



**UW/FHCRC Center for AIDS Research  
2013 Infrastructure Award Application Form**

Applicant Name: Carey Farquhar, MD, MPH & Dr. Peter Cherutich, MBChB, MPH

Institutional Affiliation: UW & NASCOP

Phone Number: [REDACTED]

Email: \_\_\_\_\_

Please describe the site and circumstance necessitating the proposed activities:

In collaboration with Drs. Peter Cherutich, Matthew Golden, Ruanne Barnabas and John Kinuthia, Dr. Farquhar has two major studies underway that are utilizing mobile phone-based electronic data collection systems. These projects both utilize the Open Data Kit (ODK) platform, which is an open-source suite of tools that can be used to collect and manage mobile data. ODK is currently in use world-wide, but conveniently its core developers are researchers at the University of Washington's Department of Computer Science and Engineering. Although these multi-year studies are still underway, it is already clear that the ODK systems developed for these research projects have increased data accuracy, decreased data collection time, and provided the PIs and other members of the project team near real-time access to data as it is collected at field sites.

There have been two key challenges in establishing the technology framework to administer these projects: First, acquiring, setting up, and maintaining the computer server to distribute the blank data collection forms and collect/store the completed survey records; and Second, designing and programming the electronic data collection forms. While it is reasonable to assume each project should fund their own staff to develop the data collection forms, there is the potential to benefit numerous CFAR studies by leveraging these project's initial server development efforts and resulting implementation know-how. There are substantial computer skills required to setup an ODK server. At a minimum set-up involves (1) changing network configuration, (2) either selecting and using a website hosting service or specifying and configuring your own server and network router(s), (3) installing and maintaining server software, and (4) ensuring that your site has proper power-failure and data-backup systems in place.

The computer server used for these projects is a shared resource that is housed and administered at the Kenya National AIDS & STI Control Programme (NASCOP) by IT personnel jointly funded by NASCOP and these projects. While there are other cloud-based server systems for hosting an ODK Aggregate Server, such as Google App Engine or Amazon EC2, there are several drawbacks to this approach. Billing for large projects can get difficult to estimate, data locality and security may be key concerns, and/or the lack of server customization that may be required for specialized or large collection activities. For these reasons, we feel a CFAR administered server, located in NASCOP, is the best long-term solution for administering large numbers of ODK-based surveys. However, while the server hardware is appropriate for the data volume of the current projects, it has little room for expansion.

Detailed Description of Proposed Actions:

This proposal would establish a scalable ODK server solution for additional CFAR projects to benefit from the infrastructure (server hardware/software and personnel know-how) already established by current CFAR research programs. This would lower the barrier-to-entry substantially for this modern approach to field data collection for the CFAR community. This will be accomplished by purchasing a single computer server, containing a base image of a single ODK server, with the capacity to clone-on-demand this base image using virtualization technology, essentially simulating individual servers for new research projects as they are needed.

We propose to purchase:

One IBM System x3650 M4 Server, with sufficient RAM and RAID hard drive storage hardware to serve up to 10 virtualized ODK servers.

The server will be physically located in NASCOP. Nightly server backups will be done to replicate project databases to file servers located at the University of Washington. Encryption options can be implemented, as needed, insuring data privacy from the moment it is entered into a phone device to the point at which the PI unencrypts the final database.

Currently funded IT personnel on Dr. Farquhar's projects will be responsible for setting up server software and hardware, ongoing support, insured availability, and backup management. The same personnel will also support other CFAR researchers in finding the most appropriate phone devices for administering surveys and providing guidance on programming/encoding surveys for use on the phones.

How will the activities impact the international site?

This server hardware will enable CFAR, by way of NASCOP, will provide researchers access to a completely built out ODK server solution, removing one of the primary barriers to entry for UW collaborative research projects that intend to conduct primary data collection using cell phone devices.

Please list UW/FHCRC CFAR linked grants individuals that will utilize the infrastructure:

PI	Title	Grant Number	Grant Source (NIH, etc)
Carey Farquhar	Assisted Partner Notification to Augment HIV Treatment and Prevention in Kenya.	R01 A1099974-02	NIH/NIAID
Carey Farquhar	HIV Testing and Educating Male Partners to Improve Maternal and Infant Outcomes.	R01 HD075108-01	NIH/NICHD
Carey Farquhar	Improving the HIV Care Cascade in Kenya through Implementation Science Training	D43 W009580-01	NIH/Fogarty
Brandon Guthrie	Improving Linkage to HIV Care Following Provider Initiated Testing and	New Investigator Award	UW CFAR

	Counseling		
Jennifer Unger	Improving Maternal and Neonatal Health with Mobile Phone Technology	K12 HD09026	NIH/NICHHD
Judd Walson	Molecular Basis of Nontyphoidal Salmonella Emergence	U19 AI090882-03	NIH/NIAID
Judd Walson	Prevalence and Correlates of Tuberculosis Identified in non-pulmonary Specimens among Kenyan Children		Firland Foundation

Additional CFAR-linked investigators participating in research that will benefit from the purchase of this server and not named above: **Drs. Peter Cherutich, John Kinuthia, Alfred Osoi, Thomas Odeny**

Budget:

Item	US Dollar Amount
IBM System x3650 M4 Server	\$3020
Base System: <ul style="list-style-type: none"> <li>• Xeon 6c E5-2620 (single socket, 1 empty)</li> <li>• 2X300 GB HDD 2.5" SAS</li> <li>• SR 5110e (basic raid controller)</li> <li>• 2x Power supply</li> <li>• DVD RW</li> <li>• 3Yr Warranty</li> </ul>	
Hard Drives: IBM 300G 2.5in SFF 10K 6Gbs SAS <ul style="list-style-type: none"> <li>• 4 units @ \$333/each</li> </ul>	\$1332
RAM: Express 8GB PC3-10600 CL9 ECC DDR3 <ul style="list-style-type: none"> <li>• 12 units @ \$333/each</li> </ul>	\$3996
Raid Controller Upgrade to 5100 series	\$202
VAT 16%	\$1368
<b>Total</b>	<b>\$9918</b>

Please attach a copy of your biosketch and vendor quotes to support your budget.

Submit all applications to [REDACTED] by November 20, 2013.