An Introduction to Universal Acceptance

Don Hollander / Presentation to ALAC September 2017

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Universal Acceptance

UA in a Nutshell

Universal Acceptance (UA) ensures that all domain names and email addresses can be used by all Internet-enabled applications, devices and systems.

Anatomy of an email address

username@example.com

测试5@普遍接受-测试.世界

* *Username/*测试5
  * *Mailbox name*
  * *Can be in ASCII or Unicode*
* *Second level domain name (example/*普遍接受-测试*)*
  * *Can be ASCII or Unicode.*
  * *Unicode can be represented as Unicode or Punycode*
* *Top Level Domain name (.com/*世界*)*
  * *Can be ASCII or Unicode*
  * *Unicode can be represented as Unicode or Punycode*
  * *Can be 2 to 63 characters long*
  * *Can ONLY be from an authoritative list that is dynamic and has more than 1,500 choices*
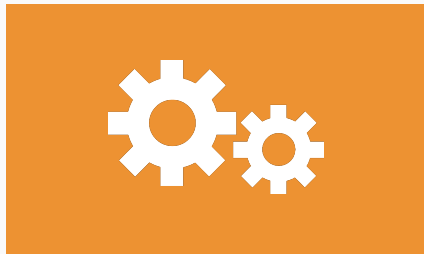
//*.*/

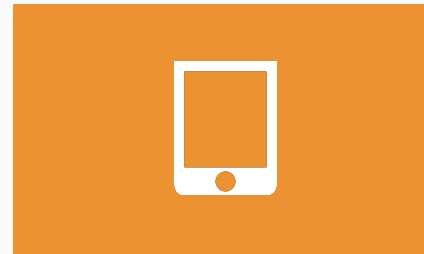# Five Verbs to UA Readiness
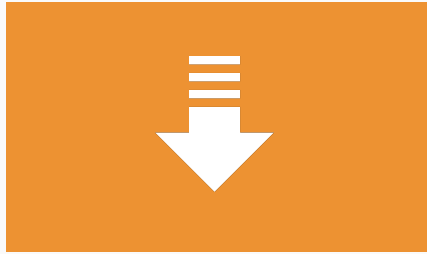
Accept

Validate

Store

Process

Display

Our Target Audiences

Doers

Developers & Systems Architects

Directors

CIOs and senior IT Management

Influencers

C* suite, Thought Leaders, Government Ministers and Officials

UA Documents: uasg.tech/documents

* *UASG003 – One page Fact Sheet*

* *UASG004 – Use Cases for UA Testing*

* *UASG005– Quick Guide to Universal Acceptance – 11 Languages*

* *UASG007 – Introduction to Universal Acceptance – Technical*

* *UASG008 – Local Engagement*

* *UASG010 – Quick Guide to Linkification*

* *UASG014 – Quick Guide to EAI*

* UA At a Glance
* What it Addresses
* Why it Matters
* Aimed at non-Geeks

* UA At a Glance
* What it Addresses
* Why it Matters
* Aimed at Media

* Model of a Local UA Initiative

* Multi-Party

* We're looking for local partners to engage local communities

* We can provide content and collateral

* We can also provide limited funds – See Help Wanted Ad

* Aimed at At-Large structures, ISOC Chapters, Local Computer Societies

* 11 Languages

* Accept, Validate, Store, Process & Display

* Aimed at Technical Managers

* Working Websites
* Working Email Addresses
* Provides Test Suite for Developers
* Aimed at Geeks

* Extensive Technical Document – 70 Pages
* English and Chinese
* Aimed at Developers and Architects

* Lists relevant RFCs
* Aimed at Geeks

White Paper

* Commissioned Report by Analysis Mason
* Looks at Social, Cultural and Financial Implications
* Estimates nearly US$10 Billion added economic Benefit
* Estimates millions of additional users
* Aimed at C*Os, Boards, Ministers

* Identifies the issues around automatic creation of Links in Applications
* Linkification Evaluation of Popular Social Media currently underway
* Aimed at Application Owners

* Introduces Email Address Internationalisation (EA)
* Identifies the Issues
* Aimed at email Geeks & SysAdmins

* Aimed at CIO and IT Management
* Outlines the Issues to address and how
* Includes Checklist of Popular Internet Industry applications
* Additional Blueprints planned for other Industries

* Provides sample tendering and contractual clauses
* Includes IPv6 and DNSSEC
* Aimed at IT Management & Procurement

* APNIC
* Xgen Technologies
* ICANN
* THNIC
* Others to be developed

* Being published September 2017

* Looked at most popular browsers – Desktop & Mobile

* One passed all our tests

* Most others were pretty good

* Looked at 1,000+ popular websites
* Found just 7% accepted all test cases
* Found just 7% rejected all test cases
* Peeked under the hood of the code
* Targeted at web geeks and Accessibility Advocates

Thank You & Questions

Principles of Universal Acceptance

Accept

The process by which an email address or domain name is received as a string of characters from a user interface, file or API.

UASG Recommendations

* User interface elements must support:
  * Unicode.
  * Strings up to 256 characters.

* ASCII Compatible Encoded text ("Punycoded") in place of Unicode.
  * Unicode shown by default.
  * Punycoded text shown *only* when it provides a benefit.

Validate

The process by which an email address or domain name – received or emitted – is checked for syntax correctness.

UASG Recommendations

* Easiest way to ensure all valid domain names are accepted.

* Should not occur unless required. If yes:
    * Verify TLD against authoritative table.
    * Query domain name against DNS.
    * Require repeated entry of email address.
    * Validate characters - no "disallowed" code points.
    * Limit to few, whole-label rules defined in RFCs
   * If string contains '。' convert to '.'

Store

The long-term and / or transient storage of domain names and email addresses.

UASG Recommendations

* Apps / services should support Unicode

* Information stored in UTF-8 whenever possible

* Consider end-to-end scenarios before converting between A-Labels & U-Labels

   * Consider storing in both formats

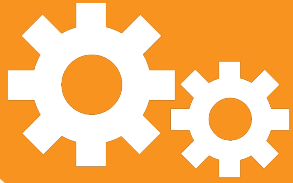* Clearly mark email addresses and domain names during storage
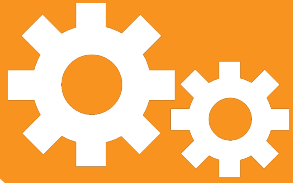
Process

Occurs whenever an email address or domain name is used by an application or service to perform an activity, or is transformed into an alternate format.

UASG Recommendations

* Check code points not defined when application / service was created – shouldn't "break" user experience.

* Use supported Unicode-enabled APIs.

* Use latest IDNA Protocol & Tables documents for Internationalized Domain Names.

* Process in UTF-8 wherever possible.

Occurs whenever an email address or domain name is used by an application or service to perform an activity, or is transformed into an alternate format.

UASG Recommendations

* Ensure numbers are handled as expected

* Treat ASCII numerals & Asian ideographic number representations as numbers

* Upgrade apps & servers/services together
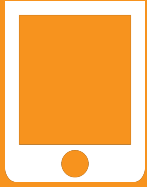
* Perform code reviews to avoid buffer overflow attacks
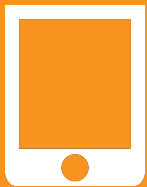
Display

Display occurs whenever an email address or a domain name is rendered within a user interface.

UASG Recommendations

* Display all Unicode code points supported by underlying operating system.

* When developing app/service, or operating a registry, consider languages supported.

* Convert non-Unicode data to Unicode before display.

* End user should see "everyone.みんな" vs. "everyone.xn--q9jyb4c."

Display (continued)

Display occurs whenever an email address or a domain name is rendered within a user interface.

UASG Recommendations

* Display Unicode by default

* Use Punycoded text *only* when it provides a benefit

* Consider that mixed-script addresses will become more common

* Use Unicode IDNA Compatibility Processing to match user expectations

* Be aware of unassigned & disallowed characters

Tools & Resources for Developers

Authoritative Tables:

* http://www.internic.net/domain/root.zone
* http://www.dns.icann.org/services/authoritative-dns/index.html
* http://data.iana.org/TLD/tlds-alpha-by-domain.txt
* See also SAC070: https://tinyurl.com/sac070

Internationalized Domain Names for Applications:

* Tables: https://tools.ietf.org/html/rfc5892
* Rationale: https://tools.ietf.org/html/rfc5894
* Protocol: https://tools.ietf.org/html/rfc5891

Unicode:

* Security Considerations: http://unicode.org/reports/tr36/
* IDNA Compatibility Processing: http://unicode.org/reports/tr46/

Universal Acceptance Steering Group info & recent developments: www.uasg.tech

Next Steps…

* Read the documents at www.uasg.tech/documents
    * UASG003 – Fact Sheet
    * UASG005 – Quick Guide
    * UASG007 – Introduction to UASG
    * UASG011 – FAQs
* Subscribe to the UASG Discussion list www.uasg.tech/subscribe
* Get your own systems UA Ready
* Spread the word…