



# Universal Acceptability

## *The Public Suffix List & IDN Whitelist*

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# Universal Acceptability



**YOU can help with Universal Acceptability**

**Two important community initiatives**

- **Mozilla / community Initiatives**
  - *Public Suffix List*
  - *Mozilla IDN Whitelist*



# The Public Suffix List

*Community-Driven Universal Acceptability*

# The Public Suffix List (“PSL”)



<http://publicsuffix.org>

## What Is it?

- **PSL is a list of all known public suffixes**
  - *Factors in all levels under which Internet users can register or obtain delegations.*
  - *Some examples of public suffixes are ".com", ".co.uk" and "pvt.k12.wy.us" where the IANA list would have ".com", ".uk" and ".us".*
  - *Complimentary to and adds depth/detail to the IANA list of TLDs*



# The Public Suffix List (“PSL”)



## IANA List

(<http://data.iana.org/TLD/tlds-alpha-by-domain.txt>)

...  
AF  
AG  
AI  
AL  
AM  
AN  
...

## Public Suffix List

(<http://publicsuffix.org>)

```
// af : http://www.nic.af/help.jsp
af
gov.af
com.af
org.af
net.af
edu.af

// ag : http://www.nic.ag/prices.htm
ag
com.ag
org.ag
net.ag
co.ag
nom.ag

// ai : http://nic.com.ai/
ai
off.ai
com.ai
net.ai
org.ai

// al : http://www.ert.gov.al/ert_alb/faq_det.html?Id=31
al
com.al
edu.al
gov.al
mil.al
net.al
org.al

// am : http://en.wikipedia.org/wiki/.am
am

// an : http://www.una.an/an_domreg/default.asp
an
com.an
net.an
org.an
edu.an
...
```

# The Public Suffix List (“PSL”)



## Where did it come from?

- **Designed to aid browsers**
  - *Founded in 2007 by Jo Hermans*
- **Practical application rapidly grew its use**
  - *Now maintained with Mozilla, by community and core group of volunteers*

# The Public Suffix List (“PSL”)



## Where is it used?

*It used by (at least):*

**Browsers:** *Firefox, Chrome, Opera, others;*

**Languages:** *Google’s Java libraries;*

*regdom-libs for C, Perl, and PHP;*

*Nokia QT, Ruby on Rails,*

*JavaScript - Greasemonkey, many others.*

**Other Software and Services:**

**Operating Systems – Hosting Companies –**

**Statistics Providers – Anti-Spam – Security**

**Services – Certification Providers – CRM Systems –**

**Law Enforcement Agencies – Form Validation**

**+ Many, Many More**

# The Public Suffix List (“PSL”)



## How can I view it?

You can view it at <http://publicsuffix.org/list/> (click the link that says ‘See the list’).

## How can I update or add my IANA listed TLD or sub-delegation registry?

To make amendments to the list, please visit this site:  
<http://publicsuffix.org/submit/>

*Note: Requests go through a distributed approval process before implementation*



# The Public Suffix List (“PSL”)



## What does it do?

*It allows for validation of the rightmost elements as TLDs underneath a domain name.*

*It allows browsers to, for example:*

- Avoid privacy-damaging "super cookies" being set for high-level domain name suffixes
- Highlight the most important part of a domain name in the user interface
- Accurately sort history entries by site

# The Public Suffix List (“PSL”)



Please review and add or update your entry

- **Requirements:**

- *Request must come from Registry/Authorized Party*
- *Rightmost string must be IANA Listed*
- *Subdomain Registries are allowed to request listing*
- *Pre-Delegation Exceptions to IANA listed rule:*
  - **ccTLD IDN Fast-Track TLDs that have passed String Evaluation phase**
    - (i.e. are listed on “[IDN ccTLD Fast Track String Evaluation Completion](#)”)

# The Public Suffix List (“PSL”)



## Take Away This:

### As it relates to Universal Acceptability

- My TLD benefits from being accurately represented in the PSL
- My Community / All Users also benefit
- Simple: One edit cascades out to many applications and developers

**Public Suffix List = Good. Go update it now!**



# Mozilla IDN Whitelist

*Internationalization with Curation*

# Internationalization

عربي  
עברית  
فارسی

Afrikaans  
Shqip  
Հայերեն  
অসমীয়া  
Asturianu  
Euskara  
Беларуская  
বাংলা  
Bosanski  
Brezhoneg  
Български  
català

中文 (简体)  
正體中文 (繁體)  
Hrvatski  
Čeština  
Dansk  
Nederlands  
English  
Esperanto  
Eesti keel  
suomi  
Français  
Frysk

Gàidhlig  
Galego  
ქართული  
Deutsch  
Ελληνικά  
ગુજરાતી  
हन्दी  
Magyar  
íslenska  
Bahasa Indonesia  
Gaeilge (Éire)  
Italiano

日本語  
ಕನ್ನಡ  
Қазақ  
한국어  
Kurdî  
Latviešu  
lietuvių kalba  
Luganda  
मैथिली मैथिली  
മലയാളം  
मराठी  
Sepedi

Norsk  
ଓଡ଼ିଆ  
ਪੰਜਾਬੀ  
Polski  
සිංහල  
Македонски  
Português  
română  
rumantsch  
Русский  
Српски  
slovenčina

Slovenščina  
Soṅay  
Español  
Svenska  
தமிழ்  
తెలుగు  
ไทย  
Türkçe  
Українська  
Tiếng Việt  
Cymraeg  
isiZulu



**Mozilla Firefox 4.0 is  
fully localized into over  
80 distinct languages**

*and has over*

**227,486,079**

*downloads worldwide and growing!*



# IDN in Top Level Domains



## “One World, One Internet, Everyone Connected”

*Assuming for this portion that are all familiar with IDN at the top level, or second level and the numerous benefits that come for communities that need more than just A-Z.*

All good, but the benefits of new things can often introduce new opportunities for bad actors to exploit.

Example:

well-worn [paypal.com](https://www.paypal.com) in mixed code as mixed language homograph

Homographs also possible within single language set

Æ -> AE

Œ -> OE

DŽ -> DZ

UNLESS registry has policy to avoid the circumstances where there would be two separate registrations for the visually similar domain.

# IDN in the wild and Guidelines v2.2



Not all registries have policies to avoid visually similar domains from being registered within their IDN implementations.

Summarizing ICANN IDN Guidelines v 2.2

*“List your allowed characters and all else are disallowed”*

Very oversimplified summary. View Full policy here for authoritative detail: <http://icann.org/en/topics/idn/implementation-guidelines.htm>

- This still leaves room for homographs

# Unicode Technical Reports and Security



Not all registries have policies to avoid visually similar domains from being registered within their IDN implementations.

Summarizing Unicode TR 36 §2.10.4, item B

*“Publicly document the enforcement policy on confusables: whether two domain names are allowed to be single-script or mixed script confusables”*

Very oversimplified summary. View Full report here for authoritative detail: [http://www.unicode.org/reports/tr36/#international\\_domain\\_names](http://www.unicode.org/reports/tr36/#international_domain_names).

- UTR 36 ( <http://unicode.org/reports/tr36> )
- UTR 39 ( <http://unicode.org/reports/tr39> )
- This helps close the door on homographs



# Human review of policy, then ‘whitelist’



Where registries have policies to avoid visually similar domains from being registered within their IDN implementations.

Unicode TR36 §2.10.3 B,D “Security recommendation for User Agents” (aka Browsers)

- Expose Punicode in Location Bar as default behavior *unless* TLD Policy is reviewed and considered for conformity and then subsequently whitelisted if approved

This helps visually expose homographs so that general users are less likely tricked or confused

# Mozilla's IDN-enabled TLD list



- Mozilla maintains such a “whitelist” for their projects

Registry submits policies and code points for review.

Until approved, domains display in Punicode

- Review the qualifications

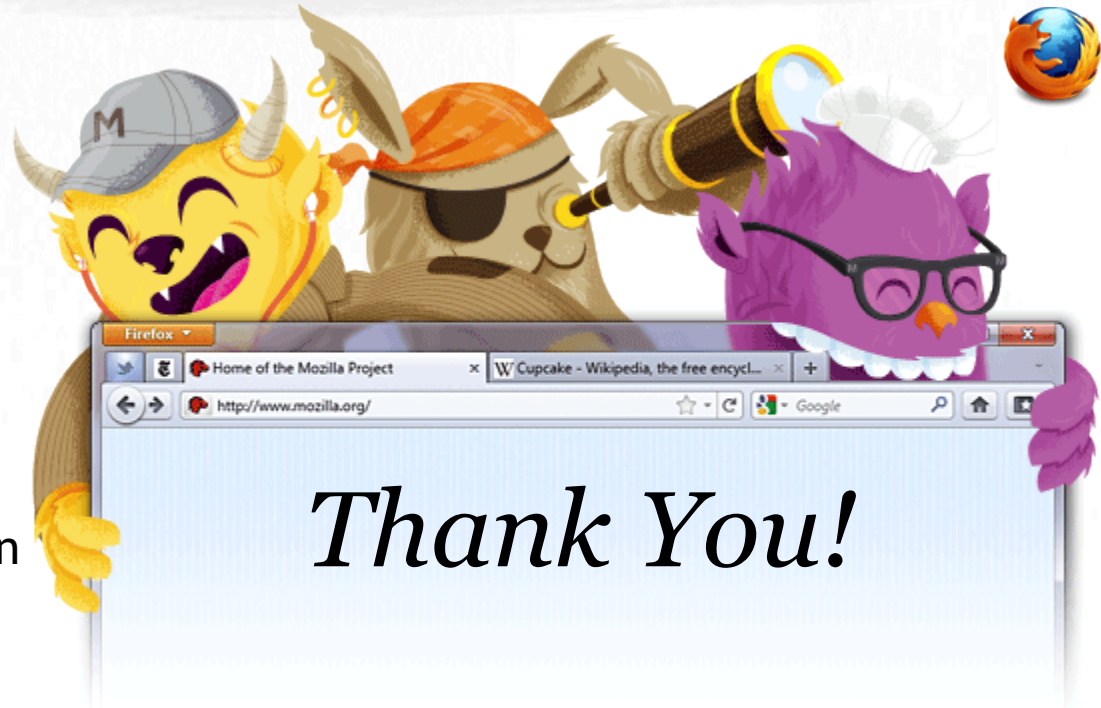
<http://mozilla.org/projects/security/tld-idn-policy-list.html>

- Add your TLD to the list <http://goo.gl/sdpqs>



**Questions?**

# Thank you and recognitions



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