

KhmerOS Software Initiative (KhmerOS)

Final Report on the Grant received from the Internet Society

Background

KhmerOS (Khmer Software Initiative) is a project directed to creating and distributing free basic final-user software in Khmer (Cambodian) language, so that users will not have to learn a foreign language in order to acquire computer skills and access information through the Internet.

No proprietary software companies have translated any of their applications or operating systems to Khmer language.

KhmerOS is coordinated by the Open Forum of Cambodia (OFC), an NGO that back in 1995 was the first organization to provide e-mail in Cambodia, in order to give service to other NGO's and universities. OFC was also delegated the .kh ccTLD at the beginning, until the Government accepted the responsibility. The KhmerOS initiative is being lead by Norbert Klein and Javier Solá, both of whom have been participating in ISOC's activities since 1995 (Javier was VP for Conferences in 1998/1999) and have been deeply involved in Internet Governance (Norbert still is).

The social goals of this project are:

- Reduction of the Digital Divide by empowering the least advantaged to access jobs that require the use of computers.
- Eliminating the barrier of having to use an English browser in order to access information that is in the Internet in Khmer.
- Reduction of training time and cost for jobs that require computer skills.
- Protecting the local language from an excessive entry of foreign terms that complicate training and integration in the work place. Clarification and standardization of the correct use of the Khmer language and of Khmer cultural issues such as word sorting.
- Permitting training on technology from early stages in the education system. Permitting reaching out to rural areas in order to offer to them training on skills similar to those which might be offered in large cities.
- Facilitating the computerization of the Administration, allowing it to maintain databases in its own script.

In order to fulfill these social goals, the following technical goals need to be fulfilled:

- Create a set of free computer applications in Khmer that cover most of the people's computer needs (office productivity and Internet), and that will work in both the MS Windows and Linux Operating systems.
- Development (translation) and deployment in Cambodia of a free end-user computer system (desktop) and its applications that works entirely in Khmer Language (KhmerOS system).
- Production of training materials on the use of the translated applications. These materials will also be free.
- Provide training for trainers to the use of the applications for those who are presently teaching the use of computers in English.
- Creation of software development and computer training expertise -based on this software- for computer Cambodian software development companies, computer vendors, universities and private computer training centers.
- At a first stage, assuring the installation of the tools of at least 80% of the MS Windows based computers sold in Cambodia in the first year after the system is fully functional. To have -three

years after deployment- Linux based KhmerOS preinstalled in 80% of new systems sold in Cambodia.

Open Forum considers that the possible benefits of the project are more than enough to undertake this project:

- **Cultural:** Allowing the Cambodian culture to enter the technological world without forfeiting its culture. Avoiding the entrance of an excessive number of foreign words in the Khmer language. Turning the computer into a tool that reinforces Khmer culture, by clearly defining and permitting the right ordering of Khmer words, the right format for dates, as well as a number of other cultural issues that computers in a foreign language could change irreversibly, adopting foreign forms.
- **Training:** Drastic reduction of the amount of training necessary to empower Cambodian end-users to use a computer system, and therefore, of the cost of such training for the trainee (separation of the “Computer” and the “English” skills). This is especially important for the less economically favored, who will be able to pay for much less expensive training that might lead to jobs that require the use of computers.
- **Industry development:** Facilitating the introduction of computer technology in Cambodian SMEs, large companies and public administrations.
- **Governance:** Opening the way for the development of computer systems for the Cambodian national, provincial and district level Administrations that will allow civil servants to work entirely in Khmer language and manage databases of Khmer names and data. Opening the way for decentralization of data towards province and district levels. The same applies to utility companies (electricity, water, phone, etc.) which will develop Khmer language databases, reducing costs and giving better service to the citizens.
- **Communication:** Allowing Cambodians to communicate through e-mail in their own language.
- **IT industry development:** Empowerment of Cambodian Software development companies to work for the Cambodian Administrations and private companies. Empowerment of the local design industry with good fonts. Preparing the Universities to deliver the necessary trained engineers.

The most direct **beneficiaries** of the project include **all Cambodian citizens who wish to have access to computer technology**, especially those in rural areas who have very few economical resources that can be dedicated to develop job-oriented skills. Khmer language computer training will also **reinforce their culture**, instead of undermining it. The infrastructure created by this project will eventually lead to **better governance** (through computerization of the administrations in their own language), therefore giving better service to the citizens.

Computer programs in Khmer must be considered as an infrastructure project. They open the way for the technological development of the country, including its **small and medium size enterprises** who cannot afford to train somebody for at least a year before they can use a computer.

A key beneficiary of the project is **the Administration** itself. English language is not a requirement for most Administration officials, but many jobs in the administration will definitely profit from the use of computers. Only if they are in Khmer will computers really be accepted in the workplace, because of the reduced training and perdurability of it. The Administration will be able to cut to less than 20% the training costs.

Local language computer programs can be used by the **Ministry of Education** in all the current programs aimed at starting computer **training in secondary education**. This would not be possible if the computers are in a foreign language.

Project development

The project was launched at the beginning of 2004. After developing a glossary of computer terms in Khmer, translation of Open Source computer applications started, as well as development of Unicode standard fonts and adaptation of the Linux environment to include the use of Khmer.

The first stage of the project involves the translation of programs and the preparation of training materials. By April 2005, when the ISOC grant was awarded, the following software had been translated.

- The OpenOffice 2.0 office suite (word processing, spreadsheet, presentation tool).
- The Mozilla Firefox Internet browser and a chat extension.
- The Mozilla Thunderbird e-mail client program.
- Translation of the IMP web-mail program.

This list implicates that **all the computer tools that about 80% of the users ever use are already available in Khmer language on the Windows and Linux platforms** (all programs are multi-platform). The project advances on schedule towards its **first milestone**, which is planned for June 2005. Materials that need to be finished by the end of this stage include training materials for all applications mentioned above.

At this time, also with the participation of OFC, the Cambodian Government has developed and published a plan to migrate all its offices to Open Source Khmer language software, and to involve the Ministry of Education and the Ministry of Labor and Vocational Training training facilities, so that all schools in Cambodia will be required to have at least one teacher prepared to teach Khmer language computer applications.

During the **second stage** (one year) of the project, training for trainers will be provided by both OFC and the Government, covering all teacher training centers in the country, as well as reaching out to private computer teachers. All this will take place with Open Source applications used on Windows platform. At the same time, OFC will translate and develop training materials for a Linux User interface, preparing itself for the third stage. During this period voluntary migration of government offices will take place, while the Government's migration plan is prepared and starts.

During the one year long **third stage (Linux stage)**, all available resources in OFC and Government will be used to migrate the operating system from Windows to Linux. The present Government's master plan includes finishing migration during this stage.

The partners

KhmerOS has become a multi-stake holder initiative in which NGO's, Government and computer industry work together to move the country into the next stage of ICT development. The largest computer vendors have already pledged to install the new applications in the computers that they sell.

Solicited participation from ISOC

A grant of \$10,000 was solicited from ISOC in order to develop training modules and documentation for Internet applications in Khmer and purchase of computer materials necessary to provide training using these materials (a portable computer and an LCD projector).

The training materials to be developed under this grant 2 included:

- Training modules (class slides and teacher documentation) and documentation in Khmer for the browser application, e-mail client and web-mail software that have been translated.
- Evaluation materials for the above courses.
- A book for self-training on how to use e-mail, using as a base the Khmer client and the web-mail programs translated to Khmer

The Training materials development effort involves one training expert, two translators/training content developers as well as the partial participation of the KhmerOS coordinator, all this during four months of work.

Report on Activities accomplished with the Grant

During the last four months Open Forum has developed the necessary training materials to teach 10 hours of Internet browser use and 10 hours on the use of e-mail. Both modules are based on Khmer language Free and Open Source programs localized by the Khmer Software Initiative:

- Mekhala: Web browser based on the code of Mozilla Firefox, localized and modified to work with screens of resolution 600x800 or smaller (for developing country's computers), and also to be able to change languages (so that it can be used in Cybercafés). Also, the name (a Khmer mythological being) is better fit for pronunciation in Khmer, where the "f" sound does not exist.
- Moyura: E-mail client based on Mozilla thunderbird, with similar modifications to Mekhala. Moyura means "peacock" in Sanskrit, and is a word used in all Indian and many South East Asian countries.

All the training materials include slides, detailed instructions on what the teacher should say with each one of the slides, handouts and evaluation materials. An agreement has been reached with the Cambodian Government through which students that pass the evaluations will be certified by the government.

These two modules have already been tested in a real course situation, and are being handed to the 300 teachers that are being training to teach Khmer language software (by us as well as by the Government).

We have also developed a small book on how to use e-mail, for self training. Besides the usage of Moyura, we have also included the use of the IMP web-mail software, which we have also localized to Khmer language, as we have realized that – with very few computers are privately owned - most people need to use web-mail. We are also working on the translation of gmail to Khmer.

The materials are distributed freely through our website, and we give a paper copy to each teacher that goes through our training rooms, as they can only study them in the evenings in their houses, where they have no computers.

We have bought a laptop computer and an LCD project that have become the hart of our training room, which now has grown to 11 computers, and that is helping us train 20 computer teachers a week on how to train using software in Khmer.

Evaluation of results

We believe that the technical results expected when we solicited the grant have been fulfilled, with the materials being developed as expected and within the planned time framework. The budgeted materials have also been purchased.

What is more important is that these materials have already been put to use, and are being distributed and used by teachers all over Cambodia, who also have been trained on how to install these Khmer language FOSS applications on Windows platform.

The work developed under this grant is a large step towards our goal of reducing the digital divide in Cambodia through the use of local language.

Next steps

Next in our agenda is to assure that all these applications are really used. We will continue our installation campaign all around the country. We also want to make sure that Internet is used to fulfill our goals of improving and fostering communication, and will be promoting all means of communication through the Internet, with a special emphasis on blogging.