIS2 - DPGA Details (digitalpublicgoods.net)

Contact: post@dhis2.org

WHO System Classification: Health management information system (HMIS)

Website: http://dhis2.org

Demo: https://play.dhis2.org

Primary users: Health workers at facility and community levels, supervisors, program managers and district health officers, National-level stakeholders, administrators, and Ministries of Health.

GLOBAL UTILITY

Source code: https://github.com/dhis2

License the tool is published under (OSI): BSD-3-clause

Known implementations of the tool by geography:

Afghanistan
Algeria
Angola
Bangladesh
Benin
Bhutan
Botswana
Brazil
Burkina Faso
Burundi
Cabo Verde
Cameroon
Central African Republic
Chad
Colombia
Comoros
Congo
Costa Rica
Cote d'Ivoire
Democratic Republic of the Congo
Ecuador
El Salvador
Equatorial Guinea
Eritrea
Eswatini
Ethiopia
Gambia
Ghana
Guatemala
Guinea
Guinea-Bissau
Haiti
Honduras
India
Indonesia
Iraq
Jordan
Kenya
Kyrgyzstan
Laos
Lebanon
Lesotho
Liberia
Libya
Madagascar
Malawi
Maldives
Mali
Mauritania
Mauritius
Morocco
Mozambique
Myanmar
Namibia
Nepal
Niger
Nigeria
Norway
Pakistan
Paraguay
Peru
Rwanda
Saint Lucia
Sao Tome and Principe
Senegal
Sierra Leone
Solomon Islands
Somalia
South Africa
South Sudan
Sri Lanka
Sudan
Syrian Arab Republic
Tajikistan
Timor-Leste
Togo
Tonga
Uganda
United Republic of Tanzania
Vanuatu
Vietnam
Yemen
Zambia
Zimbabwe

Impact of the tool: DHIS2 is used in more than 100 countries, including as national-scale, country-owned health information systems in 69 low- and middle-income countries. In total, 3.2 billion people live in countries where DHIS2 is used for public health programs.

Offline functionality: Yes

COMMUNITY SUPPORT

Public-facing tool roadmap and documentation: Yes

Technical and Ddveloper documentation: https://docs.dhis2.org/en/implement/implementing-dhis2/server-hosting.html#architecture

https://docs.dhis2.org/en/develop/develop.html

User guide documentation : https://docs.dhis2.org/en/use/use.html

Languages available: Arabic, Chinese, Czech, French, Indonesia, Lao, Norwegian, Persian, Portuguese, Russian, Spanish, Ukrainian, Urdu, Uzbek, Vietnamese

Community engagement overview: There are both regularly scheduled and ad-hoc online meetups for different parts of the DHIS2 community. General DHIS2 community meetups are currently scheduled on an ad hoc basis with a topical focus based on input from the community. https://dhis2.org/news-and-events

The DHIS2 Annual Conference is a four-day event that typically occurs in June in Oslo, Norway. This event was held online during the COVID-19 pandemic, and in 2022, transitions to a hybrid format with around 300 in-person participants from 70 countries and 600 online participants. Through the DHIS2 Academy program, the HISP network hosts 15 to 20 training courses per year, which gather 30 to 100 participants per course. Information on the DHIS2 Annual Conference and Academies: https://dhis2.org/academy

There are also regular DHIS2 webinars and online events, such as biannual webinars about new DHIS2 software releases and quarterly webinars for the DHIS2 for Immunization project (sponsored by Gavi).

Public events schedule: https://dhis2.org/news-and-events

Mailing lists:

Community of Practice: https://community.dhis2.org

Mailing list: https://dhis2.org/contact

SOFTWARE MATURITY

Health standards: ICD-9, ICD-10, ICD-11; LOINC; GS1; SNOMED

Interoperability standards: HL7 FHIR; ADX; mCSD; SVCM

GNUHealth

OVERVIEW

GNU Health is a modular, extensible ecosystem built on top of proven Free/Libre software (Python, PostgreSQL, GnuPG), supports open standards (HL7/FHIR), and is developed by a worldwide community. GNU Health contains elements for individuals (MyGNUHealth), Health practitioners and hospitals (GNU Health HMIS, Health Management and Information System and Ministry of Health /local and regional health networks (GNU Health Federation).

Digital Public Goods Alliance nomination/registration: GNU Health - DPGA Details (digitalpublicgods.net)

Contact: info@gnuhealth.org

WHO System Classification: Health management information system (HMIS)

Website: www.gnuhealth.org

Demo: https://en.m.wikibooks.org/wiki/GNU_Health/The_Demo_database

Primary users: Individuals, health professionals, institutions, and governments.

GLOBAL UTILITY

Source code: https://savannah.gnu.org/hg/?group=health

License the tool is published under (OSI): GPL-3.0-only

Known implementations of the tool by geography:

Angola
Argentina
Bangladesh
Brazil
Cameroon
Congo
Gabon
Gambia
Germany
Ghana
Haiti
India
Indonesia
Italy
Jamaica
Japan
Laos
Malaysia
Mali
Mexico
Morocco
Nigeria
Pakistan
Peru
Philippines
Spain
United Republic of Tanzania

Impact of the tool: GNU Health has been deployed in primary care centers, laboratories, academic, and research institutions worldwide. Over the last decade, GNU Health has been adopted by multilateral organizations and national governments, improving the lives of millions, specifically in Africa, Asia, and the Americas.

Offline functionality: Yes

COMMUNITY SUPPORT

Public-facing tool roadmap and documentation: Yes

Technical and developer documentation: As GNU Health is an ecosystem, we have different architectural backgrounds:

- For the HMIS we use Tryron ERP Backend, Python, PostgreSQL, GnuPG (privacy and encryption) and GTK resp NodeJS for the frontends
- For the Federation, we use Python, Flask, VueJS
- MyGNUHealth is based on Qt.

The Health Management and Information System component (HMIS) uses Tryton as ERP backend. Tryton itself uses a three-tier client-server architecture: https://de.wikipedia.org/wiki/Tryton

GNU Health Developers Corner: https://en.m.wikibooks.org/wiki/GNU_Health/Developer%27s_corner

https://www.gnuhealth.org/docs

User guide documentation: https://en.m.wikibooks.org/wiki/GNU_Health

Languages available:

English
Albanian
Arabic
Bulgarian
Catalan
Chinese (Simplified)
Chinese (Traditional)
Czech
Dutch
Esperanto
Finnish
French
Georgian
German
Greek
Haitian
Hungarian
Indonesian
Italian
Japanese
Kabyle
Kannada
Kurdish
Lao
Lithuanian
Norwegian Bokmal
Polish
Portuguese
Russian
Servian
Slovenian
Spanish
Swedish
Turkish
Ukrainian

Community engagement overview: GNU hosts community calls every Friday at 18:00 CE(S)T - https://meet.jit.si/gnuhealth

Mailing lists: https://savannah.gnu.org/mail/?group=health; https://app.element.io/#/room/#gnuhealth-space:matrix.org

SOFTWARE MATURITY

Health standards: ICD-9, ICD-10, ICD-11; SNOMED; ICPM; ICD10-PCS; ICD9-PROCS; WHO Essential Medicine; UNIPROT Genom Knowledge Base

Interoperability standards: HL7 FHIR

IASO

OVERVIEW

Iaso is an open-source data collection, campaign monitoring, and facility registry solution. Iaso provides several core features in support of continuous geospatial data management: a mobile application, a web dashboard, a matching feature to merge various data sources, a data science and scripting interface, and a seamless bi-directional integration with DHIS2.

Digital Public Goods Alliance nomination/registration: https://app.digitalpublicgoods.net/a/10264

Contact: iaso@bluesquarehub.com

WHO System Classification: Health management information system (HMIS)

Website: https://www.bluesquarehub.com/iaso

Demo:

Demo Iaso web application (FR) https://www.youtube.com/watch?v=CcXSSaVgYd8

Demo Iaso mobile application (FR) https://www.youtube.com/watch?v=Moln0S0XZ_s&t=2s

GLOBAL UTILITY

Source code: https://github.com/BLSQ/iaso

License the tool is published under (OSI): MIT

Known implementations of the tool by geography:

Burundi	Democratic Republic of the Congo	Senegal
Cameroon	Mali	Uganda
Cote d'Ivoire	Niger	

Impact of the tool: Iaso has been implemented in more than 10 countries and the various types of mobile applications have been downloaded more than 20,000 times.

Iaso is now one of the central tools used by WHO to monitor the good execution of polio vaccination campaigns across 47 African countries. It has been picked by the World Food Programme as the basis of their new tool for tracking distribution of food packages to beneficiaries.

Offline functionality: Yes

COMMUNITY SUPPORT

Public-facing tool roadmap and documentation: No

Technical and developer documentation: https://github.com/BLSQ/iaso#introduction

https://github.com/BLSQ/iaso#long-intro

User guide documentation: https://docs.google.com/document/d/12eXaHgQ0egNp1SMS86gv_X2j5vhpohU_Usagq4u_FAw/edit#heading=h.c9upbu93ilx

SOFTWARE MATURITY

Interoperability standards: XLSForm

iHRIS

OVERVIEW

iHRIS is a free and open-source software solution that has been used by ministries of health, district health offices, and health care facilities in over 30 countries to collect, maintain, analyze, and manage health workforce data and resources more easily.

Digital Public Goods Alliance nomination/registration: iHRIS - DPGA Details (digitalpublicgoods.net)

Contact: digitalhealth@intrahealth.org

WHO System Classification: Human resource information system

Website: www.ihris.org

Demo: https://www.ihris.org/ihris-50

Primary users: HR managers, planners, and workforce policy makers at Ministries of Health, Regional Health Bureaus, Hospitals, and Professional Councils.

GLOBAL UTILITY

Source code: https://github.com/iHRIS/iHRIS

License the tool is published under (OSI): LGPL-3.0-only

Known implementations of the tool by geography:

Benin
Botswana
Chad
Democratic Republic of the Congo
Ethiopia
Guinea
India
Kenya
Laos
Liberia
Malawi
Mali
Namibia
Nepal
Nigeria
Pakistan
Senegal
Sierra Leone
Togo
Tunisia
Uganda
Zambia

Offline functionality: No

COMMUNITY SUPPORT

Public-facing tool roadmap and documentation: Yes

Technical and developer documentation: https://ihris.github.io/iHRIS/user/introduction/#ihris-architechture

https://ihris.github.io/iHRIS/dev/customization

User guide documentation : https://www.ihris.org/toolkit-new

Languages available: Any language available in Google Translate (e.g., French, Chinese, Spanish)

Community engagement overview: Calls and webinars are periodic around releases or calls for input on new functionality. The OpenHIE Health Worker Registry Community which meets on an ad-hoc basis. https://wiki.ohie.org/display/SUB/Health+Worker+Registry+Community

Mailing lists: https://groups.google.com/g/ihris, Ihris.slack.com , https://www.ihris.org/community

SOFTWARE MATURITY

Health standards: SNOMED

Interoperability standards: HL7 FHIR; OpenHIE Architecture; IHE mCSD

PCMT | Product Catalog Management Tool

OVERVIEW

The Project Catalog Management Tool (PCMT) aims to connect product catalogs in order to show a clear journey from manufacturer to patient.

Digital Public Goods Alliance nomination/registration: PCMT - DPGA Details (digitalpublicgoods.net)

Contact: pcmt@villagereach.org

WHO System Classification: Identification registries and directories

Website: http://productcatalog.io

Demo: https://demo.productcatalog.io

Primary users: Product managers, national regulatory bodies, pharmacy data managers, and logistics managers.

GLOBAL UTILITY

Source code: https://gitlab.com/pcmt/pcmt

License the tool is published under (OSI): NPOSL-3.0

Known implementations of the tool by geography:

Ethiopia
Malawi
Rwanda
Zambia

Impact of the tool: PCMT is implemented at national scale in five African countries as well as a back-end service for a global health visual analytics network.

COMMUNITY SUPPORT

Public-facing tool roadmap and documentation: Yes

Technical and developer documentation: https://gitlab.com/pcmt/pcmt/-/tree/master/doc/arch

https://gitlab.com/pcmt/pcmt/-/blob/master/README.md

User guide documentation : https://help.akeneo.com

Languages available: https://help.akeneo.com/pim/serenity/articles/contribute-translations.html

100%: English, French, Italian

Greater than 70% (appears in the UI of the SaaS version): Catalan, Chinese, Croatian, Danish, Dutch, Finnish, German, Japanese, Russian, Spanish

Mailing lists: https://www.akeneo.com/akeneo-customer-community

SOFTWARE MATURITY

Health standards: GS1; FHIR

Interoperability standards: HL7 FHIR

OVERVIEW

The OpenELIS Global software is an enterprise-level laboratory information system built on open source web-based technologies that has been tailored for public health laboratories in low-and-middle income countries.

Digital Public Goods Alliance nomination/registration: OpenELIS Global - DPGA Details (digitalpublicgoods.net)

Contact: digit@uw.edu

WHO System Classification: Laboratory and diagnostics information system

Website: https://openelis-global.org

Demo: http://openelis-global.org/getting-started/demo

Primary users: Laboratory technicians, laboratory managers, and public health epidemiologists.

GLOBAL UTILITY

Source code: https://github.com/I-TECH-UW/OpenELIS-Global-2

License the tool is published under (OSI): MPL-2.0

Known implementations of the tool by geography:

Cote d'Ivoire	Kenya	United States of America	Vietnam
Haiti	Mauritius		

Impact of the tool: OpenELIS Global is an integral part of the health information architecture at a national scale in Cote d'Ivoire, Mauritius, and Bangladesh, with additional large-scale deployments in Haiti, and as part of integrated hospital information system platforms. OpenELIS has been used as a front-line response tool for the COVID-19 pandemic and has been integrated into border control procedures, with SMS and email results for real-time patient communication. It has been integrated both as a stand-alone lab network, and as part of interoperable health systems.

Offline functionality: Yes

COMMUNITY SUPPORT

Public-facing tool roadmap and documentation: Yes

Technical and developer documentation: http://docs.openelis-global.org/en/latest

Languages available: English, French

Community engagement overview: The OpenELIS team engages the community through the OpenHIE LIS COP, which meets the third Tuesday of each month at 11am EST. https://wiki.ohie.org/display/resources/Lab+Information+System+Subcommunity+Call

Mailing lists: OpenELIS community Forum on Discourse - https://talk.openelis-global.org. Slack channels dedicated to the OpenELIS community.

OpenHIE LIS Community of Practice - https://wiki.ohie.org/display/SUB/Lab%2BInformation%2BSystems%2BCommunity

SOFTWARE MATURITY

Health standards: LOINC

Interoperability standards: HL7 v2, v3; HL7 FHIR

openboxes

OVERVIEW

OpenBoxes is a purpose-built open source logistics management information system (LMIS) designed to serve the supply chain management demands of public health systems.

Contact: support@openboxes.com

WHO System Classification: Logistics management information system (LMIS)

Website: www.openboxes.com

Demo: https://demo.openboxes.com

Primary users: Pharmacists and depot managers at hospitals and medical supply warehouses in low-resource settings.

GLOBAL UTILITY

Source code: https://github.com/openboxes

License the tool is published under (OSI): EPL-1.0

Known implementations of the tool by geography:

Dominica
Haiti
Liberia
Madagascar
Malawi
Mexico
Rwanda
Sierra Leone
United Kingdom
United States of America

Offline functionality: No

COMMUNITY SUPPORT

Public-facing tool roadmap and documentation: Yes

Technical and developer documentation: https://docs.openboxes.com/en/develop/about/architecture

https://docs.openboxes.com/en/develop/developer-guide/getting-started

https://docs.openboxes.com/en/latest/developer-guide

User guide documentation: https://help.openboxes.com

Languages available: French

Mailing lists: OpenBoxes discussion forum: https://discuss.openboxes.com

OpenLMIS

OVERVIEW

OpenLMIS is a powerful, open source, cloud-based electronic logistics management information system (LMIS) purpose-built to manage health commodity supply chains. The OpenLMIS mission is to make powerful LMIS software available in low-resource environments providing high-quality logistics management to improve health commodity distribution in low- and middle-income countries. OpenLMIS increases data visibility, helping supply chain managers identify and respond to commodity needs, particularly at health facilities where lack of data significantly impacts the availability of key medicines and vaccines.

Digital Public Goods Alliance nomination/registration: OpenLMIS - DPGA Registry (digitalpublicgoods.net)

Contact: info@openlmis.org

WHO System Classification: Logistics management information system (LMIS)

Website: https://openlmis.org/

Demo: https://openlmis.atlassian.net/wiki/spaces/OP/pages/250249255/Version+3+Demo+Supporting+Documentation

Primary users: Supply chain managers.

GLOBAL UTILITY

Source code: https://github.com/OpenLMIS/open-lmis

License the tool is published under (OSI): AGPL-3.0-only

Known implementations of the tool by geography:

Angola	Chad	Gambia	Malawi	Nigeria
Benin	Cote d'Ivoire	Guinea	Mozambique	United Republic of Tanzania
Cameroon	Eswatini	Jamaica	Nepal	Zambia

Impact of the tool: OpenLMIS is currently used to manage logistics processes at more than 12,000 health facilities across ten geographies in Africa. It provides ordering, reporting, and inventory management for a mix of health programs, including for vaccines (Expanded Program on Immunization), HIV, malaria, tuberculosis, family planning, and essential medicines. It has mobile device capabilities and ensures that medicines are available to patients at the point of need.

Offline functionality: Yes

COMMUNITY SUPPORT

Public-facing tool roadmap and documentation: Yes

Technical and developer documentation: https://openlmis.atlassian.net/wiki/spaces/OP/pages/51019809/Architecture+Overview+Version+3, https://openlmis.atlassian.net/wiki/spaces/OP/pages/26574890/Developer+Guide

User guide documentation: https://openlmis.atlassian.net/wiki/spaces/OP/pages/88670494/Functional+Documentation

Languages available: English, French, Portuguese, Spanish

Community engagement overview: The OpenLMIS Community is an open source community that supports the initiative through donated time and resources. The Community is made up of a global core team, a Community Manager, and health, technology, development, and financial-support partners. Community calls are managed directly by the OpenLMIS community manager with content and agenda for the meeting agreed with the community before the sessions.

Mailing lists: The community engages via Discourse - https://forum.openlmis.org/

SOFTWARE MATURITY

Health standards: Principles of Digital Development, and standards prescribed by the Open Health Information Exchange

Interoperability standards: HL7 FHIR

CommCare by dimagi

OVERVIEW

CommCare is an open source digital data collection and service delivery platform designed to improve data collection and the quality of frontline services in low-resource settings. CommCare is used across multiple sectors, including healthcare, education, financial services, government, supply chain, gender equality, agriculture, and sanitation.

Digital Public Goods Alliance nomination/registration: CommCare - DPGA Details (digitalpublicgoods.net)

Contact: info@dimagi.com

WHO System Classification: Public health and disease surveillance system

Website: https://dimagi.com/commcare

Demo: https://www.youtube.com/@DimagiVideo

Primary users: Community health workers, nurses, auxiliary nurse midwives, Anganwadi workers, and lab technicians.

GLOBAL UTILITY

Source code: https://github.com/dimagi/commcare-hq

License the tool is published under (OSI): BSD-3-Clause

Known implementations of the tool by geography:

Angola
Argentina
Armenia
Australia
Austria
Bahamas
Bangladesh
Barbados
Belgium
Belize
Benin
Bhutan
Bolivia
Bosnia and Herzegovina
Botswana
Brazil
Brunei
Bulgaria
Burkina Faso
Burundi
Cabo Verde
Cambodia
Cameroon
Canada
Central African Republic
Chad
Chile
China
Colombia
Congo
Costa Rica
Cote d'Ivoire
Cuba
Cyprus
Czech Republic
Democratic People's Republic of Korea
Democratic Republic of the Congo
Denmark
Dominica
Dominican Republic
Ecuador
Egypt
El Salvador
Equatorial Guinea
Eswatini
Ethiopia
Fiji
Finland
France
Gambia
Germany
Ghana
Greece
Grenada
Guinea
Guinea-Bissau
Haiti
Honduras
Hungary
India
Indonesia
Iran
Iraq
Ireland
Israel
Italy
Jamaica
Japan
Jordan
Kenya
Kuwait
Kyrgyzstan
Laos
Lebanon
Lesotho
Liberia
Libya
Luxembourg
Madagascar
Malawi
Malaysia
Mali
Mauritania
Mexico
Micronesia
Mongolia
Morocco
Mozambique
Myanmar
Nauru
Nepal
Netherlands
New Zealand
Nicaragua
Niger
Nigeria
Norway
Oman
Pakistan
Panama
Papua New Guinea
Paraguay
Peru
Philippines
Poland
Portugal
Qatar
Republic of Moldova
Romania
Russian Federation
Rwanda
Saint Lucia
Samoa
Saudi Arabia
Senegal
Serbia
Sierra Leone
Singapore
Slovakia
Solomon Islands
Somalia
South Africa
South Sudan
Spain
Sri Lanka
Sudan
Suriname
Sweden
Switzerland
Syrian Arab Republic
Tajikistan
Thailand
Timor-Leste
Togo
Tonga
Trinidad and Tobago
Tunisia
Turkey
Turkmenistan
Uganda
Ukraine
United Kingdom of Great Britain and Northern Ireland
United Republic of Tanzania
Uzbekistan
Vanuatu
Venezuela
Vietnam
Yemen
Zambia
Zimbabwe

Impact of the tool: Users in more than 130 countries used CommCare applications in 2021 and more than 400 million people have been registered in a CommCare application. CommCare is also one of the most researched mobile data collection platform, and supports an evidence base of more than nearly 100 peer-reviewed studies, including eight randomized controlled trials. Together, these studies have demonstrated CommCare's positive impact on strengthening frontline healthcare systems, frontline worker capabilities, and client outcomes.

Offline functionality: Yes

COMMUNITY SUPPORT

Public-facing tool roadmap and documentation: Yes

Technical and developer documentation: https://confluence.dimagi.com/display/commcarepublic/Home

User guide documentation: https://confluence.dimagi.com/display/commcarepublic/Training+Manuals%2C+Guides%2C+and+Resources

Languages available: CommCareHQ is available in English, with translations in French and Spanish. CommCare supports many languages, and some require Unicode fonts to display. For the application to languages, local language and display it correctly, the text needs to be Unicode-enabled/friendly.

CommCare applications can be in many languages including Indian languages (Hindi, Odiya, Marathi, Bengali, Kannada, etc.)

Community engagement overview: Dimagi hosts well-timed webinars to keep the CommCare user community involved and abreast of the latest developments in engaging frontline workers for health in low- and middle-income countries. The webinars involve members of top universities of the world- who constitute many CommCare users, philanthropists, and international NGOs who support CommCare. More details can be found in https://www.dimagi.com/webinars/

CommCare's platform announcements are made at https://forum.dimagi.com/c/platform-announce/8. Additionally, any platform events and feature updates are communicated to donors and partners through emails and meetings.

Mailing lists: Dimagi has a forum for interaction with its clients and ecosystem stakeholders through its public-focused form (https://forum.dimagi.com/about). The forum is moderated and doubts about CommCare in the community is addressed through admins who are employees of Dimagi.

SOFTWARE MATURITY

Interoperability standards: HL7 FHIR

OVERVIEW

ODK is an open-source platform that helps leading researchers, field teams, and Measurement & Evaluation professionals build powerful offline forms to collect the data they need wherever it is.

Digital Public Goods Alliance nomination/registration: ODK - DPGA Details (digitalpublicgoods.net)

Contact: email@getodk.org

WHO System Classification: Public health and disease surveillance system

Website: https://getodk.org

Demo: Request a personalized demo at https://getodk.org

Primary users: Researchers, field teams, and Measurement & Evaluation professionals.

GLOBAL UTILITY

Source code: https://github.com/getodk

License the tool is published under (OSI): Apache-2.0

Known implementations of the tool by geography:

Afghanistan
Albania
Algeria
Andorra
Angola
Antigua and Barbuda
Argentina
Armenia
Australia
Austria
Azerbaijan
Bahamas
Bahrain
Bangladesh
Barbados
Belarus
Belgium
Belize
Benin
Bhutan
Bolivia
Bosnia and Herzegovina
Botswana
Brazil
Brunei
Bulgaria
Burkina Faso
Burundi
Cabo Verde
Cambodia
Cameroon
Canada
Central African Republic
Chad
Chile
China
Colombia
Comoros
Congo
Cook Islands
Costa Rica
Cote d'Ivoire
Croatia
Cuba
Cyprus
Czech Republic
Democratic People's Republic of Korea
Democratic Republic of the Congo
Denmark
Djibouti
Dominica
Dominican Republic
Ecuador
Egypt
El Salvador
Equatorial Guinea
Eritrea
Estonia
Eswatini
Ethiopia
Fiji
Finland
France
Gabon
Gambia
Georgia
Germany
Ghana
Greece
Grenada
Guatemala
Guinea
Guinea-Bissau
Guyana
Haiti
Honduras
Hungary
Iceland
India
Indonesia
Iran
Iraq
Ireland
Israel
Italy
Jamaica
Japan
Jordan
Kazakhstan
Kenya
Kiribati
Kuwait
Kyrgyzstan
Laos
Latvia
Lebanon
Lesotho
Liberia
Libya
Lithuania
Luxembourg
Madagascar
Malawi
Malaysia
Maldives
Mali
Malta
Marshall Islands
Mauritania
Mauritius
Mexico
Micronesia
Monaco
Mongolia
Montenegro
Morocco
Mozambique
Myanmar
Namibia
Nauru
Nepal
Netherlands
New Zealand
Nicaragua
Niger
Nigeria
Niue
North Macedonia
Norway
Oman
Pakistan
Palau
Panama
Papua New Guinea
Paraguay
Peru
Philippines
Poland
Portugal
Qatar
Republic of Korea
Republic of Moldova
Romania
Russian Federation
Rwanda
Saint Kitts and Nevis
Saint Lucia
Saint Vincent and the Grenadines
Samoa
San Marino
Sao Tome and Principe
Saudi Arabia
Senegal
Serbia
Seychelles
Sierra Leone
Singapore
Slovakia
Slovenia
Solomon Islands
Somalia
South Africa
South Sudan
Spain
Sri Lanka
Sudan
Suriname
Sweden
Switzerland
Syrian Arab Republic
Tajikistan
Thailand
Timor-Leste
Togo
Tonga
Trinidad and Tobago

Tunisia	Uganda	United Kingdom	United Republic of	Uruguay	Vietnam
Turkey	Ukraine	of Great Britain	Tanzania	Uzbekistan	Yemen
Turkmenistan	United Arab	and Northern	United States of	Vanuatu	Zambia
Tuvalu	Emirates	Ireland	America	Venezuela	Zimbabwe

Impact of the tool: ODK is used in every country in the world. It enables 2 million people to collect 200 million submissions every year. ODK has helped:

- Eradicate wild polio from Africa
- Enable large-scale COVID-19 response
- Prove the efficacy of the RTS,S malaria vaccine
- Vaccinate millions of children from measles-rubella
- Measure the global burden of disease in a standardized manner

Offline functionality: Yes

COMMUNITY SUPPORT

Public-facing tool roadmap and documentation: Yes

Technical and developer documentation: https://github.com/getodk

User guide documentation: https://docs.getodk.org

Languages available:

Afrikaans	Czech	Indonesian	Malayalam	Russian	Thai
Albanian	Danish	Italian	Marathi	Serbian	Tigrinya
Amharic	Dutch	Japanese	Nepali	Slovenian	Turkish
Arabic	Estonian	Khmer	Norwegian	Somali	Ukrainian
Bengali	Finnish	Kinyarwanda	Pashto	Spanish	Urdu
Bulgarian	French	Lao	Persian	Swahili	Vietnamese
Burmese	Georgian	Lingala	Polish	Swedish	Zulu
Catalan	German	Lithuanian	Portuguese	Tagalog	
Chinese	Hindi	Malay	Romanian	Telugu	

Community engagement overview:

Monthly video calls with project leadership and occasional webinars showcasing new features.

Mailing Lists: https://forum.getodk.org

SOFTWARE MATURITY

Interoperability standards: XLSForm

Reveal
REDEFINING PRECISION

OVERVIEW

Reveal is an open source digital global good that enables country governments and implementing partners to use geospatial data and technology to plan and deliver life-saving intervention campaigns efficiently and effectively.

Digital Public Goods Alliance nomination/registration: Reveal - DPGA Details (digitalpublicgoods.net)

Contact: info@akros.com

WHO System Classification: Public health and disease surveillance system

Website: www.revealprecision.com

Demo: https://revealprecision.com/resources

Primary users: Governments and implementers of health programs, Ministry of Health staff and district-based managers, field teams, community health workers, and community drug distributors.

GLOBAL UTILITY

Source code: https://github.com/akrosinc

License the tool is published under (OSI): Apache-2.0

Known implementations of the tool by geography:

Kenya Mozambique Senegal Thailand Zambia

Impact of the tool: Reveal supports health campaigns and interventions with an end-to-end workflow from microplanning to last mile delivery. The deployment of this tool has impacted 3.6 million individuals across a total of ten countries where it has been used. Reveal has been used for multiple use cases, particularly those requiring high intervention coverage for impact. Health campaigns and interventions supported have included malaria (IRS, SBC, SMC, Foci Investigation), neglected tropical diseases (deployment of MDA), surveys, and vaccine planning.

Offline functionality: Yes

COMMUNITY SUPPORT

Public-facing tool roadmap and documentation: Yes

Technical and developer documentation: https://revealplatform.atlassian.net/wiki/spaces/REVEAL/pages/393249/Reveal+Technical+Documentation

User guide documentation: https://revealplatform.atlassian.net/wiki/spaces/REVEAL/pages/393296/End+User+Guides

Languages available: English, French, Hausa and Siamese/Thai

Community engagement overview: Scheduling of community calls are managed over email and through Google Calendar. A side meeting at the American Society of Tropical Medicine and Hygiene will be hosted, with invitations extended to interested countries, partners and current implementers of Reveal.

Mailing Lists: www.revealprecision.com

SOFTWARE MATURITY

Interoperability standards: HL7 FHIR

SORMAS

OVERVIEW

The Surveillance Outbreak Response Management and Analysis System (SORMAS) is an open source software for early detection of infections and management of epidemic control. SORMAS enables digital data exchange in real time and across national or regional borders.

Digital Public Goods Alliance nomination/registration: SORMAS - DPGA Details (digitalpublicgoods.net)

Contact: info@sormas.org

WHO System Classification: Public health and disease surveillance system

Website: www.sormas.org

Demo: https://demo.sormas.org

Primary Users: Federal Institutions, Healthcare Workers, Hospitals, Doctors, and Contact Tracing Specialists.

GLOBAL UTILITY

Source code: https://github.sorm.as

License the tool is published under (OSI): GPL-3.0-only

Known Implementations of the tool by geography:

Afghanistan
Cote d'Ivoire
Democratic Republic of the Congo
Fiji
France
Germany
Ghana
Nepal
Nigeria
Switzerland
Tunisia
United Republic of Tanzania

Impact of the tool: SORMAS has been successfully used to manage outbreaks of infectious diseases such as Lassa fever, cholera, and COVID-19 in 12 countries, including Nigeria, Ghana, France, and Germany, enabling health workers to quickly identify and respond to cases. According to the Nigeria Centre for Disease Control, SORMAS has helped to save lives and reduce the economic impact of disease outbreaks in Nigeria. It has also helped to improve disease surveillance and reporting, leading to more accurate data on disease prevalence and incidence.

Offline functionality: Yes

COMMUNITY SUPPORT

Public-facing tool roadmap and documentation: Yes

Technical and developer documentation: https://wiki.sorm.as

User guide documentation: https://sormas.org/documents

Community engagement overview: SORMAS has weekly community calls where users from the local health departments can engage directly with the SORMAS core team, ask questions, give feedback, and help each other with open questions. The community calls are split into multiple disciplines (i.e., some are geared more towards users with IT expertise and administrators of the system and others focus more on the end users).

Interested community members can subscribe to the SORMAS Foundation's newsletter via this link: https://newsletter.sorm.as

The discussion platform is available at: https://community.sorm.as

SOFTWARE MATURITY

Health standards: LOINC

Interoperability standards: HL7 v2, v3; Representational State Transfer (REST); JSON

Tupaia

OVERVIEW

Tupaia is an end-to-end data platform that supports data aggregation, analysis, and visualization for mapping health systems in low- and middle-income countries. Tupaia is used to complement other systems such as DHIS2 and mSupply, utilizing several powerful features such as a data broker that can seamlessly consume and route data from multiple sources, the ability to support multiple data platforms and a highly attractive GIS platform around which the visualizations are built.

Tupaia combines data from multiple sources including DHIS2, mSupply, Kobo, Tamanu and its own MediTrak app to help improve medicines availability, map disease outbreaks, map public health programming, undertake disease surveillance, respond to disasters, and strengthen service provision.

Digital Public Goods Alliance nomination/registration: Tupaia - DPGA Details (digitalpublicgoods.net)

Contact: contact@tupaia.org

WHO System Classification: Public health and disease surveillance system

Website: https://tupaia.org

Demo: https://beyondessential.com.au/tupaia

Primary users: Healthcare workers and donors from low- and middle-income settings.

GLOBAL UTILITY

Source code: https://github.com/beyondessential/tupaia

License the tool is published under (OSI): GPL-2.0

Known implementations of the tool by geography:

Australia	Nauru	Samoa
Fiji	Niue	Solomon Islands
Kiribati	Palau	Tonga
Laos	Papua New	Tuvalu
Marshall Islands	Guinea	Vanuatu

Impact of the tool: Tupaia is used across more than 12 countries by organizations including UNICEF, World Bank, UNFPA, DFAT, and others. It has more than 3,500 registered users who have collectively submitted 958,000 surveys through Tupaia MediTrak (in addition to data consumed via APIs). Tupaia supports BI across immunization programs, disease surveillance, water, sanitation and hygiene, disaster response, DHIS2 enhancements, hospital management, and public health.

Offline functionality: Yes

COMMUNITY SUPPORT

Public-facing tool roadmap and documentation: No

Technical and developer documentation: https://github.com/beyondessential/tupaia, https://github.com/beyondessential/tupaia#readme

User guide documentation : https://www.beyondessential.com.au/tupaia-instructions

Languages available: English, Laotian

Community engagement overview: Community engagement activities can be found on our YouTube channel:

https://www.youtube.com/channel/UCrqx5WxULXZrVKt4bOjrpPQ/playlists

Mailing lists: https://www.bes.au

SOFTWARE MATURITY

Health standards: ICD-9; ICD-10; ICD-11

Interoperability standards: HL7 FHIR

Vxnaid

OVERVIEW

Vxnaid is a digital platform that integrates innovative technologies to improve patient tracing, data management and communication to implement impactful vaccination campaigns in low resource settings. The platform has three main pillars: person Identification capabilities; dashboard reporting and engagement capability. The technology is built on an OpenMRS open-source backbone and can support any vaccine type.

Digital Public Goods Alliance nomination/registration: Vxnaid - DPGA Details (digitalpublicgoods.net)

Contact: vxnaid@its.jnj.com

WHO System Classification: Public health and disease surveillance system

Website: https://github.com/johnsonandjohnson/vxnaid/wiki

Demo: https://players.brightcove.net

Primary users: Individuals who execute vaccination campaigns or oversee the performance of the campaigns.

GLOBAL UTILITY

Source code: https://github.com/johnsonandjohnson/vxnaid

License the tool is published under (OSI): Apache-2.0

Known implementations of the tool by geography:

Colombia
Democratic Republic of the Congo
Kenya
Mali
Philippines
Rwanda
Sierra Leone

Impact of the tool: To date, the tool has been deployed in clinical studies and vaccination campaigns in seven countries across three continents.

Offline functionality: Yes

COMMUNITY SUPPORT

Public-facing tool roadmap and documentation: Yes

Technical and developer documentation: https://github.com/johnsonandjohnson/vxnaid/wiki/Architecture

https://github.com/johnsonandjohnson/vxnaid/tree/main/docs

User guide documentation: https://github.com/johnsonandjohnson/vxnaid/wiki

Languages available: English, French

SOFTWARE MATURITY

Health standards: CIEL; ICD-9; ICD-10; ICD-11

Interoperability standards: HL7 v2, v3

APPENDICES

Appendix A: Digital Square COVID-19 response

Since the beginning of the COVID-19 pandemic in 2020, Digital Square has promoted the rapid adaptation of digital health global goods for COVID-19 response –ensuring implementers have access to mature, interoperable tools that can be deployed and scaled quickly.

Digital Square continues to support COVID-19 response and prevention through our partnerships with USAID and the Digital Health Centre of Excellence (DICE), a mechanism designed to deliver agile and coordinated technical assistance to governments on digital health solutions. Through DICE, we contributed to the development and launch of the Primer on Digital Solutions for COVID-19 Vaccination Service Delivery. This resource provides examples to planners, funders, and implementers of how utilize digital health tools for pandemic and post-pandemic response. The Primer includes case studies that highlight the use of data and digital health tools to support immunization service delivery. Many Digital Square approved global goods featured in this guidebook are included in the Primer.

Figure 4: *Primer on Digital Solutions for COVID-19 Vaccination Service Delivery*

Appendix B: Digital Square and DPGA Coordination

The Digital Public Goods Alliance (DPGA) is a multi-stakeholder initiative co-hosted by the United Nations Children's Fund (UNICEF), Norwegian Agency for Development Cooperation (Norad), the United Nations Development Programme (UNDP). Digital Square is a member of the DPGA and collaborates with the DPGA and the World Health Organization (WHO) Clearinghouse to align the approval processes for Digital Square global goods and DPGs.

While these alignment efforts are underway, several points have been agreed upon:

- The definition of DPGs used by both Digital Square and the DPGA has derived from the United Nations Secretary-General's Roadmap for Digital Cooperation which indicates DPGs as open source software, open data, open artificial intelligence models, open standards, and open content that adhere to privacy and other applicable laws and best practices, do no harm, and help attain the SDGs.
- This definition is operationalized via the DPG Standard which is a nine-indicator open standard that projects must and is stewarded by the DPGA. The DPG Standard does not assess the scale, funding sources, country deployments, or other indicators of a "mature" global good.
- Within the context of health, software global goods are considered a mature subset of DPGs. Digital Square and the DPGA are working to align processes so that health-related software global goods approved through Digital Square also meet the DPG Standard.
- Both Digital Square global goods and DPGs must be open source.
- Neither Digital Square nor the WHO Clearinghouse certify global goods. The DPGA reviews digital solutions against the DPG Standard and approves them as DPGs.
- Digital Square, WHO, and the DPGA will be piloting the application of combined standards for DPGs and global goods to identify and assess promising short-listed projects of high relevance for immunization delivery management as part of the Community of Practice for Digital Health convened by the DPGA and co-chaired by UNICEF.
- In future iterations of this guidebook, Digital Square will note which global goods are DPGs and which use cases have been approved through the WHO Clearinghouse. The DPG Registry will also note which DPGs are Digital Square global goods. Digital Square, the DPGA, and the WHO Clearinghouse will continue to cross-reference respective "approvals" of global goods.
- The goal of this alignment and collaboration is to better empower country governments, donors, and digital tool implementers with a clear understanding of which DPGs are evaluated and recommended by technical experts.

Digital Square, the DPGA, and the WHO are fully aligned in the belief that digital health solutions and services are critical for creating a more equitable world. By aligning efforts, we are better able to increase the discovery, adoption, and support of high-quality digital tools that are optimally positioned to ensure better health outcomes for all. Please visit the Digital Public Good Registry to learn more about DPGs, how they can help attain the Sustainable Development Goals, and why digital solutions should become DPGs.

Appendix C: OpenHIE

The global goods presented in this guidebook are each designed to address specific business domains within health information exchange (HIE) systems. When deployed together, they provide a strong backbone for the digital health infrastructure within a country. In this section, you will find an overview of OpenHIE, which provides a framework for best practices in interoperability and open standards for bringing these global goods together.

Launched in 2013, OpenHIE evolved from work initially begun in 2009 to establish the Rwandan Health Information Exchange. As the benefits of the approach adopted in Rwanda became apparent, interest gathered from other countries looking to apply similar architectural tactics within their environments.

OpenHIE's approaches, reference technologies, and community of practice are now being leveraged or explored in multiple countries. Today, members from more than 55 countries work with standard-setting bodies and technology providers to align the world toward appropriate uses of standards and to further grow and evolve the community and its framework.

OpenHIE background

In a fragmented health data environment, health information systems typically operate independently of one another. Each member of a health care team (e.g., primary care physicians, specialists, nurses, technicians, public health practitioners, community health workers, and health system management personnel) has specific, limited interactions with an individual patient and differing vantage points into the patient's health. The result is disaggregated information stored in different locations and formats, making it impossible for data to be harmonized and for health care personnel to share knowledge, collaborate in care, and truly understand the full breadth of an individual's health history. Those who manage and oversee the health system have little ability to make inferences from these data for monitoring and evaluation purposes. Health care personnel are forced to make life-altering decisions for their population without key health information.

To address the challenge of fragmented health information systems, the OpenHIE community is dedicated to improving the health of individuals in resource-emerging environments through open and collaborative development and support of country-driven, large-scale health information–sharing architectures by: enabling large-scale health information interoperability using standards-based approaches; offering freely available reference technologies; and, supporting needs through peer technical assistance communities.

OpenHIE envisions a world where all countries are empowered to pragmatically implement sustainable health information–sharing architectures that measurably improve health outcomes.

OpenHIE community

The OpenHIE community supports interoperability through a reusable, conceptual architectural framework that introduces a service-oriented approach, leverages health information standards, enables flexible implementation by country partners, and supports interchangeability of individual software components. For a more detailed description of each of the components, please review OpenHIE's Architecture Specification. Several OpenHIE community offerings are described below.

Community network

OpenHIE Discourse is a diverse peer learning network providing a knowledge space for ministries of health and other government entities as well as implementers, funders, domain and technical experts, developers, end users, standards development organizations, and others who have an interest in implementing an HIE framework. Members are available as resources to help support project needs in real time.

Architecture specification

The OpenHIE Architecture is intended to represent a pattern for key architectural components in a health information exchange. The specification includes components and business domains that the OpenHIE framework supports, and the framework evolves as standards and implementer needs change.

Getting started guide

The OpenHIE Getting Started Guide is designed to help ministries of health, implementers, and others involved in establishing eHealth architecture and health system project teams get started with an HIE.

On the OpenHIE website, members publicly share the work they have accomplished or are progressing toward using the OpenHIE framework and network as a way to contribute to the community. Sharing the impact OpenHIE has around the world helps members build upon successes together, learn from others in the community, and improve patient care.

Community members from all over the world have already published their stories on projects like data aggregation, immunization registries, health information exchange systems, client and facility registries, lab information systems, and more.

Appendix D: WHO Classification of Digital Health Interventions

The World Health Organization's Classification of Digital Health Interventions (v1.0) categorizes the different ways in which digital and mobile technologies are being used to support health system needs.

Interventions

A digital health intervention represents a discrete area of functionality of a technology to achieve health sector objectives. These interventions are intended for different users, including clients, healthcare providers, health system or resource managers, and those involved in data services.

Examples of digital health interventions include "Transmit targeted alerts and reminders to client(s)" and "Manage inventory and distribution of health commodities."

System categories

Software solutions in digital health are not limited to clinical information systems. Rather, they can be tailored to the needs of different domains, or categories, within a health system—such as health information systems, supply chains, program monitoring and evaluation, disease surveillance, and health insurance.

Examples of software solutions designed for system categories and taken from Digital Square's portfolio of global goods include: OpenLMIS, a logistics management information system (LMIS); and Bahmni, an open source electronic medical record (EMR). Figure 5 depicts a potential scenario for addressing multiple health system challenges. In this model, the challenges are addressed with targeted interventions that are, in turn, grouped by system category—the organizing principle for the solutions in this guidebook.

Figure 5: Example of a mapping across health system challenges, digital health interventions, and system categories.

Appendix E: WHO SMART Guidelines and Digital Adaptation Kits

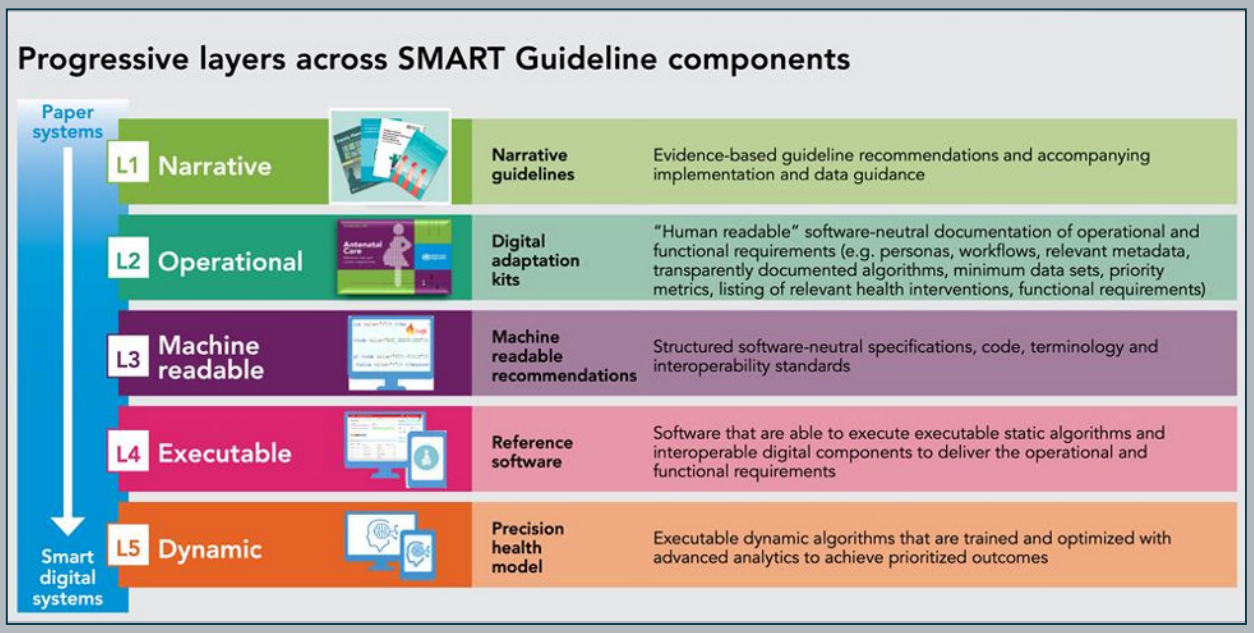
SMART Guidelines

As the United Nations agency responsible for international public health, the World Health Organization (WHO) connects countries, partners, and people to advocate for universal health care, monitor public health risks, coordinate responses to health emergencies, and promote health and well-being. A core function of WHO is the development of global guidelines to ensure appropriate use of evidence. The guidelines articulate and endorse rigorously tested recommendations for health interventions to be adopted within country programs. When applied correctly and consistently, guideline recommendations save lives and improve the health of individuals and populations.

With countries increasingly investing in digital technologies for health, WHO member states and their implementation partners need guidance to adopt WHO health and data recommendations more efficiently and accurately into digital systems.

To support this effort, WHO has developed SMART Guidelines to translate complex guidelines and standards of care into actionable and standardized health and data requirements. SMART Guidelines—**S**tandards-based, **M**achine-readable, **A**daptive, **R**equirements-based, and **T**estable—are a set of reusable digital health components (e.g., interoperability standards, code libraries, algorithms, technical and operational specifications) that provide a five-step pathway to advance the adoption of best clinical and data practices as a country ramps up its digital capabilities. Use of SMART Guidelines can help ensure standards-based, interoperable systems that can share accurate data and become part of stronger, more sustainable health information systems.

Figure 6: Progressive layers across SMART Guideline components.



Digital Adaptation Kit (DAK)

For countries to implement the SMART recommendations, national governments and technology partners must interpret and then adapt the content to align with local policies, procedures, and digital tools across many health areas. This work can be challenging and ambiguous. For this reason, WHO has led the development of digital adaptation kits (DAKs) to package its guidelines and operational resources in a standardized format that provides a common language across various audiences, including health program managers, software developers, and digital system implementers.

Through practical components such as workflows and data dictionaries, DAKs distill content from a range of published WHO guidance to ensure relevant health information is included for a specific health area. In short, DAKs:

- Are software-neutral, operational, and structured documents based on WHO clinical, health system, and data use recommendations to systematically and transparently inform the design of digital systems.
- Identify the necessary core data elements required for each system and the support logic for a functioning system.
- Include generic personas, or descriptions of end users, and user scenarios to help stakeholders understand the types of users and the ways in which they would interact with each digital system use case.
- Include functional and nonfunctional requirements for a digital system for the designated use case, providing stakeholders a starting place for designing or adapting a digital health tool.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