

Notes from the Field

The Foundation of Cultural Change in Indonesia

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For many people around the world, the Internet acts as a doorway to a host of opportunities. From accessing information to sharing knowledge, creating and penetrating markets, and opening communication channels, the Internet is a collective resource with the power to transform lives, empower communities, and lift societies. Though this model is often debated (Lim, 2003), access to these potential opportunities and resources is typically available only to those who can afford it. In many cases, governments and ISPs may hold the key to this door—and ultimately, to the opportunities that opening it provides—which can often be problematic for the world's poor. While direct causal links between Internet access and social improvement cannot be demonstrated as yet, this paper seeks to highlight how the Internet has taken and continues to take shape in Indonesia.

Since the transition from the Suharto regime, there has been a movement occurring in Indonesia unlike any other in the world. It is a movement that removes restrictions on information and opens up access to the Internet to the entire country. It is a bottom-up revolution based on simple solutions, openness, and empowering the most marginalized groups. It is a model that requires an intimate knowledge of a context where appropriate solutions are the only ones that matter. In many ways, the simplicity and appropriateness of this model are similar to other approaches to development, often found in agriculture (Polak, 2008). However, with a growing desire for everyone to be a part of this technology movement, there is a much more infectious and visceral feel to this grassroots movement in Indonesia. This paper tells the story, based on Onno Purdo's own experiences in Indonesia, about how this model came about by sharing tools, readying the environment, and empowering Indonesians, so that, together, they can continue to open the door for themselves and encourage others to follow.

The Tools—An Early Attempt in Seeking Low-Cost Internet Infrastructure

The Internet revolution in Indonesia began with radio hobbyists in the late 1980s (Barker, 2008). Amateur radio enthusiasts began networking their computers by connecting them together with radios. By transferring data instead of voice over the radio waves, they were able to bypass the telephone network, typically a requirement to access the bulletin board systems and other early Internet applications of that time.

Controlled by Telkom, a public corporation with a monopoly on the telephone network in Indonesia, the phone network was expensive and ultimately prevented Indonesians from gaining access to the network. Even if an Indonesian was lucky enough to be able to afford a line, tele-

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phone density was so low—and service so poor—that it would often take years to be connected. Fortunately, there was a group of radio hobbyists that was not so patient.

In 1990, Onno Purbo published the first of a long series of articles that described how to build an Internet network for all Indonesians. This network used radio technology to bypass the expensive and restrictive telephone network to connect local networks across the country. After several years, many more publications, and countless speeches, this network began to take shape. Universities, government research institutions, hi-tech industry, and radio hobbyists began connecting, and together, they formed what would eventually become the Computer Network Research Group (CNRG).

Crucial to the growth of these ideas, and ultimately this network, has been the open availability of resources and publications, from this group and others. Many e-books and open source software for Indonesians have been made freely available online. From e-books on information and communication technologies (ICTs) for Indonesian high school curricula to guides on preventing young Indonesians from accessing inappropriate content (Donny, 2009), the open availability of these resources online has facilitated a cultural shift.

The Environment—Liberating 2.4 GHz Radio Band

Building a large and affordable broadband network presented many challenges along the way. One of the most significant victories came after more than 12 years of lobbying policy makers for a change in wireless spectrum management. As radio and technology enthusiasts continued to circumvent the wired network with radio-based solutions, government regulation over radio frequencies in Indonesia required users to pay costly license fees to access the spectrum—thus creating the very walls that the ideas behind radio networks had hoped to bring down.

Those walls were brought down by people who first recognized that they existed and then demanded change. As communities were empowered through workshops, seminars, and many publications, Indonesians became aware of the restrictions imposed on them and wanted change. This collective desire, combined with recognition

from the international community and media outlets, placed pressure on policy makers to adopt a different perspective. This led to pro-poor and pro-people changes in regulations that resulted in a decision on January 5, 2005 to liberate the 2.4 GHz band in Indonesia, making it open for all Indonesians to access without fees.

With a more open platform for connecting to the Internet, the floodgates of innovation, openness, and citizen voices began to open. With a liberated 2.4 GHz band, people took advantage of their newfound opportunity by bypassing the restrictive wired networks and creating large wireless networks. Without having to pay license fees to access the radio band, an individual computer network can broadcast wifi signals a long distance, meaning that a single account with an ISP can be shared with an entire neighborhood.

The result of this regulation change was that “neighborhood networks” popped up all over Indonesia. Now, using simple wifi-boosting solutions such as the Wokbolik, these networks can extend up to several kilometers. Developed by Pak Gunadi in Indonesia, the Wokbolik is a wifi signal-boosting device made out of a regular USB wireless adapter, a three-inch PVC pipe, and a cooking wok (Purbo, 2009). When connected to a computer and pointed directly at a wireless router from afar, the network reach is drastically increased. With only \$35 worth of equipment, and through sharing the ISP costs, Indonesians formerly unable to afford a connection to the Internet can now have access. The broad uptake of this model represents a global phenomenon unique to Indonesia in that it is a bottom-up infrastructure created by a self-supporting, growing cooperative of hackers.

Wifi equipment vendors report that, after liberation of the radio band in 2005, monthly sales of outdoor wifi equipment rose from roughly 2,000 units per month to as many as 6,000 units. This growth continues in 2010, as vendors report that sales figures exceed 10,000 units per month. However, unlike 2005, in 2010, the majority of units are sold to areas outside of Jakarta in remote regions of the country, including Middle and Eastern Java, Bali, Kalimantan, and Sulawesi. This suggests that these bottom-up neighborhood networks and cyber cafés are filling the demand for Internet connectivity in places where the formal private sector has yet to provide an affordable alternative for Indonesians.

The market for Internet customers in urban centers also seems to have benefited from the competition sparked by liberating the wireless spectrum. Costs of services provided by private telecommunications operators are approaching those of the informal networks in areas such as Jakarta, where the formal networks now exist to provide broad wireless access to their customers. Rates for a connection with 1–3 megabits per second now range from US\$4–10 per month. Similarly, cellular network operators offer daily and weekly rates for Internet access at an affordable US\$0.50 per day.

Where the formal networks offer services that meet the needs of urban Indonesians, the demand for informal networks is not as high. Therefore, informal networks appear to temporarily fill gaps of the digital divide in Indonesia. This happens until the formal sector can catch up to the informal, during which time it drives competition and demand for Internet access. Though the urban areas are largely connected, neighborhood networks continue to influence the broadband environment in areas outside Jakarta and in rural Indonesia.

The Movement—Triggering a Social Movement

The notion of a bottom-up infrastructure is only the beginning of what will hopefully result in positive social changes in Indonesia. Fundamental to this movement is the idea that the Internet represents an open platform for education and social engagement; a space with less hierarchy and more opportunity, one where the best ideas can be nurtured and shared, and can ultimately rise to the top of an information economy. Just like the infrastructure that facilitates these transfers, knowledge and ideas are also a collective resource, created by the people, for the people.

Enda Nasution, dubbed the “Father of Indonesian Bloggers” and cited often in Indonesia’s mainstream media, has estimated that there were 250,000 Indonesian bloggers in 2008 (Hermawan, 2008). Though the discourse of these bloggers has not been analyzed for evidence of social contributions, the simple fact that they have the space to freely share information is a drastic improvement over the previous era, when flows of public expression were condemned.

Dr. H. Basyir Ahmad, the mayor of Pekalongan

City in Central Java Province, commented on social movements: “As we lift the weakest point in the society, the whole society will be lifted.” If the Internet is a device for contributing to the “lifting of society,” it can be only as effective as those who participate in that resource. To us, this means providing Internet access to the most marginalized groups, who, in Indonesia, are women and youth.

One successful instance of this is a local program that offers weekend IT literacy courses for Indonesian women. These courses have been promoted by One Destination Center (ODC) for the past two years. There has been very high demand for these courses, as many women consider ICTs to be a key factor that contributes to their children’s education. While the merits of e-literacy for women can be debated, this example highlights the demand for Internet access among Indonesian women. These courses are especially accessible because they are held on weekends, as these women often have many other responsibilities during the week. The participants learn basic accounting and ICT skills, which help them to manage their savings, small loans, and neighborhood shops.

Building on the success of programs such as ODC, as well as on the notion that marginalized groups represent an important opportunity for Indonesia, the Ministry of Information and the Ministry of Women’s Affairs are collaborating with organizations from civil society to promote an ICT4Women initiative, which is set to launch late in 2010. Though it is not clear as yet if this initiative will spark a social movement to transform Indonesia, it represents a step toward lifting the country into a more equitable future; one with access to information and empowered citizens.

Conclusions

Though it is only beginning, the story of Indonesia and the Internet is one that is very different from the rest of the world. It is based on having the appropriate knowledge, innovating with simple solutions, and creating openness. But more important, it is about empowering people with knowledge and the tools required to access opportunities for themselves, instead of waiting for others to provide it. Many Indonesians have seized these opportunities and are now online, creating and sharing stories, educational materials, and other resources. How-

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ever, as a foundation for any significant changes, in Indonesia and elsewhere, this movement depends on empowering the most marginalized groups with opportunities to access, learn, and contribute to a collective resource. In Indonesia, the knowledge-based society of the future rests on the shoulders of women and young Indonesians. ■

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