



The IDN Variant Issues Project:

A Study of Issues Related to the Delegation of IDN Variant TLDs

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Executive Summary

The IDN Variant Issues Project will undertake work - through case studies - to identify issues associated with the beneficial and safe delegation of IDN variant TLDs.

Specifically ICANN proposes to conduct five case studies (suggested cases are Chinese, Arabic, Latin, Indic, and Cyrillic) to investigate the set of issues that need to be resolved to facilitate a good user experience for IDN variant TLDs. From these five case studies, an Issues Report will be created.

Managing IDN variants is a complex and important subject, and the success of the project is dependent on significant community expertise input and cooperation in doing the work.

1. Introduction

Language communities that use variant characters are affected by decisions about how variants are managed and implemented in new TLDs. This is of concern in both IDN gTLD and IDN ccTLD implementations.

In 2009, an independent implementation working team was formed after discussions during the ICANN meetings in Mexico City and Sydney to study these issues. The team included linguistic and technical experts from various language communities, and was co-chaired by two ICANN Board Directors who are well-versed in the fields of IDN and DNS. The team recommended that variants not be delegated as TLDs at that time, and that if desired variants are to be delegated, certain conditions must be fulfilled¹.

To develop potential solutions for the delegation of IDN variant TLDs, the ICANN Board in its 2010 meeting² in Norway directed the CEO to:

... develop (in consultation with the ICANN Board ES-WG) an issues report identifying what needs to be done with the evaluation, possible delegation, allocation and operation of IDN gTLDs containing variant characters, as part of the new gTLD process in order to facilitate the development of workable approaches to the deployment of gTLDs containing variant characters IDNs. The analysis of needed work should identify the appropriate venues (e.g., ICANN, IETF, language community, etc.) for pursuing the necessary work. The report should be published for public review.

This document describes ICANN's proposed plan to develop an initial Issues Report.

Five case studies (suggested cases are Chinese, Arabic, Latin, Indic, and Cyrillic) are planned to investigate the set of issues that, if resolved, may enable the delegation of IDN variant TLDs for the benefit of the respective user communities. It is expected that the results of the five case studies will play a crucial role in the identification of issues, roadblocks and potential solutions towards the handling of IDN variants in TLDs.

¹ Definitions accessible at <http://www.icann.org/en/topics/new-gtlds/idn-implementation-working-team-report-final-03dec09-en.pdf>

² See ICANN Board of Directors. (2010) Adopted Board Resolutions. Trondheim, Norway. Retrieved November 30, 2010, from <http://www.icann.org/en/minutes/resolutions-25sep10-en.htm#2.5>

Section two of the document provides some background on IDN variants; section three defines the project scope; section 4 details the overall work plan, work team composition, sharing of information, preliminary timeline, budget philosophy, etc.

2. Background

There is no universally agreed definition of a “variant”. One possible definition³ is that variant characters occur where a single conceptual character can be identified with two or more different Unicode Code Points with graphic representations that may or may not be visually similar. IDN variant TLDs contain one or more characters that have such variants.

Possible examples of IDN variant TLDs⁴:

- a. Arabic Example:

السعودية السعودية

- b. German Example:

“koeln” and “köln”

- c. Chinese Example:

中国 vs. 中國

3. Project Scope

There are several identified issues with the delegation of IDN variant TLDs. Allowing the delegation of IDN variant TLDs may result in user confusion, while excluding the variants may disenfranchise communities that use the characters in the excluded TLD strings.

The expected user experience if using delegated IDN variant TLDs as compared to using the related base label TLD may vary from case to case. In general, to ensure the success delegation of IDN variant TLDs, the following tasks needs to be completed:

Project Tasks:

³ See RFC 3743, Joint Engineering Team (JET) Guidelines for Internationalised Domain Names (IDN) Registration and Administration for Chinese, Japanese and Korean. Available at: <http://www.ietf.org/rfc/rfc3743.txt>. The IDN Implementation Working Team Final Report also uses this definition, see < <http://www.icann.org/en/topics/new-gtlds/idn-implementation-working-team-report-final-03dec09-en.pdf>>

⁴ These are for illustration purposes only, it does not imply that these are requirements for variants.

1. Create a commonly understood glossary of terms and ensure that such terms are accurate and vetted with appropriate technical and linguistic communities
2. Identify the set of challenges of working with IDN variant TLDs that are based on (a) linguistic accuracy, (b) technical feasibility and accuracy, (c) usability, (d) accessibility, and (e) security and stability

The IDN Variant Issues Project focuses on question (1) and (2).

Follow-on Tasks:

3. Determine the circumstances under which IDN variant TLDs might be eligible for delegation
4. Analyze and arrive at rules where possible, or guidelines where rules are not possible, that address the challenges of working with IDN variant TLDs outlined in task 2
5. Arrive at rules and guidelines, both in the registry operational requirement area and the technical implementation area
6. Determine the responsibilities of TLD operators who would be responsible for managing such delegated IDN variant TLDs
7. Determine what kind of compliance programs may be necessary to ensure that IDN variant TLDs operate according to the arrived at rules and guidelines
8. Identify viable and sustainable outreach mechanisms to communicate and interact with the community on the issues report

Tasks (3) through (8) will be the focus of follow-on projects by ICANN policy development, implementation guidelines produced by ICANN staff in consultation with the community, and relevant technical work by IETF.

The IDN Variant Issues Project goal is to identify the "problem statement", by having diverse sets of teams identify use cases and describe the foreseeable problems for their linguistic communities that IDN variant TLD policy should seek to address. Groups should explain how they expect IDN variant TLDs should work from the perspective of how users should use and interact with domains. For example, how domains should function when entered into web browsers, how domains should be entered in email addresses, how domains should function during the domain registration process, how domains should be configured into server configurations, and so on. It should consider what would be undesirable outcomes in these different areas as well, with a particular emphasis on security and stability issues.

Case study teams should avoid describing solutions, but rather focus on the problem statement. A clear vision on what properly functioning IDN variant TLDs would look like to domain users can then be turned into a unified list of issues to address and goals. This process should produce a clear description of scope and use cases, which should make it easier to assess whether potential solutions will provide satisfactory results.

Once this agreed set of issues is harmonized across the different case study teams, along with settling on common terminology, work on analyzing potential solutions can proceed as a second phase. The work on identifying potential solutions will consider linguistic accuracy, technical feasibility, usability, accessibility, and security and stability. It is anticipated the solution space will be a mixture of rules for registries and operational requirements that a TLD operator can achieve through operational practices where possible, or through protocol mechanisms.

4. The Project

Five individual case studies will be undertaken to focus on the known situations where variants are in common use and may be part of applications requesting the delegation of IDN variant TLDs. Each study, carried by a study team, will concentrate on specific issues that are relevant to their communities. This section describes the work plan, the composition of case study teams, how information is to be shared among the case study teams and with external entities, the project management and coordination, the timeline, and the project budget philosophy.

In order to inform the discussion inside the case study teams, a survey of current registry policy around IDN variants at the second level will be done in parallel with the work of the case studies. The survey will help understand how variants are managed in registries below the root to avoid reinventing solutions. It will contain questions related to, for example, the type of variants that are managed by the registry, the policy and technical requirements for the registrants of such variants, etc. Team members will assemble a questionnaire to be sent to TLD (gTLD and ccTLD) operators that currently offer IDN registrations. Responses will be summarized and synthesized in a report that will be publicly available.

4.1 Work Plan

There are four steps in the plan: define objectives, form study teams, undertake case studies, synthesize issues, and create issues report. They are outlined in Figure 1.

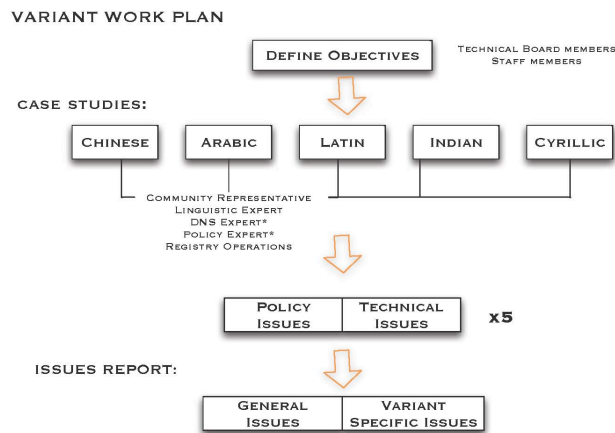


Figure 1: IDN variant TLD Issues Project Work Plan

1. **Define Objectives:** The first step in the work plan is to determine the objectives of the study teams. Proposed objectives are outlined above. The ICANN project team will propose a set of objectives, to be reviewed by the new Board IDN Variant Working Group (BV-WG), and published for community input. The cases to be studied are suggested in the above graphic, but will be determined by this objective setting exercise above.
2. **Formation of Case Study Teams:** The second step is the establishment of five separate case study teams to undertake the five separate case studies. The proposed composition of the study teams is described below. Each team will be led by a community Team Leader, identified by ICANN in consultation with the relevant community.
3. **Case studies:** Each Case Study team will develop a detailed study plan to achieve the set objectives. The output of each case study will include:
 - An issues report for that case. It is expected that some issues will be germane to all cases while some will be case specific.
 - A set of issues necessary for the goals (1) and (2) listed in Section 3.
4. **Synthesis of issues:** A coordination team comprised of representatives from the five teams will develop a single issues report. The report will be divided into two sections. One section will be comprised of common issues germane across the cases studied. The second section will be comprised of issues germane to the specific cases.

5. **Issues report:** The issues report will describe each of the general and case-specific issues to be resolved for the five cases studied. It will also provide a detailed roadmap that can be used for studying additional cases. The experience gained from these initial five case studies should enable the efficient development of similar issues reports for additional cases.

4.2 Composition of the Study Teams

Each team must be comprised of the following: community team leader, community representation, linguistic expert, DNS expert, security & scalability, policy expert and registry operations expert – see Table 1 below. Successful completion of the work depends, above all else, upon finding community resources to perform the substantive work.

Table 1: Composition of each case study team

Area of Expertise	Description
Community Representation	Experts with understanding of local culture, customs, and practices.
Linguistic	Case-specific and Unicode experts from the local community.
DNS	IETF participant knowledgeable in DNS and IDNA.
Security and Stability	Expert knowledgeable in security and stability implications of variants on Internet protocol usage.
Policy	Experts knowledgeable of ICANN’s bottom-up process.
Registry Operations	Experts familiar with local registry operations and standards

The ICANN project staff responsible for recruiting and supporting the teams includes:

Project Leader: Dennis Jennings
 Management oversight: Kurt Pritz
 DNS operations & Security and Stability: Kim Davies
 Policy coordination: Steve Sheng
 Registry operations: Francisco Arias
 Linguistic Outreach: Baher Esmat
 Community liaison: Naela Sarras
 Project Management: Carole Cornell

4.3 Project Management and Coordination

To help implement IDN Variant TLDs project ICANN will provide Project Management services.

These services will consist of:

- Planning - project planning, work to develop a plan with the case study teams
- Project schedule – develop and maintain a working integrated schedule with an agreed upon milestones
- Communications – internal and external communication, status reports, progress updates, coordination of activities
- Execution – working with the teams to facilitate timely deliverables
- Coordination – collecting and synthesizing information, providing meeting minutes and other support as needed

4.4 Sharing of Information

The subject of variants in domain names is being increasingly broadly discussed in the community among groups such as JIG⁵, language-specific initiatives⁶, IRD⁷, and IETF. To ensure the successful completion of this project, all those that are working on variants or related subject matters should stay closely coordinated.

There are two types of information sharing needed: sharing within the five case studies groups, sharing of the case study team’s work with external entities mentioned above.

To facilitate information sharing within the five case studies, ICANN will ask that:

1. The leaders of the five study teams hold regular calls (e.g. monthly) to update each other of their group’s progress and also to discuss if any general principles, or synergies can be applied.
2. An internal wiki is created for the project and one for each case study team that can be viewed by members of the other study teams.
3. The leader of the project attends all the calls for each study group.

To facilitate information sharing with external entities, ICANN will ask:

1. That there is an overlap of membership of study team members with external entities working on these areas. For example a technical expert working on name aliases in IETF should be on at least one of the case study groups.

⁵ Refers to the Joint ccNSO-GNSO IDN working group.

⁶ See Arabic Script IDN Working Group <<http://asiwg.org/wiki/>>, Chinese Domain Name Consortium < <http://www.cdnc.org/>>

⁷ Refers to the Joint GNSO-SSAC Working Group on Internationalised Registration Data.

2. The five working group as a whole provide quarterly updates to other external groups, and the other working group also keep these five working groups informed of their progress.
3. Staff to create an informational wiki (accessible to the public) that documents all of the different groups' work on domain name variants to date.
4. The output of this work be socialized by publishing for public comment and considered as input to IETF's relevant working groups.

4.5 Timeline

This is not a complex project in terms of interdependencies or task loading. However, recruiting for this type of effort has always been problematic as budgeted or planned for positions remain unfilled and there are a limited number of technical experts available to participate. Therefore, slightly more time is provided than might be anticipated to recruit skill sets and perform work (because skill sets might have to be shared among the case studies). There are limited numbers of IDN and DNS experts and the timeline described here is contingent on securing requisite skills for each case study.

Regular progress reports will be made to the new Board IDN Variant Working Group (BV-WG). Table 2 shows the proposed timeline for the project.

Table 2: Preliminary Timeline for the Project

Task	Time
<i>Objective setting</i>	<i>Present – 31 Mar 2011</i>
<i>Recruiting case study teams</i>	<i>Present – 29 Apr 2011</i>
<i>Complete case studies</i>	<i>31 Mar 2011 – 30 Sept 2011</i>
<i>Synthesize issues across studies</i>	<i>1 Oct 2011 – 30 Nov 2011</i>
<i>Issues report publication</i>	<i>15 Dec 2011</i>

4.6 Budget Philosophy

To the extent possible and in order to minimize incremental expense, the case study effort will be performed by ICANN volunteers and supported by ICANN staff members that are cross-utilized in various cases. However, in order to complete the work in a timely manner, expenditures will be made. Resources on the critical path to success should be retained (DNS and linguistics expertise) in some fashion in order to ensure their availability and the completion of their work. The Finance Committee will be consulted to determine sources of funds. The Board will be consulted if reprioritization of budgeted tasks is required.