The Mobile Clinic Electronic Medical Records system was developed for Orant Charities to replace their paper-based system of accessing patients in rural areas of Malawi, Africa. This system was required to account for the limited power and internet connection in these rural areas.

After field testing the system, Orant charities provided feedback on features they would like to see introduced or improved. My specific problem space is:

- Improve Local Server synchronization to reduce data transfer time to and from the Cloud.
- Add functionality to allow use for multiple charities and to keep information consistent between them.
- Provide security to information stored on the Local Server and during synchronization with the Cloud.

As a Local Server Administrator, I want to:

- Only pull new or updated information from the Cloud Server so that I can quickly obtain the most recent and up-to-date information.
- Only push new or updated information to the Cloud Server so that I can back up information and share it with other charities and clinics.
- Securely transfer data to and from the Cloud Server, so that no unauthorized access is given to confidential information.

My subsystem is highlighted in red.

Mobile Clinic v1.0

- Replaces paper-based system used to record patient information.
- Provides a central location to store all information gathered on the field.
- Allows users to access information gathered on the field at a remote location.
- Exclusive use by Orant Charities

Mobile Clinic v2.0

- Allows use of the system by multiple charities and clinics, providing a centralized medical records database.
- Improved performance of data synchronization.
- Added Security to prevent unauthorized access to confidential information.

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The project was conducted according to Scrum principles (iterative design and development)

Preliminary testing was performed using GHUnit with Xcode in order to validate that the correct information was being saved into dictionaries.

Integration testing was performed using a bottom-up approach to verify that the necessary information was being sent between the Local Server and the Cloud.

The Local Server application is implemented in Objective-C, using Xcode’s cocoa framework.

Data is stored on the Local Server using an SQLite database and is manipulated using the core data framework.

All data sent between the Local Server and the Cloud is encrypted using the AES encryption algorithm with a 256 bit key.

Mobile Clinic v2.0 will provide Orant Charities, along with other charities:

- An easy to use, portable application, to administer medical care without the need of paperwork.
- A centralized medical records database for use by all participating charities to track patient histories.
- An increased patient processing rate.
- Improved system and data security, preventing unauthorized access to confidential information.