

Mapping of Digital Health Tools and Technologies: Mongolia Country Brief

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Table of Contents

Abbreviations and Acronyms	2
Overview	3
Introduction	3
Background	3
Analysis Overview	3
Digital Health Tools and Technologies	5
H-Info	5
Aimag	5
e-Mongolia.mn	6
eHospital	6
MedSoft	7
LiceMed	7
ViVA	7
Vaccination Supplies Stock Management (VSSM)	8
Berlinger	8
Microsoft Power BI	9
ArcGIS	9
SMS Aggregator/Shortcode “Call Pro”	9
USSD	10
econtent.edu.mn	10
Facebook Messenger Chatbot	11
UNSPECIFIED Telemedicine for Child Health	11
UNSPECIFIED Civil Registration and Vital Statistics	12
UNSPECIFIED National Registry	12
UNSPECIFIED HIV Registry	12
Auxiliary tools	13
Appendix: Use Case Definitions	14
Additional Resources	16

Abbreviations and Acronyms

CBIS	Community Based Information System
CDC	Centers for Disease Control
CO	Country Office
COD	Common Operational Datasets
CRVS	Civil Registration and Vital Statistics
DICE	Digital Health Center of Excellence
EMR	Electronic Medical Record
GIS	Geographic Information Systems
HIV	Human Immunodeficiency Syndrome
HMIS	Health Management Information System
LDIS	Laboratory and Diagnostics Information System
LMIS	Logistics Management Information System
MFL	Master Facility Registry
MOH	Ministry of Health
NGO	Non-governmental organization
RCCE	Risk Communication and Community Engagement
RO	Regional Office
SMS	Short Message Service
UN	United Nations
UNICEF	United Children's Fund
USAID	United States Aid
USSD	Unstructured Supplementary Service Data
VSSM	Vaccination Supplies Stock Management
WB	World Bank
WFP	World Food Programme
WHO	World Health Organization

Overview

Introduction

The government of Mongolia has been pursuing a holistic e-government strategy for over 10 years and in 2019 it passed a resolution on the "[National Policy on E-Governance](#)" which has further accelerated this endeavour. Within it, the Government of Mongolia and the International Development Agency of the World Bank signed a Financing Agreement in 2015 for implementation of the E-Health Project during 2015-2020. The Ministry of Health officially launched the E-Health Project on June 2, 2016. The project objective was to improve integration and utilization of health information and e-health solutions for better health service delivery. More information can be found [here](#).

However, the current COVID-19 pandemic has brought forth the urgency of the presence of a strong and integrated digital health ecosystem. The UNICEF Digital Health Mapping tool was created to address this need by identifying all existing digital health systems which can be leveraged towards the greater goal of strengthening the health care system in countries, besides adapting to respond and recover from the COVID-19 pandemic.

Following the overview, this report presents the digital health tools that are in use in Mongolia with details of their usage and scale, and, where available, information about implementing agencies, donors etc. The report concludes with appendices which provide additional resources and information.

Background

UNICEF is implementing a comprehensive health response to COVID-19, focusing on outbreak control and mitigation of the collateral impacts of the pandemic, including the risks to the continuity of health services for children, women, and vulnerable populations in conflict-affected areas. A particular priority area is to support countries for the planning, introduction, and deployment of the COVID-19 vaccine. To support this effort, UNICEF has initiated a country mapping of relevant digital health tools and technologies that can be leveraged to support countries' health initiatives in general as well as for their response to COVID-19.

In addition to this, recently UNICEF and the World Health Organization (WHO) have co-founded the COVID-19 [Digital Health Center of Excellence \(DICE\)](#) to provide coordinated, standardized support and technical assistance to national governments and partners on digital health implementations and solutions, including COVID-19 and COVID-19 vaccine delivery.

The DICE is a multi-agency consortium with a UNICEF-WHO co-hosted secretariat. It is funded by the Bill & Melinda Gates Foundation and GIZ and endorsed by the World Bank, Centers for Disease Control (CDC), The Global Fund, Gavi, Digital Square, EU Commission, USAID and more. Partner organizations have identified staff who can be seconded in the short-term to provide immediate technical expertise. Additional resources will be sought to further coordinate and scale its ability to meet rapidly growing demand. If you would like to request support from the DICE, please write to contact@digitalhealthcoe.org.

Analysis Overview

An in-depth interview with the digital health, health, and supply and logistics specialists working at the national (Mongolia CO) and the digital health, health, and immunization specialist working at the regional (East Asia and Pacific RO) levels was undertaken in May of 2021. The information gathered from the interview was supplemented with data from the [Map & Match exercise](#) by Digital Square and from the World Bank's Digital Health Landscaping assessment. The collated data was entered in the [Mapping of Digital Health Tools and Technologies tool](#).

There are 19 digital health implementations currently being used in Mongolia. Eleven are implemented at the national level and the remaining eight are implemented at the sub-national level. Digital health tools are mostly used for information and management systems such as health management information systems (HMIS), community based information systems (CBIS), laboratory and diagnostics information systems (LDIS), pharmacy information systems, and logistic management information systems (LMIS), along with electronic medical records (EMR), telemedicine, immunization forecasting tools.

Most of the digital health tools utilized in the country are bespoke (custom made) to serve their specific needs and are implemented by the Ministry of Health (MOH).

Strengths

- There is strong commitment and investment from the MOH to investing in digital health and digital health tools. The MOH and Government of Mongolia has already developed several tools that serve their specific purposes.
- The MOH and Government of Mongolia have a strong interest in integrating some of their systems and making their digital health tools interoperable.

Gaps

- The majority of the digital health systems being used are bespoke and will need further investments for interoperability with other government systems and for scale-up.
- None of the digital health systems in place are considered digital public goods, which normally are best suited to developing and establishing a mature digital health ecosystem.
- It is acknowledged that the mapping tool reflects the knowledge of the stakeholders included in the interview(s) and may be excluding systems not known to them. It would be imperative to engage with all organizations operating in the health space for a more comprehensive view.

Opportunities

- Explore the need and feasibility of implementing digital health tools in the areas in which they are not being used now, such as public health and disease surveillance, immunization delivery monitoring, health worker registry or master facility registry.
- Explore the most suitable tools for each system before scaling up, particularly with regards to interoperability.

- Understand how currently deployed tools can be used to create a more cohesive and integrated health system to avoid fragmentation and silos.
- Foster coordination with other UN agencies, INGOs, and entities engaged in digital health interventions as well as with the MOH to ensure a more comprehensive mapping in future exercises.

Digital Health Tools and Technologies

National	Subnational
<ul style="list-style-type: none"> • H-Info • Aimag • LiceMed • ViVA • VSSM 4.7 • SMS Aggregator/Shortcode • USSD • econtent.edu.mn • Telemedicine for Child Health • National Registry • HIV Registry 	<ul style="list-style-type: none"> • e-Mongolia.mn • eHospital • Medisoft • Berlinger • Microsoft Power BI • ArcGIS • Facebook Messenger Chatbot • Civil Registration and Vital Statistics

Digital Health Tool	H-Info
Description	Bespoke complex system for the birth and death data, application statistics and qualitative indicators of the sector used in all Aimag (province) and Soum (subdistrict) levels.
Current Use Case(s)	Patient Registry, Health Management Information Systems (HMIS)
Scale	National
Implementer(s)	MOH, Credotrerra LLC
Donor(s)	-
Licensing	-
Website	-
Covid-19 Specific Functions	-

Digital Health Tool	Aimag
Description	Bespoke system connected to immunization, insurance, birth registration, and national ID systems. Only in use in public facilities.
<u>Current Use Case(s)</u>	Electronic Medical Record (EMR)
Scale	National
Implementer(s)	MOH
Donor(s)	-
Licensing	-
Website	-
Covid-19 Specific Functions	-
Digital Health Tool	e-Mongolia.mn
Description	State electronic information exchange system. Recently is also being used as a COVID-19 dashboard
<u>Current Use Case(s)</u>	Community Based Information System (CBIS), Digital Yellow Card
Scale	Subnational
Implementer(s)	Mongolia's Government
Donor(s)	-
Licensing	-
Website	https://www1.e-mongolia.mn/home
Covid-19 Specific Functions	It currently contains a COVID-19 dashboard with information for citizens on number of cases, vaccines, health education, etc. The site can be accessed through this link . Citizens can also access their COVID-19 vaccine certificates through that site.
Digital Health Tool	eHospital
Description	Bespoke system
<u>Current Use Case(s)</u>	Laboratory and Diagnostics Information System (LDIS)
Scale	Subnational
Implementer(s)	MOH

Donor(s)	World Bank
Licensing	-
Website	-
Covid-19 Specific Functions	-

Digital Health Tool	MedSoft
Description	-
<u>Current Use Case(s)</u>	Laboratory and Diagnostics Information System (LDIS)
Scale	Subnational
Implementer(s)	-
Donor(s)	-
Licensing	-
Website	-
Covid-19 Specific Functions	-

Digital Health Tool	LiceMed
Description	Bespoke system used to register medicine being imported and to issue import licences.
<u>Current Use Case(s)</u>	Pharmacy Information System
Scale	National
Implementer(s)	-
Donor(s)	-
Licensing	-
Website	-
Covid-19 Specific Functions	-

Digital Health Tool	ViVA
Description	The Visibility for Vaccines (ViVa) tool is a stock monitoring dashboard that visualizes the pipeline of vaccine orders and forecasts, enabling country governments to identify risks of stock-out or overstocking and take corrective action before they occur.
<u>Current Use Case(s)</u>	Immunization Stock Forecasting
Scale	National
Implementer(s)	National Center for Communicable Diseases
Donor(s)	-
Licensing	Proprietary
Website	https://www.vivaplatform.org/en/default.aspx
Covid-19 Specific Functions	ViVa is currently utilized by countries to track upcoming shipments for COVID-19 vaccines. Concerning examples of how countries have been using it for COVID-19 vaccinations' programs, considering the not very high amount of COVID-19 vaccines procured by countries so far through UNICEF and the few related data produced in that sense, there is not enough information at the moment to assess the impact on the planning of the COVID-19 vaccines.
Digital Health Tool	Vaccination Supplies Stock Management (VSSM)
Description	Vaccination Supplies Stock Management (VSSM) is an inventory management tool whose overarching goal is to improve management of the supply chain in order that vaccines and diluents and other related commodities neither suffer from being overstocked and avoid that any item is out of stock. It provides 40 different reports to help program managers to plan ahead and have up-to-date information about all stock levels for all items in the stores. It also provides the managers with a remaining net capacity for different storage areas.
<u>Current Use Case(s)</u>	Immunization Stock Forecasting
Scale	National
Implementer(s)	National Center for Communicable Diseases, WHO
Donor(s)	-
Licensing	Open Sourcer

Website	-
Covid-19 Specific Functions	-
Digital Health Tool	Berlinger
Description	External thermometer and alarm system for refrigerators and freezers used to store vaccinations .
<u>Current Use Case(s)</u>	Cold Chain Monitoring
Scale	Subnational
Implementer(s)	-
Donor(s)	-
Licensing	Proprietary
Website	https://www.berlingerusa.com/
Covid-19 Specific Functions	-
Digital Health Tool	Microsoft Power BI
Description	Power BI is a collection of software services, apps, and connectors that work together to turn your unrelated sources of data into coherent, visually immersive, and interactive insights. Your data may be an Excel spreadsheet, or a collection of cloud-based and on-premises hybrid data warehouses. Power BI lets you easily connect to your data sources, visualize and discover what's important, and share that with anyone or everyone you want.
<u>Current Use Case(s)</u>	Data Visualization
Scale	Subnational
Implementer(s)	Center for Health Development under the MOH
Donor(s)	-
Licensing	Proprietary
Website	https://powerbi.microsoft.com/en-us/
Covid-19 Specific Functions	The Power BI team has created a COVID-19 tracking sample that enables governments to publish or customize an interactive report about COVID-19. Using Power BI Desktop, they can analyze and visualize COVID-19 data to keep their communities informed at the

	city, county, state, and national levels. Then using Power BI Publish to Web, they can share the report publicly to inform citizens.
Digital Health Tool	ArcGIS
Description	ArcGIS offers unique capabilities and flexible licensing for applying location-based analytics to your business practices. Gain greater insights using contextual tools to visualize and analyze your data. Collaborate and share via maps, apps, dashboards and reports.
<u>Current Use Case(s)</u>	Geographic Information System Mapping (GIS)
Scale	Subnational
Implementer(s)	The Ministry of Construction and Urban Development
Donor(s)	-
Licensing	-
Website	https://www.esri.com/en-us/arcgis/about-arcgis/overview
Covid-19 Specific Functions	ArcGIS has a COVID-19 specific site from which users can have access to maps, datasets, applications, and more for coronavirus disease 2019 (COVID-19). These resources are updated periodically with new information as it becomes available.
Digital Health Tool	SMS Aggregator/Shortcode “Call Pro”
Description	SMS aggregators act as a buffer in between wireless carriers and SMS software providers.
<u>Current Use Case(s)</u>	Core Mobile Services
Scale	National
Implementer(s)	MOH
Donor(s)	-
Licensing	-
Website	-
Covid-19 Specific Functions	Core mobile services can be used by governments and MOHs for a variety of purposes related to COVID-19 such as to provide health advice; where to access care, testing, and vaccination; get COVID-19 test results back, etc. Currently the government of Mongolia is using it for COVID-19 vaccination.

Digital Health Tool	USSD
Description	USSD (Unstructured Supplementary Service Data) is a Global System for Mobile Communications (GSM) protocol that is used to send text messages. USSD is similar to Short Message Service (SMS). USSD uses codes made up of the characters that are available on a mobile phone.
Current Use Case(s)	Core Mobile Services
Scale	National
Implementer(s)	MOH, Private Sector
Donor(s)	-
Licensing	-
Website	-
Covid-19 Specific Functions	Core mobile services can be used by governments and MOHs for a variety of purposes related to COVID-19 such as to provide health advice; where to access care, testing, and vaccination; get COVID-19 test results back, etc. In Mongolia, all mobile operators and banks use it.
Digital Health Tool	econtent.edu.mn
Description	Dual online-TV learning platform championed by the government to respond to the closure of schools as a consequence of the COVID-19 pandemic.
Current Use Case(s)	eLearning, Traditional Media
Scale	National
Implementer(s)	MOH, Ministry of Education
Donor(s)	-
Licensing	-
Website	http://econtent.edu.mn
Covid-19 Specific Functions	econtent.edu.mn provides lessons to all students from 1st to 12th grade via website, TV, and free smartphone application. It also provides live lessons.
Digital Health Tool	Facebook Messenger Chatbot
Description	Chatbot implemented by the MOH to disseminate instant and

	accurate information about COVID-19– via Facebook’s global reach.
<u>Current Use Case(s)</u>	Social Media for Risk Communication and Community Engagement (RCCE)
Scale	Subnational
Implementer(s)	MOH
Donor(s)	-
Licensing	Proprietary
Website	-
Covid-19 Specific Functions	Facebook has partnered with their developer community to provide free services to government health organizations and UN health agencies to help them use Messenger to scale their response to the COVID-19 crisis by sharing timely and accurate information, and speed up their responses to concerned citizens.

Digital Health Tool	UNSPECIFIED Telemedicine for Child Health
Description	Telemedicine is the use of electronic communications and information technologies to provide clinical support. Telemedicine can be used between providers or between providers and patients.
<u>Current Use Case(s)</u>	Telemedicine)
Scale	National
Implementer(s)	MOH
Donor(s)	UNFPA
Licensing	-
Website	-
Covid-19 Specific Functions	-

Digital Health Tool	UNSPECIFIED Civil Registration and Vital Statistics
Description	A well-functioning civil registration and vital statistics (CRVS) system registers all births and deaths, issues birth and death certificates, and compiles and disseminates vital statistics, including cause of death information. It may also record marriages and divorces.

<u>Current Use Case(s)</u>	Civil Registration and Vital Statistics (CRVS)
Scale	Subnational
Implementer(s)	Mongolia's Government
Donor(s)	-
Licensing	-
Website	-
Covid-19 Specific Functions	-

Digital Health Tool	UNSPECIFIED National Registry
Description	Registries that capture different kinds of information about the citizens of the country.
<u>Current Use Case(s)</u>	National ID
Scale	National
Implementer(s)	Mongolia's Government
Donor(s)	-
Licensing	-
Website	-
Covid-19 Specific Functions	-

Digital Health Tool	UNSPECIFIED HIV Registry
Description	A system that records all relevant patient care information is often referred to as a "registry." Providers can use the registry to record critical elements of the care plan, produce quick care summaries at the time of a visit, and enter data to alter the care plan as needed. A patient registry is most useful when patient data is available to the provider at the point of the patient visit, when decision support is most needed.
<u>Current Use Case(s)</u>	HIV Registry
Scale	National
Implementer(s)	MOH

Donor(s)	-
Licensing	-
Website	-
Covid-19 Specific Functions	-

Auxiliary tools

Tool	Common Operational Datasets (COD)
Description	CODs are authoritative reference datasets used to support operations and decision-making in the initial response of humanitarian emergencies as well as to enable activities such as microplanning. Frequently collected and used CODs are geographical shapefiles, health facility catchment areas, settlements, population estimates, satellite imagery, and ancillary geospatial layers.
<u>Current Use Case(s)</u>	Common Operational Datasets
Scale	National
Access to CODs	Mongolia's CODs
Tool	TV and Radio
Description	TV and radio used for health messaging and/or risk communication and community engagement.
<u>Current Use Case(s)</u>	Traditional Media
Scale	National
Implementer(s)	MOH, Ministry of Education

Appendix: Use Case Definitions

Use Case	Description
Civil Registration and Vital Statistics (CRVS)	Digital systems used to record statistics on vital events, such as births, deaths, marriages, divorces and fetal deaths
Cold Chain Equipment Inventory	Technology to continually keep track of cold chain equipment status (inventory and working status)
Cold Chain Monitoring	Technology to continually monitor temperature-sensitive products being transported in a “cold chain”—that is, a supply chain of perishable and/or temperature-sensitive
Common Operational Datasets	Authoritative reference datasets needed to support operations and decision-making for all actors in a humanitarian response.
Community Based Information System (CBIS)	Family-centered health information system designed for CHWs to manage their work in educating households and delivering an integrated package of promotive, preventive, and basic curative health services
Comorbidity Registry	The presence of comorbidities can significantly affect a patient's treatment options, quality of life, and survival. Comorbidity registries keep track of comorbidities which help inform medical decisions
Contact Tracing	Contact tracing is the process of identifying all people that a positive patient has come in contact with
Core Mobile Services	Services used by GSM cellular phones (feature phones) (SMS Aggregator, SMS Shortcode, IVR Shortcode, USSD Services)
Data Visualization	Digital tools used for graphical representation of information and data
Digital Yellow Card	Digital credentialing for vaccinations
Electronic Medical Record (EMR)	Electronic record for patients - includes information about a patient's health history, such as diagnoses, medicines, tests, allergies, immunizations, and treatment plans
Geographic Information System	Framework for gathering, managing, and analyzing data
Health Management Information Systems (HMIS)	Data collection system to support planning, management, and decision making in health facilities and organizations. It can provide reliable and timely info on health system performance
Health Worker Registry	A registry of all the health workers in the country
Immunization Delivery Monitoring	Digital tools that are used for vaccine handling, distribution, and tracking of vaccines

Immunization Forecasting	The Immunization Calculation Engine (ICE) is an immunization evaluation and forecasting system, whose default immunization schedule supports all routine childhood, adolescent, and adult immunizations. ICE evaluates a patient's immunization history and generates the appropriate immunization recommendations for patients
Immunization Stock Forecasting	System or platforms that can forecast vaccine orders based on utilization which can enable COs to identify risks of stock outs or overstocking and take action before they occur
Interactive Voice Response (IVR)	Automated phone system technology that allows incoming callers to access information via a voice response system of pre-recorded messages
Laboratory and Diagnostics Information Systems (LDIS)	Software system that records, manages, and stores data for laboratories and can send laboratory test orders to lab instruments, tracking those orders, and then recording the results
Logistics Management Information System (LMIS)	System of records and reports used to aggregate, analyze, validate, and display data (from all levels of the logistics system) that can be used to make logistics decisions and manage the supply chain. Includes stock on hand, losses and adjustments, consumption, demand, issues, shipment status, and information about the cost of commodities managed in the system
Master Facility Registry	Comprehensive repository of health facilities of the country - would include all admin information and the status of the facility, staff, CCes, etc.
Mobile Community Health Worker Learning Management System (CHW LMS)	Learning management systems functioning in the country for community health workers
National ID	Digital national identity systems
Patient Registry	A patient registry is an organized system that uses observational study methods to collect uniform data (clinical and other) to evaluate specified outcomes for a population defined by a particular disease, condition, or exposure, and that serves one or more predetermined scientific, clinical, or policy purposes.
Pharmacy Information System	Supports the distribution and management of drugs, shows drug and medical device inventory, and facilitates preparing needed reports

Public Health and Disease Surveillance	Contributes data and information to assess and characterize the burden and distribution of adverse health events, prioritize public health actions, monitor the impact of control measures, and identify emerging health conditions that may have a significant impact upon population health
RapidPro	RapidPro is a software product that allows you to visually build the workflow logic for running mobile-based services. This software includes features for managing your users' contacts dynamically, graphically analyzing the data your service receives, connecting to multiple communication channels (ie SMS, voice, USSD, and social media), sending messages in multiple languages, and interoperating with external systems
Social Media for Risk Communication and Community Engagement (RCCE)	Utilization of social media for health messaging dissemination
Social Monitoring	Capture of what is said in social media platforms
Telemedicine	Platform used by providers to connect with patients and share video and images. It can be integrated with a provider's electronic health record and scheduling systems
Track and Trace System	Track and Trace systems enable the traceability/visibility of products from origin through various distribution processes down to patient
Traditional Media	Traditional media that may be used for outreach and messaging (TV, radio, other)

Additional Resources

Resources	Description	Website
Mapping of Digital Health Tools and Technologies in Countries (View only)	This workbook indicates the presence of tools and digital technologies being used for health initiatives and other sectors in UNICEF Country Offices (COs)	http://uni.cf/mapping-digital-health
M&M Global goods possible use cases	This document provides a list of Digital Square approved global goods mapped across the use cases visualized in the DATEC. The global goods are grouped by those that have already been adapted to match a use case and those that could be adapted to match a use case (i.e., simple, easy, low-lift adaptations).	https://static1.squarespace.com/static/59bc3457ccc5c5890fe7cacd/t/60522885399dca3568666606/1615997063979/Global+Goods+COVID+Map.pdf
Digital Implementation Investment Guide (DIIG): Integrating Digital Interventions into Health Programmes	This practical Guide provides a systematic process for countries to develop a costed implementation plan for digital health within one or more health programme areas, drawing guidance from the WHO guideline—recommended digital health interventions, providing direction to ensure investments are needs-based and contribute effective and interoperable systems aligned with national digital architecture, country readiness, health system and policy goals.	https://www.who.int/publications/i/item/9789240010567
Digital Health Atlas	The Digital Health Atlas is a WHO global technology registry platform aiming to strengthen the value and impact of digital health investments, improve coordination, and facilitate institutionalization and scale.	https://digitalhealthatlas.org/en/-/

Global Digital Health Index Country Profile	The Global Digital Health Index is an interactive digital resource that tracks, monitors, and evaluates the use of digital technology for health across countries.	http://index.digitalhealthindex.org/country_profile/MNG
Assessing country readiness for COVID-19 vaccines	The country readiness assessments for COVID-19 vaccines are undertaken jointly by governments; the World Bank; Gavi, the Global Vaccine Alliance; the Global Fund to Fight AIDS, Malaria and Tuberculosis; UNICEF and the World Health Organization. This report presents initial findings of 128 countries as of March 2021	https://documents1.worldbank.org/curated/en/467291615997445437/pdf/Assessing-Country-Readiness-for-COVID-19-Vaccines-First-Insights-from-the-Assessment-Rollout.pdf