



Federal Democratic Republic of Ethiopia

Ministry of Health

Information Revolution Strategic Plan

(2018-2025)

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Acronyms

CHIS	Community Health Information System
CRVS	Civil Registration and Vital Statistics
CSA	Central Statistical Agency
DHS	Demographic Health Survey
DQA	Data quality assessment
DTC	Drug and Therapeutic Committee
eCHIS	Electronic Community Health Information System
eHMIS	Electronic Health Management Information System
HER	Electronic Health Record
eHRIS	Electronic Human Resource Information System
eIFMIS	Electronic Integrated Financial Management Information System
eLIS	Electronic Laboratory Information System
eLMIS	Electronic Logistic Management Information System
EMR	Electronic Medical Record
EPHI	Ethiopian Public Health Institute
EPI	Expanded Program of Immunizations
eRIS	Electronic Regulatory Information System
FF	Family Folder
FMoH	Federal Ministry of Health
GIS	Geographic information system
HC	Health center
HP	Health Post
HDA	Health Development Army
HDD	Health Data Depot
HEP	Health Extension Program
HEW	Health Extension Workers
HGIS	Health Geographic Information System
HIS	Health Information Systems
HIT	Health information Technicians
HITD	Health Information Technology Directorate
HMIS	Health Management Information System
HRIS	Human Resources Information Systems
HSDP	Health Sector Development Program
HSTP	Health Sector Transformation Plan
ICD-10	International Classification of Disease (10 th set)
ICT	Information Communication Technology
IFMIS	Integrated financial management information system

IR	Information Revolution
IVR	Interactive vocal recording system
LQAS	Lot quality assurances system
M&E	Monitoring and evaluation
MFR	Master Facility Registry
MNCH	Maternal, newborn, and child health
NESB	National Enterprise Server Bus
NGOs	Non-governmental organizations
PHCU	Primary Health Care Unit
PHEM	Public health emergency management
PRT	Performance Review Team
RCA	Root cause analysis
RDQA	Routine data quality assurance
RFP	request for proposal
RHB	Regional Health Bureau
RS	remote sensing
SCMS	Supply Chain Management System
SNNPR	South Nations, Nationalities and People's Regional State
SARA	Service Availability and Readiness Assessment
SPA+	Service Provision Assessment
TE	Tele-education
TM	Telemedicine
TMS	Terminology Management Service
VERA	Vital Event Registration Authority
WorHO	Woreda Health Office
ZHB	Zonal Health Bureau

Executive Summary

1. Introduction

There have been remarkable improvements in the health status of Ethiopia over the past two decades during the five rounds of the Health Sector Development Program (HSDP). However, despite the progress achieved so far, there are still challenges to be addressed in improving the health of the population, the quality of care, and the inequalities in access and service.

The Federal Ministry of Health (FMoH) introduced the Health Sector Transformation Plan (HSTP), which focused on addressing quality and equitable distribution of health service delivery for all. One of the four transformation agendas in the current HSTP is the Information Revolution. It refers to the phenomenal advancement in the methods and practice of collecting, analyzing, presenting, and disseminating information that can influence decisions in the process of transforming economic and social sectors. It entails a radical shift from traditional methods of data utilization to a systematic information management approach powered by a corresponding level of technology. The Information Revolution is not only about changing the techniques of data and information management; it is also about bringing about fundamental cultural and attitudinal change regarding perceived value and practical use of information.

The FMoH, through the HSTP, envisions all of its citizens enjoying equitable and affordable access to all types of health services. The achievement of this vision entails robust monitoring and evaluation (M&E) systems that reveal the status of utilization of health services and desirable healthy practices using key equity lenses. This requires the establishment of an effective cycle of whereby data are transformed into information and knowledge for action. This cycle is the core of each health information system/subsystem and includes data gathering, sharing, analysis, understanding, reporting, and use for decision making.

Multiple data sources will be used to track the HSTP targets. Data sources will include: routine facility and community based health information systems, such as the HMIS, disease and behavioral surveillance, and financial and administrative information systems; household surveys, such as the Demographic Health Survey (DHS) and Expanded Program of Immunizations Coverage Survey (EPI); health facility surveys, such as the Service Provision Assessment Plus (SPA+) and the Service Availability and Readiness Assessment (SARA); civil registration and vital statistics systems; population census; and research studies.

This HIS strategic plan is developed in a consultative process by engaging leadership and staff of FMOH, donors, and implementing partners.

The HIS strategic plan is organized into 10 chapters: chapter one is introduction; chapter two is about the current state of HIS in Ethiopia; chapter three states the Mission, Vision, Core Values, and Guiding Principles; chapter four-six deals with the HIS strategy; chapter seven details the costing and financial gap analysis; chapter eight shows implementation arrangement and chapter nine contains monitoring and evaluation framework.

2. Current State of Health Information System in Ethiopia– Situational Assessment (to be written based on the results of the PRISM assessment)

3. Vision, Mission, and Core Values

3.1. Vision

“By 2025, the health sector to undergo the **transformational change** to become a **leading sector** in the **advancement and use** of quality health information to positively impact **population health** and **health-system performance**”

3.2. Mission

“To promote health and wellbeing of Ethiopians through providing and regulating a comprehensive package of promotive, preventive curative and rehabilitative health services of the highest possible quality in an equitable manner.

3.3. Core Values and Guiding Principles of the Health Sector



4. HIS Strategies

4.1. Strategic Themes and Strategic Results

The Information Revolution aims to transform the culture of data use to positively impact population health and health-system performance. The data-use transformation will be enabled and driven by the implementation and scale up of prioritized health information systems and strengthening HIS governance at all levels in the health system. This transformation is represented by three pillars:

Pillar 1: Excellence in Health Data Use Culture

Pillar 2: Digitalization and scale-up priority of health information systems

Pillar 3: Excellence in HIS governance and leadership

Each of these pillars is comprised of a number of strategic objectives, which can be further broken down in strategic initiatives. The Connected Woreda demonstration projects will ensure that these strategic initiatives are designed and executed to yield improvement that impact health workers, patients, and communities

4.1.1. Strategic Theme 1: Excellence in Health Data Use Culture

Good quality and timely data generated by from health information systems are the foundation of all health Systems. However, too often data sit in reports, on shelves or in databases and are not sufficiently utilized in policy and program development and, improvement, strategic planning and advocacy, and service delivery improvements at all levels. Efforts have been made in the past decades to improve the overall data management, data quality, and information use, in past decades though data of sufficient quality and information use remains the major challenges in the Ethiopian HIS. The behavior (knowledge, skills and attitudes) of health workers and managers at all level influences the overall effort in bringing fundamental change in the HIS. Thus, there is a need for continued efforts to change the mindset of health workforces. Cognizant to this, the IR agenda identifies Cultural Transformation on Information system as one pillar to bring fundamental change in the Ethiopian health information system. Without specific interventions aimed at improving data quality the data collection, processing, storing, analysis, interpretation and moreover, data quality and use produced by information systems for evidence-based decision making, health systems will never fully be able to meet the needs of the populations.

Use of data for decision making is the last step in a process that includes the ‘use’ of data is the data analysis, synthesis, interpretation, and review of data, and problem identification, but this last step assumes first of all the presence of an information culture, meaning that users value information as means to improve quality and equity of health services. Cultural norms define what is encouraged, discouraged, accepted or rejected as a regular practice in an organization.

When properly aligned with personal values, drives, and needs, culture can support improvements in use of data for continuous improvement.

It also assumes that the users have a number of skills such as understanding of service delivery mechanisms and other health system components, as well as problem solving techniques. and utilizing the information for decision-making processes (improving quality of care, better policy-making, planning, implementation, and monitoring and evaluation of health programs), regardless of the source of data.

Cultural norms define what is encouraged, discouraged, accepted or rejected as a regular practice in an organization. When properly aligned with personal values, drives, and needs, culture can support improvements in use of data for continuous improvement. The cultural transformation pillar identifies four major strategic objectives with defined initiatives and performance measures to realize the IR.

4.1.2. Strategic Theme 2: Digitalization and scale-up priority of health information systems

The digitalization pillar of the information revolution intends to develop, pilot, and scale up different electronic HIS including Health Information Management System, Community Health Information System (CHIS), Electronic Medical Records (EMR), Logistic Management Information System (LMIS), Regulatory Information System (RIS), National Health Data Dictionary (NHDD), National Health Master Facility Registry (MFR), data warehouse and other institution-based and point of care HIS. In particular, this pillar will ensure the interoperability of the electronic HIS and improve the functionalities and usability of this electronic system through specific customizations and enhancements of features like the decision support system.

The digitalization pillar also supports the FMOH in its goal of creating and improving health data and building out an integrated national eHealth system. It supports the FMOH to develop an eHealth architectural vision by identifying the appropriate technical components and ensuring a successful implementation of the architecture against priority use cases. In addition, this pillar focuses on creating HIS governance policies and guidelines for managing and sustaining the eHealth architecture and building capacity to expand the knowledge of effective architectural standards and development processes for national systems.

Establishing and maintaining proper operational management of the implemented HIS is another priority of the digitalization pillar. In order to properly support the implemented HIS, adequate capacity is required to ensure proper functioning and improve usability of the systems.

This pillar also supports building and administrating all health information technology and related infrastructure, including network, connectivity, servers, computers, and tablets, required to properly operationalize and manage the implemented HIS.

4.1.3. Strategic Theme 3: Excellence in HIS governance and leadership

Recent assessments of the HIS performance in Ethiopia revealed that one of main causes of poor data quality and use is the weak HIS governance. Therefore, the Information Revolution Roadmap calls for strong HIS governance as the foundation of a sustainable National HIS.

Coordination of HIS activities undertaken by various stakeholders is critical to the achievement of the Information Revolution objectives. To facilitate this coordination, the FMOH will establish a governance structure for the national HIS (Information Revolution) that will ensure alignment of HIS activities with the HSTP strategies, provide leadership and oversight of the execution of the Information Revolution, oversee development and adoption of standards and guidelines for eHealth implementation, direct HIS investments towards the iterative development of a national HIS architecture, manage communications of the Information Revolution and other HIS activities, and enable ongoing dialogue and coordination with other constituencies. The stakeholders involved include governmental agencies, including statistical agencies such as the Central Statistical Agency (CSA), non-governmental organizations, the private sector, civic societies, and prominent individuals.

The HIS governance supports overall HIS strengthening, with a particular focus on both pillars of the IR. Success of both pillars is dependent upon the development and implementation of an appropriate HIS governance system. Successful HIS governance helps to steer and coordinate HIS development through a participatory, transparent and accountable process. HIS governance provides a structure to discuss and achieve consensus on appropriate policies and strategies.

HIS Governance will support the availability and use of data for service delivery, coverage and equity, helping ensure that data is comparable and able to be synthesized from multiple sources. HIS governance will support the creation of an information culture, leading to more accountability and transparency in data generation, as well as involvement and capacity building of all information stakeholders, resulting in use of information for action and problem solving.

HIS governance supports the coordination of Health Information Technology (HIT), resulting in increased data availability, strengthening relationships between multiple systems and improving surveillance and response. HIS Governance should result in the identification and elimination of duplicative and/or inefficient HIS through the creation and implementation of an eHealth Architecture. The information revolution has identified various HIS subsystems that currently exist and/or have been identified for digitalization. HIS Governance will support the review and

appropriate coordination of these as well as future investments, ensuring that the FMOH has an appropriate review process that will result in improved quality and access to appropriate care, as well as fiscal and human efficiency.

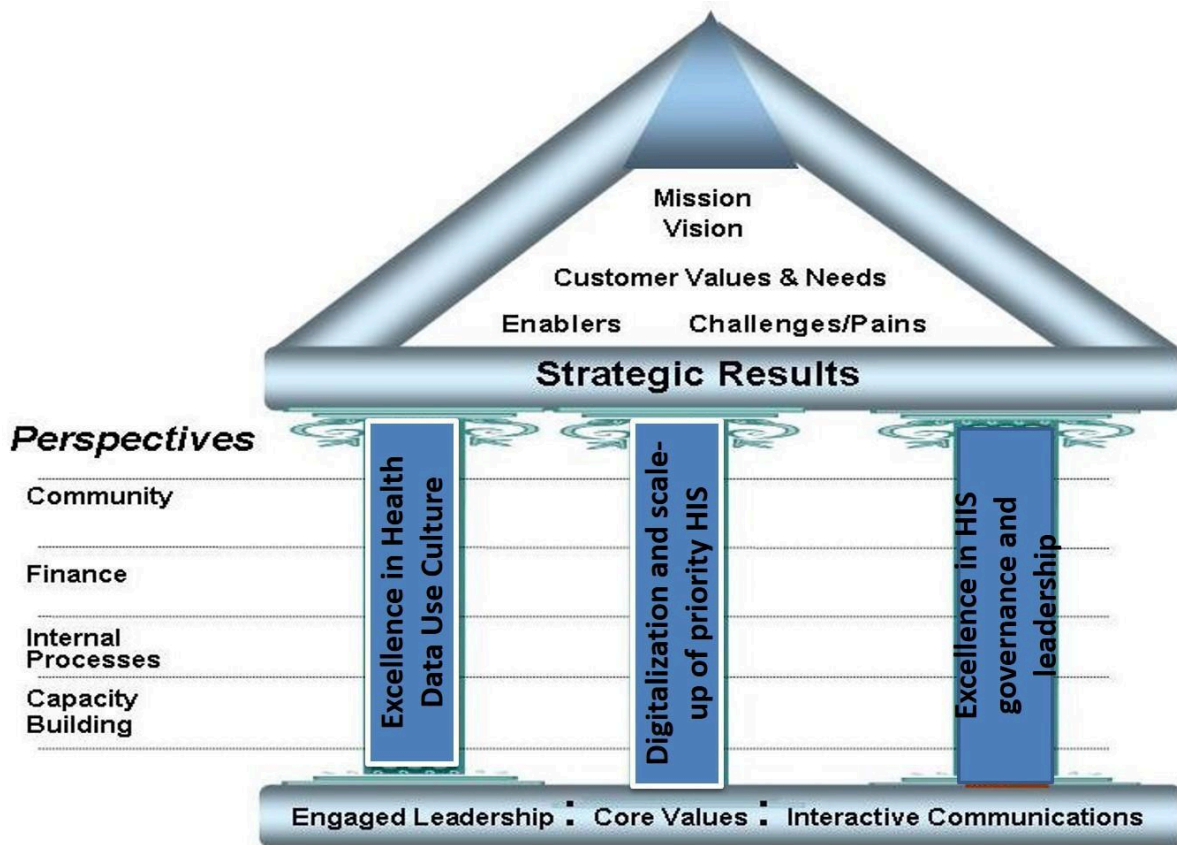
HIS Governance is making decisions following deliberate processes to support and achieve desired **Health System** outcomes. HIS governance focuses particularly on the health information system (information is one of the Health System Building blocks). It is a way to enable and facilitate strategic decision making around HIS strengthening, and communicating these decisions through various channels such as documents, expert meetings, workshops, etc.

The governance mechanism will also promote the design and implementation of HIS solutions that strengthen the cultural transformation in data use and local capacity through the establishment of principles for HIS development. The principles will encourage local ownership of solutions and data, building for scale-up and sustainability, protection of patient privacy and confidentiality, adoption of standards-based and open-source solutions, and designing solutions with the input of patients and users.

4.2. Strategic Perspectives

Perspective	Key Concept	Key Questions
Community	“Ownership” “Empowerment”	How can we enable the Community to produce its own health?
Financial Stewardship	“Efficiency”	How do we mobilize and utilize more resources effectively and efficiently?
Internal process	“Quality”	How can we enhance our integration & responsiveness in order to improve quality, timeliness, & functionality?
Learning & Growth	“Capacity”	To excel in our processes, what capacities must our organization have and improve?

4.3. The HIS Strategic Management House



IS Strategic objectives and the Strategy Map

4.4. List of Strategic objectives

<i>Perspective</i>	Strategic Objectives
<i>Community</i>	C1: Improve transparency and accountability
<i>Financial Stewardship</i>	F1: Improve Efficiency & Effectiveness
<i>Internal Processes</i>	P1: Improve culture of evidence-based decision-making
	P2: Improve Quality of Health Data
	P3: Improve digitalization for data management and manipulation
	P4: Improve standardization and integration of different HIS
	P5: Improve operational management of digital systems
	P6: Improve leadership, coordination, & partnership for HIS strengthening
	P7: Develop & enforce, policy, strategy, legislation & regulation
<i>Capacity Building</i>	CB1: Improve Health IT Infrastructure
	CB2: Improve HIS capacity of HWF (Skill Mix, Quality, Quantity)

4.5. Strategic Objectives Commentary

C1: Improve transparency and accountability

Description

This strategic objective is meant to improve availability and accessibility of quality health data to the public in order to improve accountability and transparency. HIS stakeholders at each level are accountable for the performance of HIS as well as use of quality data. The data that will be made accessible includes data from routine sources, facility surveys, disease surveillances, and census data. Access to the data will be provided through various electronic media to facilitate improved access to data for informed decision making. While ensuring equitable access to health data, it also focuses on improving planning and service quality improvement activities thereby enabling the community to be empowered by providing access to the performance of health facility and health work force in their catchment area.

Making the HIS lifecycle and data generated by the process needs to be Open for access so that communities and stakeholders will discuss and provide input and participate in the decision making process.

Outputs/Outcomes

- Accessible quality data

Key Components

- Community scorecard
- Engagement of community and other stakeholder in all HIS lifecycle
- Foster inclusiveness on the HIS development and data use

F1: Improve Efficiency & Effectiveness

Description

This strategic objective is about proper allocation, efficient utilization, tracking and controlling of HIS resources. It also entails harmonization and alignment among stakeholders to strengthen the financial and procurement management system of the government, to minimize wastage of resources and duplication of efforts. Due emphasis will be given to equity in HIS resource allocation.

There will be closer monitoring of program implementation and follow up of timely and proper liquidation of financial resources in order to ensure improved accountability at all level of the health sector.

Outputs/Outcomes

- Equitable HIS resource allocation
- Significant improvements in HIS resource absorptive capacity
- Improved efficiency of the health information system

Key Components

- Integrated Financial Management Information System (IFMIS)
- Efficiency gains
- Effective HIS governance

P1: Improve data use for evidence-based decision-making

Description

Information culture is reflected in organization's values, norms, and practices with regard to the management and use information for decision making. Evidence based decision making is about improving data use through evidence generation, translation and dissemination. It promotes and advocates the culture of generating quality data, ensuring transmission and analysis and synthesis of data from multiple data sources for monitoring and evaluation, and research to improve quality and equity of health services. Information use culture needs favorable values and utility towards data for decision making. A strong data culture results when an organization believes in continuous improvement and regularly puts that belief into practice.

Outputs/Outcomes

- Improved individual competencies and confidence in data use
- Improved continues practice of evidence based decision making

Key Components

- Program monitoring, evaluation and planning
- Surveillance and Emergency response

- Health research and survey
- Policy analysis and dialogue
- Motivation Mechanism
- Innovations, Learning and Knowledge management
- Community engagement
- Building capacity in data use core competencies
- Data access and availability

P2: Improve Quality of Health Data

Description

It describes the fitness of data for program performance monitoring, evaluation and planning and decision making. This includes timeliness, completeness, accuracy, reliability, and integrity, confidentiality of data at all levels of health system.

Increasing use of data leads to improving its quality, which in turn leads to increasing use. This principle applies to all levels of the health system – whether using data in communities to improve outreach, in facilities to improve quality of services, or at the national level to resolve health system constraints in the workforce and in financing. As more use is made of data from country systems, the quality of data will improve, building international confidence and removing the need for separate, duplicating systems.

Outputs/Outcomes

- Quality health data availed

Key Components

- Data Management including data collection, processing, verification, analysis and dissemination
- Standards and data quality assurance guidelines
- Data quality assurance assessments
- Data triangulation of different data source

P3: Improve digitalization for data management and manipulation

Description

This strategic objective is meant to develop, test, and scale up priority health information systems with the aim of streamlining the efficiency and effectiveness of healthcare delivery from

the community up to the national level. These electronic information systems have been categorized into national HIS, standards-based digital registries, and point of service HIS. These include EMR, eCHIS eHMIS, eHRIS, IFMIS, LMIS, LIS, RIS, TeleHealth, mHealth, and others.

Outputs/Outcomes

- Developed and implemented electronic HIS

Key Components

- Electronic Health Management Information System
- Electronic Community Health Information System
- Electronic Medical Records
- Electronic Human Resource Information System
- Electronic Logistics Management Information System
- Electronic Regulatory System
- Telemedicine
- Mobile Health

P4: Improve standardization and integration of different HIS

Description

This strategic objective is meant to support integration and standardization of health information systems through establishing, curating, and designing digital technologies, standards, and processes that enable HIS subsystems to be interoperable. This is achieved through the development and implementation of eHealth Architecture principles, schema and standards.

Outputs/Outcomes

- Integrated and interoperable HIS

Key Components

- Development and implementation of National Health Data Dictionary
- Development and implementation of Master Facility Registry
- Development and implementation of Shared Health Records
- Development and implementation of National Interoperability services
- Development and implementation of National Health Data Warehouse

P5: Improve operational management of digital systems

Description

This strategic objective is meant include all the processes and services administered by the FMOH, RHBs, and Agencies. As such, HIT operations include administrative processes and support for hardware and

software, for both internal and external clients. Effective HIT operations management ensures the availability, efficiency and performance of the health system's processes and services.

HIT operations management defines methods by which HIT approaches services, deployment and support to ensure consistency, reliability and quality of service.

Outputs/Outcomes

- Functional HIS

Key Components

- Network administration management
- System administration and management
- HIS Applications administration
- **Data** Center management

P6: Improve leadership, coordination, & partnership for HIS strengthening

Description

HIS Leadership is the process in which one engages others to set and achieve a common goal often an organizationally defined goal. The leadership, coordination and maintenance of collaborative partnerships is critical for the development of health information systems, and for the effective operation and sustainability of important of HIS functions.

Outputs/Outcomes

- Priority based resource allocation towards unified HIS
- Functional HIS governance structure

Key Components

- Evaluation of the landscape of HIS investments and mobilization of financial resources
- Coordinated resource allocation and utilization/priority setting
- Identifying opportunities to accelerate progress towards unified/interoperable HIS
- Coordinate investments across donors to maximize alignment and reduce duplication
- Ensuring appropriate contacts, follow up and communications
- Multi-sectoral collaboration and coordination at all level
- Establish a working governance structure

P7: Develop & enforce, policy, strategy, legislation & regulation

Description

As new health strategies and technologies emerge, HIS policy, strategic plans and guidelines may need to be modified and / or developed that address the current and anticipated changes, helping

ensure that HIS strategy remain aligned with the health sector and the country goals. In order to ensure implementation of HIS policy and strategy, further legislation and regulation is required.

Legislation is the laws that are endorsed (or in the process of being developed) by the legislature. Regulations are the documents that contain the details and/or interpretation of the legislation (or law). Regulations focus on the process of monitoring and enforcing the laws.

Outputs/Outcomes

- Data standardization, integration, legitimacy, security, confidentiality

Key Components

- HIS Policy and Strategy Development and implementation
- HIS planning, both strategic as well as operational
- HIS Strategic investment guidelines
- HIS HRH strategy as part of the health sector HRH strategy
- HIS Legislation and regulation
- HIS lifecycle and delivery modality – public, private and community services

CB1: Improve Health IT Infrastructure

Description

This strategic objective is meant include building and administrating all HIT and related infrastructure required to properly operationalize and manage the implemented HIS. Infrastructure is the foundation or framework that supports a system or organization. The information technology infrastructure is composed of physical and virtual resources that support the flow, storage, processing and analysis of data. Infrastructure may be centralized within a data center, or it may be decentralized and spread across several data centers that are either controlled by the FMOH, RHBs, and Agencies. It also includes the communication and networking infrastructure for digital data access or device sharing.

Outputs/Outcomes

- HIT infrastructure in place to properly run HIS applications

Key Components

- Network infrastructure
- Connectivity
- Data Center
- Cloud hosting services
- Servers
- Computers and Tablets

- Electricity

CB2: Improve HIS capacity of HWF (Skill Mix, Quality, Quantity)

Description

Developing motivated, accountable and empowered data collectors, managers, and users to manage and improve HIS functions and performance at each level of the health system

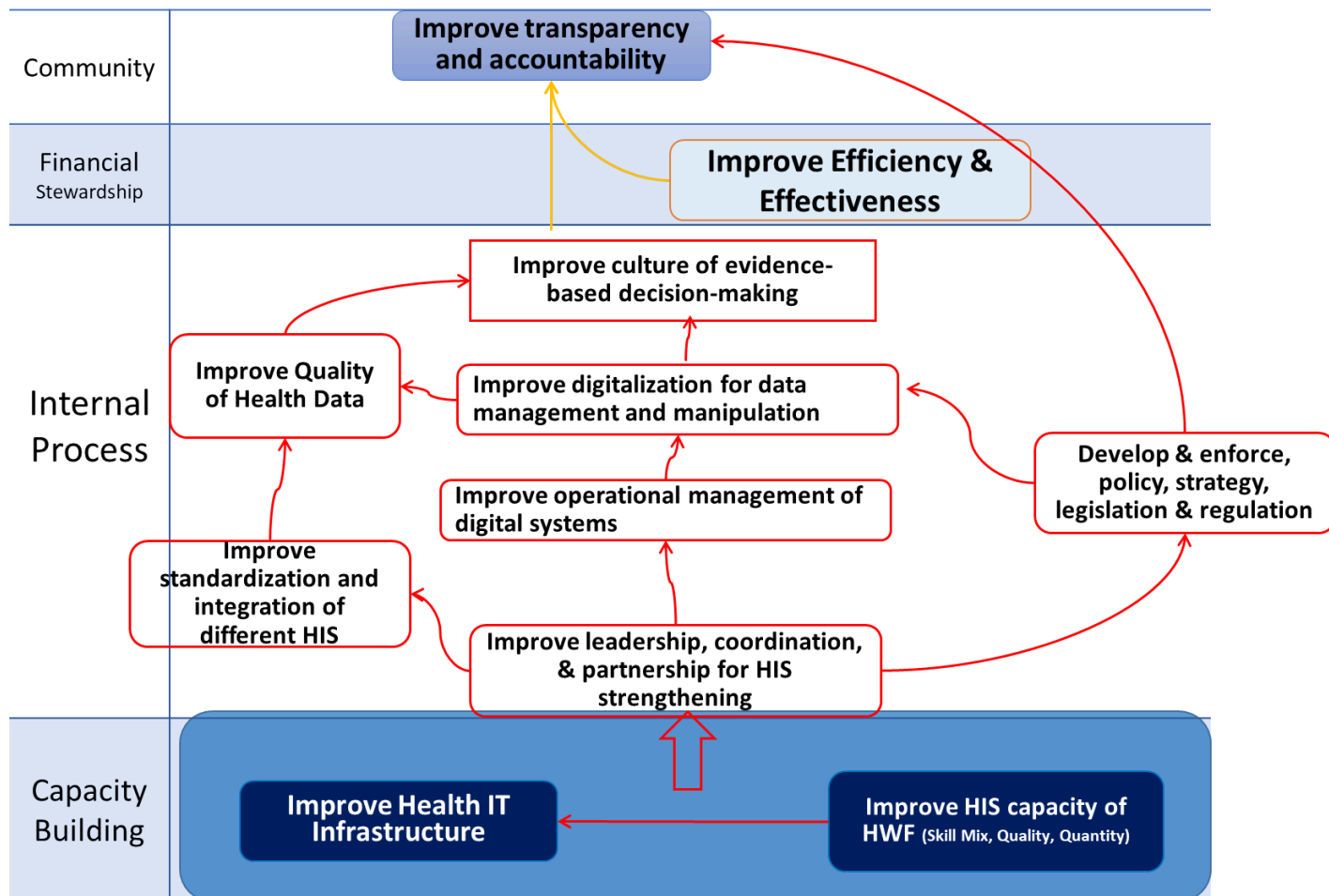
Outputs/Outcomes

- HIS HR development and mgmt. plan
- Multi-sectoral collaboration for HIS HR development
- HIS management curricula and training developed and applied (pre and in-service)
- Retention and motivation of HR for HIS (conducive work environment)

Key Components

- HIS human resource in place with the Right, number, mix and competency

4.6. HIS Strategy Map



6. Performance Measures and Strategic Initiatives

C1: Improve transparency and accountability

Performance Measures

- Proportion of kebeles implemented community score card
- Percentage increase in public awareness about health services and health sector performance
-

Strategic Initiatives

- Develop public portal for health data

- Strengthen community engagement forums to review the program performance and joint decision making system
 - Develop Guidelines on Community engagement for performance monitoring for Health facilities and Health post based on identified community perception
 - Advocacy workshop on the Guideline implementation
 - Integrate the Guideline with IRT for HEWs
 - Monitor the implementation and document best practices
- Foster inclusiveness in the HIS development

F1: Improve Efficiency & Effectiveness

Performance Measures

- Increase HIS budget utilization and liquidation rate to 100%

Strategic Initiatives

- Rollout integrated financial management information system
- Automation of internal processes
- Efficiency gain
- Allocation efficiency based on priority interventions towards unified HIS
- Regular HIS performance audit

P1: Improve culture of evidence-based decision-making

Performance Measures

- Health workers HIS core competency index
- Information Use Composite index
- Health worker motivation, satisfaction and empowerment index
- Proportion of timely emergency response based on surveillance report (consult PHEM)
- Number of technical reports produced from surveillance, research and surveys
- Proportion of health facilities documented use of synthesized information for decision
- Number of documented and disseminated best practices in data use
- Number of data use innovation labs established

Strategic Initiatives

1. Build Data use capacity at all levels in the health system

Enhanced skill and competencies on health information analysis and use will be a key focus under this strategic objective. Various capacity building approaches on data analytics techniques including scientific report writing skill at all level, establish data mining, modeling and prediction tool, computing local

estimates on selected indicators using different data source and data analytics and visualization will be adapted to the Ethiopian context and introduced in the system.

Interventions

- 1.1 Design capacity development approaches (in-service) for data use core competencies including data analysis and evidence-based decision-making. This includes development and implementation of data use guidelines for DHIS2, IFMIS, EMR, HRIS, eCHIS, eLMIS and other health information systems
- 1.2 Build capacity of PMT members, experts and care providers on information use through data use in-service training, mentorship training to capacitate and monitor connected woreda implementation, and regularly conducting mentorship
- 1.3 Engage Local Universities on HIS capacity building program
- 1.4 Establish knowledge sharing/management platforms to share best practices and challenges between different units of the health sector and implementers.
- 1.5 Promote implementation research to test new ideas of improving HIS and establish innovations labs. This initiative includes establishing and operationalizing HIS innovation labs to promote new ideas, conduct implementation research, and identify solution to promote information use as well as designing and implementing interventions on challenges for data use using Human Centered Design approaches for improved problem-solving techniques using data.

2. Data synthesis, access and communication

The Information Revolution will focus on improving availability of data quality at all levels of the health system along with the data use interventions to bring a catalytic improvement in data quality, access and use.

Interventions

- 2.1. Establish different information dissemination platforms
 - Identify target group specific core indicators to share information for general public
 - Create Web-Public portal at Federal and regional level
- 2.2. Establish data warehouse: Pulling data from different research, surveillance, survey into central data repository.
- 2.3. Establish data mining, modeling and prediction tools
 - Train experts on advanced data analysis, modeling and prediction

- Develop modeling and prediction tool
 - Identify priority indicators
- 2.4. Compute local estimates on selected indicators using different data source.
- Develop Guideline
 - Select priority indicators/diseases
 - Train experts on principles of generating local estimates
 - Generate estimates and produce reports
 - Conduct Information Dissemination workshops
- 2.5. Establish a multi-agency group on coordination of surveys and other ad-hoc data collection.
- Inventory of facility and population-based surveys in the country
 - A plan on conducting standardized health facility and population-based surveys and researches to be conducted at regular intervals
 - ✓ Develop research/survey protocol to standardize assessment type, frequency, priority areas, data synthesis and dissemination
 - ✓ Facilitate researches, surveys and evaluation assessment to be conducted in the sector
 - Conduct in-depth analysis, data triangulation from different data sources and communicate findings for policy dialogue
 - Develop advanced data analytic tool (EDAP)
 - Capacity building training for FMOH, agencies and RHBs
 - Produce reports based on the findings of data synthesis
- 2.6. Conduct Burden of Disease study and utilize the findings
- Establish/revitalize National Disease burden monitoring unit
 - Capacitate relevant staff on disease burden survey
 - Experience sharing visits
 - Customization of disease burden study guidelines with consultation of senior experts from abroad
 - Generate and disseminate national and subnational level disease burden status on selected diseases at least once per year

3. Universal registration of births and deaths including reporting cause of death

This strategic initiative of the roadmap will focus on improving registration of births, deaths and other vital events recording occurrence and characteristics to produce fertility and mortality statistics. The

roadmap will focus on addressing in increasing the coverage of birth and death reporting, quality of medical certification of cause of death, and the facility and community cause of death information.

Interventions

3.1 Implement Civil Registration and Vital Statistics (birth & death) in all health facilities including Expand use of ICD-10

- Develop CRVS training guideline and verbal autopsy
- Capacitate care providers and HEWs on CRVS implementation
- Implement CRVS in all health facilities
 - Print and distribute Birth and death Notification formats
- Integrate CRVS activities reporting system with DHIS2 and CHIS/eCHIS
- Strengthen medical certification of cause of death from health facilities
 - Print and distribute death Certificates

4. Disease outbreak surveillance and response information management

Strengthening disease surveillance and response systems involve active participation of communities and health workers and a supportive laboratory infrastructure. Early warning functions of the health system including rapid communication infrastructure are crucial components of IHR implementation. Sufficient capacity of human resources and streamlining of reporting systems will be a key focus of this roadmap.

Interventions

- Strengthening coordination mechanism of HDSS sites
 - Expand and strengthen Health and demographic surveillance site
 - Conduct Surveillance Team Training
 - Revise reporting of multidimensional indicators for evidence generation
 - Conduct Annual data analysis and write up workshop
 - Generating nationally synthesized reports and disseminate the findings for policy recommendations
- Strengthen disease specific surveillance on selected disease types
 - Reporting of maternal deaths and adverse effects after immunization, as well as other crucial epidemiological surveillance data, integrated into existing reporting system.
 - Introduce reporting of adverse effects after immunization/medications surveillance data integrated into existing reporting system.

- Human resource capacity building in epidemiological surveillance information in each level of health services (health managers and PHEM experts)

5. Program monitoring, evaluation and Planning (Data Use Forums)

5.1. Harmonization of Health and Health related Indicators

- Develop comprehensive M&E framework for Health Sector Transformation Plan
- Develop quality and equity measurement toolkit
- Essential indicators in line with Sustainable Development Goals (SDGs) and UHC related to health identified.
 - Develop standardized definitions for clinical and management related indicators for multiple levels of the health system.
- Implement harmonized M&E plan
 - Conducting advocacy workshop on health sector M&E plan
 - Print and distribute M&E plan
 - Training on revised Indicators

5.2. Woreda based health sector planning

- TOT national level
- Regional level training
- Preparation of WBHSP at zonal level
- Regional level WBHSP Aggregation workshop
- National level WBHSP Aggregation workshop

5.3. Implement performance and Result based motivation Mechanism

- Design and implement incentive guideline for improving individual level motivational factors (incentives, recognition, empowerment and satisfaction) and barriers for improving data use culture identified and introduced
- Integrate Routine Health Information System (RHIS) core competencies with performance appraisal (Balanced Score card)
- Debriefing workshop on developed guideline
- Evaluate organizational and individual performances using defined criteria
- Reward/recognize best performer organizations
- Reward/recognize best performer individuals

5.4. Self-assessment (PMT)

5.5. Performance Review meetings (Quarterly, Biannual, Annually)—facility to FMOH levels

5.6. *HIS specific Performance Review meetings (Quarterly, Biannual, Annually)—facility to FMOH levels*

5.7. *Joint Review Mission (Annually)*

5.8. *Mid-term Review (Every 2.5 years)*

5.9. *Supportive supervision*

P2: Improve Quality of Health Data

Performance Measures

- Percent of reports received on time (>90% Timeliness)
- Percent of complete reports received (>90% Completeness)
- Proportion of HF that meet data verification within 10% range for priority indicators (SBA, Penta 3, TB all forms....)
- Proportion of Health facilities with LQAS score greater than 90%
- Proportion of HFs which received integrated supportive supervision quarterly
- National Data Quality assessment guidelines and standards developed

Strategic Initiatives

- Develop Data Quality Assurance standards (data management procedural manual and data quality assurance guidelines and standards)
- Capacity building training and mentorship on routine data management (collection, processing, analysis and interpretation and data quality assurance)
- Capacitate HEWs on Community Health Information system (CHIS)
- Conduct Data quality assurance assessments regularly
 - Conduct DQR integrated with SARA annually
 - Conduct RDQA annually at Federal and Regional level annually
 - Conduct PRISM every 5 years nationally
- Integrate community data verification with regular RDQA
- Sustainable supply of recording and reporting tools for HIS (HMIS, CHIS, etc)
- Strengthen mechanisms for inclusion of health information from the private health facilities into the national HIS and monitoring system.

P3: Improve digitalization for data management and manipulation

Performance Measures

- Implement DHIS-2 as a national eHMIS platform in 100% of health administration offices (regions, zones, woredas) and public and private health facilities
- Implement eHRIS in 100% of Woreda Health Offices and all health facilities,

- EMR implemented in 100% of hospitals and 80% of the health centers
- Implement telemedicine in 100% of public hospitals
- Develop and rollout IVR reporting system to 100% of health posts
- Implement eCHIS at all health posts
- Implement eLMIS (supply chain management) solution at all distribution warehouses and health facilities
- Implement the eRIS (Electronic regulatory information system) solution

Strategic Initiatives

- Customization and rollout of DHIS-2 as a national HMIS
- Develop and implement human resource information system at all Woreda Health Offices and Health facilities
- Develop and implement EMR solution, develop implementation plan, and initiate rollout into selected public health facilities
- Implementation of telemedicine in public hospitals
- Rollout of IVR in health posts
- Development and Implementation of Electronic community health information systems (eCHIS)
- Development and implementation of logistics management information system
- Development and implementation of regulatory information system

P4: Improve standardization and integration of different HIS

Performance Measures

- Implement national eHealth enterprise architecture
- Implement interoperability services at national and facility levels
- Implement national health data warehouse
- 100% of the health data sets included in the NHDD
- Updated and functional National MFR
- Implement Master Patient Index
- Implement Master Provider Index

Strategic Initiatives

- Develop and implement eHealth enterprise architecture
- Develop and implement interoperability services
- Implement a data warehouse hosted by the FMoH in alignment with the national health information enterprise architecture
- Produce harmonized data dictionaries for the HMIS, disease classifications, and other priority datasets
- Establish authoritative master health facility registry governed by the MOH that includes all public, private and faith-based facilities
- Develop and implement shared health records

- Initiate development of health information exchange (interoperability) standards. These are critical for the EA.

P5: Improve operational management of digital systems

Performance Measures

- 99.9 uptime of HIS applications
- <2% security incidents
- Reduce # of complaints to below 5%

Strategic Initiatives

- Network administration management and support
- System administration management and support
- Establish systems for HIS Applications administration and support
- Setup data center management and support system

P6: Improve leadership, coordination, & partnership for HIS strengthening

Performance Measures

- **% decrease in resource gaps for HIS development and implementation**
- 100% of the donor and partners HIS support are aligned to explicit priorities in the Information Revolution agenda
- 100% of partners HIS support and interventions are done jointly with FMOH and other partners who are active in HIS strengthening
- The new HIS governance structure has been put in place at national and regional levels

Strategic Initiatives

- Evaluation of the landscape of HIS investments and mobilization of financial resources
- Coordinate resource allocation and utilization/priority setting
- Identifying opportunities to accelerate progress towards unified/interoperable HIS
- Coordinate investments across donors to maximize alignment and reduce duplication
- Ensuring appropriate contacts, follow up and communications
- Existence of functional HIS governance structure at all levels in the health system

P7: Develop and/or enforce, policy, legislation, regulation, and strategic planning

Performance Measures

- HIS Governance Index
 - Existence of approved legislation/regulation to govern HIS
 - Existence of up-to-date national health information system strategic and operational plans linked to national needs and priorities
 - Existence of up-to-date national health information system standards

- Existence of key health information system documents, which are published and disseminated annually (such as budget documents, annual performance reviews, health indicators)
- Existence of mechanisms, such as surveys, for obtaining timely feedback on the functionality of health information systems

Strategic Initiatives

- HIS Policy and Strategy Development and implementation
- HIS planning, both strategic as well as operational
- HIS Strategic investment guidelines
- HIS Legislation and regulation
- HIS lifecycle and delivery modality – public, private and community services

CB1: Improve Health IT Infrastructure

Performance Measures

- 100% of the health admin units and health facilities connected with HealthNet
- 100% of the health facilities implemented LAN
- 100% of the health facilities have access to electricity

Strategic Initiatives

- Connect all health facilities to HealthNet
- Implement and improve LAN in health facilities
- Connect all health facilities to Power Utility sources

CB2: Improve HIS capacity of HWF (Skill Mix, Quality, Quantity)

Performance Measures

- All facilities and health offices have minimum number of HIS personnel as per the standard
- HIS Human Resource Index
- OBAT score

Strategic Initiatives

- Produce and deploy the required number of health information systems professionals required at all levels in the health system
- Support the harmonization and expansion of advance standing BSc programs in health informatics
- Strengthen existing MSc and PhD programs in health informatics, M&E, Biostatistics, and other disciplines to help produce the required number of HIS professionals at masters and PhD levels
- Provide regular in-service training for HIS staff

- Staff retention and increase motivation for effective data management and information use
 - Well defined roles and responsibilities of staff
 - Introduce financial and non-financial incentive schemes for better performance
 - Improve the working environment
- Build capacity at FMOH and RHBs to respond various demands of existing and new initiatives that require high level capacity for data modeling, mining, and various forms of discovery analysis

7. Operationalizing the Information Revolution at Woreda level – the Connected Woreda Strategy

The Connected Woreda is Ethiopia’s program to realize “Information Revolution” at the woreda level and is an integral part of the Health Sector Transformation Plan (HSTP), which aims to provide quality and equitable service delivery for all. The Connected Woreda plan operationalizes data-use innovations through instituting a tiered pathway for facilities and woredas as a whole to achieve the highest standards in data quality and use. This pathway begins with an accreditation process where facilities are evaluated and scored against a common set of criteria related to M&E infrastructure, data quality, and administrative and clinic data use. Facilities and woredas that meet the highest standards, and that are able to access and share data with higher levels through offline mechanisms, are recognized as “Model Facilities” and “Model Woredas”. Model facilities and woredas that take this one step further by enabling online data access and transmission are recognized as “Connected Facilities” and “Connected Woredas”.

The Connected Woreda aims to support the delivery of quality and equitable health services through improved access to and use of quality health information for decision making at all levels. Specific objectives include:

1. To improve the quality and transformation of health information at all levels
2. To improve the culture of using health information for decisions at all levels
3. To strengthen HIS infrastructure through improved connectivity and digitalization of HIS tools
4. To strengthen information revolution implementation and expansion to all regions

The Connected Woreda is implemented in stages. Following the implementation of the Connected Woreda, the program expands to connect the zone, the region, and national health systems.

Connected Woreda Stage 1:

- Establish key structures of the program (e.g., assessment of facilities along Connected Woreda pathway, Supporting Capacity Building to support facility advancement within the program, M&E) to facilitate access, use, and sharing of high-quality data within and between woreda facilities
- Develop and test digital tools that support data-use for decision making.

- Sets initial targets for Number of Connected/Model Woredas

Connected Woreda Stage 2 is the future evolution of the program and is expected to include:

- Refining assessment criteria / processes based on Stage 1 learnings (e.g., clinic data use)
- Expanding the use of digital tools found to enhance decision-making
- Expanding the number of Connected / Model Woredas

Connected Zone:

- Enables zonal offices to access, use, and share high-quality data from lower and higher levels

Connected Region

- Enables regional health bureaus and hospitals to access, use, and share high-quality data from lower and higher levels

Connected Nation

- Enables FMOH and other government agencies to access, use, and share high-quality data from all levels

The Connected Woreda is about connecting woreda-level health institutions and people with better information in order to improve health system performance and ultimately outcomes. It is the program to realize the Information Revolution at the woreda level. The Connected Woreda involves communities, patients, health workers, administrators, and decision makers - from communities and health posts, to clinics and hospitals, to administrative offices at all levels, all the way up to the ministry and its directorates.

Within the Connected Woreda...

- Communities are connected with better information about services available and their own health
- HEWs and clinicians have access to better data about their patients and communities and use it to deliver better care
- Woreda administrators have information and tools to support resource planning and supervisory/mentorship within the PHCU and across the woreda
- Supervisors at health centers provide support HEWs with supervisory and PMT processes to improve standard of care
- Doctors and nurses at higher levels have patient history, while HEWs know the care their patients are receiving.
- Decision makers at higher levels understand the state of health across the woreda and can effectively support policy and planning for equitable, effective, and safe health care delivery

- The Woreda is able to demonstrate best practices and support sharing and knowledge transfer to other woredas

The Connected Woreda achieves this via the integration of innovative, relevant, and resource-appropriate interventions to support the development of a **data use culture** and the integration of effective **data systems**, including digitalization.

All levels of the health system participate and support the Connected Woreda program at their respective levels. Key activities include:

- Assessment of Connected Woreda sites
- Leadership and Coordination
- Resource Mobilization and Allocation
- Technical Support Provision
- Coordination of Planning Processes
- Supportive Supervision and Mentoring Provision
- Evaluation
- Accredited Connected Woreda Sites

To ensure that the critical element of the Connected Woreda initiative - strengthening health workforce capacity and motivation to collect, analyze and use information at program level – is properly implemented, the FMOH contracted out responsibility for implementing the mentorship, capacity building and research components to local universities through the Capacity Building and Mentorship Program (CBMP). Universities were made the focal point of the CBMP partnership because they have the capacity and experience to deliver quality training, mentorship and research services and are a local and sustainable resource. As part of the CBMP program, local universities will offer HIS courses in pre-service and in-service trainings for health workers and managers to build their capacity to manage and use health information as well as to enhance HIS staff career opportunities.

The Capacity Building and Mentoring Program (CBMP)

The CBMP partnership with local universities is not limited to individual capacity building via coursework or trainings; it also serves as a link from academia to program implementation (organizational CB) and provides opportunities to conduct rigorous operational research. The universities are expected to provide technical assistance to support the RHBs in creating model health facilities and woredas through improvements in data quality and use of health information for decision-making at administrative unit and health service levels by integrating capacity-building elements and digital tools. This includes: (1) improving the quality and transformation of health information at the lower levels in the health system, (2) improving the culture of using health information for decisions at the lower levels in the health system, (3) transforming HIS at the University Hospital, (4) expediting the digitalization process by

creating awareness and building capacity of health workforce on HIS implementation and management, and (5) capacity building for RHBs and Zonal HDs on data analytics and evidence generation.

8. Costing and budgeting

9. Monitoring and Evaluation Framework

	INDICATOR	Definition	BASELINE (2017/18)	TARGET		DATA SOURCE
				2020	2025	
Outcomes						
Output						

Input/Process						

10. Conclusion