IDN Application Guideline
draft-yoneya-idn-app-guideline-00

7 Mar 2005

APPAREA BOF

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Recognition of Issues

- IDN extends repertoire of characters used in domain names
- Benefit of IDN is to enable domain names to be expressed in a way non-English native Internet users are comfortable with
- Meanwhile, IDN specifications are so general and freewheel use may lead to undesirable confusion
- i.e., IDN specifications allow the use of domain names that are not usually used in real world such as
  - multi-script domain names
  - domain names with marks that don't belong to any language

Recognition of Issues (cont.)

- This problem was recognized during IDN standardization and described in its specification
- To avoid this problem, IDN registration guidelines were developed and adopted by many TLDs
  - JET Guideline (RFC3743)
    - http://www.ietf.org/rfc/rfc3743.txt
  - ICANN Guideline
    - http://www.icann.org/general/idn-guidelines-20jun03.htm
- IDN != Non-ASCII Domain Name
  - Original concept of IDN is to accommodate native language representation of domain names
- To make IDN usage / implementation closer to its original concept is guideline's role

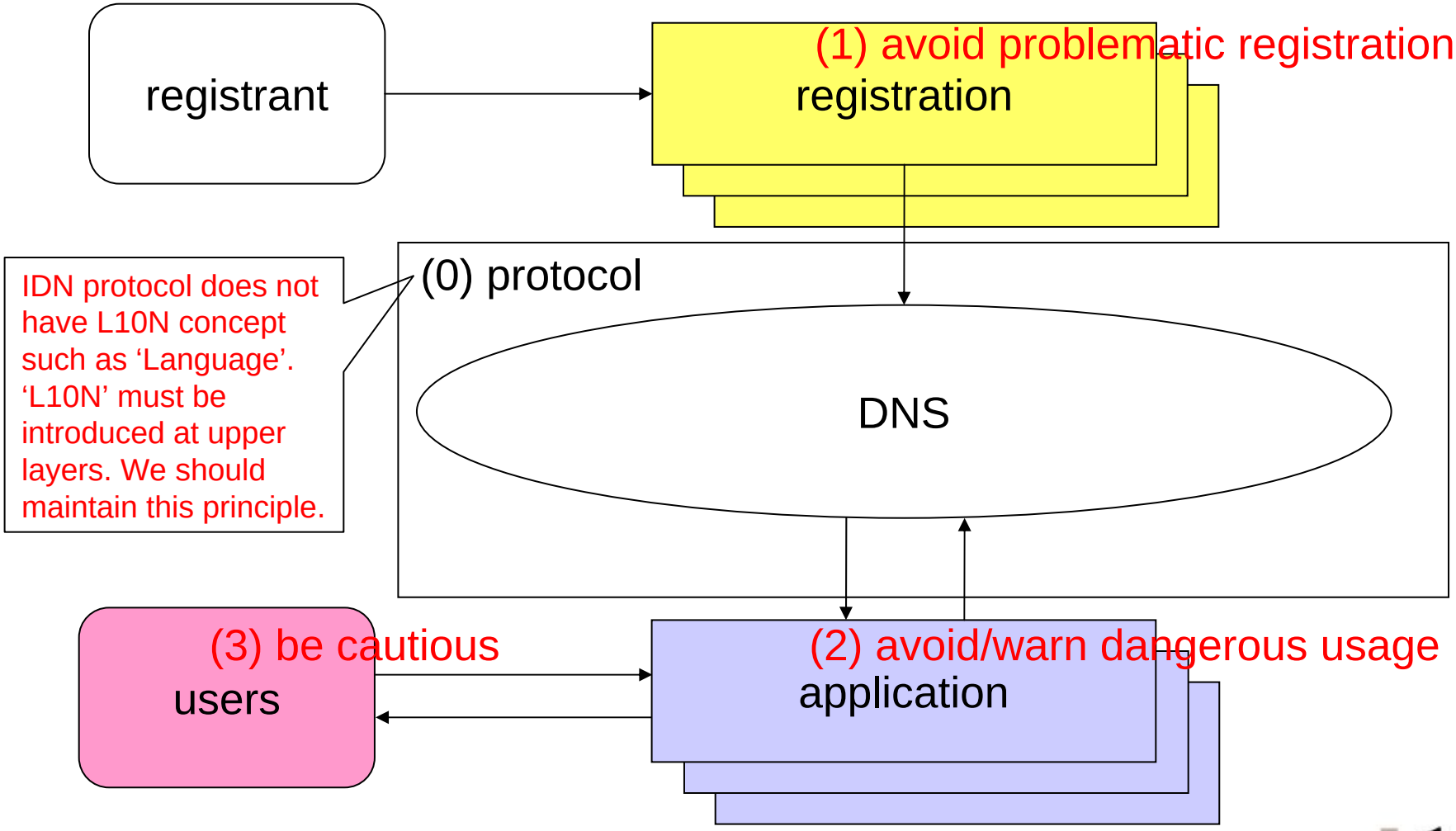
Recognition of Issues (cont.)

- Registration guidelines do not have full power to be enforced in the whole domain name space
- i.e., unusual multi-script names can be registered
  - in some TLDs
  - as subdomains under domain names that are delegated to registrants
- Recently, this issue was pointed out as “homograph attack”
  - http://www.paypal.TLD/ v.s. http://www.paypal.TLD/
  - http://www.xn--pypal-4ve.TLD/ v.s. http://www.paypal.TLD/

Recognition of Issues (cont.)

- And there is more serious example which existing registration guidelines can not cover
  - http://www.name.TLD/search.example.TLD?
    v.s.
    http://www.name.TLD/search.example.TLD?
  - http://www.name.xn--tldsearch-ng4e.example.TLD?
    v.s.
    http://www.name.TLD/search.example.TLD?

Model of this Issue



When do users have interface with IDN?

- Basically, there are two situations
  - Domain name registration
  - Typing, copy-n-pasting and clicking in application
- The former is already covered by IDN registration guidelines, which will be enhanced where necessary
- The latter is already pointed out by IDNA
  - cf. RFC3490, Security Consideration
  - But the solution is not yet developed
  - Time to develop well-described “common experiences” for applications

IDN aware application implementation guidelines

- Guidelines for registration cannot block all the problematic IDNs to be registered
- Guidelines for application implementation as well as guidelines for registration needed
- To reduce “homograph attack” possibility in application side
- This should be developed in IETF as well as guidelines for registration

What can be done in application?

- Combination of followings should be guided
- Extra mapping
  - This may be effective for homographs of mathematical operators widely used in protocol elements
    - ex. －(U+2212), ／(U+2215) and ：(U+2236)
- Extra prohibiting
  - This may be effective for homographs of symbols
    - Such as marks and symbols in U+2000-U+2AFF
    - ex. – (U+2013), T(U+252C), ×(U+2715), etc.
- Visually highlighting
  - Above extras may lead to protocol violation
  - Highlighting will attract users' attention

Visually highlighting

- Indicating NON-ASCII characters with:
  - Color, Bold, Italic, and / or Another Encoding such as Punycode or %-Encoding
- IDN in anchor
  - Highlight in status bar and/or pop-up dialogue
- IDN in address bar
  - Highlight in background color and/or ICON such as SSL/TLS session
- IDN in certificate
  - CN (Common Name) should be displayed in Punycode

Example

Dear customer,

We decided to enforce our security level much higher than before.
Your password seems weak so please change ASAP.

You can change your password from following page:
http://www.paypal.TLD/

Sincerely Yours,

Customer support

Example1

http://www.paypal.TLD/

Your ID/PW is required to change immediately:

ID

Old PW

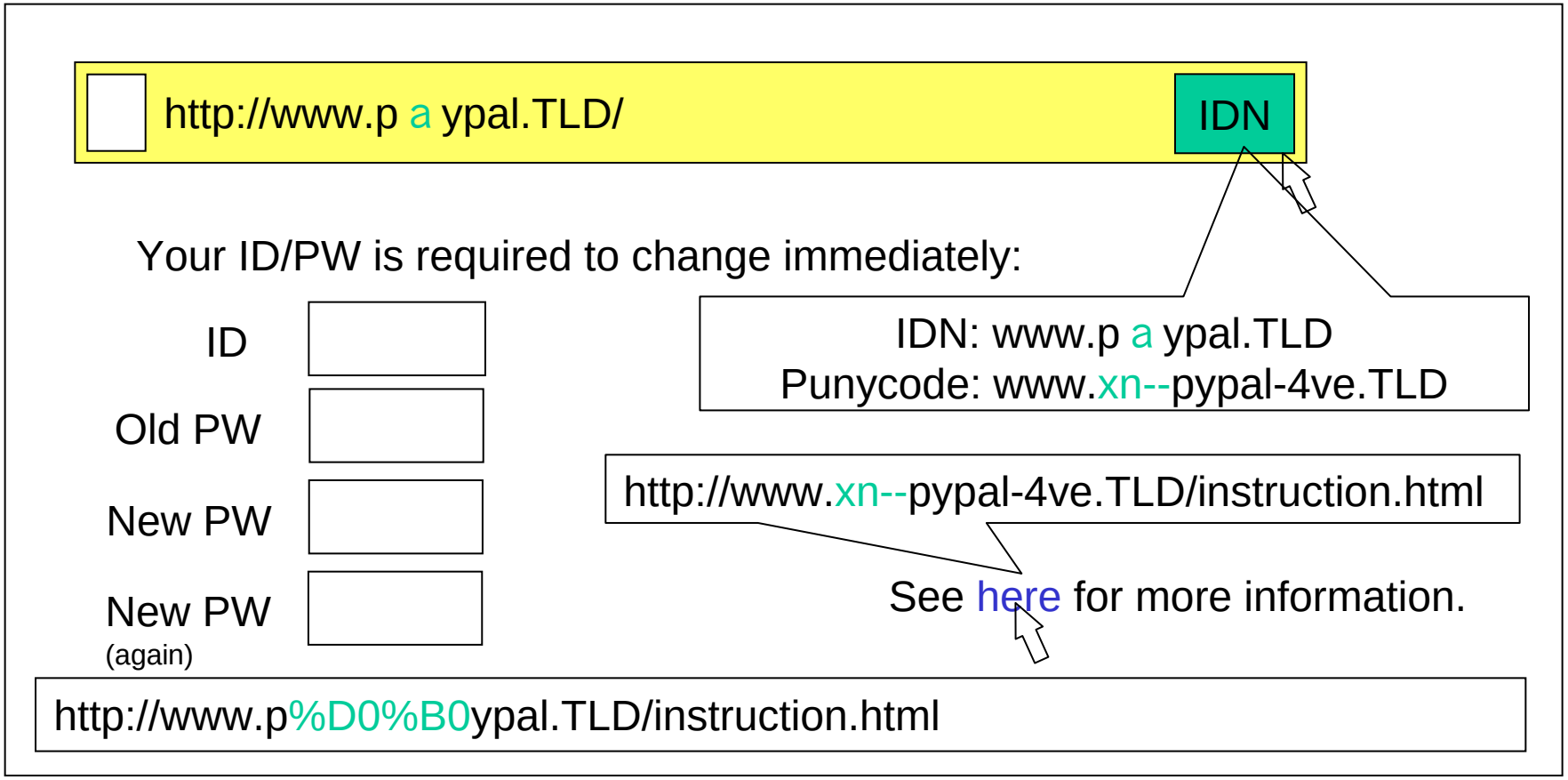
New PW

New PW
(again)

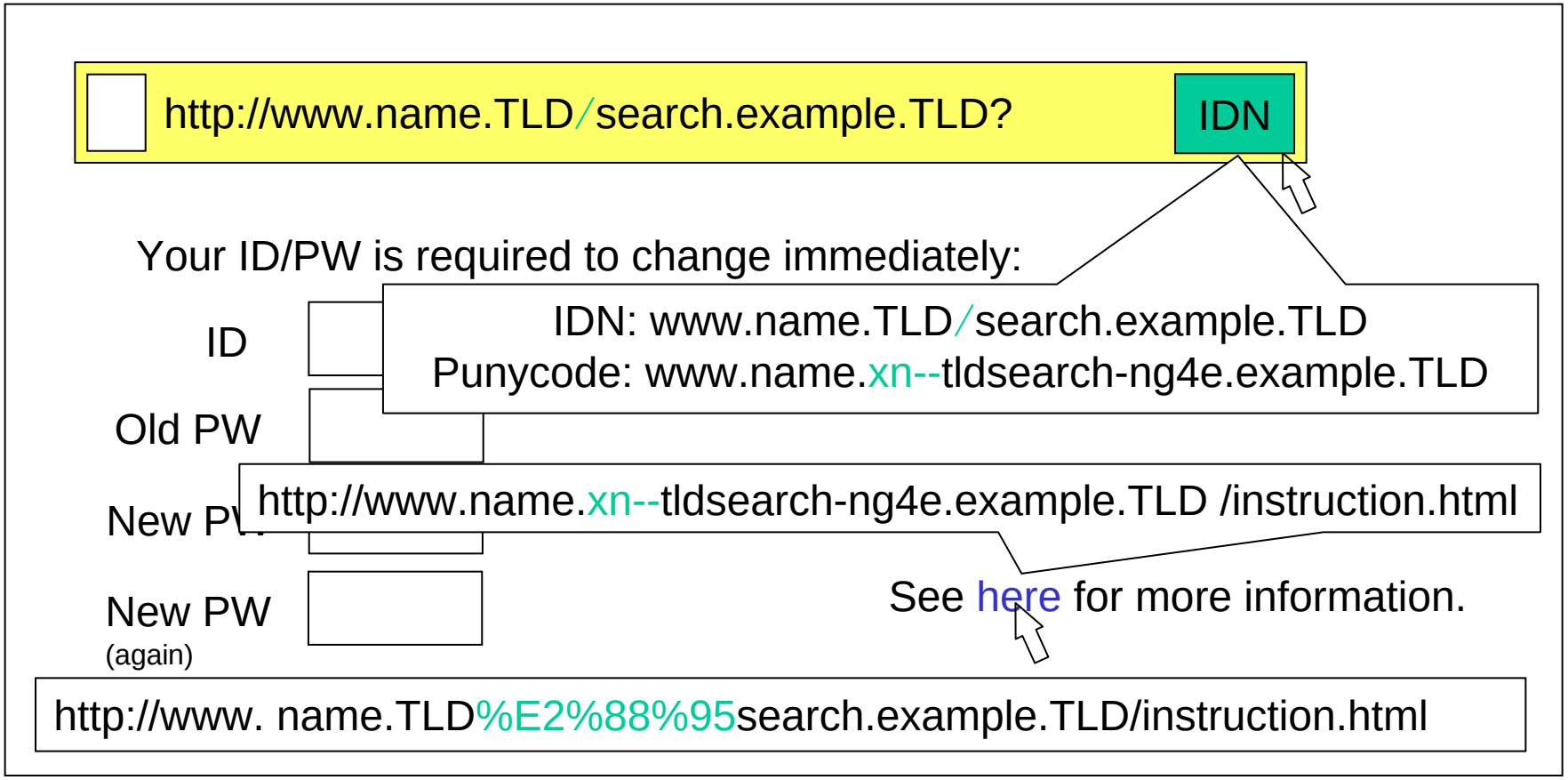
See here for more information.

http://www.paypal.TLD/instruction.html

Example2



Example2



Existing Implementations

- Firefox 1.0.1
  - IDN is enabled
  - IDNs are displayed in Punycode
    - To display IDN, need to change configuration
  - http://www.mozilla.org/products/firefox/releases/
- Opera 8.0 beta2
  - IDN is enabled
  - IDNs are displayed in IDN or Punycode
    - TLD based whitelist
  - http://www.opera.com/pressreleases/en/2005/02/25/

Any comments, suggestions and feedbacks are welcome!