eHealth Architecture (eHA) - Ethiopia Experience

ETHIOPIA DATA USE PARTNERSHIP (DUP)

23rd April 2018
Some facts about ETHIOPIA

- **1.104 MILLION KM²**
  Area

- **9 REGIONS, 2 CITY ADMINS**
  Administrative units

- **~ 100 MILLION**
  Total Population

**CALENDAR AND ALPHABET**
Ethiopia has its own calendar and alphabet (i.e. it is 2010 in Ethiopia)
Data Use Partnership in Ethiopia in support of the Information Revolution

Agreement between the Federal Ministry of Health (FMOH) and Bill & Melinda Gates Foundation (BMGF)

Five Year Project (2016-2021)

Awarded to JSI consortium in November 2016

JSI consortium includes: Regenstrief Institute, The Gobee Group, and Gonder University
Guiding Principles of the DUP Approach

- Inclusive and collaborative engagement
- Promotion of country ownership of and accountability
- Deliberate investment in creating an information culture
- Innovative and strategic change
To improve the use of high-quality routine information in the health sector, contributing to improved quality, efficiency and availability of primary health and nutrition services at all levels.
Information Revolution Roadmap

Ethiopia Information Revolution

PILLAR 1
Cultural transformation for health data use

PILLAR 2
Digitalization and scale-up of priority HIS

HIS Governance

The Connected Woreda Demonstration Projects

Transformed Woredas
Ethiopia eHealth Architecture (eHA)

The Ethiopia eHealth Architecture is a conceptual model that depicts the information systems, data sources, and integrations that the Federal Ministry of Health proposes to implement and maintain to help achieve its strategic goals.

Collaboration between FMOH, JSI/Data Use Partnership (DUP) project, and Regenstrief Institute
Why eHealth Architecture (eHA)?

The eHealth Architecture provides a foundational plan to support the acquisition, exchange, sharing and use of health data.

DATA
Making data transparent and accessible

HEALTH RECORD
Provides support for a patient based longitudinal health record

TRACKING
MOH health indicators and goals longitudinally

INTEROPERABILITY
Supports reuse of software applications with efficient components, standardized data and a plan for integration
Maximizing ICT resource utilization through curation, publication and dissemination of the eHealth Architecture diagram.

Creating and maintaining detailed eHealth architecture Roadmap

Advising project teams on integration paths and use of standards.

Creating and maintaining an inventory of existing eHealth and mHealth applications (Projects and Products)

Maximizes IT investments by creating reusable components, standardized data and a plan for integration.
Ethiopia eHealth Architecture: Current State

National Health ICT Infrastructure

Shared Services
- Master Facility Registry
- Health Data Dictionary

Institution-Based HIS & Data Sources
- Facility Surveys (SPA+)
- IDSRL ePHEM
- eLMIS/HCMIS
- eRIS
- eHMIS
- HGIS

Population-Based HIS & Data Sources
- Census
- EHDAP

Analytcs & Business Intelligence

LEGEND:
- Under Development
- Functional Application

External Systems
- IFMIS
- Agriculture

Point of Service HIS
- Nutrition
- eLIS
- Surveillance IVR
- EMR
- eCHIS

Under Development
Ethiopia eHealth Architecture: Future State

**National Health ICT Infrastructure**

**Shared Services**
- Shared Health Record
- Client Registry (EMPI)
- eHIRIS
- Master Facility Registry
- Health Data Dictionary

**Institution-Based HIS & Data Sources**
- Facility Surveys (SPA+)
- IDS / ePHEM
- Health Insurance / eHNIS
- eLMIS/HCMIS
- eRIS
- eHMIS
- HGIS

**Population-Based HIS & Data Sources**
- CRVS
- Surveys
- Census
- Data Warehouse

**Analytics & Business Intelligence**
- EHDAP

**Interoperability Service**
- Authentication • Encryption • Routing • Transformation • Queuing • Validation • Translation

**Point of Service HIS**
- Nutrition
- eLIS
- Surveillance IVR
- EMR
- Patient Portal

**External Systems**
- IFMIS
- Agriculture

**Legend:**
- Development not started
- Under Development
- Functional Application
Components of the eHA

**SHARED SERVICES**
Provides access to common functionality and data sources

**Institution-based HIS & Data Sources**
administered centrally and support institutional capabilities of the FMOH.

**Population-based HIS & Data Sources**
Allows to collect data directly from the population.

**Point of Service HIS**
used by health workers to facilitate service delivery
Components of the eHA

**Interoperability Service**

mediates the exchange of health information between information systems in the eHA. It enables transaction scheduling, message routing and encryption, transaction tracking, and error management.

**Analytics & Business Intelligence**

a technology-driven approach to enhance strategic and operational decision making by consolidating and analyzing data across organizational units.

**External Systems**

provide important capabilities or data to the FMOH, but fall outside of FMOH governance.

**Governance**

The design of the HIS governance supports the inclusion of decisions around strategy, standards, guidelines, capacity building as well as HIS policies and procedures.
Governance of the eHA

Governance structure and accountability

eHA governance is derived from the bigger HIS governance framework

eHA Technical Working Group – TOR developed, TOR to be reviewed by the Digitization Technical Working Group and later will be submitted to the IR Steering Committee for review and endorsement
eHA Roadmap Plan (2018, Q1-Q4)

**App inventory**
Create inventory of existing eHealth and mHealth applications

**Scenarios**
Identify and prioritize scenarios for data sharing in support of the Ethiopian DUP data use priorities

**Governance & Guidelines**
Develop establishing key eHealth Architecture Governance and Guidelines

**eHA Roadmap**
Create detailed eHealth Architecture (eHA) roadmap

**Interoperability Layer**
Implement the interoperability layer based on the identified priority use case(s)

**Publication**
Formalize publication and dissemination of Ethiopian eHealth Architecture
eHA Roadmap Plan (2018, Q1-Q4)

**Review**
Review and update eHealth Architecture

**Capacity building**
Development of eHA processes, capability assessments and training documentation

**Instantiation**
Instantiate the interoperability layer

**Shared Services**
Identification and Implementation of Shared Services consistent with eHealth architecture

**Interoperability standards**
Identify and approve core interoperability standards

**Pilot-test**
Pilot interoperability service (layer)
Interoperability Service selection

Scenario Selection Process
1. Identify potential scenarios
2. Determine selection criteria
3. Perform Evaluation
4. Select Scenario

Technology Selection Process
1. Identify IOL Criteria
2. Identify IOL Tools to Evaluate
3. Perform Evaluation
4. Select Tool

Pilot tool and Scenario
1. Install tool
2. Determine data trigger and flow
3. Determine message specification
4. Determine test cases
5. Configure tool
6. Build workflow
7. Test
8. Implement
9. Evaluate Pilot / Capture learning
Way forward

• Work on the eHA roadmap

• Pilot-test the interoperability layer

• Learn from the pilot-test

• Add more use cases, etc.
Ethiopia eHA and OpenHIE

• We don’t want reinvent the wheel - use OpenHIE standards and frameworks

• Continue to engage in the OpenHIE community - Both JSI and Regenstrief are active contributors of the community
THANK YOU!