



HMIS/LMIS Integration Demonstration

DHIS 2, OpenLMIS & OpenSRP
GDHF 2017

Agenda

1. Why Integrate?

2. Our systems

- HMIS (DHIS 2), LMIS (OpenLMIS), EMR (OpenSRP)

3. *Live Demo*

4. Best Practices / How to Integrate / Risks & Challenges

5. Discussion / Q & A

Exploratory discussion on integration opportunities

A hand is shown interacting with a tablet device that is propped up on a green-painted ledge. The background is a blurred outdoor scene with trees. The text "Why integrate?" is overlaid in white on the tablet screen.

Why integrate?

What is Integration?

Interoperability

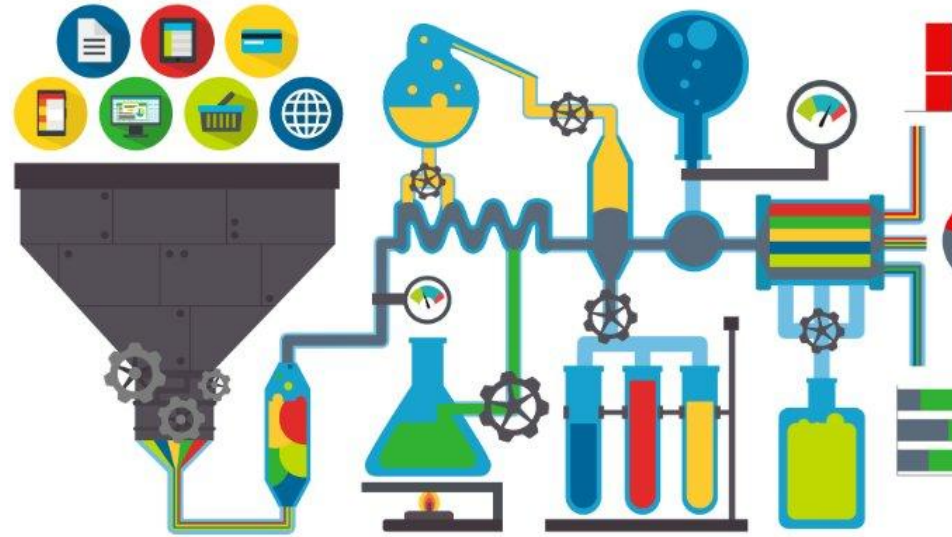
Integration

Why?



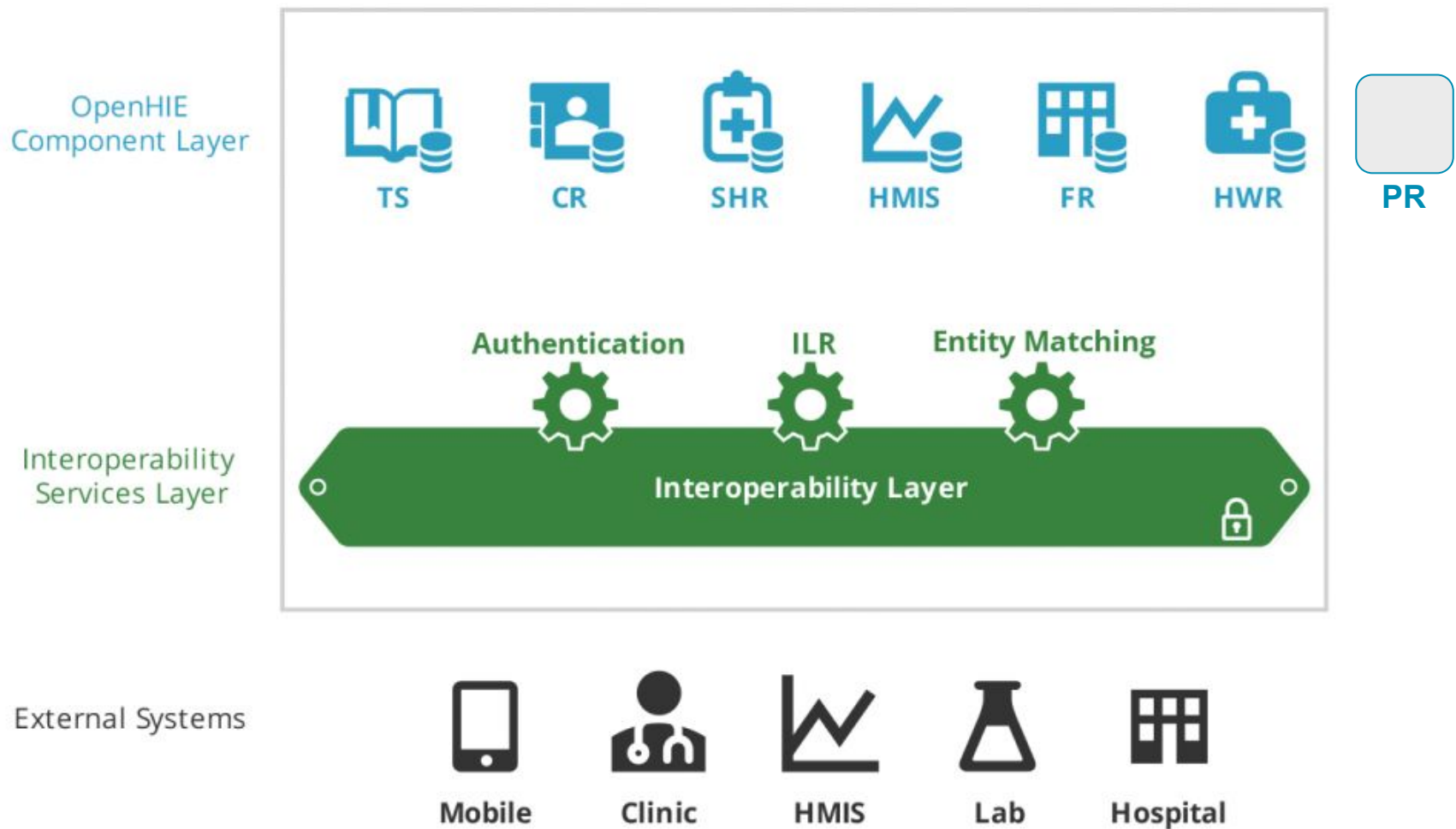
Integration unlocks value

- Reduces data entry
- Improves data quality
- Speeds up reporting/insights



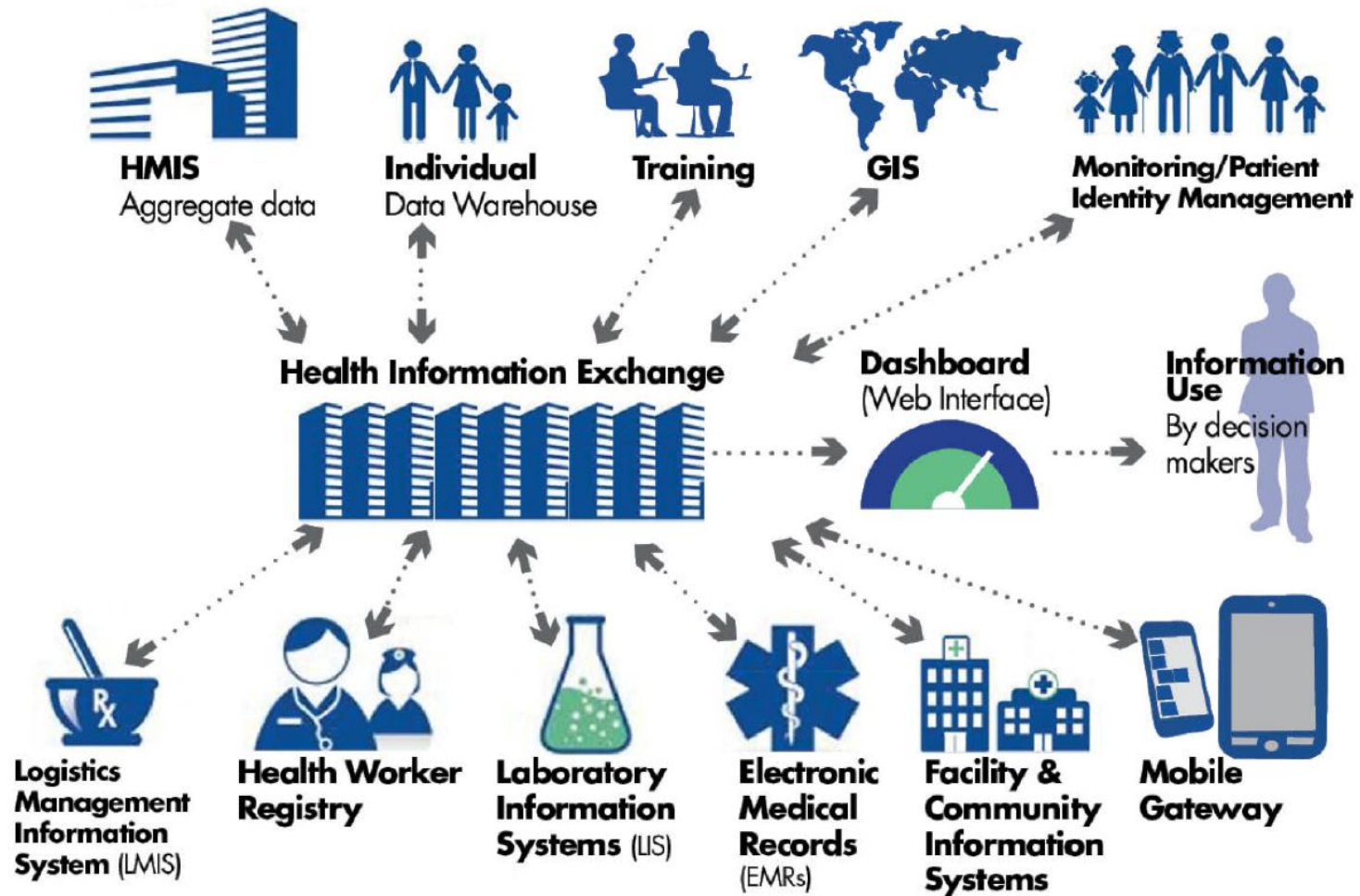
Interoperability in Global Health

OpenHIE Architecture <https://ohie.org/#arch>



Interoperability in Global Health

Model from CHAI, JSI, and VillageReach includes supply chain, laboratory, and more:



A hand is shown interacting with a tablet device that is propped up on a green-painted metal ledge. The background is a blurred outdoor scene with trees and foliage. The text "Our Systems" is overlaid in white on the tablet screen.

Our Systems

Proof of Concept Integration Demo

A hand is shown interacting with a tablet computer that is propped up on a stone ledge. The background is a blurred outdoor scene with green foliage. The text "What is HMIS?" is overlaid in white on the tablet screen.

What is HMIS?

Health Management Information System

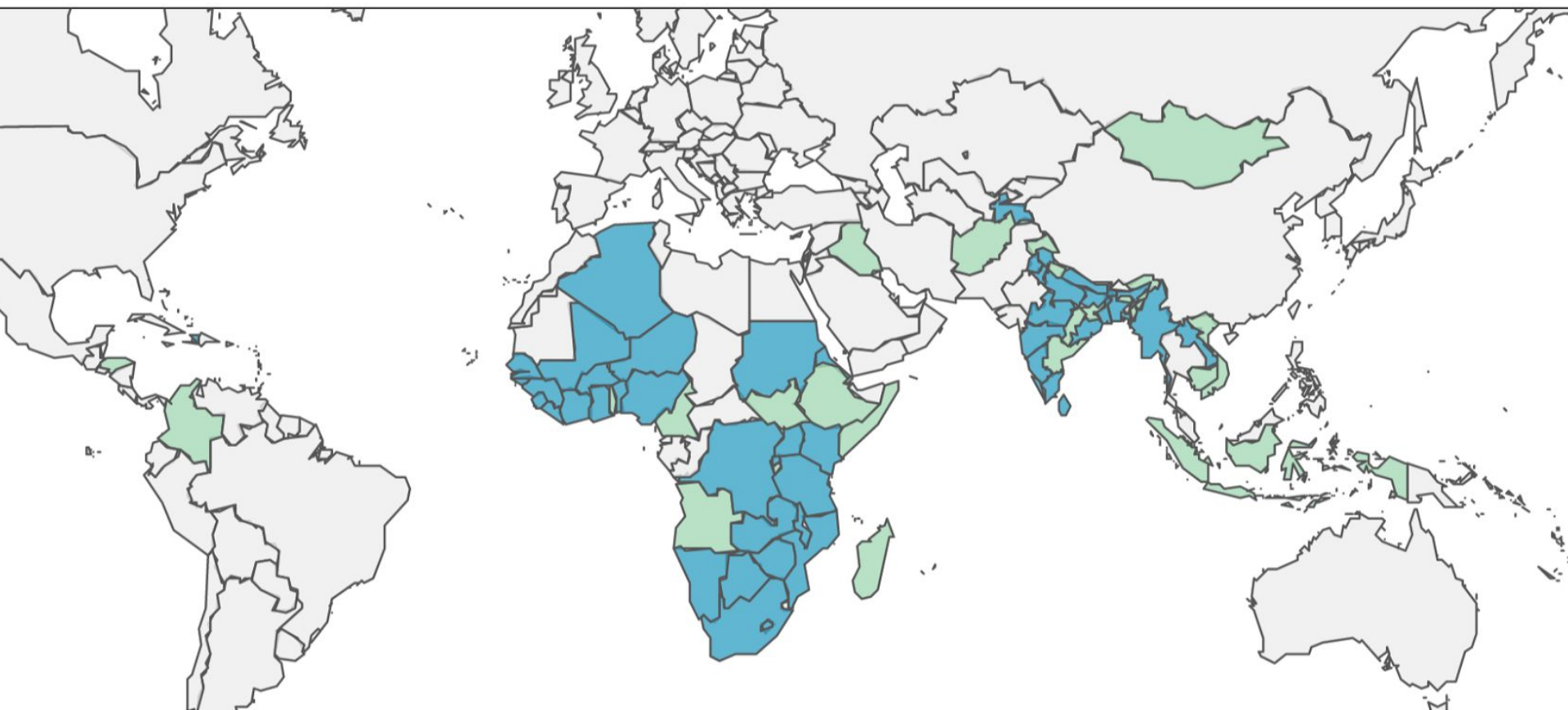
- A ***health management information system (HMIS)*** collects and reports program information, such as incidence of disease, client/patient information, and health services rendered. HMIS data can be used to determine disease patterns or to track health services use, as well as to monitor and evaluate health service delivery.
- DHIS2 is the most widely used application in LMICs, and is optimized for *data reporting*.

DHIS 2

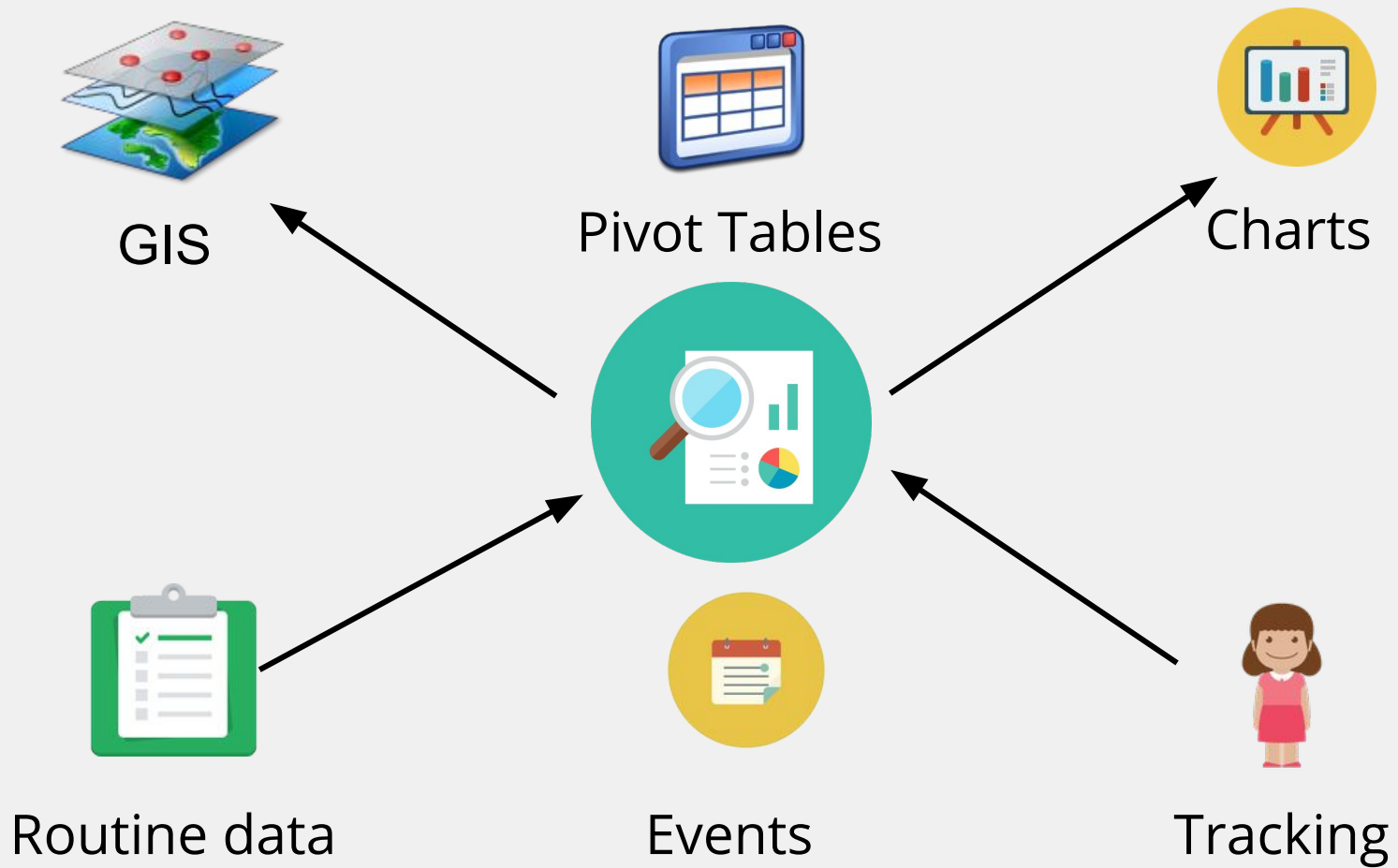
- Capture, management, and analysis of data
- Highly flexible and configurable platform with a wide variety of use cases
- Free and open source software
- Extensible through Web APIs and other applications
- New major versions released each quarter



DHIS 2 Global Footprint



DHIS 2 Features



A hand is shown interacting with a tablet computer that is propped up on a green-painted metal ledge. The background is a blurred outdoor scene with trees and foliage. The text "What is LMIS?" is overlaid in white on the tablet screen.

What is LMIS?

Logistics Management Information System

- 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

OpenLMIS is an open source, cloud-based, enterprise class electronic logistics management information system (LMIS) purpose-built to manage health commodity supply chains

The OpenLMIS initiative incorporates a community-focused approach to develop open source and customizable LMIS systems



Current Features and Functionality



Requisitions and Ordering

- Create, authorize, approve report and requisitions, both regular, based on configured processing periods, and emergency.
- Supports offline data capture on key screens.
- Executes complex and configurable approval hierarchies.
- Calculates order amounts based on average consumption and max policies.
- Complex data validations to support quality data capture.
- Generate orders for external fulfillment based on approved requisitions.



Setup and Customization

- Manage system users, role assignments, programs, facilities, orderables and associations with bulk uploads and administrative screens.
- Configure the system to match your processing and reorder periods, policies and facility hierarchy.



Stock Management

- Record transactions and view electronic stock cards (supports lot info)
- Perform physical inventory & adjustments
- Track ins/outs of stock – send and receive stock

Vaccine Module MVP Scope (3.3)

OpenLMIS version 3 and vaccine module

A long-term, solution supported by a community of financing and implementation partners

- Track stock amounts at multiple levels of the supply chain
- Manage the resupply of stock by fulfilling orders to supervised facilities
- Calculate reorder amounts calculated using ideal stock amounts
- Manage a centralized CCE catalog; Add and monitor CCE at specific facilities
- Reporting on DISC indicators

Estimated Release Date: March 30

Follow the [living product roadmap](#) for updates.



Requisitions & Allocations.

Supports push, pull, and mixed supply chains and the processes required for each.



Forecasting.

Update and input annual forecasted needs, at sub-national levels, to inform reorder and resupply quantities.



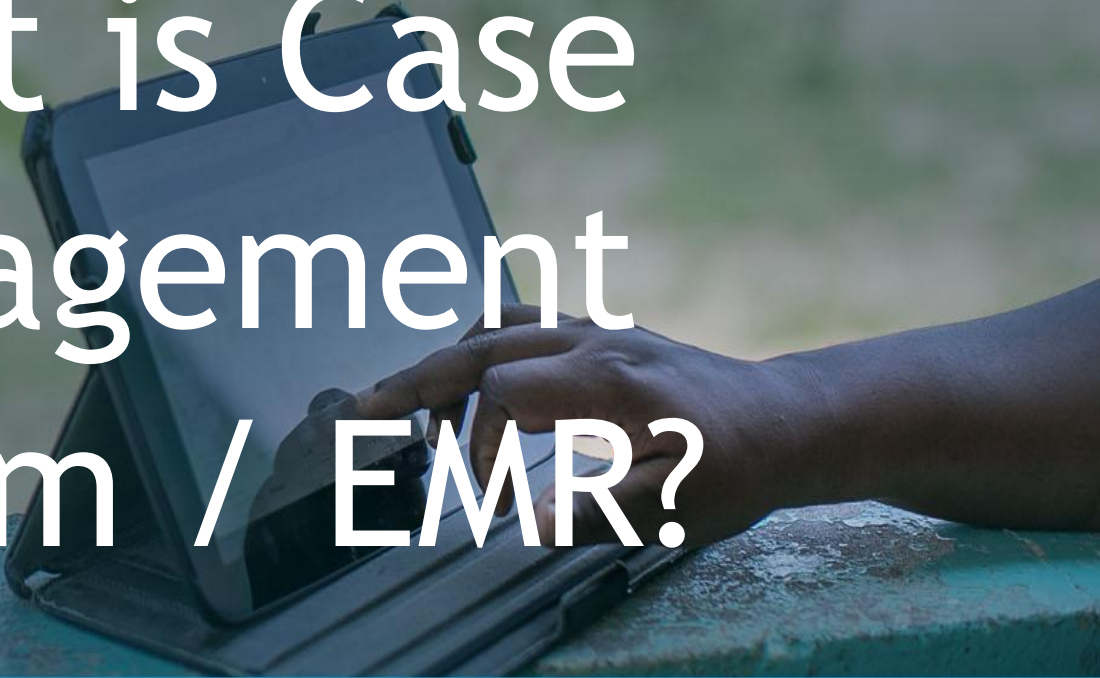
Stock Management.

Captures inventory data and stock movements to provide an overview of full stock availability. Record vial wastage and VVM status.



Cold Chain Equipment. OpenLMIS captures cold chain equipment inventory, functional status, and temperature status.

What is Case Management System / EMR?

A hand is shown interacting with a tablet computer. The tablet is propped up on a green, textured surface, possibly a ledge or a piece of equipment. The background is a blurred outdoor scene with green foliage and a light-colored wall. The text 'What is Case Management System / EMR?' is overlaid in white, sans-serif font on the left side of the image.

Case Management System / Electronic Medical Record

Case management features promote continuity of care across life stages by ensuring clients receive the complete package of health services with automated scheduling and showing reminders for follow-up visits and required services. These features enable health workers to see a holistic view of their clients and easily manage client records.

OpenSRP

NR ZEIR

Zone 1

+

100

Search name or ID

Scan QR code

CHILD	AGE	ID	WEIGHT	DUE VACCINE
Robert Roberts Riana Tylor	8w 1d	5047162	✓ 6.0 kg	Upcoming 6 weeks
Precious Chelo Sharon Kakkoma	1y 9m	5178511 8070420	Record weight	✓ 18 months
Lastone Tembo Lee I Lu	8w 1d	4291431	Record weight	Record at birth
Harry Moonga Grace Mbewe	8w 5d	4291423 675545/45/5	Record weight	Upcoming 6 weeks
Issue... Issue Parentname	10w 4d	5138623	Record weight	Record at birth
Issue Twentytwo Issue Parentname	10w 4d	5138615	Record weight	Record at birth
Choolwe Siakantu Zwino Syangandu	1y	4996971 188/17	Record weight	Record 9 months
Mosley Chizela... Estely Sakuba	8m 3w	4996963 222/17	Record weight	Record 10 weeks
John Rambo M/G.	5y 2m	5143144	Record weight	Record at birth
Patrick Malyamba Glady. Imasiku	5m	5136148 34		Lost to Follow-Up
Rose Moonga Linda Bwala	6m	60098014... 67/17	Record weight	Record 14 weeks

ZEIR > Robert Roberts

Zone 1

Robert Roberts

ZEIR: 5047162 Age: 9w 1d

Robert Roberts

5047162

☒ OPV 0

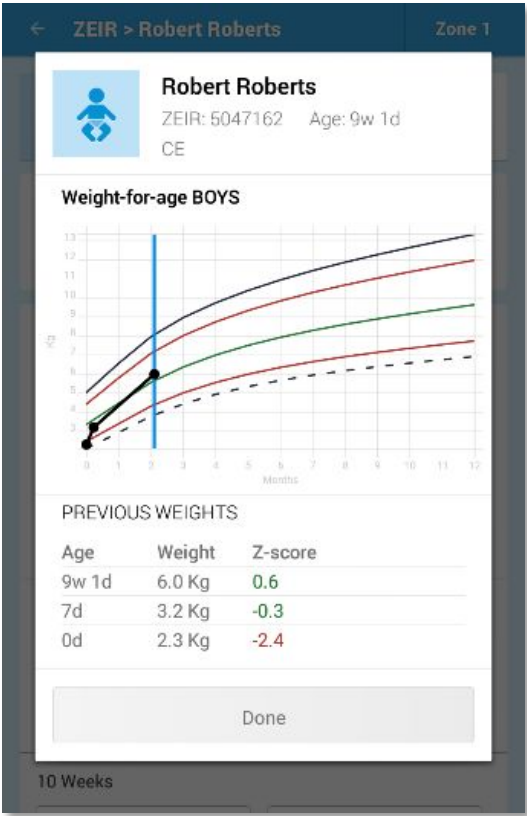
☐ BCG

24 Aug

25 Sep 2017

Cancel

Set



OpenSRP Features












- Two-way integration with OpenMRS
- Common data model (maps to CIEL concept dictionary)
- Offline functionality, including schedules, patient registrations, lookups
- Unique identifier module / QR code support / biometric support
- Global patient lookup
- Team-based data sharing
- DHIS2 integration and reporting
- In-app reporting

The screenshot shows the OpenSRP mobile application interface for a patient named Joyce Mwansa. The top navigation bar is purple and contains a back arrow, the text "ZamJab > Joyce Mwansa", and "Linda Clinic". Below the navigation bar, there is a patient profile section with a photo of Joyce Mwansa, her name, and her EIR (5425428) and age (6w 4d). To the right of the profile is a "HER SIBLINGS" section with a photo of a child. Below the profile is a "WEIGHT-FOR-AGE" section with a "Record weight" button and a graph icon. The main section is titled "IMMUNISATION RECORD" and shows the patient's DOB as 17/12/2016. It is divided into two sections: "Previous: 6 Weeks" and "10 Weeks". The "Previous: 6 Weeks" section has four checkboxes: "OPV 1" (checked), "Penta 1" (checked), "PCV 1" (checked), and "Record Rota 1 - due 12/12" (highlighted in red). The "10 Weeks" section has three buttons: "Record OPV 2", "Record Penta 2", and "Record PCV 2".



In-app Reporting

- Daily tallies of service data
- Monthly reporting indicator aggregations
- Submission to DHIS2

HIA2 Reports	
Daily Tallies	Draft Reports (0)
March 2017	
	4 March 2017
	12 March 2017
	26 March 2017
February 2017	
	2 February 2017
	11 February 2017
	23 February 2017
January 2017	
	2 January 2017
	17 January 2017
	28 January 2017
December 2016	
	6 December 2016
	14 December 2016

Daily Tally > 4 March 2017		
Under 5 Clinic Attendance		
ID	Indicator	Value
CHN1-005	Attendance child health <12months (male)	2
CHN1-001	Attendance child health <12months (female)	2
CHN1-005	Attendance child health <12months (total)	2
CHN1-001	Attendance child health 12-59 months male	2
CHN1-005	Attendance child health 12-59 months female	2
CHN1-001	Attendance child health 12-59 months (total)	2
CHN1-005	Attendance child health total	2
CHN1-005	Attendance from outside catchment's area	2
Growth Monitoring and Nutrition		
Immunisation		
Vitamin A, Deworming, and ITNs		



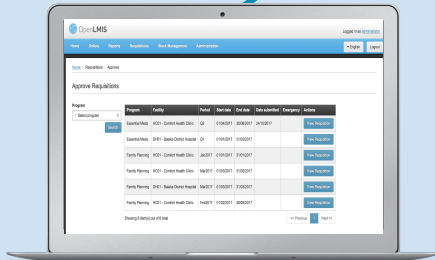
A photograph of a hand interacting with a tablet computer. The tablet is in a black, ruggedized case and is propped up on a weathered, light-colored stone wall. The background is a blurred outdoor scene with green foliage. The text 'Live Demo' is overlaid in white on the tablet screen.

Live Demo

Integrating OpenSRP, OpenLMIS and DHIS 2

POC: Integrating Stock data and Coverage data

Supply Chain Management

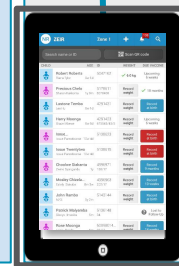


*Send stock
information*

Health Service Delivery Management



*Send coverage
information*



Users

Immunization Nurse

- Administers vaccinations
- Records services rendered in the OpenSRP application



Users

Store Manager

- Tracks stock levels
- Requests stock using OpenLMIS application



Users

EPI Manager

- Monitors program
- Conducts root cause analysis
- Takes action on issues
- Uses DHIS 2 to visualize data



A hand is shown interacting with a tablet device that is propped up on a green-painted ledge. The background is a blurred outdoor scene with trees. The text "Start Demo" is overlaid in white on the tablet screen.

Start Demo

https://docs.google.com/document/d/12_qE_rxtPRwrabSCXZ7C_QlSxvFnqR6dcwBDQHaChZE/edit

A hand is shown interacting with a tablet device that is propped up on a green-painted ledge. The background is a blurred outdoor scene with trees. The text "End Demo" is overlaid in white on the tablet screen.

End Demo

A hand is shown interacting with a tablet device, which is propped up on a green-painted ledge. The background is a blurred outdoor scene with trees. The word "Kahoot" is overlaid in white text on the tablet screen.

Kahoot



URL: integration.baosystems.com

Username: guest

Password: GDHF2017

Login!

Discussion



Where else would integration be valuable?

OpenSRP -> DHIS2

- case level to aggregate

OpenSRP -> OpenLMIS

- Submit a requisition to order more stock

OpenLMIS -> OpenSRP

- Receive advance shipment notifications
- Confirm proof of delivery
- Update equipment functionality

DHIS2 -> OpenLMIS

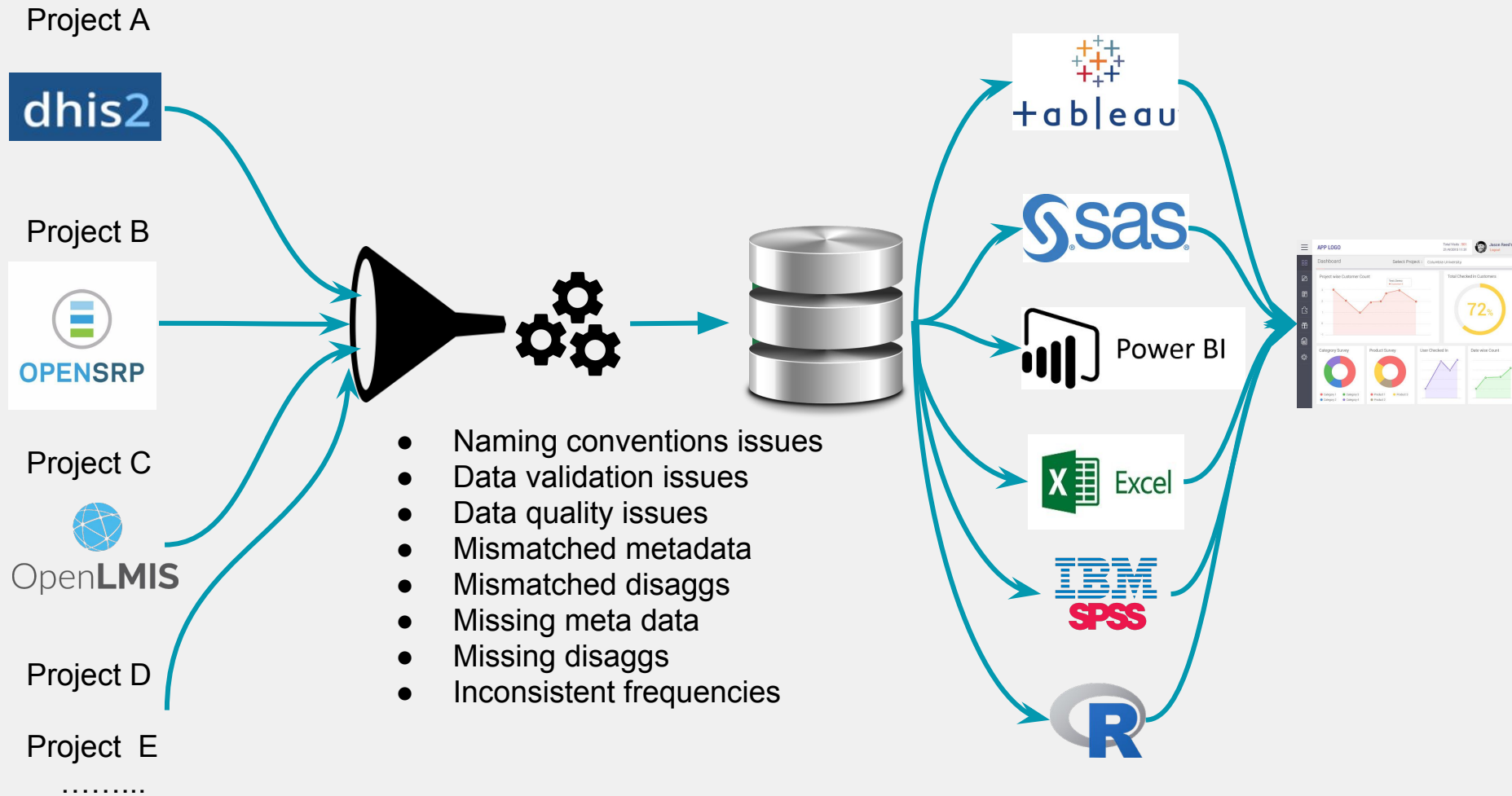
- see aggregate usage information for resupply decisions

A photograph of a hand touching a tablet screen. The tablet is propped up on a green-painted concrete ledge. The background is a blurred outdoor scene with trees. The text 'Best Practices' is overlaid in white.

Best Practices

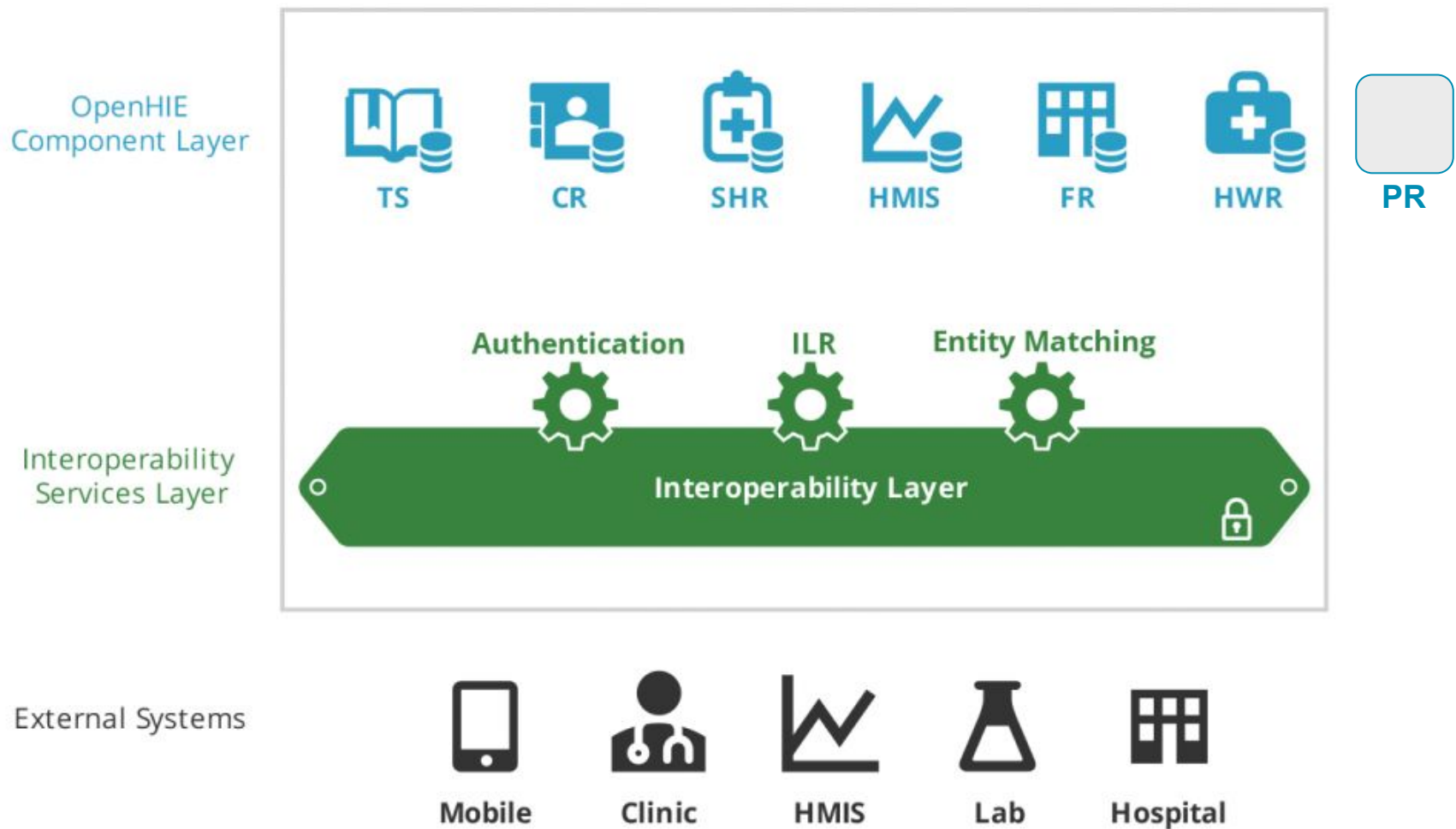
How do you integrate?

Why Integrate?



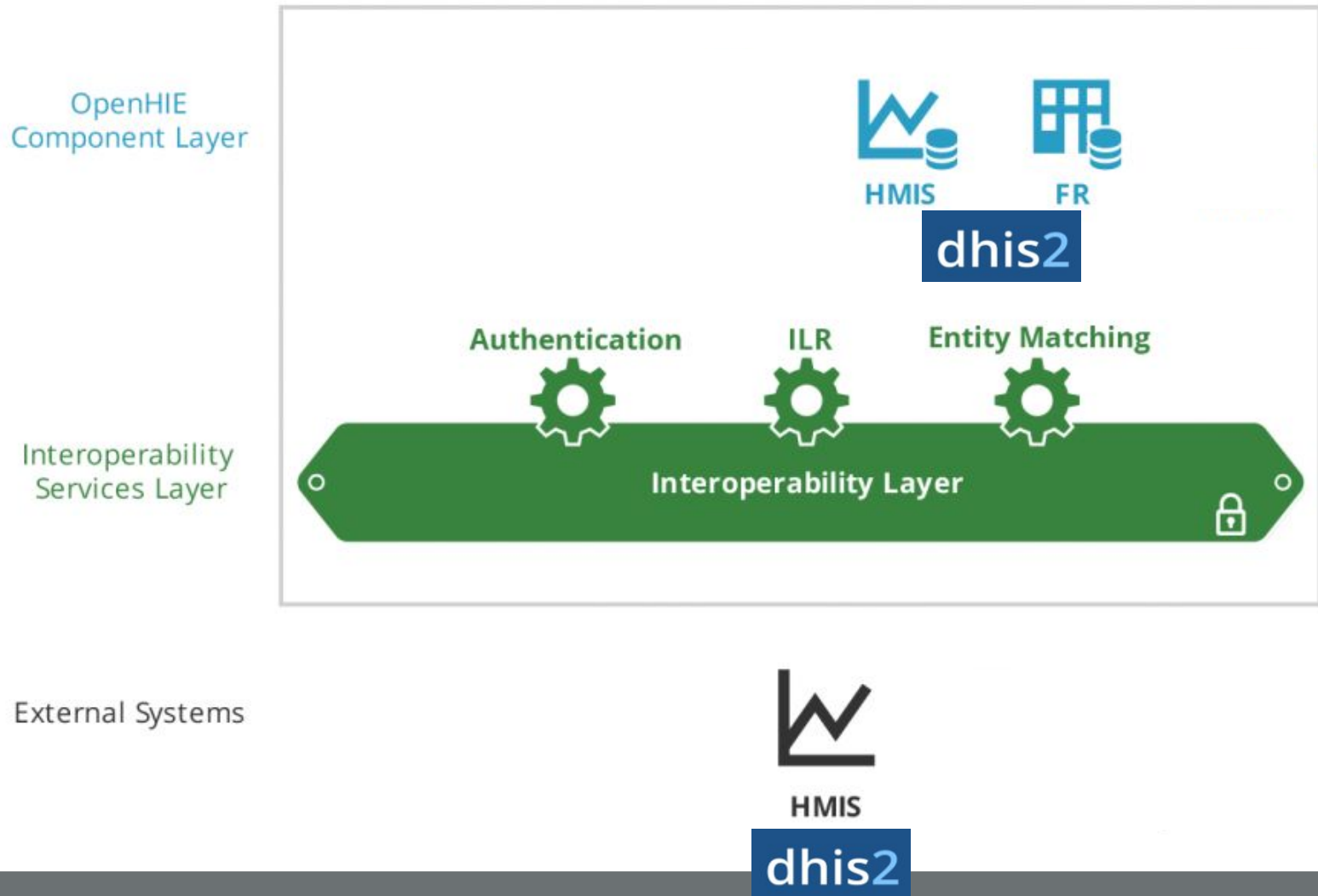
Interoperability in Global Health

OpenHIE Architecture <https://ohie.org/#arch>



DATIM4U Example

OpenHIE Architecture <https://ohie.org/#arch>



Considerations for Integration

Technology

Human Resources



- Repeatable
- Sustainable
- Scalable
- Recoverable

Keys to Integration Success

- **Data Governance**
- **Standards Adoptions**
- **Supported and Active Software Development**
- **Security and Compliance**
- **Proper Staffing**
- **Be Flexible**

Risks to Integration

- Complexity of systems to be integrated
- Changes in software, particularly APIs
- Security being optional
- Compliance & local laws
- Capacity / Staffing

Discussion / Q & A



END

"PLEASE NOTE"
Please do not touch the contents of this box
as they are fragile and may be damaged
if handled incorrectly.
If you need to open the box, please
contact the person who provided it.
Thank you for your attention to this matter.
The Kings
LONDON - 444 444
UK

Presentation Outline

What is LMIS, HMIS and EMR? NICOLA does HMIS, MARY JO does LMIS, Matt does EMR

Introduction to all three systems (1 slide each)

- Nicola to introduce DHIS 2
- Mary Jo to introduce OpenLMIS
- Matt to introduce OpenSRP

What does integration mean? What does interoperability mean? Why? BRANDON (VR)

•

Begin the demo integration walkthrough (*use the slides to get shared understanding of the flow of the demo*)

- Explain the various roles and why you are using that system and why the integration helps you do your job
- Could talk about the use cases we are demonstrating
- Also, highlight other opportunities of integration

Key success and failure points to integration. How do you maintain integration?

- Steffen to add in a slide or two
- Good time to ask questions about failures/challenges

Discussion questions (EVERYONE please think about questions which can happen throughout presentation)

- Add more to the next slide

Sessions Description

Many countries considering their health information system (HIS) strategy have expressed a growing interest in integrating systems and incorporating systematic analysis of Logistic Management Information System (LMIS) and Health Management Information System (HMIS) data to improve supply chain performance and service delivery. Specifically for immunization supply chains, interest is rapidly growing in data for management and the provision of high-quality data for accurate and informed decision-making. For this lab session, participants will see a demonstration environment on three systems: DHIS 2, OpenLMIS and OpenSRP, all of which manage both LMIS and HMIS data within immunization supply chains across countries.

The OpenLMIS, DHIS 2, and OpenSRP Integration Lab aims to present a proof-of-concept for systems integration, demonstrating how supply chain and health information systems can bring data together for decision-making and reporting while maximizing data capture and reducing redundancies. The lab will hold a discussion on the key steps, data governance decisions, and technical requirements behind a DHIS 2 (HMIS), OpenLMIS (LMIS), and OpenSRP (point of care vaccine registry) integration. The lab will demonstrate how data captured in varying systems can be visualized together in another system to drive better decision making. During the lab, participants will see how an electronic LMIS (OpenLMIS) feeds stock level and inventory data into the HMIS (DHIS 2) where it can be compared against vaccine coverage information reported by a digital registry (OpenSRP). Additionally, participants will see how stock levels of vaccines can be viewed side-by-side for a particular facility or geographic area. Throughout the lab, participants will be asked to share experiences and join the discussion to identify lessons learned and additional opportunities.