

## ICT<sup>1</sup> and Community Building in the Rural Areas of Thailand

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### Abstract

Information and Communications Technologies are identified as a suitable means for community building at a micro scale. It is evident that with the power of communication and networking mechanisms, several virtual communities and “community of practice” can drive the country towards a knowledge-based economy. The author provides a number of practical examples in our study “ICT for Poverty Reduction” in Thailand, carried out by the National Electronics and Computer Technology Center. It was argued that ICT can be a useful tool for community building. With an appropriate logical sequences, as planned and experienced by Thailand, several interesting results can be obtained. The author concludes that by empowering the communities (with ICT) to earn more from their local product sales, they will become the strong force in raising the purchasing power and drive the developing economies well.

### The World of Differences

*A group of nine nations representing the highest per capita income account for 60% of the total world GDP. Extending this to 43 rich nations accounting for 20% of world population, they represent 84% of world GDP; 57 nations with 30% of world population account for 90% of world GDP. This amounts to saying that the poor 70% of world population receives only 10% of the total world income! The ratio between the GDP per capita of the richest (Switzerland: \$26,716) and the poorest (Mozambique: \$95) is 275 times. A similar Rich-to-Poor income ratio also exists within a country. A typical scenario is that less than 30% of rich population takes more than 70% of GDP.<sup>3</sup>*

Economic cooperation between economies with so large differences in GDP is a not trivial task. The poorer economies usually have fewer intellectuals to absorb the new opportunities. This can make the cooperation a non-starter. In order to increase the economic cooperation, the knowledge and purchasing power of the developing economies must be increased. Taking the examples of China and India, where the citizen’s knowledge have been a focus of the long-term planning of the education system, the two economies are now the biggest markets in many areas.

Is the economy’s income related to its position, size, or other obvious factors? May I quote from Professor Robert Summers of the University of Pennsylvania: “*There is no correlation between the country income and the value of country latitude. Political Instability (as measured by revolutions and assassinations) make very little difference, and Political Rights and Civil Liberties are entirely insignificant.*”<sup>4</sup>

Several studies lead to the same conclusion: natural resources are no longer the main factor for the income, knowledge is the one.

How can we bring together the best potential of all APEC economies to work together despite the differences?

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<sup>3</sup> <http://www.geocities.com/combusem/WORLDGDP.HTM> (data of 1995).

<sup>4</sup> Robert Summers, "The World Distribution of Income: Growth and Inequality" (University of Pennsylvania, 1995) [http://pwt.econ.upenn.edu/papers/world\\_distribution.pdf](http://pwt.econ.upenn.edu/papers/world_distribution.pdf)

## APEC Commitment in building the Knowledge-Based Economy

According to the twelfth APEC Ministerial Meeting in Brunei, 2000, “The revolution in ICT has transformed the ways of doing business in the region. This new economy presents both developed and developing APEC economies with many new and exciting opportunities for increasing economic growth.”

“Ministers acknowledged that a digital divide could further widen social and economic disparities across the APEC region, and underlined the importance of ensuring that everyone in the APEC region has access to the opportunities presented by ICT networks. Ministers therefore called for improvement in access to **affordable technology**.”

The Brunei meeting declared

“Ministers called for a public-private partnership **to create digital opportunities** and spread the benefits of the new economy throughout **all segments of society**. Ministers reaffirmed the vital linkages between education and maximisation of the potential of the new economy, stressing that as the region moves ahead **no person should be left behind**.”

### Analyzing the Goals

ICT is the means to access information and knowledge. The technology by itself is a big irrecoverable expense unless the users turn them into some means of productivity improvement tools. The direct approach on the use of ICT is to do what the developed economies do: that is to automate the way we handle manufacturing, business processes and trade. There come the terms factory automation, supply-chain management, enterprise resource planning, paperless-trading and electronic commerce. All of these sophisticated business mechanisms assume the existence of computer on every desk, the interconnection to the Internet, and a properly planned business process supported by a large computer system. This is perfectly fine for the few nations, which control 90 percents of the world GDP. But for the remaining parts of the world at large, if we do nothing about this, the capability gap will be widened.

The digital divide prevents developing economies to join the cyberspace and become part of the fast moving international trade. These economies lack the basic infrastructures ranging from the basic electricity, telecommunication, to the access devices and the knowledge to manage the technology. They also lack the necessary law, which enables the use of electronics transaction in place of paper documents.

The Brunei goal “to create digital opportunities and spread the benefits of the new economy throughout all segments of society” is a daunting task. How can we do that in an economy with a rather large digital divide in within the economy? Some concerted efforts must be made by the government, non-government and the private sector to help raising the economy’s readiness for the new economy. This paper describes what have been done in Thailand in getting ready for the new economies.

### Three years after the Brunei goals on ICT

In 1966, Thailand started her first IT Policy, which was known as IT2000. The policy focuses on three main development goals:

- building the national information infrastructure,
- developing human resources, and
- adhering to good governance.

We had a mixed success with this policy, with some of the successful work program was built after the economic crisis of 1997-1999.

In the year 2000, the new policy framework, IT2010, was studied. IT2010 declares a move towards the Knowledge-based Economy and

## IT 2010: Towards the Knowledge-based Economy and Society

Cabinet Approval 19 March 2002



### Three principles

- Build Human Capital
- Promote Innovation
- Invest in Information Infrastructure and promote the Information Industry

Society and shift Thailand from the group “dynamic adopters” into “potential leaders” as defined by UNDP Technology Achievement Index.<sup>5</sup>

Thai government, in the past five years, implemented several development programs using ICT as the tools to improve education of people; to build the information structure; to develop sustainable communities and to address the poverty problems. I will give some examples to these programs in this paper.

### ICT for Poverty Reduction Programs in Thailand

The National Electronics and Computer Technology Center (NECTEC), a quasi-government unit that promote the R&D and usage of ICT in the economy, recently compiled a list of ICT programs which are addressing the subject of poverty reduction.

The programs consist of many projects, which address the digital divide problems and attempt to solve the “primary problems” of the people with lower income and opportunities. They may be grouped into six themes:

- ICT for education
- Community Telecenters
- Community Radio
- ICT for the underprivileged
- Low-cost PC and Low-cost Internet
- Village Trading Portal and Back Office Systems

### Community Building: the Key to Sustainability

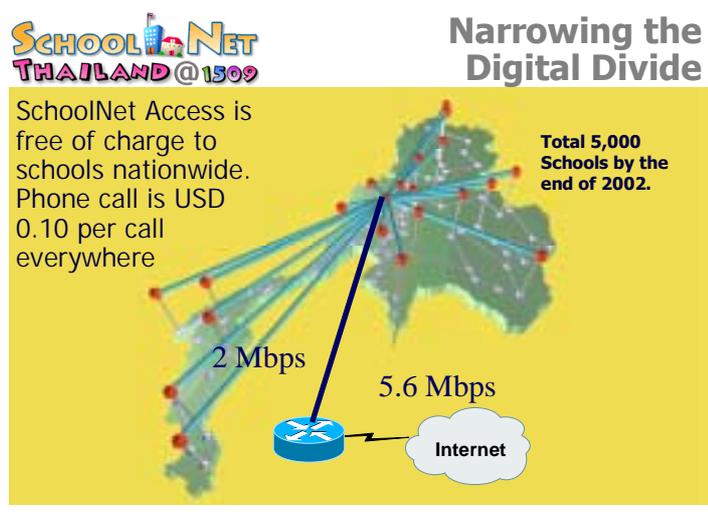
Recognizing that there is no quick and easy way to absorb the potential of technology without really understanding of the power of technologies, the community development projects were developed jointly with the communities, by the community and for the community. We learned that by working closely with the communities, better results are obtained. The degree of success is not depending on how much materialistic input we put in, but on the leadership and the attention we pay for the technology transfer. We will examine each of the theme above.

### Theme 1: ICT for Education: The SchoolNet Thailand Project

Schoolnet Thailand started in 1995, with the initial plan to facilitate a pilot program of 50 schools, which were ready to try out the Internet in schools. We went into the second stage during 1998-2000, with a capacity to serve 1,500 schools nationwide through the use of the “Golden Jubilee Network” which was constructed to celebrate His Majesty the King’s 50<sup>th</sup> Anniversary for the Accession to the Throne. During this phase, schools were given free Internet access, teachers were given training on the Internet and participation in the “local content development community”.

Through computer network and knowledge sharing, the Thai language contents were made available to every school. We identified several “community leaders” through the SchoolNet Awards and research grant programs, which NECTEC awarded to teachers and students.

In 2001, the government gave an additional boost to expand the service to 5,000 schools to mark the third phase of SchoolNet. In 2003, the SchoolNet Thailand project is being handed over to the Ministry of Education to run it as a normal production service.



<sup>5</sup> UNDP Human Development Report 2001, p.46.



SchoolNet achieved several milestones in raising the country readiness for ICT in education. In 1999, the mechanism to manage the network was presented at the Internet Society's ISOC 1999.<sup>6</sup> In 2001, the project is mentioned in the UNDP Human Development Report.<sup>7</sup> In 2003, SchoolNet Thailand is now a model used by UNESCO to set up the "Asian SchoolNet Program" in the neighboring economies. Other citations can be found in the APEC and the New Economy Report (2001) and the ITU World Summit on Information Society "success stories".<sup>8</sup> One notable creation is the software distribution called "Linux School Internet Server" or Linux-SIS, through which a school can simply install and manage using a web-based system management tools in Thai-language. The other important asset is the web site "SchoolNet Digital Library" ([www.school.net.th/library/](http://www.school.net.th/library/)) where nearly 10,000 web pages containing useful articles and pictures produced by schoolteachers all over the country are accessible for free use.

SchoolNet Project is a kind of virtual community where the active members meet face-to-face about once a year to share their experience, to exhibit school achievements and to be benchmarked in order to gain awards and recognition from NECTEC.

## **Theme 2: Community Telecenters**

The first apparent problem of a community is typically to get the first phone line. So, things always started with the drive for installing a telephone line, a phone set and a fax machine, and then a personal computer. A "telecenter" is a place in the community where people can go to use public phones, public fax and public Internet.

In 2001, there are more than seven organizations in Thailand (out of hundreds) which are interested in working with the telecenter concept. These organizations, together with NECTEC, the World Bank and the Ministry of Finance, started to work together in sharing the telecenter ideas and implement them from different approaches in order to reach the goals for the self-sustaining telecenters. We also expect the growth of the centers due to their "values" to the communities.

Thai Government invested in four pilot telecenters, managed by NECTEC. The objective of the project is to experiment and make these telecenters a gateway to electronic commerce for the communities. We would like to prove that the computer and the Internet can add values to the community, if they have the capacity to use them properly. We have to help building such capacity. We located our telecenters in four provinces and give regular visit to them in order to make sure that they are being used wisely.

Another notable project was initiated and run by a joint-effort between Thailand and MIT (the Suksa-Pattana Foundation and the Thaicom Foundation). The project is located at a village called *Ban Sam Kha* in Lampang Province, about 100 km. South of Chiangmai. The project aimed at empowering the people in the community through project-based learning experience or the constructionism approach. At Ban Sam Kha School, practical working programs were tried with students and their parents. A number of workshops took place at Ban Sam Kha to solve the biggest problems of the community: their debts. Once knowing what is going on, the behaviour of the villagers changed rapidly.

It was discovered that the total debts of all families combined were more than 18 million baht. Through a simple classification scheme, the debts were grouped by their financial costs and their relationship to the productivities, an amazing new knowledge was learned together. The villagers changed their behaviors quickly in order to get rid of less-performing and high-interest loans. At this moment, the villagers are trained to keep records of their income and expense, with the simple accounting tool training given to school kids at school. Parents are encouraged to join the evening classes to learn about computers where the kids are their teacher! The school has about 15 computers to teach students.

Developing telecenters and make them sustainable turned out to be harder and slower than originally planned, but this is not entirely unexpected. Here are a few things which we learned:

- Get to know the community well before putting ICT into the location
- Always encourage them to understand the linkage between ICT and their daily business

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<sup>6</sup> INET'99: < [http://www.isoc.org/inet99/proceedings/2e/2e\\_1.htm](http://www.isoc.org/inet99/proceedings/2e/2e_1.htm)> "Network Design and Resource Management Scheme in SchoolNet Thailand Project", by Paisal Kiattananan, Thaweesak Koanantakool, Taweesak Chairatanayut, Pattara Kiattisevi and Robert Beck, National Electronic and Computer Technology Center, Thailand

<sup>7</sup> UNDP Human Development Report 2001, p. 87.

<sup>8</sup> WSIS Success Stories website, [http://www.itu.int/osg/spu/wsis-themes/ict\\_stories/AsiaICTinitiatives.html](http://www.itu.int/osg/spu/wsis-themes/ict_stories/AsiaICTinitiatives.html)

- Let them plan on what and how to do things by themselves. We only ask them relevant questions, which would help making decision.
- Send young staff or student volunteers to learn from the community and document their work.
- Never over-invest in the hardware/equipment as this will affect the sustainability of the centers, but never under-invest in putting a lot of attention to the learning process and technology adoption of the community.
- The winning telecenters are those where the machines are used heavily, and the main users are children. One way of inducing the adults to be literate about PCs is to ask the children to help.
- Always keep records of the users and income for analysis.
- Seek outside help to create useful software, information and news which are relevant to the community. Government agencies and universities are the main producers of the relevant contents such as farm prices, weather forecast/warning, and other knowledge. By enhancing the information quality, communities can learn more about the values of their telecenters.

### Theme 3: Community Radio

Most villages in Thailand are equipped with the “audio tower” for announcement by the village headman. The only voice the people hear is the audiocast from the house of the headman. It is either his voice or someone he assigned. Sometimes, we hear the radio broadcast relay and some music. As most households now also own radio sets, and the endorsement from the Constitution, each community may now run a community radio station.



*Ban Sam Kha School, with the community Radio Transmitter. The antenna tower is visible at the back of school.*

NECTEC was involved in a project to design a combined community radio and the audio-tower system for a small village in the province of *Lampang*. This is a small radio station, which broadcasts at a small power but enough for a clear reception on any radio set in the village to receive on a VHF/FM band. The system was donated to the main school in the village so that students can take care of the station. A group of secondary-level students are now running the station by reading useful news from various newspapers and books.

The radio transmitter also have a capability to remotely control the “audio tower” of the village so that not only people can tune in FM108 MHz, they also can listen from the “audio towers”

The impact from our pilot site shows that while the system is useful for the village, and people get more relevant information from the school, we are training students who are capable of public speaking, news research and editing, and the linkage between the world of books to the world of oral-traditions of passing on information. Most Thai people prefer listening to reading. The students are also learning how to manage things like a small radio station.

The school is acting as the source of knowledge and information to the special customers: the people in the community. The work is done by students who will do research on subjects which benefit most to the community. The cost of the radio is very small, but the cost for housekeeping and programming will be recurring and people will support it.

### Theme 4: ICT for the Underprivileged People

This theme has the largest number of activities in our survey for “ICT for Poverty Reduction”. Most of the projects in this theme are initiated and executed by Her Royal Highness, princess Maha Chakri Sirindhorn. Her Royal Highness started the “Princess-IT Project” since 1995. The project team were closely supervised by HRH and she provide supports by regularly visiting the sites in order to give advices and follow up. Target groups and method of work for each group are as summarized below:



Left: Children with disabilities are learning with a special large key-pad (Intellikeys) with a computer;  
 Right: Computer training for the inmates.

Target Groups	Activities	Benefits
Schools in remote areas	Donation of electric typewriters, used computers; teachers training basic computer skill. Clustering of schools to learn from leading schools in the program (ie. Virtual communities)	Typing skills, IT skills, reading skills. School-leavers can be employed easily as they have basic skills of using PCs.
Children in hospital (those who have to stay for weeks)	Computer classroom in three hospitals with appropriate edutainment software. Research to investigate the choice of suitable edutainment software.	Children can continue to learn even when they are admitted with chronic disease, which does not affect learning activities.
Persons with disabilities	R&D and production of assistive technologies (for the deaf, blind and physical disabilities). So far, more than five IT products have been designed and put into use. Establishing the center for assistive technology to educate those who are affected with disabilities on how to use assistive technologies.	Disabled persons can live and do work more independently. Promotion of compliant to the Thai Constitution.
Inmates	Donation of computers (both used and brand new), and provide teachers to the prison. Graphics production, talking-book production by the inmates.	Inmates can do creative jobs while they are detained. Many of them are generating income. They are employable after released from jail.

### Theme 5: Low-cost PC and Low-cost Internet Access

Started in 2001, major local PC manufacturers joined force with NECTEC to produce a low cost PC model in order to promote the use of ICT and Internet. We managed to bring down the price to about 19,900 Baht (\$473)<sup>9</sup> per unit by means of volume-based negotiation with the key suppliers of parts.

There are more than 60% of the parts, which are manufactured in Thailand. The bundled software was not Microsoft Windows and MS Office as they are too expensive. We used Linux with Thai Language Extension (Linux-TLE) and Office-TLE package based on the OpenOffice software. The software was completely legal. Over 100,000 machines were shipped during the project.

In February 2003, the Ministry of ICT, together with the local PC manufacturers and NECTEC, pushed the project further to one million machines target within one year. The basic price of the desktop machine is only 10,900 Baht (\$260), with software and one year warranty, not including 7% VAT. Over 130,000 machines were sold in the first two months of introduction. The system is also packaged with Linux-TLE and Office-TLE.

The Low-Cost PC project is a result of collaborations of many organizations, public and private sectors. The computers are offered to a general public.

The local PC manufacturing community recently became the "Association of Thai Computer Manufacturing" or ATCM, which will become the central contact between the Ministry of ICT and the private sector.

<sup>9</sup> At the time of writing, 1 USD is about 42 Baht.



By May, 2003, Microsoft Corporation decided to join the low cost PC project by delivering a new special version of Windows XP Home package, together with some components of the software of MS Office at a very special price.

In July 2003, a new low-cost Internet for the general public was introduced by TOT Corporation<sup>10</sup> and some commercial ISPs. The service is a limited Internet service to Thailand-based contents with the usage charge of only one bath per hour.

Gartner Group commented that the project is very likely to have a global effect<sup>11</sup>.

### **Theme 6: Village Trading Portal and Back Office Systems**

ICT programs to build up communities will be most appreciated if they are used as part of the village economic system. Once we have the basic infrastructures in place, people can browse the web and make use of phone calls and fax machines to contact anyone in the world, the Internet usage can be more sophisticated and made some spectacular results.

It was fortunate that the government started two important projects earlier: the One Tambon One Product (OTOP), and the Village Funds. *Tambon* is a “subdistrict” covering a cluster of 3-7 villages. It is managed by the Tambon Administrative Office, led by local people. The OTOP program generated a lot of production and marketing activities. There are more than 10,000 communities involved. All of them are in need of one common infrastructure: the virtual trading portal and the back office system, where ICT can play a big role.

The government, by the Community Development Department, Ministry of Interior together with a private company set up a trading portal called “ThaiTambon.Com” to serve the 10,000 communities in building up a main produce portal, search engine and payment gateway for electronic commerce. The program is capable of putting product catalogues online quickly and professionally.

A supplementary program for the communities is called the “SiamVillage.net”, a back office system for communities and government to track the product quality, standards, deficiency and the supply-chain analysis. The work was sponsored by NECTEC, and 13 government organizations that deal with the community development. The objective of SiamVillage is to serve as a back-office system to track the real strength of OTOP so that many development policies can be applied. It is the MIS for the work programs in promoting the packaging technology for products, optimizing the cost of raw materials by the distance (and transportation costs), tracking the industrial standards for products, including international non-tariff barriers (NTBs) such as HACCP, CMP compliant.

SiamVillage is not possible without the Telecenter program, as it requires communities to be the owner of their information. Fortunately, we managed both projects in synchronism, as well as we provide the guidelines for telecenters to achieve the level of ICT usage for trading and tourism. So far, Siamvillage also cover 10,000 communities in basic term, with the four pilot telecenters showing off their products and tourism attraction, all done by the local people.

### **Conclusion:**

Through a complete chain of community development supporting programs, we believe that the use of ICT and the move towards a knowledge-based economy is on the right track. The lessons we learned are that we must use ICT to solve the community problems by putting ICT in the place where community members can appreciate and use them for their production, marketing, accounting and promotion of trade. Once the income of the communities increased, they themselves are the source of purchasing power, which will drive developing economies further. The author believes that this is a way to create more equal partnership among the world of differences (275:1 income ratio), and make it less unequal.

*For more information, please contact <[htk@nectec.or.th](mailto:htk@nectec.or.th)>. NECTEC welcomes researchers and interns who are interested in the field studies in Thailand regarding to all of the programs mentioned in this paper. The collection of the author's publication is available at <http://www.nectec.or.th/users/htk/publish/>.*

<sup>10</sup> Formerly known as the Telephone Organization of Thailand. TOT became a public company limited since July 2002. It plans to have an initial public offering (IPO) in early 2004.

<sup>11</sup> “ICT project could have a global impact Gartner: Microsoft is likely to cut prices” by Tony

Waltham and Karnjana Karnjanatawe, Bangkok Post, Database, August 20, 2003.

[http://www.bangkokpost.net/200803\\_Database/20Aug2003\\_data01.html](http://www.bangkokpost.net/200803_Database/20Aug2003_data01.html)