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IDN Variant TLD Implementation

**Status, Recommendations, Analysis, Risk Mitigation and
Next Steps**

Sarmad Hussain
Director IDN Program

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Objectives of This Presentation

1. Understand IDN variant top-level domains (TLDs) and their status
2. Review proposed recommendations and their analysis for managing IDN variant TLDs
3. Overview the risks identified and the next steps
4. Provide feedback during this session

Overview of the Presentation

- ⦿ Understanding IDN variant TLDs and their current status
- ⦿ Recommendations for implementing IDN variant TLDs
- ⦿ Summary of analysis of recommendations
- ⦿ Summary of risks identified
- ⦿ Discussion on questions for Public Comments
- ⦿ Next Steps
- ⦿ Appendices
 - I. Rationale for RZ-LGR
 - II. Risks and their mitigation measures
 - III. Using ROID for IDN variant labels
 - IV. Limiting IDN variant domain names

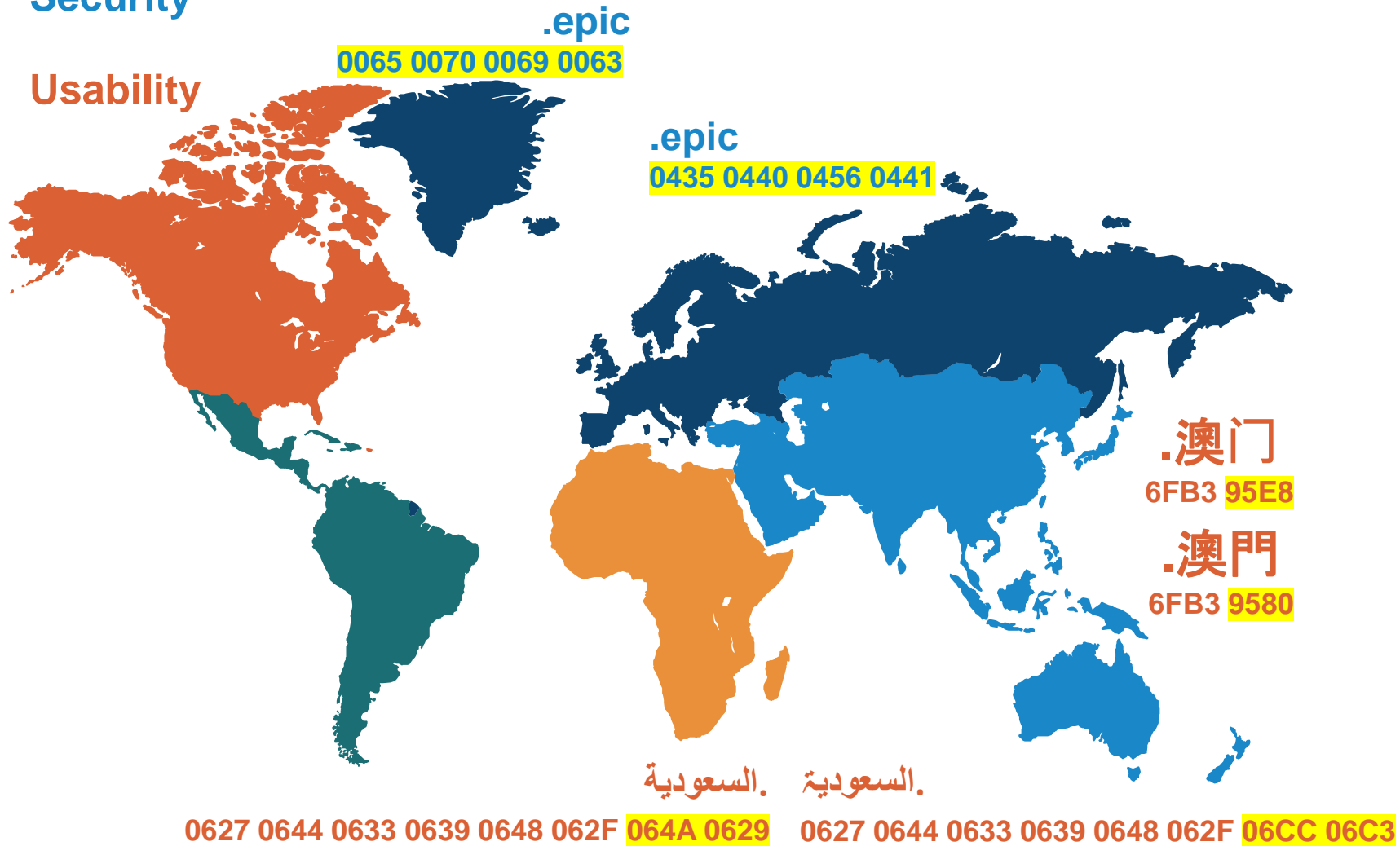
Understanding IDN Variant TLDs and Their Current Status

IDN Variant TLD Implementation

Understanding IDN Variant TLDs

- Security

- Usability

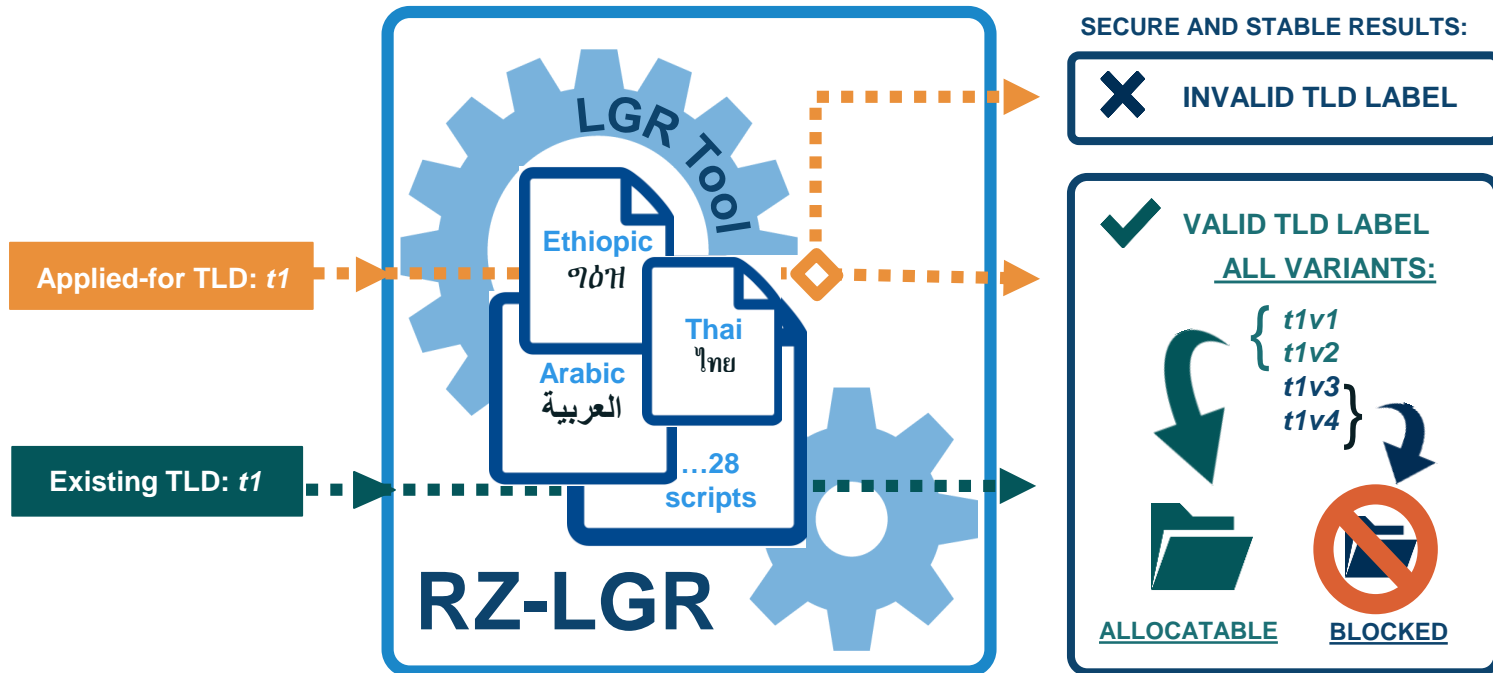


IDN Variant TLDs – Background

- ⦿ Variant labels are hard - interpretation of “same” varies across script
- ⦿ On 25 September 2010, the ICANN Board resolved:
 - ***“No variants of gTLDs will be delegated through the New gTLD Program until appropriate variant management solutions are developed.”***
- ⦿ Undertook studies on [Arabic](#), [Chinese](#), [Cyrillic](#), [Devanagari](#), [Greek](#), and [Latin](#) scripts in 2011 to understand the variant phenomenon
- ⦿ Issues collated in the [Integrated Issues Report, IIR](#) (2012) - identified following gaps:
 1. No definition of IDN variant TLDs
 2. No IDN variant TLD management mechanism

IDN Variant TLDs – Definition of Variants

- Gap 1: No definition of IDN variant TLDs
 - Solution: Define variant labels using Root Zone Language Generation Rules (RZ-LGR)
 - Next steps: RZ-LGR-Study Group initiated to review technical implementation



IDN Variant TLDs – Variant Management Mechanism

- ⦿ Gap 2: No IDN variant TLD management mechanism
- ⦿ Solution: ICANN org to work with the community to develop a feasible mechanism
 - Recommendations developed by ICANN org
 - Recommendations presented to ICANN Board on 22 June 2018
 - Recommendations released for [public comment](#) on 25 July 2018

Recommendations

IDN Variant TLD Implementation

Framework of Analysis

- ⊙ Dimension
 - Root Zone
 - Second Level
 - Subordinate Zones

- ⊙ Level
 - **Administrative** – who is the entity registering the label
 - **Policy** – what are the conditions on registering the label
 - **Technical implementation** – how are the conditions implemented

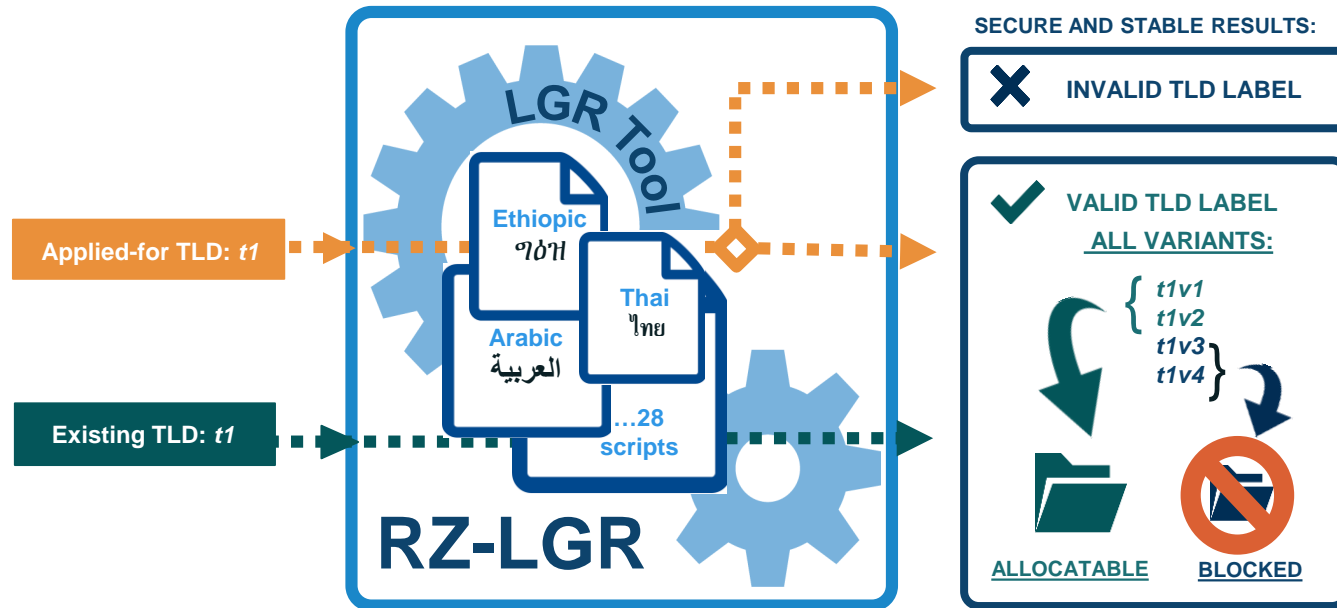
- ⊙ Degree
 - **None** – no condition specified
 - **Minimal** – a single constraint
 - **Intermediate** – multiple constraints
 - **Maximal** – complete specification

Overview of Proposed Solution

	Administrative	Policy	Implementation
Root Zone	<i>Intermediate</i>	<i>Intermediate</i>	<i>Minimal</i>
Second Level	<i>Intermediate</i>	<i>Intermediate</i>	<i>None</i>
Subordinate Zones	<i>None</i>	<i>None</i>	<i>None</i>

Recommendations for IDN Variant TLD Implementation

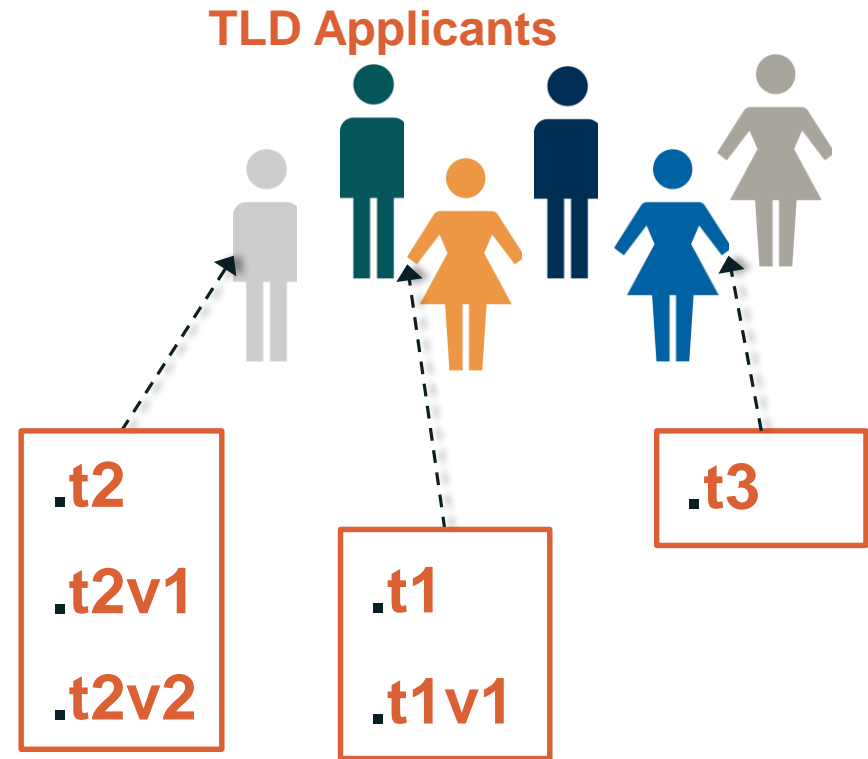
1. Root Zone Label Generation Rules (RZ-LGR) the only source for valid TLDs and their variant labels



Recommendations for IDN Variant TLD Implementation

2. IDN variant TLDs allocated to same entity: {t1, t1v1, ...}

t = top-level domain label
s = second-level domain label
v = variant label



Recommendations for IDN Variant TLD Implementation

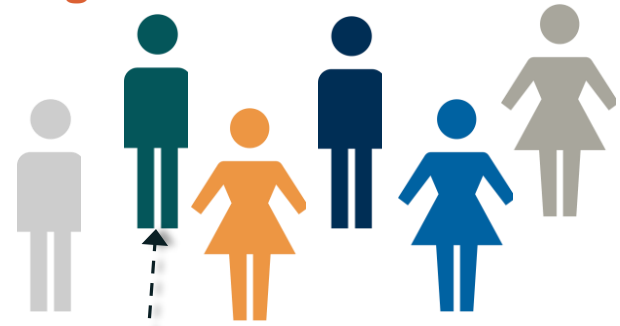
3. Same label under IDN variant TLDs registered to the same entity: **s1.t1** and **s1.t1v1**

t = top-level domain label

s = second-level domain label

v = variant label

Registrants



s1.t1
s1.t1v1

Recommendations for IDN Variant TLD Implementation

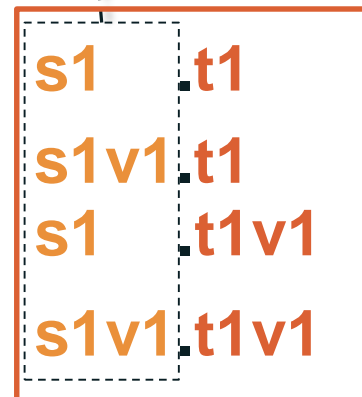
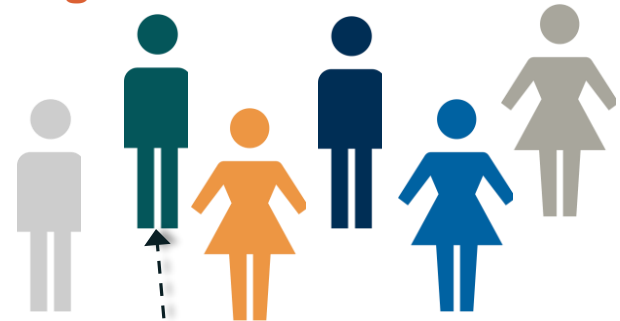
4. Second-level variant labels under IDN variant TLDs registered to the same entity: **s1.t1**, **s1v1.t1**, **s1.t1v1** and **s1v1.t1v1**

t = top-level domain label

s = second-level domain label

v = variant label

Registrants



Recommendations for IDN Variant TLD Implementation

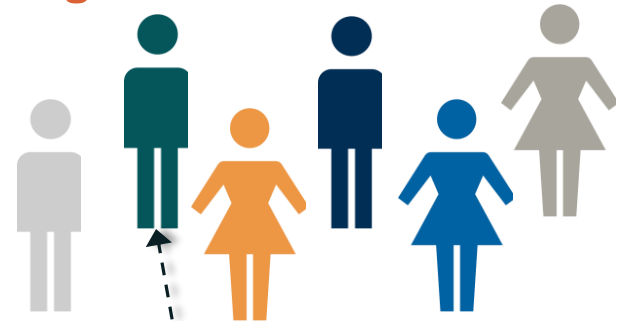
5. Second-level variant labels allocable or activated under IDN variant TLDs not necessarily same

t = top-level domain label

s = second-level domain label

v = variant label

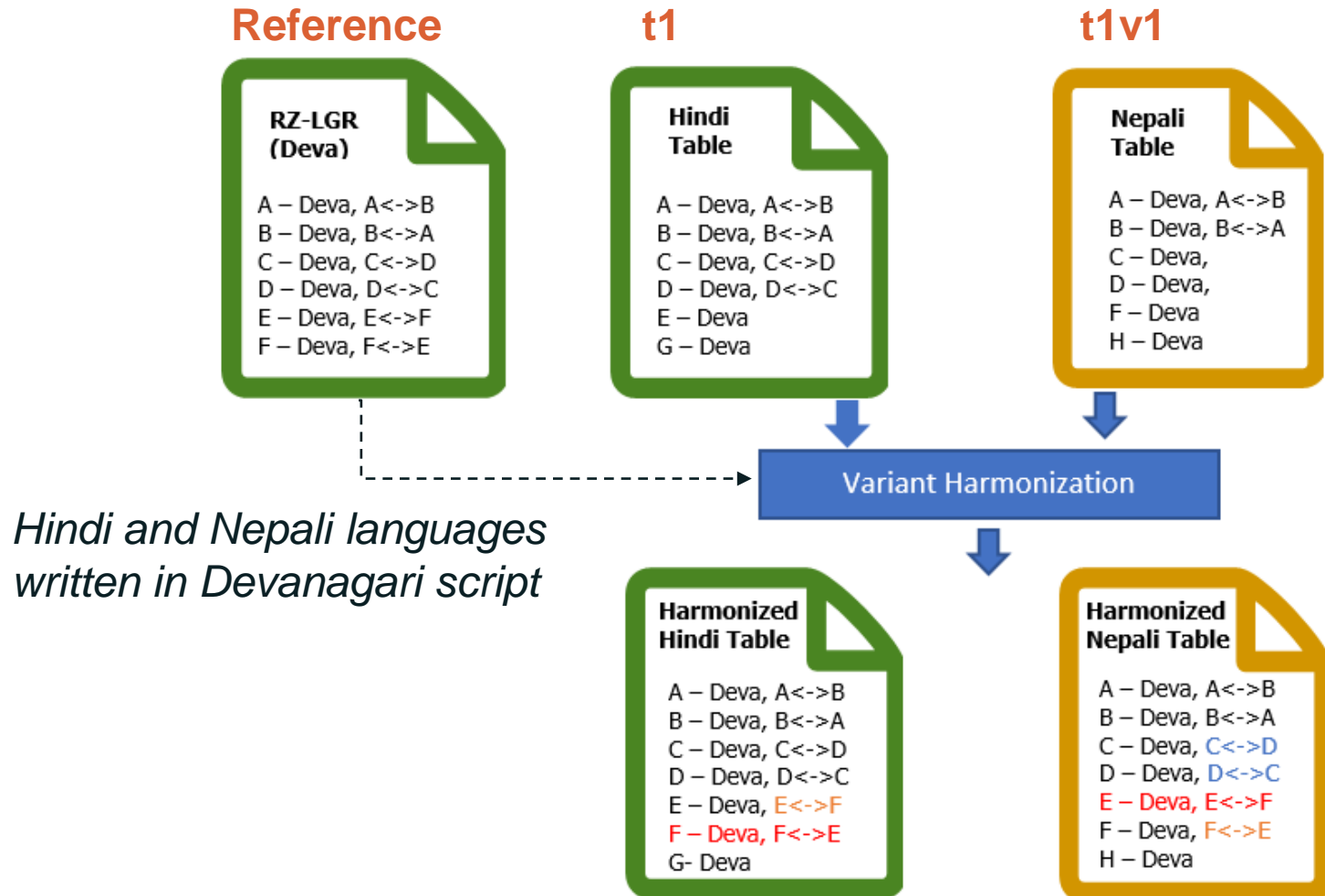
Registrants



s1 .t1
s1v1.t1
s1 .t1v1
s1v1.t1v1

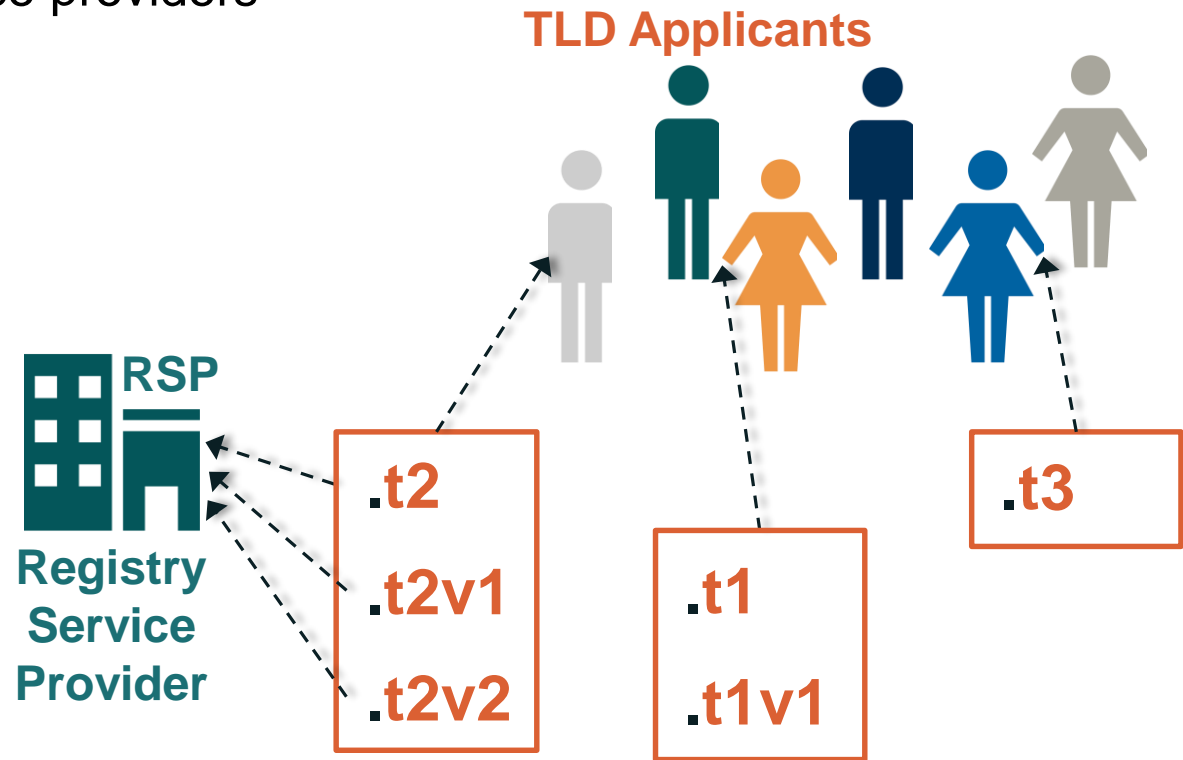
Recommendations for IDN Variant TLD Implementation

6. Second-level IDN tables under IDN variant TLDs harmonized



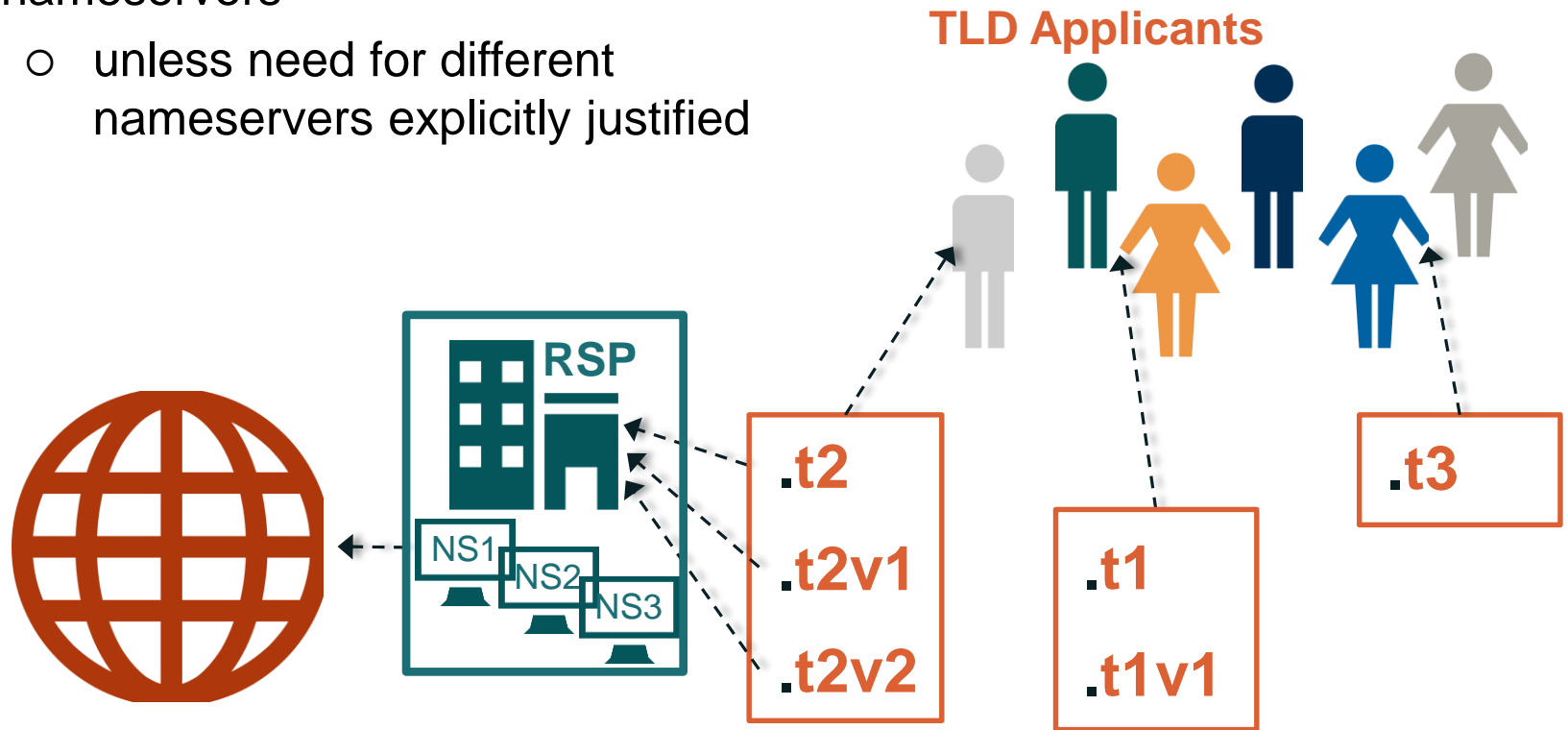
Recommendations for IDN Variant TLD Implementation

7. IDN variant TLDs operated by same registry service providers



Recommendations for IDN Variant TLD Implementation

8. IDN variant TLDs deployed at same nameservers
 - unless need for different nameservers explicitly justified



Recommendations for IDN Variant TLD Implementation

- Existing policies and procedures updated to accommodate these recommendations
- All other existing top-level and second-level policies apply, unless identified otherwise



Summary of Proposed Solution

	Administrative	Policy	Implementation
Root Zone	<p><i>Rec.2 IDN variant TLDs allocated to same entity: {t1, t1v1, ...}</i></p> <p><i>Rec.7 IDN variant TLDs operated by same registry service providers</i></p>	<p><i>Rec.1 Root Zone Label Generation Rules (RZ-LGR) the only source for valid TLDs and their variant labels</i></p>	<p><i>Rec.8 IDN variant TLDs deployed at same nameservers</i></p> <p><i>- unless need for different nameservers explicitly justified</i></p>
Second Level	<p><i>Rec.3 Same label under IDN variant TLDs registered to the same entity: s1.t1 and s1.t1v1</i></p> <p><i>Rec.4 Second-level variant labels under IDN variant TLDs registered to the same entity: s1.t1, s1v1.t1, s1.t1v1 and s1v1.t1v1</i></p>	<p><i>Rec.5 Variant labels allocatable or activated under IDN variant TLDs not necessarily same</i></p> <p><i>Rec.6 Second-level IDN tables under IDN variant TLDs harmonized</i></p>	<p>None</p>
Subordinate Zones	<p>None</p>	<p>None</p>	<p>None</p>

Additional Root Zone and Second Level

Rec.9 Existing policies and procedures updated to accommodate these recommendations

Rec.10 All other existing top-level and second-level policies apply, unless identified otherwise

Summary of Analysis of Impact of Recommendations

IDN Variant TLD Implementation

Restricting the Number of Delegated Variant TLDs

- ⊙ Possible to delegate too many variant TLDs
 - IDNA 2008, RFC 6912, User Experience Study, SAC 60 and Integration Panel call to minimize allocated variant TLDs
- ⊙ gTLDs
 - Application fee a sufficient barrier?
 - Update gTLD Applicant Guidebook accordingly
- ⊙ ccTLDs
 - Current Fast Track process restrictions may not allocate IDN variant TLDs based on existing criteria of meaningfulness and official language and script
 - As needed, update Fast Track process conservatively, e.g. on usability (and update applicable to IDN ccPDP accordingly)
- ⊙ Detailed analysis in Appendix IV below

Adjustments in Registry Services

- ⦿ s1 and any variant s1v1, e.g. s1.t1, s1.t1v1 s1v1.t1, s1v1.t1v1, etc., registered to same registrant
- ⦿ Define mechanism to determine same registrant, e.g. use ROID
- see Appendix III below
- ⦿ Harmonize second level IDN Tables across all IDN variant TLDs
- ⦿ Registrar transfer should involve all variant labels at the same time
- ⦿ Easier to manage if variants registered through the same registrar

Adjustments in Registry Agreements

- ⦿ Separate registry agreement (RA) for each IDN variant TLD being delegated
- ⦿ All variant TLD agreements with the same entity
- ⦿ All registry agreements requiring same Registry Service Provider (RSP)
- ⦿ Amend existing TLD agreement to incorporate recommendations and tie with other IDN variant TLDs being delegated
- ⦿ All RAs for IDN variant TLDs require provision that follows same process
 - s1, s1v1 etc. registered to same registrant under IDN variant TLDs
 - Second level IDN Tables across all IDN variant TLDs harmonized
 - Registry Transition Process upholds same entity requirement
 - EBERO for any one must trigger EBERO for all IDN variant TLD

Adjustments in Registration Dispute Resolution

- ⦿ Decisions regarding registration changes for one domain label under a TLD have impacts on:
 - Registration of the label and all its variant labels under the TLD
 - Registration of the label and all its variant labels under all the IDN variant TLDs
- ⦿ Universal Dispute Resolution Process (UDRP) decision cannot break the same entity – so change for s1.t1 impacts s1.t1v1, s1v1.t1, s1v1.t1v1, etc.
 - Transfers of registered label and its variant labels under all IDN variant TLDs
- ⦿ Uniform Rapid Suspension (URS) not impacted (possibly: webpage updated for s1 under all activated TLD variants)
- ⦿ Post Delegation Dispute Resolution Process (PDDRP), if it reassigns a TLD, will trigger it for all IDN variant TLD withheld and delegated

Adjustments in String Similarity

- ⦿ Process modified to compare a label with
 - All delegated or applied for strings
 - All reserved labels
 - All (allocatable and blocked) variants of the above categories
- ⦿ Only compare applied-for label, not all its variants, at the time application
- ⦿ Contention process updated to address collisions with existing labels and their variant labels

Unaffected Policies and Procedures

- ⦿ Data escrow
- ⦿ RZ-LGR procedures
- ⦿ Domain name life cycles
- ⦿ Two-character rule (ISO 3166 based ccTLDs)

Summary of Risks Identified

IDN Variant TLD Implementation

Summary of Major Risks

1. Either GNSO, ccNSO or the technical community disagree with the RZ-LGR due to its approach, scope or results, and it is not implemented
2. Due to the possible complexities in registration policy and operations, the GNSO or ccNSO community may not agree to the same entity constraint on s1 under TLD variants, so *s1.t1* and *s1.t1v1* allocated to different registrants
3. A large number of variant labels creates a backlash on use of IDNs or their variant labels, e.g. 5 TLD variants and 5 second level label variants create 25 variant domain names
4. GNSO or ccNSO or some ccTLDs do not agree with a consistent approach for implementing variant TLDs but the approach is implemented anyway, causing confusion for users

Summary of Major Risks

5. A court of competent jurisdiction rules against the variant labels created by the RZ-LGR and establishes an alternative definition of “variant” TLD
6. The “same entity” rule does not have a consistent approach, leading to differences among IDN implementations
7. Implementation of variant TLDs may exacerbate the Universal Acceptance challenge. Software vendors and tool providers reject IDNs (or IDNs that generate many variants) as too dangerous or difficult to implement
8. Community considers second-level variant management complex and out of scope of the ICANN organization’s mandate, so does not agree to implement it

Discussion on Questions for Public Comments

IDN Variant TLD Implementation

Public Comment Release

- Following documents released for [Public Comment](#) on 25 July, closed on 17 September 2018:

- [Executive Summary](#)
- [Motivation, Premises and Framework](#)
- [Recommendations and Analysis](#)
- [Rationale for RZ-LGR](#)
- [Risks and their Mitigation](#)
- [Appendices](#)
 - [Definitions](#)
 - [Use of ROID](#)
 - [Limiting Allocated Variant TLDs](#)

Name	Initials
Dot Trademark Holding Company	DTHC
KNET Co.	KNET
The gTLD Registries Stakeholder Group	RYSG
ICANN Business Constituency	BC
At-Large Advisory Committee	ALAC
SaudiNIC	SANIC
Wang Wei (Individual)	WW

Questions Asked from the Community

1. *The rationale for the RZ-LGR requires strictly adhering to the IDN variant label sets defined by the community through the RZ-LGR. Is this a reasonable pre-requisite for implementing IDN Variant TLDs?*

	Feedback
DTHC	RZ-LGR be strictly followed
KNET	applications complying with RZ-LGR shall get approval
RYSG	agrees with utilizing RZ-LGR as the only source to validate TLDs and calculate their variant labels (all TLDs, and not only IDN TLDs); urges the relevant panels to complete the RZ-LGR
BC	RZ-LGR is not just a reasonable prerequisite, it is absolutely essential; without LGR variant labels should not be defined
ALAC	RZ-LGR is the most appropriate way of arriving at IDN Variant Labels, and that strict adherence to this process is reasonable
SANIC	asks for three variants of IDN ccTLD, all of which are allocatable through RZ-LGR
WW	registries and registrars must operate strictly under the IDN variant recommendation/ regulation

Questions Asked from the Community

2. Do the proposed recommendations appropriately address the management and implementation of the IDN Variant TLDs? (a) Do any suggested recommendations need to be changed? Why? (b) Are any additional recommendations needed?

	Feedback
DTHC	(i) agrees to 3 core recommendations and considers 4 to 10 ... acceptable; (ii) additional second level policies left to the registries
KNET	(i) agrees top and second level variants allocated to same entity; (ii) allow registries to manage other aspects of second level labels
RYSG	(i) agrees with all recommendations except “same nameserver” requirement even if it is common practice; (ii) variant handling policies for the second level left to the registry; (iii) registries and registrars to agree on a common solution to same entity principle
BC	all the ten recommendations should be implemented
ALAC	agrees with all recommendations
WW	recommendations provide clear guidance on how to handle IDN variant TLDs and prevent confusion

Questions Asked from the Community

3. *Does the analysis suitably cover the impact of the recommendations on existing procedures for IDN ccTLDs and IDN gTLDs? Is there alternate analysis for certain cases? Are there any additional impacts on the procedures not identified?*

	Feedback
DTHC	agree to the analysis; however, (i) do not require the complete application procedure for IDN variant TLD as it will cost registries and ICANN; (ii) application be fast track on rolling basis
KNET	(i) IDN variant TLD should not be a separate TLD application; (ii) pay only fee for second level registration under primary TLD and not its variant TLD ... otherwise registrants may not activate same label under IDN variant TLD; (iii) application process be fast track
RYSG	(i) each variant TLD is a TLD, once it is delegated; (ii) need to adjust gTLD registry agreements in relevant areas; (iii) until mechanisms agreed by community restrictions on variant TLDs to apply
ALAC	agree that adequate analysis on the impact on procedures for IDN ccTLDs/gTLDs

Questions Asked from the Community

4. Which (if any) of the recommendations require policy consideration by GNSO and ccNSO, whereas the remaining would only have an impact on procedures?

	Feedback
DTHC	there is no need of policy consideration by GNSO or ccNSO for second level context
RYSG	develop a procedure to govern the allocation of IDN variant TLDs in coordination with the GNSO and ccNSO
BC	greatly complicated by split policy and procedures between ccNSO and GNSO ... need for alignment
ALAC	R2. Variants allocated to same entity or withheld (GNSO, CCNSO); R3. Second-level labels allocated to same entity (GNSO); R4, R5, R6, R7, R8 (GNSO and ccNSO); R9, R10 (GNSO and ccNSO)

Questions Asked from the Community

5. *To prevent the permutation issue which can be introduced by using variant labels, as identified by SSAC, how may the allocated IDN Variant TLD labels be limited? Are the mechanisms suggested in Appendix C appropriate? What other factors may also be relevant?*

	Feedback
DTHC	manage IDN variants strictly, as not every IDN variant TLD has practical value
KNET	strictly manage the IDN variant TLDs, and the IDN variant TLDs should be applied by each IDN registry based on actual conditions
BC	mechanisms in Appendix C quite extensive and promising but no list of heuristics can entirely resolve such issues ... should be a risk
ALAC	agree; for further reduction in allocatable labels, additional work may be required; similar efforts for managing the numerosity of IDN variant labels at second level
SANIC	agree; consider identifying variants needed for international reachability across different input devices for stability and reachability; identified with “activated” disposition

Questions Asked from the Community

6. Are the risks and their mitigation measures sufficiently comprehensive? Are there any additional risks? Should there be different or additional mitigation measures?

	Feedback
DTHC	risks and their mitigation measures are sufficiently comprehensive and there is no additional risk
BC	thorough but not complete - existence and quality of LGR panels will vary over time; and, lack of Infrastructure and tooling will be a challenge
ALAC	risk that certain procedures left to the discretion of registries, e.g. (i) for managing large number of valid, no incentive for registries to operationalize; (ii) also how to handle transitional exceptions that may arise?
WW	no tools to monitor registries and registrars and for end users to better understand variant labels

Next Steps

IDN Variant TLD Implementation

Next Steps Leading to the ICANN Board Decision

- ✓ **June 2018** - ICANN org presented the recommendations to ICANN Board
- ✓ **July 2018** - ICANN org released recommendations for public consultation
- ⊙ **October 2018 – ICANN org presents recommendations and analysis at ICANN63**
- ⊙ **January 2019** - Based on community consensus, ICANN org submits the final set of recommendations to ICANN Board for further consideration
- ⊙ **March 2019** – ICANN 64 Kobe, Japan - ICANN Board deliberates to adopt the recommendations to forward to ccNSO and GNSO for further consideration

Engage with ICANN



Thank You and Questions

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Appendix I: Rationale for RZ-LGR

IDN Variant TLD Implementation

Rationale for RZ-LGR

- ⦿ Overall structure of argument
 - IDNs and why top-level domains are special
 - ICANN's role in coordinating the DNS
 - Motivation of IDN variant TLDs
 - Requirements for compliance with standards
 - Expected user experience
 - The solution through Root Zone Label Generation Rules (RZ-LGR)
 - Generation Panel: Developing a script-specific LGR
 - Integration Panel: Creating a unified LGR
 - Public feedback on proposed LGR
 - IDN variant labels in ICANN's TLD allocation processes
 - IDN variant label analysis vs. string similarity
 - Conclusion

Rationale for RZ-LGR

- ⦿ IDNs and why top-level domains are special
 - Need to support users globally
 - Domain have rules – ASCII and IDNs
 - TLDs have are further limited - alphabetic – ASCII and IDNs
- ⦿ ICANN's role in coordinating the DNS
 - Coordinate and collaborate for allocation and assignment of names in the root zone
 - Facilitate openness, interoperability, resilience, security and/or stability
 - Use bottom-up consensus-based multistakeholder process

Rationale for RZ-LGR

- ⊙ Motivation of IDN variant TLDs
 - Undertook case studies as bottom-up mechanism to determine variant issues
 - Communities identified and technically distinct labels considered “same”
 - ICANN must have a way to validate IDN variant TLD labels
 - Address security issues and support usability needs
- ⊙ Requirements for compliance with standards
 - Unicode
 - Contains large number of characters and varied writing systems
 - Incorrect usage can expose programs or systems to possible security attacks
 - IDNA2008
 - Diversity of characters in a U-label may cause confusion
 - Additional restrictions are mandatory for IDN registries
 - For many scripts, the use of variant techniques ... helpful in reducing problems

Rationale for RZ-LGR

- ⊙ Expected user experience
 - User Experience Report
 - Principles of security, predictability, equivalency and consistency
 - Without LGR mechanism, variant determinations may not fulfill principles
 - SSAC
 - The root zone is necessarily shared by everyone on the Internet
 - Needs LGR that ensures minimal conflict, minimal risk to all users
 - Independent of the language or script and independent of gTLD or ccTLD
 - Minimal potential for incompatible change over time
- ⊙ The solution through Root Zone Label Generation Rules (RZ-LGR)
 - Bottom-up script-community based Generation Panels
 - Security and stability managed by expert Integration Panel
 - Open and transparent, with larger community engagement through public comment

Rationale for RZ-LGR

- ⦿ IDN variant labels in ICANN's TLD allocation processes
 - New gTLD: [Applicant Guidebook](#) allows to identify variant labels
 - informative only and will not imply any right or claim to the declared variant strings
 - IDN ccTLD:
 - [Fast Track Process](#) allows to identify variant labels
 - does not mean that the variant TLD will be delegated in the DNS root zone
 - [IDN ccTLD proposed policy](#) does not specifically cover variant labels
 - recommendations for variant IDN ccTLDs will be added at a later stage

Rationale for RZ-LGR

- ⊙ IDN variant label analysis vs. string similarity
 - Variant applicable to characters, defining “same” string based on script-community
 - String similarity applicable to strings (not characters) considered different but confusing
 - Variant labels take precedence over string similarity cases, where the two are overlapping

- ⊙ Conclusion
 - Adherence to a single set of rule is fundamental for the security and stability of individual cases and the whole system

Appendix II – Risks and Their Mitigation Measures

IDN Variant TLD Implementation

Risk 1 and Mitigation

- Risk

- Either GNSO, ccNSO or the technical community disagree with the RZ-LGR due to its approach, scope or results, and it is not implemented.

- Mitigation

- Segregate RZ-LGR as a separate pre-requisite step in variant TLD implementation to focus on agreement on RZ-LGR
- Communicate the details of RZ-LGR to the community
 - Technical rationale for single RZ-LGR
 - Openness, transparency and conservativeness of the process
 - Responsibility of community to develop the script proposals and maintain them
- Ask the community to adopt RZ-LGR in relevant procedures, as a follow up to [ICANN Board resolution](#) to implement the LGR Procedure
- ICANN Board to keep the ban on IDN variant TLD delegation until a unified solution is agreed

Risk 2 and Mitigation

⦿ Risk

- Due to the possible complexities involved, with implications and overhead on registration policy, operations, engineering and business, the GNSO or ccNSO community may not agree to the same entity constraint on s1 under TLD variants
- Domain names s1.t1 and s1.t1v1 allocated to different registrants causing misconnection

⦿ Mitigation

- Ask GNSO and ccNSO to make the requirement part of relevant policies and procedures
- For gTLDs, explicitly include the requirement in contracts for all IDN variant TLDs
- Add explicit language for applicants to agree in application form for IDN ccTLDs
- Reach out to ccTLDs and registrars to create awareness of implications
- Ask the constraint be included in the publicly posted registration policy

Risk 3 and Mitigation

⦿ Risk

- A large number of variant labels creates a backlash on use of IDNs or their variant labels
- For example, 5 TLD variants and 5 second level variants create 25 variant domain names

⦿ Mitigation

- Ask GNSO and ccNSO to develop conservative TLD policy based on the criteria by IIR:
 - Delegate variant labels based on: (i) justified need, (ii) demonstrated usability, and (iii) minimal impact on security and stability
- For TLDs with variant labels, ask GNSO and ccNSO to develop additional conservative policy for the second level to:
 - Minimize registration
 - Reduce automatic activation to minimal needed
 - Keep variant labels consistent and predictable under all variant TLDs

Risk 4 and Mitigation

- ⦿ Risk

- GNSO or ccNSO or some ccTLDs do not agree with a consistent approach across TLDs for implementing variant TLDs but the approach is implemented anyway
- Due to inconsistency in approach, some confusion for users occurs

- ⦿ Mitigation

- Clearly communicate that country codes and generic names are both TLDs, so same technical constraints applicable
- Review recommendations by a group of experts from SOs/ACs to develop a single collective assessment

Risk 5 and Mitigation

- ⊙ Risk

- A court of competent jurisdiction rules against the disposition of variant labels created by the RZ-LGR and separates two variants from one another, or establishes an alternative definition of “variant” TLD

- ⊙ Mitigation

- Clearly document and disseminate motivation, reasoning and contractual requirements which can be presented to a court of law in such a case
- Expand the scope of objection processes to include the variant TLD labels
- Allow an allocated label to be “blocked by policy” to allow separating a sub-set of allocatable labels from a variant TLD set and reserving them but preventing allocation to a different entity

Risk 6 and Mitigation

- ⦿ Risk
 - The “same entity” rule does not have a consistent approach, leading to differences among IDN implementations

- ⦿ Mitigation
 - Request community to identify and implement consistent technical mechanisms to determine the same entity for a registered label using registration data, e.g. by using Repository Object ID (ROID)

Risk 7 and Mitigation

- ⦿ Risk

- Implementation of variant TLDs may exacerbate the universal acceptance (UA) challenge. Software vendors and tool providers (e.g. web browser and mail user agent developers) reject IDNs (or IDNs that generate many variants) as too dangerous or difficult to implement

- ⦿ Mitigation

- Early outreach on the need, policy, implementation details and their implications on UA
- Minimize the number of variant TLDs delegated
- Address UA for variant TLDs after UA for IDNs has been addressed to reduce the burden

Risk 8 and Mitigation

- ⦿ Risk

- Community considers second-level variant management complex and out of scope of the ICANN org's mandate, so it does not agree to implement it and creates possibility of misconnection with second-level variant labels for end-users with associated security consequences

- ⦿ Mitigation

- Clearly communicate the benefits, intended primarily to address end-user confusion and security, and that these requirements follow from the updated IDN Implementation Guidelines
- Make part of contract for the gTLDs and include in Fast Track Process for the ccTLDs
- Request registries to ask registrars to maintain same-registrant constraint for a registration

Appendix III - Using ROID for IDN Variant Labels

IDN Variant TLD Implementation

Using ROID

- Recommendations for implementing IDN variant top-level domain (TLD) require “same entity” for *s1.t1*, *s1.t1v1*, *s1v1.t1*, *s1v1.t1v1*, ...
 - Same registry operator for TLD variants: *t1*, *t1v1*, ...
 - Same registrant for second-level label variants: *s1*, *s1v1*, ...
- What is Repository Object Identifier (ROID)
 - Globally unique identifier (RFC 5730): “LocalID-RepositoryID”, e.g.: 5372808-EXAMPLE
 - Repository may have multiple TLDs
 - Maintained by the registry with ROID suffix (RepositoryID) registered with IANA
 - Contractually required by new gTLDs and most legacy gTLDs
- Use ROID as a means to identify same registrant

Example of ROID

- **Query format:** whois EXAMPLE.TLD

- **Response format:**

Domain Name: EXAMPLE.TLD
Registry Domain ID: D1234567-EXAMPLE
Registrar WHOIS Server: whois.example-registrar.tld
Registrar URL: <http://www.example-registrar.tld>
Updated Date: 2009-05-29T20:13:00Z
Creation Date: 2000-10-08T00:45:00Z
Registry Expiry Date: 2010-10-08T00:44:59Z
Registrar Registration Expiration Date: 2010-10-08T00:44:59Z
Registrar: EXAMPLE REGISTRAR LLC
Registrar IANA ID: 5555555
Registrar Abuse Contact Email: email@registrar.tld
Registrar Abuse Contact Phone: +1.1235551234
Reseller: EXAMPLE RESELLER1
Domain Status: clientDeleteProhibited <https://icann.org/epp#clientDeleteProhibited>
Domain Status: clientRenewProhibited <https://icann.org/epp#clientRenewProhibited>
Domain Status: clientTransferProhibited <https://icann.org/epp#clientTransferProhibited>
Registry Registrant ID: 5372808-EXAMPLE
Registrant Name: EXAMPLE REGISTRANT
Registrant Organization: EXAMPLE ORGANIZATION
Registrant Street: 123 EXAMPLE STREET
Registrant City: ANYTOWN
Registrant State/Province: AP
Registrant Postal Code: A1A1A16
Registrant Country: AA
Registrant Phone: +1.5555551212
Registrant Phone Ext: 12347
Registrant Fax: +1.5555551213
Registrant Fax Ext: 4321
Registrant Email: EMAIL@EXAMPLE.TLD
Registry Admin ID: 5372809-EXAMPLE
Admin Name: EXAMPLE REGISTRANT ADMINISTRATIVE

- Admin Organization: EXAMPLE REGISTRANT ORGANIZATION
Admin Street: 123 EXAMPLE STREET
Admin City: ANYTOWN
Admin State/Province: AP
Admin Postal Code: A1A1A1
Admin Country: AA
Admin Phone: +1.5555551212
Admin Phone Ext: 1234
Admin Fax: +1.5555551213
Admin Fax Ext: 1234
Admin Email: EMAIL@EXAMPLE.TLD
Registry Tech ID: 5372811-EXAMPLE
Tech Name: EXAMPLE REGISTRANT TECHNICAL
Tech Organization: EXAMPLE REGISTRANT LLC
Tech Street: 123 EXAMPLE STREET
Tech City: ANYTOWN
Tech State/Province: AP
Tech Postal Code: A1A1A1
Tech Country: AA
Tech Phone: +1.1235551234
Tech Phone Ext: 1234
Tech Fax: +1.5555551213
Tech Fax Ext: 93
Tech Email: EMAIL@EXAMPLE.TLD
Name Server: NS01.EXAMPLE-REGISTRAR.TLD
Name Server: NS02.EXAMPLE-REGISTRAR.TLD
DNSSEC: signedDelegation
URL of the ICANN Whois Inaccuracy Complaint Form: <https://www.icann.org/wicf/>
>>> Last update of WHOIS database: 2009-05-29T20:15:00Z <<<

Note: "EXAMPLE" represents one or more TLDs.

Appendix IV - Limiting IDN Variant Domain Names

IDN Variant TLD Implementation

Problem and Advice by SSAC

- ⦿ Numerous variant labels may be created using IDN tables
 - ابو ظبي (Abu Dhabi) gTLD has 80 labels in its variant set
 - پاکستان (Pakistan) ccTLD has 1200 labels in its variant set
- ⦿ SSAC notes in Recommendation 14 of SAC060:
 - Variants introduce a permutation issue both at the top level as well as with combinations of top level and second level
- ⦿ SSAC cautions:
 - Such large number of variant strings presents challenges for the management of variant domains at the registry, the registrar and registrant levels
- ⦿ SSAC advises:
 - ICANN should ensure that the number of strings that are activated is as small as possible

Applicable Stages for Variant Label Reduction

- ⦿ Top level label
- ⦿ Second level label
- ⦿ Labels at additional levels – beyond ICANN's ambit

- ⦿ Domain Name – using combination of first x second levels

Causes of Over-Production of Variant Labels

- ⦿ Difference in level for analysis (at script level) vs. use (at language level)
- ⦿ Use of same script across different writing system (Han for Chinese, Japanese, Korean)
- ⦿ Usage conventions not completely restricted due to limitations or complexity
 - Arabic ʾ (U+0629) / Greek lower case σ (U+03C3) not allowed in word-final position
 - Structural rules for Abugida scripts engineered to reduce complexity
- ⦿ Meaninglessness of variant labels for ccTLDs, geo-names, brands, etc.

TLD Variant Labels – Reduction with Mechanical Rules

- ⊙ LGR Procedure uses dispositions to reduce labels
 - Maximize “blocked” labels to promote security by reducing user confusion
 - Minimize “allocatable” labels to ensure manageability
 - Algorithmic analysis is not optimal across all labels
 - ابو ظبي (Abu Dhabi) gTLD has 2/80 allocatable variant labels (usable = 2/2)
 - پاکستان (Pakistan) ccTLD has 5/1200 allocatable variant labels (usable = 2/5)
- ⊙ Mechanical rules can limit on high-level syntax but not semantics of the labels
- ⊙ Integration Panel notes:
 - Limitations in what can be done with mechanical application of rules
 - Having a label that is “allocatable” does not mean that it should be delegated
 - Other steps in process expected to shortlist labels for delegation
 - Such shortlisting is absolutely necessary

TLD Variant Labels – Considerations for Further Reduction

- ⦿ Specify label for a specific language community
- ⦿ Validate using the relevant language-based IDN table
 - Reference Second Level LGR
 - Relevant language-based second-level IDN table proposed by applicant
- ⦿ Determine if usable with generally available input method editors (IME)
- ⦿ Determine if follows the orthographic conventions of the script
- ⦿ Demonstrate if meaningful in relevant cases (country name for ccTLDs, etc.)
- ⦿ Consider additional constraints through policy or procedure
 - Propose a ceiling value per script
 - Take input from Generation Panels

Second Level Domain Labels – Considerations for Reduction

- ⦿ Encourage use of language-based IDN tables for registration
- ⦿ Determine if based on IDN tables which include
 - Code points on principles in RFC 6912
 - Variant code points with types to maximize blocked variant labels
 - Label-level rules to further reduce the allocatable variant labels
- ⦿ Block variant labels not contained in a single language-based IDN table
- ⦿ Minimize second-level labels in cases of free or automatic activation
- ⦿ Consider additional policy to propose a ceiling value

Domain Names – Considerations for Reduction

- ⦿ Consider additional constraints when combining top and second level variant labels
- ⦿ Encourage to have a consistent top-level and second-level policy
 - Discourage script mixing across labels as it requires switching of IME
 - Additional rules for consistency across levels, e.g. SC.SC or TC.TC for Chinese
- ⦿ Consider additional policy to propose a ceiling value
- ⦿ Include such recommendations for second level in IDN Implementation Guidelines
- ⦿ Promote similar practices for the third and other levels, as applicable