UEM - MOASIS
Mozambican Open Architectures, Standards and Information Systems

jembi health systems
Mozambique

PEPFAR

REPORT AND MAIN RESULTS OF THE TECHNICAL WORKSHOP POC, EPTS & HELPDESK SEPTEMBER, 11-12, 2018

VENUE: Pensão Martins – Maputo, Mozambique

PARTICIPANTS: CDC, USAID, Jembi, CCS, Ariel, EGPAF, ICAP, FGH, CHASS-fhi360

1. OBJECTIVES

a) Collect basic information of the implementations partners (plans, # of sites covered and location, versions of the EPTS used and main constraints, team, focal points, technology used, others).
b) Discussion of the actual situation of eSaude project and lessons learned and next steps
c) Discussion overall objective and framework/architecture of each Partner.
d) Define high level common requirements for Open MRS EPTS.
e) Define common Open MRS EPTS implementation architecture
f) Define help desk functioning and methodology
g) Define coordination mechanisms and support plan
h) Define future of eSaude community

2. PARTNERS PRESENTATION (insert link of presentation)

- PEPFAR CDC explained the purpose of the workshop which was to understand from the clinical partners the support they need regarding health PEPFAR health information systems with a specific focus on Open MRS EPTS Retrospective and Open MRS Point of Care, which will

soon be deployed. The Ministry of Health (MOH) requested EPTS all future data be housed at MOH and it is important we collaborate and find a common architecture that involves centralization at the DPS and MOH. Additionally supporting various Open MRS platforms is resource intensive and partners have had concerns regarding moving to the Open MRS using the Docker container. PEPFAR Health Information Systems, with the support of JEMBI and clinical partners, would like to find a solution towards one Open MRS platform, one architecture for EPTS and POC keeping in mind MOH hosting and ownership of data, while allowing partner access to data for program monitoring and patient care.

- CDC indicated Jembi will lead Open MRS EPTS and POC development and deployment activities, while FGH will support Open MRS Reports/queries, data exchange with Open MRS other systems and iDART development and deployment.
- Jembi opened the board of presentations, and gave a brief history of its work, briefly presenting main projects across southern African countries.
- Then all partners presented their current ETPS status, its implementation, experiences, key challenges and opportunities, deployment models and also spoke about some of the challenges they have been facing.

PARTNER	CURRENT STATUS	MAIN CHALLANGES
CCS	-26 HF in Maputo & 27 in Inhambane; -Using back-ups to have access to data and be able to consolidate for reporting; -Created a sprint into the server that allow automatic back-up -use 3G modem for internet; -In Maputo there are 5 districts,	-challenges using the synchronization mode; -Internet connectivity and quality -Need of accurate tools to execute OpenMRS; -updates of new queries for reporting; -For installations time is approx. 1hour, the big problem is when

	backup storage is per district file; - Reporting is done by HF: - Use of Docker for setups (version only); -Use eSaude DB, same that all partners use as data is customized; -Use Teamview to access all HF data, whenever there are problems team goes to the field; -In Inhambane there is one M&E officer at the district level and one data clerk in each HF. -to monitor remote installations they access Teamview and use Whatsapp notifications (team group on whatsapp), if any problem team goes to the field, but mostly is done remotely; -All HF have same version (MySQL 5.6, OMRS1.11.6) and use github to versions control	BD is doing deployment; -For back-up upload it takes approx. 30min, depending on the internet
ARIEL		
EGPAF		
ICAP	-113 HF with EPTS, initiated this year in Q2 (Nampula and Zambézia) -Use Docker container; -Zambézia sites will transit to FGH; -Data clerks in some of the HF, on other there are “bickers” that goes to the HF once a week to collect data -Provide training to data assistant, so during reporting	-Some of the HF doesn’t have enough space to have data clerks sitting there to collect data; -equipment used, have some corei7, but most are i5 and even i3 -Doesn’t have central server, target is to have a server at the province level and have all back-ups there; -some constrains in transition Docker to the machines

	period all knows how to execute on OMRS; -Provide megabites every month for the back-up, -currently weekly back-ups -Docker in 66HF	
FGH	-Central server at DPS -Synch is done on laptops using motorbikes	-Challenges on synch
CHASS/ fhi360	-Central server at DPS level; -In Quelimane only the DB is 13GB - Niassa server is full online - Sync is done via internet; -version of OpenMRS 1.9.2	-Challenges on Sync that happens during night time, and sometimes there are power breakages -Problems on the server, DB of the HF is a copy of the entire province for the smaller HF, high volume sites have separate servers

2.1 EPTS IMPLEMENTATION SUMMARY

Note: Based on Q2 Reporting information and Partners presentations on EPTS Workshop September, 2018

A. Partners Coverage

Partner	# Provinces	# Districts	# HFs	# isEPTS	# non EPTS (manual only)
Ariel	2	25	203	197	6
CCS	2	21	119	54	65
FHI/CHAAS	5	55	447	95	352
EGPAF	1	12	136	94	42
FGH	1	9	112	102	10
ICAP	2	27	215	111	104
Total		**149**	**1232**	**653**	**579**

B. OPENMRS VERSIONS (1.9.2, 1.11.5, 1.11.6)

EPTS Coverage						
Partner	**# Provinces**	**# Districts**	**# HFs**	**OpenMRS version**	**Docker**	**Sync**
Ariel	Cabo Delgado Maputo Province	17 8	112 85	1.11.5	Yes	
CCS	Cidade Maputo Inhambane	7 14	28 26	1.11.6	NA	
FHI/CHAAS	Manica Niassa Sofala Tete Zambezia	5 7 4 8 3	15 11 16 18 35	1.9.2		
EGPAF	Gaza	12	94	1.9.2 (44 sites) 1.11.5 (53 sites)	Yes in 1.11.5	
FGH	Zambezia	9	102	1.11.6	N/A	Manual Online
ICAP	Zambezia Nampula	6 21	45 66	1.9.2 -> FGH 1.11.5	Yes in 1.11.5	Not using

C. SERVERS

Partner	# Central Head Office Server	# Central Servers DPS	# Central Servers District	# Servers Health Facility
Ariel	2	0	0	**1** Virtualized Server with 3 Virtual Machine **6** OpenMRS instances Installed **5** Virtualized Server with 11 Virtual Machine

				22 OpenMRS instances Installed
CCS	1	2	0	53 servers
CHAAS		5	0	95 servers
EGPAF		0	0	Max. 105 desktops / laptops
FGH		0	9 Servers for each District HQ	9 Servers (only at Quelimane district) 8 Laptops in Quelimane 86 laptops in other districts
ICAP	1	0	0	45 laptops running local instance

D. ARCHITECTURE

FGH	Architecture:	A1. 9 districts have District Central Server and copy of district database in each HF laptop. A2. 1 district (Quelimane) District Central Server and HF Server with copy of district database in each HF.
	Sync:	A1. Manually, every Friday laptops are taken to District HQ to sync with District Central Server A2. Online one-way sync between HF servers and District Central Server.
EGPAF	Architecture	A1. Client and server implementation (LAN) •Multiple computer small network A2. Stand-alone (single virtualized server instance) •Single Desktop computer one health facility A3. Stand-alone (multiple virtualized server instance) •Single Laptop more than one health facility

	Sync:	

3. General comments:

- PMTCT and TB are not included on OpenMRS;
- SMI (mother and child care) was created by UCSF, but it was pending SOP. FGH did draft design and ICAP worked on the documentation shared with UCSF;
- IDART is online and OpenMRS is retrospective
- Docker container was recommended by UCSF, most partners had problems, some were solved others not, some received UCSF help, others solved problems by themselves as there are different IT skills among partners.
    - Not enough training provided
    - Problems accessing database after Docker installation
    - Benefits of Docker – configurations, one image, running an applications is faster, easy to replicate;
    - Partners needs to understand benefits and that nothing changes when using Docker;
    - In general partners were working well without docker;
        - CCS had scheduled sessions with UCSF to work on Docker but didn't learned much;
        - Ariel – started to use Docker but had many problems with it UCSF provided help and now is working well;
        - ICAP – Docker is good but was not well sold out.
    - With Docker is harder to manipulate an SQL reason why partners tend to abandoned it;
    - Restrictions to produce queries for any type of analyses
    - UCSF wanted to have better control that is why launched Docker container, and it close partners of their data.
- For Master Card requirements for the system will be managed by PEPFAR.
- All partners must come to one unique platform.

DAY 2

On the second day plenary was split into 2 groups for discussions.

4. Working Group #1

4.1 State of eSaude community and way forward;

- The Domain will no longer be available after October 1st;
- Need to create another domain transfer all data and maybe create new name;

- Jembi need to work on the layout of the new website to make it more use friendly (better storage of documents, understand contents)

4.2 State of helpdesk & support system and way forward;

- Help Desk did not work well till date;
- JIRA is used only for developers and not for users;
- Tools are not important, what matters is problem solving,
- Need to define flow of the help Desk, what is propose of HD, who will use it and when?
- All partners must submit issues to the helpdesk even if it is duplications among partners, CDC needs to know number of requests.
- In addition to the conclusion that Clinical Partners, are not using the help desk, most were not aware of the existence of the Helpdesk electronic platform (JIRA Service Desk) and, the general Helpdesk problem is not related with the platform but rather the lack of resolution of the problems that were reported.
- It was decided that the ToRs of the helpdesk system should be developed to enable everyone to have a common understanding of the scope and responsibilities of the parties including the M&E mechanism of the Helpdesk system.
- Monthly meetings are expected to happen with the PEPFAR Implementing partners in order to coordinate and strengthen Jembi Help Desk & Support Service mechanisms. This meeting will occur on every first Wednesday of the month, with a previously established agenda including training needs.

Help Desk Requirements Gathering		
Sr No	**Features and Prioritization**	**Votes**
1	Ability to create tickets over email, phone and by login to a web portal	7
2	When problems are reported on queries then CDC (M&E) should be notified	6
3	Define a process and format for submitting tickets based on type of issue	5
4	Need reference number for tickets to be assigned. The users should be able to follow up using this reference number. Ability for users to track the status of their	5

	ticket using this reference number	
5	Summary reports - Number of created reports - Number of resolved cases - Average time to first response - Average time to respond/ resolve - Number of cases reopened and % - Number of cases deleted / marked duplicate - Top 10 request types - Number of cases rejected as out of scope for the helpdesk	5
6	Requests to be tracked at the partner organization level and first triaged internally. Only those issues which are not resolved internally should be responded by Helpdesk. Need some workflow for approval by HIS point person of the partner	4
7	If there is a common problem reported by multiple partners then helpdesk should communicate this to all partners. They should share progress updates with everyone. When resolved send a broadcast message to all.	4
8	Time to respond to field issues is important - need to define Service Level Agreements for different issue types - For example upgrade in field or facility takes higher priority and should have short response time	4
9	Integration with change management system for tracking new requirements received through helpdesk	4
10	Helpdesk should be open for everyone to post issue and search for result	3
11	Differentiate between implementation issue vs product defect - Use Tags and categories to assign to tickets - Helpdesk person can change category or Tag - in which case notify the user	3
12	Should have an FAQ and Knowledgebase for search	3

13	A common place to see announcements - Status of common issues - so that people don’t have to call up - People can respond to the announcements	3
14	Easy to use tool - should support Portuguese - Training to be provided to partners	2
15	When an issue is resolved then response should be broadcasted to all members	2
16	Need a pre-defined format for reporting an issue	2
17	Should report on the follow up status of the ticket	2
18	CDC should get a monthly report on queries raised by clinical partners - each partner to raise a ticket even if it leads to duplication - Will help with prioritize those issues	2
19	System should send automated acknowledgement emails when an issue is raised	2
20	Should allow to filter issues	1
21	Need 2 tier knowledgebase - for IT staff - For end users	1
22	Ability to triage the tickets	0
23	Allow community to post and answer questions for other members	0
24	Should have an option to mark certain issues / questions as private	0
25	The iDART requests must also be managed within the JEMBI helpdesk	0
26	Quarterly report required to be sent to HIS point of contact on issues raised and its status in that quarter	0

GENERAL NOTES AND REQUIREMENTS COLLECTED DURING THE WORKSHOP

- www.esaude.org (old site will soon be shut down) the new domain is now: www.e-saude.net
- Cost is about 20USD for first registration **(done)** and 13USD successive years
- Site must be built on a public domain and not private as it was before. Need to establish the owner. Right now is Jembi HS, but can be transfer to anyone at any time
- There will be ONE site with two types of access, public and private:
    1. **PUBLIC WEBSITE WITH APPROVED DOCUMENTS ONLY (proposal ready by November 30, 2018)**
    2. **PRIVATE WEBSITE ACCESSIBLE ONLY TO THE MEMBERS WITH ALL DOCS INCLUDING DRAFTS (proposal 30-9-2018) (EPTS & POC):**
        a. GOOGLE GROUP INTEGRATION
        b. ALL DOCUMENT REPOSITORY
        c. CODE REPOSITORY
        d. WIKI: A website where users collaboratively modify content and structure directly from the web browser, with the aim of storing and creating common knowledge.
        e. KNOWLEDGE LINK: A list of links to documents in any form, text, audio, video, etc., that are notable to mention because its content contributes to the common knowledge.
- Study the license and the logo situation and propose solutions: no limitation of license or copyrights, need to define new if community likes.
- Need to build the private site and publish 1st November 2018:
    1. new domain: e-saude.net/private
    2. new design and logos:
    3. activate a new google group for all partners
    4. backup all esaude old site:
    5. design the web similar to the old but more user friendly and submit to the partners
    6. activate the code repository
    7. activate the others parts as per requirements
- Need to build the public site and publish between December 2018 and February 2019

NOTE:

The **e-Saude** community will continue existing in virtual and physical mode and will be coordinate by CDC and Jembi trough defined procedures, access to document and site, regular meetings and ad hoc workshop and working groups.

4.3 Communication and coordination mechanism;

- If questions regarding queries and reports are send to Jembi, Jembi need to share with PEPFAR SI team.
- Jembi will have focal points appointed to each part of the project and partners need to indicate focal points too;

5. Working Group #2

Group had technical discussion about EPTS (concept dictionary, reporting queries, upgrading and harmonizing versions etc.), and EPTS solution architecting.

5.1 Upgrading to same version:

- Partners mention some of the main efforts there they need to have in order to have the versions updated:

Partner	Main efforts
FGH	Started with v1.9.2 and 3.2G and took 12 hours
	Documented everything on Wiki page
	Total sites: 9 districts
	Movement is very slow in upgrading in OpenMRS
	Community is not able to respond to older versions
	When UCSF started, they said we are moving to 1.11.6. USCF dynamically took second decision to downgrade OpenMRS to 1.11.5 without informing the valid reasons
	Upgrading 1 laptop takes: 8 hours to restore the DB for current i5, 4G, no SSD and 30 minutes to restore the DB for current i7, 8G, SSD
	There was an issue in Reporting module in v1.9.2
	"CDC forced to use Docker" => Silent Comment
	Expectation: - Training and Awareness is not done properly with UCSF and CDC related to Docker
ICAP	Started with v1.9.2 and moved to 1.11.5. Took 2 months to upgrade to 66 sites.
	Used Docker to do that and didn't happen smoothly like tomcat and other server utilities was not working
	They didn't receive any support from UCSF. UCSF just sent a manual guide and they had to manage their own
	44 sites still using 1.9.2 because of issues with Docker
	Expectation: - One docker container for all partners
EGPAF	1.11.5 - 53 Sites and 1.9.2 44 sites

Ariel	Chances are high that we loose the data when docker gets corrupted
	So I am not in favor of Docker
	All of the sites are on v1.11.5
CCS	Test in local servers
	Migration has happened with 8 hours to move from1.9.2 to 1.11.6
	Not using docker at any of the sites
CHASS	Working in all sites with v1.9.2

5.2 Module vs Scripts:

- Partner's would like to go with module but currently the issue is everything is based on UUID and not on Concept ID so if this is fixed then module is the way to go

5.3 Sync

- CHAAS:
  - They run queries on the database to get the results
- FGH:
  - They use SQL scripts when then do the change in database directly

5.4 Concept Dictionary Changes:

- It is consistent across the partners

5.5 Mozart

- "Quite a nightmare."
- Happens regularly. You have to backup the database and run the ETL process using the SQL stored procedures which gets the data converted to Access database
- On average it takes around 4-5 days for getting the Access DB
- (OpenMRS Data Model + Access Data Model) Mysql => Access Database
- CDC have an issue here: Sometimes facility data is missing in complete data
- Need to check the stored procedure because the data gets lost here
- CDC don't need Access DB anymore. They need a seamless database transfer.
- They don't know what kind of output is required from Mozart
- CDC indicated the Mozart data transfer process is going to be simplified to be more user friendly and to eliminate the ACCESS process.

5.6 Database Backups:

- Daily Backup is taken by all partners
- Retrospective data entry is done at all facilities
- Not using replication

5.7 Test Processes:

- Create a pre-prod environment and test it before putting it on facility databases
- Sometimes in urgency they directly put it on facilities
- We can use database anonymized data for using it in development and testing environments
- CDC indicated every clinical partner should have a test environment. Software releases should be installed in the test environment with production data and data validations should occur before and after the software is installed to identify issues.

5.8 Technical Support:

- Proposes to have the following tools to provide support:
    - Phone
    - Email
    - Slack

6. NEXT STEPS

- Have a list of EPTS focal points of all partners
- Create a working group for Help Desk
- Jembi will create a website to replace eSaude and will send to partners for contributions
- Reactivate eSaude monthly (or quarterly) meetings
    - Send previously propose of agenda topics to have more productive meetings
- Jembi will share new Help Desk contacts starting October 1st

ANNEX I - AGENDA OF THE WORKSHOP

Start – End time	Activity	Presenter
Tuesday 11th September, 2018		
8.00-8.30	Welcome - Introductions - Housekeeping issues - Main objective	Maria
8.30 - 9.00	Jembi Presentation - Introduction of the agenda	Chris & Alessandro
9.00 – 10.30	Partners presentations: - ETPS implementation, experiences, key challenges and opportunities, deployment models and pros and cons. - CCS - Ariel - EGPAF - ICAP	Partners leads
10.30 - 10.45	Coffee break	
10.45 – 11.15	Partners presentations: - ETPS implementation, experiences, key challenges and opportunities, deployment	Partners leads

	models and pros and cons. - Fhi360 - FGH	
11.15 - 12.15	Discussion on the presentations	all
12.15 – 12.30	AOB	all
Wednesday 12th September, 2018		
8.30 – 10.30	Discussion with all partners split in two groups: **Working Group #1** - State of eSaude community and way forward; - State of helpdesk & support system and way forward; - Communication and coordination mechanism; - Suggestions from all and development of a high level plan; **Working Group #2** - Technical Discussion about EPTS (concept dictionary, reporting queries, upgrading and harmonizing versions etc) - EPTS Solution Architecting Technical Discussion - Suggestions from all and development of a high level suggestion plan;	Jembi

10.30 - 10.45	Coffee break	
10.45 - 11.15	**PLENARY PRESENTATION OF THE WORKING GROUPS:** Groups to prepare the presentation with findings of the working groups Establish a high level plan for the future meetings, responsibilities and roles: immediate meetings, working groups, regular steering committee, planning and M&E meeting	
11.15 - 12.15	Presentation of the working groups	
12.15 - 12.30	AOB	

"The project is made possible through a partnership between Mozambique and the American people through PEPFAR - CDC funding.