“TLD Managers have a duty to serve the community.”

RFC 1591

JUNE, 2000: .NU Domain begins using the "*" A RR Record in the .NU zone file (wildcard Address Resource Record).

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Why use the wildcard?

To *serve* the Global (non-English speaking) Internet community (RFC 1591), under established Internet *standards* (RFC 1034) by giving users simple access to their own languages and character sets on the Internet.

Limited "Local Language" DNS solutions in 1999:

I. *Keywords:* Registered Uniform Resource Identifiers (URI) with browser-based plug-ins

- Netpia: Korean Keywords (Still active 2010)
- 3271: Chinese Keywords (terminated 2008)
- CNNIC: Chinese "Internet Keyword" (active 2010)
- RealNames/Microsoft: All languages' Keywords (Terminated 2002)
- IDN-S.Net: Chinese language, other URIs

Alternative “Local Language” solutions in 1999:

II. *Direct DNS software support:* non-standard DNS patches supporting native characters

- CNNIC: Launched a national test
- JPNIC: Same
- KRNIC: Same
- Some Arab-language ccTLD operators
- IDN-S/Net: Terminated after IETF Standards set

Alternative "Local Language" solutions in 1999:

III. *.NU Domain's Multilingual Web Address:*

- Developed in 1999
- Met all current Internet standards
- Launched at ICANN Cairo meeting in 2000
- No browser plug-in required
- Precursor to IETF's IDN Standards of 2003 (RFC 3490, 3491, RFC 3492)

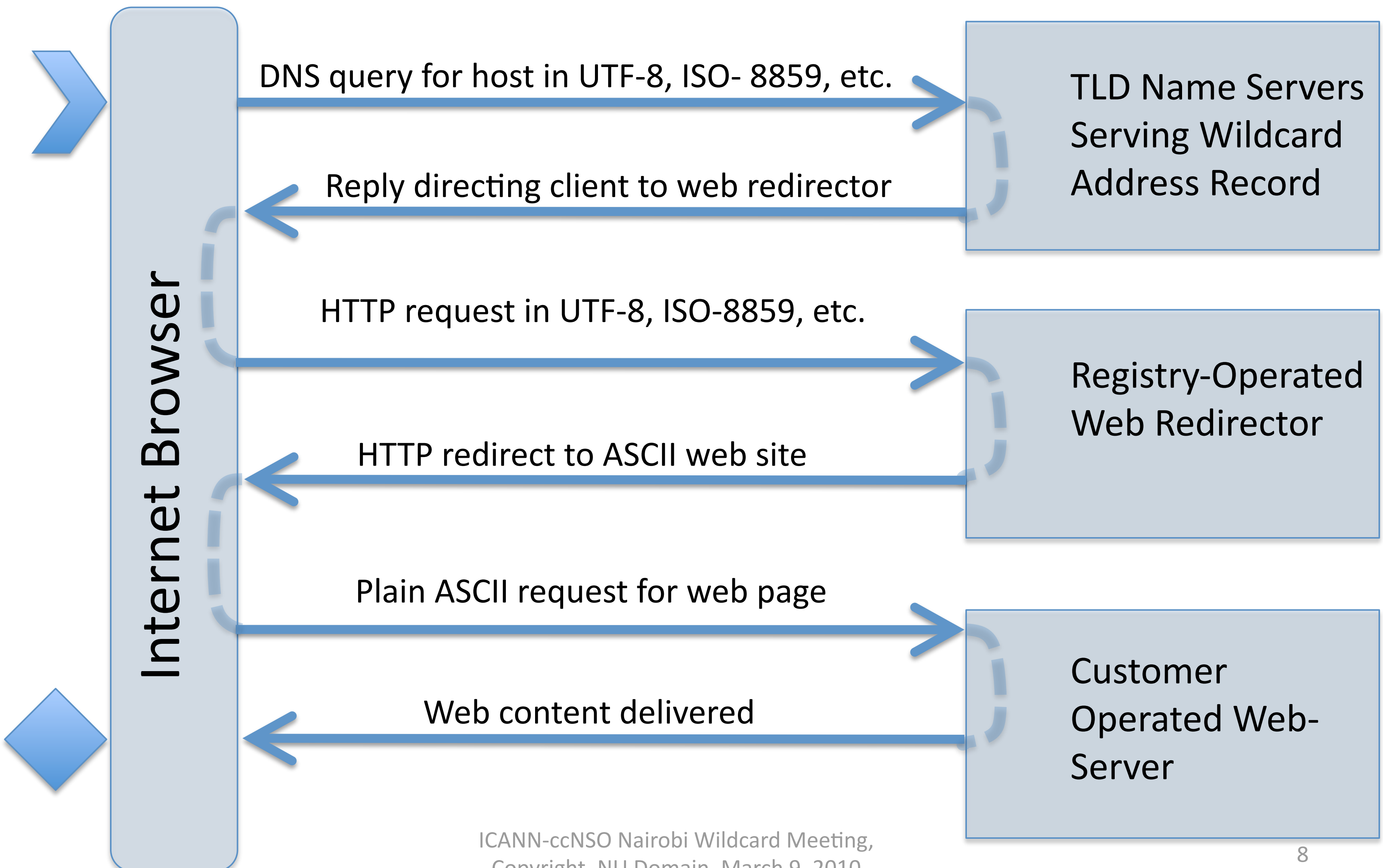
III. (Continued)

.NU's Multilingual Web Address Service:

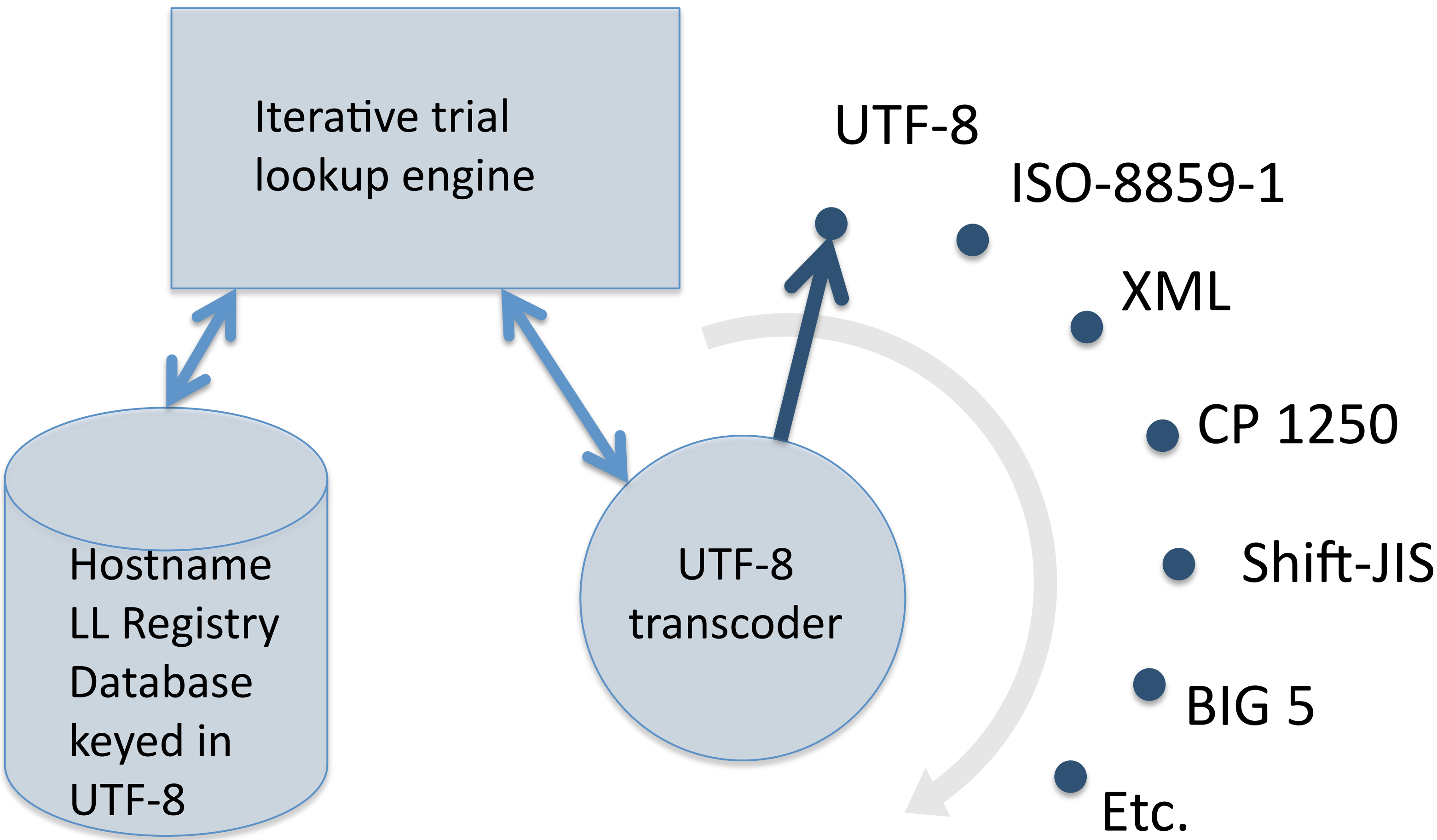
Followed IETF and W3C standards

- ASCII characters in .nu zone file (STD 13, RFC 1034)
- Wildcard A RR points to single IP addr (RFC 1034)
- .NU's "Web Redirect" at IP addr receives non-ASCII hostname queries, checks for a registered LL URL and, if true, finds conjoined ASCII domain name.
- LL query match is redirected to ASCII URL (W3C)

Method for Serving URLs with non-ASCII hostnames



Web Redirector Internal Lookup Logic



.NU's Multilingual Web Address Service:

Who Developed it?

Paul Mockapetris, Senior Technical Adviser

Author, RFC 1034 and RFC 1035; inventor of the DNS; former ARPA Networking Program Manager; former Chair of: the Research Working Group of the Federal Networking Council, the IETF and the IESG; former IAB member.

Currently Chairman and Chief Scientist at Nominum.

Marc Blanchet, Manager, Software Development

Co-chair, IETF Internationalized Domain Names (IDN) working group (2000 – 2001); Author, RFC 3491, "Nameprep: A Stringprep Profile for Internationalized Domain Names (IDN)" (2003). Currently Vice-Chair, ISACC IPv6 Task Group at ICT Standards Advisory Council of Canada, and President, Viagenie

Bill Semich, Project Director

Founding member, Asia Pacific Top Level Domains (1998); member, IFWP (1998) ; initial director, APTLD iName (IDN) committee (1998); founding participant, ICANN (1999, Singapore); initial member, ICANN's DNSO Names Council, Berlin (1999 - 2000), Founding Member, MINC; founding member and contributor, IETF IDN working group (2000 - 2001); founding member, Dot Asia, 2004; working group member, ccTLD IDN Fast Track Process, 2008. Currently President, .NU Domain.

.NU's Multilingual Web Address Service:

Implementation Phases:

Phase I, 1999 – 2003: Implementation, initial launch and ongoing operation.

Two step process:

1. User Registers an ASCII.nu domain name
2. Signs up for .NU ML Web Address service using a local language hostname

Typical WHOIS response:

Domain Name (ASCII): elnat.nu
Conjoined Domain Name (UTF-8): elnät.nu
Record last updated on 24-Feb-2003
Record expires on 24-Feb-2004
Record created on 24-Feb-2002

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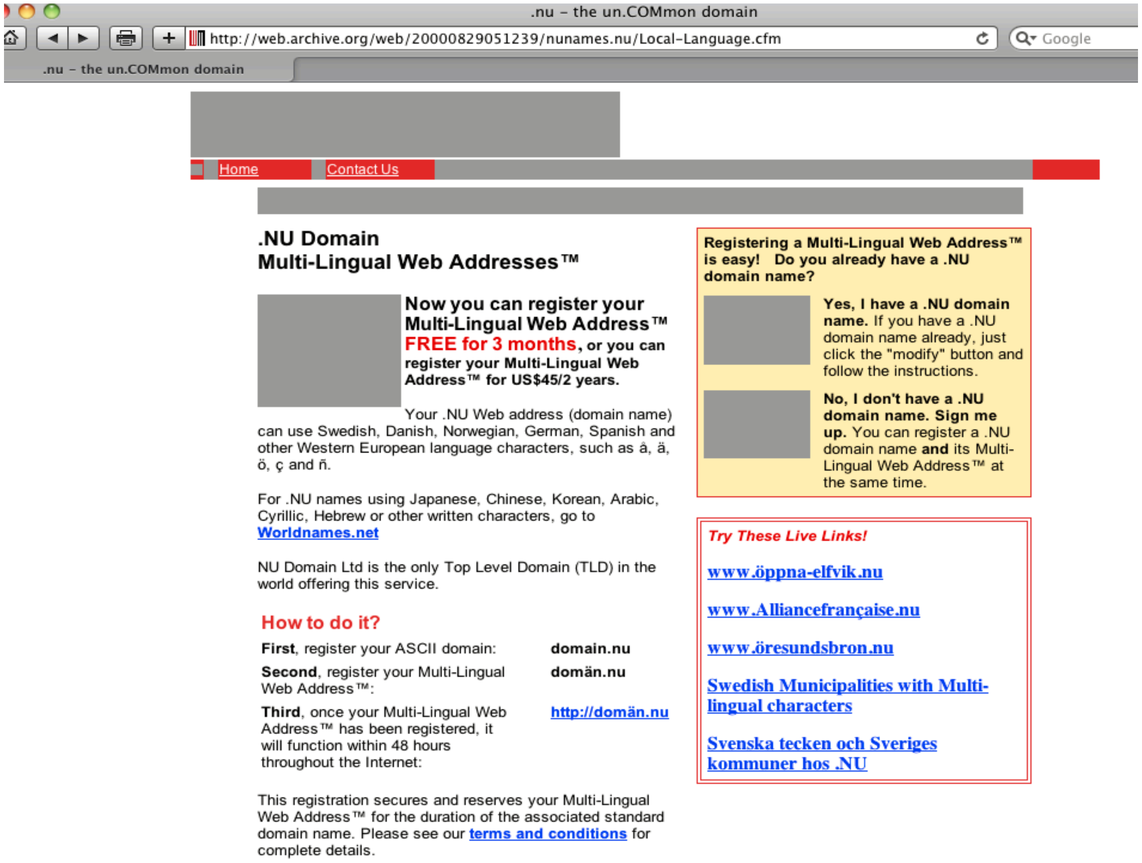
Example:

Phase I

Registration Process

In 2000



.nu – the un.COMmon domain

http://web.archive.org/web/20000829051239/nunames.nu/Local-Language.cfm

Google

.nu – the un.COMmon domain

Home | Contact Us

.NU Domain
Multi-Lingual Web Addresses™

Now you can register your Multi-Lingual Web Address™ FREE for 3 months, or you can register your Multi-Lingual Web Address™ for US$45/2 years.

Your .NU Web address (domain name) can use Swedish, Danish, Norwegian, German, Spanish and other Western European language characters, such as å, ä, ö, ç and ñ.

For .NU names using Japanese, Chinese, Korean, Arabic, Cyrillic, Hebrew or other written characters, go to Worldnames.net

NU Domain Ltd is the only Top Level Domain (TLD) in the world offering this service.

How to do it?

First, register your ASCII domain:	**domain.nu**
Second, register your Multi-Lingual Web Address™:	**domän.nu**
Third, once your Multi-Lingual Web Address™ has been registered, it will function within 48 hours throughout the Internet:	http://domän.nu

This registration secures and reserves your Multi-Lingual Web Address™ for the duration of the associated standard domain name. Please see our terms and conditions for complete details.

Registering a Multi-Lingual Web Address™ is easy! Do you already have a .NU domain name?

Yes, I have a .NU domain name. If you have a .NU domain name already, just click the "modify" button and follow the instructions.

No, I don't have a .NU domain name. Sign me up. You can register a .NU domain name **and** its Multi-Lingual Web Address™ at the same time.

Try These Live Links!

www.öppna-elfvik.nu

www.Alliancefrançaise.nu

www.öresundsbron.nu

Swedish Municipalities with Multi-lingual characters

Svenska tecken och Sveriges kommuner hos .NU

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Phase I

User Example:

OmVärlden.nu

(As seen by user)

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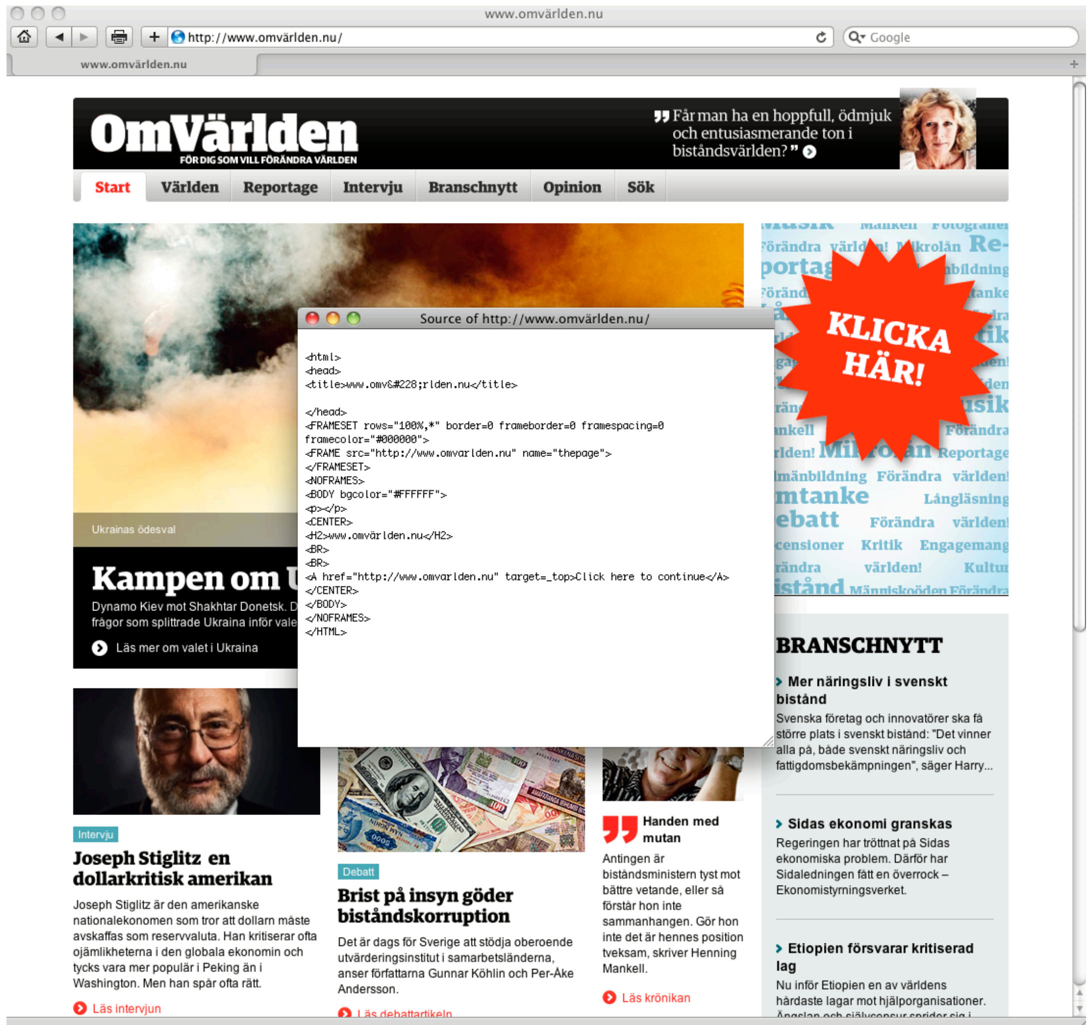
Phase I

User Example:

OmVärlden.nu

(Showing URL Frame Redirection Source Code)



.NU's Multilingual Web Address Service:

Implementation Phase II:

2004 – 2009: Transitional Adoption of IETF 2003 IDN Standards.

1. New IDN users register a single .nu IDN name. ASCII-encoded "Punycode" domain name entered into .nu zone with defined A RR.

2. Legacy users who had previously registered an actual ASCII domain name are still supported via wildcard redirect to LL Hostname; ASCII-encoded version of LL Hostname is assigned, entered into .nu zone. Final transition of legacy customers at next renewal.

Typical WHOIS response for Legacy user:

Domain Name (ASCII): elnat.nu
Conjoined Domain Name (UTF-8): elnät.nu
Conjoined domain Punycode Form: xn--elnt-noa.nu
Record last updated on 24-Feb-2008
Record expires on 24-Feb-2009
Record created on 24-Feb-2002

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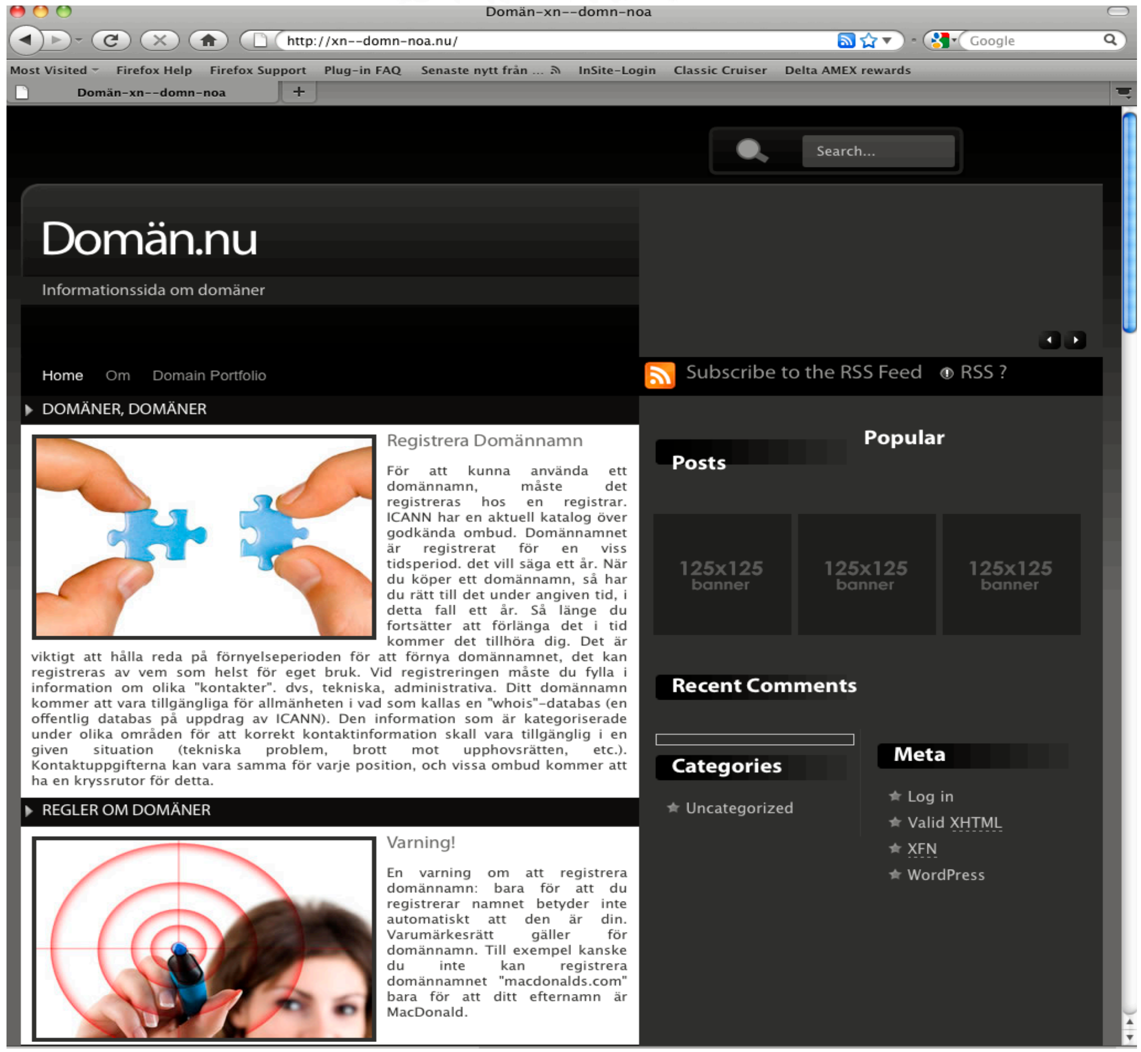
User Example, Phase II: Domäin.nu

(New Punycode Registration, viewed on a browser ***without*** a Punycode plug-in installed)



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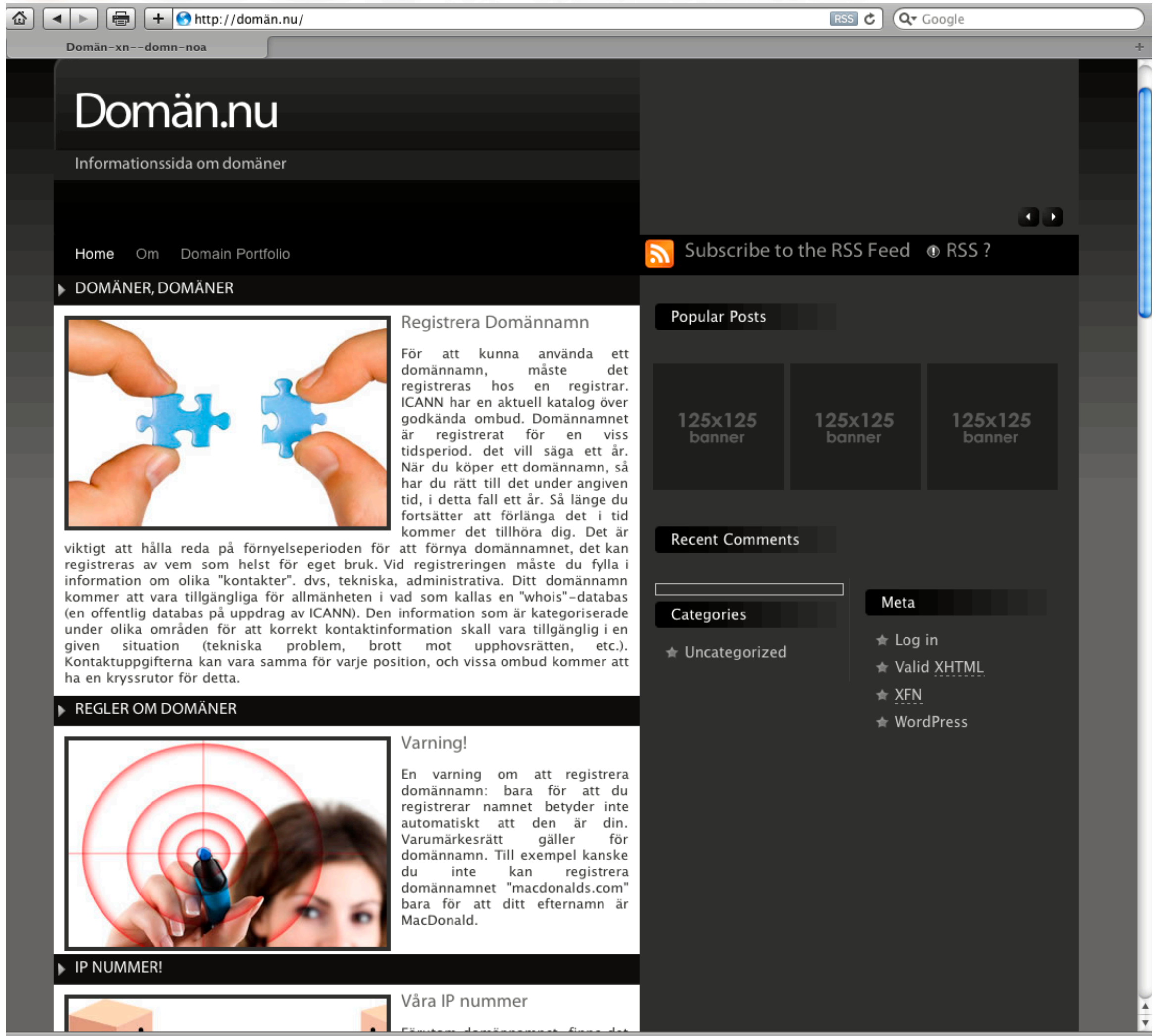
User Example,

Phase II:

Domäin.nu

(New Punycode Registration, viewed on a browser ***with*** a punycode plug-in installed)



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.NU's Multilingual Web Address Service:

Final Implementation, Phase III:

2010: Transition completed, only IETF IDN names supported

1. All .NU Domain IDN users must register or renew a single IDN name.

    ASCII "Punycode" name entered into .nu zone with defined A RR.

2. Wildcard removed from the .nu zone file.

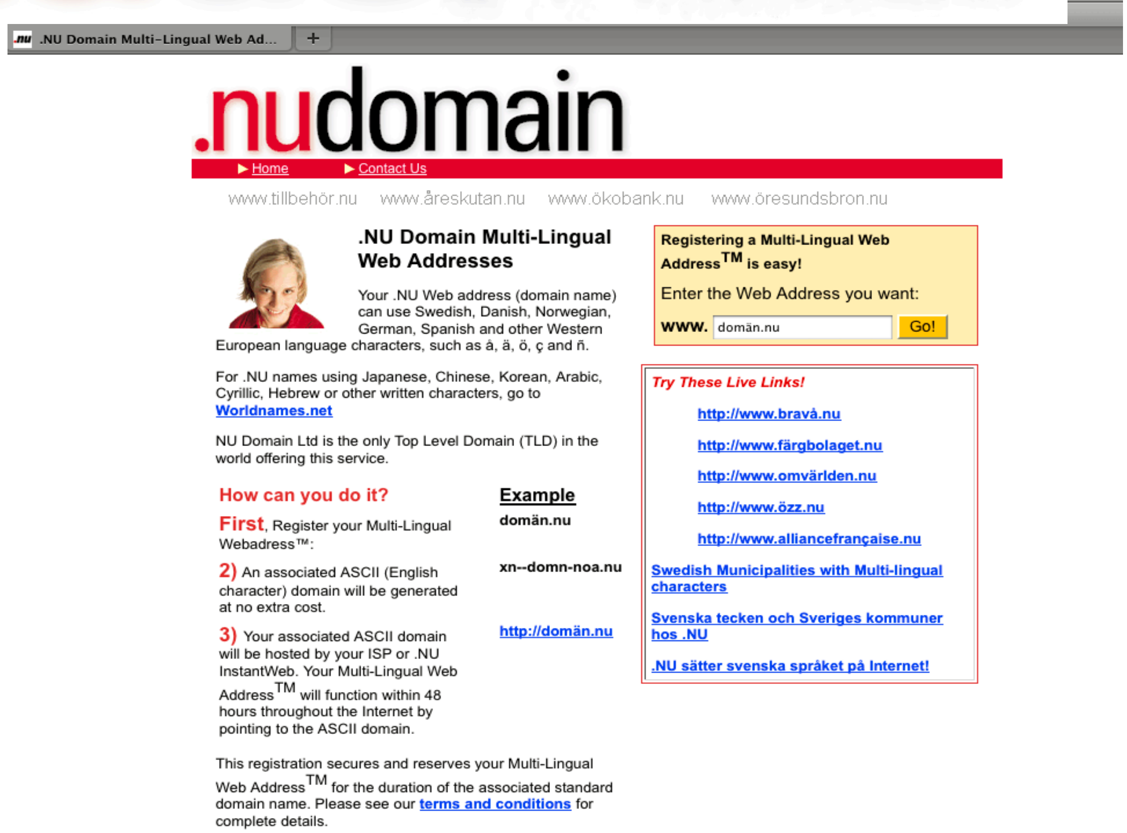
Typical WHOIS response for all current users:

Domain Name (UTF-8): elnät.nu
Punycode Form: xn--elnt-noa.nu
Record last updated on 24-Febr-2010
Record expires on 24-Feb-20011
Record created on 24-Feb-2002

Example,

Phase III:

IDN Registration Process



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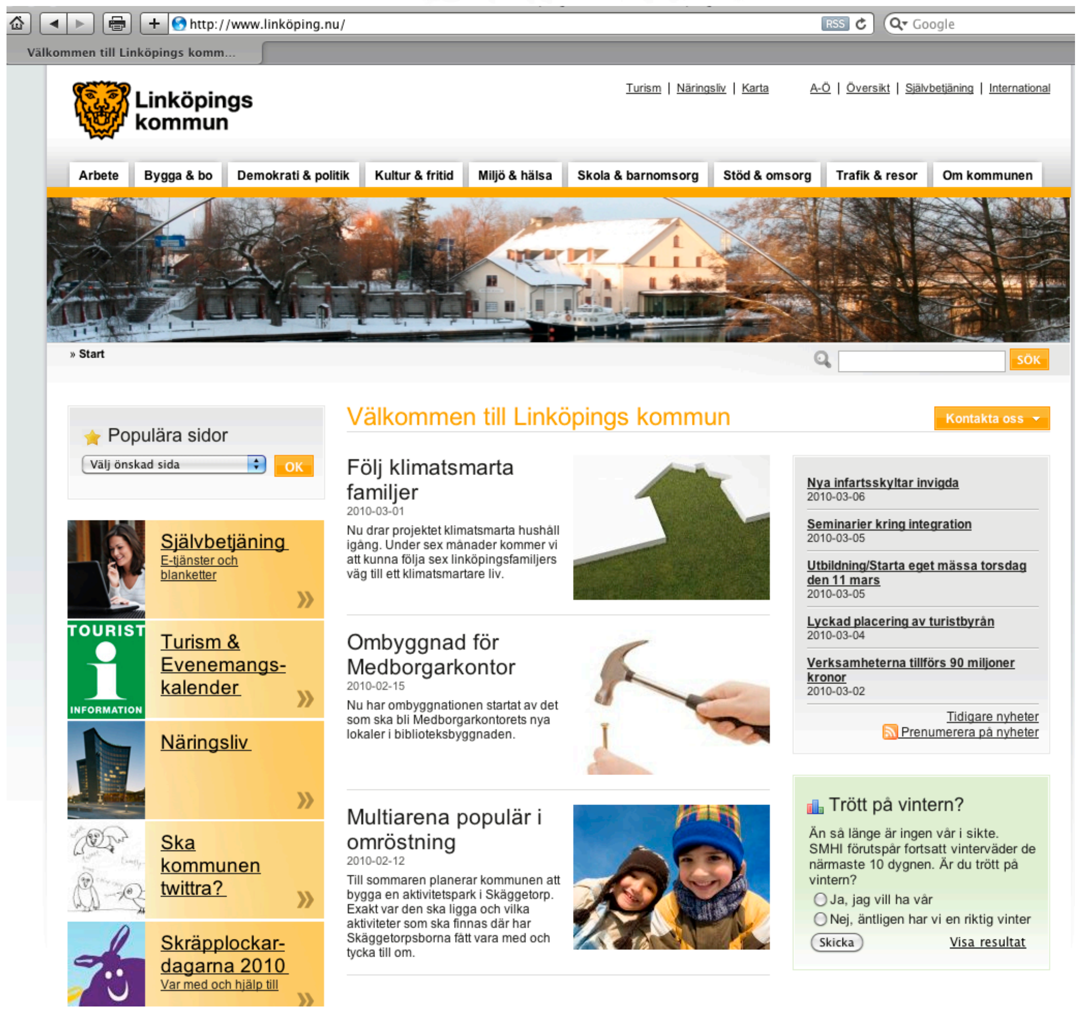
Example,

Phase III:

.NU IDN registered only via Punycode, ***without*** wildcard



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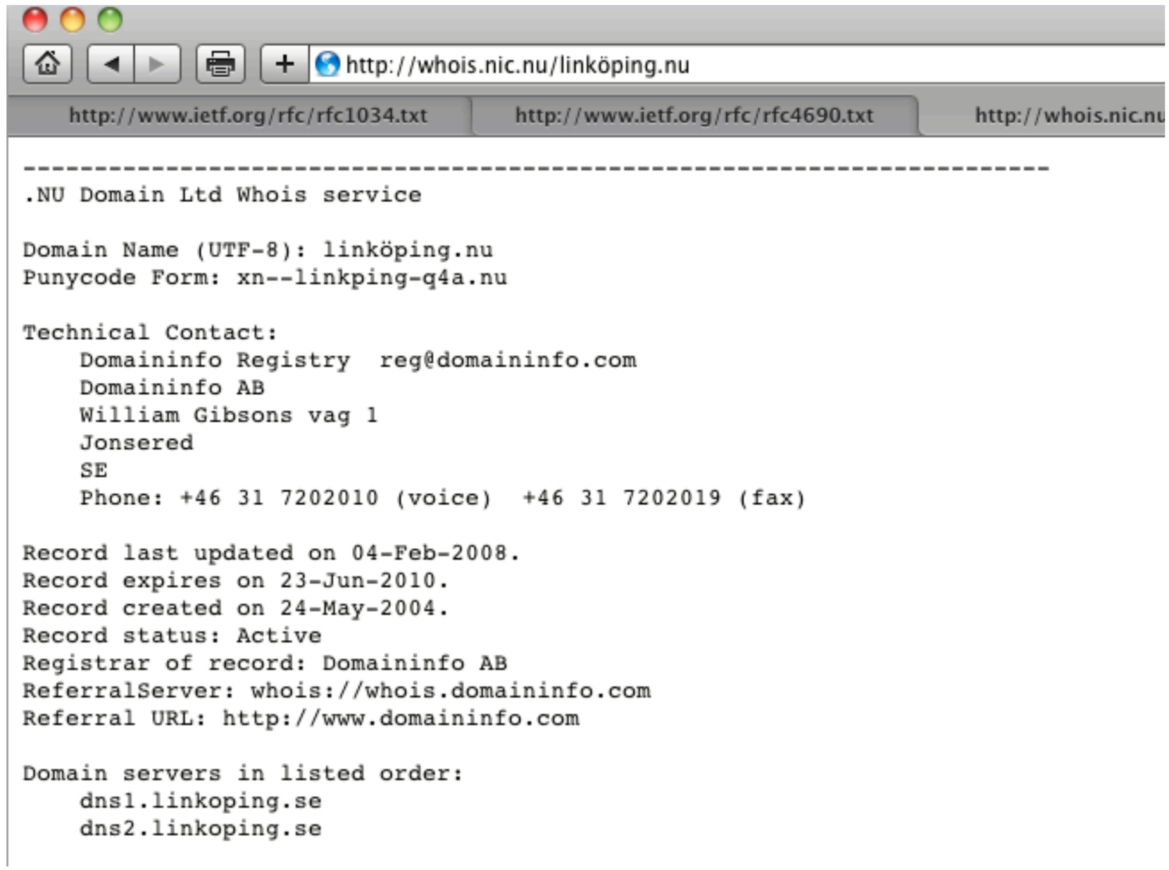
WHOIS Result

For Linköping.nu:




```
------------------------------------------------------------------------
.NU Domain Ltd Whois service

Domain Name (UTF-8): linköping.nu
Punycode Form: xn--linkping-q4a.nu

Technical Contact:
    Domaininfo Registry  reg@domaininfo.com
    Domaininfo AB
    William Gibsons vag 1
    Jonsered
    SE
    Phone: +46 31 7202010 (voice)  +46 31 7202019 (fax)

Record last updated on 04-Feb-2008.
Record expires on 23-Jun-2010.
Record created on 24-May-2004.
Record status: Active
Registrar of record: Domaininfo AB
ReferralServer: whois://whois.domaininfo.com
Referral URL: http://www.domaininfo.com

Domain servers in listed order:
    dns1.linkoping.se
    dns2.linkoping.se
```

Conclusion:

.NU Domain IDN Users Have Successfully Transitioned to the IETF IDN Standards, and the Wildcard Is Not Needed in the .NU Zone.

IDN Has Come A Long Way Since 1999!

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Summary:

"If one of the crucial values of the Internet is international communication, then it's only right for the Internet to accommodate the different language systems people use to communicate."

-- Bill Semich, 1999

".NU domain's development of this unique new naming service is a major breakthrough in the globalization of Internet domain names. Maybe a bit of running code will help push along the acceptance of the standards."

-- Paul V. Mockapetris, 2000

"This is only the first step, but it is an incredibly big one and an historic move toward the internationalization of the Internet. The first countries that participate … are going to help to bring the first of billions more people online – people who never use Roman characters in their daily lives."

-- Rod Beckstrom, ICANN President and CEO, 2009

(about the ccTLD IDN Fast Track implementation)