# INFORMATION SYSTEMS FOR SUPPLY CHAIN MANAGEMENT

## The case for connecting separate and interoperable technology applications for LMIS and HMIS data.

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**PRESENTED BY SSANYU NYINONDI, JSI**

Using technology to improve global health

# UNIQUE CHARACTERISTICS OF LMIS AND HMIS

- Health management information systems (HMIS) collect, aggregate and use service data from health facilities

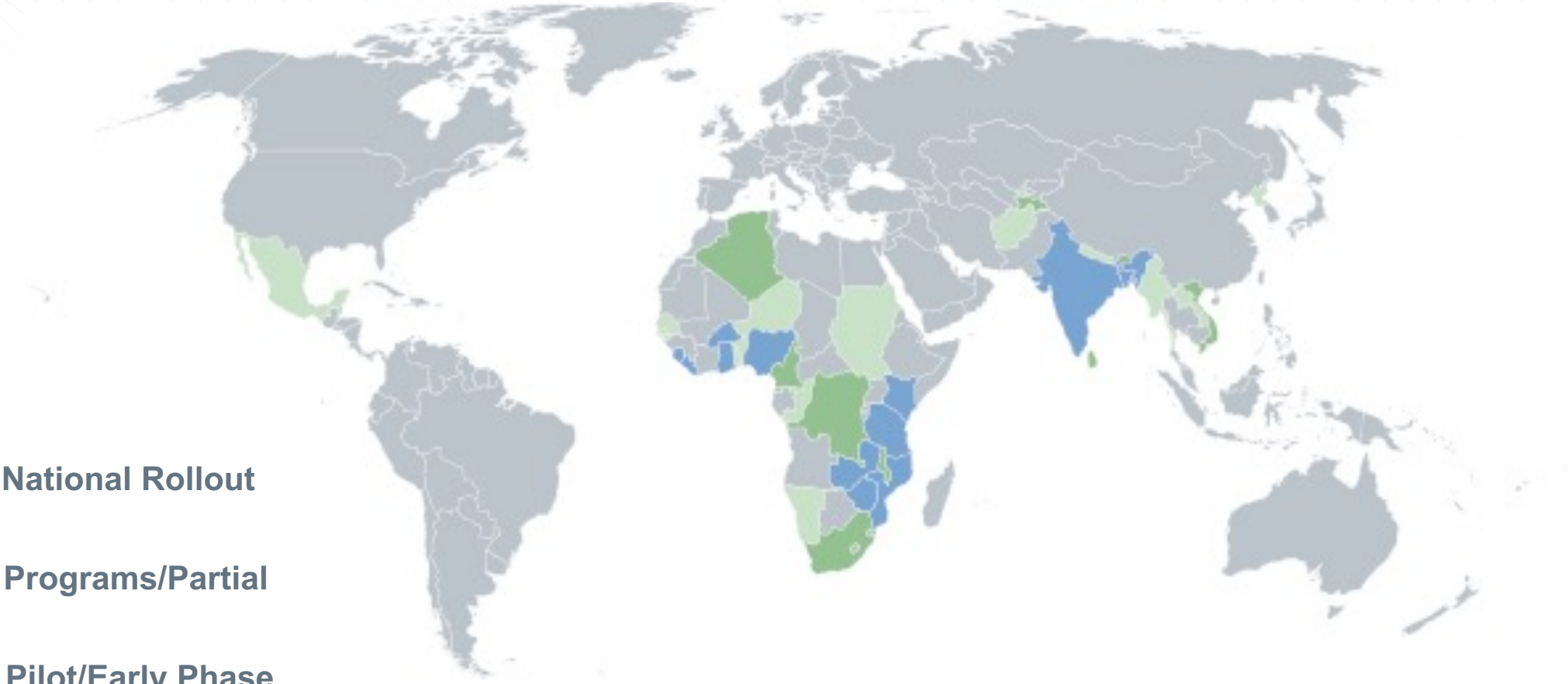
- Logistics management information systems (LMIS) collect and use medicines supply data from health and storage facilities

# DEFINING HMIS

- A ***health management information system*** **(HMIS)** collects and reports program information, such as incidence of disease, client/patient information, and health services rendered. HMIS data can be used to determine disease patterns or to track health services use, as well as to monitor and evaluate health service delivery.

- DHIS2 is the most widely used application in LMICs, an is optimized for *data reporting*.

# 47 DHIS2 DEPLOYMENTS



National Rollout

Programs/Partial

Pilot/Early Phase

*https://www.dhis2.org/inaction*

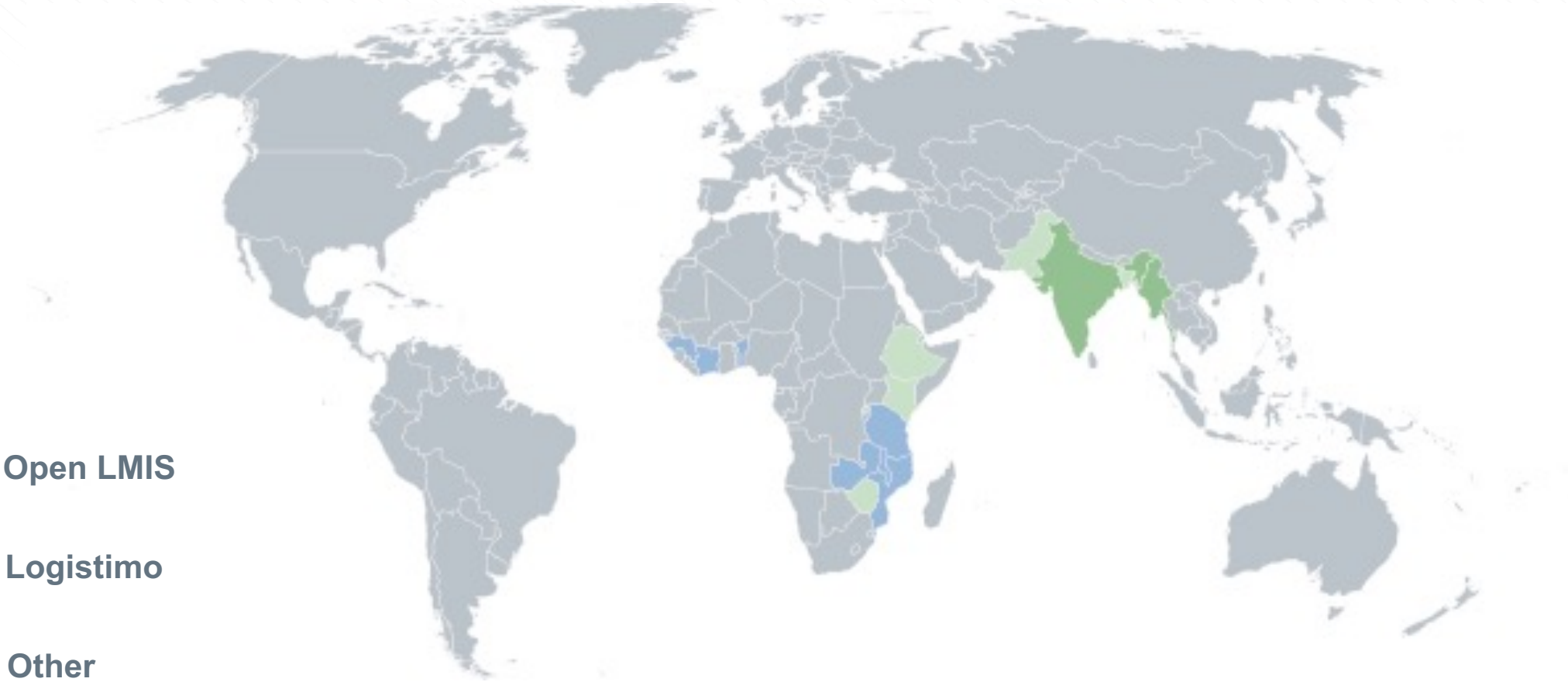
# DEFINING LMIS

- A ***logistics management information system*** **(LMIS)** is an information system that is used to collect, organize, and present logistics data gathered from all levels of the health system. An LMIS enables logisticians to collect the data needed to make informed decisions that will ultimately improve product availability and customer service. One immediate decision that is made based on logistics data is the quantities of products that should be resupplied to health facilities.

- OpenLMIS, Logistimo, and Real Time Value Network™ are examples of LMIS applications in use in Africa and Asia; they are optimized for *supply chain management*

OpenLMIS logistimo one

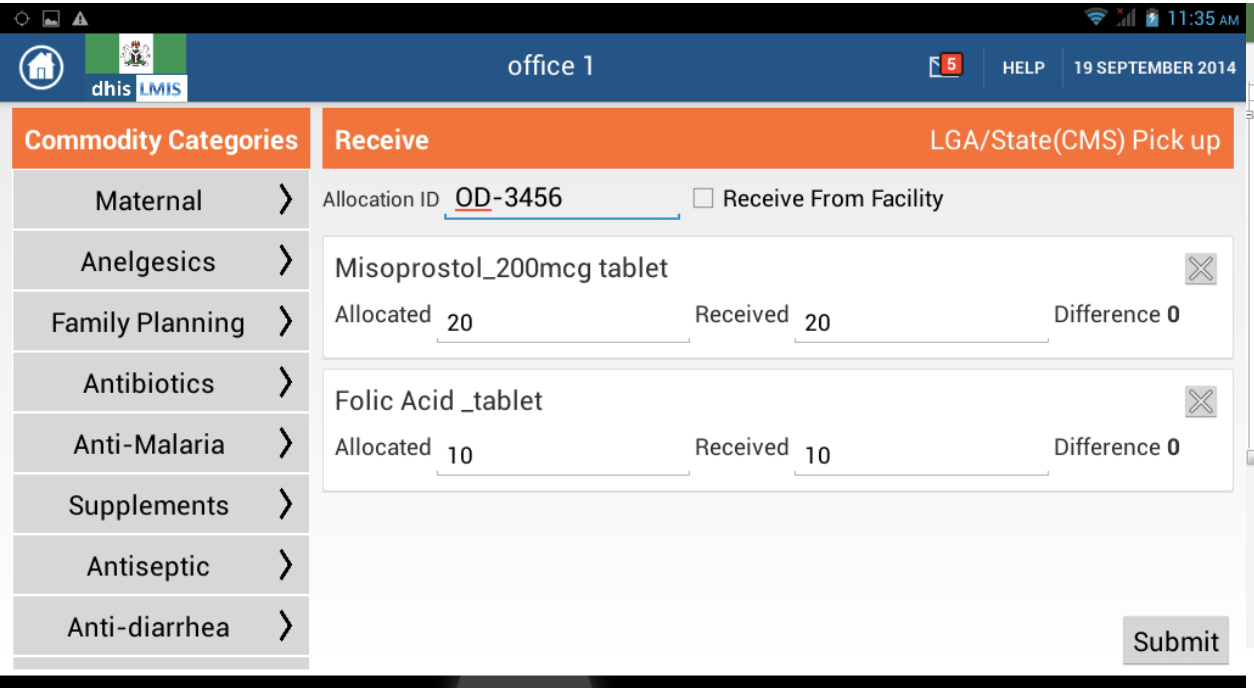
# 15 KNOWN ELMIS DEPLOYMENTS

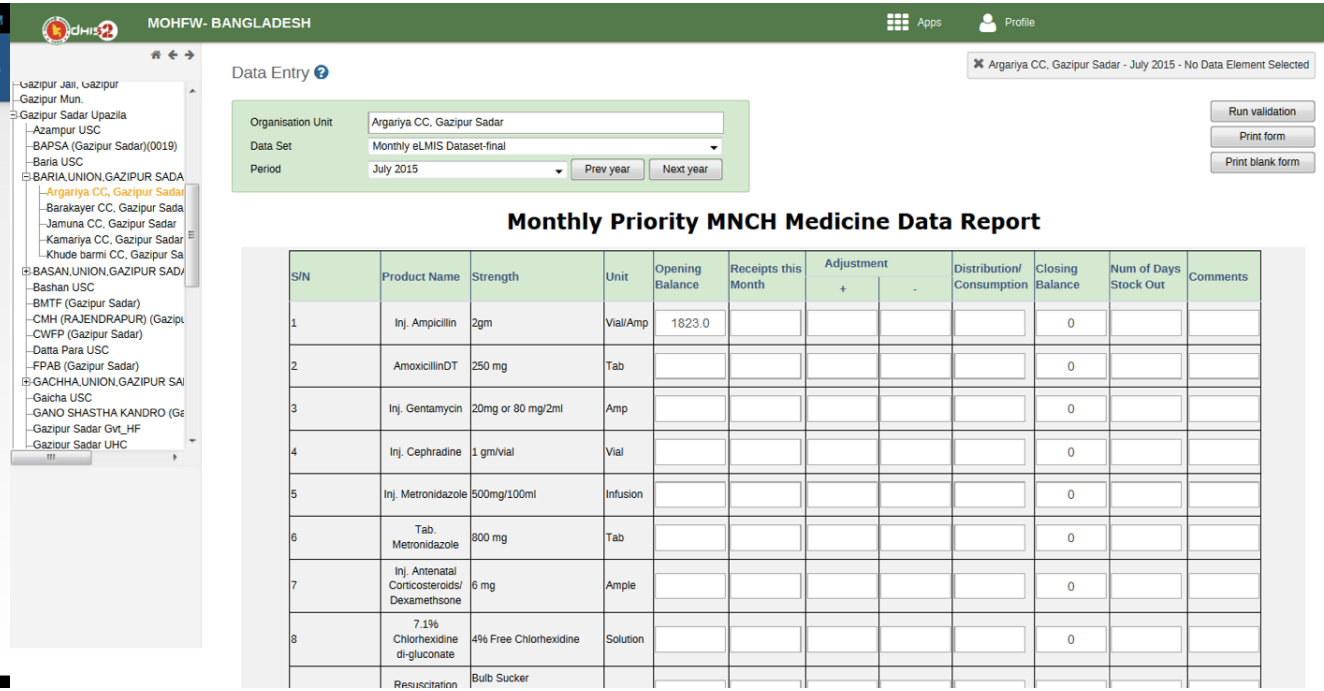


- Open LMIS
- Logistimo
- Other

*Does not include DHIS2 as a data collection tool*

# CAN DHIS2 BE AN ELMIS?



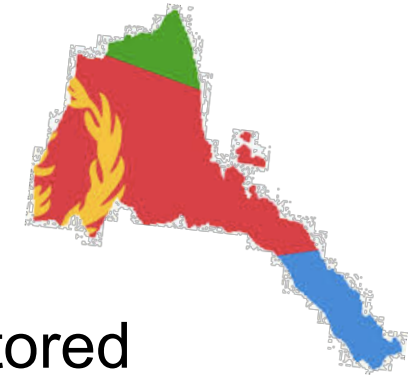
# EXCHANGING DATA BETWEEN LMIS & HMIS

*UN Commission on Lifesaving Commodities Enabling. 2016. Technology, People & Processes: Enabling Successful HMIS/LMIS Integrations.*

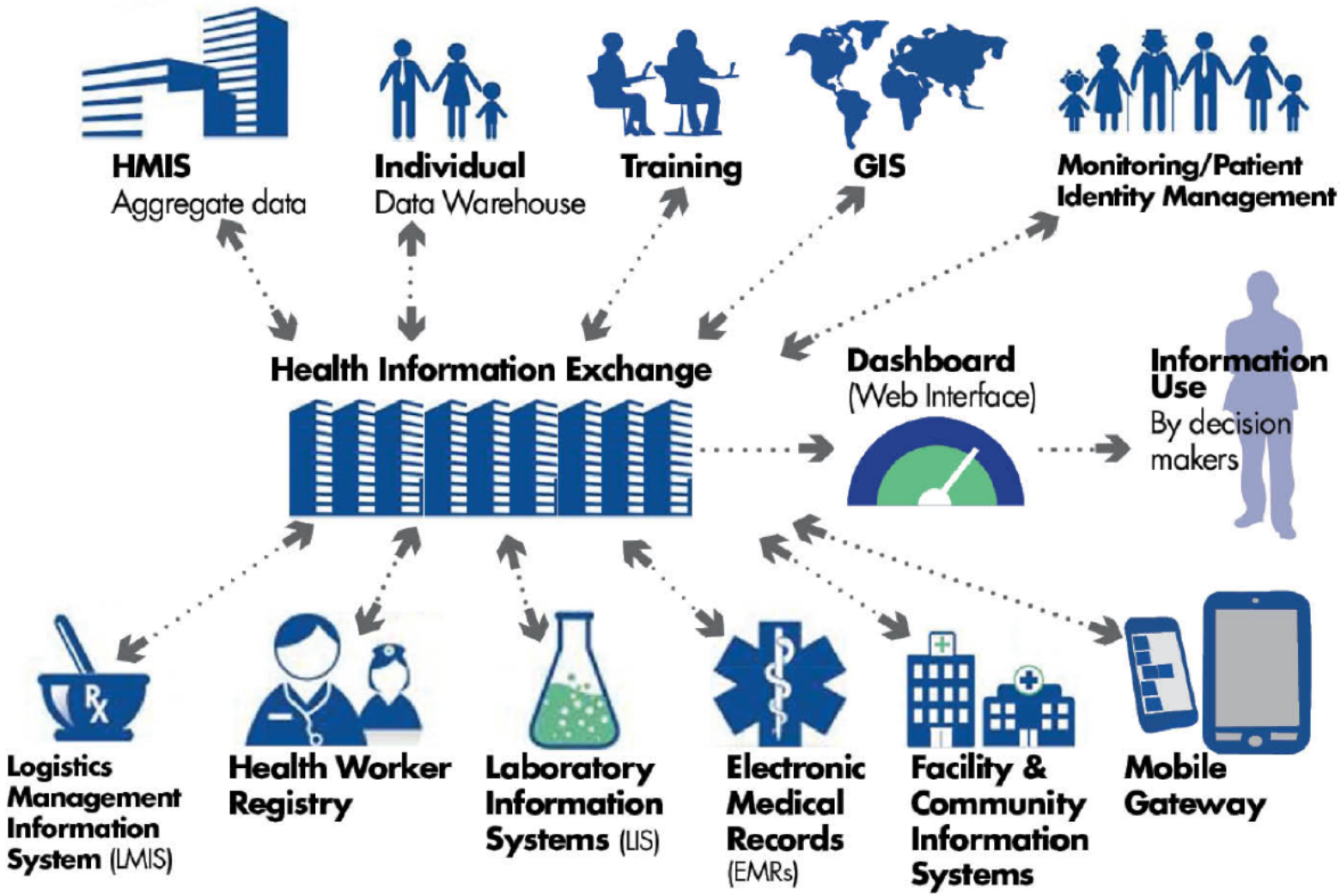
# SYSTEM INTEROPERABILITY IN ERITREA

## Linking LMIS and HMIS Data for Improved Use of Information

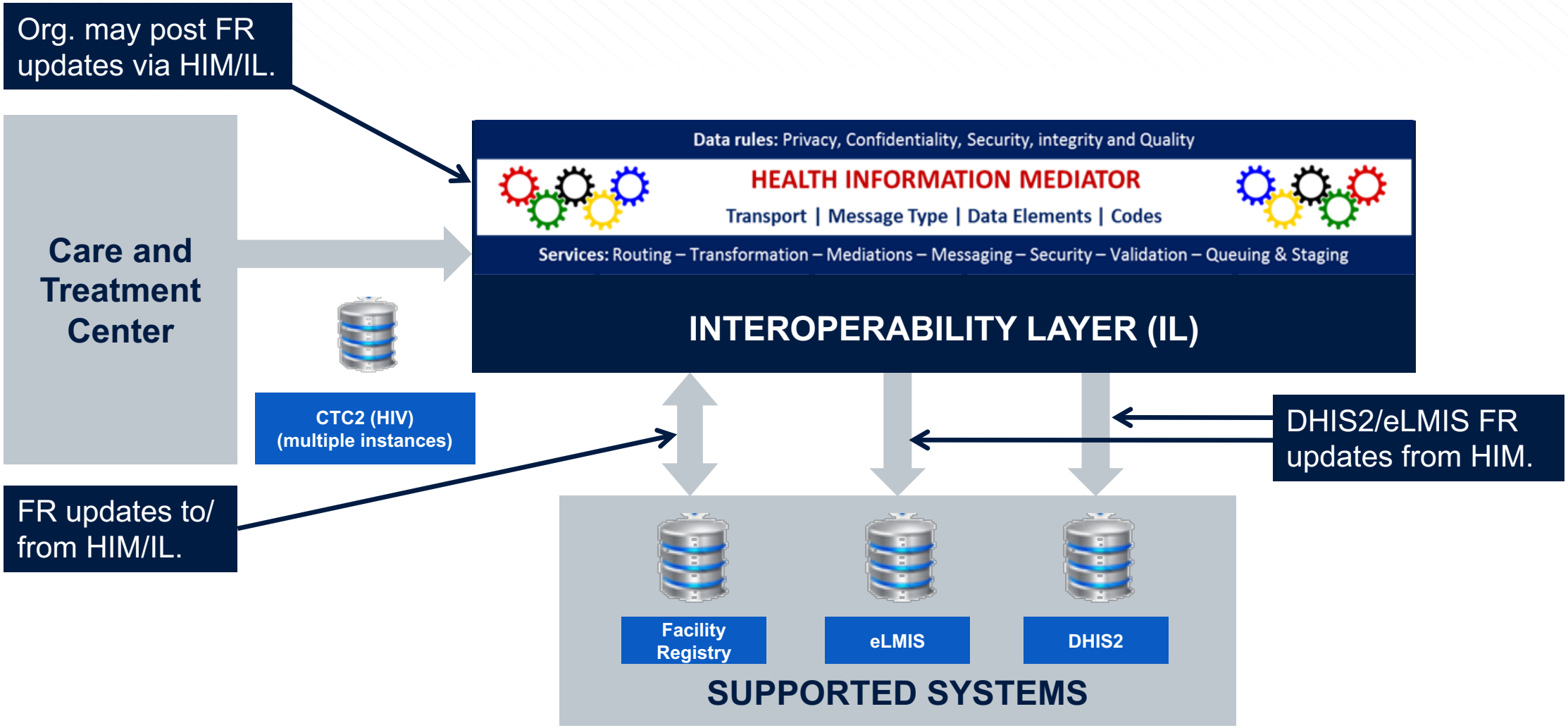
- Intervention: General restructuring of the facility-based Routine Health Information Systems
- Before the improved RHIS, vaccine stockouts went unreported
- After linking LMIS and HMIS, vaccine stockouts could be monitored monthly, and the relationship between stockouts and children vaccinated could be tracked
- Evidence of an elevated stockout percentage alerted MOH to request additional vaccines from donors



# THE VISION OF DATA EXCHANGE IN AN HIS



# TANZANIA'S HIE, PHASE 1

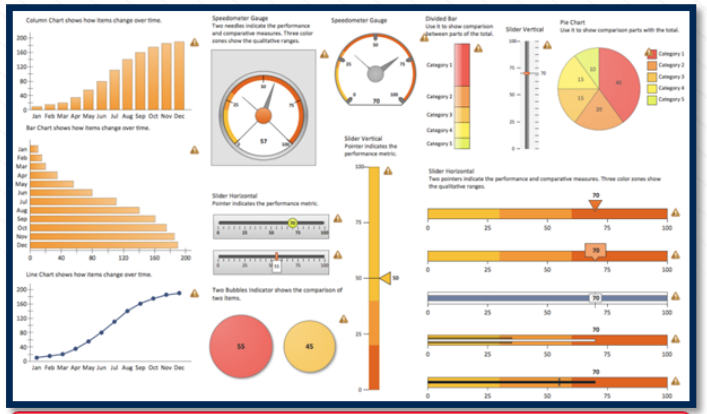


# Health Information Exchange conceptual model

**Shared Information Services Applications**

- Health Facility Registry
- Provider Registry (HRHIS)
- Master Client Register
- Shared Health Records
- Program & Products Registry
- Terminology Services

Data Warehouse



Data Visualization

**Data rules:** Privacy, Confidentiality, Security, integrity and Quality

## HEALTH INFORMATION MEDIATOR

Transport | Message Type | Data Elements | Codes

**Services:** Routing – Transformation – Mediations – Messaging – Security – Validation – Queuing & Staging

**Hospital Information Management Domain**

- Data Repository
- iHFeMS
- EMR

**HMIS data Domain**

- DHIS2
- eIDSR

**Immunization data Domain**

- VIMS
- TImR

**Logistics data Domain**

- MSD E9
- eLMIS
- iHFeMS
- ILSGateway

**Point of Service and Decision Support Applications**

**Other Institutions/ sectors Applications**

- Plan Rep
- LGA Epicor
- NHIF & CHF
- RITA CRVS

## KEY DESCRIPTIONS

### SYSTEM NAME COLOR FONTS

- Existing
- Not Existing
- Under Implementation

### SYSTEM INTERACTION ARROWS

- Across domains (Bidirectional)
- Across domains (Unidirectional)
- Inter-domains (Bidirectional)
- Across Sectors (Bidirectional)

### INTERACTION CONCEPTS

- Health information mediator will manage interaction across HIS domains, HIS and other sectors
- Domain specific interactions e.g. MSD E9 and eLMIS, TImR and VIMS will be managed within a domain
- Hospital level referral will be managed with hospital Management Domain

### SYSTEM NAMES ABBREVIATIONS

- **Data repository** – Hospital data registry
- **iHFeMS** – Integrated HF electronic Management System
- **EMR** – Electronic Medical Records
- **HMIS** – Health Management Information Systems
- **DHIS2** – District Health Information System 2
- **IDSR** - Integrated Disease Surveillance and Response
- **VIMS** – Vaccines Information Management System
- **TImR** – Tanzania Immunization Registry
- **MSD E9** – MSD Epicor 9
- **eLMIS** – electronic Logistics Management Information System
- **LGA** – Local Government Authority
- **NHIF** – National Health Insurance Fund
- **CHF** – community Health Fund
- **RITA** – Registration Insolvency and Trusteeship Agency
- **CRVS** – Civil Registration and Vital Statistics

# THANK YOU

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