ICANN 70

VIRTUAL COMMUNITY FORUM

Remediating Universal Acceptance Issues

ICANN70 Virtual Community Forum
25 March 2021

Agenda

- Introduction to Universal Acceptance (UA)
  Dr. Ajay Data - Chair, Universal Acceptance Steering Group (UASG)
  Maria Kolesnikova - Chair, UA Communications Working Group

- UA Technical Issues Identified for Remediation
  Mark Svancarek - Chair, UA EAI Working Group
  Dennis Tan Tanaka – Chair, UA Measurement Working Group
  Satish Babu – Chair, UA Technology Working Group

- Mitigation, Remediation Approaches, and Strategy - Panel Discussion
  Dennis Tan Tanaka – Chair, UA Measurement Working Group
  Maria Kolensikova - Chair, UA Communications WG (Moderator)
  Mark Svancarek - Chair, UA EAI Working Group
  Satish Babu – Chair, UA Technology Working Group

- Question and Answer (Q&A)

Opening Remarks

Dr. Ajay Data
Chair, Universal Acceptance Steering Group (UASG)

Universal Acceptance (UA)

Vision

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

Mission

To mobilize application developers to get their products UA ready by providing encouragement, documentation, case studies, test suites, tools, and measures to help provide a better user experience for end users.

Structure

To address UA, the UA community is actively engaged and participating in the UA local initiatives and dedicated working group. The leadership structure is the Universal Acceptance Steering Group (UASG).

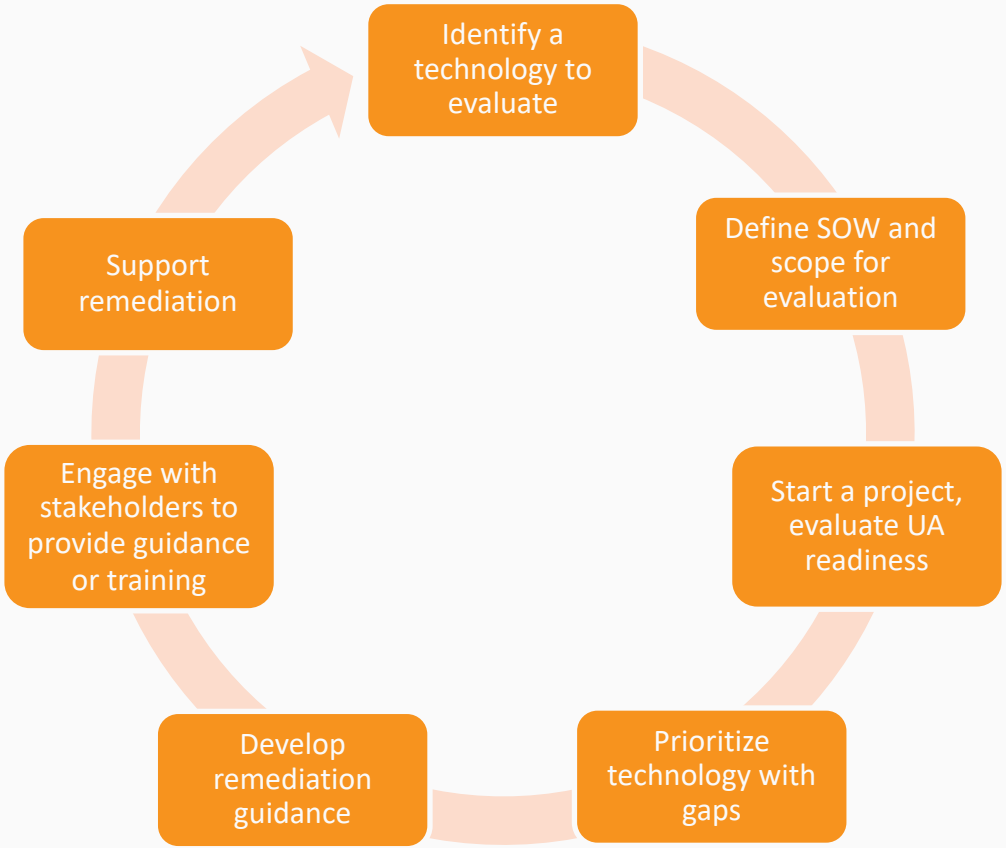
Impact

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

UASG Working Groups

UASG Working Groups	Role
Technology Working Group	Oversees remediation work on standards, programming languages, tools, and development platforms.
Email Address Internationalization (EAI) Working Group	Oversees engagement with email software and service providers to make them EAI ready.
Measurements Working Group	Identifies UA readiness gaps in tools and technologies.
Communications Working Group	Develops communication strategy and oversees its execution in collaboration with other working groups.
Local Initiatives Working Group	Conducts national or regional UA awareness, training, and stakeholder engagements.
UA Ambassadors	Organize training and outreach at national and regional levels.

UA Remediation Cycle



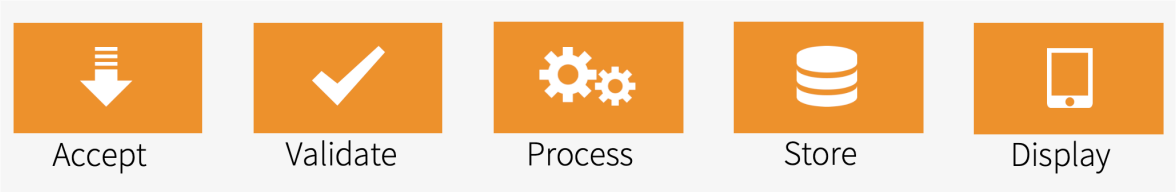
Main Categories Affected by UA Readiness

Domain Names:

- New short top-level ASCII domain names: example.sky
- New long top-level ASCII domain names: example.engineering
- Internationalized Domain Names (IDNs): คน.ไทย

Email Addresses:

- ASCII@ASCII (new and long TLD) ekrem@misal.istanbul
- ASCII@IDN marc@société.org
- Unicode@ASCII 测试@example.com
- Unicode@IDN όνομα@παράδειγμα.ευ
- Unicode@IDN; right-to-left scripts ايميل@مثال.موقع



UA Readiness in the Technology Stack

Applications and Websites

- Wikipedia.org, ICANN.org, Amazon.com, custom websites globally
- PowerPoint, Google Docs, Safari, Acrobat, custom apps

Social Media and Search Engines

- Chrome, Bing, Safari, Firefox, local (e.g., Chinese) browsers
- Facebook, Instagram, Twitter, Skype, WeChat, WhatsApp, Viber

Programming Languages and Frameworks

- JavaScript, Java, Swift, C#, PHP, Python
- Angular, Spring, .NET core, J2EE, WordPress, SAP, Oracle

Platforms, Operating Systems and Sytem Tools

- iOS, Windows, Linux, Android, App Stores
- Active Directory, OpenLDAP, OpenSSL, Ping, Telnet

Standards and Best Practices

- IETF RFCs, W3C HTML, Unicode CLDR, WHATWG

UA Readiness in 2020

- At a Glance -

Universal Acceptance

9.7% of email servers are potentially configured to support email addresses in local languages and scripts.

11% of the top 1000 websites globally support email addresses in Arabic and Chinese.

98.3% of the top 1000 websites globally support email addressses with short top-level domains.

测试@普遍接受-测试.世界

مشرف@اختبار-سجل.مصر

όνομα@παράδειγμα.ευ

Projects and Publications (Q4.2020 – Q1.2021)

UA Reports

- Universal Acceptance Compliance of Programming Language Libraries and Frameworks (UASG018A)
- Considerations for Naming Internationalized Email Mailboxes (UASG028)
- Evaluation of EAI Support in Email Software and Services Report (UASG030)
- Frequently Asked Questions (FAQs): UA Readiness of Programming Languages and Email Tools (UASG31)

UA Projects - Completed

- Evaluation of EAI Support for Email Software and Services
- Universal Acceptance Compliance of Programming Language Libraries and Frameworks

Projects and Publications (Q4.2020 – Q1.2021)

UA Projects - Ongoing

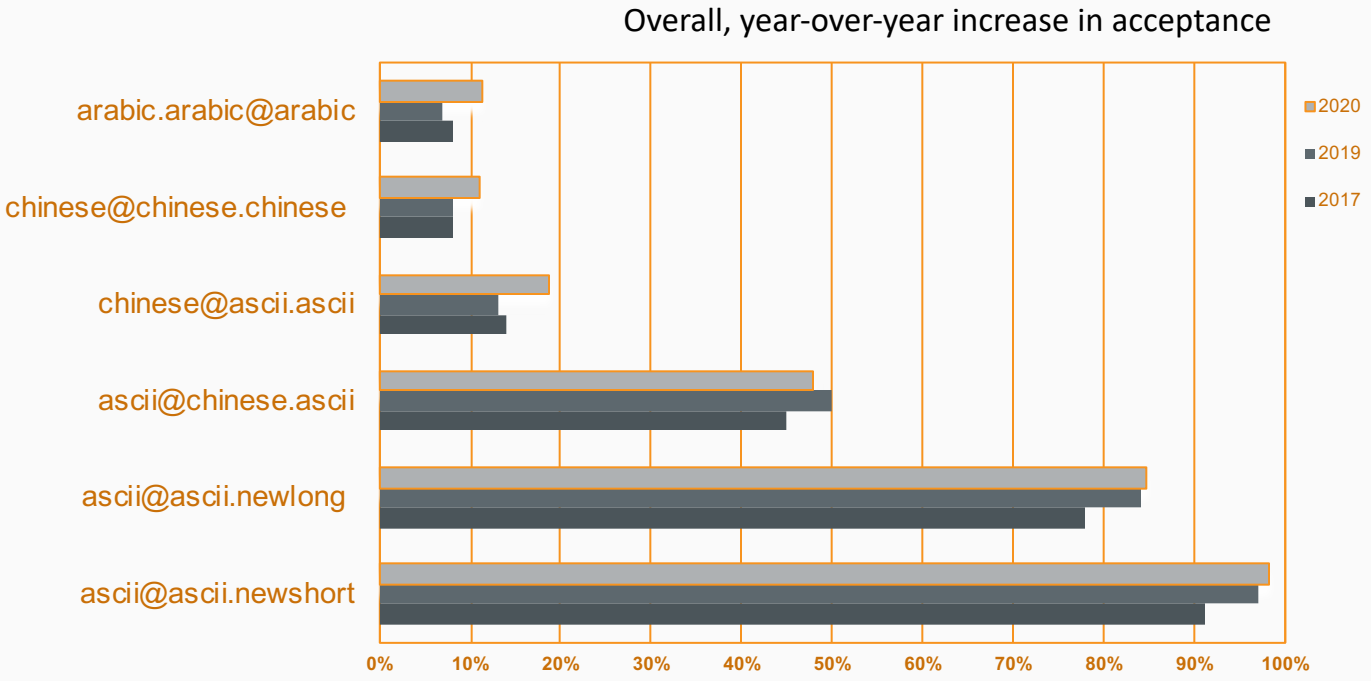
- UA Readiness of opensource code (Github)
- Inventory of EAI tools, applications and services
- UA readiness of Content Management System (CMS) pilot - WordPress

UA Projects - New

- Universal Acceptance (UA) readiness of browsers (2021 study)
- Universal Acceptance (UA) of social media networks
- UA readiness evaluation of standards and best practices
- EAI technical education and awareness directed at the developer community via Q&A webs

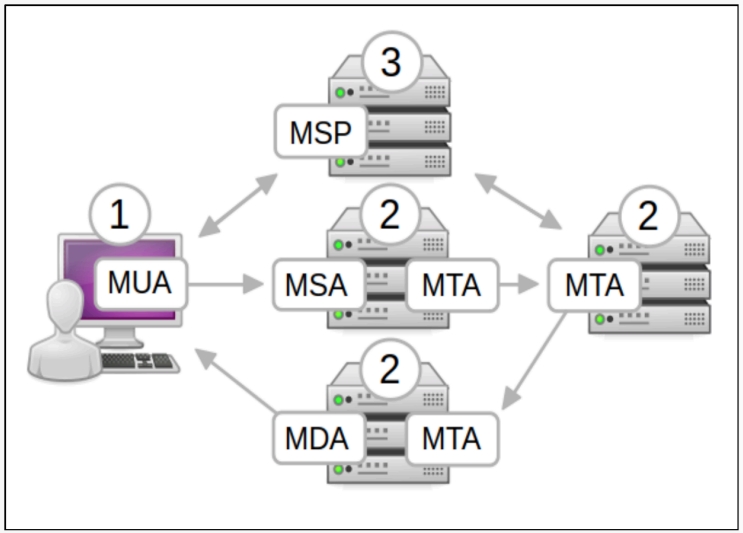
UA Technical Issues Identified for Mitigation and Remediation

Acceptance of Email Address Internationalization (EAI) by Top 1000 Websites Globally



Mail Stack for UA Consideration

- **Webmail Platforms**
  - Gmail
  - Coremail
  - Yandex
- **MXAs**
  - Axigen
  - Courier
  - Dovecot
  - Postfix
  - Zimbra



- **Components of Email systems**
  - ✓ Mail User Agent (MUA)
  - ✓ Mail Submission Agent (MSA) and Mail Transfer Agent (MTA)
  - ✓ Mail Delivery Agents (MDA)
  - ✓ Mail Service Provider (MSP)

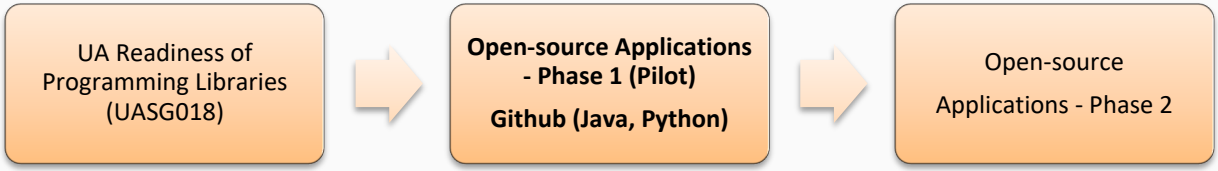
EAI Tools and Systems Testing 2021 (UASG030 Report)

L1 - EAI level 1 - sends to and receives from EAI addresses
L2 - EAI level 2 - L1 plus provides local EAI addresses

Name	MUA	MSA	MTA	MDA	MSP	Web mail
Coremail	Few	All L2	Most L2	Few	All L2	Most L2
MS Outlook.com	Most L1	Most L1	Most L1	None	None	Most L1
Yandex Mail	Few	None	None	Few	Part	Few
Roundcube	Most L2					
Apple Mail	Few					
Mozilla Thunderbird	Few					
MS Outlook	Most L1					
MS Exchange Server (hosted)		All L1	All L1			
Exim		Most L2	All L2			
Postfix		All L2	All L2			
Sendmail		Not tested	Not tested			
Fetchmail				Not tested		
Courier		All L2	All L2	All L2		
Gmail	All L1	All L1	All L1	Few		
XgenPlus		Not tested	Not tested	Not tested	All L2	Not tested

Blank cells indicate the component does not exist

UA Readiness of Open-source Code – Phase 1 (Pilot)



Goal of Phase 1 (Pilot): To determine the usage of **domain name/email address validation** procedure (library or ad-hoc code) by applications available in the open-source code **Github** repository using **Java** and **Python**.

Tool: a crawler was coded in Python to find the "dependency files" of each project, which basically lists all components necessary for the software to be compiled or run successfully.

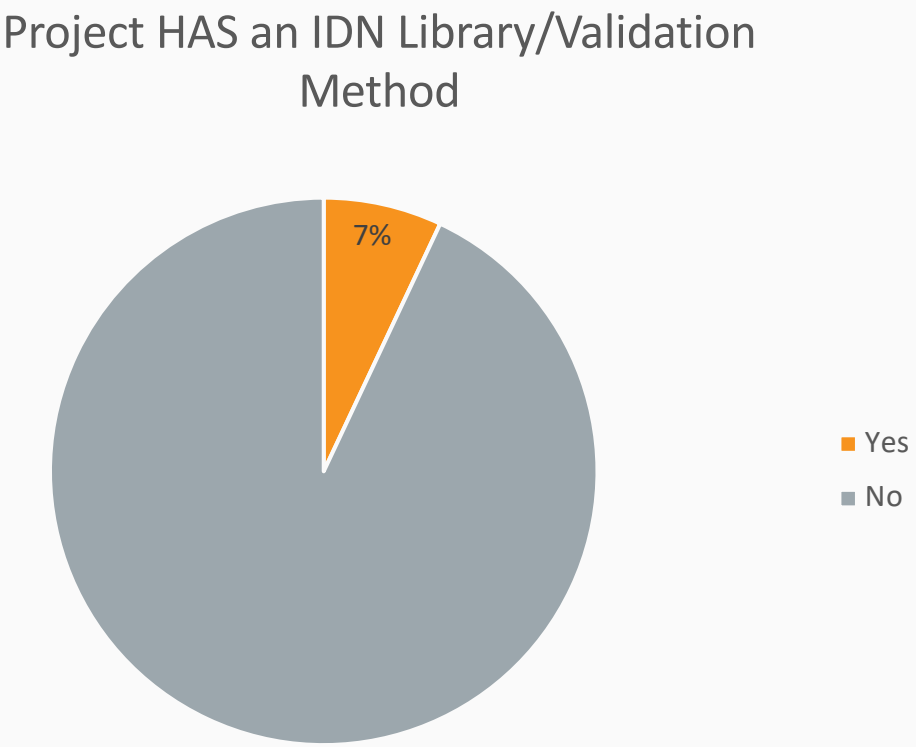
Information: UA-associated dependencies are the most used, as well as studying overall library usage to prioritize partnerships and remediation actions.

Crawler discovered and surfaced all dependencies/libraries that projects rely upon as long as the projects followed Github's best practices of making use of Maven for Java and Pip for Python as their project management tools.

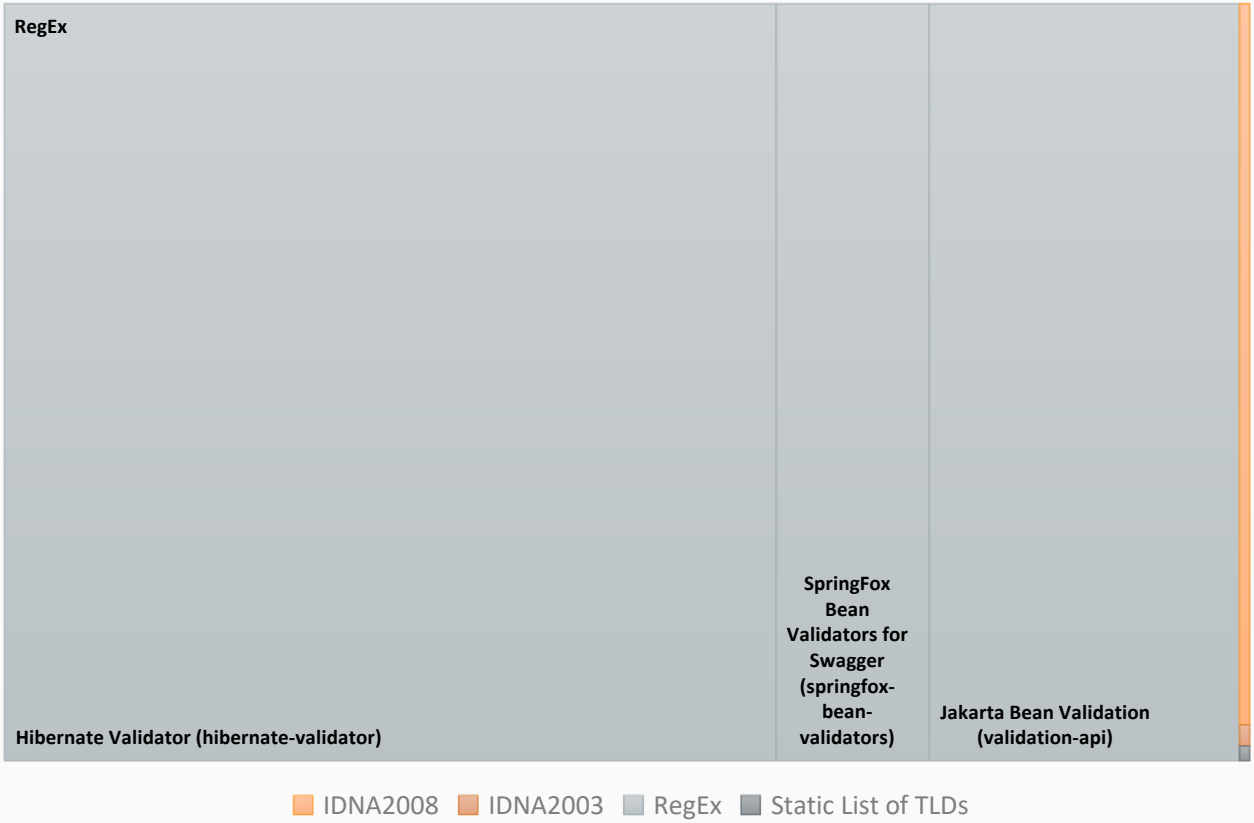
The metadata from the dependency files was extracted, processed, and catalogued in a database (MongoDB).

An arbitrarily calculated "**relevance score**" was introduced based on the metadata to signal popularity, as Github itself does not keep an official list of top software.

Key Findings for Java

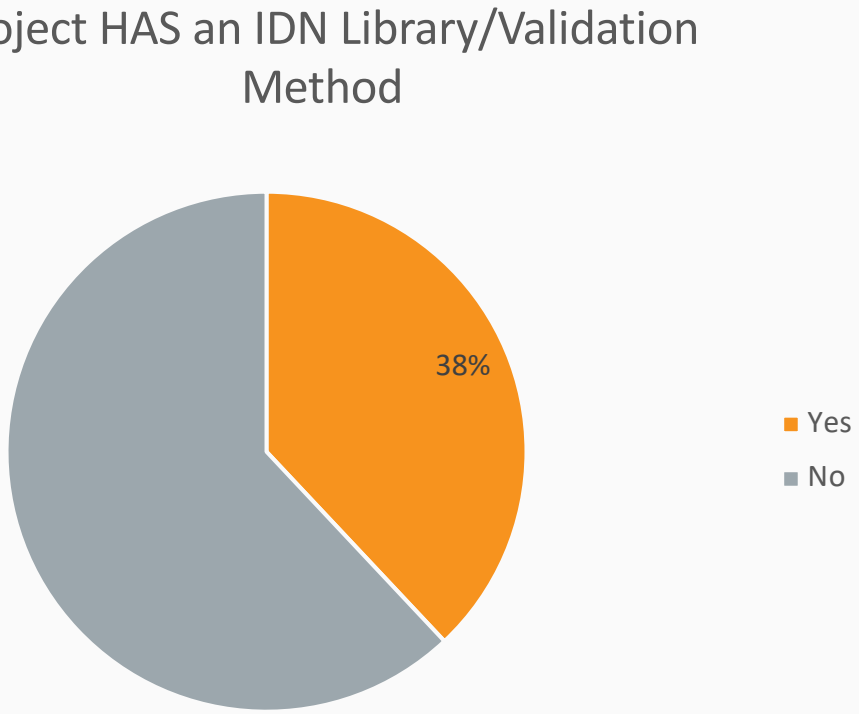


Key Findings for Java – IDN Library Mix

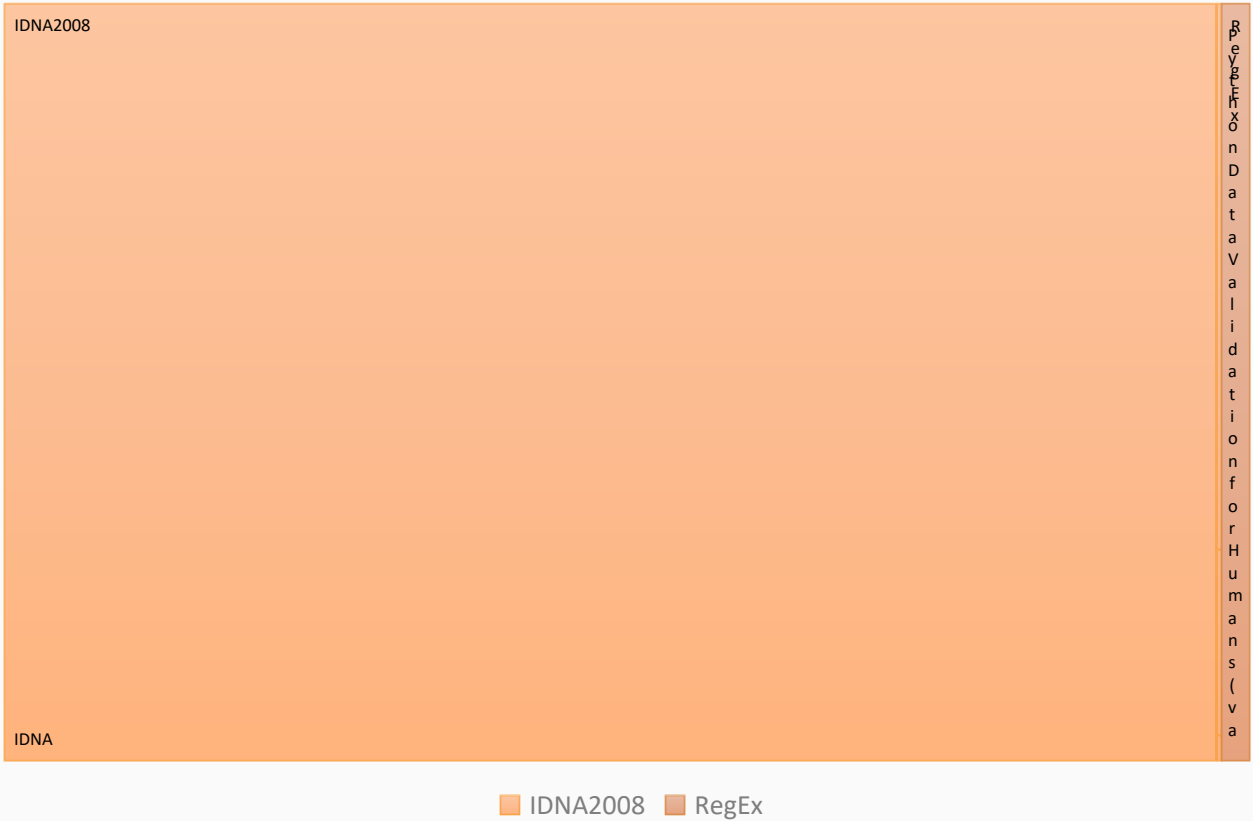


RegEx via annotations seems to be a popular method of performing validation in Java, which is unfavorable to the UASG's interests. validation-api ranks 55th overall in terms of usage, and its derivative hibernate-validator places even higher at 21st. springfox-bean-validators also ranks quite high at 79th.

Key Findings for Python



Key Findings for Python – IDN Library Mix



Out of the entire Python dataset, the *idna* module ranks 6th overall in terms of usage, which can be seen as a favorable result to the UASG's interests. It can also be a key argument in engaging with the Python language developers to port that module to the language's core, replacing the default IDNA2003 implementation.

UA Readiness of Programing Languages and Frameworks

Language	Lib Name	Compliance on dataset (%)	Datasets
c	libcurl	84.3	HEs
c	libidn2	95.2	LA2U ,LU2A
csharp	mailkit	84.3	HEs
csharp	microsoft	83.9	LA2U ,LU2A
go	idna	79	LA2U ,LU2A
go	mail	100	HEs
go	smtp	19.6	HEs
java	commons-validator	85.5	HEs ,HDns
java	guava	77.8	HDns
java	icu	93.5	LA2U ,LU2A
java	jakartamail	82.4	HEs
java	jre	71	LA2U ,LU2A

Legend (UASG018A)

UA ready

UA ready but developer needs to be careful

Not UA ready

UA Readiness of Programing Languages and Frameworks

Language	Lib Name	Compliance on dataset (%)	Datasets
js	idna-uts46	85.5	LA2U ,LU2A
js	nodemailer	84.3	HEs
js	validator	94.2	HEs ,HDns
python3	django_auth	48.1	HEs ,HId
python3	email_validator	86.3	HEs
python3	encodings_idna	67.7	LU2A ,LA2U
python3	idna	100	LA2U ,LU2A
python3	smtplib	84.3	HEs
rust	idna	87.1	LA2U ,LU2A
rust	lettre	7.8	HEs

Legend (UASG018A)

UA ready
UA ready but developer needs to be careful
Not UA ready

Approaches and Strategy for Resolving Universal Acceptance Issues

Questions for Discussion

- What is the best strategy to speed up the UA/EAI mitigation and remediation efforts?
- What is the best approach to engage tech companies and developers?
- Can governments play a role in generating demand for EAI email service and UA remediation?

Q&A

Follow, share, like, and engage with the UASG on social media and use the UASG hashtag in relevant posts: #Internet4All

Twitter: @UASGTech
LinkedIn: https://www.linkedin.com/company/uasgtech/
Facebook: https://www.facebook.com/uasgtech/

Join the UA Discuss email alias: ua-discuss@icann.org

Report a problem if you find an application or webpage that is not UA Ready: https://uasg.tech/global-support-center/

спасибо

谢谢

GRACIAS

THANK YOU

ありがとうございました

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