IDN Program Update

ICANN 60
1 November 2017
Overview of Session Presentations

- IDN Program Overview and Progress - Sarmad Hussain
- Update by Integration Panel - Marc Blanchet
- Update on IDN Implementation Guidelines - IDN Guidelines WG
- Community Updates
  - Cyrillic GP Update - Dušan Stojičević
  - Latin GP Update - Mirjana Tasić
  - Neo-Brahmi GP Update - Ajay Data
- Q/A
IDN Program Overview and Progress

Sarmad Hussain
Director, IDN Programs
Overview

- IDNs at Top Level
  - IDN TLD Program
    - Root Zone Label Generation Rules (RZ-LGR)
    - LGR Toolset
    - IDN Variant TLD Implementation
      - IDN ccTLD Fast Track Process
- IDNs at Second Level for gTLDs
  - IDN Implementation Guidelines
  - Reference Second Level LGRs
- Community Outreach and Involvement
Root Zone Label Generation Rules (RZ-LGR)

- IDNA2008 expects registries at all levels, including the top-level, will reduce opportunities for confusion by, for example, restricting characters or using variant techniques
  - RZ-LGR basis for such mechanism for the Root Zone
- RZ-LGR aims to:
  - Support IDN TLDs in scripts used by communities globally
  - Provide a secure and stable definition for valid IDN TLDs
  - Determine variant labels of IDN TLDs
RZ-LGR Process

- One Generation Panel per writing system (script)

Generation Panel 1

Generation Panel 2

Generation Panel 3

Integration Panel

RZ- LGR

Script 1
Script 2
Etcetera

Needs more work
Status of Generation Panels (GPs)

28+ Scripts
19+ GPs

Other:
- Hebrew
- Sinhala
- Thaana
- Tibetan
Status of RZ-LGR

RZ-LGR-2 Summary

- Arabic, Ethiopian, Georgian, Khmer, Lao and Thai scripts integrated
- Armenian finalized – to be integrated after LGRs of related scripts received
- Available at www.icann.org/idn
LGR Toolset (beta)

- Label Generation Rulesets (LGRs) used to generate domain name labels, as specified in RFC 7940

- LGR Toolset currently allows for the following:
  - **Create** single LGR or merge multiple LGRs
  - **View** LGR in XML form or user friendly HTML form
  - **Use** a LGR to validate a label and determine its variant labels
  - **Manage** LGRs, by comparing or combining them
  - **Review** impact of a new or a revised LGR on existing labels

- Online beta deployment at: [https://lgrtool.icann.org/](https://lgrtool.icann.org/)

- Open source package(s) released with BSD license
  - Released at github: lgr-core, lgr-django, munidata

- [User guide](#) available for further details
Pre-Requisite for IDN Variant TLD Implementation

- Update relevant procedures to incorporate Root Zone Label Generation Rules (RZ-LGR) cohesively across IDN ccTLDs and IDN gTLDs

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**Applied for TLD:** t1

**Existing TLD:** t1

**RZ-LGR**

**LGR TOOL**

- **Ethiopic ኢትዮጵያ**
- **Arabic العربية**
- **Thai ไทย**
- ...28 scripts

**SECURE AND STABLE RESULTS:**

- **INVALID TLD LABEL**
- **VALID TLD LABEL**
  - **ALL VARIANTS:** {t1v1, t1v2, t1v3, t1v4}
- **ALLOCATABLE**
- **BLOCKED**
IDN Country Code Top-Level Domains

ccTLDs: 58 for 40*

* Successfully evaluated IDN ccTLDs for total countries and territories
IDN ccTLD Fast Track Process

- Launched in late 2009
  - 58 IDN ccTLDs evaluated representing 40 countries/territories
  - 56 IDN ccTLDs delegated representing 38 countries/territories
  - Requests cover 33 languages in 19 scripts for

- Currently under review
  - Public comment in Jan 2015 raised issues with second similarity review process (EPSRP)
  - Board resolution in June 2015 to review EPSRP
  - ccNSO formed Working Group (WG) on EPSRP
  - Public comment in July 2016 on updated EPSRP guidelines
  - Final report published, incorporating feedback and discussion
  - ccNSO adopted the final report by WG on EPSRP
  - Joint ccNSO SSAC Response to ICANN Board
Reference Second Level IDN Tables

- Reference IDN tables in LGR format in RFC 7940
- Developed using Guidelines, vetted for security and stability
- Finalized after a public comment process
- Can be referred to, as registries enhance IDN implementations
- Currently 27 LGRs published
  - Latin: Bosnian, Danish, English, Finnish, French, German, Hungarian, Icelandic, Italian, Latvian, Lithuanian, Norwegian, Polish, Portuguese, Spanish, Swedish
  - Cyrillic: Belarusian, Bosnian, Bulgarian, Macedonian, Montenegrin, Russian, Serbian, Ukrainian
  - Mixed scripts: Korean
  - Others: Chinese, Hebrew
Communication and Outreach Efforts

- IDN web pages at icann.org/idn
- IDN Program sessions at ICANN meetings
- IDN Program updates to SOs/ACs at ICANN meetings

- Direct outreach
  - Africa Internet Summit, Jun 2017, Nairobi
  - DNS Forum, Jul 2017, Tanzania
  - APrIGF, Jul 2017, Bangkok
  - PKSIG, Aug 2017, Pakistan
  - APTLD, Sep 2017, Georgia

- IDN community wiki pages
- IDN mailing lists
  - {vip, lgr, ArabicGP, ArmenianGP, ChineseGP, …}@icann.org
Thank You

- For information on IDN Program projects, please visit: [www.icann.org/idn](http://www.icann.org/idn)

- For queries regarding the IDN Program, please email: [IDNProgram@icann.org](mailto:IDNProgram@icann.org)
Update by Integration Panel

Marc Blanchet
Integration Panel
Integration Panel Scope

“The Integration Panel is a panel of independent experts tasked with reviewing proposals presented by the Generation Panels and, if accepted, integrating them into a consistent set of Label Generation Rules for the Root Zone. The decisions by the integration Panel are required to be unanimous.”

(https://community.icann.org/display/croscomlgrprocedure/Integration+Panel)
IP Activities Summary – Since ICANN58

- Reviewed GP proposals
  - Latin

- Reviewed draft LGRs
  - Ethiopic
  - Thai
  - Japanese
  - Greek
  - Korean
  - Cyrillic
  - Devanagari

- Monitoring the need for new MSR (ver. 3) for additional scripts and issues related to Unicode 6.3
IP Activities Summary (cont.)

- Root Zone LGR-2 final integration and publication
  - Scripts included: Arabic (from RZ-LGR-1), Ethiopic, Georgian, Khmer, Lao, Thai
  - Postponed: Armenian (waiting for other related scripts to be submitted)
    - Iterative process
    - Multiple independent implementations were used to verify the content
  - Public comments on 6 June 2017
    - Support received from the community
    - Thanks to GP members who have verified
    - No issues found
  - Posted final 17 August 2017
IP Activities Summary (cont.)

- The Root Zone LGR is split into the following
  - One **Element LGR** per script
  - A single **Merged LGR**
  - Each of these files in XML (normative) and HTML (informative)
  - Plus documentation files (Overview and Code Tables)

- Use the LGR to verify a label (e.g. for a new application)
  - Validate the label
  - Generate allocatable variants
  - Check for collisions with delegated labels and their variants

- More details in the IDN RZ-LGR session
  - 15.15 – 16.45, 1 November 2017
IP Activities Summary (cont.)

- Updated documents
  - Guidelines for Developing Script-Specific Label Generation Rules for Integration into the Root Zone LGR
  - Considerations for Designing a Label Generation Ruleset for the Root Zone
  - Requirements for LGR Proposals from Generation Panels
  - Packaging the MSR and RZ-LGR
  - Out of Repertoire Variants in Root-Zone LGR and Proposals
  - Summary Guidelines
  - Whole Label Evaluation (WLE) Rules

- Variant Rules IP document replaced by RFC 8228 "Guidance on Designing Label Generation Rulesets (LGRs) Supporting Variant Labels"
  - The RFC is heavily based on the IP document
  - Independent effort
Thank You

- For queries regarding the Integration Panel, please email integrationpanel@icann.org

- For information on IDN Program projects, please visit www.icann.org/idn

- For queries regarding the IDN Program, please email IDNProgram@icann.org
Agenda

- Purpose and Status
- IDN Guidelines WG
- Scope and Topics
- Next Steps
Purpose

- **Background**
  - For second-level IDN registration policies and practices
  - To minimize the risk of cybersquatting and consumer confusion

- **Relevance**
  - **gTLD** – registries and registrars offering IDNs contractually bound
    - Required by most Registry Agreements
      - For example, new gTLD Registry Agreement: Specification 6 Section 1.4
    - Required by many Registrar Agreements
      - For example, 2013 Registrar Accreditation Agreement: Additional Registrar Operation Specification Clause 3
  - **IDN ccTLDs** – “expected” by the Fast Track Process
Status

- **Call for Community Experts** in July 2015
- Working Group formed in October 2015
- **Initial issues list** presented at ICANN 55
- **Interim draft** presented at ICANN 57
- **Final draft** for **Public Comment** released in March 2017
- Final draft for Public Comment presented at ICANN 58
- **Final draft** open for **Second Public Comment** until 10 December 2017
- Final draft for Second Public Comment being presented at ICANN 60
## IDN Guidelines WG (IDNGWG)

<table>
<thead>
<tr>
<th>Name</th>
<th>Organization</th>
<th>SO/AC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Satish Babu</td>
<td>ISOC-TRV</td>
<td>ALAC</td>
</tr>
<tr>
<td>Wael Nasr</td>
<td>TLDVILLA LLC</td>
<td>ALAC</td>
</tr>
<tr>
<td>Mats Dufberg</td>
<td>IIS</td>
<td>ccNSO</td>
</tr>
<tr>
<td>Pablo Rodríguez</td>
<td>Puerto Rico TLD</td>
<td>ccNSO</td>
</tr>
<tr>
<td>Edmon Chung</td>
<td>.asia</td>
<td>GNSO</td>
</tr>
<tr>
<td>Christian Dawson</td>
<td>i2Coalition</td>
<td>GNSO</td>
</tr>
<tr>
<td>Chris Dillon</td>
<td></td>
<td>GNSO</td>
</tr>
<tr>
<td>Kal Feher</td>
<td>Neustar</td>
<td>GNSO</td>
</tr>
<tr>
<td>Dennis Tan</td>
<td>Verisign</td>
<td>GNSO</td>
</tr>
<tr>
<td>Jian Zhang (until 7 April 2017)</td>
<td>KNET</td>
<td>GNSO</td>
</tr>
<tr>
<td>Patrik Fältström (will only review)</td>
<td></td>
<td>SSAC</td>
</tr>
</tbody>
</table>
Scope and Topics

- Scope limited to only the owner-name of the DNS records added to the zone file by the registration system
  - Any glue records and right-hand or target names excluded from scope

- Total of 7 topics with 19 guidelines and Additional Notes:
  - Transition (4)
  - Format of IDN Tables (2)
  - Consistency of IDN Tables and Practices (4)
  - IDN Variant Labels (3)
  - Similarity and Confusability of Labels (4)
  - Publishing IDN Registration Policy and Rules (1)
  - Terminology (1)
  - Additional Notes
Next Steps

- Finalize IDN Guidelines 4.0 after second public comment
- Submit final IDN Guidelines 4.0 for consideration by ICANN Board
Thank you

- For second public comment visit https://www.icann.org/public-comments/idn-guidelines-2017-10-19-en

- Visit IDN Guidelines wiki page for the list of WG members, email archive, call recordings and summaries: https://community.icann.org/display/IDN/IDN+implementation+Guidelines

- For feedback, email at: idngwg@icann.org or IDNProgram@icann.org
Cyrillic Generation Panel Update

Душан Стојичевић
Dusan Stojicevic
Chair, Cyrillic GP
Introduction – Script of LGR

- ISO 15924 Code: Cyrl
- ISO 15924 English Name: Cyrillic
- Latin transliteration of native script name: Cyrillic
- Maximal Starting Repertoire (MSR) version: MSR-2
Background on Script and Principle Languages

- Based on Early Cyrillic, from First Bulgarian Empire in 9th century AD
- Used for languages across eastern Europe and north and central Asia
- Basis of alphabets in languages, past and present, especially those of Slavic origin, and non-Slavic languages influenced by Russian
- Used by more than 250 million people as the official script for their languages, about half from Russia
- With the accession of Bulgaria to the European Union in 2007, Cyrillic became the third official script of the European Union, in addition to the Latin and Greek scripts
Background on Script and Principle Languages

- South Eastern part of Europe (Serbia, Montenegro, Macedonia, Bulgaria, Bosnia and Herzegovina)
- Eastern Europe (Belorussia, Ukraine, Russia)
- Central Asia (Kazakhstan, Turkmenistan, Uzbekistan, Kyrgyzstan, Tajikistan, Mongolia)

is the only official orthography

is the only official orthography, but others are recognized for national or regional languages
Methodology

- According to work plan in the proposal for Cyrillic script GP
- Initially language based repertoire compiled, based on second level IDN tables used by different ccTLDs, including the .su ccTLD which contained inventory for languages currently spoken in Russia
- Language repertoires collated in a face to face meeting in Istanbul on 25-26 Nov. 2016.
- Continued to use the mailing list to share and finalize documents
- Consulted with Integration Panel (IP), including on crucial query regarding inclusion of U+02BC MSR for Ukrainian and Belarusian
## Code Point Repertoire

86 code points recommended for inclusion

7 code points recommended for exclusion (shown in the table)

<table>
<thead>
<tr>
<th>#</th>
<th>Unico de CP</th>
<th>Glyph</th>
<th>Unico de Name</th>
<th>Lang. using CP</th>
<th>EGIDS value</th>
<th>Ref.</th>
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<tbody>
<tr>
<td>1</td>
<td>04EB</td>
<td>ô</td>
<td>CYRILLIC SMALL LETTER BARRED O WITH DIAERESIS</td>
<td>Khanty</td>
<td>Khanty 6b</td>
<td>Rule 6 <a href="http://www.omniglot.com/writing/khanty.htm">http://www.omniglot.com/writing/khanty.htm</a></td>
</tr>
<tr>
<td>2</td>
<td>04ED</td>
<td>ê</td>
<td>CYRILLIC SMALL LETTER E WITH DIAERESIS</td>
<td>Sami</td>
<td>Sami 8b</td>
<td>Rule 6</td>
</tr>
<tr>
<td>3</td>
<td>04DB</td>
<td>ø</td>
<td>CYRILLIC SMALL LETTER SCHWA WITH DIAERESIS</td>
<td>Khanty</td>
<td>Khanty 6b</td>
<td>Rule 6 <a href="http://www.omniglot.com/writing/khanty.htm">http://www.omniglot.com/writing/khanty.htm</a></td>
</tr>
<tr>
<td>4</td>
<td>04C2</td>
<td>þ</td>
<td>CYRILLIC SMALL LETTER ZHE WITH BREVE</td>
<td>Gagauz</td>
<td>Gagauz 5</td>
<td>Rule 5 <a href="http://www.omniglot.com/writing/gagauz.htm">http://www.omniglot.com/writing/gagauz.htm</a> Gagauz alphabet not in Cyrillic from 1996</td>
</tr>
<tr>
<td>5</td>
<td>04CC</td>
<td>ѱ</td>
<td>CYRILLIC SMALL LETTER KHAKASSIAN CHE</td>
<td>Khakas</td>
<td>Khakas 5</td>
<td>Rule 5 <a href="http://www.omniglot.com/writing/khakas.htm">http://www.omniglot.com/writing/khakas.htm</a></td>
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<tr>
<td>6</td>
<td>045D</td>
<td>ï</td>
<td>CYRILLIC SMALL LETTER I WITH GRAVE</td>
<td>Historical sign</td>
<td></td>
<td>Rule 6</td>
</tr>
<tr>
<td>7</td>
<td>0450</td>
<td>è</td>
<td>CYRILLIC SMALL LETTER IE WITH GRAVE</td>
<td>Stressed sign</td>
<td></td>
<td>Rule 6</td>
</tr>
</tbody>
</table>
Cyrillic Script Variants

- No variants in Cyrillic script
  - Some code points visually confusible
    - not considered as variants by the Cyrillic community
    - provide table of confusible code points, so organizations can use as needed
Cross-Script Variants

- Decided to limit these to homoglyphs
- Included code points which are homoglyphs in the lower case but not homoglyphs in the upper case
  - Only lower case because upper case disallowed in IDNA 2008
  - Decision made in consultation with IP (“the IP, at this point, does not require that upper case homoglyphs are included”)

- Cyrillic GP found cross-script variants with
  - Armenian
  - Greek
  - Latin

- Cyrillic GP did not find cross-script variants with Georgian
Cross-Script Variants - with Armenian Script

- Armenian GP indicates three (3) variants with Cyrillic script
- Opinion of Cyrillic GP that only two (2) homoglyphic variant
- Other one (1) not identical, so included in confusables table

<table>
<thead>
<tr>
<th>Armenian glyph</th>
<th>Armenian code point</th>
<th>Name</th>
<th>Cyrillic glyph</th>
<th>Cyrillic code point</th>
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</thead>
<tbody>
<tr>
<td>հ</td>
<td>0570</td>
<td>ARMENIAN SMALL LETTER HO</td>
<td>h</td>
<td>04BB</td>
</tr>
<tr>
<td>օ</td>
<td>0585</td>
<td>ARMENIAN SMALL LETTER OH</td>
<td>o</td>
<td>043E</td>
</tr>
</tbody>
</table>
Cyrillic has three (3) homoglyphic variants with Greek script

<table>
<thead>
<tr>
<th>Greek glyph</th>
<th>Greek code point</th>
<th>Name</th>
<th>Cyrillic glyph</th>
<th>Cyrillic code point</th>
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<tbody>
<tr>
<td>κ</td>
<td>03BA</td>
<td>GREEK SMALL LETTER KAPPA</td>
<td>κ</td>
<td>043A</td>
</tr>
<tr>
<td>ο</td>
<td>03BF</td>
<td>GREEK SMALL LETTER OOMICRON</td>
<td>ο</td>
<td>043E</td>
</tr>
<tr>
<td>φ</td>
<td>03C6</td>
<td>GREEK SMALL LETTER PHI</td>
<td>φ</td>
<td>0444</td>
</tr>
</tbody>
</table>
Cyrillic has following homoglyphic variants with Latin from MSR-2:
- Confusables listed separately

<table>
<thead>
<tr>
<th>Latin glyph</th>
<th>Latin code point</th>
<th>Cyrillic glyph</th>
<th>Cyrillic code point</th>
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</thead>
<tbody>
<tr>
<td>a</td>
<td>0061</td>
<td>a</td>
<td>0430</td>
</tr>
<tr>
<td>c</td>
<td>0063</td>
<td>c</td>
<td>0441</td>
</tr>
<tr>
<td>e</td>
<td>0065</td>
<td>e</td>
<td>0435</td>
</tr>
<tr>
<td>o</td>
<td>006F</td>
<td>o</td>
<td>043E</td>
</tr>
<tr>
<td>h</td>
<td>0068</td>
<td>h</td>
<td>04BB</td>
</tr>
<tr>
<td>i</td>
<td>0069</td>
<td>i</td>
<td>0456</td>
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<tr>
<td>j</td>
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<tr>
<td>ø</td>
<td>01DD</td>
<td>ø</td>
<td>04D9</td>
</tr>
<tr>
<td>æ</td>
<td>0259</td>
<td>æ</td>
<td></td>
</tr>
</tbody>
</table>
To Summarize

It took Cyrillic GP more than three years to finalize proposal. But, the work has been done according to the dates defined in original Working plan, with some small delays.
Next Steps

1. Very short term
   Celebrate actual end of the work with one dinner together

2. After public comment phase
   Finalize the LGR proposal to include community feedback

3. Long term phase
   Address new code points included in the MSR in the future
   o if needed in the Root Zone LGR, GP to re-convene and create additional proposal
### Members of Cyrillic GP

<table>
<thead>
<tr>
<th>Alex Khmyl (Belarus)</th>
<th>Nelly Stoyanova (Bulgaria)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alexei Sozonov (Russia)</td>
<td>Nodir Mirzoev (Tajikistan)</td>
</tr>
<tr>
<td>Almaz Bakenov (Kyrgyz Republic)</td>
<td>Oleksandr Tsaruk (Ukraine)</td>
</tr>
<tr>
<td>Daniel Kalchev (Bulgaria)</td>
<td>Pavel Gusev (Kazakhstan)</td>
</tr>
<tr>
<td><strong>Dmitry Belyavskiy (Russia)</strong></td>
<td>Predrag Lesic (Montenegro)</td>
</tr>
<tr>
<td>Dmitry Kohmanyuk (Ukraine)</td>
<td>Sanja Simonova (Macedonia)</td>
</tr>
<tr>
<td>Dušan Stojičević (Serbia, chair)</td>
<td><strong>Sergey Povalishev (Belarus)</strong></td>
</tr>
<tr>
<td>Enkhbold Gombo (Mongolia)</td>
<td>Tattu Mambetalieva (Kyrgyzstan)</td>
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<tr>
<td><strong>Iliya Bazlyankov (Bulgaria)</strong></td>
<td>Yashar Hajiyev (Azerbaijan)</td>
</tr>
<tr>
<td>Kadamjon Safiev (Tajikistan)</td>
<td>Yuliya Morenets (Russia)</td>
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<tr>
<td>Mirjana Tasić (Serbia)</td>
<td><strong>Yuriy Kargapolov (Ukraine)</strong></td>
</tr>
<tr>
<td>Nazgul Kurmanalieva (Kyrgyzstan)</td>
<td>Yuriy Honcharuk (Ukraine)</td>
</tr>
</tbody>
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Latin Generation Panel Overview

Mirjana Tasić
Latin GP Chair
Latin GP Overview - Introduction

1. Short History
2. Scope of Work
3. Members
4. Organization of Working Groups
5. Work Accomplished
6. Project Timeline
Latin GP Overview - Short History

- Summer 2016 - GP restarted with new call for volunteers
- Real work started October 2016
- GP proposal finalized and sent to ICANN at the beginning of May 2017
- GP seated on Monday, 15 May 2017
  - Proposal for Formation of Latin Generation Panel
The dark green areas show the countries where the Latin script is the sole main script. Light green shows countries where Latin co-exists with other scripts. Grey areas - Latin-script alphabets are sometimes extensively used in areas colored grey due to the use of unofficial second languages, such as French in Algeria and English in Egypt, and to Latin transliteration of the official script, such as pinyin in China or rōmaji in Japan.
Latin GP Overview – Scope of Work

- Maximal Starting Repertoire version 2 (MSR-2)
- Lowercase letters
- Unicode ranges
  - Controls and Basic Latin
  - Controls and Latin-1 Supplement
  - Latin Extended-A
  - Latin Extended-B
  - IPA Extensions
  - Combining Diacritical Marks
  - Combining Diacritical Marks Supplement
  - Latin Extended Additional
  - Latin Extended-C
- Non exhaustive list of 455 languages in scope
- Non exhaustive list of EGIDS 1-5 languages contains 300 languages
- Non exhaustive list of EGIDS 1-4 languages contains 180 languages
- Maximal Starting repertoire version 2 (MSR-2) shows 279 Latin script code points

Note: **EGIDS** stands for the Expanded Graded Intergenerational Disruption Scale. This is a tool that is used to measure the status of a language in terms of endangerment or development.
Latin GP Overview – Members

- 14 members, 3 observers
- Language representatives
  - Africa
  - Asia
  - Australia and Oceania
  - Europe
  - North America
- Diversity
  - Community Representatives
  - Linguistic Experts
  - Registry/Registrar Experts
  - Policy Experts
  - Technical Community, DNS Experts
  - IDNA/Unicode Experts
Latin GP Overview - Challenges and Solutions

- Challenges
  - Many languages
  - Many code points to process
  - Not enough members to cover workload

- Solutions
  - Process languages with EGIDS=1-4 first (180)
  - Consider processing languages with EGIDS=5 (120)
  - Define simple procedure for developing Latin script repertoire
  - Workload divided in two groups
    - Repertoire Working Group
    - Variant Working Group
Latin GP Overview – Organization of Working Groups

- Repertoire Working group
  - 10 members
  - Developing Principles for Inclusion and Exclusion of Code Points in Latin Script for the Root Zone LGR
  - Processing Languages to build the repertoire

- Variant Working Group
  - 4 members
  - Developing Principles for Analysis of Variants in the Latin Script for the Root Zone LGR
  - Identifying variants
Latin GP Overview – Work Accomplished

- Developing Repertoire
  - 180 of 180 EGIDS 1-4 languages processed
  - 114 of 279 MSR-2 code points attested
  - 38 non-MSR-2 code points or code point sequences detected

- Developing Variants
  - Variants with Cyrillic script - work in progress
  - Variants with Greek script - to be done
  - Variants with any other script - to be done
  - In-script variants - to be done

Note: Figures as of 24 October 2017
Latin GP Overview – Project Timeline

Developing Principles
Developing Code points
Integration of different groups work products
Discuss WLE Rules needed for Latin Script LGR
Prepare Latin Script LGR Proposal for Public Comment
Submission to ICANN

To Summarize: work started on 15 May 2017
14 months is estimated time for project duration
Neo-Brahmi General Panel (NBGP)

Ajay Data, Mahesh Kulkarni, Udaya Narayana Singh
NBGP Co-Chairs
Agenda

1. Introducing NBGP: Scope: Scripts, Languages, Geo Coverage
2. Akshara System and its Impact
3. NBGP Members and Expertise
4. Efforts and Progress so far - Timeline
5. Future Plan of Action
6. Get Connected
1

Introduction to NBGP, its Scope, Scripts, Languages, and Geo-Coverage
Introduction
Generate proposals for script specific LGRs, based on community expertise and requirements. Ensure Global Acceptability of Neo-Brahmi Script based language IDN’S and variants.

Scope
Devanagari, Gujarati, Bengali, Gurmukhi/Punjabi, Odia/Oriya, Tamil, Kannada, Telugu and Malayalam.

Geo Coverage
India, Sri Lanka, Nepal, Bangladesh

Coverage
Devanagari under the Brāhmī family is used by 11 out of 22 scheduled languages of India - Bodo, Dogri, Hindi, Kashmiri, Konkani, Maithili, Marathi, Nepali, Sanskrit, Santhali and Sindhi.

Why Devanagari
Devanagari is also used by 45 other languages in India, and is being adopted by new literary tribal languages of Arunachal Pradesh, Bihar and Andaman & Nicobar Islands. It is also popularly used in Fiji, Mauritius, Malaysia, England, Canada, South Africa, and Indonesia.
Each consonant under Devanagari has an implicit schwa /ə/ added to it. In traditional phono-graphic classification, the consonants are categorized in terms of FIVE “Varga” or Groups – made up of both Place and Manner of Articulation. In addition, there are a few under the Non-Varga group (includes nine).

Each Varga, which corresponds to Stops, contains five consonants classified as per their phonetic properties.

The first four consonants are classified on the basis of Voicing and Aspiration and the last one is the corresponding nasal for each category.

All consonants have an implicit vowel sign (schwa) within them. A special sign is needed to denote that this implicit vowel is stripped off. This is known as the Halanta ( SMB) – the Vowel-killer.
The Halanta thus joins two consonants and creates conjuncts, which can be generally from 2 to 4 consonant combinations. In rare cases it can join up to 5 consonants.

Each vowel is pronounced and symbolically represented independently.

To indicate a Vowel sound other than the implicit one, a vowel modifier (Matra) is attached to the consonant. Since the consonant has a built-in schwa, there are equivalent Matras for all vowels excepting the य.

Hindi, Marathi, and Konkani also admit two more vowels and their Matras given at the end.

Then there are vowel modifiers, Anusvara (homo-organic nasal) & Chandrabindu (or nasalization marker), Visarga as well as ‘Nukta’ for Perso-Arabic words.
### Akshara System - Binds Brahmi Based Scripts (Cont.)

#### Consonants in "Varga"

<table>
<thead>
<tr>
<th>Unvoiced</th>
<th>Voiced</th>
<th>Nasal</th>
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<tbody>
<tr>
<td>- Asp</td>
<td>+Asp</td>
<td>-Asp</td>
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<tr>
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<td>+Asp</td>
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</tbody>
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- **Velar**
  - क
  - ख
  - ग
  - घ
  - ङ

- **Palatal**
  - च
  - छ
  - ज
  - झ
  - ञ

- **Retroflex**
  - ट
  - ठ
  - ड
  - ढ
  - ण

- **Dental**
  - त
  - थ
  - द
  - ध
  - न

- **Bi-labial**
  - प
  - फ
  - ब
  - भ
  - म

#### Vowels

<table>
<thead>
<tr>
<th>अ</th>
<th>आ</th>
<th>इ</th>
<th>ई</th>
<th>उ</th>
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<th>ए</th>
<th>ऐ</th>
<th>ओ</th>
<th>औ</th>
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#### Matras

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<th>ि</th>
<th>ः</th>
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<th>ः</th>
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<th>ौ</th>
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</tbody>
</table>

- **Vowel Signs / Matras (M):**
  - ा ि ः ो घों

- **Vowel modifiers (D):**

- **Halant (H):**

- **Nukta (N):**
3

NBGP - Members
Members

Co-Chairs
Dr. Ajay Data
Mahesh Kulkarni &
Prof. Udaya Narayana Singh

Key Members
Akshat S. Joshi
Jay Paudyal
Harish Choudhary

Key Members
Raiomond Doctor
Bal Krishan Bal
Gurpreet Lehal

Members
Chitrita Chatterjee
U.B Pavanaja
Hempal
Ganesh Murmu

Members
Shubham Sharan
Rajiv Kumar
Abhijit Dutta
Anupam Agrawal
+++++

ICANN
Sarmad Hussain
Samiran Gupta
Pitinan
Kooarmornpatana
4
Timeline
Timeline

May 2010: IDN ccTLD
Aug 2014: ccTLD .bharat
May 2015: NBGP Seated
Oct 2016: LGR draft gets Created
May 2017: F2F meeting in Nepal
Aug 2017: IP feedback and Draft LGR is getting prepared

Summary
Draft LGR for Devanagari is at final stages to be released for public comments.
Future Plan of Action
Future Timeline

Release of Devanagari LGR for Public Comments

Review of LGR for Other Scripts

LGR Drafts for Other Scripts get Created

Final Versions of LGR for Other Scripts

IP Feedback on LGRs Received

Release of all Neo-Brahmi LGRs for Public Comments

Important Follow up

Draft LGR for Devanagari is at final stages to be released for public comments.
Thank you
Connect with NBGP
NeobrahmiGP@icann.org
Engage with ICANN and IDN Program

Thank You and Questions
Reach us at: IDNProgram@icann.org
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