Universal Acceptance

CELEBRATING 10 YEARS

of the

Universal Acceptance Steering Group (UASG)

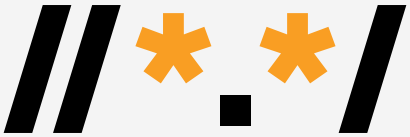
and UA Readiness

2025

ICANN

TABLE OF CONTENTS

Executive Summary



Universal Acceptance (UA) means that all valid domain names and all email addresses work in all software applications and systems. The newer top-level domains (TLDs) include those that are longer than three characters, as well as Internationalized Domain Names (IDNs) in different languages and scripts. The ICANN community had noted that, with the rollout of these TLDs, many of the domain names and corresponding email addresses were inconsistently handled by software applications and online services. The community further recognized that a coordinated industry effort was needed to ensure a resolution: Universal Acceptance.

As a result, the Universal Acceptance Steering Group (UASG) was formed in 2015 to promote UA awareness, and encourage the stakeholders to become UA-ready. The UASG also requested ICANN to coordinate, support, and manage its work for 10 years.

The UASG initially conducted foundational work to define the scope of UA and to identify the relevant stakeholders. The UASG then took action to create awareness about UA among these stakeholders, identify and assess gaps in relevant software tools, services, and platforms, and ultimately develop solutions to address these gaps. The UASG established multiple working groups to conduct this work.

To facilitate outreach to the local stakeholders, the UASG established UA Ambassador and Local Initiatives programs. Additional awareness activities included maintaining an active social media presence, publishing case studies and newsletters, and organizing annual UA Day events. The UASG also developed a UA curriculum and additional training materials to help build technical capacity to support UA adoption efforts.

Based on the work and outreach conducted by UASG over the years, there is now a much greater awareness of UA, including its importance to enabling broader multilingual access to end users. As a result, many software developers, email service providers, businesses, and governments are now making their systems UA-ready, and the Universal Acceptance landscape has shifted to adoption and implementation. ICANN Org has increased its resources to address this transition and, with guidance from ICANN Board and ICANN Community, is continuing its work to move UA-readiness forward.

This report documents the background, evolution, and achievements of the UASG in promoting UA over the past 10 years. Congratulations to the members of the UASG on a decade of accomplishments.

Messages for the UASG

MAARTEN BOTTERMAN, CHAIR OF ICANN BOARD IDN AND UA WORKING GROUP

On behalf of the ICANN Board, I offer congratulations to the Universal Acceptance Steering Group (UASG) for 10 years of outstanding service. The UASG has made significant contributions in creating UA awareness globally, including through the UA Ambassadors Program, UA Local Initiatives, and global UA Day events. In addition, the UASG has identified gaps and developed technical solutions for promoting UA remediation. I want to acknowledge and thank all members that contributed over the years, and especially call out the UASG chairs, who have been instrumental in driving the successes that have been achieved to date: UASG's founding chair Ram Mohan; Ajay Data; and Anil Kumar Jain. Thank you so much for all you have done over the years!

KURTIS LINDQVIST, ICANN CEO AND PRESIDENT

Congratulations to the UASG on 10 years of progress. With your help, we are coming closer to a UA-ready world where users globally can experience the power of the Internet using a domain name and email address that best aligns with their interests, business, language and culture. ICANN remains committed to facilitating Universal Acceptance, and supporting community-wide efforts to achieve UA-readiness globally.

1. Background of Universal Acceptance (UA) and UA Steering Group (UASG)

Top-level domains (TLDs) include those which are newer, longer than three characters, and TLDs which can be represented in different languages and scripts. Universal Acceptance means that all valid domain names formed with these TLDs – and corresponding email addresses – work consistently and seamlessly in all Internet-enabled applications, devices, and systems regardless of length, language, or script. As the Domain Name System (DNS) evolved, many software products and online services failed to keep up, often struggling to properly process domain names and email addresses using these newer TLDs. In many cases, developers were unaware of the issue or lacked sufficient market or regulatory incentives to ensure full interoperability across applications and platforms. The rollout of new TLDs, the growth of Internationalized Domain Names (IDNs), and the availability of email address internationalization (EAI) require a consistent user experience to foster digital inclusion.

These limitations were identified by the community early on. The Joint ccNSO – GNSO IDN Working Group (JIG) shared its initial recommendations on UA in 2011 and published its final report in 2013, calling for the ICANN community to work toward addressing challenges. A coordinated industry effort was needed to ensure a practical and continuing resolution to UA challenges.

1.1. FORMATION DETAILS

On 9 February 2015, following **discussion** at ICANN52 in Singapore, ICANN community members **wrote** to the Chair of ICANN's Board of Directors requesting support for a community-based Universal Acceptance Steering Group (UASG) and to "be prepared for the Steering Group to drive action over the course of the next 10 years." The UASG was formed in 2015 by the community, with ICANN's role as "coordinator, catalyst, supporter, advocate and manager of the work streams" of the UASG. The UASG intended participation as a multistakeholder group, envisioned to be an advocacy group rather than a policy-oriented group – with a coordinated effort toward a set of shared principles, along with coordinated messaging to guide community action.

1.2. CHARTER, SCOPE, AND STAKEHOLDERS

Governed by its **charter**, the UASG attracted dedicated volunteers to contribute to its goal: that all domain names and email addresses work in all software applications and systems. Volunteers joined a UA-discussion email list to help shape the concept, define its scope, identify key stakeholders, and set priorities for the group's work. The work was driven by the UASG's coordination team, a "small coordinating body with limited membership other than the Chair, Vice-Chairs, and a few issue leaders" as per its charter. Eventually, these discussions concluded that the UA of domain names and email addresses meant that software applications should be able to accept, validate, process, store, and display them correctly.

Over the course of its work, the UASG identified working with the following stakeholders to promote UA readiness and adoption:

1. Technology Enablers: Organizations and open source communities producing standards, best practices, and software programming languages, tools, and frameworks.
2. Technology Developers: Organizations and open source communities developing and deploying online applications and services using programming tools and frameworks.

3. Email Software and Service Providers:
    a. Email Software Providers: Organizations providing the different applications, tools, and utilities for the email ecosystem.
    b. Email Service Providers: Organizations and individuals providing email services.
    c. Email and System Administrators: Organizations deploying and administering email-related software and services.
4. Top-Level Domain Registries and Registrars: Country code top-level domain managers (ccTLDs) and gTLD operators, especially IDN TLDs, as well as registrars.
5. Academia: Faculty and students of technical and Internet governance programs at universities.
6. Government Organizations and Policy Makers: Government organizations and their officials generating demand for UA-ready products and services.

The UASG started its work by producing some foundational documents on the scope of UA, including the following:

- Introduction to UA: **UASG 007**
- Relevant RFCs: **UASG 006**
- UA Quick Guide: **UASG 005**
- UA Fact Sheet: **UASG 003**

1.3. STRUCTURE

Over time, the UASG identified technical issues related to UA, determined their solutions, and raised UA awareness among relevant stakeholders through its Working Groups (WGs), Local Initiatives (LIs), UA Ambassadors, members, and awareness efforts. UASG WGs were determined and defined as follows:

1. Measurement WG: To measure UA-related gaps in technology and overall indicators for measuring progress.
2. Technology WG: To determine technical solutions and training to address UA-readiness and adoption.
3. Email Address Internationalization (EAI) WG: To promote the upgrade of email tools and services for the adoption of internationalized email addresses.
4. Communications WG: To promote global awareness of UA.

The UASG started a UA Ambassador Program in 2017 to help promote UA awareness. Since then, the UASG has supported many UA Ambassadors conducting outreach campaigns within their regions, countries, and territories. As of 2025, the UASG supports 18 UA ambassadors.

In addition, in 2019 the UASG established LIs to promote UA awareness and adoption locally. The UASG has supported six LIs to date in the following regions:

1. China
2. Commonwealth of Independent States and Eastern Europe (Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyz Republic, Republic of Moldova, the Russian Federation, and Serbia)
3. Europe (France and Catalonia, Spain)
4. India
5. Sri Lanka
6. Thailand

Since 2023, the UASG has also organized annual UA Day events on or around 28 March to help raise awareness and technical capacity. Each year, more than 50 events, in as many countries and territories, have been held and supported by the UASG and ICANN. These efforts have reached thousands of people directly, with additional outreach amplified through media coverage in many countries, as well as on social media.

As requested by the UASG, ICANN org has provided staff and financial support to drive action over the course of the past 10 years.

2. UA-Readiness of Software Applications and Systems

2.1. MEASURING THE TECHNICAL GAPS

Initially, significant gaps were observed, with many websites and social media applications unable to properly support IDNs and EAI. The UASG strategically conducted gap analyses to identify the root cause of these technical issues. In these analyses, the UASG adopted a layered approach to look at the technology stack and examined each layer separately. These layers include software applications, websites, social media platforms, search engines, content management systems, and programming languages, as well as the underlying operating systems and standards.

The UASG found that there was limited IDN support in browsers and social media applications. For instance, when a user typed an IDN into the browser's address bar, the browser wouldn't recognize the URL and instead use the input as a text string which would lead to search results instead of resolving to a website. Even in cases where an IDN in U-label format was recognized as a domain name, it was converted and displayed in its equivalent A-label (e.g., the Lao language domain name ສາກົນ-ການຍອມຮັບ-ທີ່ຄລອງ.ລາວ would be automatically converted and displayed as xn-----k1ib5a8a0cxancm7fsc2c9bgl8cje9pna.xn--q7ce6a) by browsers and social media platforms, degrading the user experience.

The following platforms were measured to determine UA-readiness and the reports were posted at **https://UASG.tech** document repository:

- Popular Identity Platforms (Okta, Auth0, OpenIAM): **UASG 045**
- Popular Web Hosting Tools (cPanel, Plesk, and ISPConfig): **UASG 042**
- Social Network Applications (Facebook, Twitter, Instagram, WhatsApp, Tik Tok, WeChat, Telegram, LinkedIn, Snapchat): **UASG 035**
- Content Management Systems (WordPress): **UASG 032**
- UA Remediation of Websites Globally: **UASG 017**, **UASG 025**, **UASG 027**, **UASG 039**, **UASG 046**
- UA of Popular Browsers
  - 360, Amigo, Edge, Epic, Opera, Safari, Samsung, Yandex: **UASG 036**
  - Chrome, Firefox, Opera, Safari: **UASG 016**

Over time, improvements in UA measurement results have illustrated the positive impact of outreach and awareness campaigns based on resources developed by the UASG.

The UASG regularly tested for website support of various categories of email addresses, with the results summarized below in Figure 1. The figure shows that acceptance (in percent) of email addresses formed using the new short gTLDs has improved from 91 percent to 97 percent, comparable with earlier gTLDs. Similarly, the acceptance rate of email addresses using the longer new gTLDs has also improved from 78 percent to 90 percent. Rates for email addresses using IDNs or Unicode mailbox names remain low, though the rates are improving, with acceptance for email addresses completely in a local language increasing from 8 percent to 14 percent.

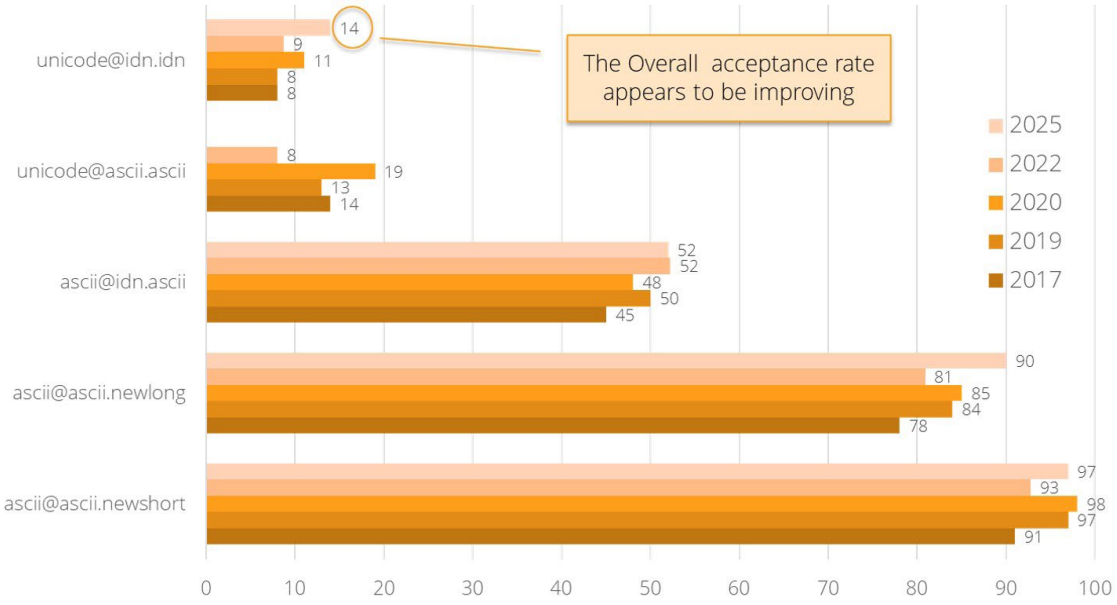


Figure 1: Acceptance (in percent) of different categories of email addresses by 1000 websites globally from 2017 to 2025

2.2. DEVELOPING TECHNICAL SOLUTIONS

The UASG promoted UA within the developer community by identifying libraries compliant with standards like IDNA2008 in supporting UA. Using the available compliant software libraries, the UASG has also developed guides, testing frameworks, and code samples to showcase how to implement UA in software applications using the different programming languages and platforms. These resources are useful for software developers. The work has been published through the reports listed below, with code samples available at **https://github.com/icann/ua-code-samples**.

- UA-Ready Code Samples
  - Javascript libraries React, Angular and Node (in progress)
  - Java, Python, and JavaScript: **UASG 043**
- UA-Readiness Evaluation of Standards and Best Practices: **UASG 040**
- UA-Readiness of Open Source Code Pilot: **UASG 033**
- UA-Readiness Framework: **UASG 026**
- UA-Readiness of Command Line Networking Tools: **UASG 024**

- UA-Readiness Evaluation of Programming Languages and Frameworks
  - Mobile platform libraries (Android and iOS) and PHP (Linux and Windows) - **UASG 037**
  - C, C#, Go, Java, Javascript, Python, Rust: **UASG 018A**
  - Criteria: **UASG 018**
- Quick Guide to Linkification: **UASG 010**
- Use Cases for UA-Readiness Evaluation: **UASG 004**

The UASG also helped develop training materials for developers using sample code. These materials are being used to conduct training at various forums and through UA Day events.

There has been notable progress. Currently, all major browsers correctly recognize and process IDNs, displaying the IDNs in the original script, the U-label, instead of the equivalent A-label. The browsers are also resolving these domain names to the intended websites instead of using them to produce search results. Major social media platforms are also displaying IDNs correctly. This is building confidence and improving online interaction for users worldwide, who are able to use domain names and email addresses in their own languages.

One area which is still lagging is the end user's ability to create accounts using email addresses in local languages on social media platforms, software applications, and websites. Further, automatically recognizing and making domain names and email addresses clickable (called linkification) still presents challenges on different applications and systems, with some recent improvements, specifically on the Android platform.

3. Supporting Email Addresses Internationalization (EAI)

3.1. ASSESSING EMAIL TOOLS AND SERVICES

When the UASG started its work, email addresses in local languages were unfamiliar and generally unsupported by email applications and services. There was limited guidance, as well as limited tools and testing mechanisms available. Supporting internationalized email addresses required a key technical update: email systems needed to support Unicode characters in both the local and domain parts of email addresses. To guide this transformation, the UASG reviewed email standards (**RFCs**) and created comprehensive guidance materials for developers and email service providers. Moreover, the UASG reviewed email tools and services to check the extent to which they supported EAI, for sending, receiving, and hosting internationalized email addresses. These analyses and recommendations were published in the following reports:

- Evaluation of Email Software and Services Which Announce EAI Support
  - Dovecot, Sendmail, Thunderbird, etc.: **UASG 030A**
  - Courier, Exchange, Outlook, Postfix, Gmail, etc.: **UASG 030**
- EAI Evaluation of Major Email Software and Services: **UASG 021A**, **UASG 021B**
- EAI Readiness in TLDs - **UASG 021D**
- EAI: A Technical Overview and Perspective: **UASG 012 EAI**, **UASG 019B**

Initially, few tools and services supported EAI, but repeated testing has shown a broader adoption, at least for sending to and receiving emails from such addresses. This now includes some larger email services, e.g., Google's Gmail and Microsoft's Outlook. There are also many more open source and proprietary tools that support EAI, as per the details in these reports published by UASG.

The UASG also released a simple and practical online **EAI test tool** for end users and email administrators to test whether their email servers were UA-ready by simply typing their email address, as illustrated in Figure 2 below.

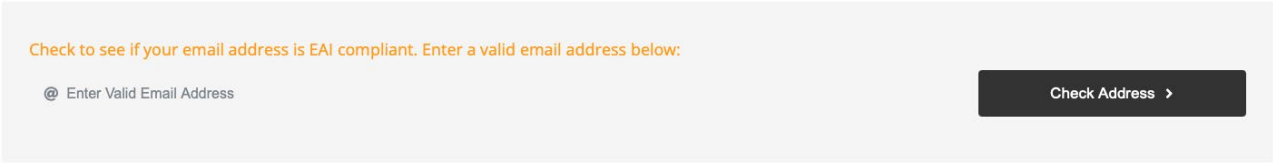


Figure 2: Online tool to test if an email server accepts internationalized email addresses

ICANN has refined this testing methodology and started testing **EAI support for email servers** listed under gTLDs on a quarterly basis since 2021. The results, in Figure 3, show an increase in email exchange (MX) servers which can accept internationalized email addresses from 19.5% in 2021 to 26.8% by 2025.

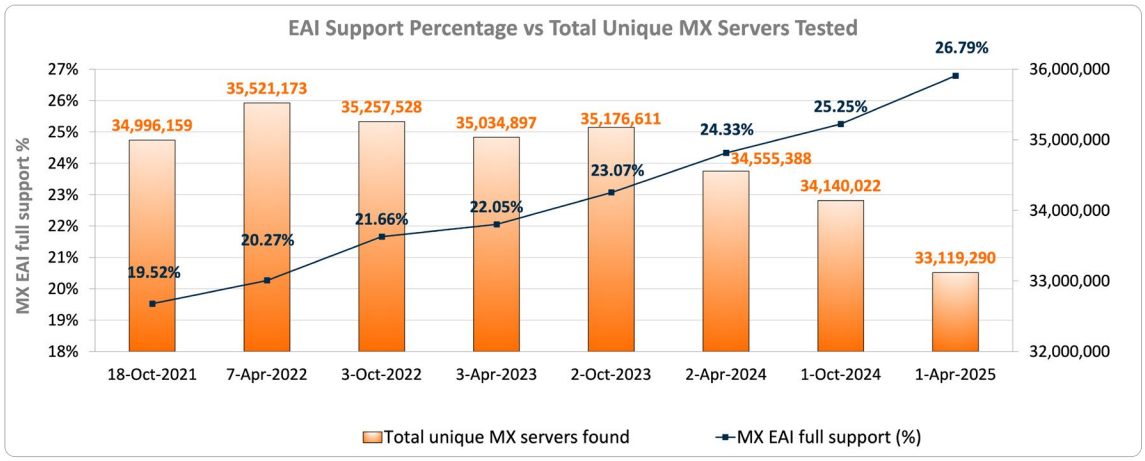


Figure 3: Growth in email exchange (MX) servers listed in gTLDs that accept internationalized email addresses

3.2. GUIDANCE ON SUPPORTING EAI

The UASG developed guidelines for creating mailbox names in local languages and detailed guidelines for self-certification for EAI support in email tools and services, mapping to Silver, Gold, and Platinum levels. More recently, software code to install and self-host EAI servers has been published at **https://github.com/icann/eaiselfhost**. Many more details are available in the documents published by UASG, as summarized below.

- EAI-Readiness Self-Certification Guide: **UASG 049**
- EAI Technical education and Awareness to the Developers' Community via Q&A Websites: **UASG 044**
- Considerations for Naming Internationalized Email Mailboxes: **UASG 028**

4. Creating Awareness and Building Capacity

4.1. DEVELOPING COMMUNICATION MATERIALS

In 2017, the UASG initiated a **UA Business Case Study**, which identified a $9.8 billion economic opportunity. The UASG has also published a wide range of original materials outlining the scope of UA and the roles various stakeholders can play. These resources are designed to clearly communicate with diverse audiences and provide practical guidance on how each group can support and advance UA adoption.

- Messaging for Social Relevancy, Business Opportunities and Career Opportunities: **UASG 038**
- Blueprint for CIOs – Internet Industry Edition: **UASG 015**
- Quick Guide to Tender and Contractual Documents: **UASG 009**
- Webmaster Engagement Letter: **UASG 002**

The UASG worked with ICANN org to develop and promote a range of tools and resources aimed at raising awareness and building capacity around UA. This included leveraging ICANN Learn, ICANN's e-learning platform, to offer accessible online courses. Over time, tailored training programs were designed and delivered across various regions to support global UA readiness.

In order to evaluate UA readiness, a comprehensive set of **testing data**, covering domain names and email addresses across numerous scripts, has been compiled and published to assist developers. Several **case studies** have been published to demonstrate the efforts and status of UA-readiness. Technical videos about IDNs, EAI, and UA have been produced by the UASG and ICANN, made available through various channels like **YouTube** and **UA Day**. Additionally, **materials and recordings** on UA have been developed and provided by regional training programs. The UASG also created a newsletter for its community to provide an overview of the work being done. Most of these resources, in addition to the technical reports produced by the UASG's work, are disseminated through the UASG's website at **https://uasg.tech**.

UASG members have actively used these resources to promote UA at a wide range of events, including regional meetings, conferences, and Internet Governance Forums (IGFs) at the national, regional, and global levels.

4.2. CREATING AWARENESS THROUGH AMBASSADORS AND LOCAL INITIATIVES

The UASG identified several ways to promote UA issues and solutions, including the UA Ambassador Program, which was **established** in 2017. Industry leaders and UA experts were recruited, all of whom committed to raising awareness and facilitating capacity building to targeted stakeholders in their local languages. Currently, there are 18 UA Ambassadors located in 11 countries and territories. UA Ambassadors have actively contributed to over 150 activities, encompassing UA Day events, national forums, DNS Forums, IGFs, and events involving universities and governments.

The UASG supported institutional presence around the world at the local level through Local Initiatives (LIs). These LIs have been engaging key stakeholders such as local governments, technology industry participants, developers, academic institutions, and businesses. A significant advantage of LIs is their ability to engage and provide training in local languages through strong stakeholder relationships, ensuring follow-through from initial awareness to implementation.

Currently, six LIs, each composed of seasoned IDN and UA experts, drive technical collaboration, general outreach, and public sector engagement within their designated countries or regions.

- China: **Internet Society of China** (other **website**)
- Commonwealth of Independent States and Eastern Europe (CIS-EE): Currently covers IDN TLD registries, registrars, IT organizations and experts from nine countries (Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia and Serbia)
- Europe: **GeoTLD Group** (The GeoTLD Group membership is composed of government entities, and 34 geoTLDs across different continents.)
- India: **Federation of Indian Chambers of Commerce and Industry (FICCI)**
- Sri Lanka: **Theekshana** (other **website**)
- Thailand: **Thai Network Information Center Foundation (THNIC)** (See highlights **here**)

Some highlights from each LI include:

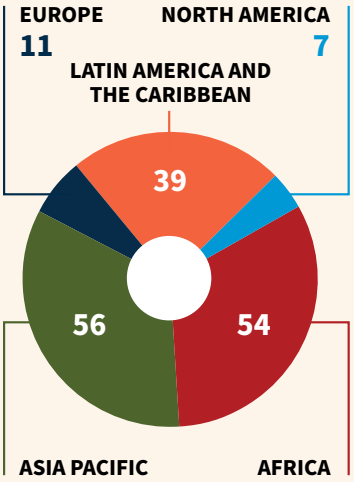
- **China**: Reached out to local organizations to raise awareness and promote UA. All Chinese local browsers and search engines support Chinese domain name resolution and indexing, and some social platforms support Chinese domain names. There is increasing support for Chinese email addresses. Two thirds of around 6,000 well-known Chinese enterprises have registered Chinese domain names.
- **CIS-EE**: Conducted awareness and training efforts for the local communities, as well as UA-readiness evaluations of popular websites. One of its members worked to develop EAI support by mail servers in .ru and .РФ, and UA-readiness of local software. The region is seeing growth in the local IDN market.
- **Europe**: Raised awareness within geoTLDs about UA. Conducted workshops for university students and academics.
- **India**: Reached more than 5,000 professionals from diverse sectors, including developers, IT professionals, and government officials. Supported the relevant ministry in developing and launching the National UA Policy under the Multilingual Internet Development initiative.
- **Sri Lanka**: Set up EAI-ready email servers and began issuing Sinhala and Tamil email addresses. The first UA-ready website was launched for one of the key Buddhist organizations in Sri Lanka (**https://**සමස්තලංකාබෞද්ධමහාසම්මේලනය.ලංකා), and then made **helpcentre.lk** UA-ready. Developed government-wide guidelines for UA-ready websites.
- **Thailand**: Conducted gap analysis in local websites. Through hackathons and hands-on training workshops, demonstrated how to support UA in websites utilizing WordPress. Also set up and configured an Ubuntu-based email server (**https://www.naxsolution.com/service-email**), integrating key elements such as Postfix and Dovecot for robust EAI support.

4.3. ORGANIZING UA DAY

In 2023, the UASG instituted an annual UA Day to be celebrated on or around 28 March, with the support of ICANN. Celebrating UA Day creates awareness around the motivation for UA, and the technical gaps and actions needed by the different stakeholders to address the gaps. Each year more than 50 events have been organized in a number of countries and territories, which create general awareness and build technical capacity. In total, 167 UA Day events have reached more than 23,663 people in 39 languages in 82 countries and territories over the last three years. In 2025, the message has received more recognition, with UNESCO **collaborating** with ICANN on promoting UA globally, and especially for UA Day.

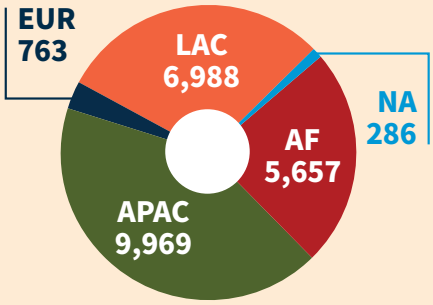
167 UA Day Events

- 3 years
- 82 countries
- 39 languages



23,663 Participants Total Across All Regions

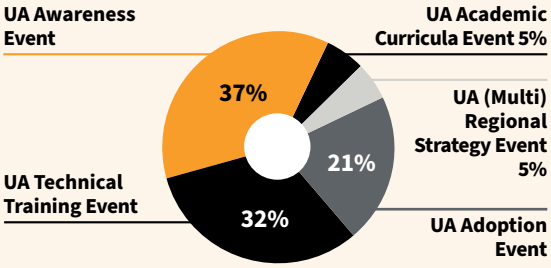
PARTICIPANTS	
2023	9,424
2024	6,544
2025	7,695



UA Day Event Dates

Organized on or around **28 March annually**, with events between **1 March and 30 May**.

167 UA Day Events by Type



4.4. INTEGRATING UA CURRICULUM

A UA curriculum has been developed to help integrate key concepts into technical degree programs at universities to develop a sustainable mechanism to raise awareness and promote UA adoption. Following this work, a **collaborative program** between ICANN and universities has been initiated to integrate the UA curriculum into their coursework.

4.5. REACHING OUT ONLINE

The UASG maintains a presence across multiple social media channels (handles listed below) to generate organic content about UA and promote community events, available UA resources, and UA-related news. In addition to UASG's own content, posts by community members are tagged with **#Internet4All** and **#UADay**, allowing for broader visibility on these platforms. Furthermore, a collaborative effort between the UASG, ICANN, and community members has resulted in the production and publication of approximately 30 videos on YouTube and **https://uasg.tech/videos/**.

- X: **@UASGTech**
- LinkedIn: **https://www.linkedin.com/company/uasgtech/**
- Facebook: **https://www.facebook.com/uasgtech/**
- YouTube: **https://www.youtube.com/@uaday-uasg** ; **https://www.youtube.com/@uasgtech9858**

The UASG has interacted with the community and presented updates regularly at ICANN meetings.

UASG by the Numbers

The goal of the UASG has been to enable the support of all valid domain names and email addresses by all software applications and systems. Following is a summary of 10 years of work by the UASG, covering its outreach, analyses and publications.

Initiated Projects in Collaboration with ICANN

- UA case studies
- UA Curriculum
- Identifying big-tech and open source orgs for outreach
- Social media outreach

Document Hub

Developed and published 50 documents, including:

- UA test data and frameworks, EAI self-certification guide
- Annual UA-readiness reports
- UA gap analysis of programming languages, content management systems, email tools, social media apps, websites, and more
- Free code samples and self-hosted working EAI system

Mechanisms for Working

- Six working groups
- Six local initiatives
- 18 UA Ambassadors
- Blogs and announcements
- Analysis and reports

UA Day Events 2023-2025

167 UA Day events

in **3 years**, reaching

23,600+ people

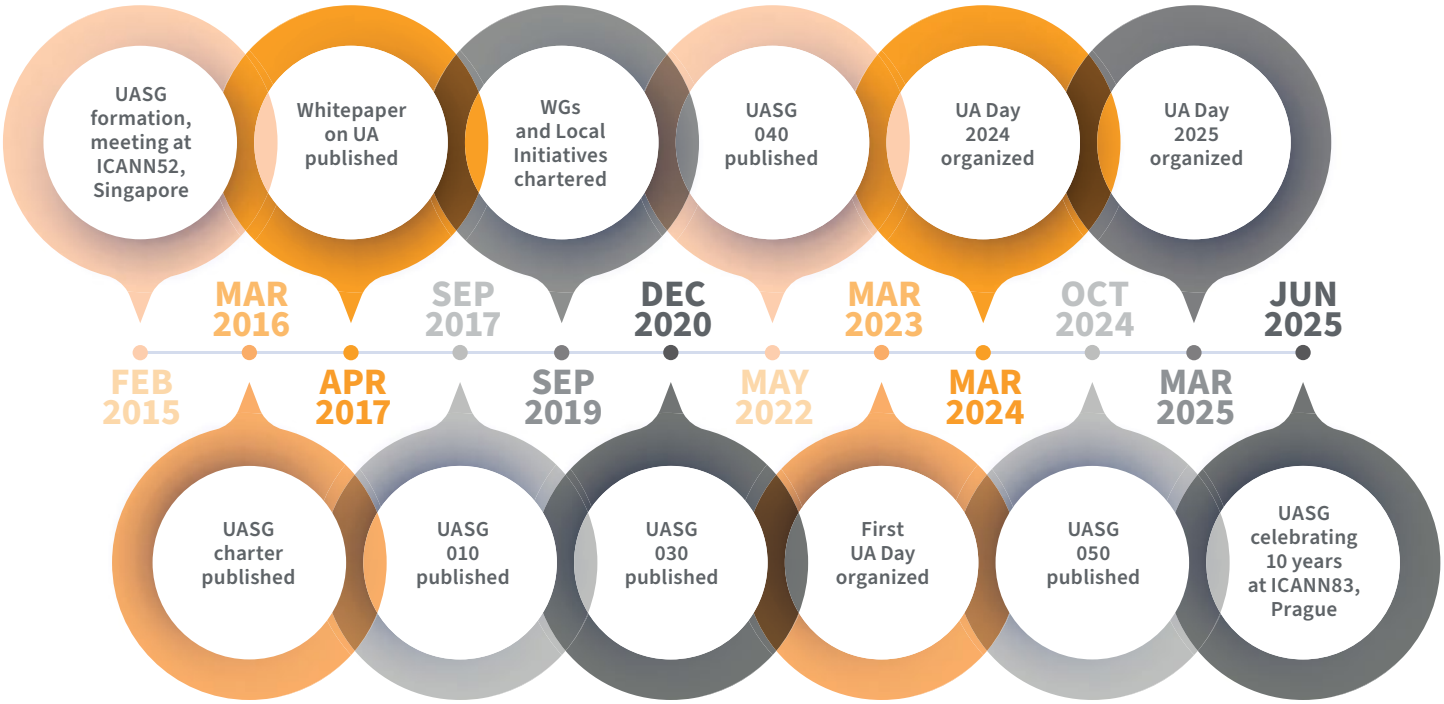
Raised Awareness with Stakeholders

Outreach through **300+ events** including:

- ICANN Public Meetings
- local/global IGFs
- WSIS Meeting
- local technology forums
- UASG training sessions

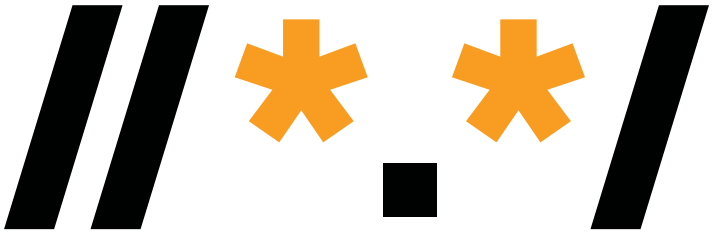
UASG Timeline

The UASG community has worked from 2015-2025 to assess gaps in UA-readiness of software applications and systems, develop solutions, create awareness and promote adoption. The illustration below shows a high level timeline of the work done by the UASG over the past decade.



Conclusion

The UASG presents a successful model of community-led initiatives, which has laid the foundation for, and created a significant impetus toward, the promotion and adoption of UA globally. UA issues have been well-defined, and solutions for these issues have been analyzed and documented based on the UASG's work. Building on top of the work accomplished by UASG, it is now time to focus on implementation of these solutions. ICANN Org is taking the implementation work forward, with guidance provided by the ICANN Board and ICANN Community.



Universal Acceptance

https://uasg.tech

ICANN

One World, One Internet