

Project:

InterConnection Uganda

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Abstract

InterConnection Uganda is a new project, supported by the Ugandan Ministry of Information Communication Technologies, created this year with the purpose of establishing a computer refurbishing center in Kampala, Uganda. The computer refurbishment center's primary focus will be to refurbish second-hand PCs that will either be sold to individuals, companies, or the government at competitive prices, or will be donated to nonprofit or educational institutions. The refurbishment center will also serve as a technology hub for the community, providing various IT-related services, such as computer repair or lab maintenance for schools in Uganda which have computer labs. Further goals include providing computer-related courses for individuals and technology teachers.

Ultimately, after initial setup, the refurbishment center will be run completely by Ugandans. As a result it will not only serve as a source for affordable computers, but it will serve as an employer for Ugandans with technology-related skills. Additionally, the center will provide an opportunity for university students who are studying computer science, or who have strong computer backgrounds, to come and teach courses.

I will be in charge of the refurbishment center's network setup, initial staff-training, and primary curriculum development.

1. Supervisor

My supervisor for InterConnection Uganda is the Honorable John Alintuma Nsambu, Minister of Information Communication Technologies (ICT) for the Ugandan government.

I have gotten to know Honorable Nsambu through the Computers for Uganda (CFU) project, a project based out of Washington State which he co-founded in 2001. For the past two summers I have participated in the project as a student technical lead. The project's main goal is to connect U.S. high school students in with Ugandan students through technology. Every summer since 2002, CFU has taken a group of ten to twenty high school students to Uganda to set up several labs of donated computers, which were refurbished by the U.S. students beforehand, in primary and secondary schools. In addition to lab set up, the U.S. students also hold introductory tutorial sessions for the school. Since 2002, a total of over 400 computers have been set up in 28 computer labs.

CFU's success is largely due to Hon. Nsambu's efforts. Every year, Hon. Nsambu selects roughly ten to twenty schools, based on a set of criteria, which are in need of computer labs. When the CFU team arrives in Uganda, Hon. Nsambu provides all the transportation and lodging needed for the entirety of the three-week stay. He also travels with the team to each school and spends a significant amount of time talking with the team about how to further expose the young people of Uganda to computer science, a subject Hon. Nsambu has been successfully promoting since he became a Member of Parliament in the Ugandan government.

In fact because Hon. Nsambu acts with such passion, believing that computer technology is the future that will help resurrect his country's economy and will connect Uganda to the developed world, he was appointed the Minister last year of Uganda's first Ministry of Information Communication Technologies. Since the establishment of the Ministry of ICT, Hon. Nsambu has been working to bring a cheaper, faster Internet connection to the public, has made initiatives to digitize government records in hopes of ending government corruption, and has been continuing his quest to improve computer access in educational institutions, among many other projects.

InterConnection Uganda is one such project, that I have helped to establish over the past year, and one that Hon. Nsambu believes will help solve some of the problems faced by the Computers for Uganda project, such as lab maintenance and self-sustainability. John has put me in charge of the initial set up of the warehouse and training of the staff. During my stay in Uganda he will provide me with transportation and lodging. Additionally he will provide me with opportunities to talk with other Ugandan politicians about the future of technology in Uganda and visit the schools with labs Computers for Uganda has set up in the previous years to assess the state of the labs, make repairs, and talk with the educators at those schools about their needs in computer education. Additionally, I will have the opportunity to discuss the future of the project and possible further involvement with a team of students from MIT.

2. Community Needs

InterConnection Uganda will be in its initial development stages when I arrive in Uganda, and its first shipment of computers will arrive at about the same time. The warehouse center for InterConnection Uganda has already been established just outside of Kampala. I will be in charge of setting up the network for the center and teaching the current staff how to troubleshoot hardware and software issues. Additionally, with advice from Hon. Nsambu and the help of part of this year's Computers for Uganda team, arriving roughly three weeks after me, I will help to establish an organized infrastructure within the warehouse, such as the creation of a computer "ghosting" lab, where the software for the refurbished computers can be quickly installed through a program such as Symantec Ghost. In addition I will also work on a computer inventory system for the refurbishment center, which will keep track of sales and donations.

Once the primary infrastructure is set up, I will be able to work with the staff on ideas for an initial curriculum that the warehouse can offer to the public and computer instructors. I will also talk with students of computer science, such as those from the Datamine technical school and Mekere University, Uganda's premiere university, about how they can participate and add their technical skills to InterConnection Uganda through an internship or by working there as a technical instructor or staff member after graduation.

One of the basic needs of computer-related education in Uganda right now is a source of computer instructors with true technical skills. A reoccurring problem I noticed after meeting with the instructors from Computers for Uganda supported schools is that there is a shortage of instructors with computer skills above a basic knowledge of how to use certain applications. In fact, many of the instructors I met with were previously instructors of other subjects unrelated to technology, with only basic skills in computer science, and were quick to mention how they wanted a way of obtaining further computer-related skills.

A possible solution to this would be to have InterConnection Uganda provide computer education workshops targeted specifically to computer instructors at no cost, done with the help of volunteers, either from Mekere University or Datamine, or, in the future, a group of students from MIT.

The creation of a full, thorough curriculum will most likely not be probable during the two months I plan to stay in Uganda because I will be mainly concerned with the setup of InterConnection Uganda's physical infrastructure. However, brainstorming sessions with InterConnection Uganda staff will provide me with a better idea of what to work toward for the next year. Also, I will make the initial steps and connections with other university students in Uganda, so I can contact and share ideas with them over the next year.

3. Work Plan

Between now and June 1, 2007:

Until I leave for Uganda, I will keep in contact with this year's Computers for Uganda team and obtain software, i.e. Symantec Ghost, which will be essential in warehouse setup and computer refurbishment. Then I will gather computer hardware and software troubleshooting resources, online and in print, with advice from Course VI students and other fellow computer enthusiasts here at MIT. The final outcome will be a bank of essential resources that the staff at the refurbishment center can reference as they come across problems. Also, I will need to purchase a plane ticket as soon as possible, hopefully with the aid of the fellowship, and make sure I have all the appropriate medication (such as doxycycline for malaria) and that all my required shots are up to date.

Uganda Phase I:

I plan to arrive in Uganda on June 1, 2007, just before the initial shipment of PCs. Until June 23, I will be working on the general network setup of the warehouse and initial staff training. On June 23rd, the technical help from the Computers for Uganda 2007 team should arrive, and they will be able to help me over the following three weeks to complete the physical infrastructure of the warehouse and make sure that everything is in order before they leave around July 14. During this time I will also be working on a records system which will keep track of the sales of refurbished computers. This initial setup will probably take most, if not all, of the 400 hours allotted for the stipend since I plan to work roughly eight hours a day on the refurbishment center.

Uganda Phase II:

During the time between July 14 and August 1 (when I depart for home) I will continue working on curriculum plans and network with local university students in an effort to set up system which will train more technical instructors who will have sufficient knowledge to not only teach the students in the computer labs set up by Computers for Uganda, but also to maintain the labs and have the capability of doing their own hardware and software troubleshooting. I plan to have most of the hours I work on this portion of the project count as community service, since Phase I will probably take up most of the stipend time.

4. Community Impact

InterConnection Uganda will have an impact on Uganda in several ways.

One way is that, because the second-hand refurbished PCs can be sold to individuals at a low cost (the price of which is currently being determined) they will be more readily accessible to the public, and the demand for PCs will increase. One of the sub-projects that is still in the planning stages which the Computers for Uganda team and Hon. Nsambu have been discussing for the past two years is the implementation of a WiMax network, which is more powerful than WiFi and could deliver high speed Internet to anyone with a computer within range. If such a network exists, and if InterConnection Uganda's computers are readily available, then more people would be able to access the Internet, an immense resource.

The creation of a business like InterConnection Uganda that is centered around information technology, creates job positions for Ugandans who have technical skills, which might motivate other Ugandans to pursue careers in information technology. My experience of Uganda thus far is that many older Ugandans don't regard skills in information technology to be of any use (since work is usually centered around agriculture in Uganda), since there aren't that many people in Uganda with such a skill set. My hope is that InterConnection Uganda can serve as a starting point to create more jobs promote IT in Uganda. Additionally, it should give students of computer science the opportunity for practical experience through internships, something which is invaluable in the world of IT and nearly impossible to duplicate accurately in a classroom. Also, I firmly believe that increasing the national skill level in computer use is essential in order to bring Uganda out of poverty, because the modern, developed world is so reliant on computers. In order to have a reliable job in this world, you need to have a certain level of technical skill, something that people in developing nations usually lack, and something that InterConnection Uganda can very easily provide.

In addition to creating jobs in Information Technology, InterConnection Uganda would serve as a community hub for technical information.

If people experience hardware or software issues, they have a place to turn to for help. Schools, like the ones sponsored by Computers for Uganda, would be able to get help if something in the lab goes awry. I remember visiting a few of Computers for Uganda's oldest labs last year, shocked that a third to half of the lab was left unused because of technical issues, usually due to hardware failure from power surges. Computers for Uganda can easily fix this, as we always bring spare parts with us, but we are only there once a year. With InterConnection Uganda, the labs would not have to wait for the next Computers for Uganda team to arrive. The Ugandan staff at the center would be able to fix the lab's problems without our help, and the labs can remain in one piece, allowing students to continue learning.

Future workshops on computers sponsored by InterConnection Uganda would give community members the opportunity to familiarize themselves with computers. From my experience, the reason why a lot of Ugandans never consider a career in IT is because they have never been exposed to the power of computers. Imagine holding a free, community workshop for people to come in and learn how to use a computer for the first time. If such a workshop is created, fewer people would be intimidated by this technology and might pursue it further. Also, classes offered specifically for technical instructors to increase their skill level would be very useful, especially for the labs established by Computers for

Uganda. The computer instructors of these schools could be educated about their lab's network infrastructure, which would allow them to troubleshoot any networking issues that they come across. It is something I have always wished we had time for to teach the instructors in the Computers for Uganda schools. In addition to networking, hardware, and software issues, the instructors would also learn about the importance of maintaining constant power to the computers. All too often, we've come back to old labs and see that computers are plugged directly into the wall instead of through a power stabilizer. Consequently, those computers are usually the ones not working because the hardware has been fried from a power surge (a side effect of Uganda's unstable electricity environment).

Lastly, InterConnection Uganda would provide a place for people to deposit their old computer equipment. I remember visiting one lab and seeing old broken CRT monitors piled up in the corner (equipment which the school had procured, which had the wrong voltage input—110V instead of 240, after Computers for Uganda had set up the lab). Broken computer equipment like this is hazardous if thrown out directly into the surrounding environment. However, with InterConnection Uganda, equipment can be recycled through a partnership with recycling companies in the U.S., and computer parts which are still working can be kept, inventoried, and used in the future.

5. Motivation

My role as a student technical lead for Computers for Uganda Team 2005 introduced me to the beautiful country of Uganda. I fell in love with the laid-back and friendly nature of its people, who are quick to share their culture with you in dance, song, or language. Most of all, I found inspiration in the young people of Uganda—students unlike those I experienced at my high school. These students take pride in the fact that they are going to school, for it is a privilege. They have an intense desire to learn because they believe that education can give them and their future families a better life. I have always felt the same way about education, and it was amazing to see Ugandan children in primary school who were just as passionate. To them, education was a way of life.

The talk started very early last year about the possibility of creating a refurbishing center in Uganda in part to make Computers for Uganda self-sustaining by not relying completely on funding from the Rotary every year. CFU would utilize a portion of the profits from second-hand PC sales, to ship computers to Uganda for the project. The idea quickly evolved into a way of addressing issues like low numbers knowledgeable computer instructors in Uganda. As the idea developed into actuality, thanks to Hon. Nsambu and Computers for Uganda leaders in Washington State, I could not pass up Hon. Nsambu's suggestion that I come to Uganda this summer and help set up the warehouse and train its new staff, since I have a strong technical background and have been to Uganda for the past two summers. I could have decided not to go to Uganda this summer and take a break to work instead on an internship for a tech-oriented company, but my love for Uganda and its people compelled me to become a part of this initial set up of InterConnection Uganda. It is a revolutionary idea that will bring so many opportunities to the Ugandan people, and I want to contribute something to help change the country which has given me so much inspiration.

6. Qualifications

I have a strong background in computer networking—I completed the Cisco Certification course and obtained my CCNA (Cisco Certified Network Associate). Additionally I have experience setting up standalone networks in Uganda through the Computers for Uganda project—a necessary skill since I will be creating such networks for the warehouse. For instance the “ghosting” lab will need a standalone network that the computers can easily be attached to and receive the software image data over the network.

I have over two years of computer refurbishing background, which is also due to the Computers for Uganda Project. We had to refurbish many of the donated PCs to get them in working condition (that is, a condition we believe yields the longest possible survival in the tough climate of Uganda), so I know exactly how to train the staff when it comes to refurbishing computer systems.

Since InterConnection Uganda is a Microsoft Authorized Retailer (MAR), it is able to provide genuine Microsoft software to underprivileged organizations and educational organizations at very little cost. This means that most, if not all, of the software will be Microsoft. During my senior year of high school I took a Microsoft Certified Professional (MCP) course in troubleshooting and administering Windows XP Professional, which is most likely the refurbishment center's operating system of choice. I also received some training in administering Microsoft Server 2003, which may or may not be used (depending on licensing and cost) for the refurbishment center.

7. Personal Impact

I want to give the Ugandan people an opportunity to experience IT, because it has influenced my own life dramatically. I also realize that my experience in setting up the physical infrastructure for a large organization like InterConnection Uganda is fairly limited, and I hope that with my current technical background I can create a useful infrastructure and gain experience while learning a few new things.

One of my other lifelong goals is to become an educator at some point in my life. Through the development of a curriculum for the refurbishment center, I hope to gain a little experience in the sense of putting together miscellaneous facts to form something coherent that can be taught and shared between cultures. I have made many attempts at developing a curriculum for a class (my most recent is the IAP course I taught on Web Design this past January). I hope that working with educators and students from a different culture like Uganda will develop my own sense as an educator, and I will come out of this two-month experience more enlightened on how I can share my knowledge with others than when I started.