

MULTILINGUALISM AND THE DOMAIN NAME SYSTEM¹

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The Internet was developed from ARPANET in the United States. Since 1990, it has flourished with tremendous speed and is now a critical part of the Information Communication Technologies (ICTs) infrastructure.

The development of the Internet has changed how we live and how we do business. Unprecedented benefits have been derived from its growth. However, the use of English as the primary language for Internet transactions has led to a language barrier for non-English speaking users. This has contributed to a gap in accessibility of information between English and non-English speaking countries. This, in turn, has resulted in an inability to fully leverage the Internet for economic growth in some non-English speaking countries.

It is believed that in addition to reducing the digital divide and the associated economic gap, multilingualization is a useful measure to increase the diversity of culture and to serve special interests of different people.

It is especially important for indigenous peoples for whom the Internet is a potentially valuable tool for preserving traditional languages and knowledge. No one seems to doubt the importance and profound implications of Internet multilingualization to the cultural diversity. This chapter focuses on the multilingualization of the Domain Name System (DNS), one of the areas which should be addressed under the slogan “Internet multilingualization”.

The methods for multilingual access to Internet resources currently available are: Internationalized Domain Names (IDNs), Keyword lookup, Keyword search, and Directory services².

- IDNs are designed to use the multilingual characters as well as the English alphabet, numerical character and some symbols without any modification to the existing DNS system. However, it presently does not allow the top-level domains (TLD) to use multilingual characters, an area clearly in need of further improvement³.

¹ This chapter is largely based on the WGIG’s informal issue paper on multilingualism.

² Native Name Seminar during APRICOT: Asia Pacific Regional Internet Conference on Operational Technologies) 2005 addressed the related issues methods.

³ For discussions, see the following ICANN meeting reports:
www.icann.org/meetings/kualalumpur/captioning-idn-workshop-21jul04.htm and

- Keyword lookup is a kind of website address that directs users to a desired website when a keyword is typed into the browser's address bar. It is known to be capable of handling the native characters of various languages. From the technical point of view, there are two types of keyword lookup services: one is a client-side-based service, like IDN, which requires users to install a plug-in software on the browser, while the other one is a server-side-based service which may require some modifications to the DNS lookup functions.
- Directory services and Keyword search are services enabled by various search engines. The former utilizes pre-registered databases and the latter utilizes databases that index website contents.

What Works, and What Does Not?

1. Internationalized Domain Names (IDNs)

The first form of multilingualized Internet name is IDN (internationalized Domain Name). It has the structure of “Name in local character” + “.” + “English TLD” (e.g., 삼성 전자.kr). The name resolution for IDN is based on the distribution of client software. IDN has been commercialized in China, Japan, Korea and other countries. Through the efforts of many in the Internet community, a global technical standard has been established.

The IDN service started ambitiously, but the market reaction has not been as warm as first expected. According to recent statistics from webhosting.info, 74% of IDN registration throughout the world is concentrated in three countries: USA, Korea and Japan. In other words, IDN is not only lopsided, but also its growth is considerably slower than that of English domain names.

The IDN technical standard requires that client software be installed on every individual computer for the necessary function of converting multilingual code to ASCII code. It has become to a certain degree an obstacle for the adoption of the service. To alleviate this problem, many people proposed to have a built-in IDN client software in the browsers which could contribute to the deployment of IDN service. However major browser companies such as Microsoft have not yet set forth a clear schedule for such an update⁴.

In addition, the structure of IDN, “Name in local character” + “.” + “English TLD” (e.g., www.수원시청.kr) does not appear natural to local people due to the difference of linguistic culture.

www.icann.org/meetings/capetown/captioning-idn-workshop-01dec04.htm; and also, www.minc.org/events/carthage2003.

⁴ <http://www.icann.org/meetings/capetown/captioning-idn-workshop-01dec04.htm>

e.g.,	수원시청	=> natural
	www.수원시청.kr	=> awkward to local people

Another point that should be taken into account is that the current IDN service cannot be considered to be fully internationalized because an English TLD still needs to be added at the end of a domain name. This forces the users to change their input method, which results in another inconvenient aspect of IDN.

It has been reported that, in an effort to mitigate this inconvenience, the Internet community, in some countries, has been pulling together and now sees some gradual success. Particularly in China, the input methods allow people to type out IDNs without shifting input method (press “Spacebar” for Chinese characters and “Enter” for ASCII letters, both “。” and “.” are recognized by the Chinese Domain Name system).

Another issue that needs to be addressed is the lack of agreement on who should be entitled to make a policy decision on linguistic issues, such as the table of character equivalences for each script and language. There have been complaints about the legitimacy of some ccTLDs establishing tables for languages used in other countries. The lack of globally agreed character tables might lead to confusion, as domain names which would be equivalent under a certain TLD would not be equivalent under others.

The current policy approach by ICANN until now has been of “laissez-faire”, with each country and registry choosing its policies. However, a global policy is necessary, especially in the gTLD field. For example, consumers should not be asked to pay the registration fee many times to reserve all different variants of their names in those languages which employ extended Western scripts. The opportunity of a sunrise period for existing registrants to register the “enhanced” (i.e., with proper accents or other marks) version of their names should be considered⁵. It is likely that, without universal access policies, gTLDs would not add support for “minority” scripts, as commercially it would not be of interest to them. All these issues require a more careful discussion of global policies on IDNs, before it is too late.

2. Keyword Lookup

Another form of multilingualized Internet name is the keyword lookup service which has “Name in local character” (e.g., 삼성 전자) format. The name resolution for keyword lookup service is either server-side-based or client-side-based depending on the service provider. Keyword lookup service was first commercialized in Korea in 1999, and shortly thereafter in China and Japan.

⁵ For example, the current registrant of “liberte.com” could be given priority over “liberté.com”.

The demand for keyword lookup service is growing, and its market acceptance in some countries is quite successful, but the keyword lookup service standard is still at the triggering stage, and an international consensus on the service has not yet been reached. Leading companies in each country are determining their own service concept independently. While there have been some efforts to reach a sort of compromise, a visible outcome is yet to emerge. As a consequence, a technical standard remains an elusive target.

An example of a keyword lookup service, Native Language Internet Address (NLIA), is being provided by Netpia.com Inc. (Korea). They have developed their own version of the server-side technology. JWord in Japan provides client-based service. 3721.com in China employs a technology similar to Jword's.

In the past, a company called RealNames launched a keyword lookup service on a global scale in collaboration with Microsoft. Microsoft included the service as a built-in functionality in its Internet Explorer browser, but the service was suddenly discontinued when the partnership between the two companies broke off. The disruption caused incalculable losses to a number of innocent customers and users. This historical lesson underscores the importance of an accountable international and multilateral organization with regard to the multilingual Internet name services.

Actors and Stakeholders

On IDN Issues

- ICANN: Name policy
- IETF: Technical standardization
- MINC: Service promotion and discussion forum for local players
- I-DNS: Initial technology initiator and service provider
- JPRS, KRNIC, CNNIC, HKNIC: Major steering actors
- * In China, IDN for ccTLD has been tested and applied independently.
- TLD registry: Service registries
- government: active especially in non-English speaking countries

On Keyword Lookup Issues

- Netpia: Korean Keyword Lookup service provider and associated solution provider
- CNNIC: Chinese Keyword Lookup service provider
- 3721 (Yahoo): Chinese/Japanese Keyword Lookup service provider
- ITU: Technical standardization (in initial discussion)
- ISP (Internet Service Provider): providing server-based infrastructure for the keyword lookup by patching multilingual S/W package to their own DNS servers.

- MINC: service promotion and discussion forum

Governance Mechanisms

Status Quo on IDN

IDN fundamentally follows the current DNS governance mechanism. ICANN takes care of the policy, and IETF is responsible for the technical standardization. Under the supervision of the US government, ICANN handles the policies including the confirmation of the language Code table, the decision of supporting multilingual TLDs, the registration policy for script variants, etc. Currently, China, Japan, Korea, Hong Kong and Middle East countries actively participate in such activities.

Status Quo on the Keyword Lookup Service

The keyword lookup service providers in each country define the nature of their own service and decide the service policies independently based on their own definition. For instance, some companies show the search results associated with the meaning of keyword as well as the relevant web pages, while others are focused on the address concept and put 1:1 look-up service as number one priority.

To overcome conflicting issues and problems, there have been many efforts to reach an international consensus through discussions in MINC, APAN and so on⁶⁷. However, there has been no noticeable output so far.

Conclusion

The ultimate goal is to reach a genuine Information Society wherein information is available and easily accessible by anyone, anywhere, and anytime. In order to achieve such Internet utopia, a combination of the on-going expansion of ICT carried out in alignment with the United Nations Millennium Development Goals (MDG) and the growing effort to facilitate the localization of the Internet content is insufficient and lacks a critical component to access Internet information efficiently.

In order to fully benefit from the progress enabled by the Internet infrastructure and content, we must make the existing Internet resources realistically accessible in local languages. Without having a multilingual Internet Name component, which acts as the gateway to the Internet, the substance of all other structural or content improvements can potentially be of limited value. It

⁶ <http://www.iak.ne.kr/new/keyword/fukuoka/minutes.htm>

⁷ <http://www.qgpop.net/2003fukuoka/AB.html#A1>

is the missing component to achieve a worldwide balance of the Internet population's demand for accessibility and connectivity.

In an effort to systematically facilitate the promotion of the multilingualization of Internet names through collective input, cooperative participation, and mobilization of synergies, a multilateral organization under the United Nations framework with the full participation of the private sector and civil society would be recommended. Such multilateral organization should operate under the principles of democracy, transparency, openness and efficiency.