

Internet for the masses

Onno Purbo, a prominent Indonesian IT expert, sees a self-financed, bottom-up Internet infrastructure as the key to achieving a knowledge-based society in developing countries.

What if no telecommunications companies, no government and no World Bank involvement were necessary to develop and build an information and communication technology (ICT) infrastructure in developing countries? What if it cost only \$0.50 (€0.43) per student per month to install such an infrastructure in schools in developing countries?

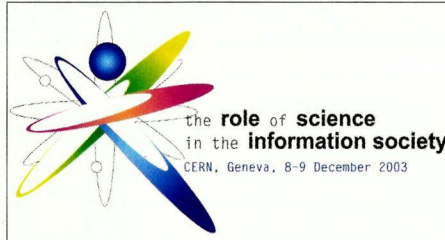
This may sound like an impossible dream for those who live in a developing country, as I do in Indonesia. But fortunately, in reality it can easily be done. It is not the equipment, nor the legislation, nor the investment that counts; it is the ability to educate a critical mass of people to gain the information and knowledge that are vital to the establishment of such an infrastructure.

It seems that the traditional Indonesian telecommunications companies (such as Telco) and the government believe that any ICT infrastructure requires highly skilled and trained personnel to run expensive, sophisticated equipment that can be funded only by multinational investors. This belief is embedded in all legal and policy frameworks within the Indonesian telecommunications industry.

Stronger, smarter and faster

However, let's take a closer look at ICT, and note a few important features of how it has developed. It has recently become more powerful, smarter and faster, and has greater memory requirements than ever before. Fortunately, all of these advanced features can now be obtained at much lower costs, and are also much easier to use, configure and control. ICT has become more user-friendly – with dramatic consequences.

The investment required in infrastructure can now be drastically reduced to a level that makes it affordable for a household or community to build and operate their own ICT system. Moreover, it can be operated by people with limited technical skills. This enables a community-based telecommunications infrastructure to be built by the people and run by the people, for the people.



It is a totally different concept and a significant paradigm shift away from the traditional telecommunications infrastructure, which is normally licensed by the government and built and run by the telecommunications operators for the subscribers. Unfortunately, most telecommunications policies and regulations, at least in Indonesia, cannot easily be adapted to accommodate such a shift.

After seven years of trying to educate the Indonesian government about the basic idea of a community-based ICT infrastructure, in 1996 I succeeded in having it partially written into some sections in the Indonesian National Information Infrastructure policy known as "Nusantara 21".

However, in February 2000, fed up with the lack of progress, I left my work as a civil servant to dedicate myself to becoming an IT writer, delivering ICT knowledge to Indonesians through various media, such as CD-ROMs, the Web, books, talk shows, seminars and workshops, as well as answering e-mails on more than 100 Internet mailing lists. Since then, experience has proved that a knowledgeable society with access to new ICT equipment can easily deploy a self-financed infrastructure, thus releasing its dependence on the telecommunications companies as well as on its own government.

Two major technologies are used as the backbone of this Indonesian bottom-up, community-based telecommunications infrastructure, namely wireless Internet (WiFi) and Voice over Internet Protocol (VoIP). WiFi-based systems, when run at 2.4 and 5.8 GHz and extended by simple external antennas, are quite good for 5–8 km links. This makes it possible

to bypass the Telco system's "last mile" and enables the NeighborhoodNet Internet Service Provider to reduce access costs.

This infrastructure currently supports about 4 million Indonesian individuals, more than 2000 cyber cafés and more than 1500 schools on the Internet, running on more than 2500 WiFi nodes. It has increased dramatically in size in the past few years.

Building on the infrastructure

Because the Indonesian government is planning to increase phone tariffs in mid-2003, a free VoIP infrastructure, also known as Indonesian VoIP MaverickNet, was deployed on top of the Indonesian Internet infrastructure in early January 2003. Within around three months, we managed to deploy more than 150 VoIP gatekeepers based on www.gnu.org freeware to handle approximately 1000 calls per gatekeeper per day for more than 3000 registered users and an estimated 8000 or more unregistered users.

Long-distance and local calls are routed through the Internet infrastructure without any Telco interconnection, via a VoIP MaverickNet area code, +6288, that has been specifically assigned to this task. Users can also be called and registered to the VoIP gatekeeper using their normal Telco number if they wish – this can easily be done, as the gatekeeper can recognize any form of number. This has the side-effect that people can be called on Telco's number at no charge via VoIP MaverickNet, thus avoiding using the expensive Telco infrastructure.

Tutorial files on implementing a bottom-up infrastructure can be downloaded free of charge from our website at www.apjii.or.id/~voipmerdeka/practical-guide. A community-based telecommunications infrastructure would not have been possible without the generous knowledge-sharing of many people on the Internet. I thank them all.

Onno W Purbo (onno@indo.net.id), former professor at the Institute of Technology in Bandung and self-confessed Indonesian ICT evangelist.



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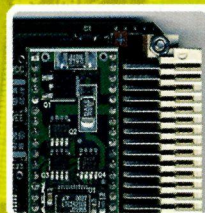
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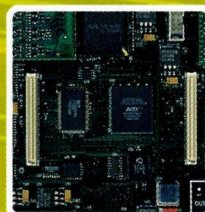
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V1290N	16	25ps	50 μ s	NIM

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