Importance of ICT International Standards

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This paper is originally written as "**Harmonizing Global technical trends and Local requirements by International Standards**" for SummIT 2000 (September 2000 Katmandu, Nepal) , then up dated for AOTS/JSA seminar (July 2002. Yokohama Japan), SEISA AP/IT-2002 (November 2002, Vientiane Lao PDR) and SEISA AP/IT-20023 (October 2003 Ulaanbaatar, Mongolia).

This paper is written as follow-up "**Japanese Co-operative Activities for Asian Region in Area of IT Standardization**" (October 1999 T. K. Sato –CICC,). The previous paper is attached as a reference material for this paper.

This paper express that the role of ICT international standard is becoming far more important than other technology/product area. It is necessary for all country and region to participate the international discussion for overcoming a digital divide due to the language and culture.

ISO/IEC JTC1 (ISO/IEC Joint Technical Committee One) is in responsibility to develop international standards for Information Technology. (note: Standards for Communication is developed by ICT-U. And there are many de-facto standards for ICT).
Number of JTC1 standards is almost the same as that of all ISO or IEC, thus, JTC1 is the largest TC within ISO and IEC, Actually, JTC1, sometimes, behaves as independent group which is equivalent to ISO or IEC. Due to the importance of worldwide compatibility of ICT technology, ISO/IEC JTC1 SC22 WG20 (internationalization) recommends that all JTC1 standards should cover a requirement for internationalization of related technology.

1. National ICT plan should include "a plan to bridge a digital divide"

Today, almost any country or region has a national ICT plan, program or strategy. The plan usually includes many types of elements. As the most offensive element, there is "ICT industry promotion plan" which expects a dramatic economical growth of the country/region by promoting ICT industry. In contrast to that, there might be the most defensive element that is "bridging a digital divide". And normally there are many plan in between such as "adaptation of laws and regulations for digital economy",

"improving a productivity of industries by utilizing ICT power for better competitiveness", ICT human resource development or the current hot topics of "e-government"…….

Some of the elements are just options to the plan as a country choice. For example, ICT industry promotion plan may not necessary for some of the country. However, "bridging a digital divide" should be a "MUST" for any country or region. Because any country/region has some kinds of a digital divide to be overcome. In some countries, it would be a domestic issue such as education of minorities, but, for most of the under development countries, it would be a problem of a gap between the country and developed country (thus, it is international issue).

Thus, each country/region must create its own "bridging a digital divide" program. None of bridging digital divide are the same each other.

2. Usability and Availability balance

Like national ICT strategy, digital divide also has many, almost independent each other, elements. Among the elements, at least, "usability" and "availability" are key words (and related each other).

2-1. Usability (literacy)

In some country, usability may mean "usability" for handicapped persons, or, "lack of educational opportunity for poor people".
However, for most of Asian countries, the most important "usability factor" is an ability to use ICT equipments "in daily language and familiar customs". Some peoples may use ICT equipments in English with US custom, but it would not be a case for the majority of ordinary persons in Asia. If English and US custom should be used, then number of user will be limited and it is a digital divide by itself.

To reach a critical mass of ICT users, it is impossible by providing an English solution only. Unless providing a ICT with local language/custom, number of ICT users will never reach to the critical mass, then the region never overcome a digital divide. Gap with developed countries may glow to wider and deeper.

2-2. Availability

If ICT solution is not widely available, even if usability is resolved, still there will be a digital divide.
Some report says that narrow bandwidth of communication line is causing an availability problem. And even some is discussing a quality of power line.
In a global network environment, an availability of same "state of the art" application is an important. The application program should be compatible and operable with in global network. If the application program is not available (even timing wise, no delay of introduction allowed), it causes a digital divide.
Thus, in network, availability does mean "compatibility and interoperability" with foreign (and same) application also.

2-3. Usability v.s. Availability

"Usability" says that local language/custom is necessary and "Availability" says the compatible to foreign application is necessary. Those two requirements are very controversial. Shooting local uniqueness for "usability" may mean "incompatibility".
This message says "there is a strong needs of localized software while maintaining a compatibility with the same software with "other locals"". Normally, adapting local custom may cause an incompatibility.

3. There are many possible solutions to meet with local requirements

Many peoples believe that once local requirements are clearly defined, then development of local solution is possible. As a reality, even if local requirements are defined, if those are primitive requirements, there are many different implementations possible to meet with the same requirements.
Different implementation cause "incompatibility problem" between different implementations. The incompatibility causes another "digital divide". This is why standardization of the requirements is needed to lead the implementations under the same principle, such that the solutions are compatible each other.
There is a needs to define the local requirements with the common technology in mind.

Once requirements are defined in international standard, usually there are many objections in related country saying "the requirements are not well reflecting the real national needs and/or there are much better and easy solution possible to implement".
Most of those voices are forgetting the compatibility issue.
There is a strong needs to choose one "compatible" method out from many possible solution. The choice should be clearly disclosed to the world developers, unless wide diversification of the solutions may occur, and that causes "incompatibility".

4. International standard

4-1. Internationalization (i18n) and Standards are the keys

Only way to resolve this problem is to use an application under i18n guideline, and disclose the local unique requirements as a part of international standards. Unless, no one pays attention on the cultural oriented requirements of under developing regions.
About the i18n technology, section 2 of the 1999 is discussing well on it. In short, there are many ways are possible to provide a local solution. However, only i18n technology (out of many others) can guarantee the "availability". It is necessary, all local solutions to be provided per the i18n technology.

The local uniqueness should be described as a set of data to be used (and usable) by the i18n technology. Only when the data is described the way, it is be adaptable by i18n.
For this, the requirements must be provided as a part of international standards. This is why disclosure of the local requirements via international standards is important.

Therefore, from both "availability" and "usability" view, international standard is a key success factor. This is why "international standard" is important for Asian countries.
Section-1 of the 1999 paper is discussing the importance of the standard as well as a new issues of the standards from Asian view point.

4-2. International Standards is a place for "compromise"

It is clear that the requirement from "Usability" is aiming more uniqueness, and "Availability" may drive to "much common for anybody". Because this is requirement of almost opposite direction, there is a needs of COMPROMISE. There is no solution to make both requirements fully satisfied. The compromised agreement is only reachable at the table of international standard. This is why international standard is important.
This importance is unique to cultural issue within ICT,
In many cases, the needs of international standard is explained from view point of economy and trade issue such as WTO TBT agreement, However, for the cultural issues of ICT, it is far more than simple trade and economy issue.

The word compromise may give some negative impression, thus, I like to use a word harmonization:
Harmonization between "Global technology trends (and requirements)" and "Unique to local requirements" should be done through a process of development of international standards. This is why international standard is important to national ICT strategy. This is totally new concept, new from traditional goal of simple world uniformity of the international standards.

Note: In 1999 paper, only importance of the international standard was expressed, after the paper, it is recognized that the importance is far larger than what it was thought in 1999.

5- This is significant for Asian countries.

As described in Chapter-1 of 1999 paper, for Asian countries, participation for the discussion of the state of the art (and Western culture driven) technologies is an issue by itself.
On top of that, the international Standard Developing Organizations (SDO) are moving toward "utilize De-facto standard more than it used be". This is another issue, because consortia for the De-facto standard development are mostly like a club of developed countries. It is also very difficult even to become a member of the consortia.

6. Japanese program against the problems.

Japan does see the problem and has tried to provide an assistance for Asian countries to overcome the issues. The program detail is well described in the 1999 paper as AFSIT, SIG, MLIT and AHTS.
AFSIT is a long standing forum (15 years) of related public sector representative of each country
SIG are MLIT are special mission to resolve defined issue at the AFSIT
AHTS (which is new) is a seminar for standardization.
In Year 2001, AFSIT-15 and AHTS-3 (SEISA AP/IT-2001) were held in Nepal, (AHTS has changed to SEISA AP/IT since 2000).

From 2002, the AFSIT is extended to AFIT (Asian form for Information Technology). AFIT-1 and SEISA AP/IT-2002 were held in Lao PDR and Singapore

After closing MLIT in 2001, from 2002, Documentation Style Information Interchange standard for Asian requirements (DocSII) is opened.

In 2003, AFIT-2, SEISA AP/IT-2003, DocSII-1 symposium are held in Mongolia

7. What happened after 1999 paper?

After the 1999 paper was presented, AFSIT-13/MLIT-4 were held in Yangon Myanmar and along with significant progress, (as usual). As a project, there was a significant progress on Khmer and Lao scripts, and Philippino currency sign specially at the JTC1 SC2 WG2 meeting on March 2000.

In addition, many new facts has been noticed.
Among them, there are three very important discovery should be reported for the SUMMIT2000 for every bodies concern.

7-1. Needs of in-depth technical lecture.

Because IT technology is moving very fast, and standard development process is proactive (which means that the standard development itself is a new technology

development), the good understanding of technology is essential. If proposal is out of the technology, such as using conventional technology, the proposal would be rejected at the international discussion.

In SEISA AP/IT-2001, following technology will be lectured
- Internationalization and Localization
- Character and Glyph relation in modern computer
- New sorting technology

7-2. More than one person should be trained.

In international discussion, the proposes are reviewed by new technologies, then, usually, the proposes are returned for re-consideration. Or, new technologies are trained in AHTS. In the past, the participant and/or trainee was a single person from the country in most of the cases.
Even if he/she brought back the new information, in the country, it was experienced that there were strong oppositions on the new technology. And the person becomes orphan within the country. It is necessary that multiple persons should listen the same story.

SEISA AP/IT-2000 invited two participants from the (selected) countries.

7-3. Template development project and need of national standard

After SEISA AP/IT-2001, countries have understood a principle of back ground technology of the modern coded character set. However, movement for real implementation of national solution is slow. The most significant reason for the slowness might be implementation technology. For this, template development project for technology transfer was opened in 2002. The template is available upon request.

Further, a needs of national standard is recognized. ISO/IEC 10646 is too large standard and also is based on the state of the art technology, the real implementation method of that is not well understood by developing countries. Therefore, explanation paper for each country is need. The paper should cover an in-depth and tuned for target country. Thus the paper should be a national standard.
SEISA AP/IT 2002 and 2003 are focusing on the national standard development.

7-4. Beyond the standard activities are the "must"

Even if standard is developed per the new technology (as a result of above), without having real implementation, it may mean nothing.
It was noticed, after establish the standard, following activities beyond standard development are necessary.
- Transfer of the new technologies. (remember this is a cultural matter, each country should do something, and nothing is available automatically from developed country)
- Intrim technology development until real solution on the new technology is available.
- Migration program from existing solution to the new solution

All of above are not a part of standard development activities, but those are really necessary work to be considered as a set with the standard development.

In addition, there is one more problem in different nature were noticed, which is project justification. To justify "by only a good will of Japan" is becoming difficult. Projects are not affordable by saying "Asian cooperation is important". It is necessary to have a requirements from country/region who are seeing a benefit.

8. Conclusion

- As a part of national/regional IT strategy, a bridging plan of a digital divide is unavoidable.
- As a part of the bridging plan development, harmonization of the cultural requirements and Global technology is necessary.
- There are many different solution possible for the same national requirements, but unless having one uniform to every solution, the differences may cause another digital divide.
- The harmonization should be done through standardization process.
- This is why industrial standard strategy is important in the national IT program.
- After international standard is developed, national standard that is based on the international standard should be developed.
- This is particularly important for Asian countries.
- Unfortunately, Any of single Asian country can do the job by herself alone.
- Also, we are still in learning phase
- Thus, It is necessary that Asian countries must get together
- Japan has been providing an assistance (for get together standard activities) and willing to continue. But it is becoming difficult.
- For future results, the projects need a help form all Asian country/region to continue the programs.

------end of 2003 up date paper------

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