The AFIT – From Today to the Future[1]

Keynote Speech
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Ladies and Gentlemen,
May I express my sincere gratitude to the CICC for having me here to give a reflection on the work that I have involved with the CICC in the standardization program for information technology.   Although most of my work is related to the National IT Policy, development of SchoolNet Thailand, and rural telecenters to bridge the digital divide, I will focus my talk on the success of CICC and the future of AFIT.

In general, the work that the CICC has done through the AFSIT and AFIT programs, are beneficial, if not crucial, to the development of IT standards in many Asian countries including Thailand.   I will share with you on the experience which I gained during the past 18 years in association with AFSIT.   I will talk about the AFIT today and the future towards the end of my speech.

The Early Stage

Thailand and Japan started a significant relationship in IT cooperation in 1987.   In that year, the CICC initiated two important programs: the Multilingual Machine Translation (MMT) and the Asian Forum for Standardization of Information Technology (AFSIT).   Five countries joined the MMT project: Japan, China, Indonesia, Malaysia and Thailand.   For AFSIT, many Asian countries such as Malaysia, Indonesia, The Philippines, Singapore, Korea, China, Thailand and others joined the forum.   Both projects are significant in the history of IT in Thailand.

The CICC Machine Translation project was an important pioneering project for NECTEC, the National Electronics and Computer Technology Center.   NECTEC is the main organization within the Ministry of Science and Technology that led the ICT research and development in Thailand.   The Machine Translation project brought about computational linguistics and natural language processing interest in the country's researchers and scientists.   The MT initiative led to many important innovations in Thailand such as the *Lexitron* dictionary, *Swath* word break software, *ArnThai* OCR for Thai language, *Vaja* text-to-speech and *Parsit* web translation services.   The MT project ended in 1995, with a follow-

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1   AFIT – The Asian Forum for Information Technology is a network comprised of government and industrial organizations from various countries/areas, which collaborate with CICC whenever it develops individual computerization cooperation programs for the Asian region. CICC – Center of the International Cooperation for Computerization.

up visit from CICC in 1997.

Although Thailand joined the AFSIT since its first meeting in 1987, I was not personally involved until the Fourth AFSIT in 1990. The early meetings of AFSIT were notably visionary into the identification of the need for IT standardization as well as internationalization of IT in any country. When I looked at the proceedings of the first three AFSIT, it is quite amazing that we listed all the names of major databases known in the country, as well as the name of the mainframe computers which were handling those databases. This really mean that the computer usage in each country was pretty small then.

I attended the keynote speeches of Professor Eiiti Wada, Professor Shunsuke Uemura, and Professor Eisuke Naito at AFSIT meetings. AFSIT not only gave me inspirations, but also a lot good friends from Japan and other Asian countries. Sharing ideas and learning about the progress (and problems) of our Asian fellows gave me some ideas on what kind of IT standardization that we need in Thailand. It was good to learn that our problem with Thai language is pretty small when compared with Chinese, Japanese and Korean (CJK). CJK has to use two bytes for every character. In Thai, we had only 96 symbols and we can easily fit into a half of the 8-bit character code maps to coexist with English symbols.

IT Standards Development in Thailand

Ladies and Gentlemen,

Let me share with you what we've gone through during the standardization of Thai character set on the computer. Thai mainframe computers were capable of using Thai characters since 1970's, and there were very few of them in Thailand. In 1980, microcomputers began to make an inroad to universities and businesses. Engineers developed Thai language display adapters for the PC and the Apple II computers. In 1984, I wrote a paper to report on how the Thai language implementations in Thailand were so incompatible. In that paper, I illustrated more than 26 types of different Thai character coding for computers! This study led to a formation of a Technical Committee under Thai Industrial Standards Institute (TISI).

After two years of work, the committee completed the design of standard code for the Thai language, and announced them as TIS 620-2529 in 1986. Although the standard codes were not compulsory, they were well adopted by all industrial players. Within two years of the introduction, all computer systems in Thailand truly supported the TIS 620 coding. TIS 620 is an eight-bit representation of the Thai character set, and it had two types: one being compatible with EBCDIC[2] standard invented by IBM, and the other being compatible with US-ASCII, or ISO 646. However, after two years, virtually all implementation went for ASCII style coding and none for EBCDIC style coding. It took us more than seven years to have our national standard character set, TIS 620, adopted and mapped into Unicode (or ISO/IEC 10646-1 UCS) standard, and more than ten years to be adopted by ISO to be known as ISO 8859-11. This means that it is pretty hard to put the national standard into the International Standards.

An early adoption of one code on Thai language was good for the country, as all subsequent database

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2   EBCDIC – Extended Binary-coded decimal character code for computer, designed by IBM Corporation.

development and content creation can rely on one standard that is accepted by all computers.   It also helped the country to promote the national standard on various important internationalized platforms such as ISO/IEC 10646-1 (Unicode) and ISO 8859-11.   The same code was placed early enough into Microsoft DOS6.0.   This made a transition into Windows 3.0, Windows 95 and subsequent versions a smooth one.   Thai standard character set (ASCII style) is also known as Windows 874 on   all Microsoft platforms.

AFSIT provided us a good platform for updating the standardization progress of Thailand.   In 1990, I came to AFSIT 4 to present a report on "Special Consideration in Thai-Language Database Construction".   It was crucial that once we develop a database, we wanted the information to be readable by any computer of the future.   So it was also important to present the syntactic relationship of characters within the Thai language as well.   The work in 1990 evolved to become TIS 1566-2541 in 1998: "Thai Input/Output Syntax Standard for Computers".   The standard helped guiding the implementers of text editor, word processor, and input/output system to make all computer systems to behave in the same way.

AFSIT opened up my horizons in making the road map for IT standards in Thailand.   For example, we managed to complete our character coding issues in Thailand by 1992.   This included the standardization of the conversion between 6-bit teletype codes and TIS 620, and *vice versa*.   We also started the work on standardizing the codes used to represent provinces in Thailand.

At the same time, a research road map was formed in order to gain more advanced natural language processing of the Thai language.   Here are what were highlighted in the AFSIT 4, in 1990:
- Electronic Dictionary System
- Thesaurus Tools
- Phonetic Matching and Data Entry
- Thai OCR
- Machine Translation

All of the works were completed in due course and some of them became commercially available for users in Thailand.

Universal Character Set and Internationalization

Universal Character Set and Internationalization was the theme of Seventh AFSIT in 1993.   I was most impressed with Mr. Takayuki Sato, who inspired all of us at AFSIT about the wonder of I18N, or Internationalization.   It is called I18N as there are 18 characters between the I and the N of the word "Internationalization".   In the beginning of 1993, CICC and INSTAC[3] initiated a Special Interest Group (SIG) on I18N.   Professor Shun Ishizaki gave a keynote speech on multimedia information processing, communication and their standards.   Each participating country gave a report on its work on universal character set and i18n.   The forum ended with Professor Eisuke Naito and Mr.Takayuki Sato reporting on the AFSIT-SIG on I18N Activity.

This meeting was a turning point in IT standardization activities, as we were then taking part in

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3   INSTAC - Information Technology Research & Standardization Center, Japan.

something so important to the world today.   Without UCS and the I18N mechanisms such as Locale and cultural elements, we would not have a PC that can handle and display many languages on the same screen.   By self preparation of each country along the standardization guidelines, it make software internationalization a lot easier.   The SIG activities continued until October of 1994.   The work should also be credited to the hard work of Mr. Watanabe Sachio and Mr. Yoshioki Kanae, the SIG secretariat.   The SIG delivered an important report in 1996 called "Data Book of Cultural Conventions in Asian Countries[4]" for worldwide reference.   This work was remarkable.

I would also like to cite the names of a few persons who were active in the work, for example: Dr. Lua Kim Teng of Singapore,   Mr.Mohammad Munjim bon Ahmad Zabidi of Malaysia,   Mr. Bai Yang from China, Mr. Raul Nilo from the Philippines.   They were contributors to AFSIT and to the group.

Multilingual Information Processing Environment Technology

Following the Cultural Conventions, MITI initiated the Multilingual Information processing environment Technology project (MLIT) in 1977.   I found the MLIT initiative to be quite remarkable. I also remember Professor Yoshiki Mikami, who gave us a lot of ideas relating to language processing in the process. In 1999, I was invited to give a closing remark on MLIT[5]:

> *The first MLIT Symposium in Singapore in 1997 marked the new era for sharing of voices of Southeast Asian countries towards IT standardization. Recognizing the differences in progresses in each country, CICC's MLIT-project has been instrumental in taking several real actions in providing assisted opportunities for less-developed nations to achieve their goals in making its national standards accepted in the global arena.*
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> *Through its remarkable secretariat led by Takayuki K.Sato, several achievements are worth noting. These includes: notifications to Lao PDR, Cambodia and Nepal to voice in the international standard development movement on time; supporting Myanmar to achieve its successful proposal of her standard code to the ISO; notification of Thailand on the re-consideration of her ISO/IEC CD 8859-11 proposal to ISO; and assisting the Philippines to add the missing characters (Peso sign and Ng) in ISO/IEC 10646-1; and probably many other issues.*

In my concluding remark in this symposium, I looked into the future:

> *The Internet and E-Commerce are probably the major driving forces in the development of multilingual IT standards in the member countries. In my experience, POSIX and Locale concepts are also appreciated through the availability of free POSIX-complied Operating Systems such as FreeBSD and Linux. These OS's are the ideal laboratories for I18N workers.*
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> *I would wholeheartedly agree with the need to voice Asian countries concerns about the appropriateness of their scripts in the international standard. Many developing countries need to develop a long-term and sustainable standards activities by creating IT standard team as well as providing the national IT standard documents online. In addition, in order to gain acceptance from industry and possible funding, there should be research projects related to natural language processing of a national language.*
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> *Last, it is imperative for a country to understand the importance of having the national standard registered with an effective IS body such as ISO, ECMA and IANA. Without such awareness by*

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4   www.**cicc**.or.jp/english/hyoujyunka/**databook**/**databook**.pdf

5   http://www.nectec.or.th/it-standards/mlit99/mlit99-special.html

the top IT planner in any country, that country is being placed in a disadvantage position of being left out in the modern digital economy.

It is exciting to see the work of three working groups in MLIT, with some fruitful results coming soon, as well as seeing the success of Myanmar,the progress of Cambodia, Lao etc. in registering their national standards with ISO/IEC 10646-1.

AFSIT activities are successful.   We saw that 21 Asian character-related proposals were submitted to the ISO/IEC JTC-1, and twelve of the proposals have already publishes as a part of international standards.   Character code standards are true foundations to the preservation of culture as well as to drive the modern economy of nations.   Texts have always been the foundation of history, literature, knowledge preservation as well as the scripting for large scale production of movie and theatrical creations.

AFIT Today

It was exciting to see a renewal process from AFSIT to AFIT in the year 2002, as CICC is now aiming at broader issues.   While standardization is still going on, there are needs to look at the application standards and IT policies as well.   To look into the future, it is important to find the importance of IT standards which will affect the way we live, work, learn and play in the ubiquitous society.

The important issues such as IT Measurement, Open Source Software and RFID have been addressed by AFIT.   AFIT also touches on the issue of national IT strategies, IT policy, bridging the digital divide, IT security and ubiquitous society as they will affect everybody in the societies.   The need for low cost, high quality, open software are going to be more and more.

Looking Forward to the Future

Open standards and open online collaboration will be the key to modern concept of IT standardization. Web 2.0 and mobile computing will come to us sooner than we think, as a new wave of services are being delivered each day by Google, MySpace, YouTube, Skype/eBay, Flickr, WikiPedia, online translations and many many more.   Some of these new services are bandwidth demanding, but not all societies have the broadband services available yet.   Thus a balance between the accessibility, bandwidth and IT measurement in each society will be difference.

While convenience was introduced into IT users, so did the dark side of IT.   We are now facing more and more problems of hackers and spamming.   Computer crimes are on the rise as financial frauds can take place quite easily on the Internet, where "nobody knows that we are only dogs".   Spamming of phishing messages can lead to several victims giving up their important private information that may damage their bank accounts.   Catching the cyber criminals are even harder than normal criminals as the   offender may live outside the country of the victim and international laws may not accommodate cross-border prosecution.   In many countries, there are no appropriate laws that address the modern issues of cyber crimes.

AFIT is progressing in a good way, and it will be even more relevant to the member countries to look at the broad picture of ICT.   We must adapt our own culture to reap the benefit of the modern IT through development.   Free and Open Source Software can be one of the most important tools and

methodology to help developing countries to move fast enough and without learning barriers. At the same time, the use of Open Standards in large information systems, especially in eGovernment, may also be effective enough to let the IT projects become less risky. Collaborative eCommerce, knowledge management and the use of Web 2.0 in new applications will certainly happen, and the AFIT countries should benefit from the cooperation.

In the modern world of ICT, computers have merged with communications; texts have merged with graphics and multimedia; and on-the air broadcasting become digital broadcasting. It is a challenge to see the computer industry to move towards mobile devices that can have wireless high speed access. The device itself is not only for telephone conversation, but also for Internet search, music and video. Many establishments provide many online services which may be linked to many nations. A man from Dubai may have his CT scan there sent to a hospital in Bangkok so that the doctor will plan for his trip to Bangkok for treatment. The so-called health tourism is becoming an international business in many countries. A Japanese hotel was playing a beautiful Thai music because it is acceptable here. Indian movies made in Bollywood are being screened in Los Angeles and viewed by many Asians. Animal in farms are being tagged with RFID so that its movement and nutrition can be monitored.

These future scenarios will happen to every nation. IT standards related to Medical images, digital video encoding/decoding, digital rights management. Multimedia will be needed. More and more sophisticated software is being developed. New issues are facing the regulatory bodies in every country, and the industry should be well facilitated. These challenges can be addressed by the future AFIT for the benefit of the collaborations among countries.

Ladies and Gentlemen,

I can see many future collaboration and high impact activities of AFIT in the years to come. And in conclusion, may I thank the CICC and MITI (METI) again for the opportunity that let me get involved in the past 17 years with AFSIT. Thanks to all the friendship, and may I wish you all the success with AFIT and prosper.

Thank you.