Internationalized Domain Names (IDN) and the Role of Academia
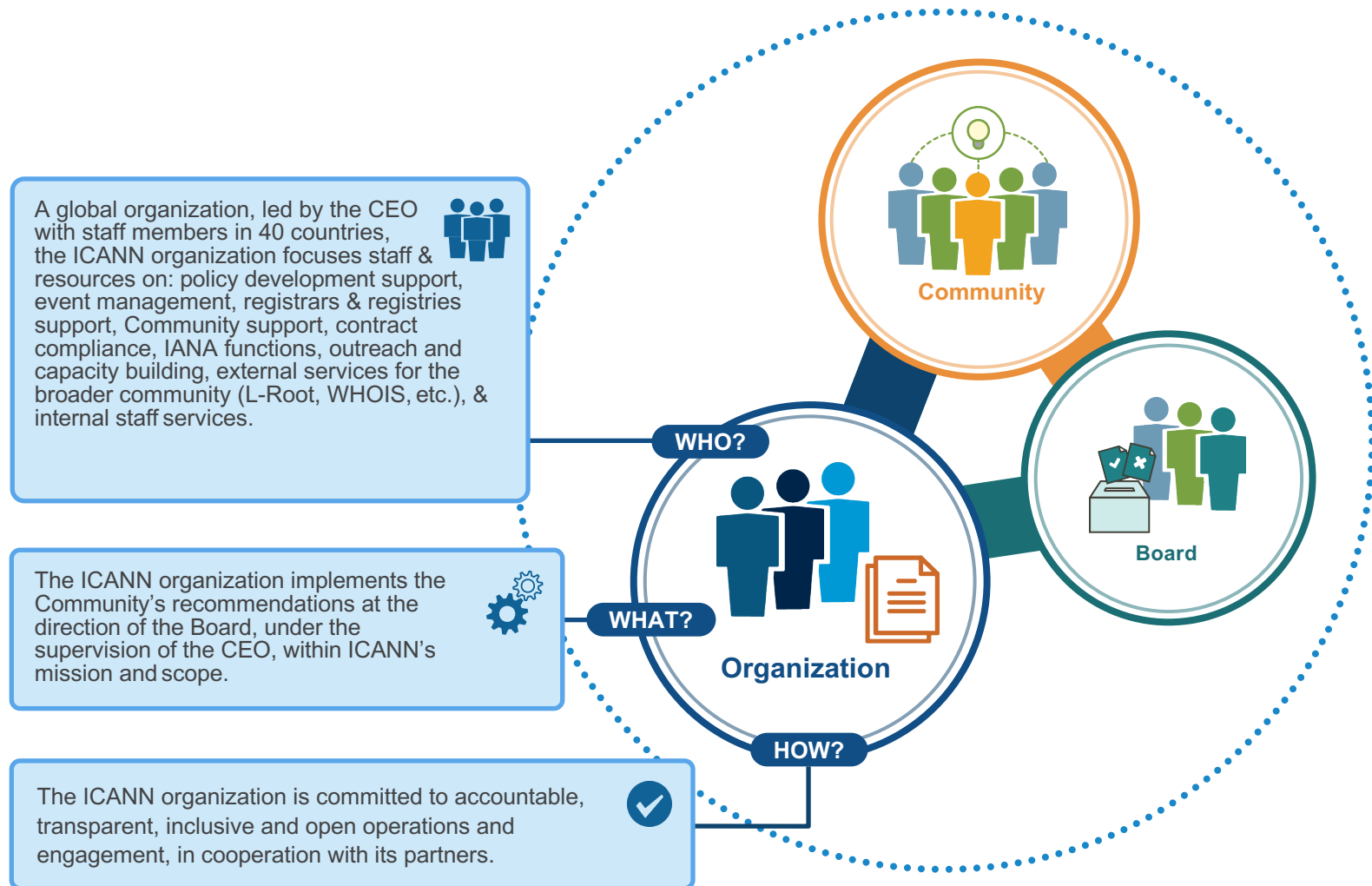
l WACREN 2017 l March 2017

The ICANN Organization

A global organization, led by the CEO with staff members in 40 countries, the ICANN organization focuses staff & resources on: policy development support, event management, registrars & registries support, Community support, contract compliance, IANA functions, outreach and capacity building, external services for the broader community (L-Root, WHOIS, etc.), & internal staff services.

WHO?

The ICANN organization implements the Community's recommendations at the direction of the Board, under the supervision of the CEO, within ICANN's mission and scope.

WHAT?

The ICANN organization is committed to accountable, transparent, inclusive and open operations and engagement, in cooperation with its partners.

HOW?

Community

Board

Organization

Some of what ICANN organization does

Domain Name System

The domain name system provides addressing for the Internet so people can find websites, send email, and other tasks. The ICANN organization also supports the stability of the DNS through its work, and also its contracts and accreditations.

Policy Development

The ICANN organization supports inclusive, open and transparent multi-stakeholder bottom-up consensus based policy development mechanisms.

L-Root

The ICANN organization hosts and supports one of the 13 L-Root infrastructures. At over 150 locations worldwide, L-Root is critical to infrastructure that helps reduce latency and improves performance of the DNS.

Support and Grow the Community

The ICANN organization engages, nurtures and supports interested stakeholders for active and meaningful participation in ICANN. ICANN connects with stakeholders through outreach and engagement, and meeting & event support.

Generic Top-Level Domains

The ICANN organization manages the domain name system's top-level domains. ICANN helps promotes competition and choice in the gTLD marketplace.
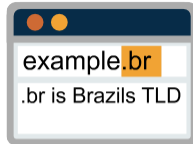
Country Code Top-Level Domains

The ICANN organization delegates top-level domains identified with a country code. Management is done by national ccTLD operators.
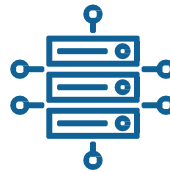
Protocol Parameters

The ICANN organization, in coordination with the Internet Engineering Task Force, manages protocol parameters by maintaining many of the codes and numbers used in Internet protocols.

Internet Protocol Addresses

By serving as the central repository for IP addresses, the ICANN organization helps coordinate how IP addresses are supplied – preventing repetition and conflicts.

Root Zone Management

The ICANN organization helps manage the root zone through the IANA functions, which involves assigning the operators of top-level domains, such as .bank and .com, and maintaining the technical and administrative details.

IANA Functions

ASCII and Internationalized Domain Names

www.cafe.com   ምሳሌ.ኢትዮጵያ

Third Level Domain

Second Level Domain

Top Level Domain (TLD)

IDN Second Level Domain

IDN Top Level Domain (TLD)

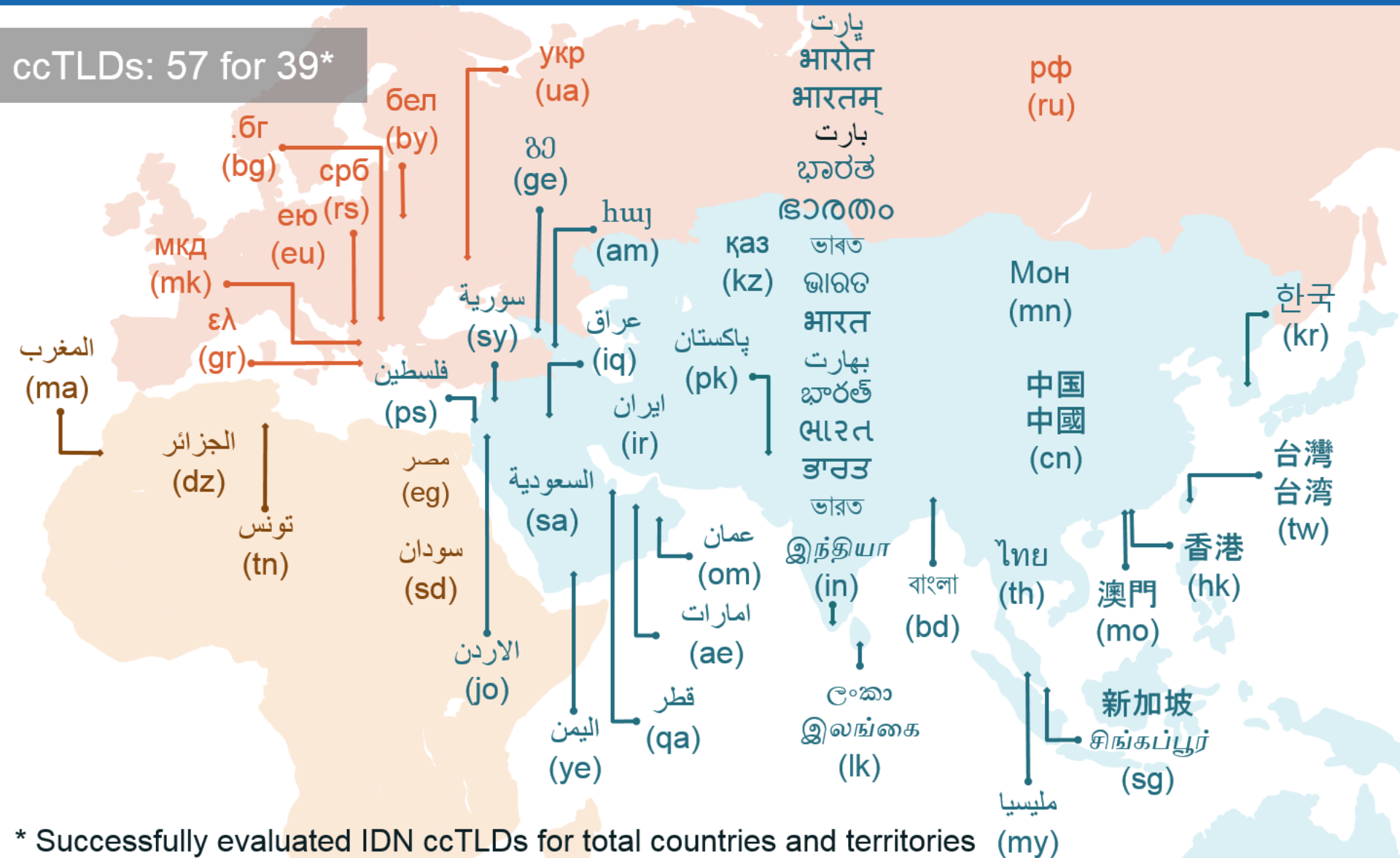**Forming ASCII Labels**
Use only Letters
- Letters [a-z]

Label length = 63

Syntax of IDN TLD
U-Label, constrained by the "letter" principle

- *What is a "letter" in a script?*
- *Are all "letters" unique in a script?*

IDN Country Code Top-Level Domains

ccTLDs: 57 for 39*

* Successfully evaluated IDN ccTLDs for total countries and territories

5

Root Zone LGR Procedure

Generation Panels

o Generate proposals for script specific LGRs, based on community expertise and requirements

Integration Panel

o Integrates them into common Root Zone LGR while minimizing the risk
to Root Zone as shared resource

Label Generation Rules (LGR)

o Which labels are permissible
o Which variant labels exist
o Which variant labels may be allocated

One Generation Panel per writing system (script)

Generation Panel 1

Generation Panel 2

Integration Panel

Generation Panel 3

Etcetera

Needs more work

Rules
Panel 1
Panel 2
Etcetera

http://....TLD
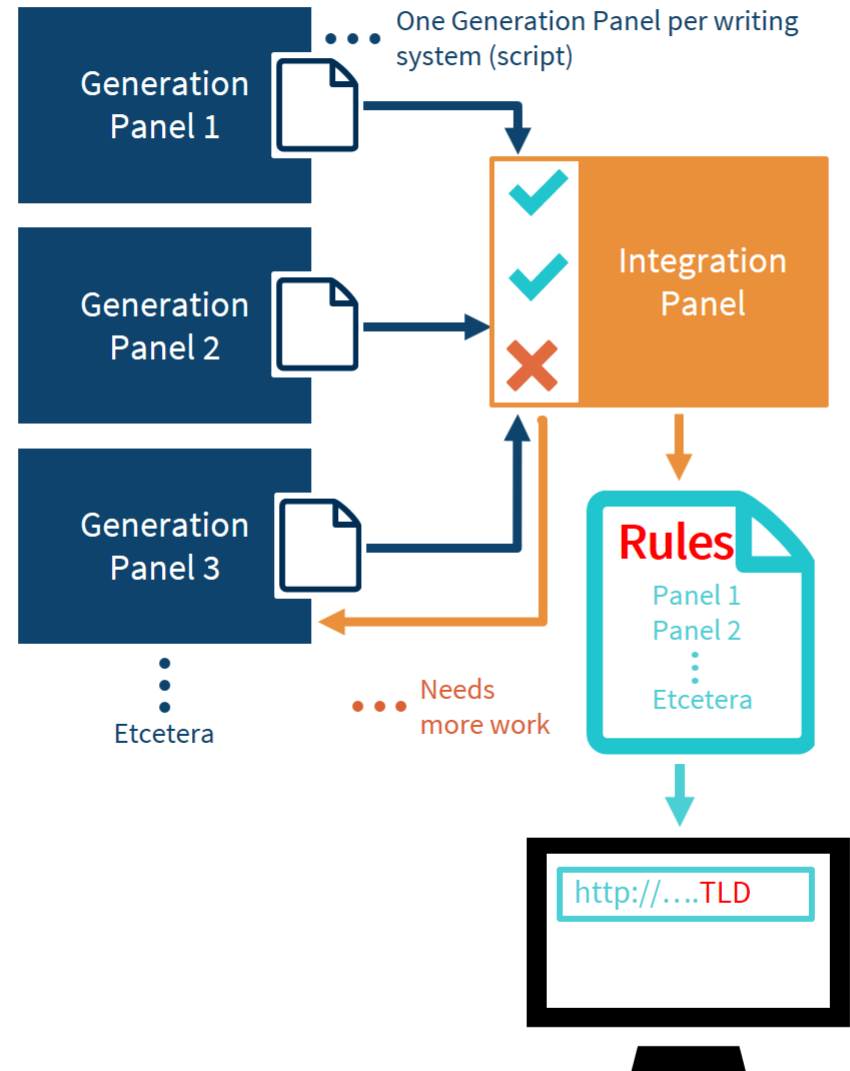
LGR Toolset (beta)

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

- LGR Toolset allows for the following:
  - Create a LGR
  - Use a LGR to validate label and variants
  - Manage LGRs

- Online beta deployment
  - Visit https://lgrtool.icann.org/

- Open source package(s) release
  - Released at github: lgr-core, lgr-django, munidata

- User guide available for further details

Domain or label to test

آزمایشی

LGR Tool

Code Point Rules

Variant Rules

WLE Rules

Machine-readable
Label Generation Ruleset

آزمایشی
آزمایشی

ALLOCATE

BLOCK

System returns a list of variants based on the rules
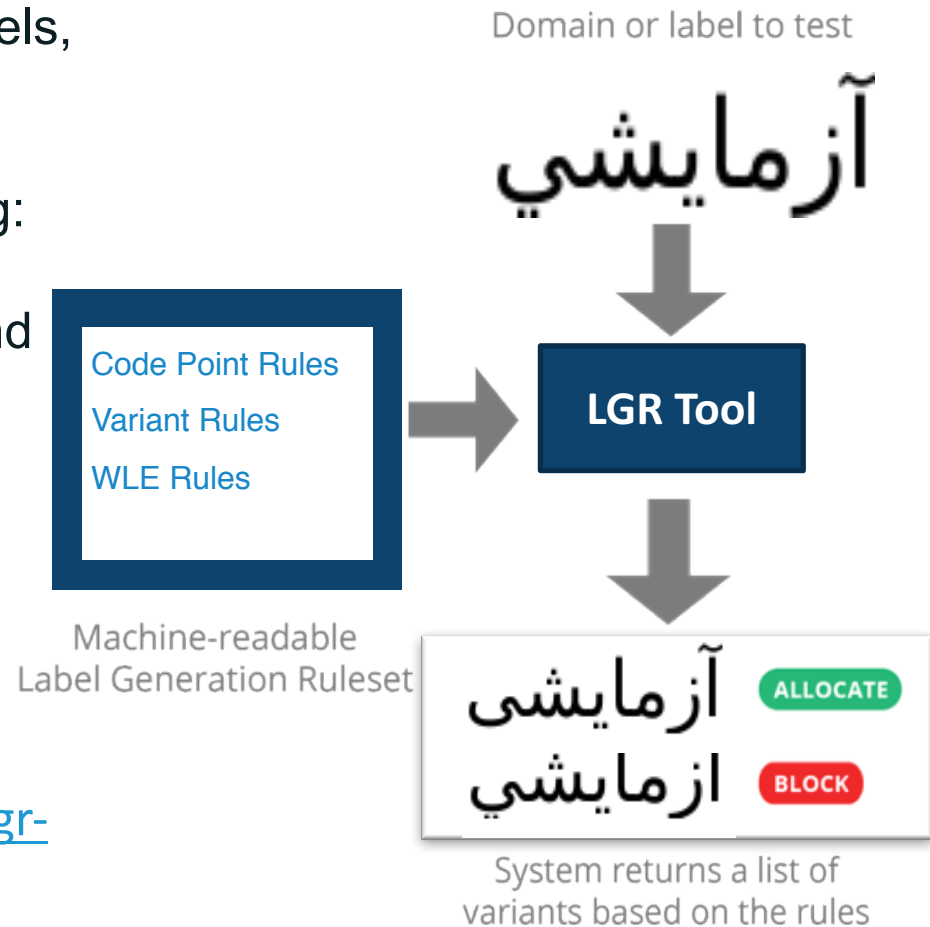
Status of LGR Development
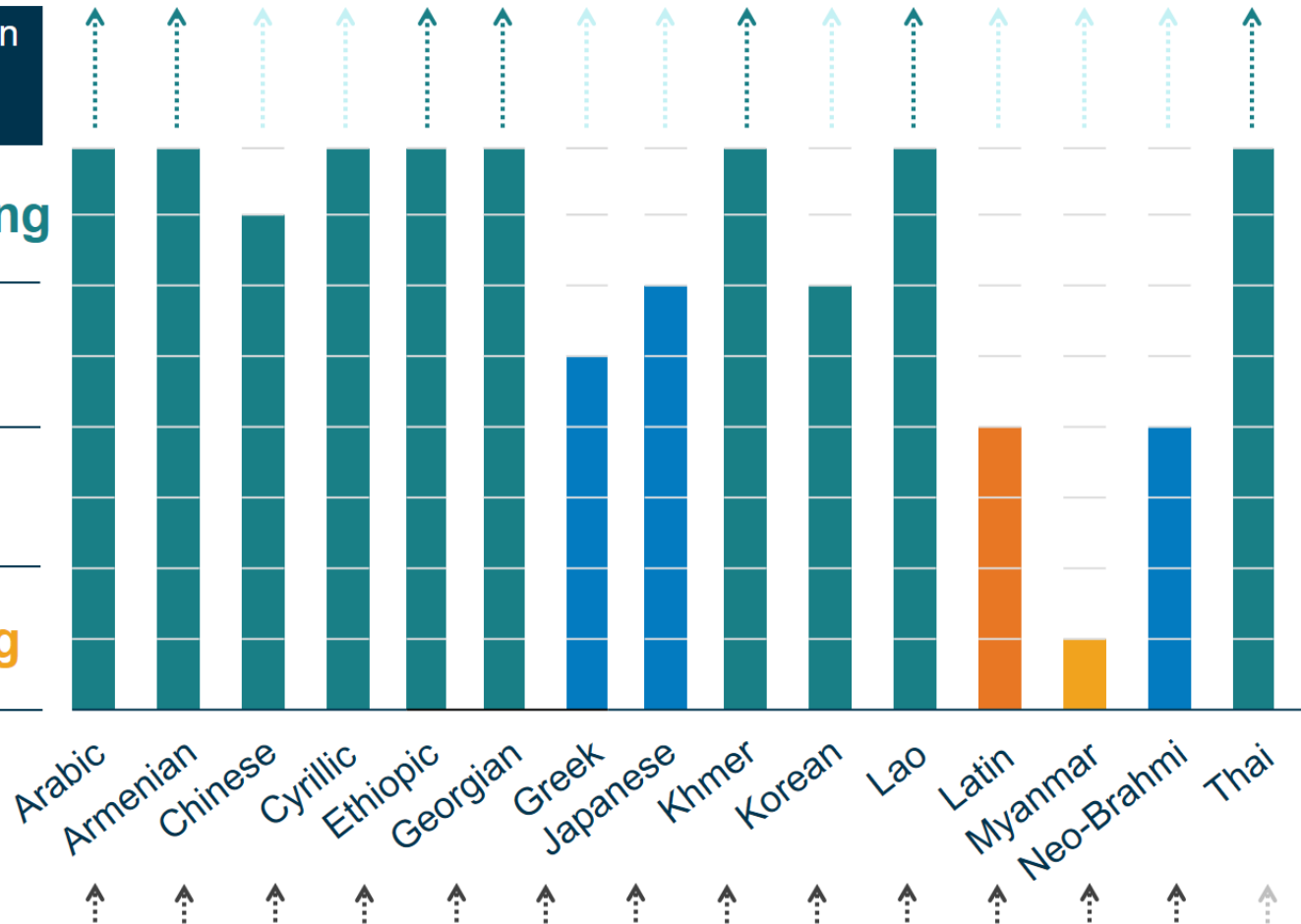
Linguistic Diversity in Africa

- ◉ More than 3000 languages in Africa

- ◉ Writing systems include:

  - ○ Ge'ez (Ethiopic)

  - ○ N'ko

  - ○ Tifinagh

  - ○ Vai

  - ○ …

  - ○ Arabic (introduced)

  - ○ Latin (introduced)

የሰው : ልጅ : ሁሉ : ሲወለድ : ነጻና : በክብርና : በመብትም : እኩልነት : ያለው : ነው : የተፈጥሮ : የማስተዋልና : ሕሊናው : ስላለው : አንዱ : ሌላውን : በወንድማማችነት : መንፈስ : መመልከት : የገባዋል ።

𞤁𞤛𞤘𞤭 𞥑𞥑�'𞤵 𞤤 𞤻 𞤉�'𞤵 𞤔𞤉𞤒 𞥑𞥑�'𞤵 𞤤 𞤍𞤭 𞤁𞤫𞤲𞤤 𞤤𞤭𞤴 𞤄𞤺𞤴𞤶 𞤘, 𞤁𞤼𞤬 𞤖𞤾𞤳 𞤔𞤗�'𞤵 𞤘𞤗𞤿𞤘 𞤍𞤭 𞤖𞤘 𞤁𞤫𞤲𞤤 𞤄𞤴𞤍𞤭. 𞤁𞤫𞤨 𞤄𞤶 𞤯𞤘𞤲𞤤 𞤘 𞤴 𞤊 𞤁𞤼𞤬 𞤁𞤫 𞤘𞤤𞤞 𞤖𞤳. 𞤄𞤼𞤬 𞤁𞤫𞤒 𞤄𞤶 𞤤 𞤕𞤘𞤘𞤿 𞤼𞤿𞤲 𞤤𞤿 𞤾 𞤊𞤼𞤬 𞤒𞤞 𞥒𞥒𞥕𞤘 𞤾 𞤀�'𞤵 𞤾𞤳𞤦 𞤁𞤫 𞤄𞤵.

![The Characters of the N'Ko Script]

The Characters of the N'Ko Script

consonants									
ߕ	ߞ	ߘ	ߙ	ߝ	ߟ	ߜ	ߓ	ߒ	ߖ
m	l	k	r	d	c¹	j	t	p	b
ߏ	ߐ	ߑ	ߒ	ߓ	ߔ	ߕ	ߖ	ߗ	ߘ
ŋ	y	w	h	n	ɲ	f	gb	s	rr

ꗢꗃꕐꖺꕌꞈꕵ, ꚙꕃꕃꞈꕵ ꕃꖺ ꕌꕌꖺꕵ ꕷꕷꕌꖺꕌꞈꕵ ꕐ ꗢꕌꞈꕌꕌꗢꕉꞈꕵ ꕃꗭꖺꕷꖺꕵ ꕐꗢ ꕌꑸꕌꞈꖫꕃꖺ ꕐ ꕉꗢꑰꞈꖺꕷꖺꕵ-ꔤꞈꖺꗭ ꗭꞈꕵ ꖮꖺꕃꗭꖺꚙꕌꗢꕬ ꕐ ꕌꖺꗞꞈꞈꕌ ꞉ ꕉꞈꗭꗭꞈꚙꕌꕃ ꚙꕐ-ꖮꗢꕌ ꖮꞈꗃꕃꖫꖮꖮ ꗞꖺ ꚙꗭꞈꕵ.

Contribution from Africa

- Work completed
    - Arabic Script LGR Proposal
    - Ethiopic Script LGR Proposal
- Work under progress
    - Latin Script LGR Proposal by Latin Panel
- Work to start – as needed by the community
    - Other scripts used in Africa

Arabic Script LGR Proposal for TLDs

Legend:
- Included in LGR (green)
- Excluded by GP (light purple)
- Excluded by MSR (pink)
- Excluded by IDNA2008 (white)

Included in LGR

Excluded by GP

Excluded by MSR

Excluded by IDNA2008

Volunteers from Africa Needed for Latin Panel

- Need contribution from African community to ensure use of Latin script for African languages is supported in the LGR for TLDs
  - For example, Alphabet Nationale du Tchad (ANT) has many characters not supported by basic set [a…z]

Get Involved!
Speak up for your language

How to get involved?

Volunteer

Volunteer for your script Generation Panel (GP)

To contribute expertise, contribute to the GP for your script. You can get involved by simply emailing your CV and a brief statement of interest to IDNProgram@icann.org

Review

Review work through public comments

Sign up for the IDN mailing list vip@icann.org (to sign up, visit https://mm.icann.org/listinfo/vip) and participated in the review of IDN work being done at ICANN through the public comments

Listen

Keep yourself updated

Attend regular IDN Program Update sessions at ICANN meetings and sign up on the IDN mailing list vip@icann.org to get updates on the IDN Program at ICANN

Engage with ICANN

ICANN

Thank You and Questions

Reach us at: IDNProgram@icann.org
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