

IDN - these days

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Hello, this is me.



History of IDN (Technology)

- **Late 1990s**
 - **Developed at the National University of Singapore**
- **July 1998**
 - **Asia Pacific Networking Group**
 - **experimental implementation of IDN**
 - **creation of a testbed in Asia Pacific countries**
- **1998-1999**
 - **Prototypes demonstrated in international conferences**
 - **BoFs held in international conferences (APRICOT, INET)**
- **Nov. 1999 -**
 - **BoF in IETF**
 - **IDN Working Group in IETF**
- **Mar. 2003**
 - **Standardization of basic protocols (RFCs) in IETF**
 - **STRINGPREP (RFC3454)**
 - **IDNA (RFC3490)**
 - **NAMEPREP (RFC3491)**
 - **Punycode (RFC3492)**

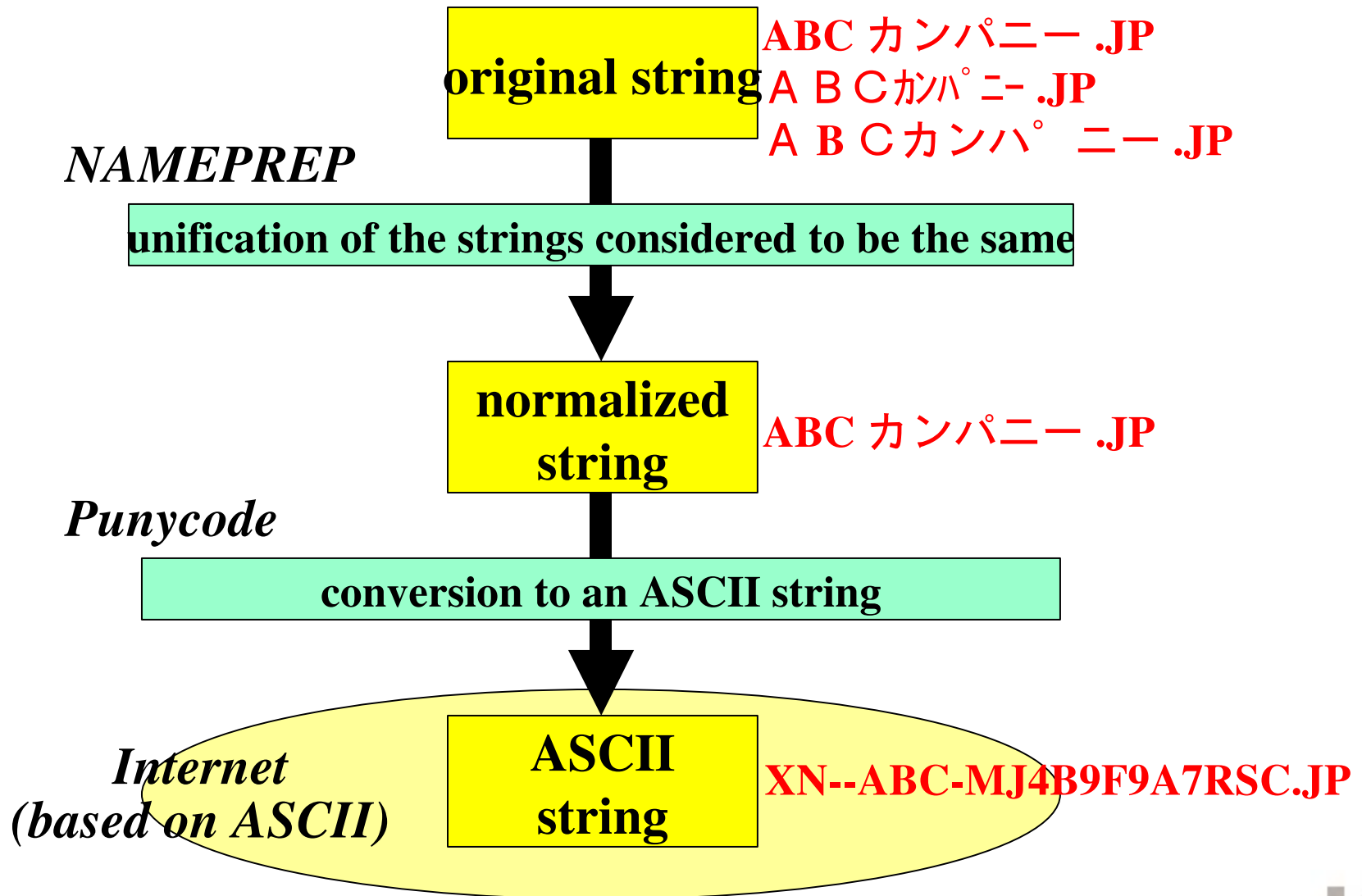
History of IDN (deployment)

- **End of 1999**
 - **Several companies began commercialization of the multilingual domain name technology**
 - **Several testbeds emerged**
- **2000 -**
 - **JET (Joint Engineering Team)**
 - **joint engineering project team : CN, JP, KR, TW ccTLDs**
 - **MINC (Multilingual Domain Names Consortium)**
 - **promotion of the multilingualization of Internet names**
 - **Country/regional organizations**
 - **AINC (Arabic Internet Names Consortium)**
 - **CDNC (Chinese Domain Name Consortium)**
 - **INFITT (International Forum for IT in Tamil)**
 - **JDNA (Japanese Domain Names Association)**
 - **:**
- **Now**
 - **The number of registries that provide IDNs is growing**

History of IDN (ICANN)

- **March 2001**
 - **IDN Working Group in ICANN Board**
 - **Fact finding survey concerning technical, policy, and service aspects**
 - **Survey report of market demand and issue list (Sept. 2001)**
- **Sept. 2001 -**
 - **ICANN IDN Committee**
 - **recommends solutions of non-technical issues (July 2002)**
- **Dec. 2002 -**
 - **ICANN IDN Registry Implementation Committee**
 - **Guidelines for the Implementation of Internationalized Domain Names Version1.0 (June 2003)**
- **Aug. 2005 –**
 - **TLD registries working group**
 - **Draft revision of Guideline Version2.0**
 - **Board endorsed the draft and Version2.0 was finalized (Nov. 2005)**
- **Nov. 2005 –**
 - **President's Advisory Committee for IDNs**
 - **analyzing various issues**
 - **implementation opportunities for internationalized top level domains**

Basic mechanisms of IDN



IANA Registry of IDN Language Tables

<http://www.iana.org/assignments/idn/registered.htm>

as of December 1, 2005

.biz German Language	.pl Belarusian Language	.pl Luxembourgish Language
.cn Chinese Language	.pl Bulgarian Language	.pl Macedonian Language
.br Portuguese Language	.pl Catalan Language	.pl Maltese Language
.info German Language	.pl Croatian Language	.pl Moldavian Language
.jp Japanese Language	.pl Czech Language	.pl Norwegian Language
.kr Korean Language	.pl Danish Language	.pl Polish Language
.museum Danish Language	.pl Dutch Language	.pl Portuguese Language
.museum Icelandic Language	.pl Esperanto Language	.pl Romanian Language
.museum Norwegian Language	.pl Estonian Language	.pl Russian Language
.museum Swedish Language	.pl Finnish Language	.pl Serbian Language
.org Danish Language	.pl French Language	.pl Slovak Language
.org German Language	.pl German Language	.pl Slovenian Language
.org Hungarian Language	.pl Hebrew Language	.pl Spanish Language
.org Icelandic Language	.pl Hungarian Language	.pl Swedish Language
.org Korean Language	.pl Greek Language	.pl Turkish Language
.org Latvian Language	.pl Icelandic Language	.pl Ukrainian Language
.org Lithuanian Language	.pl Irish Language	.th Thai Language
.org Polish Language	.pl Italian Language	.tw Traditional Chinese Language
.org Swedish Language	.pl Latvian Language	
.pl Albanian Language	.pl Lithuanian Language	

Relevant Issues

- **Homograph Attacks**
- **Registry Implementation Guidelines**
- **IDN-aware Environments**
- **Internationalized TLD**
- **More Consideration on IPR**

Homograph Attacks

- **Similar-looking domain names can be used for phishing**
- **ASCII domain names**
 - **0 and O are similar-looking**
 - **1 and l and I are similar-looking**
 - **paypal vs. paypa1**
 - **Picked up as an phishing example in Feb.2005**
- **IDNs**
 - **more characters are similar-looking in general**
 - **IDN has security problem !?**
 - **‘paypal’ vs. ‘p a yp a l’**
 - **‘domain/subdomain’ vs. ‘domain / subdomain’**

Example



UNICODE Security Considerations

- **Unicode Technical Report #36 (UTR#36)**
 - <http://www.unicode.org/reports/tr36/>
- **Recommendations (example)**
 - **Registries : Block visually confusable domain labels (at least from different registrants)**
 - **Registrars : show the reason to the registrant if a domain name application is rejected**
 - **Applications**
 - **Highlight the ‘core’ domain name part**
 - Eg. [http://abc / def/ghi](http://abc/def/ghi)
 - **Highlight risky strings defined in UTR#36**
 - Eg. a string of 2 digits, each from different script

Registry Implementation Guidelines

- **June 2003 - V1.0**
 - **Concept of Language**
 - defined character code set
 - Symbols and punctuations not allowed
 - **Definition of Variants**
- **Nov. 2005 - V2.0**
 - **Concept of language and script**
 - **Definition of variants**
 - **Special focus on anti-phishing**
 - Characters in a label are from ‘one script’
 - ‘visually confusable characters’ from different scripts are not allowed in a label
 - Unicode Technical Report #36

IDN-aware Web browsers and e-mail software

(example)

- **Web browser**

- Native



Firefox



Opera



Netscape



Safari

- With Plug-in



Internet Explorer

(Native version - Coming soon)

- **E-mail software**

- Foxmail

- Kmail

- Opera M2

- Outlook/OutlookExpress with Plug-in

Internationalized TLD (IDN TLD)

- **Demand shown**
- **Issues being identified**
 - **Technical issues**
 - Load for root servers
 - Various issues depending on Policy/Managerial decision
 - :
 - **Policy/Managerial issues**
 - Combination of TLD and language
 - Equivalency of name spaces (e.g., .jp and . 日本)
 - Visually confusable TLDs
 - Reserved domain names
 - :
- **President's Advisory Committee for IDNs**

More Consideration on IPR

- **More sensitivity on IPR**
 - Trademarks are often in its own language/script rather than in English alphabets
 - Names such as personal names, government organization names, and geographical names are in its own language
- **More complexity in dispute resolution**
 - Looks alike or not
 - Transliteration
- :