engINdia **engINdia & EWB-UK Research** engineers without borders uk research

Project Proposal: Simplified Computer

Full description of Problem:

Pabal experiences approximately eight hours of power cuts per day. It is not known when there will be a steady and reliable power supply to the village. The lack of electricity inhibits the use of computers in the village, and even the thirteen computers in the local junior college computer lab sit idle for much of the day. Batteries are used in the lab, but only to prevent work from being lost; a battery can support a computer system for a mere 20 minutes after the power has been cut. One solution to this problem is a way of storing more charge than these batteries, but in conjunction a computer system that runs on minimal power and yet still performs the basic requirements of the people is needed. Such a computer system will be able to run on battery power for a significant amount of time.

How the local community will use the proposed solution:

An appropriate solution will allow computers to be run on battery power for a significant amount of time. The newly designed computers will also be cheaper, so more people in Pabal will be able to afford personal computers.

Estimate of the economic benefit anticipated and plans for training of the local community:

Using low-power-consuming hardware will mean a better and cheaper computer system, enabling more people in Pabal to own computers for less. The schools will be able to expand their computer labs. The electricity cost for people who own computers will be lower, as well.

If more people own computers, more people will become fluent in Office Suite, Flash scripts, image manipulation and data entry softwares (some of the most common uses for computers currently). More people will also be able to complete the MS-CIT, a certification course in these softwares.

Vigyan Ashram, the local NGO, will train people in the use of the computers.

Full description of the local situation:

Currently no low-power computers are available in Pabal.

Full description of relevant infrastructure and resources available locally:

Some of the following solutions may be possible, though it was not possible to complete research on available resources.

1. A low-power-consuming CPU. Attachments that use large amounts of power should be eliminated. Some of the existing hardware can also be replaced with hardware that uses less power.

2. Thin clients on Linux and Windows platforms. Thin clients have already been successfully implemented on Linux platforms, but so much research has not been done on using the thin client with a Windows platform. Linux thin clients are known to work just like normal desktops. However, Linux systems cannot be used in Pabal because most of the software that is used in the village was designed for Windows operating systems. In order to use the existing software, Windows thin clients must be developed.

3. Clones of existing software for Windows operating systems that can be made available as open source software. These clones could make alternatives to expensive software (such as Adobe Photoshop) available to the population of Pabal. The software could also be made compatible with Linux, in which case it could be used with Linux thin client machines.

Useful background reading or resources:

See engINdia Website: http://www.engindia.net/resources.htm

Organisation Contact Details:

Name of Organisation	engINdia
Contact	engindia@mit.edu
Web site	www.engindia.net
Background information	engINdia exists to promote appropriate and sustainable engineering solutions in developing areas. Currently the program focuses on Pabal, Maharashtra, a rural village in India located 80 miles east of Mumbai. Pabal is home to Vigyan Ashram (see details below), an educational institution that focuses on rural technologies. The existence of Vigyan Ashram and Pabal's proximity to Mumbai made it the perfect starting point for engINdia. engINdia is a partnership between 6 students from the University of Cambridge, Massachusetts Institute of Technology (MIT) and the Indian Institute of Technology Bombay (IITB). An

	expedition was conducted during the summer of 2005 to the area of Pabal, Maharastra. There, the engINdia team worked with Vigyan Ashram and the local community to gain an understanding and appreciation of the development issues faced by rural India which could be tackled through engineering.
Name of Organisation	Vigyan Ashram
Web site	http://vigyanashram.com/
Background information	Vigyan Ashram is an educational institution situated just outside Pabal, Maharashtra, about five hours east of Mumbai. The focus of the institution is on rural education and enabling the rural population of Pabal and the surrounding areas to learn about technology and start their own businesses. The facility includes classrooms, labs, workshops, and living quarters for students. There is also a Fab Lab installed at the site (for more information, see http://fab.cba.mit.edu/). VA is striving to become an internet service provider for the area and to that end many of the organization's activities are becoming focused on internet-related projects, such as internet kiosks for rural farmers. A few people at VA speak English, but some knowledge of Marathi or an interpreter will be needed in order to carry out work in the area.