Universal acceptance – behind scenes

Душан Стојичевић – Dusan Stojicevic
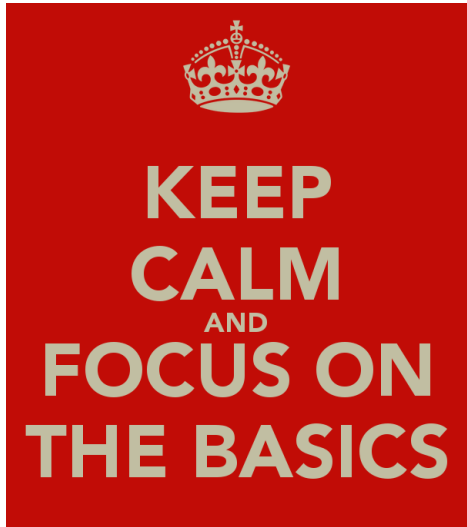
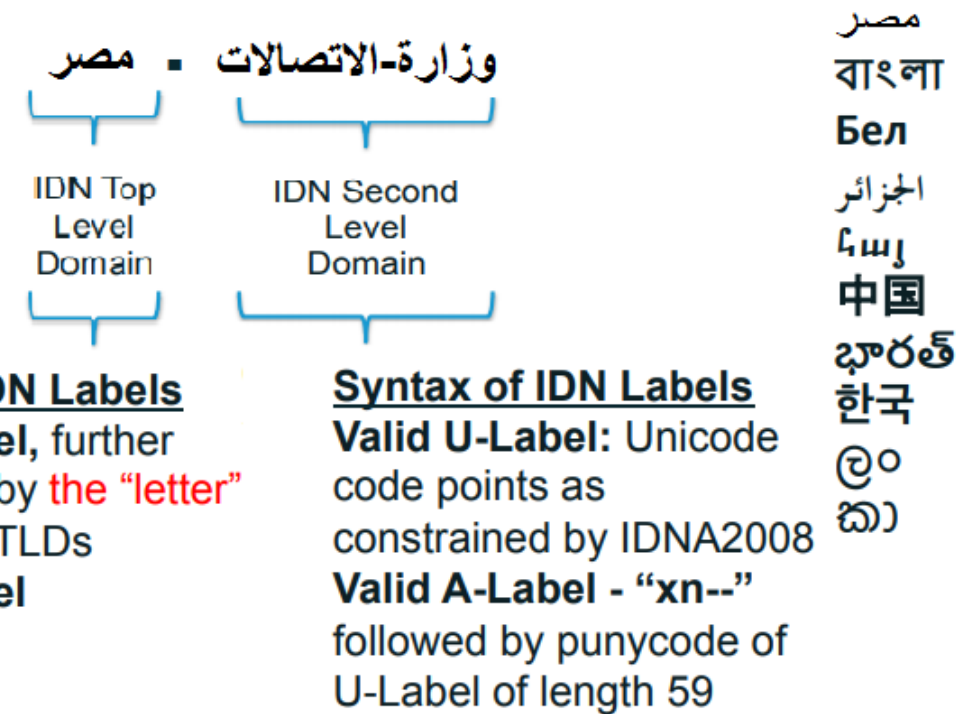UA vice chair (www.uasg.tech)

Гранси (www.gransy.com)

Before we start

- What is a domain name?

- What is DNS and how it works?

- What is ASCII, Unicode?

- What is TLD? What is ccTLD? What is gTLD? What is new gTLD?

- What is SLD or 3LD?

- What is IDN?

- What is EAI?

- What is UA?

KEEP CALM AND FOCUS ON THE BASICS

How IDN looks like

**It's not Unicode
– it's just ASCII representation!**

Converter – you can check yourself>
https://www.punycoder.com/

Internationalized Domain Name (IDN) Labels

IDN Top Level Domain

IDN Second Level Domain

Syntax of IDN Labels
Valid U-Label, further constrained by the "letter" principle for TLDs
Valid A-Label

Syntax of IDN Labels
Valid U-Label: Unicode code points as constrained by IDNA2008
Valid A-Label - "xn--" followed by punycode of U-Label of length 59

IDN email a.k.a. EAI – what is it?

- EAI - RFCs from 2013
  (https://datatracker.ietf.org/group/eai/documents/)
- Examples: **душан@стојичевић.срб**

  مشرف@اختبار-سجل.مصر

Left side is **not the same** code as right side

- **User name is UNICODE (UTF 8)**

- Domain name side is still puny code – ASCII

UTF 8 support needed on mail servers
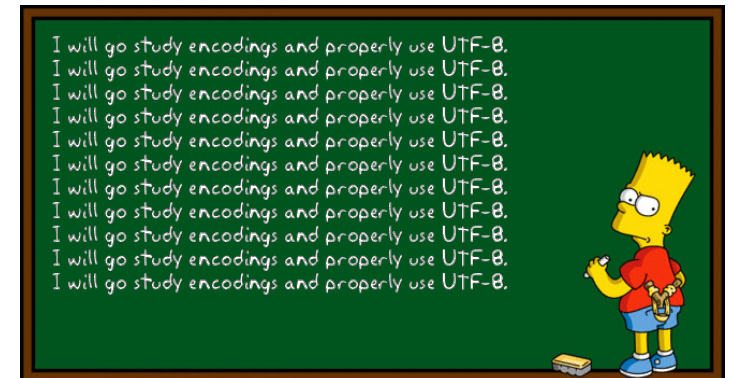
Why IDN email?

- Is there any reason this to exist? What you think?

Some of my reasons>

- Enablement for culture, society and economics

- Responsibility to comply with standards

- UA results in better User eXperience (UX)

- Expressing yourself better on native language

?

Issues

Same problem as IPv6 and DNSSEC – adoption

1. Validation – forms on Internet displays "email address is not valid"
2. Representation – ?????@xn-87438.xn-1213
3. Accepting emails - Can I register domain name in ccTLD or gTLD, by using EAI?
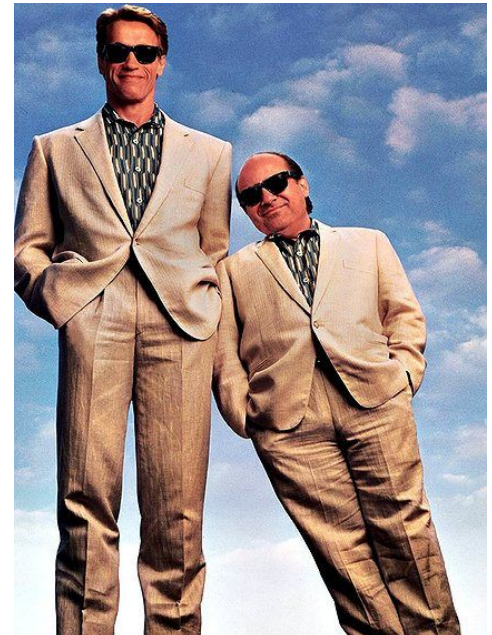4. Mail servers – not accepting UTF 8 and unable to create account

…

How to solve – update software, or create it according to the RFC

https://uasg.tech/documents/

Two accounts in one

To guarantee that the mail is received:

- Alternative mailbox in ASCII

- Passing through the servers without UTF 8 support with pure ASCII alternative email address

EAI checker

To check UTF 8 support (EAI) on your email server:

- https://uasg.tech/eai-check/

This test is checking your mail server.

Who supports UTF 8

"Half" solutions (receive/send EAI)
- Microsoft
- Google
- Postfix (???)
- …

But not Apple with default mail settings

"Full" solutions (receive/send/create account)
- Xgen (Apple solved via app)
- Coremail

UA in a Nutshell

Universal Acceptance (UA) ensures that all domain names and email addresses can be used by all Internet-enabled applications, devices and systems.

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"THE COMPUTER SAYS I NEED TO UPGRADE MY BRAIN TO BE COMPATIBLE WITH ITS NEW SOFTWARE."

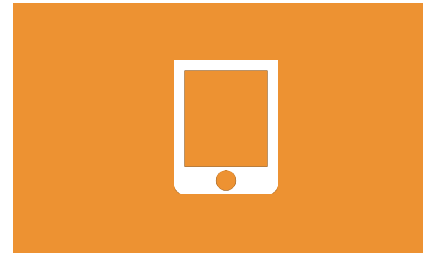# Five Ingredients to UA Readiness
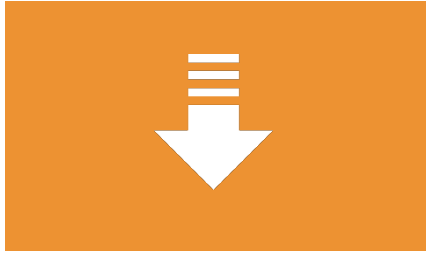
Accept

Validate

Store

Process

Display

Ingredients for a good UA meal

DISPLAY>
- ❑ Displaying domain names and email addresses is usually straightforward when the scripts used are supported in the underlying operating system and when the strings are stored in Unicode.
- ❑ If these conditions are not met, application-specific transformations may be required.

VALIDATE>

validation ensures the syntax correctness of the given information.

- ❑ Domain names and email addresses can now include Unicode (non-ASCII) characters
- ❑ The list of TLDs is growing
- ❑ A TLD can be up to 63 characters long

ACCEPT>
Applications and services allow domain names and email addresses to be:

- ❖ User input through interfaces, AND/OR
- ❖ Received from other applications and services via APIs

PROCESS>
There is no limit to the number of ways that domain names and email addresses could be processed

STORE>
- ❑ RFC-defined formats, OR
- ❑ Alternate formats that can be easily translated to and from RFC-defined formats (this is much less desirable)

Good cook, good meal – good practice (1)

- **Accept>** Any user interface element requiring a user to type a domain name or email address must support Unicode, labels up to 63 characters, and domain name strings up to 255 characters.

- **Validation>** Verify the TLD portion of a domain name against an authoritative table. Examples of some authoritative tables that you can use are:
    - ❖ http://www.internic.net/domain/root.zone
    - ❖ http://data.iana.org/TLD/tlds-alpha-by-domain.txt

Good cook, good meal – good practice (2)

- Validate only to the minimum extend necessary.

- Recognize that syntactically correct inputs may not represent domain names or email addresses currently in use on the Internet.

- Query the domain name against the DNS.

- Require repeated entry of an email address to avoid typing errors

- Validate the characters in labels only to the extent of determining that the U-label does not contain "DISALLOWED" code points or code points that are unassigned in its version of Unicode

(still Validation...)

Good cook, good meal – good practice (3)

STORE>

Applications and services should support the appropriate Unicode standards.

Information should be stored in the UTF-8 whenever possible

Consider all end-to-end scenarios before converting A-Labels (Punycode) to U-Labels and vice versa when storing.

If you don't store in Unicode, you must be able to match strings in multiple formats.

(no, it's not Validation…)

Good cook, good meal – good practice (4)

PROCESS>

- Ensure all server responses have Unicode specified in the content type.

- Specify Unicode in the web server http header and directly in a web file.

- Use supported Unicode-enabled APIs.

- Process in UTF-8 format wherever possible.

- Upgrade applications and servers/services together.

- Perform code reviews to avoid buffer overflow attacks.

Good cook, good meal – good practice (5)

DISPLAY>

- Convert non-Unicode data to Unicode before display.

- Display all Unicode code points that are supported by the underlying operating system.

- When developing an app or a service consider the languages supported and make sure operating systems and applications cover those languages.

Are you ready to hack?

Thanks!

Душан Стојичевић

душан@почта.рус

душан@писмо.орг

stojicevic@gransy.com

Universal Acceptance Readiness Hackathon

Душан Стојичевић – Dusan Stojicevic

UA vice chair (www.uasg.tech)

Гранси (www.gransy.com)

Who?

8 teams, 3 platforms…

- GoldenGang – Desktop
- The greatest – Desktop
- zero-based – Mobile
- Salata – Mobile
- Strangers – Web
- M.E.A.R – Desktop
- Avengers – Mobile
- Undefined - Web

What?

… and one task!

Introduction

Vaccinations are one of the most effective ways to protect children from serious illnesses, infectious diseases and complications; including the amputation of an arm or leg, paralysis of limbs, hearing loss, convulsions, brain damage and death. If children are not vaccinated, they could easily contract any diseases that might lead to hospitalization and even death.

1

What?

… and one task!

The task:

1. Create a registration form that will accept the necessary data of a newborn child, his parents.

2. Create a vaccination schedule for every single child

3. Send email notification for a vaccination 15 days and 2 days before the planned date in schedule.

4. Use the account so the parents can check the schedule at any point - login must include email address and password

Vaccination schedule
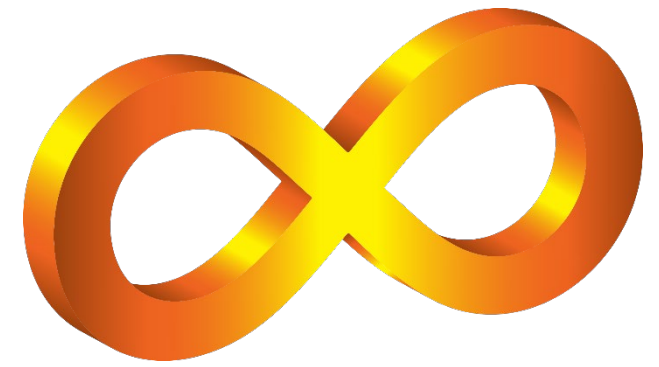
The gov program listed 10 vaccinations as mandatory and free of charge for children aged 0-18 months to ensure high coverage rates. These vaccinations include those for; poliomyelitis, tuberculosis, diphtheria, tetanus, hepatitis B, measles, mumps, German measles (Rubella) and chicken pox.

Once a child is born they receive the poliomyelitis and tuberculosis vaccination. At the ages of **two months, four months and six months**, the baby receives another round of poliomyelitis vaccination as well as an injection for hepatitis B, tetanus, measles, tuberculosis and diphtheria. At **nine months,** the baby receives the fourth dose of poliomyelitis vaccination.

At 12 months, the child receives the fifth dose of poliomyelitis vaccination in addition to vaccinations against measles, German measles (Rubella) and mumps.
At 18 months, the child receives the last dose of vaccinations for poliomyelitis, diphtheria, tetanus, measles, German measles (Rubella) and tuberculosis.

Per platform>

- For Web, teams will do the task as a web portal.

- For Desktop, teams will do the task as a desktop application (possibility that computer will be placed as a terminal in some hospital)

- For Mobile, teams will do the mobile app

Collecting user data

Parent>
1. Name
2. Surname
3. ID number
4. Street
5. City
6. Email address
7. Mobile phone number

Child>
1. Name
2. Surname
3. Date of birth

Additional rules

1. Arabic language is default, and English is secondary – build a repository and check the language which is used in collected data (Useful link> https://home.unicode.org/)

2. NO MIXING BETWEEN THE SCRIPTS

3. Be aware that email addresses can be EAI

4. Make everything UA ready

5. **There is no stupid questions just stupid answers**
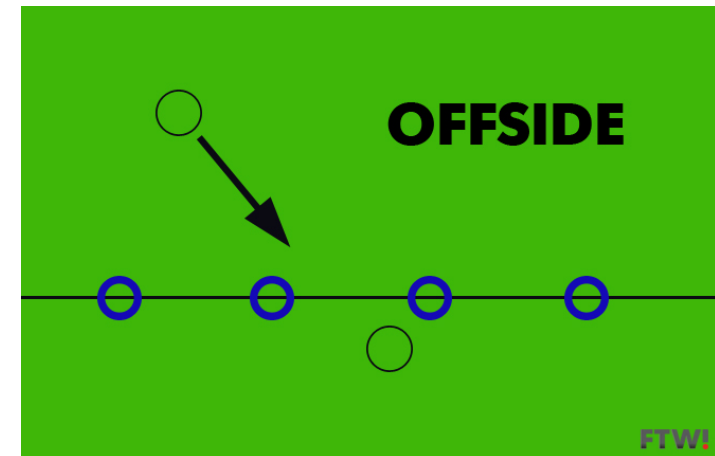
Timeline

1. Today until 05:00 PM
2. Tomorrow – whole day (09:00 AM - 05:00 PM)
3. The day after tomorrow – until 01:00 PM

4. **Winners announcement in closing ceremony**
5. **Lobying is not allowed, and... we don't take credit cards... just cash... ;)**

Are you ready to hack?

Thanks!

Душан Стојичевић

душан@почта.рус

душан@писмо.орг

stojicevic@gransy.com