

TUESDAY,
DECEMBER 11TH

Synchronizing Patient Records with the International Red Cross

We know the benefits of an EMR

Direct

Reduce the data
collection and
reporting burden

Improve timely
access to data and
reports

Scale discrete
investments into
program-wide
impacts

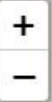
Indirect

Increase
engagement in data
use

Improve quality of
services

Improve beneficiary
experience

Simplify data
capture
requirements




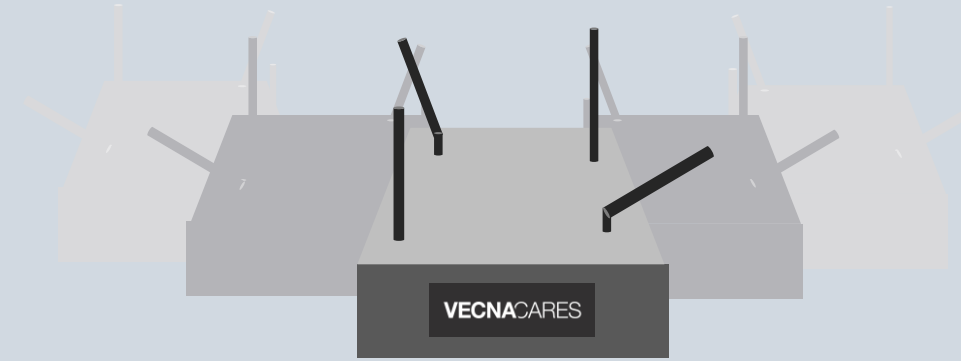
ICRC
• Key Operations



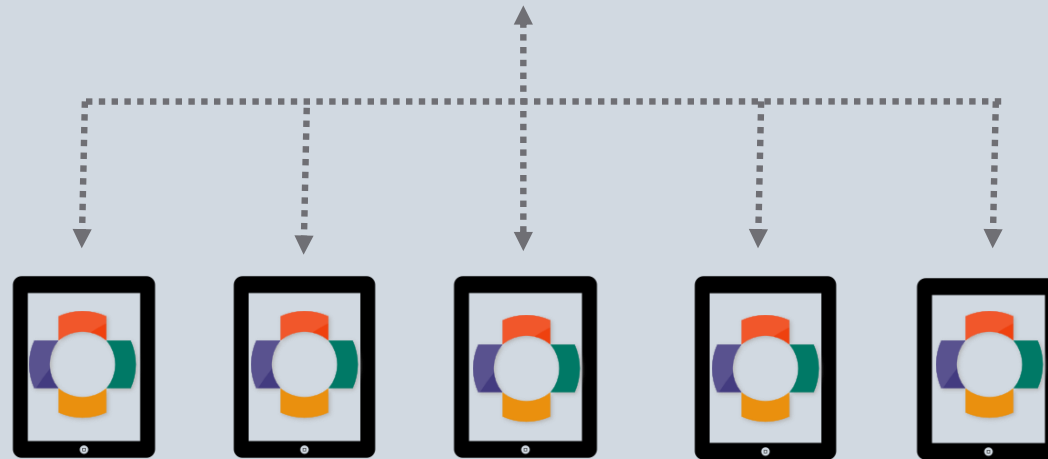
How do we ensure that the data captured in remote areas without internet is available in a consolidated digital repository?

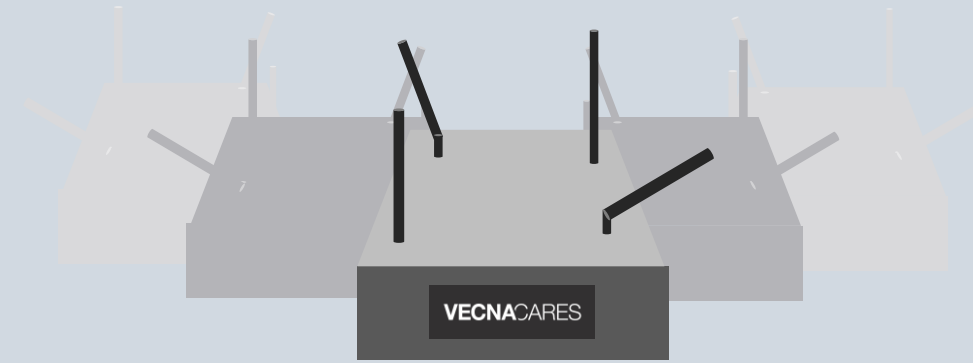
Criteria for Success

- 
- Job exists to move the data every day with no user intervention
 - Originating hardware ID is sent with the data and stored in final location
 - There exists a failure/retry option to ensure that all intended data is moved into the queue
 - Users can customize the destination location from the remote site

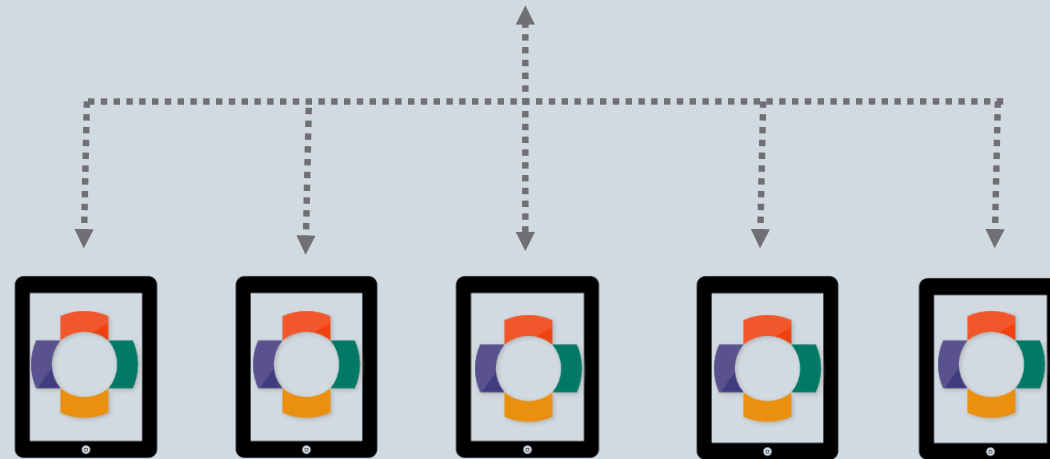


1. Software is installed
onto the CliniPAK

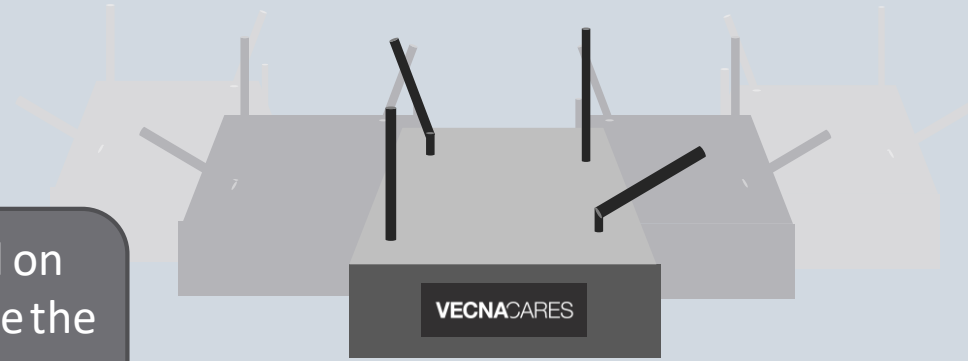




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2. Users access the software on tablets or desktop machines via a Local Area Network (LAN)



1. Software is installed onto the CliniPAK

3. Data from local area is stored on the server. How do we consolidate the data from this server with data from other globally deployed servers?

2. Users access the software on tablets or desktop machines via a Local Area Network (LAN)



Data Format Requirements



Industry standard



Compatible with OpenMRS



Extensible



Easy to parse

Data Format Requirements



Industry standard



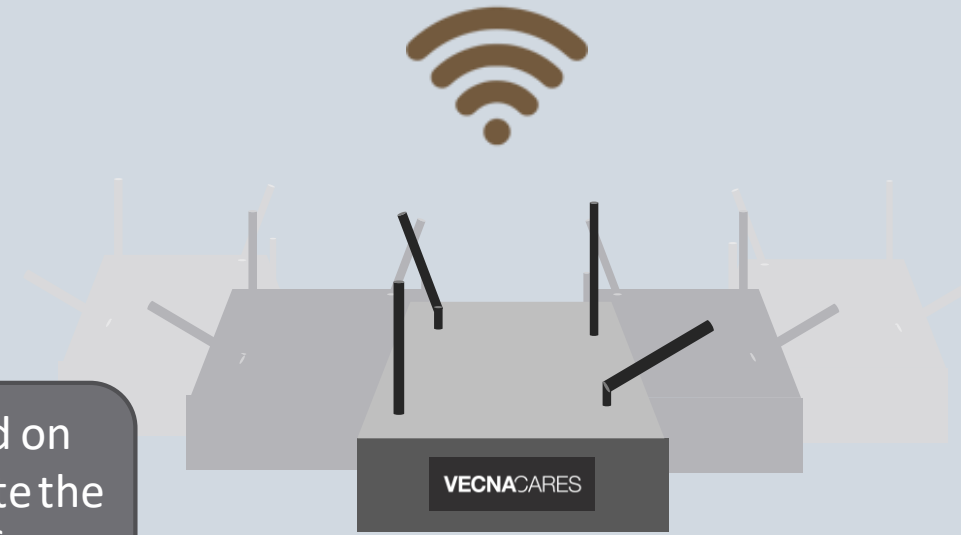
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Easy to parse



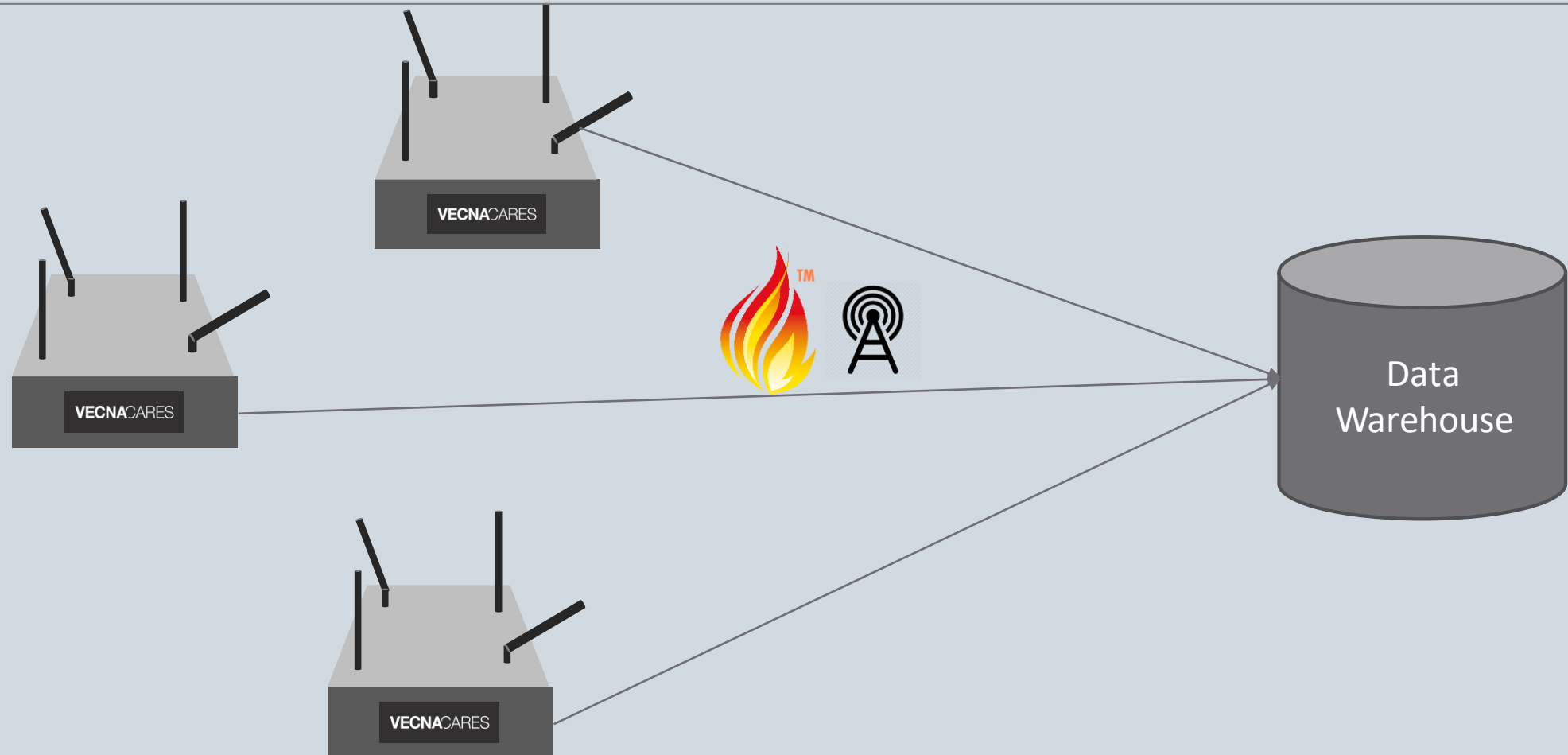
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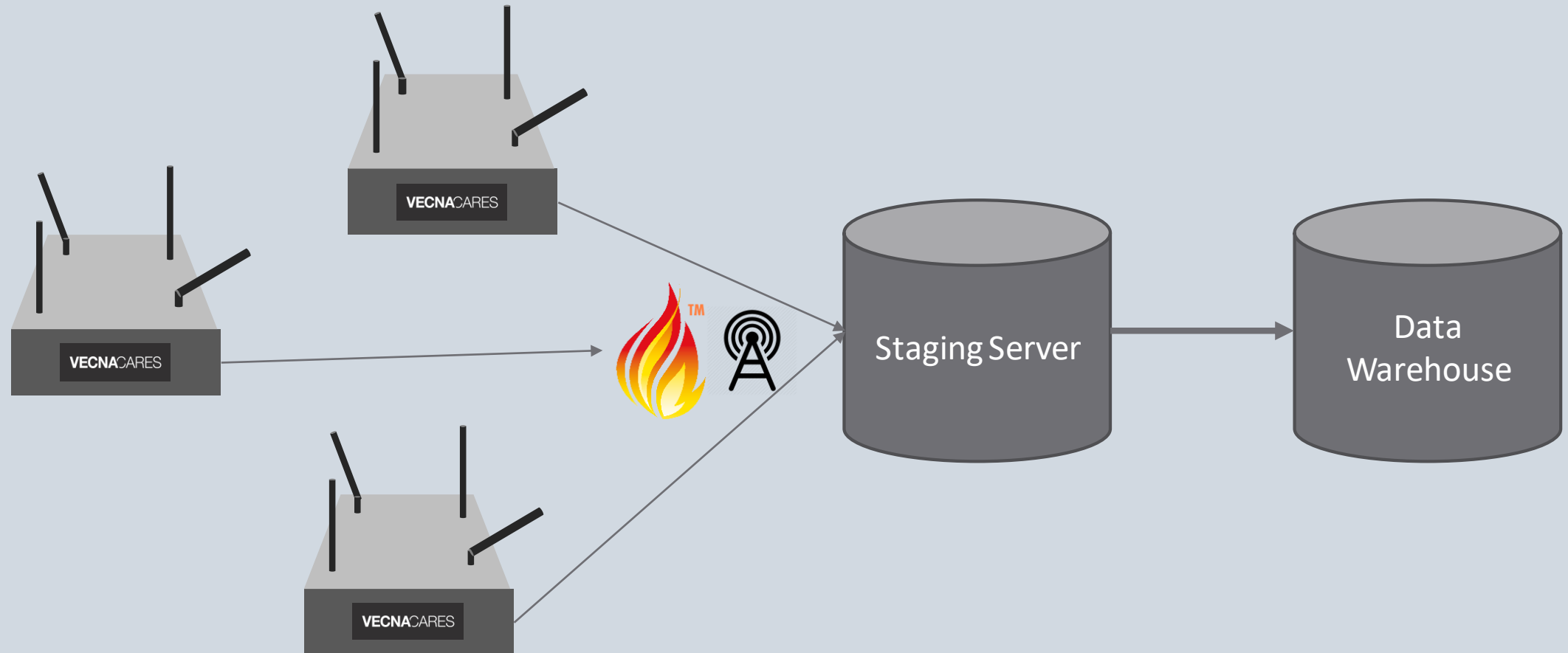


Synchronizing Architecture





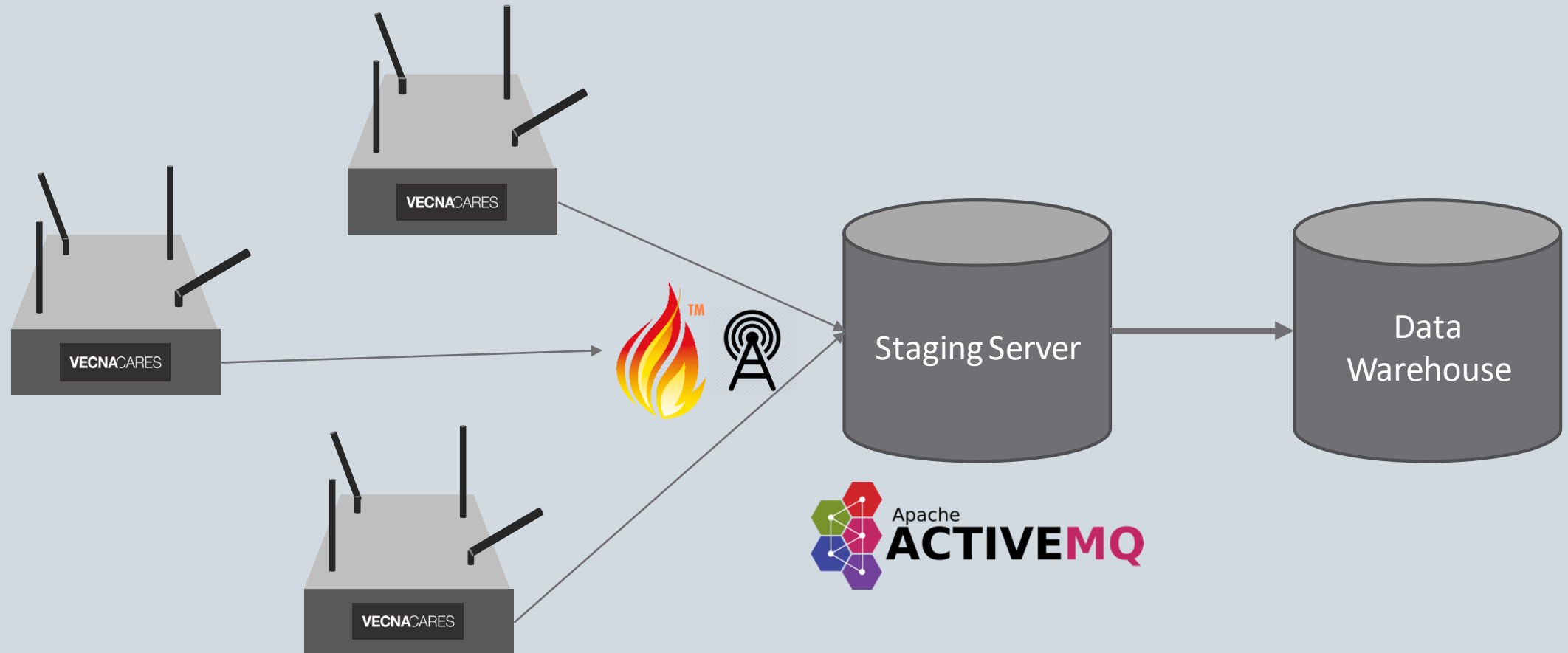
Synchronizing Architecture



Characteristic	Kafka	Advanced Message Queuing Protocol (AMQP)
Application Domain	Log Aggregation, Big Data Analytics - high throughput, weaker durability	Financial services, Stock, Banking - strong durability guarantees
Basic Distributed Unit	Topic	Queue
Consumer Subscription Model	Point-to-point and Pub-sub models available	Depending the type of exchange, both Point-to-point and Pub-sub models are implementable
Message Batching	Available out-of box	Difficult to implement
Message Delivery Model	Only pull model available	Both push and pull models are available
Message Format	Bytes - Easier to develop for	Binary - better compression, boosts throughput
Message Persistence	Writes to a persistent file system log using the page-cache	Durability is a configuration option while creating a queue
Message Reliability	Unreliable - the sender doesn't receive an ACK	Reliable - ACKs are sent on receipt of messages
Message Routing	No intermediaries. Messages are sent to brokers	Exchanges used to route messages using bindings
Virtual Hosts	Not present	Used to ensure segregation of clients

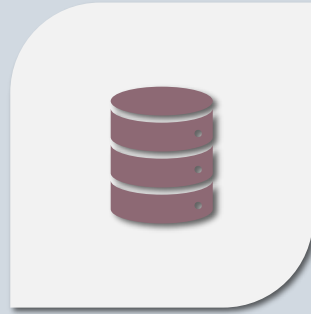
What Queue System?

Synchronizing Architecture

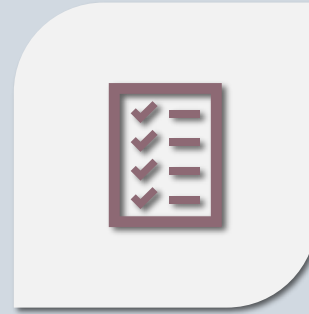




SEPARATION OF CONCERNS: HEAVY LOAD ON QUEUING SERVER WILL NOT IMPACT ABILITY TO RUN ANALYSIS ON THE DATA IN THE WAREHOUSE



OPTIMAL DATA STORAGE FORMATS: DATA IN EACH DATABASE WILL BE STORED IN AN OPTIMAL WAY FOR ITS PURPOSE (INDEXED FOR REPORTING, ETC.)



DEDUPLICATION: POTENTIAL TO CATCH DUPLICATE RECORDS PRIOR TO MERGING INTO THE DATABASE

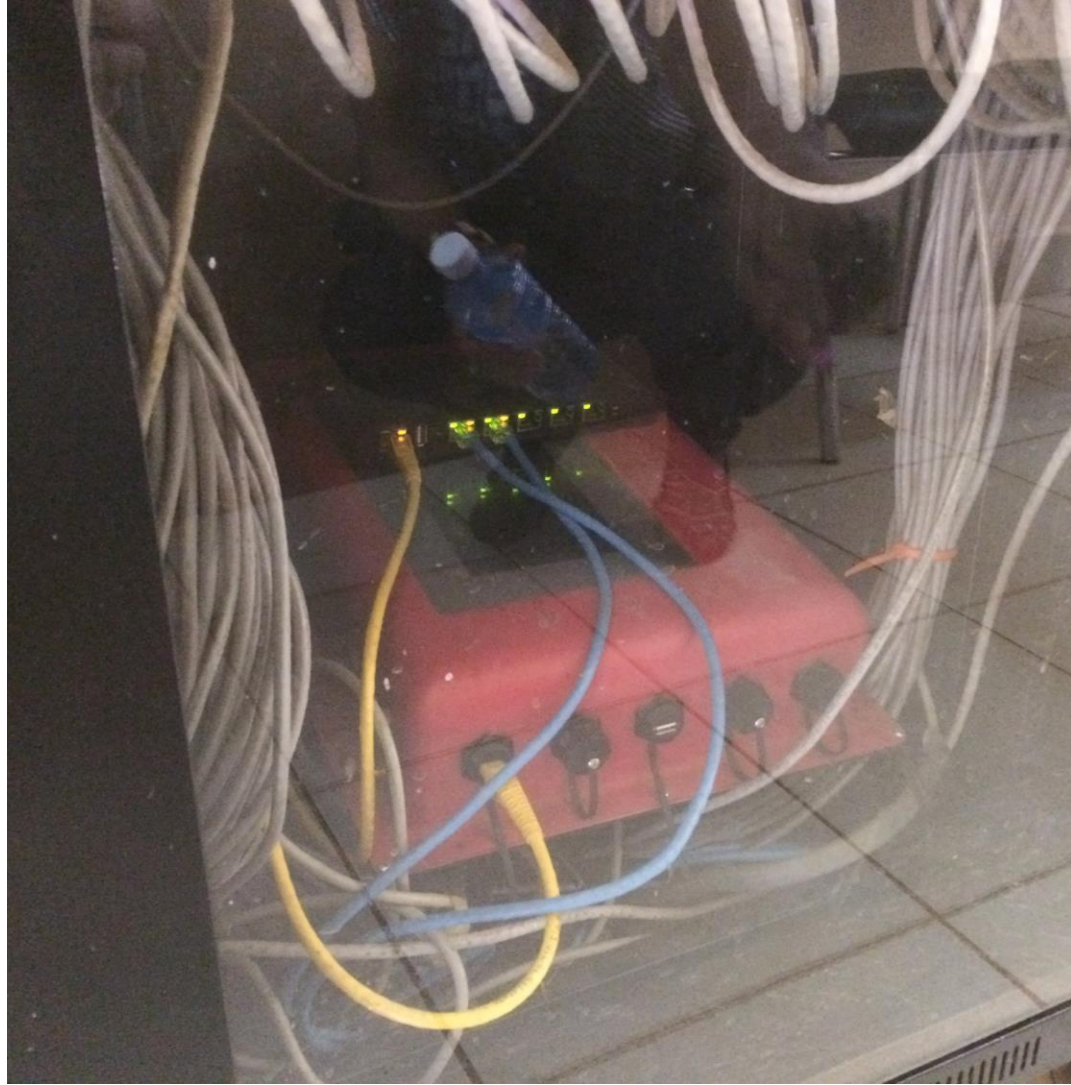


SCALABILITY: CAN ADD ADDITIONAL STAGING SERVERS AND/OR INCREASE THE SIZE OF THE WAREHOUSE WITHOUT REIMPLANTATION

Benefits of Queuing Architecture



ICRC
• Key Operations



01

Increased local
engagement
with data

02

Benchmarking
indicators
across similar
global locations

03

Data backed up
off-site

04

Collect fewer
data points for
the same
outcomes

Benefits

An interoperable
system enables
clinical providers to
focus on the patient,
not on the data or
the tool



Thank you

MARY.ROCHELEAU@VECNA.COM

Transitioning from a legacy EMR to a modern EMR deployed in 100+ Sites in Haiti: Lessons from the field

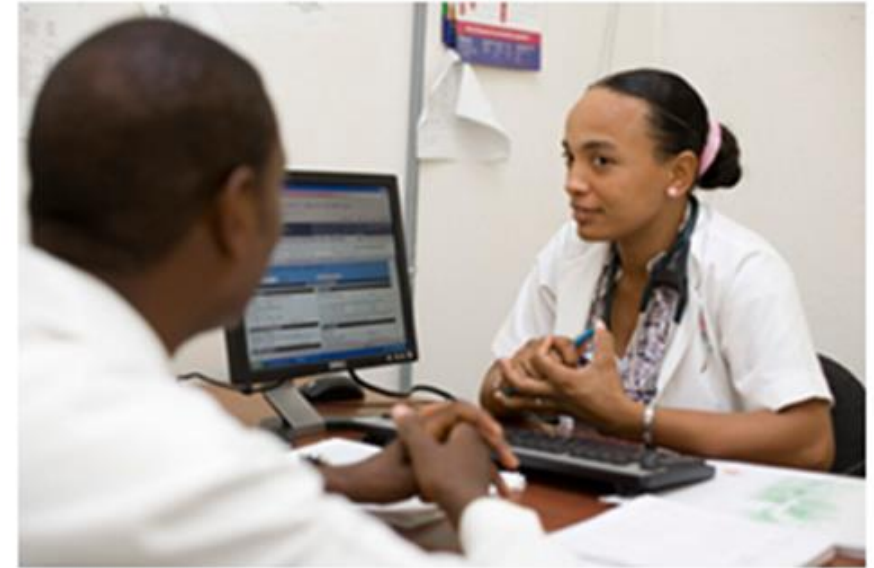
Nathaëlf HYPPOLITE.MD.MSHI

Learning Objective

- Summarize the current status of the iSanté system and implementation
 - Lessons learned after 10 years of implementation
- Transition from iSanté to iSantéPlus (OpenMRS) and OpenHIE (SEDISH)
 - Lessons learned when migrating a legacy system to a new platform

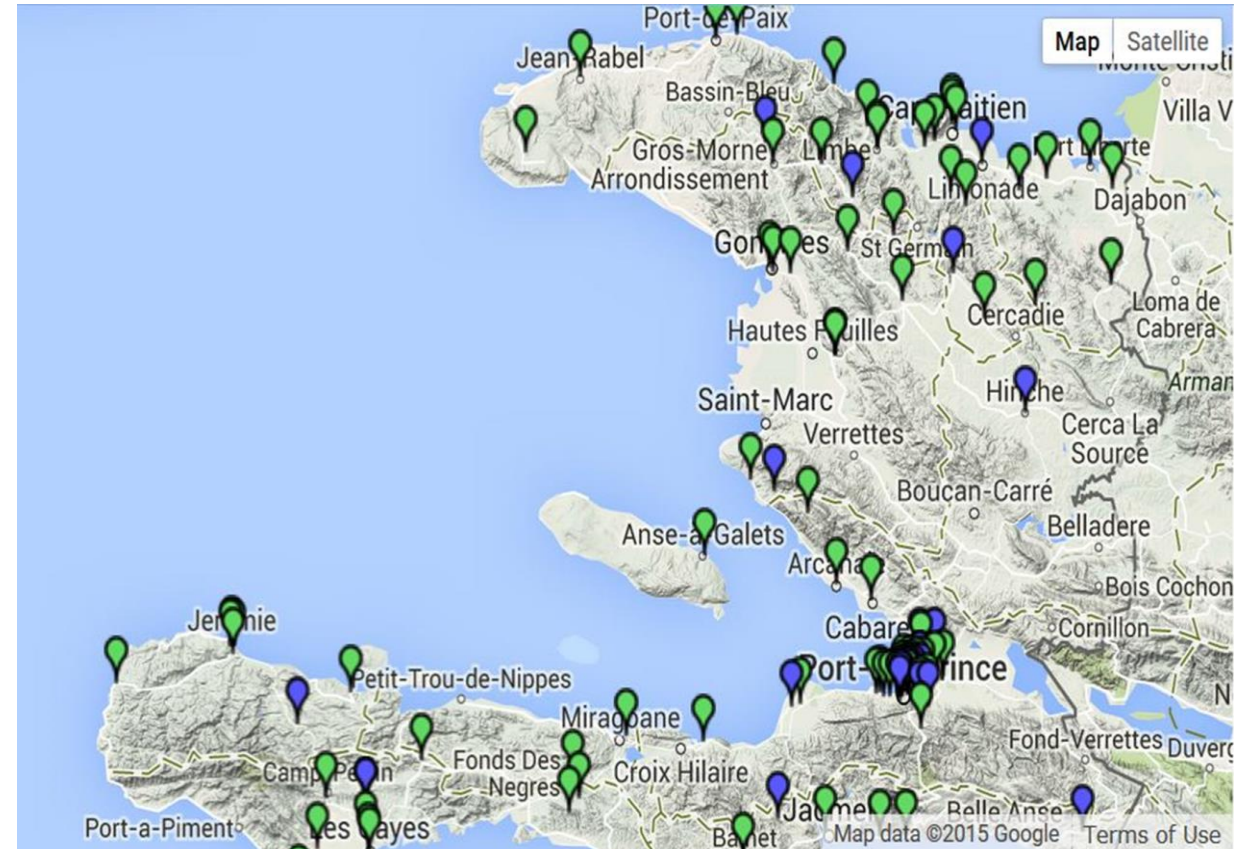
Background

- iSanté established in 2005 with retrospective data entry, HIV-only
- Evolved into a comprehensive, longitudinal electronic medical record (EMR) that assists clinicians at point-of-service (POS) to effectively treat chronic and acute diseases

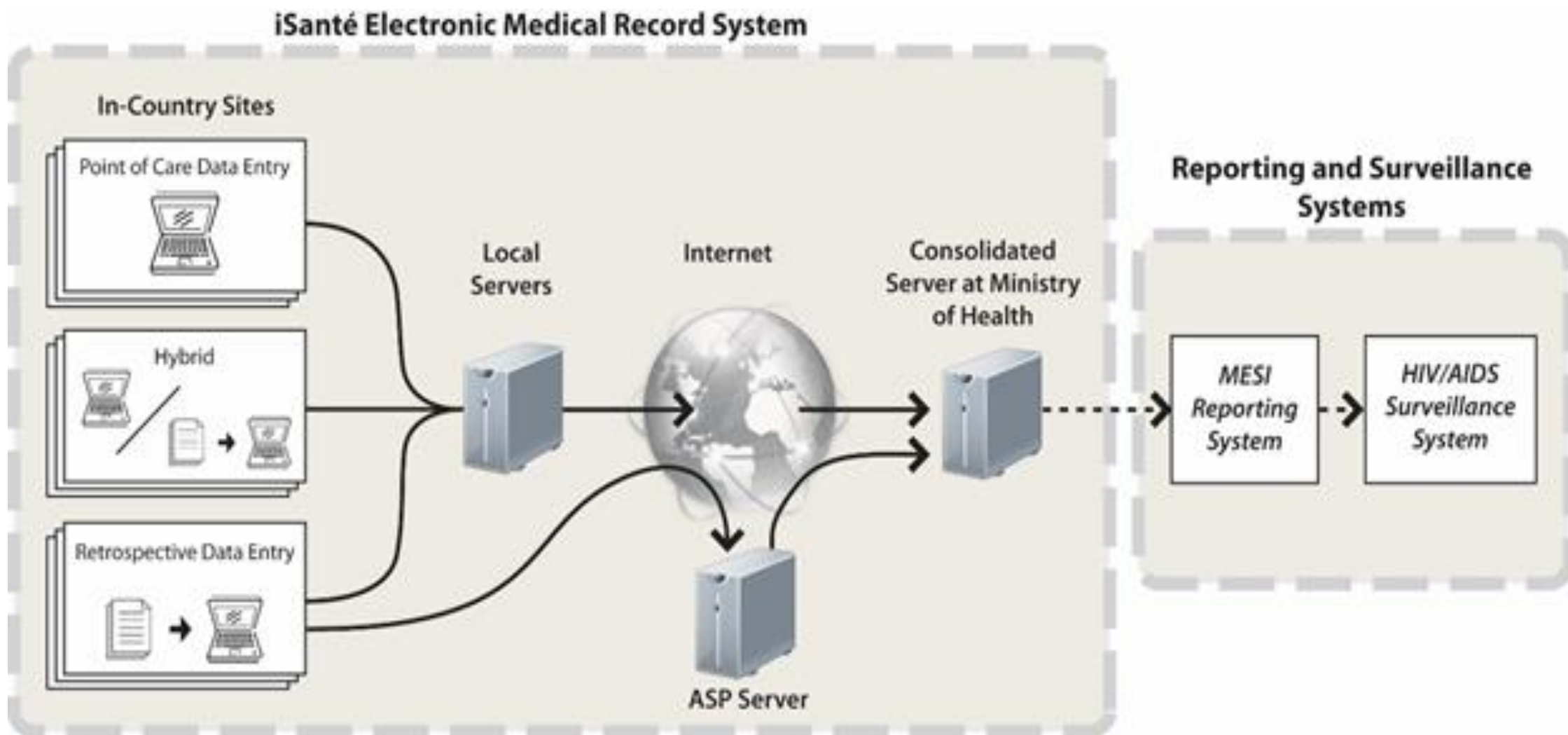


Background

- Currently holds 1 million patient records, serves as the EMR for roughly 70% of the PLHIV population in Haiti, and installed in 143 sites with ~100 replicating to the central server



iSanté Data Flow: Unidirectional



Key accomplishments in the past several years

- **Governance:** CDC, UGP and I-TECH/CHARESS formed a Technical Working Group (TWG) and Steering Committee (SC) in April 2014, to guide development and implementation for iSanté and OpenELIS, and facilitate coordination and response between the three key partners.
- **Development:** reports and indicators are up to date with PNLIS and MER 2.3 guidelines
- **Transition :** I-TECH/CHARESS hired a team of developers in Haiti to manage iSanté/OpenELIS operations. The consolidated server is hosted locally at UGP/MSPP.

Transition to iSantéPlus and SEDISH

The Pivot: iSanté to iSantéPlus

Key Interventions

Custom-built software

• Open Source Systems

Limited Developer Pool

• International Community

Deprecated Tech Stack

• State of the Art Technologies

Unique Architecture

• International Standards

Unidirectional Data Flow

• Bidirectional Exchange

Why choose an Open source EMR ?

- Able to modify the EHR system to fit Healthcare system needs
- Lower acquisition and implementation costs (No Licensing fees)
- Access and Collaboration
 - Share development ideas and experiences with the rest of the “community” that is using the same solution, which can help improve the software and speed up the development process.

Why Health Information Exchange (HIE) using International Standards?

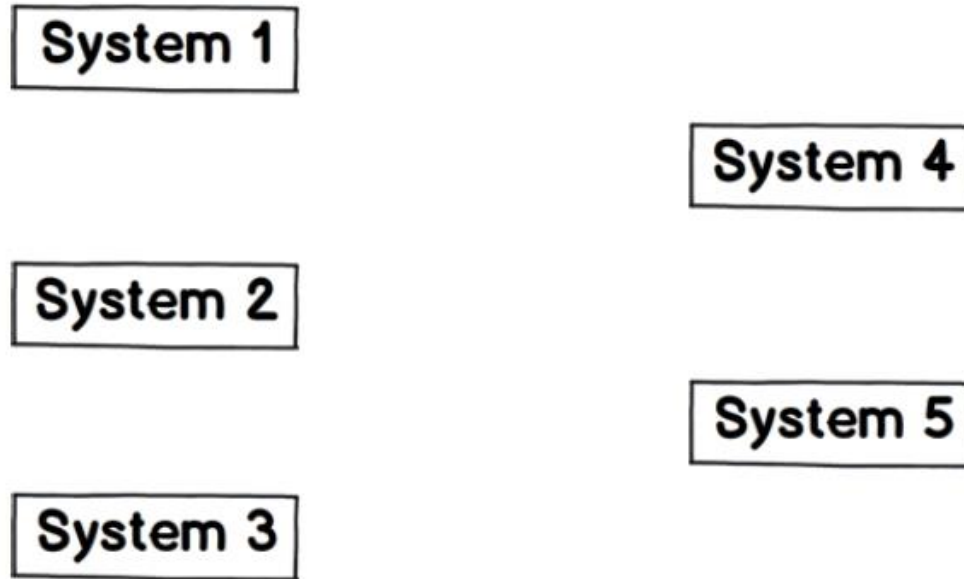
- **Semantic interoperability** with all electronic platforms of the Haitian healthcare system.
- Shared infrastructure for automated data exchange
 - Better continuity of care since the patient's information is available to clinicians throughout episodic and longitudinal care journeys.
 - Reduce long-term costs by reducing the time and effort required to acquire and share patient data.

The need for bidirectional communication

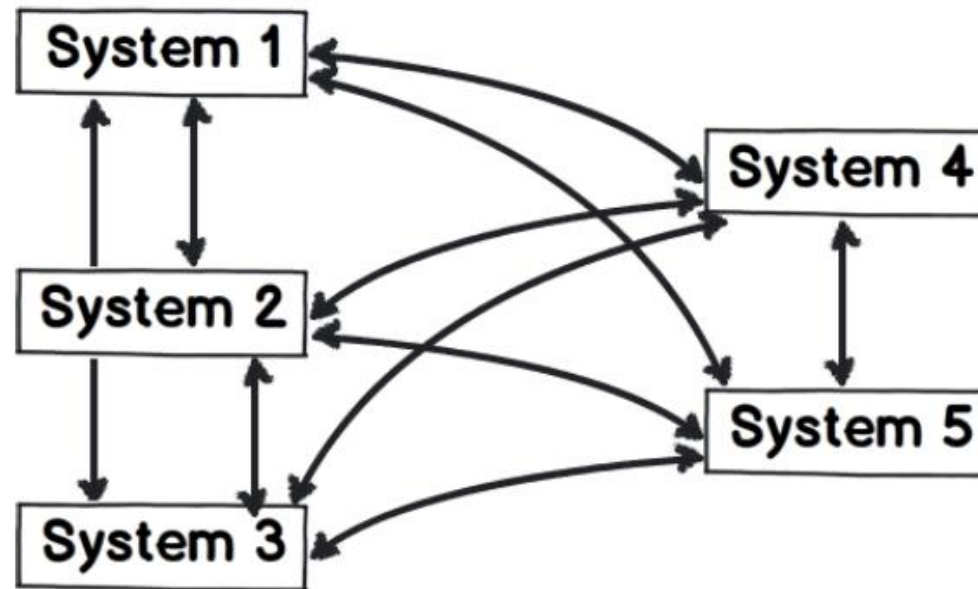
- Meeting new requirements :
 - Sending lab request to the national central LIS and getting results back (Viral load)
 - Nationwide real-time biometric identification (Fingerprint)

The problem to solve :

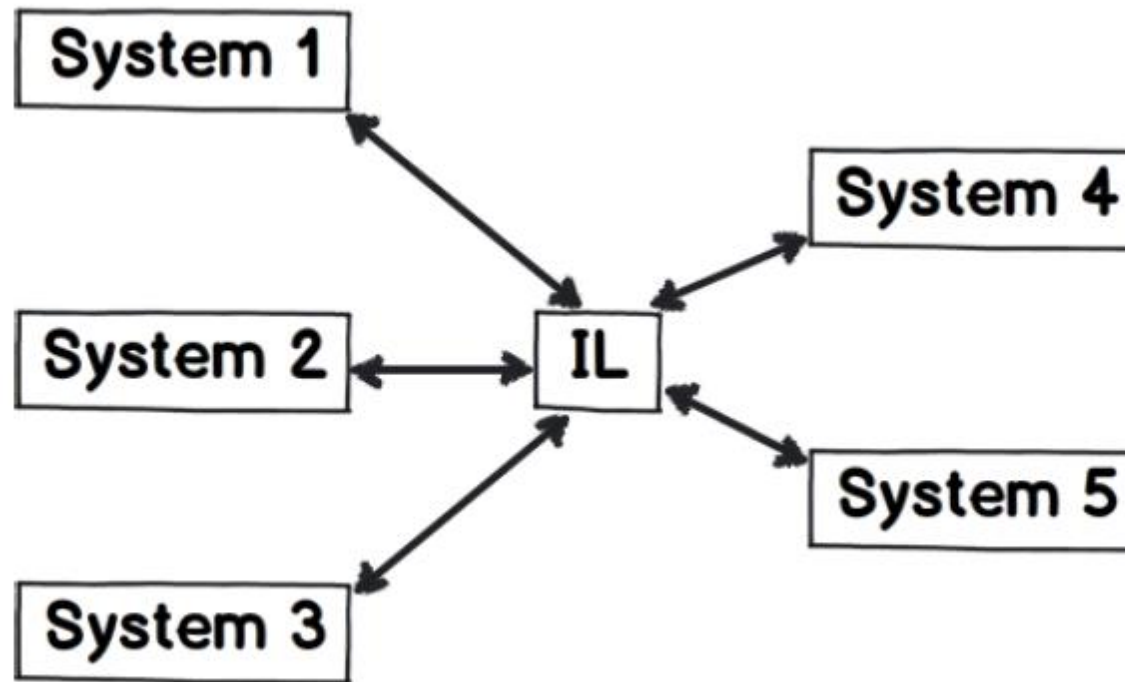
We have 5 systems that all need to talk to each other



The usual context

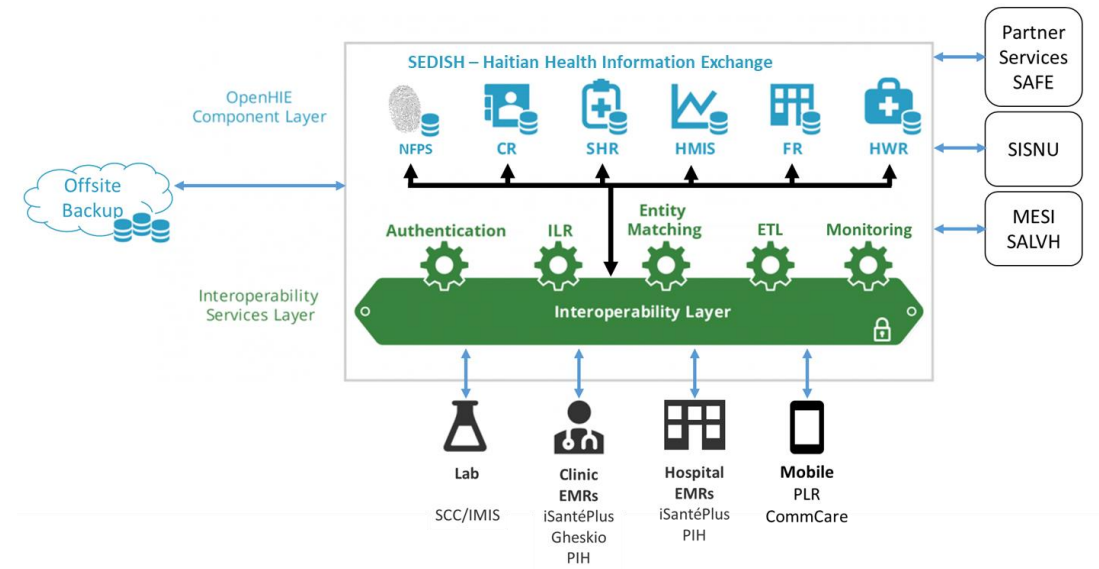


The OpenHIE approach



Open Health Information Exchange for Haiti

- Système d'Échange d'Information Sanitaire Haïtien (SEDISH) is the Health Information Exchange (HIE) in Haiti
- Global community of organizations working to improve the health of populations through robust and standardized health information systems
 - Implementation projects in 8 countries
 - Replaces and improves iSanté Consolidated Server functions
 - Allows data exchange with multiple systems



More than just a community...

- Set of reference tools to support the objective of “Sharing Data to Improve Health Outcomes”
- Supports interoperability by creating a reusable architectural framework
 - Service oriented approach
 - Leverages health information standards
 - Enables flexible implementation by country partners
 - Supports interchangeability of individual components

Challenges

- **Breaking New Ground:** This is the largest, to our knowledge, conversion of an existing EMR to an open source EMR
- **Concept mapping:** To make the EMR standard and able to be interoperable all data had to be mapped to new “Concepts” in OpenMRS.
 - This involved 1300 concepts
- **System Architecture- Design:** Because this was new ground, end to end planning of system architecture, design, and performance could not be done all at once.
- **Governance**
 - To be successful all stakeholders must agree to use the platform and convert their data to standard formats. Project management must be tied to regular TWG’s and routine sign off.
- **Data migration**
 - migration of a database with more 1.3 million patients is very complex.

Challenges

- **Change Management**
 - Design and Specifications: Reconciling the demands and expectations of end users and decision-makers is difficult. An exact replica of iSanté couldn't be done. Many changes are improvements, but not all.
 - Testing, pilot deployment, user acceptance: Must be an iterative process. Takes leadership, buy in and patience on everyone's part.
 - Programs which want to be interoperable need to be closely coordinated.
- **Financing:** There is limited experience in costing a transition of this type making financing a challenge for funder and grantee
- **Timeline:** As with any pioneering transition establishing and sticking to a timeline is difficult- especially when there are multiple dependencies.
- **Workforce Expertise:** A project such as this needs broad expertise from system design to programming, expertise in Openmrs, HIE, Openelis, database migration and optimization, hardware and cloud-based server management.

Lessons learned

- Governance
 - SEDISH cannot exist in a vacuum
 - Project scope and expectations must be set early in the execution life cycle
- Transitioning to a new EMR is not “Plug an Play” – It requires an iterative process
- Timeline and Budget must reflect complexities and uncertainties directly related to the functionalities being sought.
- Training
 - Continuous training to maintain data quality and quality of care
- Technical
 - Technical requirements must match implementation environment (Real-time FP)

Thank you

Acknowledgments

- CDC
- MSPP
- I-TECH
- CHARESS

References

- Success factors for implementing and sustaining a mature electronic medical record in a low-resource setting: a case study of iSanté in Haiti
(E deRiel¹, N Puttkammer¹, N Hyppolite², J Diallo¹, S Wagner¹, J G Honore², J G Balan², N Celestin³, J S Valle³, N Duval⁴, G Thimothe⁵, J Boncy⁶, N R L Coq⁷ and S Barnhart¹)
- <https://ohie.org/>



**THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF HEALTH, COMMUNITY DEVELOPMENT, GENDER, ELDERLY AND
CHILDREN**

**DEVELOPMENT AND IMPLEMENTATION OF ELECTRONIC MEDICAL RECORDS IN
TANZANIA: Challenges, Opportunities & Lesson Learned**

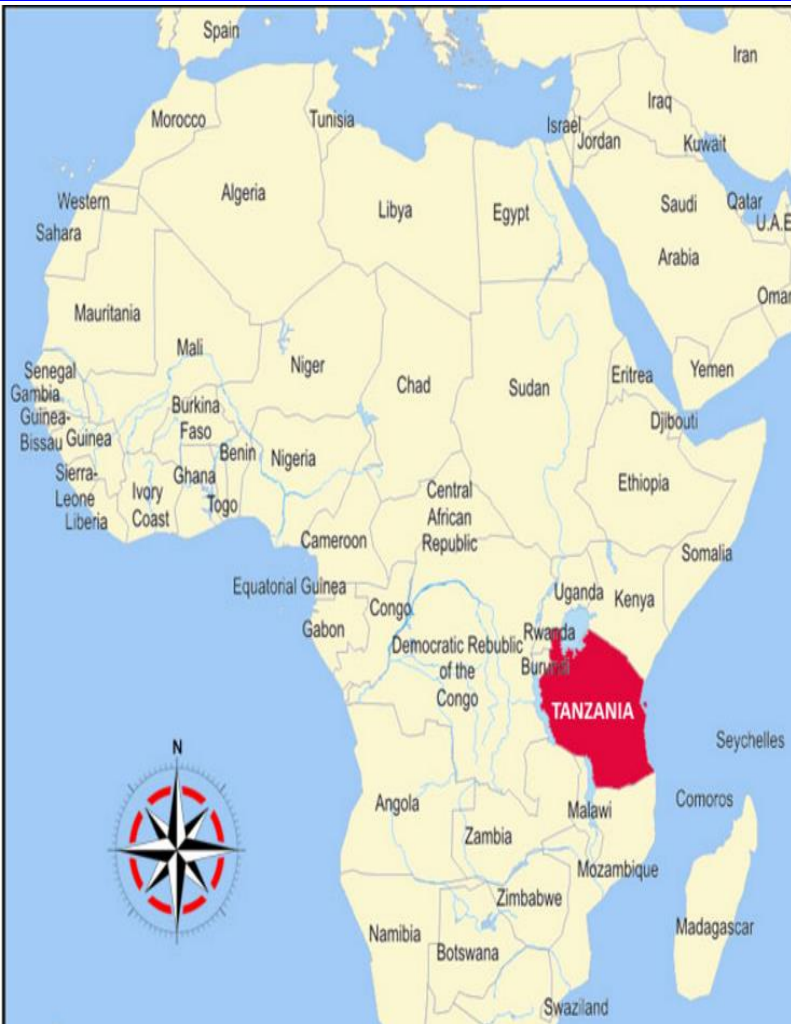
A case study of Mirembe Mental Health Hospital

**2018GDHF 10-11, December
US, WASHINGTON DC**

PRESENTED BY SULTANA SEIFF



About Tanzania

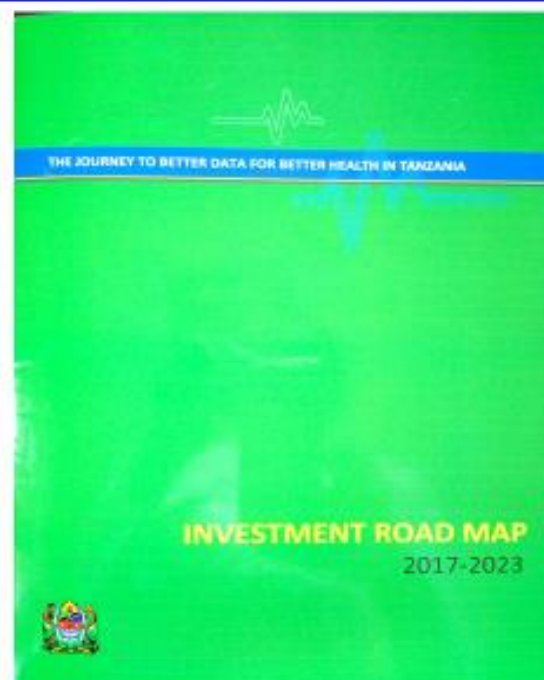
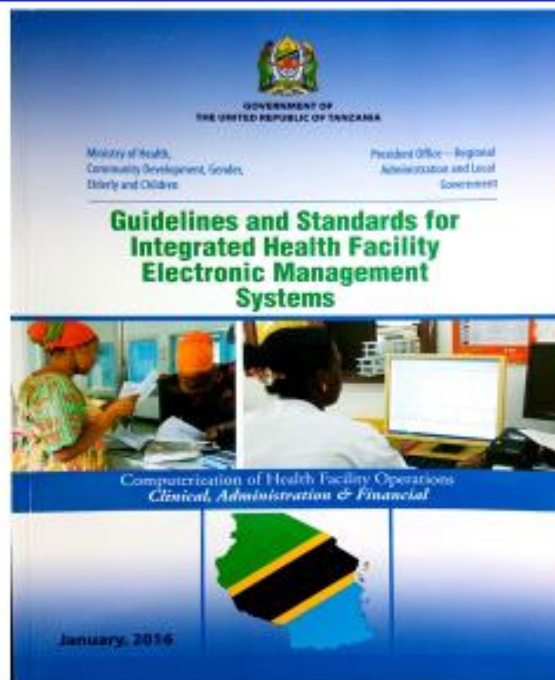
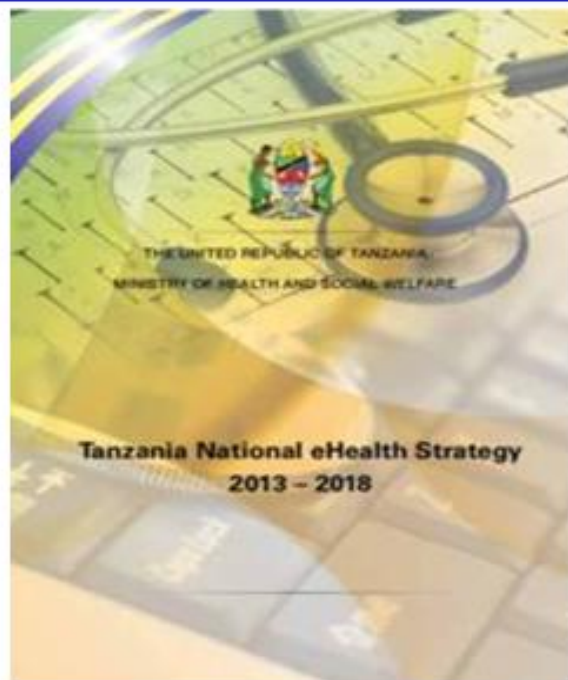


- Total Area: about 950,000 square km
- Population: 50+m
- Life Expectancy: 61.8
- Health facilities: 7,500+
- Mobile Penetration: 81%
- Internet Penetration: 50+%
- National, Zonal, Specialized and Regional Hospital Connected to National fiber optic (Backbone) and 85 % of districts
- National Data Centers



EMR Journey

Tanzania Digital Health Strategies





Background

- The implementation and use of EMR to support both clinical, administrative and financial operations hence improve service delivery is one among the key areas identified in National e-Health Strategy.
- EMR deployed in Mirembe Mental Hospital is know as AfyaCare .
- Mirembe Hospital is the national psychiatric hospital in Dodoma, Tanzania started in 1926.





Situation Before and After

Inability to track a client from arrival until discharge

Storage problems, huge number of files needed

Patient privacy and confidentiality

Only one person can access file per time

Records go missing

Not easy to do analysis.

In ability to control health commodities

Handwritten notes messy And hard to understand





Development and Implementation Approach

THE UNITED REPUBLIC OF TANZANIA,
MINISTRY OF HEALTH, COMMUNITY DEVELOPMENT, GENDER, ELDERLY AND CHILDREN



ELECTRONIC MEDICAL RECORD IMPLEMENTATION ROADMAP

Stage	Practice Tasks Recommended for successful movement along the EMR Implementation Roadmap	Milestone Checklist To demonstrate measurable movement along the EMR Implementation Roadmap <i>(Indicate the date when each milestone is completed)</i>	Tools and Services																
ASSESSMENT	<ul style="list-style-type: none">Complete site readiness assessmentAssess current workflow (identify critical/pain points)Begin or continue regular staff meetings (at least monthly)Assign physician champion (facility in-charge)Organize an EMR selection/implementation teamAssign an individual (EMR team leader/ facility in-charge) or team to lead practice changesCommit to:<ul style="list-style-type: none">Full provider engagement to implement EMRWorkflow changes necessary to maximize results	<table><tr><th>Date</th><th>Milestone</th></tr><tr><td></td><td>site readiness assessment</td></tr><tr><td></td><td>Readiness/next steps reviewed</td></tr><tr><td></td><td>Physician champion assigned</td></tr><tr><td></td><td>Team leader assigned for practice changes</td></tr><tr><td></td><td>Current workflow processes assessed</td></tr><tr><td></td><td>Give signed participation agreement EMR vendor</td></tr><tr><td></td><td>Proposed implementation target date</td></tr></table>	Date	Milestone		site readiness assessment		Readiness/next steps reviewed		Physician champion assigned		Team leader assigned for practice changes		Current workflow processes assessed		Give signed participation agreement EMR vendor		Proposed implementation target date	<ul style="list-style-type: none">Implementation GuidelineKey EMR articlesList of success factorsBarriers and solutions worksheetEMR in Trenches videosComplete onsite assessmentFacilitate staff discussionsConduct workflow analysis
		Date	Milestone																
			site readiness assessment																
			Readiness/next steps reviewed																
			Physician champion assigned																
			Team leader assigned for practice changes																
			Current workflow processes assessed																
			Give signed participation agreement EMR vendor																
			Proposed implementation target date																
PLANNING	<ul style="list-style-type: none">List clinic goals and priorities (include functions and specific provider needs)Translate identified EMR goals into available EMR system functions and featuresIdentify staff at lower levels of readiness, address their concernsDevelop a timeline and project planGain support from team members and staff, prepare staff for changesOptional:<ul style="list-style-type: none">Write RFI/RFPsComplete a cost/benefit analysis and ROI for an EMR system	<table><tr><th>Date</th><th>Milestone</th></tr><tr><td></td><td>Clinic has identified goals, priorities and any staff concerns</td></tr><tr><td></td><td>EMR goals and associated system functions are listed</td></tr><tr><td></td><td>Business plan developed, includes such items as:<ul style="list-style-type: none">- Target implementation schedule/timeline- Estimates of EMR budget and ROI- Measurable EMR goals</td></tr></table>	Date	Milestone		Clinic has identified goals, priorities and any staff concerns		EMR goals and associated system functions are listed		Business plan developed, includes such items as: <ul style="list-style-type: none">- Target implementation schedule/timeline- Estimates of EMR budget and ROI- Measurable EMR goals	<ul style="list-style-type: none">Sample implementation plans and timelinesKey features listExample goalsSample RFI/RFPsROI spreadsheet toolFinancing optionsPeer interaction with successful clinicsFacilitate staff meetings								
		Date	Milestone																
			Clinic has identified goals, priorities and any staff concerns																
			EMR goals and associated system functions are listed																
			Business plan developed, includes such items as: <ul style="list-style-type: none">- Target implementation schedule/timeline- Estimates of EMR budget and ROI- Measurable EMR goals																
		SELECTION	<ul style="list-style-type: none">Schedule structured demonstrationsEvaluate vendors and create short list of 2–3 vendorsReview EMR systems by:<ul style="list-style-type: none">Run vendors through a clinic-specific case scenarioGoing on at least one site visitObtaining at least three vendor references	<table><tr><th>Date</th><th>Milestone</th></tr><tr><td></td><td>Negotiate contracts and financing</td></tr><tr><td></td><td>EMR vendor selected</td></tr><tr><td></td><td>Hardware vendor selected</td></tr></table>	Date	Milestone		Negotiate contracts and financing		EMR vendor selected			Hardware vendor selected	<ul style="list-style-type: none">Vendor selection tools and rating referencesSample case scenariosContracting tips					
				Date	Milestone														
					Negotiate contracts and financing														
	EMR vendor selected																		
	Hardware vendor selected																		



Development and Implementation Approach

	<ul style="list-style-type: none">Identify/ select vendor for hardware, office wiring, and necessary network support for all services and products not included in EMRNegotiate contracts including all aspects of implementation, training, and technical supportContinue workflow assessment and changes		Vendor selected for office wiring and cabling needs that are not included in EMR package	<ul style="list-style-type: none">Assistant with individual vendor demonstrations
IMPLEMENTATION	<ul style="list-style-type: none">Draft EMR system implementation plan and timetableAssign data manager/administratorAssure data conversion and testing completedCreate data recovery and security plansAssure interfaces completed and tested for:<ul style="list-style-type: none">Practice Management SystemLaboratoryOther (Equipment, Radiology, Referrals)Determine a "go-live" dateTrain staffCelebrate success and address problems	Date Milestone		<ul style="list-style-type: none">Sample data testing documentationSample chart data conversion templatesIndividual assistanceFollow-up on your progressIdentify additional workflow adaptations
			Implementation plan completed	
			Contracts completed and signed	
			Data manager assigned	
			Data conversion and testing completed	
			Interfaces tested and working properly	
			"Go-live" completed and celebrated	
		Vendor will be the primary driver of this stage, so they should be thoroughly engaged in all aspects of implementation.		
		EVALUATION	<ul style="list-style-type: none">Conduct post go-live reviews of implementationConduct additional staff training as neededEvaluate EMR system goals met to dateVerify vendor has provided technical infrastructure to capture clinical measures for quality reportingRun sample population based quality reportsWork directly with your clinic liaison to track your progress	
	Post go-live reviews for EMR goals, implementation and additional staff training completed			
	Schedule additional staff training			
	Data capture verification completed with vendor			
	Population based quality report generated			
	Assess full use of EMR system and address lags			
IMPROVEMENT	<ul style="list-style-type: none">Commit to continuous review of clinical and administrative processesSystematically increase the number of EMR functions used by providers and staff.Identify and target additional care management and process improvement opportunitiesUse EMR to optimize practice of evidence-based medicineParticipate in user groupsContinue creating quality reports			Date Milestone
			Reanalyze clinical and administrative processes	
			Functions used increases monthly	
			Review performance reports	
			Identify quality improvement opportunities	
			Redesign work processes to use EMR clinical decision support tools with each patient encounter	



AfyaCare Login & Landing page & Menu

Login

Username *

Sseiff

Password *

••••••

Location *

Registration OPD

Login

WELCOME TO MIREMBE MENTAL HEALTH HOSPITAL

GET STARTED

CLINICAL SERVICE

LABORATORY

STOCK INVENTORY
& BILLING

 Registration	 Clinic	 Nursing
 Lab Orders	 Counselor	 Therapy Clinic
 Management	 Prescription	 Appointment Scheduling
 Vertical Programs	 InPatient	 Social Worker
 Radiology	 VCT	 Radiology
 Admin	 Pharmacy	 Cashier
 DHIS 2	 Social Worker	 Reports



Register or search a patient

Search Patients Register New Patient

ID
Enter ID Search

Name
Enter Name

File Number
Enter File Number

National Identifier
Passport/Driving/Votin Search

Search Patients Register New Patient

Print Registration Card

Patient Identifier: 104962-6-316679961/2018

Registration Date 03 Aug 18

Patient Name * VICTORIA MWALIMU NGALU

Sex * Female

Age * Years 38 Months 5 Days 10

Date of Birth 01/07/1980

Mobile Number 657511974

Tribe Name gogo

Birth Time --:--

Address Information

Street/Village Chamwino

District Dodoma

Council Dodoma MC

Region Dodoma

Doctor Room

Room * Room A



Additional Patient Information

National Identifications

Next of Kin

Relationships

Start OPD visit

Start MAT visit

Start CTC visit

Start VCT visit

Start IPD visit

Start TB visit

Search Patients Register New Patient

Print Registration Card

Summary

Patient Identifier: 104962-6-316679961/2018

Patient Name: VICTORIA MWALIMU NGALU

Fee Information

Patient Type

☒ GENERAL OPD

DIAGNOSTIC PATIENT

Vertical Program

Payment Category

Cash

☒ Insurance

Insurance Type

☒ NHIF

Memorite

Anglikan Msalato

T.A.G Majengo

FPCT Nkhungu

Moravian

FPCT Chamwino

E.L.C.T

A.I.C.T.Kizota

T.A.G Nkhungu

Anglikan Chang'ombe

Insurance ID

Latest

03 Aug 18 10:22 am

Payment Category Cash

Validate NHIF

Close Visit

Back

Save



Patient Dashboard

General

HIV

TB

+

Print

OPD,01 Jun 17

Consultation

Admitted Test (111531-0-47) | Male | 30 Years 2 months 4 days

Home Dashboard

Patient Visit Page

Patient ADT Page

Program Management Page

Visit Attributes

Registration

Vital Information

▼ 04 Sep 17 5:00 pm

Temperature (36 - 37)

123

▼

BMI

27.68

▼

BMI

27.68

▼

BMI STATUS

Overweight

▼

BMI STATUS

Overweight

▼

Height

170

▼

Weight

80

▼

► 04 Sep 17 3:03 pm

Lab Orders Display Control

▼ TLC - ♦♦Total Lymphocyte count

Super Man 28 Aug 17 9:55 am

No observations captured for this order.

► Basophil (Blood)

Super Man 25 Aug 17 4:18 pm

► Agranulocyte Count

Super Man 25 Aug 17 4:18 pm

► Motility (Semen)

Super Man 22 Aug 17 9:57 am

► Calcium

Super Man 18 Aug 17 12:19 pm

Lab Results

► Investigation Chart

Visits

15 Aug 17 ★

IPD

15 Aug 17 - 15 Aug 17

OPD

14 Aug 17 - 15 Aug 17

IPD

14 Aug 17 - 14 Aug 17

OPD

Diagnosis

Malaria mRDT positive

CONFIRMED PRIMARY

15 Aug 17 ▼

Activate Windows
Go to Settings to activate Win



Reports



Reports

My Reports

New Reports

Reports

Name	Start Date *	End Date *	Format *		
	<input type="text" value="dd/mm/yyyy"/>	<input type="text" value="dd/mm/yyyy"/>	<input type="text" value="Choose Format"/>		
IPD Diagnosis	<input type="text" value="dd/mm/yyyy"/>	<input type="text" value="dd/mm/yyyy"/>	<input type="text" value="Choose Format"/>	<input type="button" value="Run Now"/>	<input type="button" value="Queue"/>
Admitted Patient	<input type="text" value="01/09/2018"/>	<input type="text" value="07/12/2018"/>	<input type="text" value="PDF"/>	<input type="button" value="Run Now"/>	<input type="button" value="Queue"/>
TAARIFA YA MWENENDO WA KULAZA WAGONJWA	<input type="text" value="dd/mm/yyyy"/>	<input type="text" value="dd/mm/yyyy"/>	<input type="text" value="Choose Format"/>	<input type="button" value="Run Now"/>	<input type="button" value="Queue"/>
Mahudhurio (OPD) kwa umri	<input type="text" value="dd/mm/yyyy"/>	<input type="text" value="dd/mm/yyyy"/>	<input type="text" value="Choose Format"/>	<input type="button" value="Run Now"/>	<input type="button" value="Queue"/>
Discharge Patient	<input type="text" value="dd/mm/yyyy"/>	<input type="text" value="dd/mm/yyyy"/>	<input type="text" value="Choose Format"/>	<input type="button" value="Run Now"/>	<input type="button" value="Queue"/>
Lab Test Referred Out	<input type="text" value="dd/mm/yyyy"/>	<input type="text" value="dd/mm/yyyy"/>	<input type="text" value="Choose Format"/>	<input type="button" value="Run Now"/>	<input type="button" value="Queue"/>
VCT Registered Clients	<input type="text" value="dd/mm/yyyy"/>	<input type="text" value="dd/mm/yyyy"/>	<input type="text" value="Choose Format"/>	<input type="button" value="Run Now"/>	<input type="button" value="Queue"/>
PITC Clients	<input type="text" value="dd/mm/yyyy"/>	<input type="text" value="dd/mm/yyyy"/>	<input type="text" value="Choose Format"/>	<input type="button" value="Run Now"/>	<input type="button" value="Queue"/>
Clients Sent to CTC	<input type="text" value="dd/mm/yyyy"/>	<input type="text" value="dd/mm/yyyy"/>	<input type="text" value="Choose Format"/>	<input type="button" value="Run Now"/>	<input type="button" value="Queue"/>
Paid CLients	<input type="text" value="dd/mm/yyyy"/>	<input type="text" value="dd/mm/yyyy"/>	<input type="text" value="Choose Format"/>	<input type="button" value="Run Now"/>	<input type="button" value="Queue"/>
Crossection_NACP_HIV Care and Treatment Report	<input type="text" value="dd/mm/yyyy"/>	<input type="text" value="dd/mm/yyyy"/>	<input type="text" value="Choose Format"/>	<input type="button" value="Run Now"/>	<input type="button" value="Queue"/>
Exemption Report	<input type="text" value="dd/mm/yyyy"/>	<input type="text" value="dd/mm/yyyy"/>	<input type="text" value="Choose Format"/>	<input type="button" value="Run Now"/>	<input type="button" value="Queue"/>
Laboratory Services	<input type="text" value="dd/mm/yyyy"/>	<input type="text" value="dd/mm/yyyy"/>	<input type="text" value="Choose Format"/>	<input type="button" value="Run Now"/>	<input type="button" value="Queue"/>



Field experience:



A OPD physician and her former paper-based medical files, on the 2 big shelves: no more of such are in use, except to try to mine information from past history. These paper-based records were in use before the EMR. Now her desk is paper-free, all information is entered directly into her desktop.



Results from Learning Exercise :

- Findings tend to report an overall strong satisfaction of the users towards the EMR.
- Overall, out of the 236 answers, 228 were answered, reporting a high responding rate of close to 90%.

	'not at all'	'not really, just a little bit'	'yes, but partially'	'yes, absolutely'	N/A
# of answers	2	18	38	151	16
Relative % on 225 answers	1%	8%	17%	67%	7%
Relative % on 209 answers (without N/A)	10%		90%		

The proportion of answers reporting satisfaction towards the EMR is 90%,
and the vast majority of answers shows that staff are 'fully satisfied' with the EMR.



Overall Challenges

- Change Management Strategy- Inadequate guidelines especially in the areas of replacing legacy systems with new system e.g. Digitalisation Guideline
- Legal procedures in changing policy to incorporate digital tools
- Inadequate resources lead to competing priority of health commodity **VS** digital investment
- Inadequate computing Infrastructure and health informatics expertise.
- Human resource (number of staff vs ICT skills)



Opportunities

- Streamlines the medical workflow hence continuity of care.
- Easy tracking and monitoring patient
- Provides a seamless integration between different health services (TB/L, HIV/AIDS, RCHS, etc.)
- Easy tracking and monitoring of medicines and other medical supplies.
- Provides the ability to identify emerging health priorities and improved quality of client care
- Today No Record Loss, Appointments are made by the Doctors right away.
- Revenue collection increased to 50 %
- Increased digital health acceptance and awareness



Business Continuity Measures

- **Retrospective Data entry support**

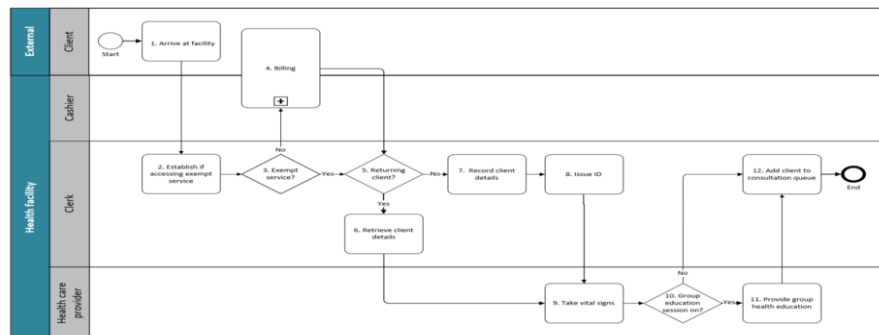
- The system allows users to enter data in "Retrospective Data mode". This is extremely valuable for low-resource settings to support use-cases such as to Catch-up entry because of system/power/network failure.



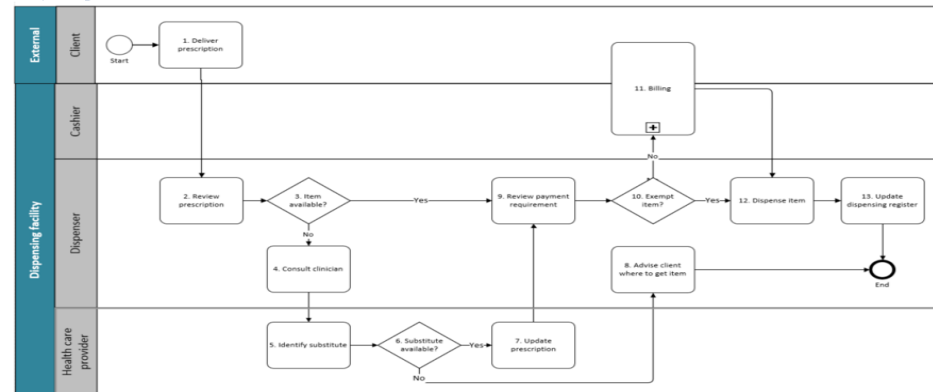
Achievements To Date

- Integration with other systems such as;
 - ✓ DHIS2- for HMIS statistics
 - ✓ NHIF- For member verification, authorization and e-Claim submission
 - ✓ GePG- To facilitate cashless environment at health facility
 - ✓ eLMIS- R&R
- Documented primary care “as-is” business processes challenges

1. Registration



7. Dispensing



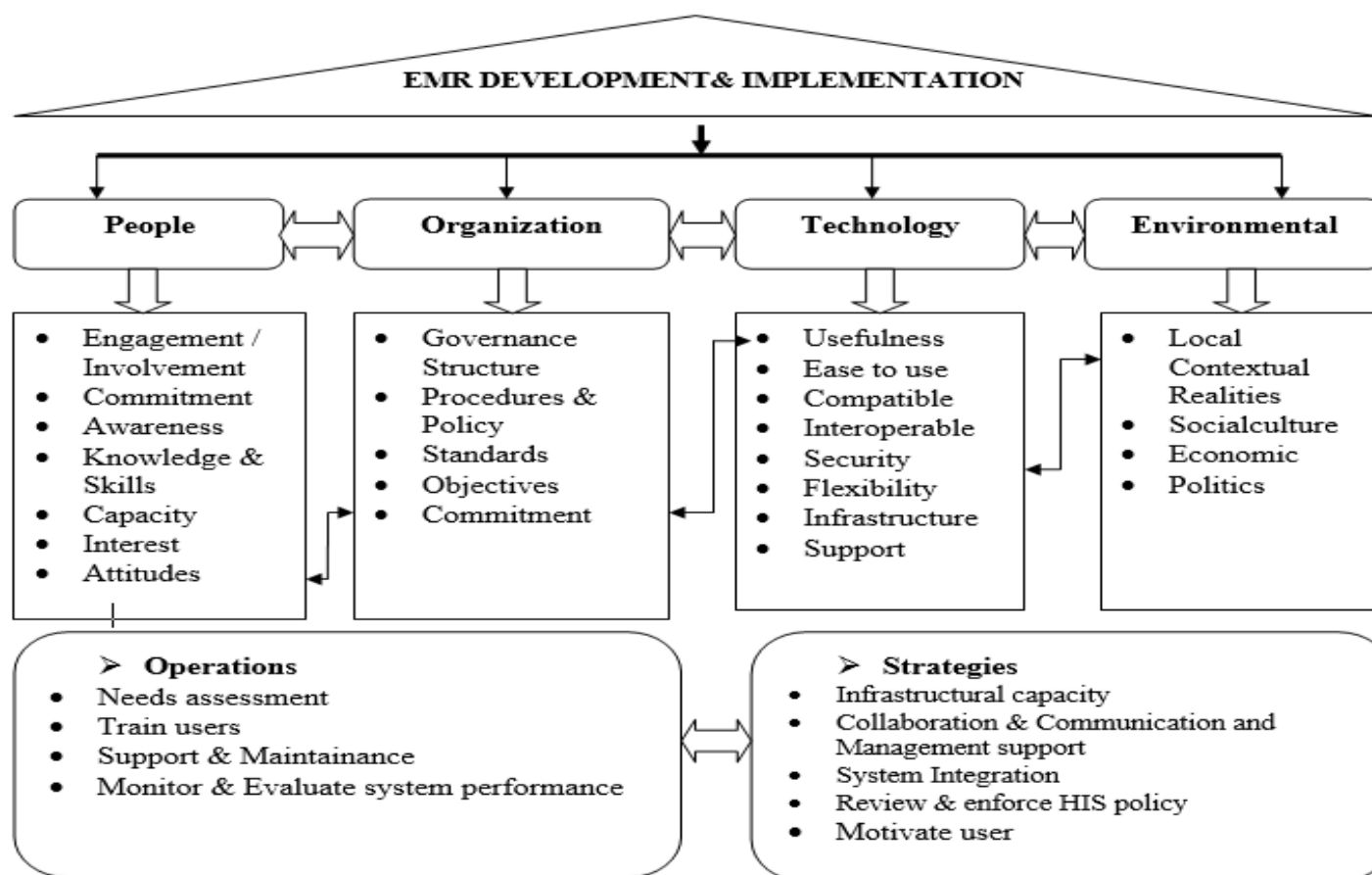


Lessons Learned

- i. Government leadership and ownership is key
- ii. Change Management Strategy is a crucial as it determine the final outcome
- iii. Identify Champions from each level
- iv. Engagement/Involvement of key stakeholders from early stages.
- v. Health Use Cases should drive the design, selection, and implementation of EMR (Design-Reality Gap)
- vi. Formulate EMR implementation Team to oversee and communicate the implementation progress.
- vii. Institutionalize the learning process to obtaining feedback from users helps to improve system and its future implementations
- viii. Strong satisfaction of the users towards the EMR is key.
- ix. Focus on service delivery and outcome and not technology
- x. Computing infrastructure is the most limit factor for quick scaling
- xi. Continuous Structured operational training



“POTE” FRAMEWORK FOR EMR DEVELOPMENT AND IMPLEMENTATION





Thank You



DATA USE PARTNERSHIP

THE JOURNEY TO BETTER
DATA FOR BETTER HEALTH
IN TANZANIA