UA-Readiness Evaluation of Standards and Best Practices

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About Governance Primer

Governance Primer is a transnational consultancy started in 2017 with the objective of providing evidence-based research and innovative solutions to the Global Governance and Internet Governance spaces. Directed by Mark W. Datysgeld, it acts as a hub that connects talents with projects, relying on a network of experts to fulfill varied tasks, ranging from reports to multimedia creation.

Executive Summary

All of the information about the groups presented in this research is also available in both CSV and XLS formats for quicker reference, which can be downloaded from these links:

- CSV
- XLS

This evaluation was conducted by Governance Primer for the Universal Acceptance Steering Group (UASG) Technology Working Group (WG) as an answer to their request for the identification of standards bodies and groups that might be relevant to Universal Acceptance (Part 1). A secondary objective was to document indexes and indicators that could come to include UA-readiness as a datapoint (Part 2). The end goal was to identify opportunities for engagement, collaboration, and the advancement of the UASG's goals.

Our investigation was limited to well-established organizations and groups that have had prior engagement with information and communications technologies (ICTs). In collaboration with the ICANN community and staff, we identified key organizations and studied their work streams, eventually generating a comprehensive list that was converted into index cards (with a few exceptions), labeled with categories and priority levels for ease of use, as well as containing relevant descriptions, recommendations, and contact information.

The work streams that emerged as the most appropriate were subject to a process of gap analysis and a more systematic study was made of them. Finally, different indexes and indicators were studied but the task did not prove as fruitful as the first one. Our general impression is that these processes require a high degree of commitment from the organization that intends to provide the data, as well as the involvement of governments.

The remainder of this executive summary will be dedicated to providing an abridged version of the gap analysis results for quick reference.

W3C Accessibility Education and Outreach Working Group (EOWG): This group has a key role within the W3C in the promotion of accessibility, exerting influence over other initiatives from the organization, and serving as a central point of contact to reach out to them. The UASG should assign a member and a proposal should be made for work to be done to evaluate UA-readiness as an accessibility criterion, and subsequent work can be performed together with the group.

W3C Internationalization Working Group (i18n): One of the groups that most closely works with matters related to UA outside of the UASG itself. The lack of communication between both groups may have resulted in missed opportunities. This WG is very active and reviews a wide range of questions related to i18n, providing recommendations and fixes. Closer cooperation could result in gains for both parties.

WHATWG HTML Living Standard: As indicated in UASG025: Global Evaluation of Websites for Acceptance of E-mail Addresses in 2019, the latest iteration of HTML5 only partially supports UA, a situation that has been subject to discussion by multiple interested parties. A Statement of Work (SOW) should be made for a contractor to develop appropriate code and, with the assistance of the UASG as a whole, navigate the community's processes in order to get this change approved.

IETF art-dmarc: Domain-based Message Authentication Reporting & Conformance: DMARC is an emergent solution to curb email abuse, which leverages the DNS to perform the task optimally. Given this close interaction with the ICANN environment, the promotion

and education of UA-readiness practices best practices could prove important in making sure that installations of the technology are properly tested against the refusal of valid emails. Ideally, a SOW would be carried out to determine under what circumstances DMARC may end up refusing valid emails.

IETF art-regext: Registration Protocols Extensions: Has active concern with the "Use of Internationalized Email Addresses in the Extensible Provisioning Protocol (EPP)" draft and pre-existing discussions centered around UA. The UASG should share its working knowledge on the matter of IDNs while consolidating a relationship with the WG that allows for a mutually beneficial advancement of this technology.

IRTF Hrpc: Human Rights Protocol Considerations Research Group: The innovative nature of the Hrpc's approach, which centers on the human rights dimension of protocols and standards, makes it a suitable home for UA-related discussions. The group is relatively recent and its focus on matters of access and free communication are a close match to the UASG's goals. Interaction with the group could help the UASG reach out to several other IETF groups, given the Hrpc's transversal nature in terms of recommendations.

Unicode International Components for Unicode (ICU): In UASG018A: UA Compliance of Some Programming Language Libraries and Frameworks and UASG033: UA-Readiness of Open Source Code Pilot we learned that ICU is a very useful software library that offers a great degree of UA-readiness. However, UASG033 shows a low adoption by developers, possibly due to a lack of proper outreach. By leveraging the combined efforts of both groups, better diffusion of this library could be achieved, leading to the UA-readiness of more software across the world.

ITU-T Joint Coordination Activity on Accessibility and Human Factors (JCA-AHF): The strong human rights focus that this group brings to the ITU and partner groups, combined with the fact that it is accessible to non-government members, makes it the ideal avenue for engagement within the ITU sphere. Their meetings are ongoing and there is space for the inclusion of UA as a subject. It is the ITU equivalent of the IRTF's Hrpc.

Python Software Foundation PEPs: UASG033: UA-Readiness of Open Source Code Pilot and the core PyPI repository both show that the *idna* module, which upgrades Python's core implementation of IDNA2003 to IDNA2008, finds very significant adoption among open source developers. A proposal should be made to integrate the module into the core of the language, making it UA-ready at its foundation. This can be achieved by means of Python Enhancement Proposals (PEPs), which should be steered by a qualified contractor via SOW.

Cybersecurity organizations engagement: Several anti-malware groups already have ICANN representation, as well as that of UASG partner Verisign. Therefore, setting up proper relationships should not be difficult. It is necessary to understand the approach of these different groups to the domain names that the UASG seeks to validate.

Methodology

This document was developed for the UASG Technology WG as an answer to their request for the identification of standards bodies and groups that may be relevant to Universal Acceptance (Part 1). A secondary objective was to document indexes and indicators that could come to include UA-readiness as a datapoint (Part 2). The end goal was to identify opportunities for engagement, collaboration, and the advancement of the UASG's goals in general.

The present document captures a moment in time, between late 2021 and early 2022, and it can be revisited in the future or made into a living document according to the community's interest. An initial static version will be published as an official UASG document to fulfill the requirements set by the community.

Given the broad range of potential actors to study, the scope of the investigation was limited to:
- Well-established organizations and groups.
- Actors with prior engagement with ICTs.
- Conferences were deemed out of scope.

Starting from a list compiled by the UASG community, we used both prior knowledge and sought opinions from specialists in order to arrive at a selection of the most relevant organizations to study. We proceeded to look into each one individually, going over their many work streams and charting those with pertinent themes based on previous documentation and discussions carried out by the UASG. "Professional certifications" were at one point also considered, such as those that prove competence in a given programming language, but these were eventually deemed to be difficult to engage with as there was no clear path to influence them.

Our investigation focused on looking into the groups' stated missions, the documents produced by them, and their mailing lists. From the results of this survey, several relevant subjects emerged. However, we also found a significant number of work streams of potential relevance that required much deeper examination in order for that to be ascertained. To look into each one individually would have far exceeded the scope of this project. Based on feedback from the UASG Tech WG, a prioritization effort was carried out resulting in the following color-coded matrix:

UASG Interest Prioritization Matrix	
Green	High interest
Yellow	Moderate interest
Orange	Tangential interest

Any work stream categorized as "high interest" (green) has been deemed of immediate interest to the UASG. Those of "moderate interest" (yellow) showed promise upon first examination, but cannot be said to be as relevant. In the case of those of "tangential interest" (orange), some evidence of relevance was found, but not enough to warrant a recommendation. Those that did not make it into any of these groupings were discarded.

Our next step was to create *arbitrary* categories to help the understanding of what a particular work stream does at a glance. These categories were intentionally kept limited in order to provide larger groupings instead of achieving a degree of granularity that would create situations such as that of a category only having one element. The categories are as follows:

List of Focus Categories	
Accessibility	Primarily concerned with making the Internet accessible to more people, often with a focus on persons with disabilities or limitations.
Cybersecurity	Dealing with digital security of any type, including in relation to other categories listed here.
Community	Aimed primarily at building connections, performing outreach, and engaging in relevant discussion.
i18n	Pertaining to internationalization and its technical challenges and solutions.
Identity	Focused on solutions that identify users.
Mail	Focused directly on email and its components.
Web/DNS	Broad category uniting web-related groups and those that deal with the DNS.

Most results were organized in an "index card" format in order to make their consultation easier and to aggregate information in a single place. There are some exceptions to this, including for cases in which the format did not facilitate the comprehension of the information provided. Those entries are presented in text form.

The index cards are composed of:
- Abbreviated group name and full group name (e.g., art-jmap: JSON Mail Access Protocol).
- Group website.
- Focus category.
- UASG interest rating.
- A box containing two elements:
  - Quick description of the group's objectives.
  - Quick recommendation of possible UASG actions.
- An extended description generally copied or adapted from the group's website.
- A contacts session, which may include:
  - A key document that represents the group.
  - Additional external websites.
  - Direct link to meeting minutes.
  - Information archives.
  - Participation and contribution opportunities, such as mailing lists and repositories.
  - Points of contact, either as names or as links to profile pages (avoiding privacy concerns).
  - Dynamic interaction channels.

The work streams that emerged as the most appropriate were subject to a process of gap analysis. In this stage of the research, members from the selected groups were contacted, previous presentations at conferences were watched, and a greater volume of documents was read. We systematized these results in the "Gap Analysis: Top Identified Opportunities" section, which should be considered the main outcome of this document.

Finally, we were tasked with researching different indexes and indicators, and evaluating them for the possibility of having Universal Acceptance included as a new datapoint. While an interesting concept, the task did not prove too fruitful, at least in relation to the several opportunities that emerged in Part 1 of the study. Our general impression is that these processes require a high degree of commitment from the organization that intends to provide the data, and often depend on the involvement of governments. An agreement and

subsequent project with the ICANN organization itself would likely be required for such projects to be carried out.

Finally, due to their repetition in this document, two non-standard abbreviations are used extensively:
- **GH**: GitHub
- **ML**: Mailing list

Gap Analysis: Top Identified Opportunities

W3C

Accessibility Education and Outreach Working Group (EOWG)

Context: The EOWG is very active and their actions are well-documented. Given their wide range of involvement in education, surveying, curricula, and similar initiatives, this group has a key role within the W3C in the promotion of accessibility, exerting influence over other initiatives from the organization, and serving as a central point of contact to reach out to them. By collaborating with their work, the UASG can tap into the several other workstreams that deal with accessibility, such as the Silver Community Group and the WAI Interest Group, and steer UA towards becoming part of the concerns of such guidelines.

Action: The UASG should assign a member who can join by recommendation of the W3C Advisory Committee Representative for ICANN, or as an invited expert in case that path is not viable. Once within the group, a proposal should be made for work to be done on evaluating UA-readiness as an accessibility criterion, and subsequent work can be performed together with the group.

Internationalization Working Group (i18n)

Context: As one of the groups that works with matters related to UA the most, outside of the UASG itself, the lack of communication between both groups may have resulted in missed opportunities. This WG is very active and reviews a variety of questions related to i18n, providing recommendations and fixes. Closer cooperation could lead to gains for both parties. In addition, some of the project's leaders are already involved in the UASG community.

Action: See "Accessibility Education and Outreach Working Group (EOWG)" as the directives are the same.

WHATWG

HTML Living Standard

[Calls for a SOW]

Context: As indicated in a previous study carried out by the UASG, "UASG 025: Global Evaluation of Websites for Acceptance of Email Addresses in 2019", the latest iteration of HTML5 only partially supports UA, and this is a conscious decision made by the developers. Given the WHATWG's de facto role as the decider of these matters under their current agreement with the W3C, this WG is the most relevant vector of promotion for the incorporation of UA as part of upcoming revisions of the HTML standard.

Action: The WG is open for pull requests to be made directly to their repository, provided that it is correctly formatted and appropriate tests are performed. At a glance, this might

seem like a straightforward matter but there is a pending necessity of getting the different stakeholders on the same page.

Previous debates around this topic involving UASG, WHATWG, and W3C members have been inconclusive. The overall position appears to be favorable, so the next step would be to share the proposal and to achieve consensus between actors. This will help build community and vendor interest to make this vital change and achieve UA success. Relevant discussion on the subject can be found at: https://github.com/whatwg/html/issues/4562.

IETF

art-dmarc: Domain-based Message Authentication Reporting & Conformance

[Calls for a SOW]

Context: DMARC is an emergent solution to curb email abuse, which leverages the DNS to perform the task optimally. Given this close interaction with the ICANN environment, the promotion and education of UA-readiness best practices could prove important in making sure that installations of the technology are properly tested against the refusal of valid emails.

Action: Ideally, a SOW would be carried out to determine under what circumstances DMARC may end up refusing certain emails. For example, this can be triggered by the improper setting of policy flags to "quarantine" or "reject." With these results, the group and one if its champions, the Global Cyber Alliance (GCA), could be approached in order to promote a UA-friendly method of educating technicians setting up DMARC systems.

art-regext: Registration Protocols Extensions

Context: Given the group's active concern with the "Use of Internationalized Email Addresses in the Extensible Provisioning Protocol (EPP)" draft and pre-existing discussions centered around UA, the friction of joining this WG's efforts would be relatively low. In addition, some of the project's members are already involved in the UASG community.

Action: The UASG should share its working knowledge on the matter of Internationalized Domain Names (IDNs) while consolidating a relationship with the WG that allows for a mutually beneficial advancement of this technology. This task could be performed by a well-informed community member or by a technical manager for UA matters.

IRTF

Hrpc: Human Rights Protocol Considerations Research Group

Context: The innovative nature of the Hrpc's approach, which centers on the human rights dimension of protocols and standards, makes it a suitable place for UA-related discussions. The group is relatively recent and its focus on matters of access and free communication are a close match to the UASG's goals. Members of the UASG have even published a paper titled "Enabling Human Rights with Universal Acceptance: The Path to Implementation of Internationalized Domain Names (IDN) and Email Addresses Internationalization (EAI)" on the WPIETF, detailing the linkage between the group and UA.

Action: With the stage already partially set by the publication mentioned above, interaction with the group could help the UASG reach several other IETF groups given the Hrpc's transversal nature in terms of recommendations. The co-publication of studies and RFCs should be evaluated to further strengthen the connected mission between the groups.

Unicode

International Components for Unicode (ICU)

Context: As indicated in a previous studies carried out by the UASG, namely, UASG018A: UA Compliance of Some Programming Language Libraries and Frameworks and UASG033: UA-Readiness of Open Source Code Pilot, it was found that ICU is a very useful software library that offers a great degree of UA-readiness. However, UASG033 shows a low adoption by developers, possibly due to a lack of proper outreach.

Action: By leveraging the combined efforts of both groups, better diffusion of this library could be achieved leading to the UA-readiness of more software across the world. By leveraging the UASG and ICANN's resources, a greater push for the usage of this library could be made, especially with Unicode's backing. A plan should be developed in partnership between the UASG Technology and Communications WGs.

ITU-T

Joint Coordination Activity on Accessibility and Human Factors (JCA-AHF)

Context: The strong human rights focus that this group brings to the ITU and partner groups, combined with the fact that it is accessible to non-government members, makes it the ideal avenue for engagement within the ITU sphere. Their meetings are ongoing and there is space for the inclusion of UA as a subject.

Action: See Hrpc: Human Rights Protocol Considerations Research Group as the directives are roughly the same.

Python

[Calls for a SOW]

The roadmap for this opportunity is extensively discussed in the section Python Language Standard.

Cybersecurity Organizations

Context: Includes the Anti-Phishing Working Group (APWG), Center for Internet Security (CIS): Critical Security Controls Community, FIRST: DNS Abuse SIG, and Messaging Malware Mobile Anti-Abuse Working Group (M3AAWG). These groups already have ICANN representation, as well as UASG partner Verisign. Therefore, setting up proper relationships should not be difficult.

Action: It is necessary to understand the approach of these different groups to the domain names that the UASG seeks to validate. Once an assessment is made, different actions can be assumed based on the responses received. At minimum, the proper framing that the usage of these emails and domain names does not necessarily entail any abuse should be made a priority.

//*.*/

Part 1: Institutions, Organizations, and their Relevant Subgroups

World Wide Web Consortium (W3C)

Background: Dating from 1994, the W3C has a focus on the standardization of several aspects of the web, as well as some of the applications that rely upon it. For a significant amount of time, there was confusion as to whether the core maintainer of the HTML standard should be the W3C or the Web Hypertext Application Technology Working Group (WHATWG). This issue was resolved with a Memorandum of Understanding between the organizations, which defined that work on the HTML and DOM standards should be carried out within the WHATWG with the W3C participating in the process, as well as acting as a facilitator and reviewer of the specifications.

Technical notes: The W3C maintains an impressive number of work streams that are divided into different categories that differ in their scope and participation criteria. In summary, the WGs require vetoing by existing members or participating organizations. A more descriptive breakdown follows:

- **Community/Business Groups**: Open; revolving mostly around socialization and sharing of ideas.
- **Interest Groups**: Open; centered on the exploration of specific themes, does not produce deliverables.
- **Working Groups**: Closed; focused on the exploration of specific themes and produces deliverables, sometimes continuously over years.

Another important concept is that of the "Invited Expert", which is a person unaffiliated with a partner organization but who, nevertheless, can demonstrably contribute to a WG's efforts. This requires the aforementioned vetoing of a party already involved in the work.

Select Engagement Opportunities

Accessibility Education and Outreach Working Group (EOWG) https://www.w3.org/WAI/about/groups/eowg/	Focus Accessibility
UASG interest: High	
Wide range of actions on education, surveying, curricula, and similar initiatives. UASG partnership can be established around combined outreach efforts.	
Description The mission of the Education and Outreach Working Group (EOWG) is to develop strategies and resources to promote awareness, understanding, and implementation of web accessibility; and to support the work of other Web Accessibility Initiative (WAI) Working Groups. EOWG is chartered to work collaboratively with other WAI Working Groups to support public awareness, understanding, and successful implementation of WAI guidelines, specifications, notes, and other resources.	
Contact **Meeting minutes:** https://www.w3.org/WAI/EO/wiki/EOWG_Meetings **Participation for Invited Experts (ML)**: https://www.w3.org/WAI/about/groups/eowg/participate/	

Accessibility Guidelines Working Group (AGWG)	Focus
https://www.w3.org/WAI/GL/	Accessibility

UASG interest: High

Work performed by Task Forces. Most relevant to UA: Silver Task Force, which feeds into the Silver Community Group, to "address current technological and cultural web accessibility requirements and provide a base for continued evolution of the guidelines."

UASG partnership can be established around combined outreach efforts.

Description

The mission of the Accessibility Guidelines Working Group is to develop specifications to support making implementations of web technologies accessible for people with disabilities, and to develop and maintain implementation support materials.

Task Forces:
- Accessibility Conformance Testing (ACT) Task Force
- Cognitive and Learning Disabilities Accessibility Task Force
- Low Vision Accessibility Task Force
- Mobile Accessibility Task Force
- Silver Task Force

Contact
Meeting minutes: https://www.w3.org/WAI/GL/minutes-history
Contribution (form and ML): https://www.w3.org/WAI/standards-guidelines/wcag/commenting/
Participation for Invited Experts (ML): https://www.w3.org/WAI/GL/participation

Accessible Platform Architectures Working Group (APAWG)	Focus
https://www.w3.org/WAI/APA/	Accessibility

UASG interest: Moderate

Work performed by Task Forces. Most relevant to UA: Research Questions Accessibility Task Force (RQTF), which "works to identify accessibility knowledge gaps and barriers in emerging and future web technologies, and to identify research findings, researchers, and research opportunities to inform and fill those gaps where possible."

UASG partnership can be established around combined outreach efforts.

Description

The mission of the Accessible Platform Architectures Working Group (APA WG, formerly part of the Protocols and Formats Working Group) is to ensure W3C specifications provide support for accessibility to people with disabilities. The group advances this mission through review of W3C specifications, development of technical support materials, collaboration with other Working Groups, and coordination of harmonized accessibility strategies within W3C.

Task Forces:
- Cognitive and Learning Disabilities Accessibility Task Force
- Personalization Task Force
- Research Questions Task Force
- Spoken Pronunciation Task Force
- CSS Accessibility Task Force
- Web Payments Accessibility Sub-Group
- HTML Accessibility Task Force
- Specification Accessibility Task Force

Contact

Participation for Invited Experts (ML): https://www.w3.org/WAI/APA/participation
Contribution (ML): https://www.w3.org/WAI/APA/contribute

ARIA and Assistive Technologies Community Group (ARIA-AT)	Focus
https://www.w3.org/community/aria-at/	Accessibility
UASG interest: Tangential	
Dedicated to screen readers/voice output testing and advocacy. UASG partnership can be established around testing efforts.	
Description	
This community group is dedicated to: ▪ Helping assistive technology developers converge on a set of clear norms for baseline support of WAI-ARIA. ▪ Helping web developers understand the current state of support for WAI-ARIA by assistive technologies. WAI-ARIA is as important to assistive technology presentation as CSS is to visual presentation.	
Contact **Participation (ML):** https://www.w3.org/accounts/login?redirect_url=/community/aria-at/join **Contribution (GH):** https://github.com/w3c/aria-at	

Chinese Web Interest Group	Focus
https://www.w3.org/2018/chinese-web-ig/	Community
UASG interest: Tangential	
Aimed at integrating and representing Chinese web users. Not very active, but contacts could still be valuable to the UASG.	
Description	
The Chinese Web Interest Group provides a forum for W3C members to enhance the participation in web standards work from the Chinese web community. The group will focus primarily on identifying unique requirements from China, on helping the Chinese members to get familiar with the process of W3C standards activities, on discussion of technical ideas with the potential to be proposed to W3C, on standards testing and implementation, as well as corresponding standardization opportunities for W3C while assisting the participation and contribution from the Chinese web community.	
Contact **Participation for Invited Experts (ML):** https://www.w3.org/groups/ig/chinese-web/instructions	

Credentials Community Group (CCG)	Focus
https://www.w3.org/community/credentials/	Identity
UASG interest: Moderate	
Very active group on diverse tasks related to credentials standards. UASG partnership is desirable as email addresses are part of the credential environment.	
Description	
The mission of the W3C Credentials Community Group is to explore the creation, storage, presentation, verification, and user control of credentials. We focus on a verifiable credential (a set of claims) created by an issuer about a subject – a person, group, or thing – and seek solutions inclusive of approaches such as: self-sovereign identity; presentation of proofs by the bearer; data minimization; and centralized, federated, and decentralized registry and identity systems. Our tasks include drafting and incubating Internet specifications for further standardization and prototyping and testing reference implementations.	
Contact **External website:** https://w3c-ccg.github.io/	

Meeting minutes: https://w3c-ccg.github.io/meetings/
Participation (ML):
https://www.w3.org/accounts/login?redirect_url=/community/credentials/join
Point of contact (IRC): irc://irc.w3.org:6665/#ccg

Decentralized Identifier Working Group (DIDWG)	Focus
https://www.w3.org/2019/did-wg/	Identity

UASG interest: Moderate

DIDs are a new type of identifier that enable verifiable and decentralized digital identities. UASG partnership can be established within the context of it supporting all domain names and email addresses.

Description

The mission of the Decentralized Identifier Working Group is to standardize the DID URI scheme, the data model and syntax of DID Documents, which contain information related to DIDs that enable the aforementioned initial use cases, and the requirements for DID Method specifications.

Contact
Key document: https://w3c.github.io/did-core/
Meeting minutes: https://www.w3.org/2019/did-wg/Meetings/Minutes/
Participation for Invited Experts (ML): https://www.w3.org/groups/wg/did/instructions

HTML Working Group	Focus
https://www.w3.org/groups/wg/htmlwg	Web/DNS

UASG interest: Moderate

The drafting of HTML specs is performed by an external entity, the WHATWG. Nevertheless, the W3C's HTML Working Group could still be an avenue for the UASG to push for native HTML validation of all domain names.

UASG partnership can be established around combined outreach efforts.

Description

The mission of the HTML Working Group is to give input to and bring the WHATWG HTML and DOM Review Drafts to W3C Recommendations.

Contact
Participation for Invited Experts (ML):
https://www.w3.org/groups/wg/htmlwg/instructions

Internationalization Working Group (i18n)	Focus
https://www.w3.org/nternational/core/Overview	i18n

UASG interest: High

The most active W3C group dealing with internationalization issues. UASG partnership can be established to share best practices or potentially perform joint actions.

Description

The mission of the Internationalization Working Group is to enable universal access to the World Wide Web by proposing and coordinating the adoption by the W3C of techniques, conventions, technologies, and designs that enable and enhance the use of W3C technology and the web worldwide, with and between various different languages, scripts, regions, and cultures.

Contact
Social media: https://twitter.com/webi18n
Projects index: https://w3c.github.io/i18n-activity/projects/
Participation for Invited Experts (ML): https://www.w3.org/groups/wg/i18n-core/instructions

MiniApps Ecosystem Community Group	Focus
https://www.w3.org/community/miniapps/	Web/DNS
UASG interest: Moderate	
New mobile applications combining web technologies and capabilities of native applications, driven by the Chinese private sector. UASG partnership can be established for the standard to be natively UA-ready.	
Description	
The MiniApps Ecosystem Community Group provides a forum for global community to discuss, incubate and propose MiniApp related standard ideas with the goal to bring more interoperability and robustness to MiniApp ecosystem.	
Contact **Key document:** https://w3c.github.io/miniapp/white-paper/ **Meeting minutes**: https://github.com/w3c/miniapp/blob/gh-pages/Meetings/CG.md **Participation (ML):** https://www.w3.org/accounts/login?redirect_url=/community/miniapps/join	

Silver Community Group	Focus
https://www.w3.org/community/silver/	Accessibility
UASG interest: High	
Key contributors to W3C's Accessibility Guidelines Working Group. UASG partnership is desirable in order to promote UA as an accessibility feature.	
Description	
Support the research and prototyping of the next major version of Web Content Accessibility Guidelines (WCAG). This group may publish Specifications.	
Contact **Key document:** https://www.w3.org/TR/wcag-3.0/ **External website 1:** https://w3c.github.io/silver/ **External website 2:** https://www.w3.org/WAI/GL/task-forces/silver/wiki/Main_Page **Participation (ML)**: https://www.w3.org/accounts/login?redirect_url=/community/silver/join **Point of contact 2 (IRC)**: irc://irc.w3.org/#silver	

Spec Editors Community Group	Focus
https://www.w3.org/community/speced-cg/	Community
UASG interest: Tangential	
Deals in a general manner with the writing of specifications for technology. Contacts could be valuable to the UASG.	
Description	
The Spec Editors Community Group aims to be an inclusive space where spec editors, and those wanting to become spec editors, can learn from each other. The Spec Ed CG focuses on the practice (the art?) of writing technical specifications across the web ecosystem (W3C, WHATWG, ECMA, IETF, etc.). By looking across the ecosystem, we hope to improve our specification development practices at the W3C.	
Contact **Participation (ML)**: https://www.w3.org/accounts/login?redirect_url=/community/speced-cg/join	

Technical Architecture Group (TAG)	Focus
https://www.w3.org/2001/tag/	Community
UASG interest: Moderate	
Reviews web standards development and implementation. UASG partnership can be established in order to further validate UA solutions.	
Description	

The TAG is a special working group within the W3C, chartered (under the W3C Process Document) with stewardship of the Web architecture. As outlined in its charter, there are three aspects to this mission: 1) to document and build consensus around principles of Web architecture and to interpret and clarify these principles when necessary; 2) to resolve issues involving general Web architecture brought to the TAG; 3) to help coordinate cross-technology architecture developments inside and outside W3C.

Contact
Participation (ML): https://lists.w3.org/Archives/Public/www-tag/
Contribution: https://tag.w3.org/workmode/

XForms Users Community Group	Focus
https://www.w3.org/community/xformsusers/	Web/DNS

UASG interest: High

The group closest to working directly with forms within the W3C. UASG partnership is desirable to promote UA in the development of this standard.

Description
A group for XForms users to discuss the use of XForms and propose changes and additions to the markup.

Contact
Key document: https://www.w3.org/community/xformsusers/wiki/XForms_2.0
External website: https://www.w3.org/MarkUp/Forms/wiki/Main_Page
Participation (ML):
https://www.w3.org/accounts/login?redirect_url=/community/xformsusers/join

WAI Interest Group	Focus
https://www.w3.org/WAI/about/groups/waiig/	Accessibility

UASG interest: High

Focused on dissemination of W3C accessibility standards. UASG partnership can be established around combined outreach efforts.

Description
The mission of the WAI Interest Group (WAI IG) is to promote awareness of, and engagement in, accessibility-related work throughout W3C. This includes augmenting wide reviews of WAI deliverables, and augmenting APA WG's review and discussion of accessibility aspects of deliverables being developed in W3C groups, including specifications, research topics, and educational materials; exploring web accessibility issues and solutions; and sharing information about web accessibility activities around the world.

Contact
Participation (ML): https://www.w3.org/WAI/about/groups/waiig/#subscribing-and-unsubscribing-to-the-discussion-list

Web Application Security Working Group	Focus
https://www.w3.org/2011/webappsec/	Cybersecurity

UASG interest: Tangential

Deals with various security-related questions on web applications. UASG partnership can be established around the security solutions developed to handle UA support.

Description
The mission of the Web Application Security Working Group is to develop security and policy mechanisms to improve the security of Web Applications, and enable secure cross-site communication.

Contact
Meeting minutes: https://github.com/w3c/webappsec/tree/main/meetings
Participation (ML): public-webappsec-request@w3.org

Web Applications Working Group (WebApps WG)	Focus
https://www.w3.org/2019/webapps/	Web/DNS
UASG interest: Tangential	
Deals with various aspects of web applications and their components. UASG partnership can maybe be established in ensuring UA-readiness of components.	
Description	
The mission of the Web Applications Working Group (WebApps WG) is to produce specifications that facilitate the development of client-side web applications.	
Contact **Projects index:** https://www.w3.org/groups/wg/webapps/publications **Participation (ML)**: https://www.w3.org/groups/wg/webapps/join	

Web Authentication Working Group/WebAuthn	Focus
https://www.w3.org/Webauthn/	Identity
UASG interest: High	
Focused on developing the Web Authentication API. UASG partnership is desirable as email addresses are part of the credential environment.	
Description	
The mission of the Web Authentication Working Group, in the Security Activity is to define a client-side API providing strong authentication functionality to Web Applications.	
Contact **Key document:** https://www.w3.org/TR/webauthn/ **Meeting minutes**: https://www.w3.org/blog/webauthn/2021/01/07/meeting-minutes-2021/ **Participation (ML)**: https://www.w3.org/groups/wg/webauthn/join	

Web Hypertext Application Technology Working Group (WHATWG)

Background: Dating from 2004, the WHATWG is a private-sector led standards body responsible for several Internet-related projects (mostly web), including the HTML language specification. It is steered by the top four browser vendors: Apple, Google, Microsoft, and Mozilla; Opera also has historical importance for the organization.

Technical notes: The WHATWG is open for participation from individuals. Those representing an entity must be authorized to do so.

Select Engagement Opportunities

DOM Living Standard	Focus
https://dom.spec.whatwg.org/	Web/DNS
UASG interest: Tangential	
Standard broadly responsible for the structuring of web documents. Its work is tangentially related to the UASG's mission.	
Description	
"The Document Object Model (DOM) is a programming interface for web documents. It represents the page so that programs can change the document structure, style, and content. The DOM represents the document as nodes and objects; that way, programming languages can interact with the page. A web page is a document that can be either displayed in the browser window or as the HTML source. In both cases, it is the same document but the Document Object Model (DOM) representation allows it to be manipulated. As an object-oriented representation of the web page, it can be modified with a scripting language such as JavaScript". (Source: Mozilla)	
Contact	

Contribute (GH): https://github.com/whatwg/dom
Interaction (Matrix): https://app.element.io/#/room/#whatwg:matrix.org
Point of contact (Twitter): https://twitter.com/thedomstandard

Encoding Living Standard	Focus
https://encoding.spec.whatwg.org/	i18n
UASG interest: High	
Important group in the standardization of UTF-8. UASG partnership is desirable as the missions of both groups are connected.	
Description	
The UTF-8 encoding is the most appropriate encoding for interchange of Unicode, the universal coded character set. Therefore, for new protocols and formats, as well as existing formats deployed in new contexts, this specification requires (and defines) the UTF-8 encoding. The other (legacy) encodings have been defined to some extent in the past. However, user agents have not always implemented them in the same way, have not always used the same labels, and often differ in dealing with undefined and former proprietary areas of encodings. This specification addresses those gaps so that new user agents do not have to reverse engineer encoding implementations and existing user agents can converge.	
Contact **Contribute (GH)**: https://github.com/whatwg/encoding **Interaction (Matrix)**: https://app.element.io/#/room/#whatwg:matrix.org **Point of contact (Twitter)**: https://twitter.com/encodings	

Fetch Living Standard	Focus
https://fetch.spec.whatwg.org/	Web/DNS
UASG interest: High	
Group coordinating the standardization of several aspects of "fetching" on the web. UASG partnership is desirable as this is an active part of the UA processes.	
Description	
The Fetch standard defines requests, responses, and the process that binds them: fetching. The goal is to unify fetching across the web platform and provide consistent handling of everything that involves, including: URL schemes; Redirects; Cross-origin semantics; CSP; Fetch Metadata; Service workers [SW]; Mixed Content; Upgrade Insecure Requests; Referrer.	
Contact **Contribute (GH)**: https://github.com/whatwg/fetch **Interaction (Matrix)**: https://app.element.io/#/room/#whatwg:matrix.org **Point of contact (Twitter)**: https://twitter.com/fetchstandard	

HTML Living Standard	Focus
https://html.spec.whatwg.org/multipage/	Web/DNS
UASG interest: High	
The core developers of HTML. UASG partnership is desirable as the missions of both groups are connected.	
Description	
"This specification defines a big part of the web platform, in lots of detail."	
Contact **Key document**: https://html.spec.whatwg.org/dev/ **Contribute (GH)**: https://github.com/whatwg/html **Interaction (Matrix)**: https://app.element.io/#/room/#whatwg:matrix.org **Point of contact (Twitter)**: https://twitter.com/htmlstandard	

Infra Living Standard	Focus
https://infra.spec.whatwg.org/	Community
UASG interest: Tangential	
The WHATWG's meta-standards group. The inclusion of UA as a concern could be explored.	
Description	
The Infra Standard aims to define the fundamental concepts upon which standards are built. Seeks to: deduplicate boilerplate in standards; align standards on conventions, terminology, and data structures; be a place for concepts used by multiple standards without a good home; help write clear and readable algorithmic prose by clarifying otherwise ambiguous concepts.	
Contact	
Contribute (GH): https://github.com/whatwg/infra/	
Interaction (Matrix): https://app.element.io/#/room/#whatwg:matrix.org	
Point of contact (Twitter): https://twitter.com/infrastandard	

MIME Sniffing Living Standard	Focus
https://mimesniff.spec.whatwg.org/	Mail
UASG interest: Tangential	
Sets standards around MIME (Multipurpose Internet Mail Extensions) types, but name is misleading. Certain aspects of MIME are involved in UA, but it is unclear how much this can influence the UASG's mission. Contacting the group might be desirable.	
Description	
The MIME Sniffing standard defines sniffing resources. It describes a content sniffing algorithm that carefully balances the compatibility needs of user agent with the security constraints imposed by existing web content.	
Contact	
Contribute (GH): https://github.com/whatwg/mimesniff	
Interaction (Matrix): https://app.element.io/#/room/#whatwg:matrix.org	
Point of contact (Twitter): https://twitter.com/mimesniff	

Notifications API Living Standard	Focus
https://notifications.spec.whatwg.org/	Web/DNS
UASG interest: Tangential	
Sets the standard for notifications pushed by websites.The content displayed by notifications may involve IDNs and websites with new gTLDs, but it is unclear how much this can influence the UASG's mission. Contacting the group might be desirable.	
Description	
This standard defines an API to display notifications to the end user, typically outside the top-level browsing context's viewport. It is designed to be compatible with existing notification systems, while remaining platform-independent.	
Contact	
Contribute (GH): https://github.com/whatwg/notifications	
Interaction (Matrix): https://app.element.io/#/room/#whatwg:matrix.org	
Point of contact (Twitter): https://twitter.com/notifyapi	

Storage Living Standard	Focus
https://storage.spec.whatwg.org/	Web/DNS
UASG interest: Moderate	
Standard that consolidates storage-related actions on the web. Storage of data and its retrieval is a known chokepoint for UA, but it is unclear how much this can influence the UASG's mission. Contacting the group is desirable.	
Description	

The Storage Standard defines an API for persistent storage and quota estimates, as well as the platform storage architecture. Over the years the web has grown various APIs that can be used for storage, e.g., IndexedDB, localStorage, and showNotification(). The Storage Standard consolidates these APIs by defining: a bucket, the primitive these APIs store their data in; a way of making that bucket persistent; a way of getting usage and quota estimates for an origin.

Contact
Contribute (GH): https://github.com/whatwg/storage
Interaction (Matrix): https://app.element.io/#/room/#whatwg:matrix.org
Point of contact (Twitter): https://twitter.com/storagestandard

URL Living Standard	Focus
https://url.spec.whatwg.org/	Web/DNS
UASG interest: High	
Sets URL standards. UASG partnership is desirable as the standard directly and specifically mentions IDNA.	
Description	
The URL standard aims to make URLs fully interoperable.	
Contact **Contribute (GH)**: https://github.com/whatwg/url **Interaction (Matrix)**: https://app.element.io/#/room/#whatwg:matrix.org **Point of contact (Twitter)**: https://twitter.com/urlstandard	

Internet Engineering Task Force (IETF)

Background: Dating from 1986, the IETF was brought under the Internet Society (ISOC) umbrella in 1992. Their emphasis is on producing and maintaining technical standards for the Internet, with policy aspects not considered a focal point. However, in the Internet Research Task Force (IRTF) there are emerging groups more concerned with the policy implications of protocols produced within the IETF.

Technical notes: IETF WGs are by and large open, and do not require specific credentials. That said, the discussions are often dense and require a considerable amount of background knowledge for effective participation.

Select Engagement Opportunities

art-dmarc: Domain-based Message Authentication Reporting & Conformance	Focus
https://datatracker.ietf.org/wg/dmarc/	Mail
UASG interest: High	
Standard directed at reducing email abuse leveraging the DNS. UASG partnership is desirable as there is a significant intersection between UA and email filtering solutions such as DMARC.	
Description	
Domain-based Message Authentication, Reporting & Conformance (DMARC) uses existing mail authentication technologies (SPF and DKIM) to extend validation to the RFC5322.From field. DMARC uses DNS records to add policy-related requests for receivers and defines a feedback mechanism from receivers back to domain owners. This allows a domain owner to advertise that mail can safely receive differential handling, such as rejection, when the use of the domain name in the From field is not authenticated. Existing deployment of DMARC has demonstrated utility at internet scale, in dealing with significant email abuse, and has permitted simplifying some mail handling processes.	

Contact
Key document: https://datatracker.ietf.org/doc/html/rfc5322
Meeting minutes: https://datatracker.ietf.org/wg/dmarc/meetings/
Archive (Wiki): https://trac.ietf.org/trac/dmarc/wiki
Participation (ML): https://www.ietf.org/mailman/listinfo/dmarc
Interaction (Jabber): xmpp:dmarc@jabber.ietf.org?join

art-emailcore: Revision of core Email specifications	Focus
https://datatracker.ietf.org/wg/emailcore/	Mail

UASG interest: Tangential

Limited scope revision to the email specification. Unclear if UA would be a relevant subject. Contacting the group might be desirable.

Description

This working group will conduct a limited review and revision to the base email specifications, and will publish new versions of these documents at Internet Standard status, per RFC 6410. The limited review is restricted to corrections and clarifications only, with a strong emphasis on keeping these minimal and avoiding broader changes to terminology or document organization.

Contact
Key document: https://datatracker.ietf.org/doc/html/rfc6410
Meeting minutes: https://datatracker.ietf.org/wg/emailcore/meetings/
Participation (ML): https://www.ietf.org/mailman/listinfo/emailcore
Interaction (Jabber): xmpp:emailcore@jabber.ietf.org?join

art-extra: Email mailstore and eXtensions to Revise or Amend	Focus
https://datatracker.ietf.org/wg/extra/	Mail

UASG interest: High

Deals with an assortment of email-related protocols: IMAP, SIEVE, ManageSieve.
Both IMAP and SIEVE can be part of the UA process, and it can be worth exploring avenues to collaborate.

Description

The IETF maintains several key email related protocols that relate to message delivery to mailstores and mailstore access. These include the following: IMAP (RFC3501) SIEVE (RFC5228) ManageSieve (RFC5804). From time to time, there are bursts of work to do and the motivation and critical mass to do it. When such bursts coincide, it's important to give them a home. This working group provides such a venue.

Contact
Key document 1: https://datatracker.ietf.org/doc/html/rfc3501
Key document 2: https://datatracker.ietf.org/doc/html/rfc5228
Key document 3: https://datatracker.ietf.org/doc/html/rfc5804
Meeting minutes: https://datatracker.ietf.org/wg/extra/meetings/
Participation (ML): https://www.ietf.org/mailman/listinfo/extra
Interaction (Jabber): xmpp:extra@jabber.ietf.org?join

art-httpapi: Building Blocks for HTTP APIs	Focus
https://datatracker.ietf.org/wg/httpapi/	Web/DNS

UASG interest: Tangential

Handles specific aspects of HTTP. Unclear if UA would be a relevant subject. Contacting the group might be desirable.

Description

In addition to its use for web browsing, HTTP is often used for machine-to-machine communication, facilitated by HTTP APIs. This Working Group will standardize HTTP protocol extensions for use in such cases, with a focus on building blocks for separate or

combined use. Its output can include the following: specifications for HTTP extensions that relate to HTTP APIs (typically, new HTTP header and/or trailer fields); specifications for new message body formats, or conventions for their use in HTTP APIs (e.g., patterns of JSON objects); best practices and other documentation for HTTP API designers, consumers, implementers, operators, etc. Other items are out of scope.

Contact
Meeting minutes: https://datatracker.ietf.org/wg/httpapi/meetings/
Archive (GH): https://github.com/ietf-wg-httpapi/wg-materials
Participation (ML): https://www.ietf.org/mailman/listinfo/httpapi
Interaction (Jabber): xmpp:httpapi@jabber.ietf.org?join

art-httpbis: HTTP standard	Focus
https://datatracker.ietf.org/wg/httpbis/	Web/DNS

UASG interest: Moderate

Deals with most aspects of HTTP. HTTP is a core component of the Internet, but it is unclear how much it can influence the UASG's mission. Contacting the group is desirable.

Description
This Working Group is charged with maintaining and developing the "core" specifications for HTTP, and generic extensions to it (i.e., those that are not specific to one application).

Contact
External website: https://httpwg.org/
Meeting minutes: https://datatracker.ietf.org/wg/httpbis/meetings/
Contribute (GH): https://github.com/httpwg/
Participation (ML): ietf-http-wg-request@w3.org
Interaction (Jabber): xmpp:httpbis@jabber.ietf.org?join

art-jmap: JSON Mail Access Protocol	Focus
https://datatracker.ietf.org/wg/jmap/	Mail

UASG interest: High

JMAP is a (recent) competitor to IMAP. As a new email standard there might be space for UA to be introduced as an active concern.

Description
The JMAP protocol defined in draft-ietf-jmap-core is designed to be extensible to multiple datatypes which are useful for personal information management related to email stores. Now that draft-ietf-jmap-mail is completed, the working group will produce specifications for related data types, beginning with calendars and contacts. According to the developers: "JMAP is the developer-friendly, open API standard for modern mail clients and applications to manage email faster."

Contact
Key document: https://datatracker.ietf.org/doc/html/rfc8620
External website: https://jmap.io/
Meeting minutes: https://datatracker.ietf.org/wg/jmap/meetings/
Participation (ML): https://www.ietf.org/mailman/listinfo/jmap
Interaction (Jabber): xmpp:jmap@jabber.ietf.org?join

art-regext: Registration Protocols Extensions	Focus
https://datatracker.ietf.org/wg/regext/	Web/DNS

UASG interest: High

Extends the EPP standard. The group has active UA concerns in its discussions of the "Use of Internationalized Email Addresses in the Extensible Provisioning Protocol (EPP)" draft.

Description

The Extensible Provisioning Protocol (EPP, Standard 69) is the standard domain name provisioning protocol for top-level domain name registries. To avoid many separate EPP extensions that provide the same functions, it's important to coordinate and standardize EPP extensions.

Contact
Key document: https://datatracker.ietf.org/doc/draft-ietf-regext-epp-eai/
Meeting minutes: https://datatracker.ietf.org/wg/regext/meetings/
Participation (ML): https://www.ietf.org/mailman/listinfo/regext
Interaction (Jabber): xmpp:regext@jabber.ietf.org?join

ops-dnsop: Domain Name System Operations	Focus
https://datatracker.ietf.org/wg/dnsop/	Web/DNS

UASG interest: High

Develops guidelines for DNS operations. UASG partnership is desirable as the mission of both groups are connected.

Description
The DNS Operations Working Group will develop guidelines for the operation of DNS software and services and for the administration of DNS zones. These guidelines will provide technical information relating to the implementation of the DNS protocol by the operators and administrators of DNS zones.

Contact
Meeting minutes: https://datatracker.ietf.org/wg/dnsop/meetings/
Participation (ML): http://www.ietf.org/mailman/listinfo/dnsop
Interaction (Jabber): xmpp:dnsop@jabber.ietf.org?join

sec-gnap: Grant Negotiation and Authorization Protocol	Focus
https://datatracker.ietf.org/wg/gnap/	Identity

UASG interest: Tangential

Deals with a broad range of identity solutions. Unclear if UA would be a relevant subject. Contacting the group might be desirable.

Description
This group is chartered to develop a fine-grained delegation protocol for authorization, API access, user identifiers, and identity assertions. The protocol will also allow the client to present unverified identifiers and verifiable assertions to the Authorization Server (AS) as part of its request. This protocol enables an authorizing party to delegate access to client software to use a Resource Server (RS) with this token. It will expand upon the use cases currently supported by OAuth 2.0 and OpenID Connect (itself an extension of OAuth 2.0) to support authorizations scoped as narrowly as a single transaction, provide a clear framework for interaction among all parties involved in the protocol flow, and remove unnecessary dependence on a browser or user-agent for coordinating interactions.

Contact
Meeting minutes: https://datatracker.ietf.org/wg/gnap/meetings/
Participation (ML): https://www.ietf.org/mailman/listinfo/txauth
Interaction (Jabber): xmpp:gnap@jabber.ietf.org?join

sec-privacypass: Privacy Pass	Focus
https://datatracker.ietf.org/wg/privacypass/	Identity
UASG interest: Tangential	
Deals with token issuing and verification. Unclear if UA would be a relevant subject. Contacting the group might be desirable.	
Description The Privacy Pass protocol provides a performant, application-layer mechanism for token creation and anonymous redemption. Servers (Issuers) create and later verify tokens that are redeemed by an ecosystem of clients. The primary purpose of the Privacy Pass Working Group is to develop and standardize a protocol that meets these requirements, influenced by applications that have arisen from the wider community.	
Contact **Meeting minutes:** https://datatracker.ietf.org/wg/gnap/meetings/ **Participation (ML):** https://www.ietf.org/mailman/listinfo/privacy-pass **Interaction (Jabber)**: xmpp:privacypass@jabber.ietf.org?join	

For sec-oauth, see Others: Identity and Access Management (IAM) solutions.

Internet Research Task Force (IRTF)

Background: The IRTF is the research arm of the IETF and its core concern is with the longer-term implications of Internet development. This also opens avenues for discussions of a less technical nature with themes such as human rights and access figuring more prominently, particularly in the past few years.

Select Engagement Opportunities

Hrpc: Human Rights Protocol Considerations Research Group	Focus
https://datatracker.ietf.org/rg/hrpc/	Community
UASG interest: High	
Focused on human rights concerns within and around the IETF. UASG partnership is desirable as the mission of both groups are connected.	
Description The Human Rights Protocol Considerations Research Group is chartered to research whether standards and protocols can enable, strengthen or threaten human rights, as defined in the Universal Declaration of Human Rights (UDHR) and the International Covenant on Civil and Political Rights (ICCPR), specifically, but not limited to the right to freedom of expression and the right to freedom of assembly.	
Contact **Meeting minutes:** https://datatracker.ietf.org/rg/hrpc/meetings/ **Participation (ML):** https://www.irtf.org/mailman/listinfo/hrpc **Interaction (Jabber)**: xmpp:hrpc@jabber.ietf.org?join	

Gaia: Global Access to the Internet for All	Focus
https://datatracker.ietf.org/rg/gaia/	Community
UASG interest: High	
Focused on enabling a global Internet. UASG partnership is desirable as the mission of both groups are connected.	
Description The Global Access to the Internet for All Research Group (GAIA) is an IRTF initiative that aims, among other goals:	

- To create increased visibility and interest among the wider community on the challenges and opportunities in enabling global Internet access, in terms of technology as well as the social and economic drivers for its adoption;
- To create a shared vision among practitioners, researchers, corporations, non-governmental and governmental organizations on the challenges and opportunities;
- To articulate and foster collaboration among them to address the diverse Internet access and architectural challenges (including security, privacy, censorship and energy efficiency).

Contact
Meeting minutes: https://datatracker.ietf.org/rg/gaia/meetings/
Participation (ML): https://irtf.org/mailman/listinfo/gaia
Interaction (Jabber): xmpp:gaia@jabber.ietf.org?join

Dinrg: Decentralized Internet Infrastructure Research Group	Focus
https://datatracker.ietf.org/rg/dinrg/about/	Community

UASG interest: Moderate

The group studies the evolution of decentralized internetworking. These solutions are becoming more relevant to the Internet's functions, and it might benefit the UASG to follow such discussions.

Description
The Decentralized Internet Infrastructure Research Group (DINRG) will investigate open research issues in decentralizing infrastructure services such as trust management, identity management, name resolution, resource/asset ownership management, and resource discovery. The focus of DINRG is on infrastructure services that can benefit from decentralization or that are difficult to realize in local, potentially connectivity-constrained networks. We are simultaneously seeing the evolution of use cases (e.g., certain IoT deployments) that cannot work (or which work poorly) in centralized deployment scenarios along with the evolution of decentralized technologies which leverage new cryptographic infrastructures, such as DNSSEC, or which use novel, cryptographically-based distributed consensus mechanisms, such as a number of different ledger technologies.

Contact
Meeting minutes: https://datatracker.ietf.org/rg/dinrg/meetings/
Participation (ML): https://www.irtf.org/mailman/listinfo/din
Interaction (Jabber): xmpp:dinrg@jabber.ietf.org?join

Unicode Consortium

Background: Dating from 1991, the Unicode Consortium is the maintainer of the Unicode Standard and of certain processes and tools that enable the usage of those standards. They have aggregated and codified existing character sets and act as the de facto authority on the matter. While there is an equivalent standard published by ISO, the ISO/IEC 10646 Information technology – Universal Coded Character Set (UCS), it is actually co-developed or derived from Unicode Consortium work.

Technical notes: Unicode is a membership-based organization which collects fees, although a Liaison Membership is offered at no cost to those who can make a case as to their usefulness to advancing the project. UASG partner Microsoft is a Full Member with voting powers at Unicode.

International Components for Unicode (ICU)	Focus
http://site.icu-project.org/	i18n

UASG interest: High

Developers of the ICU libraries, which provide i18n functions to software. According to previous UASG research, ICU is a key strategic component for UA deployment, and collaboration opportunities should be pursued.

Description
ICU is a mature, widely used set of C/C++ and Java libraries providing Unicode and Globalization support for software applications. ICU is widely portable and gives applications the same results on all platforms and between C/C++ and Java software.

Contact
Meeting minutes: https://icu.unicode.org/projectinfo/meetings
Contribute (GH): https://github.com/unicode-org/icu
Participation on usage (ML): https://sourceforge.net/projects/icu/lists/icu-support
Participation on API (ML): https://sourceforge.net/projects/icu/lists/icu-design

Unicode Common Locale Data Repository (Unicode CLDR Project)	Focus
http://cldr.unicode.org/	i18n

UASG interest: Tangential

Most relevant source of locale data. Proper implementation of locales can advance the UASG's mission but it is unclear what the ideal avenue for cooperation would be.

Description
The Unicode CLDR provides key building blocks for software to support the world's languages, with the largest and most extensive standard repository of locale data available. This data is used by a wide spectrum of companies for their software internationalization and localization, adapting software to the conventions of different languages for such common software tasks. Most developers will use CLDR indirectly, via a set of software libraries, such as ICU, Closure, or TwitterCLDR. These libraries typically compile the CLDR data into a format that is compact and easy for the library to load and use.

Contact
Key document: https://cldr.unicode.org/index/downloads/cldr-40
Contribute (GH): https://github.com/unicode-org/cldr

Unicode Technical Standard #46: Unicode IDNA Compatibility Processing	Focus
https://unicode.org/reports/tr46/	i18n

UASG interest: High

Independent standard aimed at interoperating IDNA2003 and IDNA2008. IDNA is a key component for UA, and collaboration opportunities should be pursued.

Description
Client software, such as browsers and emailers, faces a difficult transition from the version of international domain names approved in 2003 (IDNA2003), to the revision approved in 2010 (IDNA2008). The specification in this document provides a mechanism that minimizes the impact of this transition for client software, allowing client software to access domains that are valid under either system. The specification provides two main features: One is a comprehensive mapping to support current user expectations for casing and other variants of domain names. Such a mapping is allowed by IDNA2008. The second is a compatibility mechanism that supports the existing domain names that were allowed under IDNA2003. This second feature is intended to improve client behavior during the transitional period.

Contact
Key document: https://www.unicode.org/reports/tr46/tr46-27.html

ITU Telecommunication Standardization Sector (ITU-T)

The International Telecommunication Union's work is performed largely by governments, and as such, it is not an ideal match with the UASG's bottom-up approach. However, under its Telecommunication Standardization Sector (ITU-T) branch, non-government actors can contribute toward discussions on select global standards. While most groups fall outside of the UASG's scope, a particular initiative stands out as relevant, described below.

Joint Coordination Activity on Accessibility and Human Factors (JCA-AHF)	Focus
https://www.itu.int/en/ITU-T/jca/ahf/Pages/default.aspx	Accessibility
UASG interest: High	
Delivers stronger human rights focus to the ITU and partner groups. UASG partnership is desirable in order to promote UA as an accessibility feature.	
Description	
Increase awareness and help standard writers to mainstream accessibility features in telecommunication/ICT accessibility standards for the inclusion of persons with disabilities and persons with specific needs, including age-related disabilities, those with illiteracy, women, children, and indigenous people; assist study groups in the identification of standardization opportunities and solutions that improve the accessibility and human factors aspects of their work.	
Contact **Key document**: https://www.itu.int/en/ITU-T/jca/ahf/Documents/docs-2017/ToR/ToR%20of%20JCA-AHF_approved%20by%20TSAG%202017.docx **Participation (ML)**: https://www.itu.int/en/ITU-T/ewm/Pages/services.aspx	

For JCA-IdM, see: Identity and Access Management (IAM) solutions.

ACM and the IEEE

In a partnership between the Association for Computing Machinery (ACM) and the Institute of Electrical and Electronics Engineers (IEEE), a set of computing curricula is developed to inform the assembly of courses in universities around the world. Updates are made every few years and the most recent version of the "*Computing Curricula*" was published in 2020 (CC2020).

The areas covered are:
- Computer Engineering
- Computer Science
- Cybersecurity
- Information Systems
- Information Technology
- Software Engineering
- Data Science

Interestingly, the CC2020 cites in its introduction: "Universal acceptance of global diversity and cultural sensitivity are essential in all fields, especially in the field of computing which is remarkably diverse itself." Although this does not refer directly to the UASG's definition of Universal Acceptance, it nevertheless points toward a shared mission.

The documents themselves are developed in a Task Force format that aims for geographic and gender diversity. The group that wrote the latest document defined it as such: "The ACM and IEEE Computer Society initially appointed two respective CC2020 project co-chairs. In

2017, each co-chair then recruited representative members of the sponsoring organizations to serve on the CC2020 steering committee. The steering committee was expanded into a task force of fifty volunteers who joined the effort to work on the project and produce this report."

ACM/IEEE Computing Curricula	Focus
https://www.acm.org/education/curricula-recommendations	Community
UASG interest: High	
Recommends curricula for IT academic courses around the world. UASG partnership is desirable in order to include UA as a topic.	
Description The Computing Curriculum 2020 (CC2020) project is an initiative launched jointly by several professional computing societies to summarize and synthesize the current state of curricular guidelines for academic programs that grant baccalaureate-level degrees in computing as well as propose a vision for future curricular guidelines. This project aims not only to reflect the state-of-the-art in computing education and practice, but also to provide insights into the future of the field of computing education for the 2020s and beyond.	
Contact **Key document**: https://www.acm.org/binaries/content/assets/education/curricula-recommendations/cc2020.pdf	

International Standards Organization (ISO)

The ISO is the organization which congregates most of the national standard-setting bodies in the world, acting within the general United Nations environment. ICT-related concerns are but one of its many areas, making it the least focused body out of all the ones listed in this document. Participation in it requires: working together with national bodies, standards normally need to be purchased, and it has an extensive deliberation process. As such, direct engagement with the ISO should not be considered a priority, and its engagement opportunities have been collected into other categories, as listed below:

ISO/IEC 10646 Information technology: Universal Coded Character Set (UCS) is developed in tandem with Unicode, and considering the greater ease of contributing to Unicode, that institution should be prioritized in this case.

For ISO/IEC WD TR 24772 – 4 Programming languages: Guidance to avoiding vulnerabilities in programming languages – Part 4: Python, see: Python Language Standard

For ISO/IEC JTC 1/SC 22, see: Others: Coding Language Standards

For JTC1/SC22/WG21, see: Others: Coding Language Standards

Others: Coding Language Standards

While it is not practical to carry out extensive studies concerning programming languages in the current document, we will nevertheless list the resources discovered during the research process to serve as a reference for future actions. An exemption will be made for Python, based on the results of previous studies published by the UASG, which point towards a key opportunity for engaging with that group.

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Key resource: ISO/IEC JTC 1/SC 22: Programming languages, their environments and system software interfaces: https://www.iso.org/committee/45202/x/catalogue/

Key resource: ECMA: Software engineering and interfaces:
https://www.ecma-international.org/publications-and-standards/standards/?order=category

Ada

ISO/IEC 8652:2012 Programming languages – Ada https://www.iso.org/standard/61507.html
ECMA-162 Portable Common Tool Environment (PCTE) – Ada programming language binding https://www.ecma-international.org/publications-and-standards/standards/ecma-162/

C/ C++

ISO/IEC WD 9899 Programming languages – C https://www.iso.org/standard/82075.html
ISO/IEC 14882:2020 Programming languages – C++ http://www.open-std.org/jtc1/sc22/wg21/docs/standards
ISO/IEC WD TR 24772-10 Programming languages – Guidance to avoiding vulnerabilities in programming languages – Part 10: Guidance for programming language C++ https://www.iso.org/standard/80437.html
ECMA-158 Portable Common Tool Environment (PCTE) – C programming language binding https://www.ecma-international.org/publications-and-standards/standards/ecma-158/
ECMA-372 C++/CLI language specification https://www.ecma-international.org/publications-and-standards/standards/ecma-372/
JTC1/SC22/WG21 – The C++ Standards Committee – ISOCPP http://www.open-std.org/jtc1/sc22/wg21/

C#

ISO/IEC 23270:2018 Programming languages – C# https://www.iso.org/standard/75178.html
ECMA-334 C# language specification https://www.ecma-international.org/publications-and-standards/standards/ecma-334/

Dart

ECMA-408 Dart programming language specification https://www.ecma-international.org/publications-and-standards/standards/ecma-408/
Dart language in-progress specification https://spec.dart.dev/DartLangSpecDraft.pdf

Go

Go Programming Language Specification https://go.dev/ref/spec
Go Programming Language Contribution Guide https://golang.org/doc/contribute

Java

Java Language Specification https://docs.oracle.com/javase/specs/jls/se11/html/index.html

Java Community Process Program
https://www.jcp.org/
ISO/IEC WD TR 24772-11 Programming languages – Guidance to avoiding vulnerabilities in programming languages – Part 11: Guidance for programming language Java
https://www.iso.org/standard/80438.html

JavaScript

ECMA-262 ECMAScript 2021 language specification
https://www.ecma-international.org/publications-and-standards/standards/ecma-262/
ECMA-402 ECMAScript 2021 internationalization API specification
https://www.ecma-international.org/publications-and-standards/standards/ecma-402/
ECMA-414 ECMAScript specification suite
https://www.ecma-international.org/publications-and-standards/standards/ecma-414/
ECMA-419 ECMAScript embedded systems API specification
https://www.ecma-international.org/publications-and-standards/standards/ecma-419/

PHP

PHP Language Specifications
https://github.com/php/php-langspec
PHP Language Specifications ML
standards-subscribe@lists.php.net

R

R Language Definition
https://cran.r-project.org/doc/manuals/r-release/R-lang.pdf
R development MLs
https://www.r-project.org/mail.html

Ruby

ISO/IEC 30170:2012 Programming languages – Ruby
https://www.iso.org/standard/59579.html
Ruby development MLs
https://www.ruby-lang.org/en/community/mailing-lists/

Swift

Swift Language Reference
https://docs.swift.org/swift-book/ReferenceManual/AboutTheLanguageReference.html
Language Contribution Guide
https://www.swift.org/contributing/

Python Language Standard

According to the research presented in UASG 033: UA-Readiness of Open Source Code Pilot, the *idna* module, which upgrades the language's core implementation of IDNA2003 to IDNA2008, has high adoption among open source developers who use Github as their repository. Quoting from that document:

"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."

Although generated using an entirely different method from the one used in UASG033, the PyPI repository's report presents a similar figure with *idna* consistently figuring among the top 20 most downloaded projects of the entire Python language. This corroborates the importance of the module to the language with basis on two dissimilar methodologies.

Thus, we find it important to go ahead with a proposal to integrate the module into the core of the language, making it UA-ready at its foundation.

We have outlined two different vectors through which such a change could be proposed:

Python Enhancement Proposals (PEPs)

According to the Python Software Foundation (PSF): "PEP stands for Python Enhancement Proposal. A PEP is a design document providing information to the Python community, or describing a new feature for Python or its processes or environment. The PEP should provide a concise technical specification of the feature and a rationale for the feature. We intend PEPs to be the primary mechanisms for proposing major new features, for collecting community input on an issue, and for documenting the design decisions that have gone into Python. The PEP author is responsible for building consensus within the community and documenting dissenting opinions."

There are two types of PEPs that are relevant to the UASG's purposes:

1. **Standards Track**: describes a new feature or implementation for Python.
2. **Informational PEP**: describes a Python design issue, or provides guidelines to the Python community, but does not propose a new feature.

The priority should be to propose a Standard Track, but in case that process is unsuccessful, the writing of an Informational PEP is still a viable way to cause impact and draw attention to Universal Acceptance.

The Python Steering Council handles decision-making, and two Steering Council members are affiliated with UASG partner Microsoft. These individuals could help the UASG understand what the requirements are for a successful application.

The application process itself is conducted by "PEP Editors," who can be reached by mentioning "@python/pep-editors" on GitHub.
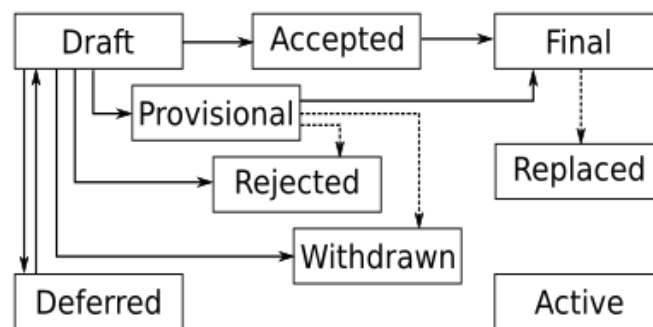
These are the steps:

1. **Idea**: Ideas for enhancements need to be focused and defined in a concrete manner.
2. **Championing**: According to the PSF: "Someone who writes the PEP using the style and format described below, shepherds the discussions in the appropriate forums, and attempts to build community consensus around the idea. The PEP champion (a.k.a. Author) should first attempt to ascertain whether the idea is PEP-able. Posting to the python-list@python.org mailing list or the python-ideas@python.org mailing list is the best way to go about this."
3. **Presentation**: According to the PSF: "Once the champion has asked the Python community as to whether an idea has any chance of acceptance, a draft PEP should be presented to python-ideas. This gives the author a chance to flesh out

the draft PEP to make properly formatted, of high quality, and to address initial concerns about the proposal."

4. **Submission**: According to the PSF: "Ideally, a core developer sponsor is identified, but non-core sponsors may also be selected with the approval of the Steering Council. Members of the GitHub "PEP editors" team are pre-approved to be sponsors. The sponsor's job is to provide guidance to the PEP author to help them through the logistics of the PEP process".

5. **Review**: According to the PSF: "Once the authors have completed a PEP, they may request a review for style and consistency from the PEP editors."

6. **Resolution**: According to the PSF: "The final authority for PEP approval is the Steering Council. However, whenever a new PEP is put forward, any core developer that believes they are suitably experienced to make the final decision on that PEP may offer to serve as the PEP-Delegate for that PEP, and they will then have the authority to approve (or reject) that PEP."

7. **Acceptance**: According to the PSF: "Once a PEP has been accepted, the reference implementation must be completed. When the reference implementation is complete and incorporated into the main source code repository, the status will be changed to Final."

The workflow is:

Source: https://www.python.org/dev/peps/pep-0001/

Relevant links:
https://www.python.org/dev/peps/
https://github.com/python/peps

ISO/IEC WD TR 24772-4 Programming Languages – Guidance to Avoiding Vulnerabilities in Programming Languages – Part 4: Python

There is an entirely different route that might be pursued either in parallel or in the case that the PEP process is unsuccessful. This route does not affect the core language but can advance the theme of UA within a standards body, which in this case, is the ISO.

Within its many standards, the ISO maintains a collection of recommendations for avoiding vulnerabilities in programming languages, which might include considerations on UA-related issues. As of the writing of this document, the WG is actively developing ideas for the Python language and could be approached. The most convenient way for an intervention to be made within the ISO is through the American National Standards Institute (ANSI), which can be tapped into by ICANN itself.

Relevant links:
https://www.iso.org/stages-and-resources-for-standards-development.html
https://www.iso.org/standard/71094.html

//*.*/

Others: Cybersecurity

Another important category to evaluate are the organizations that concern themselves with cybersecurity. We list below the ones with missions that are the most relevant to the UASG, although this list should be considered non-exhaustive.

Anti-Phishing Working Group (APWG)	Focus
https://apwg.org/	Cybersecurity
UASG interest: Moderate	
The most prominent anti-phishing group producing key reports on the subject. Both ICANN and UASG partner Verisign have existing relations with the APWG. Outreach to them could benefit the UASG.	
Description APWG is the international coalition unifying the global response to cybercrime across industry, government and law-enforcement sectors and NGO communities. APWG's membership of more than 2200 institutions worldwide is as global as its outlook. It attempts to eliminate fraud and identity theft caused by phishing and related incidents.	
Contact **Key document**: https://docs.apwg.org/reports/apwg_trends_report_q3_2021.pdf **Points of contact:** ICANN, Verisign	

Center for Internet Security (CIS): Critical Security Controls Community	Focus
https://www.cisecurity.org/communities/controls/	Cybersecurity
UASG interest: High	
CIS's Critical Security Controls are a set of constantly revised step-by-step guidelines which serve as a baseline for the digital protection of diverse actors. CIS's "Control 9: Email and Web Browser Protections" is an adequate point for UASG engagement through their Critical Security Controls Community.	
Description The Center for Internet Security, Inc. (CIS) is a community-driven nonprofit, responsible for the CIS Controls and CIS Benchmarks, globally recognized best practices for securing IT systems and data. We lead a global community of IT professionals to continuously evolve these standards and provide products and services to proactively safeguard against emerging threats. Our CIS Hardened Images provide secure, on-demand, scalable computing environments in the cloud. CIS is home to the Multi-State Information Sharing and Analysis Center (MS-ISAC), a trusted resource for cyber threat prevention, protection, response, and recovery.	
Contact **Key document**: https://www.cisecurity.org/controls/email-and-web-browser-protections/ **Participation**: https://workbench.cisecurity.org/ **Point of contact:** https://learn.cisecurity.org/contact-us	

FIRST: DNS Abuse SIG	Focus
https://www.first.org/global/sigs/dns/	Cybersecurity
UASG interest: Moderate	
An important stakeholder in the DNS Abuse sector, focused on Cyber Incident Response Teams (CIRTs). Both ICANN and UASG partner Verisign have existing relations with them, which could benefit the UASG and its interests.	
Description "FIRST provides platforms, means and tools for incident responders to always find the right partner and to collaborate efficiently. This implies that FIRST's reach is global. We aspire to have members from every country and culture. During an incident it is important that people have a common understanding and enough maturity to react in a fast and	

efficient manner. FIRST supports teams through training opportunities to grow and mature. FIRST also supports initiatives to develop common means of data transfer to enable machine to machine communication. FIRST members do not work in isolation, but are part of a larger system. FIRST engages with relevant stakeholders, in technical and non-technical communities, to ensure teams can work in an environment that is conducive to their goals."

Contact
Points of contact: ICANN CIRT, Verisign

Messaging Malware Mobile Anti-Abuse Working Group (M3AAWG)	Focus
https://www.m3aawg.org/	Cybersecurity
UASG interest: Moderate	
An important stakeholder in the DNS Abuse sector with a significant number of renowned experts attached to it. Both ICANN and UASG partner Verisign have existing relations with them, which could benefit the UASG and its interests.	
Description	
"The Messaging, Malware and Mobile Anti-Abuse Working Group (M3AAWG) is where the industry comes together to work against botnets, malware, spam, viruses, DoS attacks and other online exploitation. We are the largest global industry association, with more than 200 members worldwide, bringing together all the stakeholders in the online community in a confidential, open forum. We develop cooperative approaches for fighting online abuse. (...) We develop and publish best practices papers, position statements, training and educational videos, and other materials to help the online community fight abuse with a focus on operational practices. Our public policy advocacy (which is not lobbying) provides technical and operational guidance to governments, Internet and public policy agencies developing new Internet policies and legislation."	
Contact	
Points of contact: ICANN, Verisign	

Others: Identity and Access Management (IAM) Solutions

IAM solutions play an increasingly important role in terms of user identification on the Internet. However, no extensive test has been performed to determine how UA-ready these solutions are or whether there are benefits to be had by partnering with them. The section below outlines some opportunities for the UASG's evaluation.

OAuth

OAuth is the key technology for IAM solutions with other major solutions dependent on it. As a standard, it is managed within the context of the IETF, and is subject to the same procedures described in the relevant section.

Major providers: Amazon, Apple, Box, Discord, Evernote, Facebook, Github, Google, LinkedIn, Microsoft, Netflix, ORCID, PayPal, Reddit, Salesforce, Sina Weibo, Spotify, Stack Exchange, Stripe, Trello, Twitch, Twitter, VK, WeChat, WooCommerce, WordPress, Yandex.

sec-oauth: Web Authorization Protocol	Focus
https://datatracker.ietf.org/wg/oauth/	Identity
UASG interest: High	
The main IAM solution available. UASG partnership is desirable because if this is UA-ready, then there is a good chance that all others will be as well.	
Description	

The Web Authorization (OAuth) protocol allows a user to grant a third-party web site or application access to the user's protected resources, without necessarily revealing their long-term credentials, or even their identity. For example, a photo-sharing site that supports OAuth could allow its users to use a third-party printing web site to print their private pictures, without allowing the printing site to gain full control of the user's account and without having the user share his or her photo-sharing sites' long-term credential with the printing site.
Contact **Meeting minutes:** https://datatracker.ietf.org/wg/oauth/meetings/ **Participation (ML)**: https://www.ietf.org/mailman/listinfo/oauth **Interaction (Jabber)**: xmpp:oauth@jabber.ietf.org?join

OpenID Connect (OIDC)

OIDC is a layer running on top of OAuth 2.0, adding functionality to it. A significant portion of its development is carried out within WGs, which might be of interest in case they focus efforts on this technology. Below are the most relevant WGs to the UASG's mission.

AB/Connect WG
https://openid.net/wg/connect/
Description "The AB/Connect working group is a combined working group of the Artifact Binding (AB) Working Group and the Connect Working Group aimed at producing the OAuth 2.0 based 'OpenID Connect' specifications."
Contact **Key documents:** https://openid.net/wg/connect/status/ **Participation (ML)**: https://lists.openid.net/mailman/listinfo/openid-specs-ab

International Government Assurance Profile (iGov) WG
https://openid.net/wg/igov/
Description "The purpose of this working group is to develop a security and privacy profile of the OpenID Connect specifications that allow users to authenticate and share consented attribute information with public sector services across the globe. The resulting profile will enable standardized integration with public sector relying parties in multiple jurisdictions. The profile will be applicable to, but not exclusively targeted at, identity broker-based implementations."
Contact **Key documents:** https://openid.net/wg/igov/status/ **Participation (ML)**: http://lists.openid.net/mailman/listinfo/openid-specs-igov

Research & Education (R&E) WG
https://openid.net/wg/rande/
Description "The purpose of this working group is to develop a set of profiles for the OpenID Connect specifications to ease the adoption of OpenID Connect in the Research and Education (R&E) sector. The profiles will take into account existing practices of federated identity management in the R&E sector, current international standards to represent users that belong to R&E institutions, as well as the existing international trust fabric based on R&E identity federations and multi-lateral trust exchange. The working group will also actively look for the engagement of the R&E international community."
Contact **Key document:** https://github.com/daserzw/oidc-edu-wg/releases/tag/v1.0.0 **Participation (ML)**: http://lists.openid.net/mailman/listinfo/openid-specs-rande

Joint Coordination Activity for Identity Management (JCA-IdM)

According to the ITU-T: "For ITU-T purposes, the identity asserted by an entity represents the uniqueness of that entity in a specific context and is not intended to indicate positive validation of a person. Identity management (IdM) is the process of secure management of identity information (e.g., credentials, identifiers, attributes, and reputations). IdM is a complex technology that includes: establishing, modifying, suspending, archiving or terminating identity information; recognizing partial identities that represent entities in a specific context or role; establishing and assessing trust between entities; and the discovery (location) of an entity's identity information (e.g., authoritative identity provider (IdP) that is legally responsible for maintaining identifiers, credentials and some or all of the entity's attributes."

Relevant link: https://www.itu.int/en/ITU-T/jca/idm/Pages/default.aspx

Part 2: Indexes and Indicators

Recommended Indexes

The Economist Intelligence Unit/Facebook: The Inclusive Internet Index

Description: "The Inclusive Internet Index, commissioned by Facebook and developed by The Economist Intelligence Unit, seeks to measure the extent to which the Internet is not only accessible and affordable, but also relevant to all, allowing usage that enables positive social and economic outcomes at the individual and group level. The index assesses the performance of 120 countries in four categories of inclusion: Accessibility, Affordability, Relevance and Readiness. Each category incorporates key indicators of Internet inclusion, including quantitative measures such as network coverage and pricing, and qualitative measures such as the presence of e-inclusion policies and the availability of local-language content."

Rationale: This index already includes a criterion which could be extended to include UA called "Relevance," which "examines the existence and extent of local language content and relevant content." Currently, it takes into account two datapoints:
- "Local content" measures the availability of Internet content in the local language(s).
- "Relevant content" measures the availability of news, finance, health, entertainment and business information. While the definition of "relevant" can vary, this type of content is common.

Path to inclusion: Carried out by The Economist's team, the index is commissioned by Meta/Facebook by means of its "Data for Good" initiative. This project accepts partnerships with different organizations and the UASG could become one of them. The application can be found here: https://dataforgood.facebook.com/dfg/get-involved

Relevant link: https://theinclusiveinternet.eiu.com/

Relevant query ("Relevance"):
https://theinclusiveinternet.eiu.com/explore/countries/performance?category=relevance

Full dataset (XLS):
https://theinclusiveinternet.eiu.com/assets/external/downloads/3i-index-data.xlsm

Full dataset (CSV):
https://theinclusiveinternet.eiu.com/assets/external/downloads/3i-index-data.csv

Organisation for Economic Co-operation and Development (OECD) Indicators

Description: The OECD is well known for its reliable data, which is largely focused on economic aspects. It already tracks ICT data including datapoints such as "Internet access" and other related statistics.

Rationale: The data provided by the OECD is extensively utilized to inform varied research and is considered reputable. In this way, including a UA-related indicator would greatly contribute towards the visibility of the UASG's mission.

Path to inclusion: The OECD's data is mostly provided by governments, although other sources might also be employed. The best strategy is for ICANN's Government Engagement team to contact the OECD's Washington, U.S. office in order to determine the best way for the organizations to cooperate.

Relevant link: https://data.oecd.org/

Full dataset: https://stats.oecd.org/

Relevant query ("Internet access"): https://data.oecd.org/ict/internet-access.htm

ITU-D ICT Statistics

Description: "The ICT Data and Analytics (IDA) Division is part of ITU's Digital Knowledge Hub Department within the Telecommunication Development Bureau (BDT). One of the core activities of the Division is the collection, verification and harmonization of telecommunication/ICT statistics for about 200 economies worldwide."

Rationale: The ITU has a high interest in measuring digital development, and has a sub-project in which the UASG could insert data called "The ITU ICT SDG indicators". Given the sub-project's human rights approach, it would make sense to include the ability to use the Internet fully in one's language as an indicator.

Path to inclusion: As a state-centric organization, the inclusion of a datapoint in the ITU's dataset would require effort from a government actor that is friendly to the UASG and would be willing to support the process.

Relevant link: https://www.itu.int/en/ITU-D/Statistics/Pages/SDGs-ITU-ICT-indicators.aspx

Key document: https://www.itu.int/en/ITU-D/Statistics/Documents/facts/FactsFigures2021.pdf

Other Potentially Relevant Indexes

- Akamai's The State of the Internet
  - https://www.akamai.com/our-thinking/the-state-of-the-internet
- Fastmetrics' Internet Speeds by Country
  - https://www.fastmetrics.com/internet-connection-speed-by-country.php
- Huawei's Global Connectivity Index
  - https://www.huawei.com/minisite/gci/en/index.html
- Internet World Stats
  - https://www.internetworldstats.com/
- Speedtest Global Index
  - https://www.speedtest.net/global-index

- UNESCO Atlas of the World's Languages in Danger
  - http://www.unesco.org/languages-atlas/
- World Economic Forum Reports
  - http://reports.weforum.org/

Appendix 1: Language-based International Standards

While our focus is on standards bodies that relate to ICTs or the Internet, we undertook a side project to look into some of the more language-related organizations as potential avenues for UA promotion.

Academy of the Arabic Language
مجمع اللغة العربية
https://www.arabicac.com/
Description
The Arab Academy are Arabic language regulators, and they exist in several Arab-speaking countries, 11 in total. The Arab Academy of Damascus (مجمع اللغة العربية بدمشق) is the oldest academy regulating the Arabic language, established in 1918 during the reign of Faisal I of Syria. It is based in al-Adiliyah Madrasa and is modeled on the language academies of Europe and founded with the explicit reference to the example of the Académie Française. Arabization was the major mission of this academy after long period of Ottoman domination and use of Ottoman Turkish in major parts of the Arab world. Since establishment, it has been operated by notable committees of Arabic language professors, scholars and experts to re-spread the use of Arabic in the state's institutions and daily life of many Arab countries by adapting widely accepted proceedings and records for Arabization. Besides Syria, the 11 countries are: Jordan, Iraq, Morocco, Tunisia, Sudan, Algeria, Israel and Somalia.

International Council of the Arabic Language
المجلس الدولي للغة العربية
https://alarabiahcouncil.org/
Description
In accordance with the United Nations General Assembly proclamation of the International Year of Languages in 2008, the Arabic Language International Council was established by the Arab university's association. The organization was formed within the framework of the UN's effort to promote unity in diversity, and also in recognition of the UN's push for multilingualism as a means of promoting, protecting and preserving the diversity of languages and cultures globally, particularly in the paramount importance attributed to the quality of the organization's six official languages (Arabic, Chinese, English, French, Russian, and Spanish).

International Organization of French Speakers
Organisation internationale de la Francophonie (OIF)
https://www.francophonie.org/
Description
The International Organization of the Francophonie leads political actions and multilateral cooperation according to the missions drawn by the Summits of the Francophonie. The Summits gather heads of states and governments of the member countries of the International Organization of the Francophonie where they discuss international politics, world economy, French-speaking cooperation, human rights, education, culture and democracy. Actions of the International Organization of the

Francophonie are scheduled over a period of four years and funded by contributions from its members. The Summit, the highest authority in the Francophonie, is held every two years and gathers the Heads of states and governments of all member countries of the International Organization of the Francophonie around themes of discussion.

International Council for the French Language

Conseil International de la Langue Française

http://www.cilf.fr/

Description

The Conseil International de la Langue Française (International Council for the French Language) is an association formed in 1968 in Paris whose mission is to enrich the French language and to encourage its influence. Its work involves producing linguistic tools for French-speaking countries and to support relations with other language. It publishes multilingual dictionaries, in print and electronic media, and maintains a computerized database of terminology along with a database of spelling and grammar, available online through the Orthonet service. The Council also publishes educational materials for French-speaking people and participates in projects on oral traditions and the interaction of languages and cultures. It also publishes the periodicals "La banque des mots" and "Le français modern".

Council for German Orthography

Rat für Deutsche Rechtschreibung (RdR)

https://www.rechtschreibrat.com/

Description

Formed in 2004 as a successor to the "Zwischenstaatliche Kommission für deutsche Rechtschreibung" (Intergovernmental Commission for German Orthography) in order to include both supporters and opponents of the German orthography reform of 1996 (and subsequent reforms). Currently the RdR is composed of 41 members (40 councilors and 1 observer) from those states and regions in the German Sprachraum (places where German is (co-)official language and first language of the majority of the population.

Center for the Greek Language

Κέντρον Ελληνικής Γλώσσας

https://greeklanguage.gr/

Description

The Center for the Greek Language is a cultural and educational organization which aims to promote the Greek language and culture. It was founded in 1994. The Center is based in Thessaloniki, and also has an office in Athens. The Center for the Greek Language acts as a coordinating, advisory and strategic organ of the Greek Ministry of Education on matters of language education and policy. Its functions include providing materials and support for people learning Greek as a foreign language. It is linked to the Aristotle University of Thessaloniki.

Academy of the Hebrew Language

הָאֲקָדֶמְיָה לַלָּשׁוֹן הָעִבְרִית

https://en.hebrew-academy.org.il/

Description

The Academy of the Hebrew Language was established by the Israeli government in 1953 as the "supreme institution for scholarship on the Hebrew language in the Hebrew University of Jerusalem of Givat Ram campus." Its stated aims are to assemble and research the Hebrew language in all its layers throughout the ages; to

investigate the origin and development of the Hebrew tongue; and to direct the course of development of Hebrew, in all areas, including vocabulary, grammar, writing, spelling, and transliteration.

Crusca Academy for the Italian Language
Accademia della Crusca (La Crusca)
https://accademiadellacrusca.it/
Description
La Crusca is a Florence-based society of scholars of Italian linguistics and philology. It is the most important research institution of the Italian language, as well as the oldest linguistic academy in the world. The Accademia was founded in Florence in 1583, and has since been characterized by its efforts to maintain the purity of the Italian language. Four states have representatives in the Accademia: Italy, San Marino, Switzerland and Vatican.

National Institute for Japanese Language and Linguistics
国立国語研究所
https://www.ninjal.ac.jp/
Description
The National Institute for Japanese Language and Linguistics (NINJAL) is an independent administrative institution in Japan, established for the purpose of studying, surveying, promoting, and making recommendations for the proper usage of the Japanese language.

Academy for Malayalam
Kerala Sahitya Akademi
http://www.keralasahityaakademi.org/
Description
The Kerala Sahitya Akademi or Academy for Malayalam literature is an autonomous body established to promote the Malayalam language and literature. It is situated in City of Thrissur, Kerala in India.

Community of Portuguese Language Countries
Comunidade dos Países de Língua Portuguesa (CPLP)
https://www.cplp.org/
Description
The CPLP is an international organization and political association of Lusophone nations across four continents, where Portuguese is an official language. The CPLP operates as a privileged, multilateral forum for the mutual cooperation of the governments, economies, non-governmental organizations, and peoples of the Lusofonia. The CPLP consists of 9 member states and 19 associate observers, located in Europe, South America, Asia, Africa and Oceania, and is financed by its member states.

International Portuguese Language Institute
Instituto Internacional da Língua Portuguesa (IILP)
https://iilp.cplp.org/
Description
The IILP is the Community of Portuguese Language Countries's institute supporting the spread and popularity of the Portuguese language in the world. The institute is recent, and its statutes are still not well regulated. The IILP's fundamental objectives are "the promotion, the defense, the enrichment and the spread of the Portuguese language as a vehicle of culture, education, information and access to scientific and

technologic knowledge and of official use in international forums". The members of the IILP are the member states of the Lusophone Commonwealth – the CPLP.

Russian Language Institute
Институт русского языка имени В. В. Виноградова РАН
http://www.ruslang.ru/
Description
The V.V. Vinogradov Russian Language Institute of the Russian Academy of Sciences is the language regulator of the Russian language. It is based in Moscow and it is part of the Russian Academy of Sciences. It was founded in 1944 and is named after Viktor Vinogradov. Its activities include assessment of speech innovations in comparison to speech norms and codification of the language in Russian literature. Their output from these endeavors has included dictionaries, monographs, computer collections and databases, as well as a large historical Russian music library. They also provide a reference service of the Russian language. The Institute publishes thirteen academic journals. In addition, the Institute published 22 scholarly books in 2013 and 27 in 2012, with many more in previous years.

Association of Academies of the Spanish Language
Asociación de Academias de la Lengua Española (ASALE)
https://www.asale.org
Description
The ASALE is an entity whose end is to work for the unity, integrity, and growth of the Spanish language. It was created in Mexico in 1951 and represents the union of all the separate academies in the Spanish-speaking world. The association publishes reference works on the Spanish language and commemorative editions of Hispanic literature, among other publications. The association convenes every four years, led by a Permanent Commission composed of a President (position held by the Director of the Spanish Royal Academy), a Secretary General (one of the directors of the other academies), a Treasurer (chosen by the Spanish Royal Academy), and at least two board members drawn from the associated academies, whose nomination rotate annually.

Royal Society of Thailand
ราชบัณฑิตยสภา
https://www.orst.go.th/
Description
The Royal Society is the national academy of Thailand in charge of academic works of the government. The secretariat of the society is the Office of the Royal Society, formerly known as the Royal Institute. The office is an independent agency under the prime minister's supervision.

National Council for Promotion of Urdu Language
قومی کونسل برائے فروغ اردو زبان
https://www.urducouncil.nic.in/
Description
The National Council for Promotion of Urdu Language (Qaumī Kaunsil barā-yi Farōgẖ-i Urdū Zabān NCPUL) is an autonomous regulatory body in the Government of India.[1] It is the main authority of Urdu language and education in India, being one of two authorities responsible for the regulation of Urdu, the other being the National Language Authority of Pakistan.

Appendix 2: Subgroups Not Selected for the Study – W3C and IETF

Discarded from the World Wide Web Consortium (W3C)

- Accessibility in India Community Group
  - https://www.w3.org/community/accessibilityinindia/
- Accessibility Features Community Group (AFCG)
  - https://www.w3.org/community/a11yfeat/
- Accessible Rich Internet Applications Working Group (ARIAWG)
  - https://www.w3.org/WAI/ARIA/
- Best Practices for Multilingual Linked Open Data Community Group
  - https://www.w3.org/community/bpmlod/
- Browser Extension Community Group
  - https://www.w3.org/groups/cg/browserext
- Browser Testing and Tools Working Group
  - https://www.w3.org/testing/browser/
- Character Description Language Community Group
  - https://www.w3.org/community/cdl/
- Chinese Digital Publishing Community Group
  - https://www.w3.org/community/cndpubcg/
- Chinese Web Accessibility Community Group
  - https://www.w3.org/community/cnwa/
- Collaborative Software Community Group
  - https://www.w3.org/community/collaboration/
- Content Blocking Community Group
  - https://www.w3.org/community/abcg/
- Croatian Web Developers Community Group
  - https://www.w3.org/community/w3cdevhr/
- Data Driven Standards Community Group
  - https://www.w3.org/community/data-driven-standards/
- Decentralized Identity Korean Community Group
  - https://www.w3.org/community/did-kr/
- Font and Text Community Group
  - https://www.w3.org/community/font-text/
- HTML for Email Community Group
  - https://www.w3.org/community/htmail/
- HTML5 Japanese Community Group
  - https://www.w3.org/community/html5jp/
- HTML5 Korean Community Group
  - https://www.w3.org/community/html5kr/
- HTML5 Specifications Community Group
  - https://www.w3.org/community/html5spec/
- Internationalization Interest Group
  - https://www.w3.org/International/ig/
- Linked Data for Language Technology Community Group
  - https://www.w3.org/community/ld4lt/
- Microposts Community Group
  - https://www.w3.org/community/microposts/
- Mobile Web in Indian Languages Community Group
  - https://www.w3.org/community/mobindic/
- Multilingual Web Sites Community Group
  - https://www.w3.org/community/mws/
- Native Web Apps Community Group
  - https://www.w3.org/community/native-web-apps/

- Permanent Identifier Community Group
  - https://www.w3.org/community/perma-id/
- Read Write Web Community Group
  - https://www.w3.org/community/rww/
- Script Library Community Group
  - https://www.w3.org/community/scriptlib/
- Verifiable Credentials Working Group (VCWG)
  - https://www.w3.org/2017/vc/WG/
- WAI-Engage: Web Accessibility Community Group
  - https://www.w3.org/community/wai-engage/
- WebAuthn Adoption Community Group
  - https://www.w3.org/community/webauthn-adoption/
- WebID Community Group
  - https://www.w3.org/community/webid/
- Web Components Community Group
  - https://www.w3.org/community/webcomponents/
- Web Education Community Group
  - https://www.w3.org/community/webed/
- Web Payments Working Group
  - https://www.w3.org/Payments/WG/
- Web of Things Interest Group
  - https://www.w3.org/groups/ig/wot
- Web of Things Japanese Community Group
  - https://www.w3.org/community/wot-jp/
- Web of Things Working Group
  - https://www.w3.org/WoT/wg/

Discarded from the Internet Engineering Task Force (IETF)

- art-calext: Calendaring Extensions
  - https://datatracker.ietf.org/wg/calext/
- art-uta: Using TLS in Applications
  - https://datatracker.ietf.org/wg/uta/
- int-add: Adaptive DNS Discovery
  - https://datatracker.ietf.org/wg/add/
- int-dnssd: Extensions for Scalable DNS Service Discovery
  - https://datatracker.ietf.org/wg/dnssd/
- int-dprive: DNS PRIVate Exchange
  - https://datatracker.ietf.org/wg/dprive/
- sec-ace: Authentication and Authorization for Constrained Environment
  - https://datatracker.ietf.org/wg/ace/
- sec-kitten: Common Authentication Technology Next Generation
  - https://datatracker.ietf.org/wg/kitten/
- sec-mls: Messaging Layer Security
  - https://datatracker.ietf.org/wg/mls/
- sec-openpgp: Open Specification for PGP
  - https://datatracker.ietf.org/wg/openpgp/
- sec-secevent: Security Events
  - https://datatracker.ietf.org/wg/secevent/