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MINISTRY OF HEALTH-ETHIOPIA

DIRECTORY OF DIGITAL HEALTH SOLUTIONS IN ETHIOPIA



Contents

| | |
|--|-----------|
| Acknowledgment | .III |
| Background | .IV |
| Section I | .V |
| Governance frameworks | |
| V Section I: Governance | |
| . 1 Section II | |
| 10 Government owned digital solutions | |
| 10 Section III | |
| 43 Private Owned digital solutions | |
| 43 Summary | |
| 68 | |



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We would like to sincerely thank everyone who participated in the development of this document, which is the first of its kind in the country.

JSI-DUP has been the principal contributor of this endeavor from the idea's inception through document creation and payment of the printing costs, and we are grateful to DUP for all of its efforts in cooperating with us.

Finally, we would like to express our gratitude to the professionals at the MoH who worked tirelessly to make this effort a reality, as well as to private organizations operating in the field of digital health for their active participation in sharing information on their activities.



Background

The MoH has been working to maximize the country's benefits from digital health, and as part of this effort, it has been spending a significant amount of resources on ICT infrastructure, human resource development, creating an enabling environment, producing strategic policy documents, evaluating the investments in digital health, and coordinating the various players working in the area.

While planning the Global Digital Health Week 2022, the ministry reached out to private organizations engaged in digital health in order to promote their initiatives. On the basis of that, over 30 organizations took part in a one-day expo and demonstrate their products. Based on this initiative, we have started the process of creating a digital health catalog that provides basic information on government owned solutions, governance documents produced by the Ministry of Health, and privately developed digital health solutions in the country.

The main objective of this document is to promote existing digital health solutions in the country, reduce duplication of efforts, maximize the value and impact of investments in digital health, and improve coordination, and speed institutionalization & scalability.

Solutions presented in this document are only those registered in the digital health projects inventory system of the MoH and in the future, quality assurance and certification will be given to them based on testing.

The private digital health solutions in this document are that took part in the ministry's Global Digital Health Week 2022 and gave information based on a survey the MoH issued for them are included in this publication.

This publication is the first of its kind, and we intend to continue producing it annually using newly updated information from the sector.

Section I

Governance frameworks



Section I: Governance

INTRODUCTION

Having a solid governance framework is indispensable to realize the benefits digital health promises for the health sector. Good digital health governance is vital for the successful implementation, sustainability and scalability of digital health interventions.

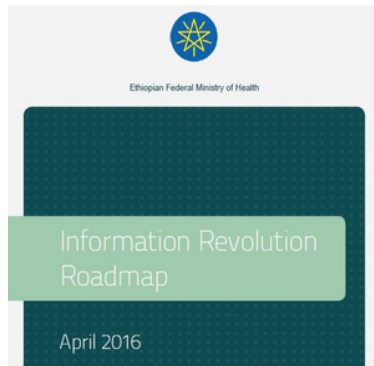
The MoH of Ethiopia has recognized the need to have a governance framework which serves to guide the digital health investment in alignment with the sectors priority initiatives, coordinate stakeholders, avoid duplication efforts and adopt common standards. Even though a lot remains to be done in this respect, there are few governance instruments developed and endorsed by the ministry in the past few years.

1 HSTP II

The health sector transformation plan-II(HSTP-II,2020-2025) is the health sector's strategic document which outlines the major initiatives to be implemented within five years in the country. The plan outlined 14 strategic directions along with their major activities, and among which two of them enhance digital health technology and improve health infrastructure directly focused on the use of digital health to enhance the health sector performance.



2 IRR roadmap



The information revolution road map-IRR (2016-2020) has three pillars , Cultural transformation for health data use, Digitalization and scale-up of priority HIS and HIS Governanc It tries to show the current landscape of health information system in the country and identified major focus areas.

It also presents the connected Woreda agenda in the forefront.

The

Connected Woreda directly links the Information Revolution to the Woreda Transformation Plan and builds off the Minister’s priority of digitizing the family folde

The information revolution is one of the transformational agendas of the health sector transformation plan(HSTP-I) and it aims to bring radical change in the way health data is being collected, analyzed and disseminated to influence decision making at every level of the health sector hierarchy.

3 Digital health blueprint



The digital health blue print is an overarching framework which guides the ministry, regions, partners and private organizations in the implementation of digital health in the coming years.

It identifies priority health sector initiatives which are to be digitally transforme It also put forward shared vision for current and emerging digital health solutions which the sector can tap in to improve the health outcomes.

The blue print encompasses the vision of digital health choices, enablers, and opportunities to bring about positive impact on health outcomes for the next ten years building on the existing Initiatives.

It identified four building blocks and five enables for a sustainable digital health ecosystem.

The building blocks or the pillars of the digital health blue print constitute the significant elements which are crucial for the realization of the objectives of the blueprint. Whereas the enablers are very essential for the functioning of the building blocks and they are cross functional in nature which implies the affect more than one elements of the building blocks of the blue print

4 HIS maturity assessment



Maturity assessments are conducted to analyze the current status of the health information system in a country in terms of governance & leadership, human resource, ICT infrastructure and organizational capabilities.

The MoH has conducted the HIS maturity assessment to

generate

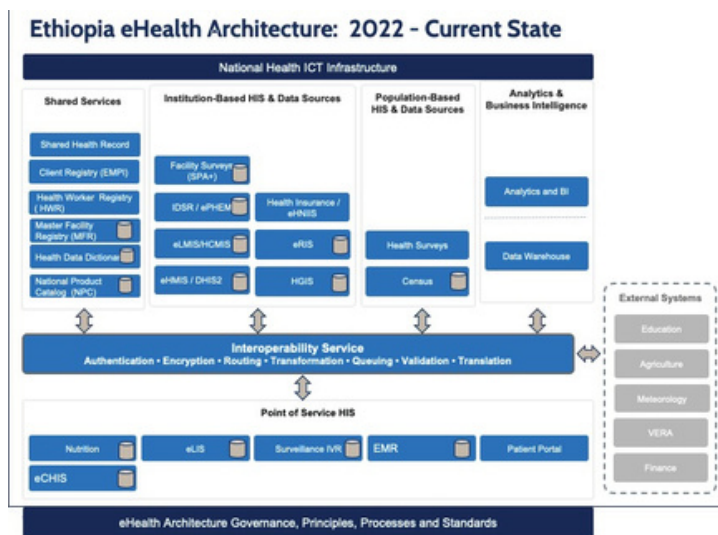
solid evidence on the maturity status of the digital health ecosystem through identifying the existing capacity, processes, and structures and the required levels of maturity.

The assessment was conducted by using the stages of continuous improvement (SOCI) framework. It has identified the current maturity level of the HIS in terms of HIS Leadership and governance, HIS Management and workforce, HIS Information and

communication technologies (ICT) infrastructure, HIS Standards and interoperability, Data quality and use.

Based on the current state, the assessment identifies the future desired HIS maturity status. Moreover, it has identified areas of strength and major gaps which need special focus and attention in order to achieve the target goals.

5 ehealth architecture



One of the biggest challenges of the health sector in the country is the prevalence of disparate, non-integrated and non-interoperable information systems. This is creating a chaos where health data collected by one system is non usable by another and information exchange among health information systems is not guided/governed by any standard procedures.

The ehealth architecture is prepared to serve as a foundational plan for health data exchange (interoperability) .It identifies the different systems in the digital health ecosystem and categorize them based on their functions like point of service, shared service, institution based, data analytics & business intelligence and population based information systems.

It is a living document which will be updated based on the new systems entering the digital landscape, the technology and standards adopted for interoperability.

6 Digital health projects inventory system



This is a tool used to govern the digital health projects development and implementation in the health sector. Any digital health solution being implemented in the country should be registered in the tool and provided recognition by the ministry.

During system registration, important information and resources like source codes, technical documentation etc about the solution is also collected to ensure its sustainability.

Besides to the registration of digital health projects, the system shows their alignment with Ethiopia e-Health Architecture (eHA) and the status of the projects with comprehensive attributes.

The tool is designed to be compatible with the WHO digital health atlas (DHA) so that data from it can easily be pushed to the global audience through the DH.

7 EHR standard



It has been more than a decade since the MoH started implementing electronic medical record system (EMR) in order to digital capture the data of a patient interaction at a health facility at public health facilities.

Private facilities have also implemented various EMR solutions to automate their process. More over partner organizations have also made their own solutions and implemented them at their project areas.

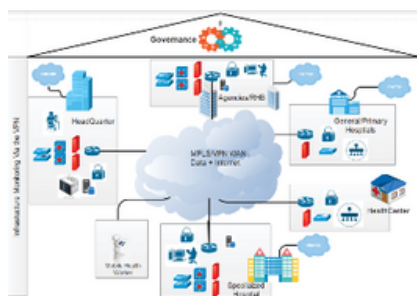
This has created a situation where patient data captured by one EMR solution couldn't be usable by another solution which hinders

continuity of care and longitudinal recording of a patient data. There is also an obstacle to create a shared patient record where patient data could be accessible from any facilities whatever EMR solution implemented there.

These problems could have been avoided had there been a standard guideline which guides the development, implementation

and data collection procedure for any EMR solution to be used in the sector. It is with this in mind the EHR/EMR standard guideline has been developed and endorsed by the MoH after going through a rigorous benchmarking, stakeholder engagement and feedback collection.

8 Digital health infrastructure Standard



Digital health infrastructure is a resource intensive engagement which is mostly carried by a government expenditure .Despite all the big spending made so far, there is a lot remaining to be done to lay out basic ICT infrastructure at health facilities and institutions to make them capable of running any digital health solution.

The digital health infrastructure standard document defines the standards for data centers, required information and communication technology equipment, Wide Area and Local Area connectivity components used to support the smooth and efficient operations of digital health information systems at all levels and departments of the health facilities and institutions in the sector. It also proposes governance mechanisms, Safety measures and major human resource [IT Professionals] required to support administering the infrastructure and services provide

9 Digital health systems hosting protocol

The main objective of this hosting I protocol document is to create the ground for the smooth running of digital health solutions through a systematic and orderly utilization of the hosting services of the ministry by creating a mutual understanding among all the stakeholders on the rules to be abide by in system hosting, the roles and responsibilities of every stakeholder, change management strategy etc so that everyone can get the best benefit out of the hosting services offered by the MoH

10 ICT Policy

The goal of this policy document is to set standards for the use and management of the organization's ICT resources, such as computers, switches, routers, software/applications, printers, fax machines, e-mail, Internet and intranet access, et, by users, administrators, technical personnel, and partners working with the ministry.

It serves as a reference for how all Ministry of Health employees and management should use and govern ICT resources by outlining the proper safety measures and procedures.

Section II Government owned digital solutions



INTRODUCTION

In order to accelerate the transformational goal of the health sector, the

MoH and its partner organizations have been implementing various digital health solutions across the nation.

These solutions are designed to act as shared services or data sources, national health information systems, data analytics & business intelligence tools and point of health service delivery digital health interventions.

The digital health solutions listed here are those that have been registered with the Ministry of Health's Digital Health Projects Inventory System (DHPIS). Only the significant and active solutions are listed.

1 Medical Incident Reporting System Innovation (MIRSI)



Overview of digital health implementation: Project aims to provide a medical incident reporting system. The current system is not anonymous, is punitive, or not in place at all, an easier, technology supported voluntary medical incidents reporting system was necessary. Project has been tested in six tertiary level hospitals and proved the technology driven approach has given the number of incidents reported a huge boost.



Geographical scope: Ethiopia, Addis Ababa



Health Information System Support: Civil Registration and Vital Statistics. Client applications. Client communication system. Clinical terminology and classifications. Community-based Information System. Learning and Training System



Licenses: Protective free and open source software

Blood Safety Strengthening Programme: Blood Safety Information System (BSIS)



Overview of digital health implementation: Safe blood is used to treat postpartum haemorrhage, childhood malaria, severe anemia, trauma and surgery. The BSSP develops and implements BSIS, an open source system designed to manage donor and donation information from the point of donation to transfusion. BSIS is for resource-limited blood services and supports AfSBT accreditation processes. Our implementations follows international good practice, building local capacity within the blood services to use, manage and maintain BSI



Geographical scope: Blood Safety Strengthening Programme (BSSP) has implemented the Blood Safety Information System (BSIS) at the Addis Ababa Centre of the National Blood Bank Service of Ethiopi The system was implemented between Dec 2016 and Aug 2017 and has been in operational use at the centre since Aug 2017.



Health Focus Areas: -Blood Safetyemergency Medical Services,Road traffic injuries,Intrapartum care (labor and delivery),Postpartum carealaria



Health Information System Support: Client applications. Clinical terminology and classifications. Electronic Medical Recor Human Resource Information System. SHR and health information repositories

3 Tenaye



Overview of digital health implementation: Educational platform for sexual and reproductive health, mental health adolescent



Geographical scope: Amhara Region



Health Focus Areas:- Adolescents and mental health, Adolescents and sexual and reproductive health, sexual and Reproductive health in humanitarian settings



Health Information System Support: Client applications. Clinical terminology and classifications. Community-based Information System. Data interchange interoperability and accessibility, Emergency response system. Health finance and insurance system. Knowledge Management. Pharmacy Information System. Research information system



Licenses: Protective free and open source software



Overview of digital health implementation: The National Health Data Dictionary (NHDD) to serve as the authoritative source for indicator and information standards within the health system. The dictionary provides a common language for clinicians, lab technicians, pharmacists, researchers and administrators to communicate and exchange health information to ensure that meaning is not lost as data is shared or aggregated into reporting systems.



Geographical scope: National Level



Health Focus Areas: Health Promotion



Health Information System Support: Client applications. Clinical terminology and classifications. Community-based Information System



Licenses: Non protective free and open source software (g. Apache)

5 mHealth



Overview of digital health implementation: To create a two way communication among health workers like sharing documents, video, audio and educational messages, and questions and answers



Geographical scope: National Level



Health Focus Areas: Health Promotion



Health Information System Support: Client communication system. Health finance and insurance system



Licenses: Proprietary

6 MFR



Overview of digital health implementation: Collects national health facility list, location, services, infrastructure and number of health professionals.



Geographical scope: National Level



Health Focus Areas: Health Promotion



Health Information System Support: Client applications.
Clinical terminology and classifications



Licenses: Non protective free and open source software (g. Apache)

7 MEMS (Medical equipment management system)

Overview of digital health implementation: The objective of the system is to automate medical equipment management system of the country from procurement up to disposal.

Geographical scope: National Level

Health Focus Areas: Health Promotion

Health Information System Support: Client applications, Facility Management Information System

Licenses: Proprietary

8

HCMS (Health commodity management information system)



Overview of digital health implementation: To manage the end to end supply chain of medical equipment, pharmaceuticals and reagents



Geographical scope: National Level



Health Focus Areas: Health Promotion



Health Information System Support: Electronic Medical Record, Emergency response system, Facility Management Information System



Licenses: Proprietary



Overview of digital health implementation: To do tasks related with viral load laboratory



Geographical scope: National Level



Health Focus Areas: HIV/AIDS



Health Information System Support: Health finance and insurance system, Identification registries and directories. Research information system



Licenses: Proprietary



Overview of digital health implementation: EthioInfo helps monitor the progress made on MSG, SDG and other socio-economic plans and imports raw data and analysis in different graphical and tabular formats



Geographical scope: National Level



Health Focus Areas: Health Promotion



Health Information System Support: Client applications. Clinical terminology and classifications. Community-based Information System



Licenses: Non protective free and open source software (g. Apache)



Overview of digital health implementation: For ART data registry and analysis.



Geographical scope: National Level



Health Focus Areas: HIV/AIDS



Health Information System Support: Client applications. Clinical terminology and classifications. Community-based Information System. Data interchange interoperability and accessibility. Health finance and insurance system, Identification registries and directories. Research information system, Telemedicine



Licenses: Public domain



Overview of digital health implementation: It is used to record digitally all the patient interaction at a health facility starting from record room up to patient discharge



Geographical scope: National Level



Health Focus Areas: Health Promotion



Health Information System Support: Client applications. Clinical terminology and classifications. Community-based Information System. Data interchange interoperability and accessibility. Health finance and insurance system, Identification registries and directories. Research information system, Telemedicine



Licenses: Public domain

eIDSR (Electronic Integrated Disease Surveillance & Response)



Overview of digital health implementation: eIDSR is a system developed to analyze, organize and interpret disease related PHEM data so that early detection of an epidemic is possible.



Geographical scope: SNNP Region



Health Focus Areas: Surveillance



Health Information System Support: Client applications. Clinical terminology and classifications. Community-based Information System



Licenses: Protective free and open source software



Overview of digital health implementation: Used to register inventory and maintain bin cards and stock cards



Geographical scope: National Level



Health Focus Areas: Health Promotion



Health Information System Support: Electronic Medical Record
Human Resource Information System



Licenses: Public domain



Overview of digital health implementation: eCHIS is designed to facilitate the daily activities of the health extension worker. It serves as a job aid, point of service data collection, patient identification, and communication tool at the community and health post level.



Geographical scope: National Level



Health Focus Areas: Health Promotion



Health Information System Support: BCivil Registration and Vital Statistics. Client applications. Clinical terminology and classifications. Environmental monitoring systems. Health finance and insurance system. Telemedicine



Licenses: Non-protective free and open source software (g. Apache)



Overview of digital health implementation: Service provided in facilities (government), referral networking and bed management



Geographical scope: National Level



Health Focus Areas: Health Promotion



Health Information System Support: Clinical terminology and classifications,. Telemedicine



Licenses: Non protective free and open source software (g. Apache)



Overview of digital health implementation: To support universities in generating longitudinal data on major demographic events and identify cause of death.



Geographical scope: National Level



Health Focus Areas: Registration of clients and demographic information



Health Information System Support: ACensus, population information & data warehouse



Licenses: Non protective free and open source software (g. Apache)



Overview of digital health implementation: Hospital activities card, lab, bed management, pharmacy, et it's like full EMR



Geographical scope: National Level



Health Focus Areas: Health Promotion



Health Information System Support: Client applications. Clinical terminology and classifications. Community-based Information System. Data interchange interoperability and accessibility. Environmental monitoring systems. Health finance and insurance system. Identification registries and directories. Research information system. Telemedicine



Licenses: Proprietary



Overview of digital health implementation: DHIS2 is a tool for collection, validation, analysis, presentation of aggregate and patient-based statistical data, tailored (but not limited) to integrated health information management activities. DHIS2 provides functions such as data entry tools, provides different kinds of validation tools, easy to use - one click reports, flexible and dynamic data analysis, easy too use metadata management, messaging interfaces for communications



Geographical scope: National Level



Health Focus Areas: Health Promotion



Health Information System Support: Client applications. Clinical terminology and classifications. Community-based Information System



Licenses: Non protective free and open source software (g. Apache)



Overview of digital health implementation: Used to report HMIS data from ART Sites that are supported by CDC



Geographical scope: Amhara Region



Health Focus Areas: HIV/AIDS



Health Information System Support: Client applications. Clinical terminology and classifications. Community-based Information System. Identification registries and directories. Knowledge Management



Licenses: Public domain



Overview of digital health implementation: It is a Health Commodity Management Information System used to record new drugs (stock), calculate consumption rate, issue drugs to Units (departments) and manages inventory.



Geographical scope: Oromia Region



Health Focus Areas: Health Promotion



Health Information System Support: Client applications. Clinical terminology and classifications. Community-based Information System. Electronic Medical Record. Emergency response system,. Facility Management Information System. Geographic Information Systems



Licenses: Proprietary



Overview of digital health implementation: Cold chain equipment inventory



Geographical scope: National Level



Health Focus Areas: Health Promotion



Health Information System Support: Clinical terminology and classifications. Electronic Medical Record, Emergency response system, Facility Management Information System, Geographic Information Systems



Licenses: Proprietary



Overview of digital health implementation: Manage hospital's patient health care financing system & reporting to respective woredas that are included in the cbhi schem



Geographical scope: Tigray Region



Health Focus Areas: Health Promotion



Health Information System Support: Client applications. Clinical terminology and classifications, Community-based Information System



Licenses: Proprietary



Overview of digital health implementation: facilitating pharmacy payment, stock management, staff performance



Geographical scope: Amhara Region



Health Focus Areas: Health Promotion



Health Information System Support: Client applications. Clinical terminology and classifications. Community-based Information System. Electronic Medical Record, Emergency response system, Environmental monitoring systems, Facility Management Information System



Licenses: Proprietary

25 Antroplus



Overview of digital health implementation: RNA, different nutrition analysis



Geographical scope: National Level



Health Focus Areas: Infant/child nutrition and micronutrient deficiency/nutrition and metabolic disorders



Health Information System Support: Client applications. Clinical terminology and classifications



Licenses: Protective free and open source software

26 Admission Referral Service



Overview of digital health implementation: admission, discharge, referral service in & out, elective surgery appointment, normal outpatient appointment



Geographical scope: Amhara Region



Health Focus Areas: Health Promotion



Health Information System Support: Clinical terminology and classifications. Community-based Information System. Data interchange interoperability and accessibility, Identification registries and directories. Research information system, Telemedicine



Licenses: Proprietary

27 Ethiopia Health Data Analytics Platform (EHDAP)



Overview of digital health implementation: “The Zenysis software integrates data from fragmented systems through an interoperability layer that uses data science techniques to harmonize the differences between integrated systems without requiring any modification to the systems themselves. In Ethiopia, the Zenysis platform successfully integrated data from more than 15 fragmented systems for the first time. This includes data from three routine health information systems as well as surveillance data, surveys, supply chain data, financial data, climatological data and more.”

More than 600 million data points from these systems are now accessible for analysis through a single, easy-to-use platform. The platform has enabled a significant shift from low-resolution

(regional-level) analytics to high-resolution (facility-level) analysis and decision-

making. Decision-makers can now access continuously updated performance statistics for all 860+ districts on-demand”



Geographical scope: EHDAP is primarily implemented and used at the central level in Ethiopia by Federal Ministry of Health (FMOH) users. Some additional training of users at the regional level has taken place.



Health Focus Areas:



Health Information System Support: Census, population information & data warehouse, Civil Registration and Vital Statistics. Client applications. Clinical terminology and classifications. Community-based Information System, Emergency response system, Laboratory and Diagnostic System. Research information system. SHR and health information repositories



Licenses: Proprietary



Overview of digital health implementation: The DHIS2 digital data package for COVID-19 is designed to accelerate case detection, situation reporting, active surveillance and response in countries. The COVID-19 digital data package includes standard metadata aligned with the WHO's technical guidance on COVID-19 surveillance and has been adapted to local country context and language in this implementation.



Geographical scope: Ethiopia



Health Focus Areas: Registration of clients and demographic information, Infection Prevention Control, Surveillance, Communicable diseases in humanitarian settings, COVID-19



Health Information System Support: Client applications



Licenses: Non protective free and open source software (g. Apache)



Overview of digital health implementation: “Prematurity is the leading global cause of death in children under 5. Every year, an estimated 15 million babies are born preterm, and this number is rising. Massive gaps in our understanding and a lack of reliable data continue to undermine worldwide efforts to prevent preterm births. An exciting period of opportunity for digital health services has arisen in Ethiopia. The government has flagged investment in digital health information management systems as a priority. For the first time, this has led to an openness toward exploring and piloting digital health solutions. Digital health solutions offer the potential to bridge these information divides and to strengthen health systems while extending the reach and quality of evidence-based, life-saving interventions to pregnant women. Supported by a grant from Born on Time, a public-private partnership that is implementing several interventions to support the prevention of preterm birth, World Vision Ethiopia engaged with technology partner SLK TECHLABS to deploy mobile health screening kits with an internet-driven telemedicine capability in the Amhara region. These mobile health kits include a mobile phone app and diagnostic equipment, including ultrasound, that captures key vitals and assesses pregnant women for risk factors of preterm birth and other obstetric complications. The kits are used by trained outreach health care providers who are also linked with enhanced telemedicine at referral hospitals. This enables timely management of any areas of concern and encourages families to seek skilled attendants for potential preterm births. The kits can also be moved easily from village to village, which maximises access to these essential services for more women living in remote areas.”



Geographical scope: LMHK operates in the Amhara Region of Ethiopia



Health Focus Areas: Adolescents and mental health, Adolescents and sexual and reproductive health, Adolescents and violence, Child marriage, Birth events, Health Promotion, Immunizations, Infection Prevention Control, Indoor air pollution, Outdoor air pollution, Water treatment (see also under Water Sanitation and Hygiene (WASH), Communicable diseases in humanitarian settings, Sexual and Reproductive health in humanitarian settings, Hepatitis, Measles, Other infectious diseases (non-vector borne), Birth preparedness, Elimination of Mother to Child Transmission (eMTCT) of HIV/AIDs and Syphilis (EMTCT/PMTCT), Intrapartum care (labor and delivery), Maternal Vaccination / Immunization, Other maternal health, Postpartum care, Pregnancy/antenatal care, Breastfeeding, Malformations/birth defects, Other newborn and child health, Alcohol use, Cardiovascular disease, Diabetes, Hypertension, Other non-communicable diseases, Diet, Malnutrition, Other nutrition and metabolic disorders, Diseases of the digestive system, Diseases of the kidney and the urinary system, Diseases of the respiratory system (g. asthma, COPD), Comprehensive sexuality education, Contraception/family planning, Female genital mutilation, Infertility, Other sexual and reproductive health, Malaria, Emotional violence, Other violence, Physical violence, Sexual violence, Handwashing, Management of diarrheal diseases, Physical Activity



Health Information System Support: Census, population information & data warehouse, Civil Registration and Vital Statistics. Client applications. Clinical terminology and classifications, Community-based Information System, Data interchange interoperability and accessibility, Electronic Medical Record, Environmental monitoring systems, Facility Management Information System. Health finance and insurance system, N. Health Management Information System, Human Resource Information System, Knowledge Management, Laboratory and Diagnostic System, Learning and Training System, Pharmacy Information System, Public health and disease surveillance, Research information system, Telemedicine



Overview of digital health implementation: The Everwell Hub platform covers the entire digital cascade of care and is the core digital infrastructure that officers, health workers, and patients use to support diagnosis, treatment success, and recovery from T. The Everwell Hub supports a broad patient management ecosystem (, mobile, web, SMS, IVR). Comprised of four key outputs, the ASCENT project will operationalize a DAT intervention (99DOTS, MERM, VOT) in diverse geographic, cultural, and infrastructural settings (Output 1), generate evidence via a shared evaluation framework for optimal use and scale (Output 2), establish a global market for optimized products, price and supply chain models of DAT (Output 3), and engage with key global and in-country stakeholders to prepare for scale-up of the DAT intervention (Output 4).



Geographical scope: The project aims to engage with patients in major regions across the country, that contribute the most to the TB cases in the country, and hence are the most vulnerabl



Health Focus Areas: Registration of clients and demographic information, surveillance of communicable diseases in humanitarian settings, Tuberculosis



Health Information System Support: Civil Registration and Vital Statistics, Client applications, Client communication system, Clinical terminology and classifications, Community-based Information System, Data interchange interoperability and accessibility, Environmental monitoring systems, Health finance and insurance system, Laboratory and Diagnostic System, Research information system



Licenses: Open Source Software



Overview of digital health implementation: Simple App: is a free app & have 2 parts. Android version used by HCWs for data recording of HTN & DM patients and web-based dashboard used by NCD technical managers for monitoring of the two programs.



Health Focus Areas: Monitoring tool for Hypertension and DM



Health Information System Support: Mobile App, Web Based



Licenses: Open source

Section III

Private Owned digital solutions





Introduction

In order to harness the potential of information communication technology (ICT) in health, countries around the world develop governance frameworks which guide the digital health investment in alignment with their health sector's strategic initiatives. This process deals about the mechanisms on how to coordinate and engage the various stakeholders working in financing, system development, implementation, ICT infrastructure lay out and capacity building among other things.

The ministry of health of Ethiopia is expected to play a vital role in coordinating all the relevant stakeholders and guide them to the full realization of the health sectors priority initiatives. As part of this process, it has been recognized that engaging and bringing on board the private sector in the digital health industry is of huge importance

During the Global digital health week 2022, which was conducted

from

October 10-16/2022 under the theme “Digital health to achieve health for all”, the MoH has dedicated one day virtual event for the private sector to present their solutions to various stakeholders. The MoH

also provided free exhibition space during a daylong conference held at Addis Ababa. In this event 30 (Thirty) private companies working in different digital health solutions have participated and demonstrated their solutions. During the Exhibition day high level government officials

including the state minister have visited all the private sector solutions and promised them to engage more in the future with the ministry.

This occasion has created a momentum to take into consideration on how to involve the private sector in the various digital health endeavors

being undertaken in the country. As an initial step the ministry has gathered basic information about these entities and compiled it in this document. The information is compiled based on the responses provided by the private entities.

It is now high time for the ministry to work in tandem with the private sector and to create the conducive environment and further engagement platforms so that we will together reap the benefits of modern information communication technology.

1 eTech SC



Solution/Tool Name: eHealth and eTech Digital Innovation Hub



Focus area of the tool: EMR, Pharmaceutical, Laboratory, TeleHealth, Digital Innovation on Health thematic area

Type of solution: Mobile App, Web Based



Type of Technology : Proprietary



Description of your services or products of digital health: In Ethiopia, medical records are mostly on paper or non-existent. This leads to several treatment delays, medical errors, lost data, patient transfer issues, unpaid bills, communication gaps, et From preliminary assessment, it has been found that HMSs can be considered almost non-existent in Ethiopi Given that lots of new private and government hospitals are coming to the industry, there is a greater demand and competition to provide high quality patient care Building a state-of-the-art facility equipped with technology and qualified Staff members will be their utmost priority. eTech has professionals that are

working in USA and Europe in the domain of electronic health care system and has established good teams in Ethiopia in development, infrastructure and other desciplines. Also, eTech has cultivated fruitful partnerships and relations with health care professionals that would like to see an integrated electronic

health care system established not just at their institutions but at a national leve Combining the available resources and solid project management, eTech

has the opportunity of building an eco-system of products & services that not only serves Ethiopia can also be extended towards Africa and beyon



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 DIRECTORY OF DIGITAL HEALTH SOLUTIONS IN ETHIOPIA



2 KMS ETH Health Trading S.C /TENAWO APP/



Solution/Tool Name: TENAWO Website, Application and call center



Focus area of the tool: EMR, Pharmaceutical, Laboratory, TeleHealth, eLearning, ambulance services wholesalers medical tourism et



Type of solution: Mobile App, Web Based, Call center 9456 & Telegram



Bot

Type of Technology : Proprietary

Description of your services or products of digital health: KMS ETH

Health Trading SC is the first innovative healthcare company founded by professionals and innovators from various educational diversities from Ethiopia, Canada, the United Kingdom, and the United States of America. We envision a healthy and prosperous Ethiopian society to have access to quality health services and products for everyone.

TENAWO is the first multiuser health service website and mobile application in Ethiopia that play a vital role in the day-to-day health activities of society. The company is launched to close the communication gap between healthcare providers, healthcare facilities, and clients.

- Ordering your prescription medicines online
- Booking online private hospitals /clinics
- Booking online home care services
- Booking and schedule appointment
- Online doctor consultation and appointment
- Booking online laboratory /pathology services
- Booking online diagnostic images
- Accessing pharmaceutical wholesalers products with price
- Accessing medical equipment wholesalers products with price
- Easy ambulance services
- Oxygen plants
- Accessing free health and medical education
- Accessing medical tourism services



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Company Website: www.tenawo.com



Solution/Tool Name: LSSYA



Focus area of the tool: TeleHealth



Type of solution: Mobile App, Web Based



Type of Technology : Proprietary

Description of your services or products of digital health: LSSYA is a virtual psychotherapy platform that connects users with psychologists online and enables them to use the services from anywhere at anytime on their convenienc



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Company Website: www.lssyapp



Solution/Tool Name: Easy-MED Hospital Management System



Focus area of the tool: EMR with AI and Machine Learning integration



Type of solution: Web Based

Type of Technology : Open source



Description of your services or products of digital health: AI based Hospital Management System(EMR with Finance, Laboratory and pharmacy inventory)



Name of contact person: D Meheret Befekadu



Phone number: +251911716974



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Company Website: www.easymed-dh.com

5 MedhanET Drug Search Engine



Solution/Tool Name: MedhanET



Focus area of the tool: Pharmaceutical



Type of solution: Web Based, Web Application

Type of Technology : Proprietary



Description of your services or products of digital health: MedhanET

is Ethiopia's largest and broadest drug search engine established in 2020. It's vision is to close the information gap between the supply and demand of the pharmaceutical market by providing the sought after data and insights to help inform decision making in the sector and alleviate the problem of lack of access to meds in the country costing hundreds thousands of lives per yea Since its soft launch in Addis, MedhanET has been able to reach over 12,000 drug searchers in just 2 months which is very encouraging where we were able to fulfil over 65% of the drug searches. We've already started work in expanding to nearby key cities to reach the underserved suburban population.



Name of contact person: Fahmi Mohammed



Phone number: 0993929107



Company email: fahmi@fidel-labs.co



Company Website: www.medhan.et



Solution/Tool Name: Saba Health



Focus area of the tool: TeleHealth, eLearning



Type of solution: Mobile App



Description of your services or products of digital health: Saba Health is a digital platform that allows users to virtually learn about Sexual and Reproductive health and rights issues.



Name of contact person: D Bethel Samson Bayu



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Company email: bethesamson@sabahealth.org



Company Website: sabahealth.org

7

Liyana digital helathcare solutions



Solution/Tool Name: liyana care



Focus area of the tool: TeleHealth



Type of solution: Web Based, Web Application Mobile App, Web Based



Type of Technology : Proprietary



Description of your services or products of digital health: Telemedicine via mobile app and web based platform and home care services.



Name of contact person: DMichael Fasil



Phone number: 0910 20 27 76



Company

email:



info@liyanadigitalhealth.com

Company

Website: liyanadigitalhealth.com



Solution/Tool Name: - eLearning



Focus area of the tool: eLearning



Type of solution: Desktop application



Description of your services or products of digital health: Participant.



Name of contact person: Temesgen Endrias



Phone number: 0916032116



Company email: temesgenendrias68@gmail.com



Solution/Tool Name: Multi vender web site and Mobile application digital marketplace



Focus area of the tool: Pharmaceutical



Type of solution: Mobile App, Web Based



Type of Technology : Proprietary

Description of your services or products of digital health: We are focused on addressing fragmentation in the pharmaceutical and health care supply chain by leveraging internet, data and technology. We built

the first in Ethiopia Business to Business pharmaceutical digital marketplace platform to connect pharmaceutical and health care product seller and buyer companies in one stop platform to communicate, order fulfilment and procurement. What we built is multi-vendor web-site and web based mobile application digital marketplace which allows pharmacists (of Pharmacies, Hospitals, Health center and other health service providers) to purchase all products in a single platform without speaking or meeting face to face with any sale representatives. We are building a pool of suppliers across different generic, brands and stock keeping units The platform has panel for each Seller (Importer, Distributer, Wholesaler) with analytic dashboard that enable them to upload detail of products they have, receive order, track delivery and shipment, and it has interactive analytic feature about the sells, the stock, inventory management and tren What pharmacists needs to do is visit the online store and access the wide array of medications, place their order, and wait for delivery. All these can also happen via a mobile app that is available on play store

and the Apple Stores (ON DEVELOPMENT), or in the web site or they can use the social media channel (Telegram & Whatsapp).



Name of contact person: Tigist Meseret



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Company email: ethiopharmalinkplc@gmailcom



Company Website: www.ethiopharmalincom
 DIRECTORY OF DIGITAL HEALTH SOLUTIONS IN ETHIOPIA

10 Utopia e-Pharma PLC



Solution/Tool Name: Medhhanet integrated digital health care solution e-Pharmacy, Medicine order and delivery web site and mobile app, Tele-Pharmacy and Tele-Health solution



Focus area of the tool: Pharmaceutical, Laboratory, TeleHealth



Type of solution: Mobile App, Web Based, Call center



Description of your services or products of digital health: Our

Medhhanet digital health start up facilitates access to quality medicine and primary health care service through an integrated and affordable healthcare pathway by leverages technology, internet and information provide 4 integrated services 1) Medhhanet digital Marketplace, a Cloud based multi-vendor web for Pharmacies to list and manage stock and order; and the mobile app for customers with end to end medicine

order

and payment. Through medhhanet's integrated web and mobile app platform, you can access a wide selection of relevant health information, a large database of medications, pharmacies, and pharmacists with a click of a button. 2) Tele-Pharmacy for consultation with Pharmacists via our IVR, PBX call center 9640 and online via app or social media channel, 3) Tele-Health for on schedule Doctor consultation using our Utopia Tele-Health 4) On demand delivery service via our motor bikes and Bicycl They can order and pay online and truck the delivery on the app Medhhanet is a vision born out of a strong desire to help people gain access to quality and affordable healthcar As our name suggests, we want to be the መድኃኒት that our people so desperately need

Name of contact person: Alemayehu Ayenew

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Company email: medhhanetpharma@gmaicom

Company Website: www.medhhanet.com



11

Fewis digital medical solutions Plc .



Solution/Tool Name: -Fewis digital



Focus area of the tool: TeleHealth



Type of solution: Mobile App, Web Based



Description of your services or products of digital health: Our company provides information of healthcare services, professionals and health institutions using Web and mobile app based digital platforms complemented by tele short code line assistance servc



Name of contact person: DMeron Demelash



Phone number: -



Company email: digitalfewis@gmaicom



Company Website: www.digitalfewis.com



Solution/Tool Name: -MEDanit



Focus area of the tool: EMR; Pharmaceutical; Laboratory; online scheduling, E- prescription



Type of solution: Mobile App; Web Based; Call center and Telegram

bot



Type of Technology : Open source

Description of your services or products of digital health: Medanit

is medical directory Provides data about the healthcare system to the community by our digital platforms which are our Website, Mobile Application, Telegram BOT and Our call cente our service include doctors schedule, services of hospitals and clinics, availability of Laboratory investigations and imaging ,preview where a prescribed medication can be located and Also Medication delivery as well As An E- prescription and Electronic medical recording system. on the other hand Our call center provide Tele Medicine as well as one of its kind

and

First Ethiopian Tele- psychology consult.Â through our Mobile application

Name of contact person: Beaudak Alemayehu



Phone number: - +251 929920742



Company email: info@medanit.com



Company Website: www.Medanit.com





Solution/Tool Name: -Mobile and web Application that connects doctors to patients



Focus area of the tool: TeleHealth



Type of solution: Mobile App;Web Based;Desktop application



Type of Technology : Open source

Description of your services or products of digital health: Digital platform that connects pateints to Doctors via internet.



Name of contact person: Dr Yared Henock

Phone number: - +251934102600



Company email: Tesyhealthcare@gmaicom



Company Website: <http://143.244.128.76>



Solution/Tool Name: -Simple App



Focus area of the tool: EMR; Pharmaceutical; TeleHealth



Type of solution: Mobile App; Web Based

Type of Technology : Open source



Description of your services or products of digital health: Simple is designed to support large-scale hypertension and diabetes management programs. The app is actively used in 11,465 public health facilities in Ethiopia, India, Bangladesh, and Sri Lanka to manage 2,922,324 patients with hypertension and diabetes “ updated 7-

Nov-

2022. Simple App is An easy-to-use mobile app for healthcare workers

to record BPs, blood sugars, and medicines at every patient visit in about 13 seconds. Simple dashboard: A web-based dashboard for officials and health system managers to monitor hypertension control across facilities and regions. BP Passport app: An app for patients and caregivers to record BPs and blood sugars that has daily medication reminders. iOS and Android



Name of contact person: Abinet Seife



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Company email: mbeyene@rtsvitalstrategies.org



Company Website: <https://simplorg>



Solution/Tool Name: -Derash



Focus area of the tool: Emergency response system



Type of solution: Mobile App



Type of Technology : Proprietary

Description of your services or products of digital health: Derash mobile application will provide the user information about ambulance services in the country, what to do and what not to do during an accident, shows the nearby hospital from the area of the accident, and basic information of an accident victim to a health professional



Name of contact person: D Elias Tadesse



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Company email: bluehealthethiopiinfo@gmail.com



Company Website: www.bluehealthethiopicom



Solution/Tool Name: -Medical Info



Focus area of the tool: EMR;TeleHealth;eLearning



Type of solution: Desktop application



Description of your services or products of digital health: feed medical information, Connect professionals with employers.



Name of contact person: Shegaw Marie Bishaw



Phone number: - +251920774630



Company email: mariebishaw@gaicom



Company Website: [facebook.com/tenamereja](https://www.facebook.com/tenamereja)



Solution/Tool Name: -Medhanite



Focus area of the tool: EMR;Pharmaceutical;Laboratory;TeleHealth



Type of solution: Mobile App;Web Based



Type of Technology : Open source

Description of your services or products of digital health: Each day, we strive to shape a healthcare system that works best for you and your family. Know what your near-by Pharmacy has to offer. We save you a trip, by making sure what you need is available.

Our aim is to: Have your medication-options to be accessible at your finger-tips. Provide easier health care experiences, that best suits your convenience. Choose the best options for you and your family, by using our Call Center, Mobile application, and Web-based supports. Medhanite is a trademark registered under 'Great Kavod Trading PI'.

Our Vision: Provide information from the Call Centre; to all other users across the country. Develop Medhanite's mobile app and website; in a language widely spoken in Ethiopia - including various service categories. . Ensure precise healthcare products and services; available in the location convenient to you (Phase I, will be in Addis Ababa – with the possibility of expansion to other cities);. Introduce a range of digital solutions throughout the different stages of the COVID-19 outbreak. Collaborate with: Pharmacies, Medical professionals, and Health-centers along with Medhanite's Technology; for effective and efficient utilization of existing medical facilities and resources. Contribute and strengthen the development of the medical sector;. Lay the foundation for future expansion in related fields;. Generate revenues in the form of taxes for the government;. Provide employment opportunities;. Explore domestic health care markets; and Transfer knowledge and technology in the respective other fields.



Our mission .Minimize the amount of time, cost, and energy of the patients/customers; by quickly locating the nearest drug stores. Inform clients where and when they can find the specialized medical professionals in the closest proximity. Educate and inform society on existing pandemics like COVID-19 and related updated news.

Give consultation and advice by our professionals in different categories like: women-health children family planning mental-health senior-care and much more... .Set-up online appointments to see the preferred- physicians.



Name of contact person: Messay Kidane



Phone number: - +251-996003500



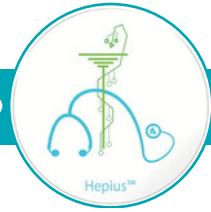
Company email: contact@medhanitcom



Company Website: www.medhanitcom

18

Hepius Medical Innovation PvtLtdCo



Solution/Tool Name: -Hepius



Focus area of the tool: Health Data Analytics



Type of solution: Mobile App;Web Based



Type of Technology : Proprietary

Description of your services or products of digital health: “Hepius_

App~ A smart, secure and simple to use personal assistant app for healthcare professionals. Hepius_Analytics~ Visual analytics and data science to improve patient safety and minimize medical errors. Hepius_Security~ Cybersecurity consultation and penetration testing services dedicated to healthcare systems and healthtech companies”



Name of contact person: Dagim Amare, MD, Health Data



Scientist **Phone number:** - +251919682140



Company email: contact@hepius.com



Company Website: <https://hepius.co>



Solution/Tool Name: -eMedical



Focus area of the tool: EMR



Type of solution: Web Based



Type of Technology : Proprietary

Description of your services or products of digital health: A fully integrated Hospital Information Management System designed to meet the every aspect of a hospital's activities.



Name of contact person: Nazrawit Abebaw



Phone number: - +251118599705. | +251966028906



Company email: info@WaliaTechnologies.net



Company Website: www.waliatechnologies.net



Solution/Tool Name: -Digital liaison system



Focus area of the tool: Digital liaison system



Type of solution: web based and mobile application



Description of your services or products of digital health: We provide a digital liaison system that connects hospitals and see the available beds, allows digital referral papers and acceptance and denial of the patient through the system. We are also working on another project that is a mobile application, a glucose tracking system for diabetes patients.



Name of contact person: D Lidia Tadesse Yigazu,



Phone number: - +25196 186 5888



Company email: contact@annadigitalsolutions.com



Company Website: <https://annadigitalsolutions.com/>



Solution/Tool Name: -YALA



Focus area of the tool: Pharmaceutical; Laboratory; TeleHealth



Type of solution: Mobile App; Web Based



Type of Technology : Proprietary

Description of your services or products of digital health: It gives patients integrated digital healthcare services by incorporating telehealth, telepharmacy and homecare



Name of contact person: D Eyasu



Company email: yalatelehealth@gmailcom



Solution/Tool Name: -ABAY-CHR, ABAY-CHR MOBILE



Focus area of the tool: Digital Health; MedTech; Cloud-based- EHR



Type of solution: Web based; MobileApp



Type of Technology : Proprietary

Description of your services or products of digital health: ABAY-CHR

Integrated patient-centered care reflects on integrated HIS requiring coordination across professionals, facilities, and support systems that are continuous over time and between patient visits. ABAY-CHR integrates Electronic Health Records (EHR) and Personal Health

Records

(Multilingual-PHRs- ABAY-CHR-Mobile). It allows the management of patient records, appointments, billing, reporting, and charts solution providing an easy-to-use EHR system. Our web-based system can be implemented on-premise (local server) or as cloud-based or web-

based,

thus having the potential to be accessible from anywhere in the world.



Name of contact person: D Wuleta Lemm



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Company email: lalibelag@gmail.com; info@lalibelaglobacom



Company Website: www.abay-ch.com

Summary

Based on the online questioner distributed for the 30 private organizations working in digital health and which attended the digital health week organized by the ministry 23 of them have provided their responses and the responses are briefly summarized as follows

Focus areas of the tools

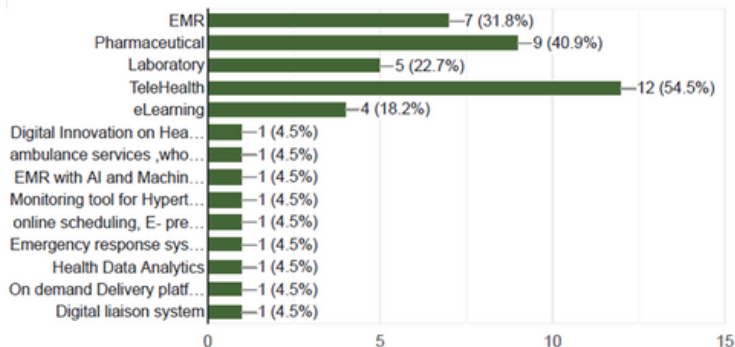
Among the respondents, the majority of the organizations are working in the telehealth sector. Telehealth is very important to address the shortage of specialists at the rural & remote part of the country. As a result of its convenience, cost efficiency, reduced time travel for health workers & clients the future of telehealth is very promising.

Telehealth service includes mobile health which takes advantage of the highly growing mobile telephone penetration rate in the country

and the opportunity with which a large portion of the population can be reached with it. Remote patient monitoring is another branch of

telehealth which is a very important service delivery mechanism especially to serve the elderly and those critically ill to attend health facilities.. Teleeducation is also another very important service as part of telehealth technology which serves to alleviate the problem of digital literacy

The MoH is working relentlessly to take advantage of this disruptive technology in the areas of health promotion, health education, patient follow and supply chain. Therefore, this is a great area of potential cooperation between the government and the private sector



I Types of solutions

Digital health solutions could be developed by using a variety of modern technologies. Eighteen of the originations are using web based applications to provide their services.

Patient centered digital health solutions are developed with a very

high

consideration for clients where patients can access and manage their health data and easily interact with their physicians. Web technology

is

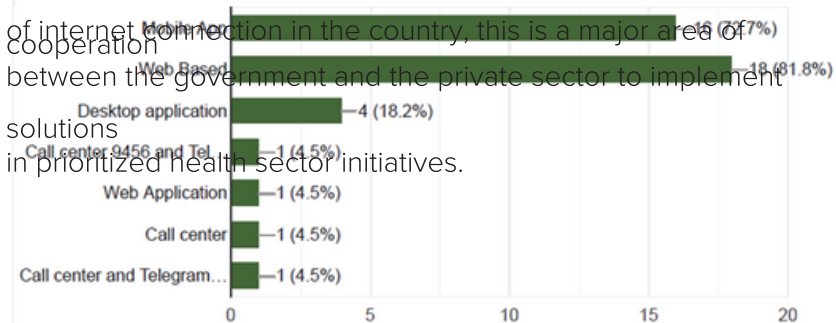
very important tool in this respect.

With their flexibility and ease of accessibility, we based solutions are increasingly being used at health facilities and organization. With this understanding the MoH is rolling out big national health information systems like Electronic medical record system (EMR), Health management information system (HMIS), master facility registry (MFR) et

With the very rapid advancement of web services and the growing

rate

of internet connection in the country, this is a major area of cooperation between the government and the private sector to implement solutions in prioritized health sector initiatives.



II Type of Technology

With their cost efficiency which enables to use and develop software applications, open source technologies are highly preferable in developing countries like Ethiopia where the health sector is burdened with a high budget constraint. This will also greatly avoid the risk of vendor lock in which usually happen when we go for proprietary health applications

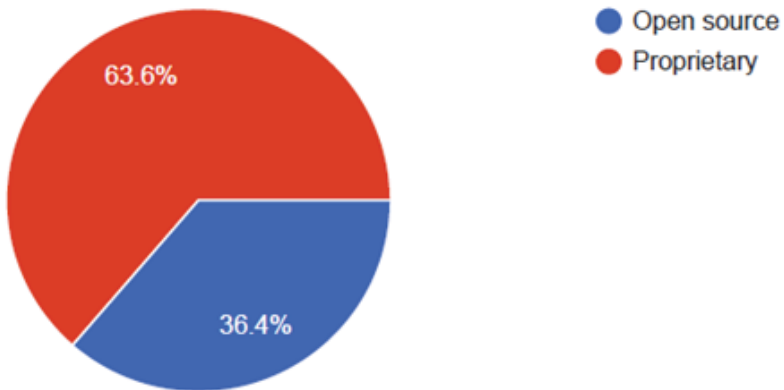
The ease of access for support from a large group of global communities also makes open source applications more preferable than proprietary ones.

Open source applications are global goods which enhances the integration of various applications and health data exchange both in facilitates and vertically through the health hierarchy.

The private sector is taking advantage of this opportunity and more than 63% of them are using open source solutions. The ehealth architecture of the MoH promotes the use of open source

technologies

for digital health solutions and hence the trend of the private sector in this respect is in line with the sector's approach which creates a good area of cooperation.



DIRECTORY OF DIGITAL HEALTH SOLUTIONS IN ETHIOPIA

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