Digital health systems to support pandemic response in **Burkina Faso**

Mapping digital health tools and matching deployment opportunities in response to COVID-19

May 2021

IN THIS TECHNICAL BRIEF

Introduction

Burkina Faso's Ministry of Health (MOH) published the Cyberstratégie sectorielle eSanté: 2016–2020 report where it promotes the strategic use of information communication technologies (ICTs) as a means to achieve its overall vision of providing high-quality health care for the entire population through the creation of an efficient national health system. The COVID-19 pandemic strained the health system, bringing a new urgency to the MOH's vision. Leveraging digital health tools is a rapid, cost-effective strategy to accelerate Burkina Faso's COVID-19 response while at the same time strengthening the health system at large.

Background

Digital Square conducted a landscape analysis of Burkina Faso's digital systems in the ten-year period from 2010–2020 with information validated by tool implementers and designers, digital health experts, and MOH stakeholders as part of the USAID-funded Map and Match project. The purpose was to identify the existing digital tools utilized in Burkina Faso, map the tools already deployed for COVID-19 response to relevant uses cases, and highlight opportunities where existing tools can quickly be adapted and deployed to support COVID-19 response.

31 digital tools identified

16 tools scaled nationally

18 tools deployed for COVID-19

5 tools potentially adapted for COVID-19

Analysis overview

Map and Match's analysis found that Burkina Faso's health system uses 31 digital health tools with at least 18 already deployed for COVID-19 response. This brief identifies opportunities for existing digital tools to be adapted to pandemic use cases to respond to needs for the COVID-19 response and potential future epidemics. Mapping of the existing tools to the use cases revealed where there are strengths and opportunities in Burkina Faso's digital health systems' response to COVID-19. For example, the analysis identified only one tool that currently supports points of entry, with additional tools ready for adaptation to further address this use case.

Strategic adaptation of existing digital health tools will accelerate the COVID-19 response, offering greater efficiency and more robust support to the government, health workers, clients, and other stakeholders.

Figure 1. Current number of digital health tool deployments mapped to pandemic use cases in Burkina Faso.
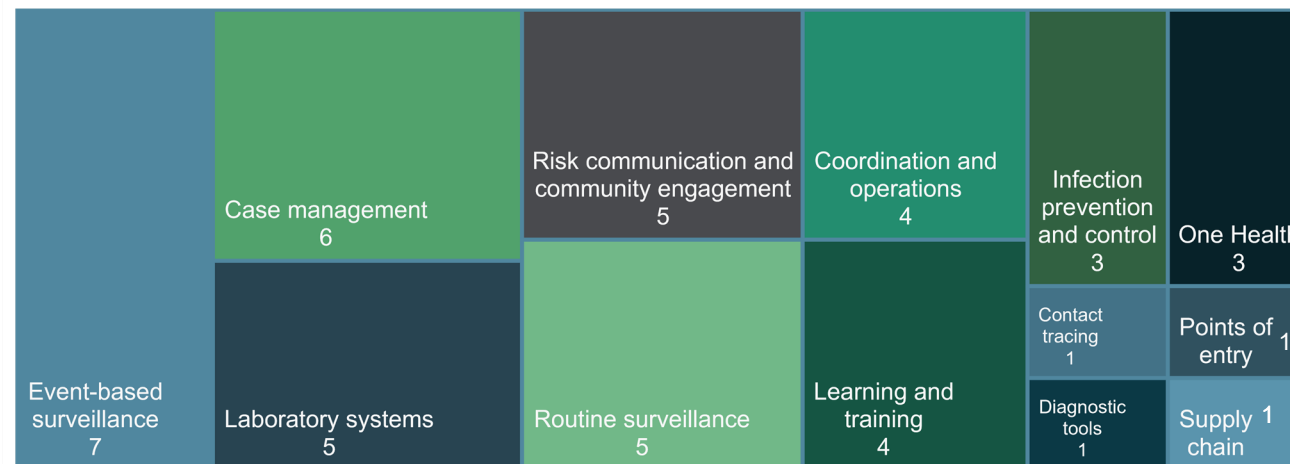
Figure 1 illustrates that many use cases are addressed using several tools in Burkina Faso's COVID-19 response while other use cases are filled by a sole tool.

Key definitions

Pandemic use case refers to the specific type of information collected, stored, tracked, analyzed, or visualized as it relates to the functional response to an epidemiological event, specifically COVID-19.

Digital health tool refers to a website, application, or other computer or mobile technology that supports data collection, storage, tracking, analysis, or visualization. The tool must have an electronic interface. One digital tool can address multiple use cases.

Application refers to components of digital tools that are primarily designed for use by clients of the health system or by health workers. Applications can be reused to address more than one use case, or applications can be uniquely used for only one use case.

Adaptation refers to making improvements to existing digital tools to improve their applicability and impact in the context of COVID-19.

Table 1. Mapping and matching digital health tools to strengthen Burkina Faso's COVID-19 response.

Digital Square mapped the current state of tools' functionality across the pandemic use cases in **blue** to illustrate how the digital health systems are supporting Burkina Faso's COVID-19 response. Digital Square matched opportunities for tool adaptation across the pandemic use cases in **green** to reveal places where Burkina Faso can reuse parts of its existing digital health systems to strengthen its COVID-19 response.

PANDEMIC USE CASES

Legend: B = Digital tools deployed for COVID-19 response (blue); G = Opportunities to adapt tools for pandemic response (green)

DIGITAL HEALTH TOOLS	Case management	Contact tracing	Coordination and operations	Diagnostic tools	Event-based surveillance (including rapid response teams, case investigation)	Health facility and provider administration	Infection prevention and control	Laboratory systems	Learning and training	One Health	Points of entry	Risk communication and community engagement	Routine surveillance	Supply chain	Vaccine delivery and planning
Burkina Faso HMIS (ENDOS) (DHIS2 + Tracker)	B	B	B	G	B	G		B		B	B	G	B		G
CommCare	G	G		G	G	G	B	G	G		G	G		G	
DataToCare	B		B		B			B					B		
Development Media International (DMI) Radio Campaign												B			
HealthConnect												B			
Integrated e-Diagnostic Approach (IeDA) (DHIS2, CommCare)	B							B							
One Health Electronic Platform (DHIS2)					B			B		B			B		
Open Smart Register Platform (OpenSRP)	B	G		G										B	
Plateforme Nyss					B				B		G		B		
Rapid Pro					B							B	B		
Safe Delivery App							B	B							
SmartHealth (CHT)	B	G			B				G						
Stelab					B			B		B		G	G		G
Surveillance Outbreak Response Management and Analysis System (SORMAS)	G	G	B					G			G	G	B		G
Vantage			B												
Viamo									B			B			
VigiFlow								B							

■ Digital tools deployed for COVID-19 response   ■ Opportunities to adapt tools for pandemic response

Table 1. Mapping and matching digital health tools to strengthen Burkina Faso's COVID-19 response, continued.

PANDEMIC USE CASES

DIGITAL HEALTH TOOLS	Case management	Contact tracing	Coordination and operations	Diagnostic tools	Event-based surveillance (including rapid response teams, case investigation)	Health facility and provider administration	Infection prevention and control	Laboratory systems	Learning and training	One Health	Points of entry	Risk communication and community engagement	Routine surveillance	Supply chain	Vaccine delivery and planning
Wellvis COVID-19 Triage Tool	■ (blue)			■ (blue)			■ (blue)					■ (blue)			
CAD4TB	■ (green)			■ (green)											
COVID-19 messaging to health providers and public						■ (green)			■ (green)			■ (green)			
GxAlert / Aspect			■ (green)	■ (green)	■ (green)			■ (green)							
Plateforme Nyss		■ (green)													
QuickRes	■ (green)	■ (green)	■ (green)	■ (green)				■ (green)	■ (green)	■ (green)	■ (green)				
The Amplio Talking Book		■ (green)							■ (green)			■ (green)			

■ (blue) Digital tools deployed for COVID-19 response   ■ (green) Opportunities to adapt tools for pandemic response

"All digital health technologies are carefully integrated into the existing digital strategy. We have learned that you can't just have different tools used in different places without connecting them back to the national plan.

With digital tools, we can manage COVID-19 data without waiting for external support. Data was integrated in the DHIS2 since the beginning of COVID-19. All lab results are sent automatically to the DHIS2 database, and includes information like name, date of exam, place of residence, and kit. It even autogenerates a PDF with a QR code for security reasons that you can scan to make sure the data is real. DHIS2 has been great to have one single unique database."

—Boukary Ouedraogo, Director of Health Information Systems, Ministry of Health, Burkina Faso

Matching digital health tools ready for adaptation to fill the pandemic use case gaps

The analysis identified existing digital tools that can be adapted to support COVID-19 response for several use case gaps below. Use case gaps are defined as use cases that have fewer than two tools addressing them. Map and Match's analysis found existing digital tools ready for adaptation to fulfill the six use case gaps specific to Burkina Faso. Many of these tools also provide opportunities to streamline the COVID-19 response across a range of use cases.

To learn more about the tools in the matrix below, please see Table 2 for more details to facilitate adaptations. To find out more about all the Digital Square–approved global goods mapped across these pandemic use cases, please see this Map and Match resource, which can provide decision-makers with targeted information to deploy and adapt global goods to fulfill gaps in the COVID-19 response.

Contact tracing

Burkina Faso HMIS (ENDOS) (DHIS2 + Tracker)	CommCare
OpenSRP	Plateforme Nyss
QuickRes	SmartHealth (CHT)
SORMAS	

Diagnostic tools

Wellvis COVID-19 Triage Tool	Burkina Faso HMIS (ENDOS) (DHIS2 + Tracker)
CAD4TB	GxAlert / Aspect
OpenSRP	QuickRes

Health facility and provider administration

Burkina Faso HMIS (ENDOS) (DHIS2 + Tracker)	CommCare
COVID messaging to health providers and public	

Points of entry

Burkina Faso HMIS (ENDOS) (DHIS2 + Tracker)	CommCare
Plateforme Nyss	QuickRes
SORMAS	

Supply chain

OpenSRP	Burkina Faso HMIS (ENDOS) (DHIS2 + Tracker)
CommCare	

Vaccine delivery and planning

Burkina Faso HMIS (ENDOS) (DHIS2 + Tracker)	SmartHealth (CHT)
SORMAS	Eyone Medical

Example of a global good adapted and deployed for COVID-19 response in Burkina Faso

SORMAS

Surveillance Outbreak Response Management & Analysis System (SORMAS) is open source software that processes disease control and outbreak management procedures. SORMAS also provides real-time digital surveillance of peripheral health care facilities and laboratories, which facilitates early detection of outbreaks. SORMAS's ability to validate real-time surveillance data enables COVID-19 contact tracing while monitoring the potential for future cases. SORMAS offers easy-to-use, multifunctional mobile health (mHealth) and electronic health (eHealth) applications, which are compatible with standard surveillance systems.

Many countries, including Afghanistan, Burkina Faso, Cote d'Ivoire, Fiji, Ghana, Kenya, Nepal, Nigeria, Tanzania, and Togo, deployed SORMAS adaptations for COVID-19. For example, Ghana and Nigeria activated a module they are using at points of entry such as airports and harbors, covering a population of more than 85 million.

8 PANDEMIC USE CASES

3 USE CASES UTILIZED

5 ADAPTATION OPPORTUNITIES IDENTIFIED

- Case management
- Coordination and operations
- Contact tracing
- Event-based surveillance
- Laboratory systems
- Points of entry
- Routine surveillance
- Supply chain
- Vaccine delivery

Table 2. An in-depth look at digital health tools to support the COVID-19 response.

Digital health tool	Purpose	Use case(s)	Funder(s)	Implementer(s)	Licensing	Scale
Burkina Faso HMIS (ENDOS) (DHIS2 + Tracker)	DHIS2 is an open source, web-based platform, typically used as a national health information system for data management and analysis purposes, for health program monitoring and evaluation, facility registries and service availability mapping, logistics management, and mobile tracking of pregnant mothers in rural communities. DHIS2 supports the collection, analysis, visualization, and sharing of both aggregate and individual-level data, including mobile and offline data collection using the DHIS2 Android app. DHIS2 is deployed in more than 70 countries.	**Case management, contact tracing, coordination and operations, diagnostic tools, event-based surveillance, health facility and provider administration, laboratory systems, One Health, points of entry, risk communication and community engagement, routine surveillance, supply chain, vaccine delivery and planning**	Gates Foundation, Gavi, Global Fund, MOH, Norad, USAID	Bluesquare, JSI, MOH, University of Oslo	Open source	National
CommCare	CommCare is an offline-capable mobile data collection and service delivery platform used in more than 80 countries. CommCare is popular for its offline case management capabilities proven to be effective at scale. It is designed for everything from simple surveys to comprehensive longitudinal data tracking. It allows for easy digitization of surveys, has forms that are intuitive for end users, utilizes simple device deployment, and includes translation features. In Burkina Faso, CommCare is deployed for COVID-19 response using a form dedicated to triaging patients in health facilities.	**Case management, contact tracing, event-based surveillance, health facility and provider administration, infection prevention and control, laboratory systems, learning and training, points of entry, risk communication and community engagement, supply chain**	Gates Foundation	Bluesquare, TdH	Open source	National
DataToCare	DataToCare is a suite of integrated applications that collects and disseminates diagnostic and surveillance data from remote laboratories to regional and national stakeholders. It allows medical teams access to the data for decision-making. The DataToCare desktop is installed across Burkina Faso in laboratories to collect and transfer diagnostic data and send via internet or SMS to the central server. The DataToCare server computes diagnostic or epidemiological data from points of care and remote laboratories. Data on the central server are used to create a dashboard that provides national/regional/provincial overviews of the data in real time. DataToCare also allows notification of the test results to clients via SMS as soon as the test results are available and validated by the operator. In Burkina Faso, the DataToCare server eases the real-time monitoring at national, regional, and case-based levels for COVID-19. Burkina Faso integrated a COVID-19 module into DataToCare to address the current pandemic by tracking COVID-19 lab results.	**Case management, coordination and operations, event-based surveillance, laboratory systems, routine surveillance**	Global Fund	Global Fund, Savics, WHO	Proprietary	National
Development Media International (DMI) radio campaign	DMI developed a radio campaign targeting family planning and birth spacing. During COVID-19, DMI adapted to support the Burkina Faso government's pandemic response by launching a national mass media campaign, sharing information about the virus, and promoting key COVID-19-related behaviors. DMI was approached by governments from African countries to help with getting COVID-19 messages to their populations. DMI set up a COVID-19 Rapid Response Fund to quickly produce and broadcast COVID-19 information and behavior change campaigns, tailored to the context of each country. DMI has produced 53 one-minute radio spots in 37 languages, two short films, and two animations distributed via social media and on TV.	**Risk communication and community engagement**	Development Innovation Ventures, Global Innovation Fund, USAID	Development Media International		Subnational
HealthConnect	HealthConnect enables effective health communication with patients, health providers, and the health system at large. HealthConnect has been adapted for COVID-19 to provide national messaging services on behalf of WHO and several other country governments on COVID-19-related information via individual modules such as HealthAlert, HealthCheck, and HealthWorkerAlert. For COVID-19, WHO launched a dedicated messaging service in Arabic, English, French, Hindi, Italian, Spanish, and Portuguese with partners WhatsApp and Facebook to keep people safe by getting information directly into the hands of those that need it. From government leaders to health workers and family and friends, this messaging service provides the latest news and information on COVID-19, including details on symptoms and how people can protect themselves and others. It also provides the latest situation reports and numbers in real time to help government decision-makers protect the health of their populations. The service, which uses Turn machine learning technology, can be accessed by a link that opens a conversation on WhatsApp. Users can simply type **hi**, **hola**, **oi**, **salut**, **ciao**, or مرحبا to activate the conversation, prompting a menu of options that can help answer their questions about COVID-19.	**Risk communication and community engagement**		Praekelt	Open source	

🟦 Digital tools deployed for COVID-19 response   🟩 Opportunities to adapt tools for pandemic response

Table 2. An in-depth look at digital health tools to support the COVID-19 response, continued.

Digital health tool	Purpose	Use case(s)	Funder(s)	Implementer(s)	Licensing	Scale
Integrated e-Diagnostic Approach (IeDA) (DHIS2, CommCare)	IeDA provides a complete solution for delivering quality care to under-fives, supporting health workers through a digital clinical job aid (i.e., on a tablet device), supplying performance data to facility and district managers for management purposes, and supporting coaching and continuous training of health workers. IeDA has been deployed in 600+ facilities, guided 3,000+ health workers, and delivers 120,000+ consultations/month for 1 million children per year.	Case management, learning and training	Gates Foundation, Global Fund, Novartis Foundation, UNICEF	Dimagi, MOH, SolDevelo, TdH	Open source	National
One Health electronic platform (DHIS2)	The One Health electronic platform is used by the MOH, Ministry for Animal Resources and Fisheries, and Ministry of the Environment, Green Economy and Climate Change so that notified disease events are monitored in near real time, with measurable indicators that prompt a response if an emerging epidemic is detected. This platform accommodates other crucial actors, such as national laboratories. The One Health platform software is interoperable, so it synchronizes with other electronic health systems into a unified online data architecture to improve data collection and data entry at facilities and improve the efficiency and quality of data transmission to higher administrative levels. In Burkina Faso, the One Health platform manages all national data on COVID-19 and handles the notification of COVID-19 cases, follow-up of contact persons and travelers at entry points, follow-up of case management, management of laboratory data, follow-up of stocks of COVID-19 supplies (e.g., drugs, PPE, reagents) and medical-technical equipment, and management of validated data from call center alerts.	Event-based surveillance, laboratory systems, One Health, routine surveillance	USAID	MEASURE Evaluation	Open source	Subnational
Open Smart Register Platform (OpenSRP)	OpenSRP is an open source platform that allows governments and technology partners to easily adapt content and functionality to health workers' needs. OpenSRP has a modular design, which makes it easy to include the existing modules, content, and functionality needed for each setting. OpenSRP is interoperable with other prominent, open source health information tools widely used today, including DHIS2, OpenMRS, and RapidPro.	Case management, contact tracing, diagnostic tools, supply chain		Ona	Open source	
Plateforme Nyss	Nyss is a custom digital platform for recording and real-time alerting of health risks collected by volunteers at the community level based on signs and symptoms. The solution was built tailored to the needs of the Red Cross Red Crescent Movement for community-based surveillance. Nyss allows for real-time detection, reporting, aggregation, and analysis of information on community health risks, enabling prevention, identification, and response to disease outbreaks through early warning and early response. If the report received is parsed and validated successfully, an alert is triggered based on rules specified on a project basis through the Nyss application. When alerts are triggered, notifications are sent as SMS and/or email, depending on configurations specified on a project basis in the Nyss application. In the event that an alert has not been handled within 24 hours, an email is sent to the manager. Burkina Faso uses Plateforme Nyss by integrating the COVID-19 risk messaging into the platform and using it to train volunteers in the detection of signs and symptoms.	Contact tracing, event-based surveillance, learning and training, points of entry, routine surveillance	Belgian Development Cooperation, DGD	Belgian Red Cross, Burkina Faso Red Cross	Open source	National
Rapid Pro	RapidPro is a free open source software that allows users to easily build and scale mobile-based applications from anywhere in the world. RapidPro collects data via SMS and other communication channels (e.g., voice and social media channels, such as Facebook Messenger, Telegram, and WhatsApp) to enable real-time data collection and mass communication with target end users, including beneficiaries and frontline workers. RapidPro also powers U-Report, UNICEF's youth and citizen engagement platform. In Burkina Faso, the CommCare Corona Triage mobile application generates an alert SMS at the end of the questionnaire, which is sent to the RapidPro server set up by UNICEF in partnership with Direction des Systèmes d'Information en Santé.	Event-based surveillance, routine surveillance, risk communication and community engagement	UNICEF	MOH, UNICEF	Open source	Subnational

■ Digital tools deployed for COVID-19 response   ■ Opportunities to adapt tools for pandemic response

Table 2. An in-depth look at digital health tools to support the COVID-19 response, continued.

Digital health tool	Purpose	Use case(s)	Funder(s)	Implementer(s)	Licensing	Scale
Safe Delivery App	The Safe Delivery App supports skilled birth attendants to quickly diagnose issues in pregnancy and with newborns, offering step-by-step guidelines to perform a treatment. It is free to download and can be preinstalled so that providers can watch the animated instruction videos and read the action cards and drug lists whether or not they have Wi-Fi. The Safe Delivery App includes the adaptation of a COVID-19 content module that provides skilled birth attendants (e.g., midwives) with key information, animated video instructions, and checklists to support them to limit the spread of COVID-19 in the health facilities, including information on infection prevention, breastfeeding, and vertical transmission. Plan International and the Maternity Foundation conducted a Training of Trainers with health workers in northeastern Burkina Faso on the COVID-19 module and the Safe Delivery App in August 2020.	Infection prevention and control, learning and training	Gates Foundation, Merck for Mothers, UNFPA	ICM, Laerdal Global Health, Maternity Foundation, Plan International, TdH, University of Copenhagen	Proprietary	Subnational
SmartHealth (Community Health Toolkit [CHT])	SmartHealth is an app that uses a basic clinical decision support system to ensure consistent and accurate diagnoses and smart workflows for pregnancy care, childhood diseases, nutrition, family planning, and immunization tracking. The app also allows health workers to collect data that is compatible and integrated with the government DHIS2. Burkina Faso uses the new COVID-19 workflows integrated into the existing SmartHealth app and has adjusted existing workflows to account for the new no-touch protocols.	Case management, coordination and operations, contact tracing, event-based surveillance, point of entry, learning and training, risk communication and community engagement, routine surveillance, vaccine delivery and planning			Open source	
Stelab	Stelab is a solution for monitoring alerts for laboratory results that is deployed in Burkina Faso and Niger. Burkina Faso has implemented dedicated COVID-19 forms. It is not widely used in Burkina Faso because overlapping functionality exists in DHIS2 Tracker.	Event-based surveillance, laboratory systems, One Health		Daycas International		National
Surveillance Outbreak Response Management and Analysis System (SORMAS)	SORMAS is open source software that processes disease control and outbreak management procedures. SORMAS also provides real-time digital surveillance of peripheral health care facilities and laboratories, which facilitates early detection of outbreaks. SORMAS's ability to validate real-time surveillance data enables COVID-19 contact tracing while monitoring the potential for future cases. SORMAS offers easy-to-use, multifunctional mobile health (mHealth) and electronic health (eHealth) applications, which are compatible with standard surveillance systems.	Case management, coordination and operations, contact tracing, event-based surveillance, laboratory systems, points of entry, routine surveillance, vaccine delivery and planning		Digital Square, SORMAS	Open source	
Vantage	Vantage is an AI-enabled cloud platform that empowers health workers to make decisions. The cloud-based platform is able to instantaneously analyze data and communicate findings and direct meaningful actions through automatically generated dashboards and targeted push notifications. Burkina Faso rapidly deployed the Vantage COVID-19 Solution to equip health workers and the Department of Health to allocate scarce resources to where they mattered most. Vantage COVID-19 Solution has supported Burkina Faso to identify hotspots, track facility readiness, and monitor health workers' own health on a daily basis.	Coordination and operations		BroadReach	Proprietary	
Viamo	Viamo leverages existing mobile infrastructure and local partnerships to provide mobile solutions that can be scaled nationally within weeks to effectively respond to rapidly evolving health emergencies. The 3-2-1 Service delivers free, trusted, life-enhancing information by local, regional, and international subject matter experts to people on mobile devices. Such information can overcome barriers to early detection of life threatening diseases, provide diagnostic advice, including self-diagnostic services, and treatment options through IVR. Callers can access prerecorded audio messages in local languages for free. Callers can also play interactive audio games, which are engaging, pathway-based games that allow them to think through decisions on relevant topics. Burkina Faso conducted a remote COVID-19 training for 400 community health workers in the Boucle du Mouhoun region and has a contextualized remote training curriculum for community health workers validated by the MOH.	Event-based surveillance, learning and training, risk communication and community engagement, routine sureveillance		Cowater, MOH, Stanford, Viamo	Proprietary	National

■ Digital tools deployed for COVID-19 response   ■ Opportunities to adapt tools for pandemic response

Table 2. An in-depth look at digital health tools to support the COVID-19 response, continued.

Digital health tool	Purpose	Use case(s)	Funder(s)	Implementer(s)	Licensing	Scale
VigiFlow	VigiFlow is a management system for recording, processing, and sharing individual case safety reports of adverse effects for medical products. VigiFlow enables maximum local control and provides an effective means for management review and analysis of national data. VigiFlow facilitates effective data analysis and is used by national pharmacovigilance centers of the WHO Programme for International Drug Monitoring. For COVID-19, MedDRA updated its 23.0 release with COVID-19-related terms. VigiFlow supports the retrieval and analysis of alternative dispute resolution reports, specifically related to COVID-19 treatments.	**Laboratory systems**	WHO	UMC	Open source	Subnational
Wellvis COVID-19 Triage Tool	Wellvis COVID-19 Triage Tool is an application that allows users to self-assess their COVID-19 risk category based on their symptoms and exposure history. It is free to users. The application also allows digital health care appointments that can be paid online.	**Case management, diagnostic tools, infection prevention and control, risk communication and community engagement**		Wellvis Health	Proprietary	
Computer-Aided Detection for Tuberculosis (CAD4TB)	CAD4TB is software designed to help non-experts detect and diagnose tuberculosis more accurately and cost-effectively using digital X-rays, machine learning, and remote expertise.	**Case management, diagnostic tools**		Delft Imaging	Proprietary	National
COVID-19 messaging to health providers and public	Burkina Faso uses emails, social media, and radio to share public health messages on COVID-19. Burkina Faso uses virtual meetings and sends emails to providers on COVID-19 best practices.	**Risk communication and community engagement, health facility and provider administration, learning and training**	USAID	MOH, Palladium		National
GxAlert/Aspect	GxAlert is a digital platform that facilitates country-level surveillance of viral load laboratory testing results by allowing data to flow across the health system. GxAlert can connect to other electronic tuberculosis (eTB) managers or M&E systems. GxAlert can also send targeted SMS alerts to facility managers, health officers, and suppliers. GxAlert enabled a solution to address the following gaps: (1) device management, monitoring, and reporting; (2) calibration, maintenance, and procurement planning; (3) lab technologists' capacity, availability, and training; (4) real-time results notifications to respective stakeholders including rapid case notifications for all positive results to all relevant health care officers; and (5) inventory management and notifications to reduce stockouts and expires.	**Diagnostic tools, event-based surveillance, laboratory systems**		SystemOne	Proprietary	National
QuickRes	QuickRes is an online application that allows any member of the public to easily make reservations for health services using a smartphone, tablet, or laptop. It builds on the existing Online Reservation App software.	**Case management, contact tracing, coordination and operations , diagnostic tools, event based surveillance, laboratory systems, One Health, points of entry, routine surveillance**	PEPFAR, USAID	FHI360	Open source	National
The Amplio Talking Book	The Amplio Talking Book is an audio device that promotes accurate and consistent messaging of specific content such as health, WASH, and education, agriculture. The device runs on dry cell batteries and works offline. It has a self-monitoring function that tracks usage statistics as well as user feedback.	**Learning and training, risk communication and community engagement**		Amplio, APME.2A, Clinisols	Proprietary	Subnational

■ Digital tools deployed for COVID-19 response   ■ Opportunities to adapt tools for pandemic response

"Some of the challenges we face include lack of interoperability between systems, and lack of electricity, especially for charging tablets."

—Boukary Ouedraogo, Director of Health Information Systems, Ministry of Health, Burkina Faso

At a glance

Figures 2 shows that Burkina Faso's digital health tools rely on different software licensing types for sustainability with open source being the most common. Figure 3 demonstrates that Burkina Faso has 16 digital health tools deployed on a national scale while 9 operate on a subnational scale. These figures are not specific to COVID-19 response, but they provide an overall picture of Burkina Faso's digital health infrastructure.

Figure 2. Software licensing types of Burkina Faso's digital health tools.

- Public domain 3%
- Freemium 3%
- Unspecified 16%
- Proprietary 33%
- Open source 45%
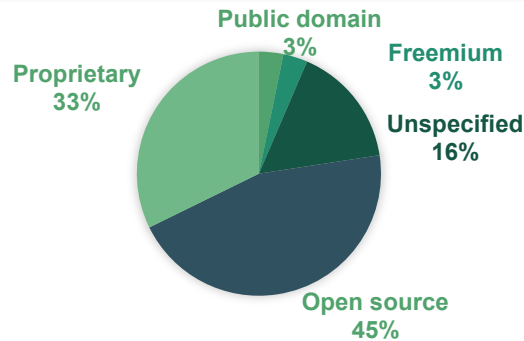
Figure 3. Number of digital tools deployed at scale in Burkina Faso.

National	Subnational	Unspecified
16	9	6
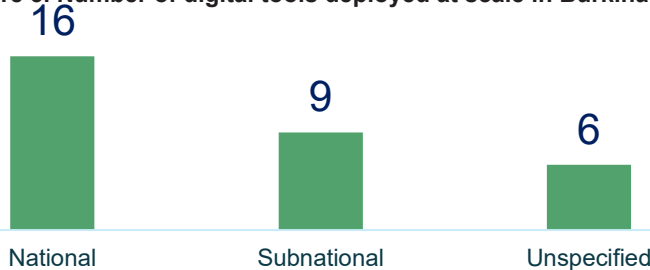
Conclusion

Digital Square mapped 31 existing, adaptable digital health tools in Burkina Faso and matched them to help target investments to accelerate the country's COVID-19 response and simultaneously strengthen its health system. This brief underpins how critical it is to align funding to Burkina Faso's existing digital health infrastructure to bolster its capacity to mitigate the effects of the current pandemic and prepare the country to respond to future outbreaks.

Take action

☑ **Coordinate with all digital systems stakeholders** to create a unified, robust digital health system that can strategically and rapidly be part of the ongoing COVID-19 response. It is paramount to support the government's lead and support its national digital health strategies and the tools it approves. Visit the Digital Health Atlas to see a complete, regularly updated snapshot of Burkina Faso's digital health system. If you know of a digital system that is not identified in this brief, please add it to the Digital Health Atlas.

☑ **Reuse existing tools when possible.** Do not invest in new systems if there are existing systems the government endorses that can effectively approach each of the pandemic use cases.

☑ **Learn more about Burkina Faso's digital health systems** and their role in the COVID-19 response by reviewing Burkina Faso's full Map and Match dataset.

☑ **Apply GIZ's Assessment Tool for Digital Pandemic Preparedness** to better understand the strengths and gaps in the country's COVID-19 response and to be well prepared for future disease outbreaks.

☑ **Connect with additional relevant resources, including:**

Digital Square continues to update its wiki with adaptations of Digital Square Global Goods and has a COVID-19 resource page that features hosted webinars that provide demos of tool adaptations.

The recently released Global Goods Guidebook (version 2.0) includes additional information about global goods deployment for COVID-19.

Map and Match's project landing page has many resources, including the Digital Applications and Tools Across an Epidemiological Curve, Global Goods Adaptations Across Use Cases, and other country briefs.

Digital Solutions for COVID-19 Response, published by Johns Hopkins University, features digital platforms that have been adapted for COVID-19 case management and contact tracing needs. The assessment includes a review of nine tools that were selected based on their existing deployment, flexibility, and adaptability for COVID-19 use cases; their ability to support multiple languages; and stakeholder interest in how these applications can be leveraged in response to COVID-19.

Annex 1. Abbreviations

Acronym	Definition
AI	artificial intelligence
APME.2A	Agence pour la Promotion de la Petite et Moyenne Entreprise/Agriculture et Artisanat (Agency for the Promotion of Small and Medium Enterprises/Agriculture and Crafts)
CHT	Community Health Toolkit
DGD	Direction Générale des Douanes du Burkina Faso (Directorate General of Customs)
DHIS2	District Health Information Software 2
Gavi	Gavi, the Vaccine Alliance
HMIS	health management information system
ICM	International Confederation of Midwives
M&E	monitoring and evaluation
MOH	Ministry of Health
Norad	Norwegian Agency for Development Cooperation
PPE	personal protective equipment
OpenSRP	Open Smart Register Platform
SMS	short message service
SORMAS	Surveillance Outbreak Response Management & Analysis System
TdH	Terre des Hommes
UMC	Uppsala Monitoring Centre
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WASH	water, sanitation, and hygiene
WHO	World Health Organization

Annex 2. Use case definitions

Category	Objective	Functional description
Case management	Systematic processing of suspected infected persons	Systems for documenting patient details and clinical interactions
Contact tracing	Reduction of epidemic reproduction rate	Identification and follow-up with people who have had high-risk interactions with infected persons
Coordination and operations (including emergency operations centers)	Preparedness and response plans, support for multisectoral responses	Systems to support cross-coordination for multisectoral response, emergency operations centers, and executing response plans
Data analytics, visualizations, and use	Efficient and effective response to validated outbreaks	Systems for enabling data-driven decision-making and communications to field teams
Diagnostic tools	Improve efficiency in clinical diagnosis and collection of data from diagnostic tools	Diagnostic tools with digital connectivity to support monitoring, documentation, and reporting of diagnoses
Event-based surveillance (including rapid response teams, case investigations)	Early detection of outbreaks and epidemics, case detection and investigation, national and subnational emergency operations to ensure rapid management of infectious disease	Systems with functionality or ability to monitor patterns indicative of infectious disease epidemic outbreak; systems to detect and document cases of emerging disease threats, investigate those threats, identify cases, and manage the response
Health facility and provider administration	Robust organizational underpinning for response	Systems for managing facility accounting and HR
Infection prevention and control	Prevent infection among patients and health workers	Systems that support triage, isolation, WASH, waste management to prevent transmission to staff, other patients, and the community
Interoperability	Improve effectiveness of tools	Provision of standardized interfaces to other software modules
Laboratory systems	Validation of infectious disease incidence	Systems with functionality to order lab tests, follow progress of patient sample, receive test results (confirm suspected case)
Learning and training	Support health worker readiness, including improve patient data collection and sample testing	Localized E-learning solutions for health workers and others
One Health	Prevent zoonotic disease outbreaks	Monitoring of potential vectors to humans by tracking infectious diseases in local wildlife and livestock
Points of entry	Detect and manage international spread of disease by identifying suspected infected persons at border entry points	Systems to strengthen border health security, screen, and follow-up with suspected infected persons at ports of entry and other border entry points
Risk communication and community engagement	Improved public awareness of facts and best practices for disease prevention	Systems for channeling messaging and communication to public to promote public awareness, counter misinformation, encourage treatment seeking behaviors, and encourage citizens to take appropriate actions to promote health
Routine surveillance	Routine health data monitoring to identify trends	Systems to manage health data and track trends on an ongoing basis, regardless of whether there is an outbreak or epidemic; systems usually include aggregate data
Supply chain	Support allocation of resources to aid in response	Systems for monitoring facility readiness and stock levels
Vaccine delivery and planning	Systematic monitoring of vaccinations in the population	Systems for documenting vaccinations for patients

Annex 3. Digital tools supporting vaccine deployment

Digital technologies can act as accelerators for the introduction, deployment, and scale-up of vaccines in countries to assist health workers, communities, and other stakeholders. The use of digital tools and the data they enable facilitate rapid, iterative, and scalable approaches to ensure vaccines are safely delivered to health facilities, that health workers are equipped to administer them, and that communities are informed and confident in their efficacy.

Through the Map and Match project, Digital Square mapped the existing functionality of approved global goods to COVID-19 use cases, including those supporting planning, delivery, administration, and monitoring of COVID-19 vaccines. These adaptations and supporting resources are listed on Digital Square's wiki.

Table 3 illustrates how digital tools can support activities aligned to five use cases focused on vaccines. Digital Square has information about its approved global goods and how they align to these use cases currently as well as potential adaptations on its website. This list does not include all digital public goods in the digital health ecosystem. Other tools like RapidPro and WelTel, which are not supported through Digital Square, can be included in these use cases.

Table 3. Global goods tools to support vaccine deployment use cases.

Description of vaccine deployment use cases	Digital Square approved global goods use cases
Plan for vaccine introduction in country Digital tools can be used for planning and "microplanning" to inform how many vaccines are needed, where vaccines can be stored and monitored, who the most vulnerable populations are and where they are located, and other information essential to planning. Assessing the tools and data available throughout the health system, including patient data and health worker data, will inform this planning. As part of a vaccine introduction, governments need to build awareness of the vaccine and its benefits, and combat misinformation. Digital tools can be used for planning purposes to send messages to both health workers and communities about the vaccine. Training health workers is essential before introducing a new vaccine. Governments need to provide information to health workers on vaccine administration, possible side effects, and how to treat patients showing adverse reactions. Digital tools can be leveraged to rapidly share this information and offer virtual training.	**Messaging** **Microplanning** **Training**
Support vaccine introduction Digital tools can enhance the launching of a vaccination campaign. Communication tools like SMS and social media can support rapid information sharing with communities as the vaccine is made available. Pharmacies, hospitals, clinics, and other facilities use robust digital systems to ensure vaccines are stocked at facilities by tracking inventory and shelf life and ordering additional supplies when needed. Digital tools can manage the transactional movements of vaccines within multilevel supply chains. Supply chain systems can also ensure that syringes, diluents, and other materials needed for vaccine delivery are stocked. Digital tools can support temperature monitoring during transport and where vaccines are stored. Remote temperature monitoring can improve cold chain performance, giving health workers assurance that vaccines are safe and effective. Digital tools can track when clients receive vaccines as well as other data fields (e.g., vaccine type, immediate negative reactions, and longer-term potential adverse events). Countries can adapt existing electronic immunization registries (EIRs) for vaccine monitoring and follow-up.	**Patient monitoring** **Supply chain** **Vaccine management**

Digital Square approved global goods use cases

Electronic immunization registries
DHIS2 Tracker, OpenSRP, OpenMRS, Tamanu

Messaging
CommCare, Community Health Toolkit, mHero, OpenSRP

Microplanning
Healthsites, OpenSRP, Reveal

Patient monitoring
CommCare, DHIS2 Tracker, OpenSRP, SORMAS

Supply chain
DHIS2, OpenLMIS, Logistimo, OpenBoxes, Product Catalogue Management Tool

Training
CommCare, Community Health Toolkit, mHero, OpenSRP, SORMAS

Vaccine management
CommCare, Community Health Toolkit, DHIS2, DHIS2 Tracker, Logistimo, OpenBoxes, OpenLMIS, OpenSRP, Tamanu

Table 3. Global goods tools to support vaccine deployment use cases, continued.

Description of vaccine deployment use cases	Digital Square approved global goods use cases
Enhance roll-out of vaccine, support ongoing vaccine monitoring In this phase, scaling to vaccinate large portions of the population is a priority. Vaccine roll-outs can be enhanced by adapting digital tools to add workflows and functionality as vaccine coverage expands. Governments need to consider additional information communications technology (ICT) needs like larger cloud-hosting services and use of tools that are operational offline for areas that have limited mobile network coverage. Supply chain is critical as vaccines are transported to more sites across the country. Digital supply chain tools, especially when paired with vaccine delivery data (e.g., from electronic medical records/EIRs), can help forecast supply needs and include decision support to prompt vaccine orders when supply falls below a defined threshold. EIRs and other tools can help prevent overcrowding in clinics by scheduling specific clinic times for vaccines. This ensures more equitable distribution of health services.	**EIRs** **Supply chain** **Patient monitoring** **Vaccine management**
Enhance communication to sustain vaccine demand Many COVID-19 vaccines are multi-dose shots. To ensure clients receive boosters, now and in the future, enhancing communication to sustain demand for the vaccine is important. Digital tools can be used to send messages to both health workers and communities about the vaccine. Communication tools can be linked with patient monitoring tools to automatically trigger direct communication to clients. Digital tools can continue to be used to increase vaccine demand and address misinformation, dispelling rumors and misinformation that cause vaccine hesitancy. Many EIRs include contact information and messaging features for patients' caregivers, allowing for direct communication to caregivers. These messaging features have historically been used to notify caregivers about upcoming immunization sessions or overdue vaccines. As the global community develops a greater understanding of COVID-19—including its transmission patterns, full range of symptoms, and treatment options—health workers also have the ability to share health promotion messages with patients.	**EIRs** **Messaging** **Patient monitoring**
Use data to inform vaccine-related decisions Patient monitoring and tracking tools as well as EIRs can help generate meaningful insights for future vaccination efforts and encourage data-driven decisions when countries are able to plan for catch-up campaigns. For example, some EIRs can quantify the number of missed vaccines and determine which areas have been under-vaccinated. This individual-level data will enable decision-makers to target immunization services and allocate funding to those areas most in need. For more information, this publication explains how Gavi and UNICEF are working to scale up use of digital tools for vaccination campaign performance monitoring. Interoperability is critical. As governments review the portfolio of tools and systems that are in place to support vaccine management, it is crucial that there is strong consideration given to the movement of data between systems to ensure a harmonized set of records for the population. This ensures that no individual is missed or counted twice.	**EIRs** **Patient monitoring** **Supply chain** **Vaccine management**

Digital Health Center of Excellence (DICE) to support the COVID-19 pandemic response

As countries operationalize their COVID-19 vaccine rollout plans, there is an opportunity to identify areas where digital health interventions can amplify these efforts, while improving service delivery and strengthening health systems more broadly.

The success of digital health solutions often correlates with the strength of the enabling environment for these technologies, such as ICT infrastructure readiness, workforce capacity, data standards, interoperability, and the policy and regulatory environment. Poorly designed or inappropriate digital interventions, as well as vertical approaches geared only toward COVID-19, risk undermining and ultimately weakening national systems.

To more effectively organize support to countries for COVID-19 response, a multiagency COVID-19 DICE, with a UNICEF-WHO cohosted secretariat, will launch in April 2021. The DICE will provide coordinated technical assistance to low- and middle-income countries to support sustainable and scalable deployment of carefully chosen digital health solutions that support COVID-19 pandemic response plans.

Areas the COVID-19 DICE covers include:

- Support countries to conduct a structural readiness assessment of their enabling environment, define business requirements, conduct platform analysis, and map partnerships, existing tools, and gaps. Along with support to countries, this will require standardizing approaches and tools across development partners.
- Coordinate surge support to countries to assist in their development of a rapid strategic approach to meet the imminent needs of the vaccine delivery and transition to a sustainable strengthened and digitally enabled health system.
- Foster capacity and partnership with regional and national digital health experts toward the development of capacity that can provide long-term technical support to the region.
- Strategically support developers and product owners to modify and optimize software products relevant for pandemic response and vaccine delivery toward interoperability, standardization, and vaccine-specific functionalities.
- Complement and operationalize WHO and UNICEF guidelines developed in the context of the Access to COVID-19 Tools Accelerator (ACT-A) to further clarify and identify mature options open to countries building health infrastructure.
- Support the transition, alignment, and integration of COVID-19-related digital health investments through a systems strengthening lens.
- Pilot and assess transformative approaches to digital health deployments, monitor global developments and opportunities for standardized approaches, increase south-south knowledge transfer, and compile lessons learned.