2.1 Technical Application

Overview, Instructions, and Template

Healthsites alignment with OpenHIE architecture

Overview

Healthsites.io plans to support the maintenance of baseline health facility data with OpenStreetMap.

In order to support the Health Information Systems being used within Ministries of Health such as DHIS2 , Healthsites.io intends to support the FHIR standard for exchanging electronic health records as it relates to health care facilities.

During the notice B development phase Healthsites specified a phased implementation plan. Our developers and digital producer will implement this standard and test with project partners.

Executive Summary

The investment will fund the integration of Healthsites.io with Health Information Systems that support the FHIR standard. This will allow Ministries to take advantage of baseline health facility data in OpenStreetmap to maintain their Master Facility List. This has a variety of benefits including cost saving, improved accessibility and enhanced data analysis.

We will make use of the The Instant OpenHIE project and provide incremental value while gaining experience with FHIR by taking a phased implementation approach.

We will continue working with the project team established during the Notice B phase. Specifically Mark Herringer, Janusz Slota (Healthsites) and Doug Moran (eHealthAfrica)

Consortium Team

Open Healthsite Consulting Ltd leads the project. It provides business analysis and Agile project management. We intend to manage the work in a similar way to the work done in Notice B. The difference this time is that we want to place the primary use cases of Epidemiologists and the Instant OpenHIE approach at the center of the work.

Examples of related work

Healthsites.io

Healthsites is building a baseline of health facility data with OpenStreetMap

Qualifications of key team members

Mark Herringer

I'm an experienced digital producer and enjoy the Human-centered design approach. I'm interested in open data and how health care location mapping and citizen participation can support humanitarian business models.

Janusz Slota

Experienced full stack developer, focused on code quality, able to produce maintainable codebase to a high standard that contributes to businesses in a sustainable way.

Specialties: software development, software architecture, software design, software testing

Doug Moran

Serial entrepreneur with over 20 years experience developing software and solutions in the Business Intelligence, Data Analytics and Big Data worlds. Key strengths are the ability to listen to people, understand the business problems they are trying to solve, quickly form and articulate big picture solutions and implement those solutions as a series of practical steps.

Number of years in operation.

5 Years. Healthsites was launched in 2015 in response to the West African Ebola epidemic.

Collaborating organisations

In support of our need to collaborate with end users (Epidemiologists) of the data we plan to work with our project partners MSF and The International Society for Infectious Diseases.

In addition we will work with Palindrome Data. Palindrome Data has experience working with 50 digital health projects in developing countries and experience developing and scaling Technology for Development (ICT4D) and Private Sector Data and Analytics.

Background or Problem Statement

Healthsites.io is a global resource used by stakeholders in the Health cluster everyday to plan operations in the field. It has been operational since it's launch in 2015. The data Healthsites publishes to the Humanitarian Data Exchange through it's open API is one of the most popular data sets on the platform.

Epidemiologists use the service to plan activities in the field and understand the capacity of facilities to support disease outbreak events.

Healthsites.io saves baseline health facility data to OpenStreetMap. This was made possible through the Digital Square Global GoodsNotice B award.

Saving health facility data to OpenStreetMap improves interoperability and harnesses the contributions of citizens, academic institutions, businesses and organisations who use the data in their daily operations.

In addition to cost savings on data maintenance, improved health facility data supports epidemic preparedness, immunization programs, disaster response, Maternity care and Health capacity planning.

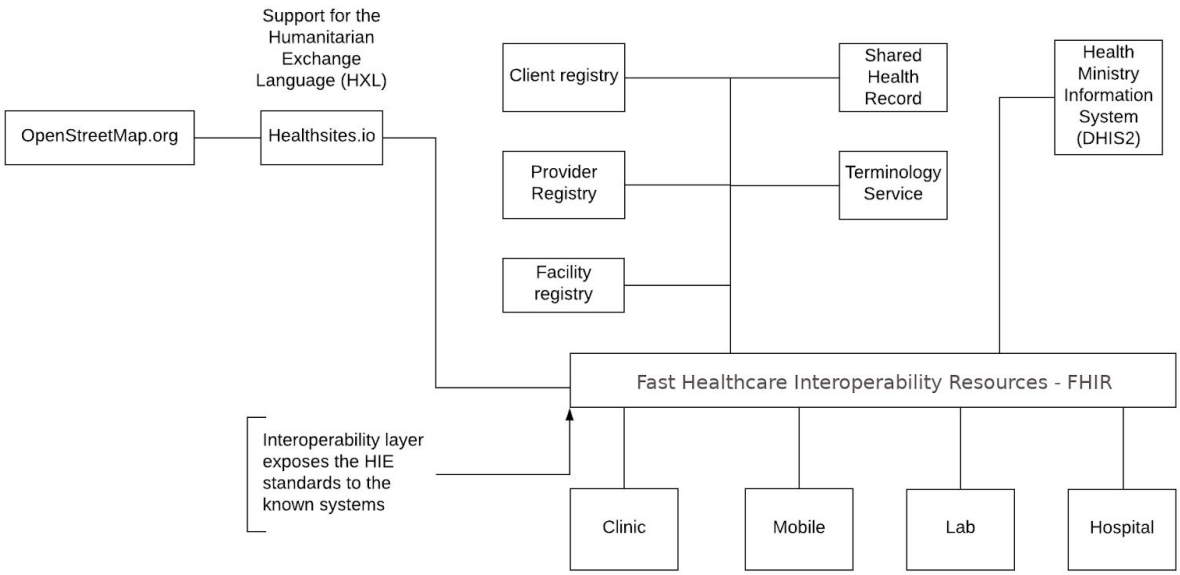
Currently Ministries of Health do not have an automated method of harnessing the contributions of OpenStreetMap. In addition there is no integrated process to share with OpenStreetMap. This proposal enables the Ministry to work with OpenStreetMap, reducing the cost of data maintenance and helping to

improve the accuracy of health facility data. In addition the Ministry has a method of sharing their updated and official health facility data.

Digital Health Technologies

The minimal integration will consist of 2 elements:

- REST like API - allowing SMART platform systems and apps to read and write* to OpenStreetMap via healthsites.io
- OAuth2 authentication listener/middleware which will check and validate the OAuth2 access token against FHIR/SMART platform.



We will make use of https://www.hl7.org/fhir/location.html#search as to the required criteria for searching for a location etc.

* Integration with OpenStreetMap, as any data that is written needs to be attributed to a specific user.

https://wiki.openstreetmap.org/wiki/Global_Healthsites_Mapping_Project

User Stories

1. As a Ministry of Health data administrator I want to check OpenStreetMap for health facility data updates so that I can use it to complement my health facility maintenance activities.
2. As a Ministry of Health data administrator I want to share Master facility list updates with OpenStreetMap so that Humanitarian actors and stakeholders in the health cluster have access to the most up to date data.
3. As a Healthsites data administrator I want to support the FHIR standard so that facility lists that support the OpenHIE architecture can send and receive data.
4. As a stakeholder in the health cluster I want to share updates to OpenStreetMap so that I can help maintain baseline health facility data.

Objectives and Activities

Healthsites will provide incremental value while gaining experience with FHIR by taking a phased implementation approach. We will take the following steps on our way to full FHIR compatibility.

Phase 1 - Establish FHIR document

Implement the ability for healthsites.io to use the FHIR document based exchange framework to provide location based data through it's API. We will generate a FHIR location resource document from Healthsites internal data with the relevant subset of attributes by the tool.

Phase 2 - Read FHIR

Develop the services required to implement a minimal RESTful FHIR based exchange framework and be conformant to "RESTful FHIR" as defined here. Healthsites will implement the read and capabilities interactions to support FHIR Location Resources. The location fields will be expanded to match all fields in healthsites.io that pertain to the FHIR location resource. We may want to look into using http://hapifhir.io/ to implement this capability.

Phase 3 - Create, search, and update FHIR

Expand phase 2 to support create, search, and update.

Community Feedback

We will make use of the Healthsites Github repository to share and request feedback on the project specifications.

We are part of the OpenStreetMap community and plan to engage further with the The OpenHIE Interoperability Layer Community (OHIE-IOL)

Schedule

Our goal is to develop working software from day one. We will engage with project stakeholders and incorporate feedback through an Agile series of sprints. The envisaged project team is based in London, Amsterdam, Cape Town (GMT+1,2) which will support the development process. Where possible we will

build in feedback from stakeholders outside of these time zones such as from our colleagues in Manilla and Boston.

The following is a high-level work plan.

Activity	Team Location Month/ Quarter	[Month/Quarter					
		[M] 1	[M] 2	[M] 3	[M] 4	[M] 5	[M] 6
Establish Github repository and definition of the solution to be developed	London, Amsterdam, Cape Town, Manilla, Boston						
Engagement with project partners and The OpenHIE Interoperability Layer Community							
Build MVP (Minimal Viable Product)							
Test with project partners							
Incorporate feedback and update product backlog							
Build out updated backlog							
Test with project partners							
Incorporate feedback and update product backlog							
Build out updated backlog							

Deliverables

Deliverable	Month/Quarter Due
Phase 1 - Establish FHIR document	M2
Phase 2 - Read FHIR	M4
Phase 3 - Create, search, and update FHIR	M6

Global Good Maturity Model Assessment

200606-Healthsites-Digital Health Software: Global Good Maturity Model - v1.1