

eHospital Implementation

ST. JOSEPH'S HEALTH CENTRE

Highlights

- IntelliSOFT partnered with St. Joseph's Health Centre to implement eHospital, powered by Bahmni.
- St. Joseph's hosts the inaugural implementation of eHospital in Kenya.
- eHospital is being used for Registration, OPD, Laboratory and planned to rollout across the entire facility.



Technologies

Development: Java, Java Spring, Angular JS, Node js, Shell, Python, Hibernate, Groovy, Ansible, Ruby

Development Environment : Maven, JDK 8, Grunt, Python 2.7, Vagrant, VirtualBox, IntelliJ, Github, Visual Studio Code

Testing : Mockito, JUnit, Karma



Background

St. Joseph's Health Centre was founded in 1993 and managed by Sisters of St Joseph of Tarbes, serving a catchment area of almost 32,000 in Nairobi, Dagoretti North constituency, Ngando village, Kenya. St. Joseph's was founded as a small dispensary in a small room in the church with a focus on providing health services and has since expanded to offer additional services focusing on HIV/AIDS, Infant and Child Health, maternal, OPD, and Dental services.

Since the founding of the facility, the staff have been using paper records and manual processes to manage the facility. This entails a complex and vast storage system of patient records, often requiring a significant amount of time for constant management and retrieval. Many staff spend hours creating reports and duplicating capturing patient information across forms and registers. Furthermore, information is singular and siloed - physical records have to be walked from provider to provider, only able to be viewed by a single staff at a time.

By late 2017, St. Joseph's was ready to embark on a journey towards digital health. IntelliSOFT Consulting partnered with St. Joseph's to define, develop and deploy eHospital, an open source EMR and Hospital Information System.

eHospital, the EMR of Choice

eHospital, powered by Bahmni, was the EMR of choice for several reasons:

- It fully complies with Kenya's Ministry of Health minimum requirements based on relevant standards and guidelines.
- It is free and open source (FOSS) listed on the globally recognized public goods.
- It is built for use in low-resource settings, and
- It is appropriate for users with basic computer skills.

IntelliSOFT has deep expertise in implementing eHospital and through this, understood that it would greatly add value to the staff at St. Joseph's, allowing them to more cost-effectively and efficiently deliver high quality of care.

From Paper Processes to Electronic Patient Records

To begin with, the St. Joseph's staff were asked to describe their intended values and goals of using an electronic data system. They shared a vision of having continuous access to patient information which can be shared across departments. This vision reduces administrative efforts and would allow a shift to focus on care delivery. The collective staff vision served as the foundation of IntelliSOFT's approach.

St. Joseph is a fully paper-based facility, therefore the IntelliSOFT team spent time interviewing health workers, and observing delivery of healthcare services in order to understand current processes and more specifically, challenges.

An assessment to evaluate the readiness of St. Joseph to implement and use a complex hospital-wide electronic data system was performed. This assessment focused on evaluating the resources available for long-term sustainability of the system (presence of ICT infrastructure and continuous power supply) and the staff's attitude towards use of a new system. The assessment identified the facility as moderately prepared.

Once the first release was ready, IntelliSOFT conducted training sessions for the users, focused on topic (e.g. troubleshooting) and department (e.g. registration). All users went through computer basics, typing games and basic troubleshooting. Lastly, live workflow training was conducted to demonstrate where eHospital will replace paper-based capture of information.

"The system has reduced my amount of paperwork and allows for patient record retrieval. The system is a positive addition to the hospital and will be of great help moving forward"

Sister Jane Francis

Designing for the Long-Term

Being the first implementation of eHospital in Kenya, the IntelliSOFT team spent time to understand forms, registers and reports used by the facility as well as those required by the Ministry of Health. The workflows were developed in a reusable way and will serve as the foundation for future implementations in the country.

1 <http://guidelines.health.go.ke/#/category/15/124/meta>

2 http://freematerialsoftware.org/index.php/Main_Page

3 https://wiki.digitalsquare.io/index.php/What_are_Global_Goods

The facility had a basic network infrastructure, with 6 desktops and a few accessing the internet.

IntelliSOFT worked closely with a local vendor to set up multiple data points in each room and utilized long-lasting materials. By doing this, the facility is set up to scale and sustain the network in the long-term.

Many of the staff at St. Joseph's had little experience using computers. The IntelliSOFT team devised a thorough training plan beginning with computer basics and typing games. Once the staff became comfortable, we moved on to eHospital training which was organized by the department.

St. Joseph's did not have a dedicated IT staff therefore IntelliSOFT observed and identified a eHospital champion who showed deep interest and skill in eHospital. This champion was given comprehensive training on the administrative, networking and troubleshooting aspects of eHospital. This is a key role to ensure the long-term success and sustainability of eHospital.

Funding

IntelliSOFT provided the financial and technical resources required to successfully implement the comprehensive facility management information system, eHospital at St. Joseph's hospital. The lion's share of the total direct cost of this inaugural implementation was driven by Human Resources averaging at KES:2,000,000 and equipment (including networking) at KES:500,000. Whereas this cost is still very high due to the elaborate nature This is consistent with findings from previous costing studies, specifically one on cost of implementing KenyaEMR. It is anticipated that for subsequent implementations, this cost will significantly reduce by more than 50%.

Going Forward

In order to ensure long-term usability and success of the system, one of the staff at St. Joseph's has been recognized and trained as a eHospital champion. The eHospital champion provides training to users, communicates feedback and support to the IntelliSOFT team, and ensures the system is continually providing value to the staff and facility. Future phases will include additional departments including Maternal and Child Health (MCH) and In-patient (IPD). The long-term goal is to electronically capture patient data and remove the burden of paper-based processes.

"The system allows me to view the patient queue and access past patient records which helps with diagnosis for patients who lose their books. I am happy we are now turning into a digital hospital "

Dr. Edwin





IntelliSOFT Consulting Limited is a wholly owned Kenyan company, with the vision to build *Health IT Systems for Health Systems Strengthening across Africa*. IntelliSOFT is focused on designing, developing, implementing, supporting and maintaining digital health solutions for Low to Medium Income Countries. Our primary focus is in the areas of Health Management Information Systems and Health Research Support Systems.

IntelliSOFT Consulting solutions power various underlying systems that enable availability and accessibility of quality health information at the Facility, Community, County and National levels.

Contact:

Steven Wanyee | swanyee@intellisoftkenya.com

Peter Anampiu | peter@intellisoftkenya.com