IDNs and Universal Acceptance
Extract from World Report on IDNs 2013

APTLD Meeting, Oman 2014
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Availability is just one metric for IDNs

*Universal Acceptance*, is a metric related to the ability to use IDNs successfully in all settings where a legacy ASCII domain name would have worked

We have significant history with the problem of Universal Acceptance

- Early rounds of expansion of gTLD space
- Significant problems with TLDs longer than three characters

Is this problem going to be even worse for IDNs?
Where to focus on universal acceptance?

- A serious problem: universal acceptance is a multi-headed problem . . .
- Do you attempt to solve it:
  - In browsers and in DNS infrastructure?
  - In the access network and with hosting and email providers?
  - In the area of network management and security tools?
  - In mobile networks and apps?
  - In traditional applications and databases?
  - At registry, registrar and RIR systems?
- The answer is “yes” to all of these.
This is very natural
- Some see the Web as the Internet as a whole
- Believe that if IDN acceptance is solved for the Web and the DNS, that means full-system solution
- Alas, almost all research focuses on browsers and the DNS

The impact of this is significant
- Applications are extremely slow to support IDNs
- There is a tiny amount of support for IDNs in mobile applications
- Email is very slow to be internationalized - and this has a corollary effect on user accounts
What did we find last year?

- Browsers
  - In a high percentage of cases, browsers work well with IDNs
  - Partly due to support for IDNs in browsers
  - But, partly due to customised support for local language in the personal computer environment
What did we find last year?

- Applications
  - Very poor support for IDNs
  - Particularly poor support for electronic mail - with the result that internationalised email addresses can’t be used as identification

- Mobile
  - Browsers work, but imagine typing in an IDN on a phone!
13 of the world’s most popular websites (e.g., Google, Facebook, Yahoo, YouTube, Wikipedia...)

Five measures for each site:

- **CrAcct**: Ability to create an account using IDN email
- **ConAct**: Ability to confirm an account creation
- **Login**: Ability to successfully log in using an IDN once an account has been created
- **Prefs**: Once logged into a web site, the ability to change preferences for the service
- **Usability**: A subjective score (0: lowest; 10: highest) of how well the service supports IDNs and email addresses using IDNs
Results

Links: 92% failure in our tests
- Differences between treatment of full and hybrid IDNs
- Facebook has the most interesting support.
- Hybrid IDNs tend to be changed to underlying punycode

User identifiers: 100% failure in our tests
- Impossible to create a user account with an IDN email address
- ...even in localised versions of services (eg Russian PayPal, Google)
Examples - user accounts

What happens if you try to create a new user on Facebook with a hybrid, IDN-based username?
What goes wrong when you try to join Twitter with a hybrid username?
Examples - Twitter

Twitter tries to cope with IDNs by accepting them as they are typed but then modifying them for display.

As Typed

As Displayed

Mark McFadden @McElmside

Twitter handles some hybrid IDNs in an unusual way: xn--ixaif0belbm2b8d.eu or xn--uppst-pra.eu

Expand
IDN fail even in localised versions of popular services
Sneak peak - 2014 results

- Mobile devices versus applications
  - Device manufacturers beginning to come to terms with user interface problem
  - Applications designers still way behind
- Applications
  - No significant progress in 12 months
- Email
  - Internationalized email making extremely slow progress
- Browsers and the Web
  - Browsers make continued improvements over last year
Conclusions - universal acceptance
IDN negative cycle

- Low User Awareness
- Low User Uptake
- Poor User Experience

(low user awareness) → (low user uptake) → (poor user experience) → (low user awareness)
IDN hierarchy of needs

- Mass adoption
- Early adopters
- New market offerings
- Universal support in hardware and software (browsers, email, applications, mobile)
- Basic domain name functionality

Current position

Human factors

Infrastructure factors