

Universal Acceptance (UA) of Domain Names

Abduilkarim Oloyede / AFRALO PREP MEETING / 19, 07 2023



Universal Acceptance

Welcome!

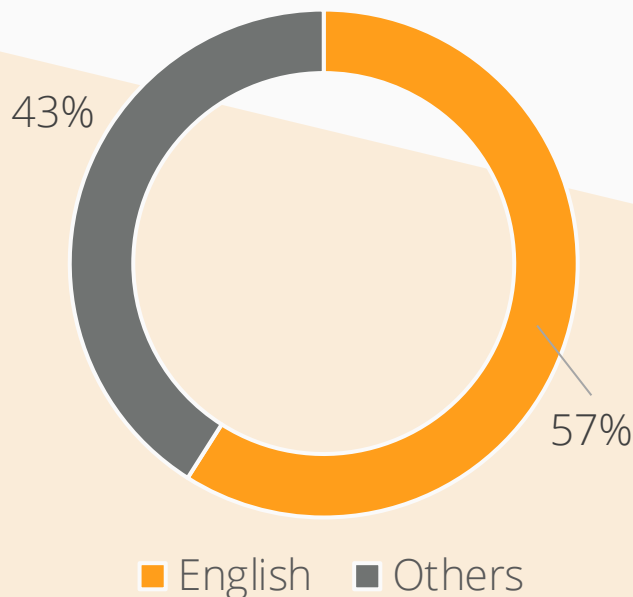
- * Many people around the world are currently excluded from experiencing the full benefits of the Internet simply because they're unable to use a domain name or email address of choice in their language and script.
- * Through Universal Acceptance (UA), all those who develop, provide or manage online websites and applications have the opportunity to enable users globally to experience the social and economic power of the Internet.
- * In this presentation you will learn more about UA and why it matters



We Live in a Multilingual World!

Globally, language usage is diverse. English comes **third in terms of native speakers** around the world, after Mandarin and Spanish. English represents 57% of the total written content online and the percentage is decreasing.

Languages on the Web



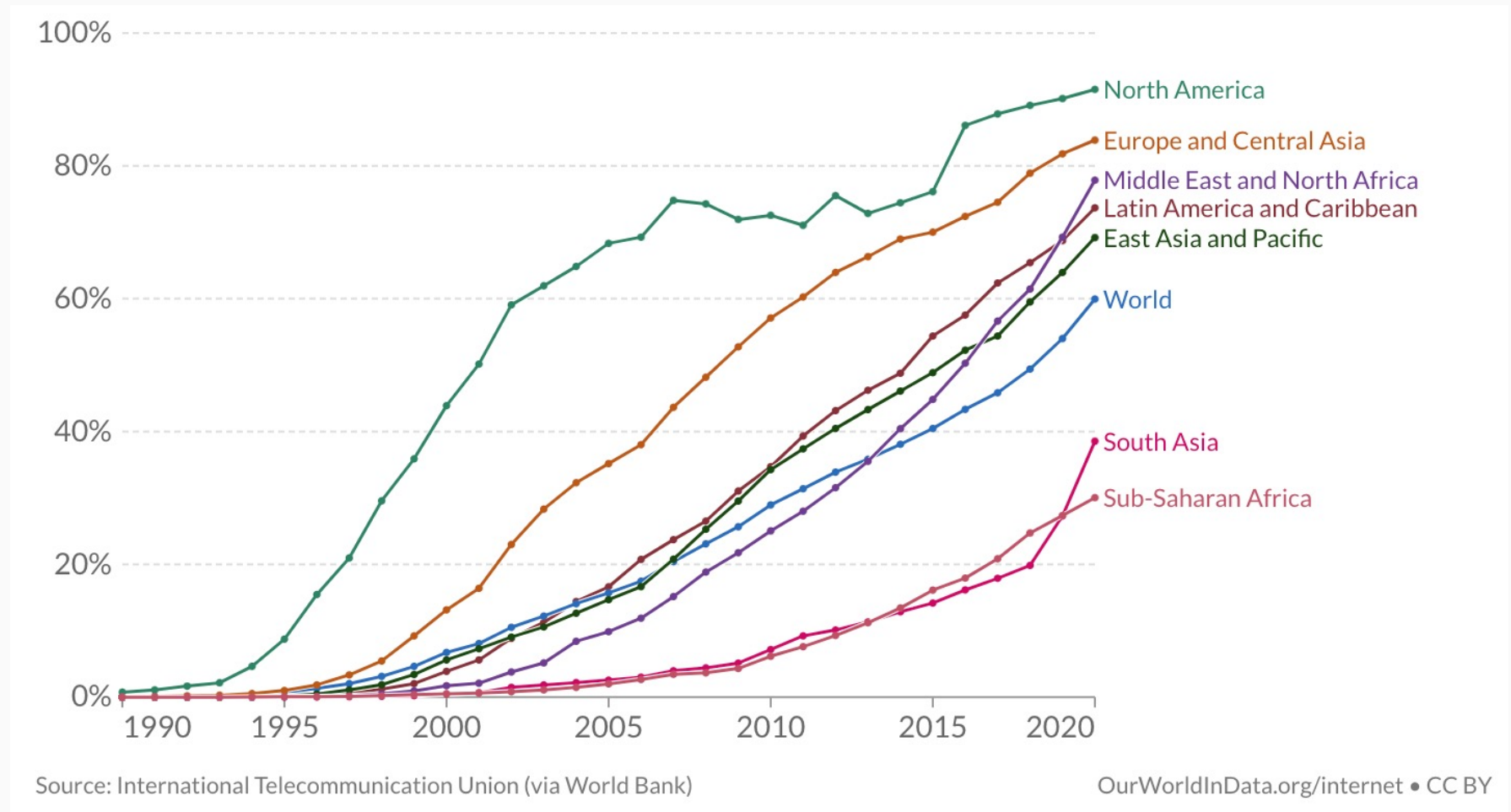
Source:
https://w3techs.com/technologies/history/overview/content_language.

Language	Native Speakers
Mandarin	1300 million
Spanish	475 million
English	373 million
Arabic	362 million
Hindi	344 million
Bengali	234 million
Portuguese	232 million
Russian	154 million
Japanese	125 million

Source:
<https://www.babbel.com/en/magazine/the-10-most-spoken-languages-in-the-world>

Internet Access Globally

The next billion Internet users will come from communities speaking a diverse set of languages.



Share of the population who used the Internet in the last three months.

The Domain Name System and ICANN

- * A domain name is a unique name that forms the basis of the uniform resource locators (URLs) that people use to find resources on the Internet (e.g., web pages, email servers, images, and videos).
- * The domain name itself identifies a specific address on the Internet that belongs to an entity such as a company, organization, institution, or individual.
- * For example, the domain name: wikipedia.org is used to point to the address: 208.80.154.224.
- * Collectively, the domain names and the Internet Protocol (IP) addresses help us navigate the Internet.
- * The Internet Corporation for Assigned Names and Numbers (ICANN) helps coordinate and support these unique identifiers across the world. ICANN's mission is to help ensure a stable, secure, and unified global Internet.

Composition of Domain Names and Email Addresses

Domain name

https://
Protocol

www.
Label

example.
Label



top-level domains (TLDs)
(generic or county code)

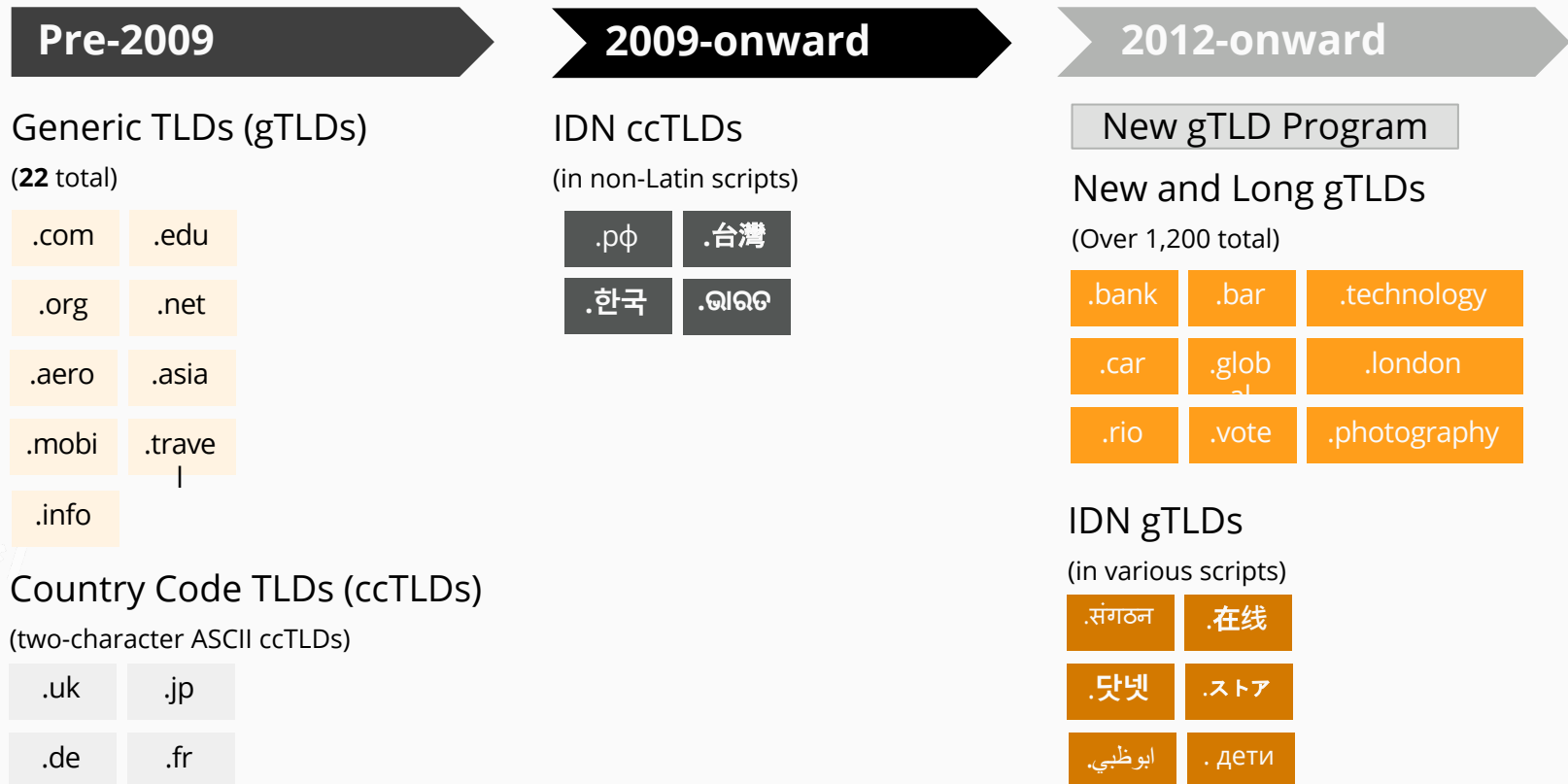
“.world” in Simplified Chinese

Evolution of Top-Level Domains (TLDs) and the DNS

- * In the past, top-level domains (TLDs) have mostly been two or three letters long formed with Latin characters a-z (e.g., .com, .org).
- * The evolution of the DNS has allowed for newer and longer TLDs. There are now over 1,200 new generic gTLDs that represent brands, communities, and geographies (e.g., .photography, .london).
- * These new TLDs also include Internationalized Domain Names (IDNs), which allow for domain names in local languages and scripts such as “.例子” and “مثال.” (“example” written in Chinese and Arabic).
 - * Other labels within a domain name can also be internationalized, allowing for a domain name to be in a local language and script completely. IDNs are separate from online content, which can also be multilingual.
- /// * The next round of gTLDs will continue to expand the DNS and give new opportunities to the next billion people waiting for access to a more multilingual and inclusive Internet in their language or script.

Expansion of the DNS and the Next Round

The introduction of new gTLDs, including long TLDs and IDNs, into the Internet ecosystem through the New gTLD Program enabled the largest expansion of the DNS. The next round of gTLDs will continue this expansion and growth.



Why Do We Need IDNs?

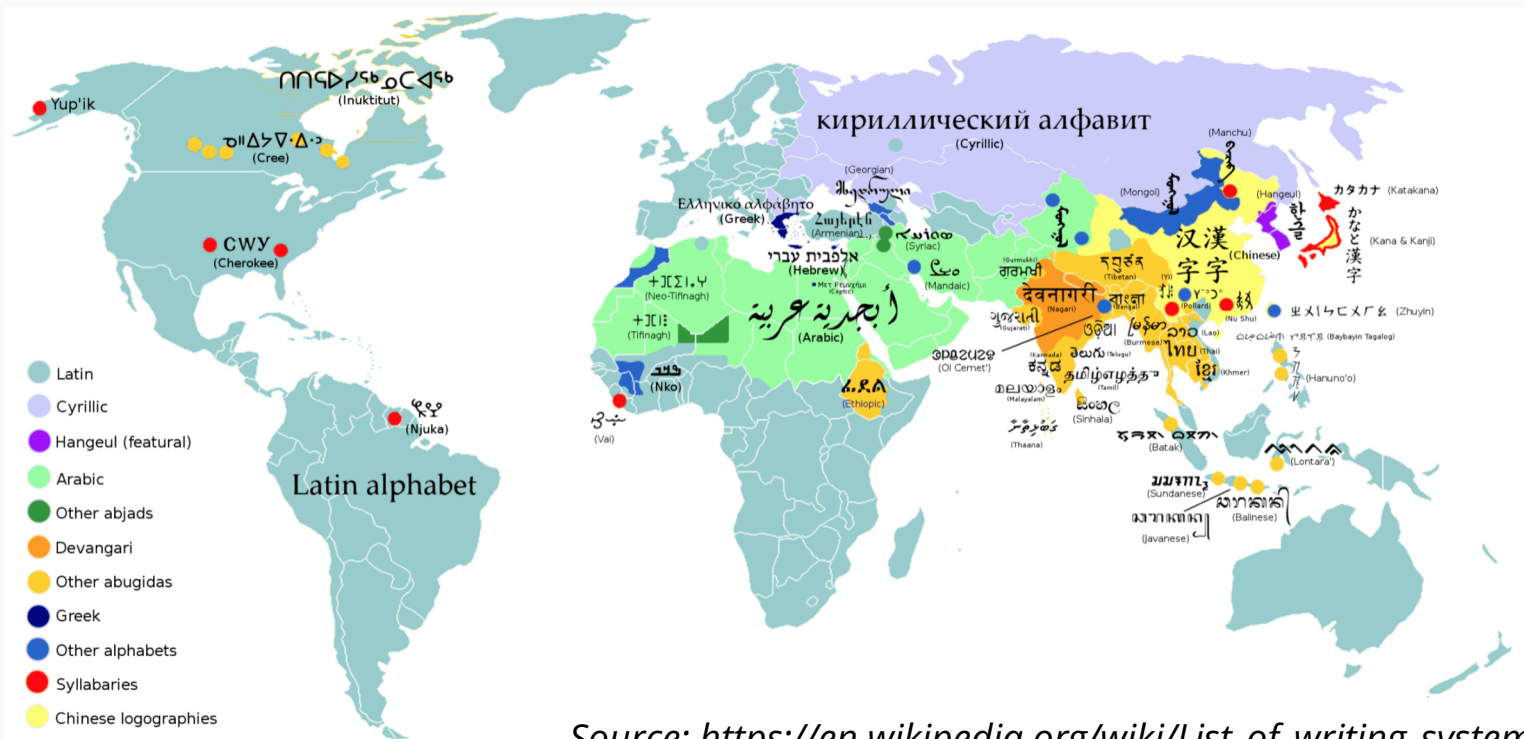
"The Web does not just connect machines, it connects people,"

-- Tim Berners-Lee

"Language is just as important to building human connections online as it is offline."

-- The Digital Language Divide

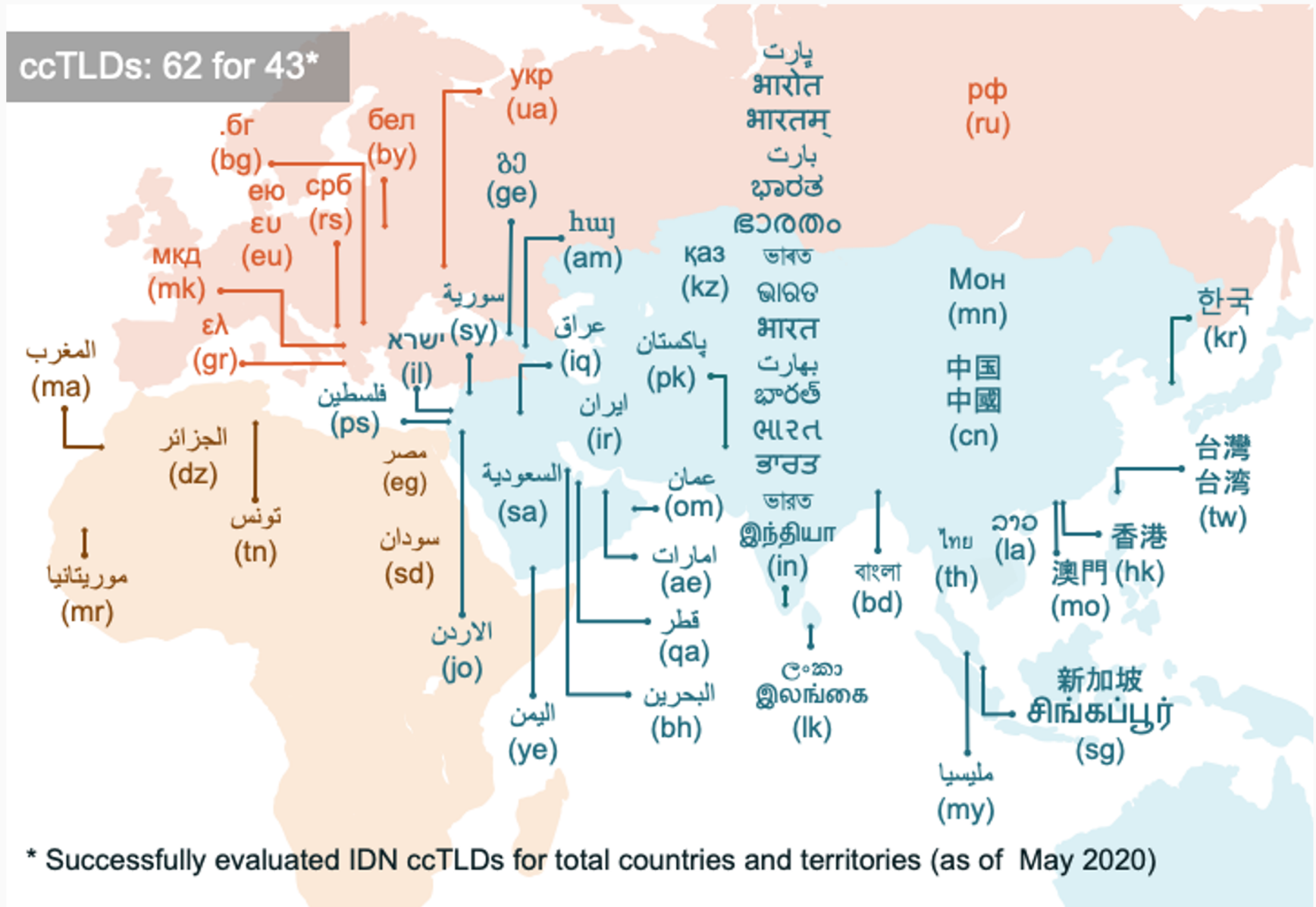
IDNs enable these connections in local languages online.



Source: https://en.wikipedia.org/wiki/List_of_writing_systems.



IDN Country Code Top-Level Domains



What is Universal Acceptance (UA)?

- * While the DNS has evolved, the checks used by many software applications to validate domain names and email addresses remain outdated.
- * In addition, not all online portals are primed for the opening of a user account with a related email address, leaving many people unable to navigate the Internet using their language and online identity of choice.
- * Considered a technical compliance best practice, UA solves these issues by ensuring all valid domain names and email addresses, regardless of script, language or character length, can be used equally by all Internet-enabled applications, devices, and systems.



Email Address Internationalization

Nabil Benamar *UASG Vice Chair*



Universal Acceptance

Evolution of Email Addresses

- * Initially, email addresses were also not available in local languages and scripts.
- * Email Address Internationalization (EAI) addresses this limitation and allows for having email addresses in local languages and scripts.
- * Internationalized email addresses are not related to the text in the body of the email, which is managed through the Multipurpose Internet Mail Extensions (MIME).



Examples of Internationalized Email

1. Էլփոստ-թեստ@հայրենիհանուր-ընկալում-թեստ.հայ Armenian
2. 电子邮件测试@普遍适用测试.我爱你 Chinese
3. ईमेल-परीक्षण@सार्वभौमिक-स्वीकृति-परीक्षण.संगठन Devanagari
4. تجربة-بريد-الالكتروني@تجربة-القبول-الشامل.موريتانيا Arabic
5. ηλεκτρονικό-μήνυμα-δοκιμή@καθολική-αποδοχή-δοκιμή.ευ Greek
6. மின்னஞ்சல்-சோதனை@பொது-ஏற்பு-சோதனை.சிங்கப்பூர் Tamil

Example of a UA Issue

A valid email is rejected by a form used on a website and is incorrectly displayed from left-to-right instead of right-to-left:

NEWSLETTER - SUBSCRIBE FOR FREE

Join our mailing list

* indicates required

Email Address *

موقع.مثال@میل-ای

Please enter a valid email address.

Examples of Categories Affected by UA

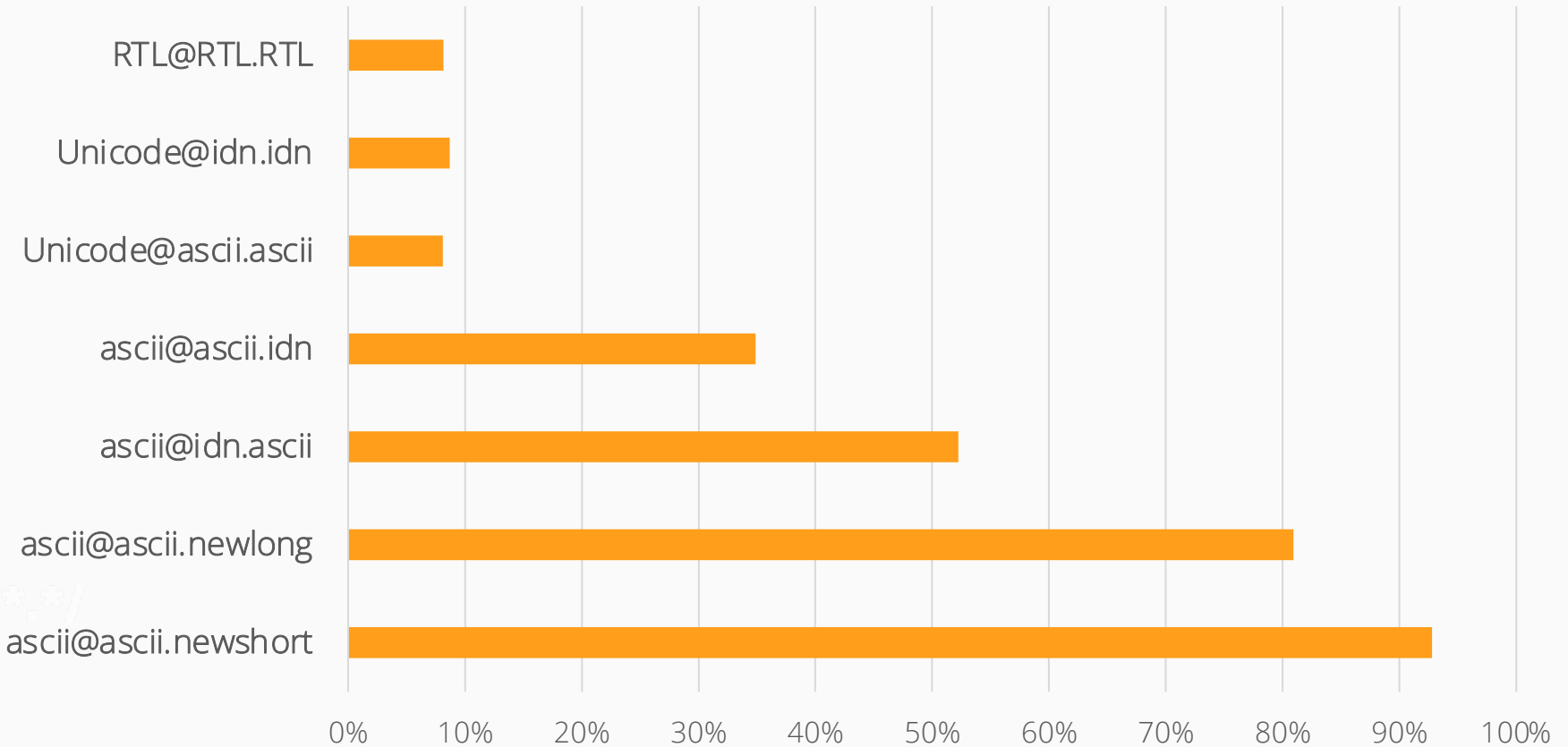
- * Domain Names that may not work in applications:
 - * ASCII: example.sky
 - * ASCII: example.engineering
 - * Unicode: คน.ไทย
- * Internationalized email addresses (EAI) that may not work in applications:
 - * Unicode: marc@société.org
 - * Unicode: 测试@example.com
 - * Unicode: ईमेल@उदाहरण.भारत
 - * Unicode: ای-میل @مثال.موقع (written right-to-left, RTL)

ASCII is based on letters A-Z, a-z, digits 0-9 and hyphen.

Unicode supports characters of global languages and scripts.

Extent of Current UA Issues

EAI Acceptance Rates in Form Fields on 2000 Websites



Source: UASG039 at <https://uasg.tech>, published in 2022

EAI Support Across Email Servers

Survey date	07-Apr-2022	01-Jul-2022	03-Oct-2022
Test email script	Han	Arabic	Cyrillic
Processed gTLD zones	1,172	1,170	1,172
Unique MX servers	35,521,173	35,190,999	35,257,528
Unique IP addresses	2,506,329	2,473,755	2,508,108
<ul style="list-style-type: none"> ● MX Full ● MX Partial ● MX None ● Not tested ● No IPs 	<p>35,521,173 TOTAL</p>	<p>35,190,999 TOTAL</p>	<p>35,257,528 TOTAL</p>

Source: <https://ithi.research.icann.org/graph-eai.html>

Does Your Email Server Support EAI?

Enter your email and check now at: <https://uasg.tech/eai-check/>



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Email Address Internationalization

EAI Check

This widget takes an email address and checks to see if the mail server advertises support for receiving EAI (Email Address Internationalization) email addresses.

Check to see if your email address is EAI compliant. Enter a valid email address below:

Enter Valid Email Address

CHECK ADDRESS

UA Goal and Impact

Goal

All valid domain names and email addresses work in all software applications.

Impact

Promote consumer choice, improve competition, and provide broader access to end users.

Making Applications UA-Ready

- * Support all valid domain names and email addresses:



Accept



Validate



Process



Store



Display

- * Accept: The user can input characters from their local script into a text field.
- * Validate: The software accepts the characters and recognizes them as valid.
- * Process: The system performs operations with the characters.
- * Store: The database can store the text without breaking or corrupting.
- * Display: When fetched from the database, the information is correctly shown.

//**/

Working Towards UA-Readiness

- * The ICANN community created the Universal Acceptance Steering Group (UASG) to promote UA-readiness globally.
- * ICANN actively promotes UA and financially supports the UASG.
- * The UASG and ICANN work to achieve UA-readiness by:
 - * Organizing outreach to raise awareness on UA issues.
 - * Conducting detailed studies to identify technical gaps.
 - * Determining solutions to address the technical gaps.
 - * Submitting bug reports in the relevant tools, systems, and applications.
 - * Developing and conducting technical training on the solutions for supporting UA-readiness.
- * More info at uasg.tech and icann.org/ua