



# Assessment of IDNA User Experience

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# Agenda

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- Introduction
- Methodology
- Results
- Examples
- What's Next
- Conclusion



Intro

The screenshot shows the website of the Saudi Network Information Center (Saudinic). The browser's address bar is highlighted with a red circle and contains the text "سجل.السعودية .sa". The website header includes the logo "sa" and the text "المركز السعودي لمعلومات الشبكة Saudi Network Information Center". Below the header, there are navigation tabs for "الرئيسية", "لوائح وقواعد", "أدلة الخدمات", "الأسئلة الشائعة", and "أدوات". A large green banner with white text reads "الآن يمكنك تسجيل نطاقك باللغة العربية". Below the banner, there is a list of domain names, including "www.bigchallengeonus.com", "www.ourhouseispainted.com", "www.hearmyvoiceclearly.com", "www.mychairisbroken.com", "www.bigchallenge.com", "www.iknowyouthefoods.com", "www.ihavenosleepwholeday.com", "www.wheredoileave.com", "www.knowswhereiamfrom.com", "www.dothebestyoucantosucceedoittohelp.com", "www.handwashingisgood.com", "www.imlatetobeontime.com", "www.itisaamazingdinnerplan.com", "www.illdothebestghomenow.com", "www.bethebestyouwant.com", "www.smalltimecompany.com", "www.hedoittohelp.com", and "www.hed". At the bottom, there are two search boxes: "ابحث عن نطاق" and "ابحث عن نطاق أو Whois".

### « أخبار المركز »

مشاركة المركز في الاجتماع الأخير لجمعية ( APTLD )

إطلاق حملة تصحيح النطاقات التي لم تدم إلى حسابات (ضم النطاق)

الانتقال إلى مبنى هيئة الاتصالات وتقنية المعلومات الجديد

### « عن المركز »

المركز السعودي لمعلومات الشبكة (Saudinic) جهة غير ربحية مختصة بتسجيل أسماء النطاقات في المملكة العربية السعودية. المركز مسئول عن إدارة أسماء النطاقات الواقعة تحت النطاقات العلوية الدولية الخاصة بالمملكة العربية السعودية (.sa، .السعودية).

# Introduction

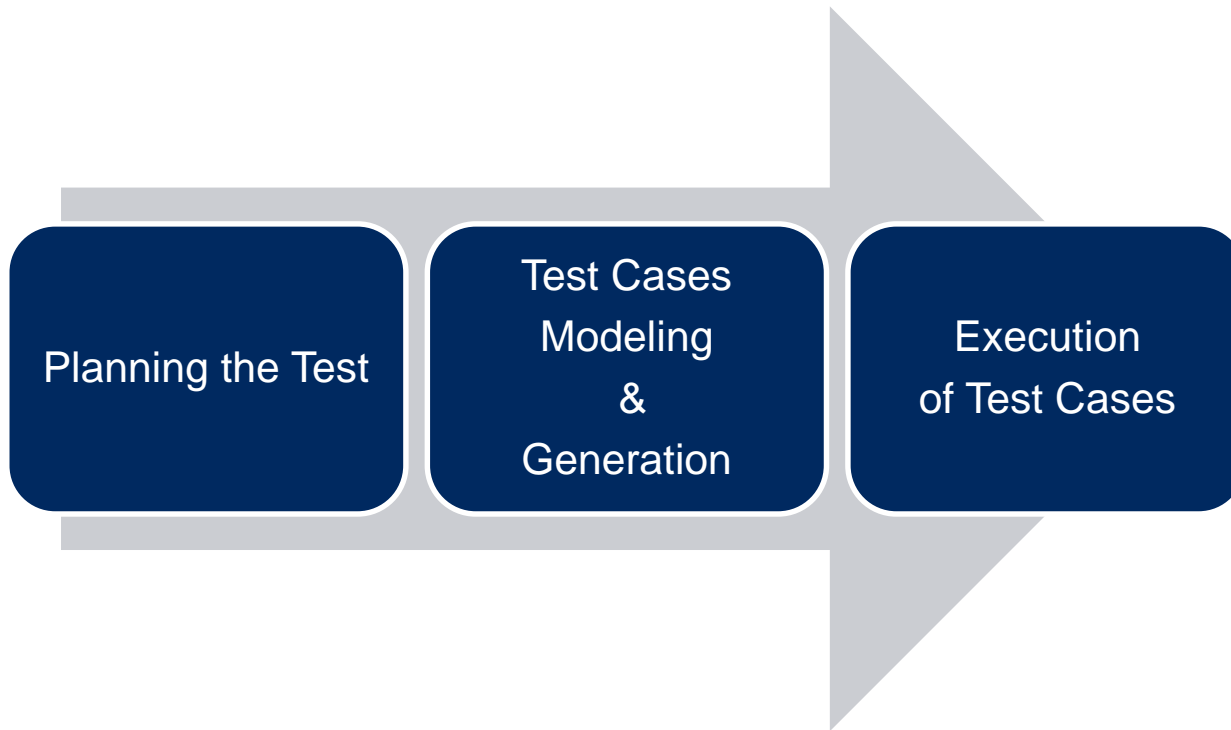
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- IDNA protocol published on 2003
  - Updated on 2010
  - **Application** oriented solution!
- IDN ccTLD were introduced in 2010 (e.g. **السعودية**.)
- Assessment Goal
  - to **study** and **assess** end-user **experiences** regarding IDNA **implementations** for Arabic domain names.



# The Methodology

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# Methodology: Planning the Test

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- Considered **previous reports** (time-based order)
  - [IDN Top Level Domain Evaluations and Testing Report](#)
    - SaudiNIC & Arabic Domain Name Pilot Project Team, 13 December **2007**.
  - [Arabic IDN Test Results for Mozilla Firefox](#)
    - SaudiNIC, 06 Dec. **2010**
  - [Arabic IDN Test Results for Microsoft IE](#)
    - SaudiNIC, 12 Dec. **2010**
  - [Internationalized Domain Names State of play:](#)
    - EURid-UNESCO, May **2011**
  - [World report on Internationalized Domain Names deployment](#)
    - EURid-UNESCO, November **2012**
  - [World Report on IDN Deployment](#)
    - EURid-UNESCO, October **2013**



# Methodology: Planning the Test

## What can be part of IDNA report?

**Display**

- Domain
- Domain with protocol
- address bar
- Copy/paste
- SSL icon
- Email Recipient
- Shell commands

**Functionality**

- Domain Name
  - Arabic
  - A-label
  - Mix (arabic-ASCII, A&U labels)
- Domain Protocol
  - ASCII
  - Arabic
  - A-label
  - Mix
- Path
- Email
  - domain
  - A-label
  - arabic
  - user
  - Mix

**Supportive**

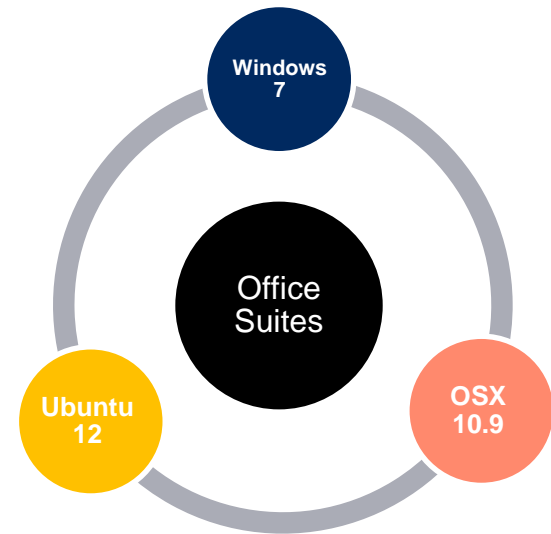
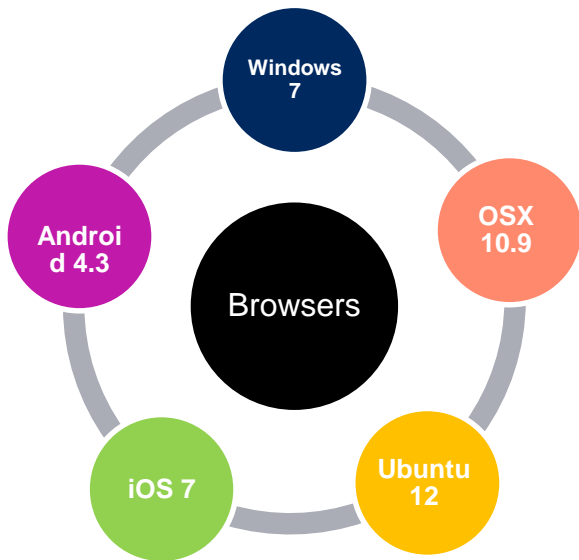
- Registrar services
- Domain Registration
- SSL
- development Library
- Regular Expression

Application	Input	Output	Notes
Browsers	http://www.موقع.كوم	http://www.موقع.كوم	Protocol and IDN
	http://www.موقع.كوم	http://www.موقع.كوم	URL Link
	http://www.موقع.كوم	http://www.موقع.كوم	Autoregistration
	http://www.موقع.كوم	http://www.موقع.كوم	SSL icon
Email Clients	mailto:موقع.كوم	mailto:موقع.كوم	Full IDN email
	mailto:موقع.كوم	mailto:موقع.كوم	Partial IDN email
	mailto:موقع.كوم	mailto:موقع.كوم	Autoregistration
	mailto:موقع.كوم	mailto:موقع.كوم	SSL icon
Office Apps	www.موقع.كوم	www.موقع.كوم	URL Link
	www.موقع.كوم	www.موقع.كوم	Autoregistration
	www.موقع.كوم	www.موقع.كوم	SSL icon
	www.موقع.كوم	www.موقع.كوم	Autoregistration
Social Media	www.موقع.كوم	www.موقع.كوم	Full IDN email
	www.موقع.كوم	www.موقع.كوم	Partial IDN email
	www.موقع.كوم	www.موقع.كوم	Autoregistration
	www.موقع.كوم	www.موقع.كوم	SSL icon
Search Engines	www.موقع.كوم	www.موقع.كوم	Protocol and IDN
	www.موقع.كوم	www.موقع.كوم	URL Link
	www.موقع.كوم	www.موقع.كوم	Autoregistration
	www.موقع.كوم	www.موقع.كوم	SSL icon



# Methodology: Planning the Test

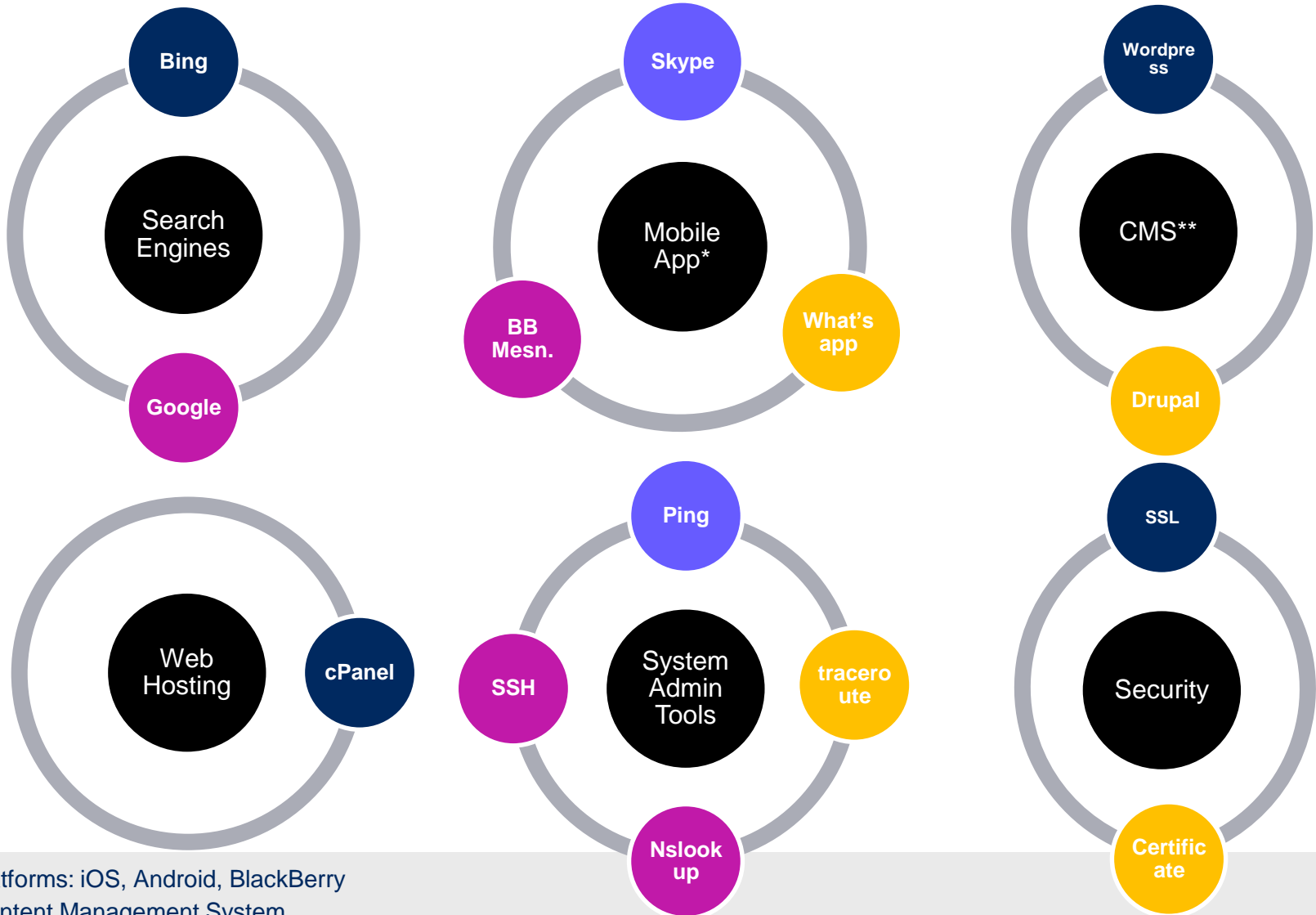
- What can be part of the report? .. **HUGE** +1000 things!
  - We have selected about ~2% to be assessed.
  - Our role in selection is: most **popular**, and **used** products.







# Methodology: Planning the Test



\* Cross platforms: iOS, Android, BlackBerry

\*\* CMS: Content Management System



# Methodology: Test Case Modeling and Generation

- The test case model which is used to generate the test cases consists of **five components**:

## Behavior

- How a tester should behave.

## Input

- The IDN string being tested.

## Target

- What is the environment, product and which part of the product.

## Checks

- Yes/No questions being asked about what on concern.

## Results

- Acceptable, Not acceptable or Not applicable.



# Methodology: Test Case Modeling and Generation

- We Generate about **190** test cases.

Section	Test Cases	Steps / Test Cases	URLs	URL Link
Browsers	Firefox	View Home	Protocol and icon	URL Link
	Opera	Autocomplete	http://icon	File name http://icon_urls.html#page=...
	Safari	Copy & Paste	Protocol - icon and folder	
	MS IE	Printed icon	http://icon	
Email Clients	Outlook	Send mail	Full URL email	URL Link
	Apple Mail	Autocomplete	Partial URL email	File name mailto:someone@domain.com
	Windows Mail	Copy & Paste	ASCI@-name (348), ASCII, Unicode (25), ASCII	File name mailto:someone@domain.com
Office Apps	Word	Autocomplete	ASCI@-name (348), ASCII, Unicode (25), ASCII	
	OneDrive	Copy & Paste	URL Link	File name http://icon_urls.html#page=...
	OneNote	Printed icon		
Social Media	Facebook	Autocomplete	Full URL email	URL Link
	LinkedIn	Autocomplete	Partial URL email	File name mailto:someone@domain.com
	Twitter	Copy & Paste	ASCI@-name (348), ASCII, Unicode (25), ASCII	File name mailto:someone@domain.com
Search Engines	Bing	Autocomplete	Protocol and icon	
	Search engines	Autocomplete		



# Methodology: Test Case Modeling and Generation

- Developed a test case control web application

المركز السعودي لمعلومات الشبكة  
Saudi Network Information Center

**isa**

Test Cases  
Test Case Inputs  
Test Case Categories  
Test Case Comment  
User  
Change Password  
Logout

### IDN user experience assessment project

Home / Test Cases

Search

Search

Exact phrase  All words  Any word

test Case id	input id	target	category id	user id	status				
133	first.ثالث.رابع.Fifth-sixth.777.xn----- مثال.السعودية.btddbpe8cpm6cb3moa	Google search: Firefox (as browser):4/2014: search field	Search Engines	alhamed	new				
134	first.ثالث.رابع.Fifth-sixth.777.xn----- مثال.السعودية.btddbpe8cpm6cb3moa	Google search: Firefox (as browser):4/2014: search field	Search Engines	alhamed	new				
135	first.ثالث.رابع.Fifth-sixth.777.xn----- مثال.السعودية.btddbpe8cpm6cb3moa	Google search: Firefox (as browser):4/2014: search field	Search Engines	alhamed	new				
136	first.ثالث.رابع.Fifth-sixth.777.xn----- مثال.السعودية.btddbpe8cpm6cb3moa	Google search: Firefox (as browser):4/2014: advance search page: search field	Search Engines	alhamed	new				
137	first.ثالث.رابع.Fifth-sixth.777.xn----- مثال.السعودية.btddbpe8cpm6cb3moa	Bing search: Firefox (as browser):4/2014: advance search page: search field	Search Engines	alhamed	new				
138	first.ثالث.رابع.Fifth-sixth.777.xn----- مثال.السعودية.btddbpe8cpm6cb3moa	Bing search: Firefox (as browser):4/2014: search field	Search Engines	alhamed	new				
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141	أول.ثاني.ثالث.خامس--mgbcz8a.xn----- مثال.السعودية.ymcbcq8b4b3fj.xn-----سادس	Bing search: Firefox (as browser):4/2014: advance search page: search field	Search Engines	alhamed	new				
	أول.ثاني.ثالث.خامس--mgbcz8a.xn-----	Bing search: Firefox (as	Search						



# Methodology: Execution of Test Cases

- Run the test cases and **collected results**.
  - Answer the **check questions**.
  - Upload **screenshots** of failed checks.

The screenshot displays the 'TSA user experience assessment project' interface. It features a sidebar with navigation options like 'Test Cases', 'Test Case Include', 'Test Case Categories', 'Test Case Comment', 'User', 'Change Password', and 'Logout'. The main content area shows a table of test cases. The first row is expanded, showing details for test case ID '88'. The 'Behavior' field contains instructions: 'Click the view icon of the page. Press on the target by double click on the following points: Check if it is acceptable or not in the following points: View mode Copy & Paste Auto completion Readable'. The 'Input ID' is 'inputid' and the 'Target' is 'Outlook: Outlook 10.0 (maverick) version 2010: message R02 (viewing mode)'. Below this, the 'category id' is 'Email Clients' and the 'user id' is 'alhamad'. The 'status' is 'new' and 'working'. The 'readable info' field contains a question: '(هل يمكن الوصول للموقع بعد كتابة العنوان كامله من المصمم والموقع قابل لتجربته؟)'. The 'view mode info' field contains a question: '(هل يمكن عرض الأرقام بطريقة مخصصة؟)'. The 'edit mode info' field contains a question: '(هل يمكن التعديل على الأرقام بطريقة مخصصة؟)'. The 'auto complete info' field contains a question: '(هل يمكن عرض الأرقام بطريقة مخصصة؟)'. The 'copy paste' field contains a question: '(هل يمكن نسخ النص ولصقه في مكان آخر؟)'. The 'focusing alignment' field contains a question: '(هل يمكن التركيز على الأرقام بطريقة مخصصة؟)'. The 'SS info' field contains a question: '(هل يمكن تحميل الصور بطريقة مخصصة؟)'. The 'protocol info' field contains a question: '(هل يمكن تحميل الصور بطريقة مخصصة؟)'. The 'URL action info' field contains a question: '(هل يمكن تحميل الصور بطريقة مخصصة؟)'. The 'clickable info' field contains a question: '(هل يمكن تحميل الصور بطريقة مخصصة؟)'. The 'URL auto resegmInfo' field contains a question: '(هل يمكن تحميل الصور بطريقة مخصصة؟)'. At the bottom, there are four 'screen' sections, each with a 'Close' button. The first screen shows a screenshot of a web page with a 'Close' button.



# Results

Target	Acceptable	Not-acceptable
Browsers	60%	40%
Email clients	6%	94%
Office Suites	2%	98%
System Admin Tools	3%	97%
Search Engines	14%	86%
Mobile Apps	13%	87%
CMS	0%	100%
Security	0%	100%
Web Hosting	0%	100%

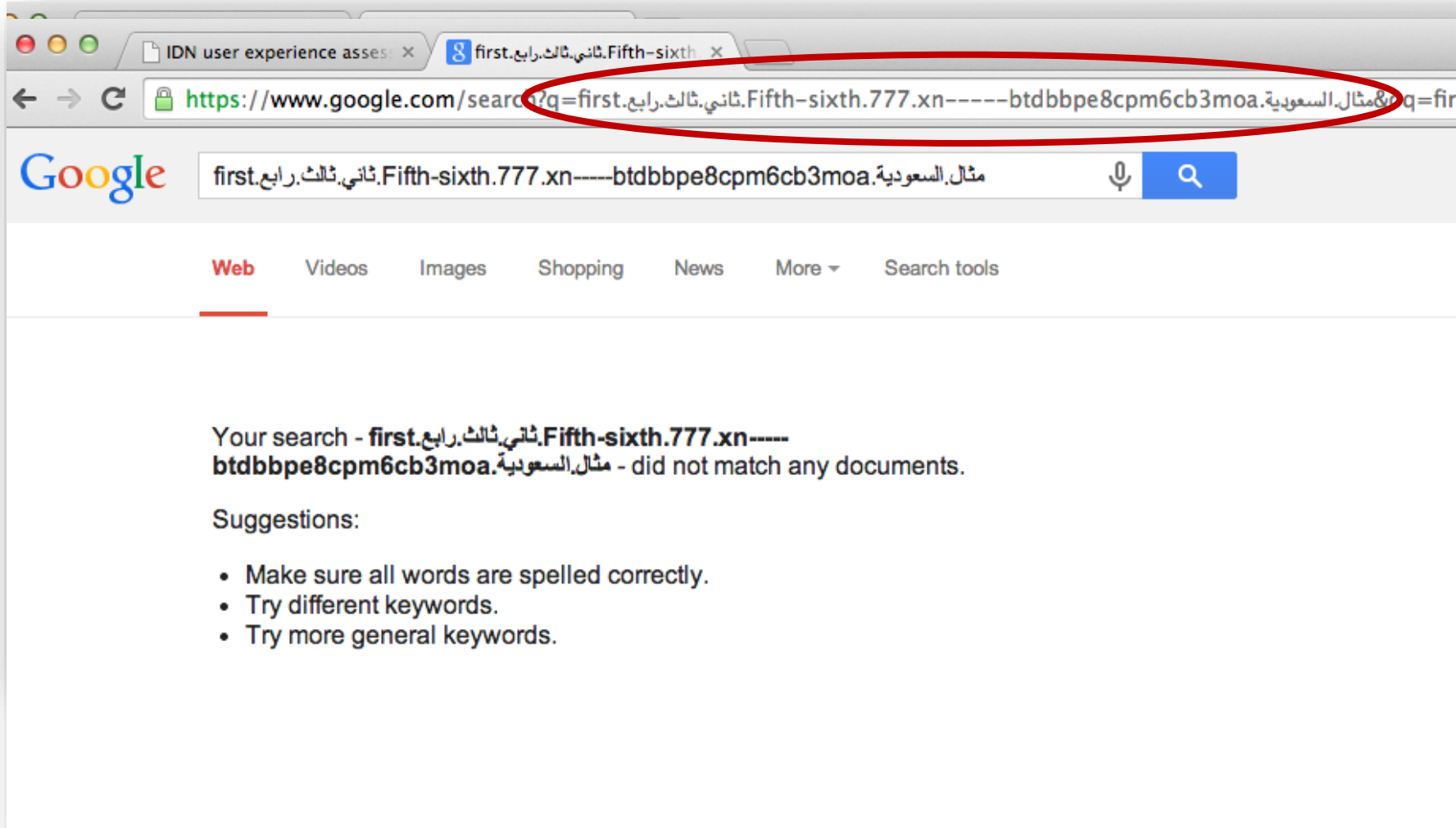


# Results

Browser	OS	Acceptable	Not-acceptable
Internet Explorer	Windows7	73%	27%
Safari	Windows7	62%	38%
Safari	OSX 10.9	60%	40%
Safari	iOS 7	65%	35%
Chrome	Windows7	40%	60%
Chrome	OSX 10.9	41%	59%
Chrome	Android 3.4	63%	37%
Chrome	Ubuntu12	<b>21%</b>	79%
Firefox	Windows7	<b>93%</b>	7%
Firefox	OSX 10.9	68%	32%
Firefox	Ubuntu12	64%	36%



# Examples: Browser







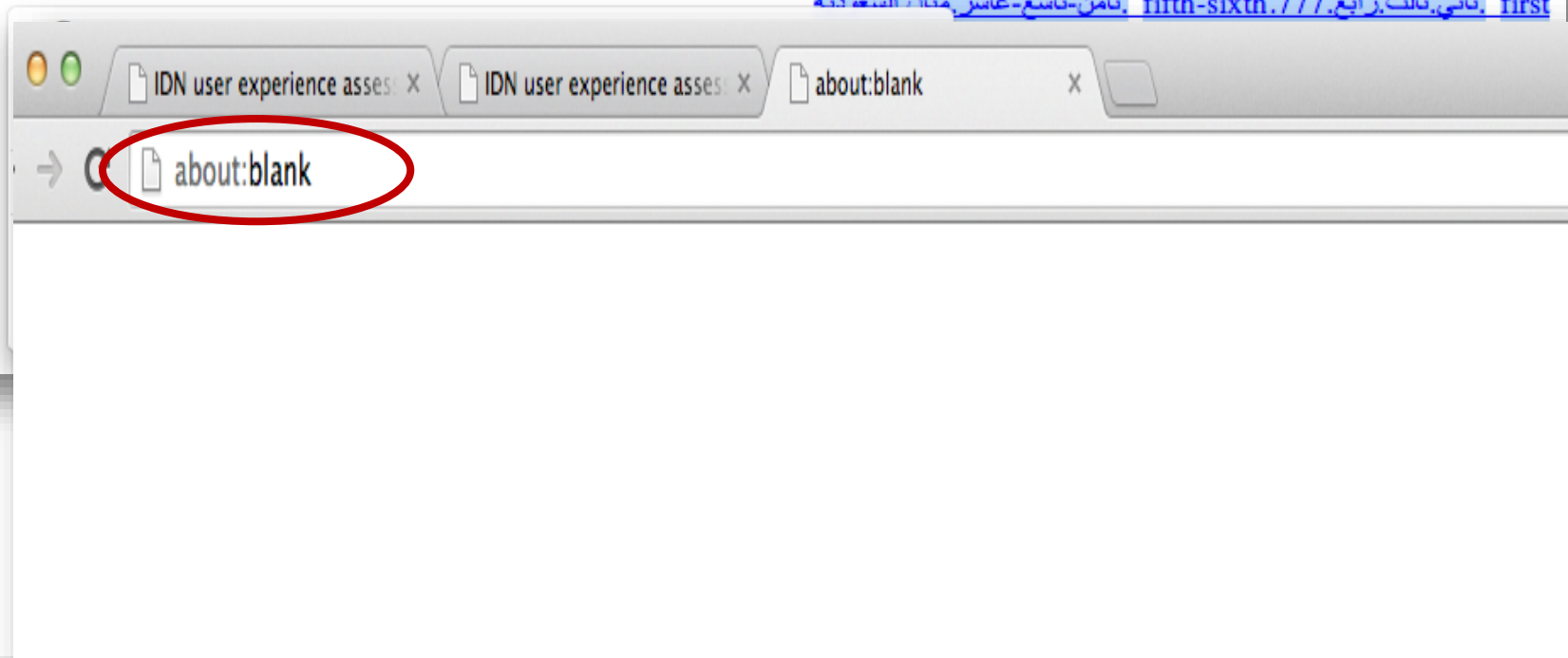
# Examples: Browser

الرابط الأول:

أول. ثاني. ثالث. رابع. خامس. سادس. سابع. ثامن. مثال. السعودية

الرابط الثاني:

first. ثاني. ثالث. رابع. fifth-sixth.777. ثامن. تاسع. عاشر. مثال. السعودية





# Examples: Browser

The screenshot shows a browser window with a security warning. The address bar contains a long, random-looking URL. A red oval highlights the domain part of the URL: `xn--igb0el.xn--mgbh6fqa.xn--mgbhb3h.xn--mgbcz8a.xn----ymcbzivbc0n.xn----ymcbcq8b4b3fj.xn--mgbh0fb.xn--mgberp4a5d4ar`. Below the address bar, the text "Identity not verified" is visible. The main content area of the browser shows a warning message: "The identity of this website has not been verified. Server's certificate does not match the URL." Below this, there is a link for "Certificate Information". Further down, it states: "Your connection to xn--igb0el.xn--mgbh6fqa.xn--mgbhb3h.xn--mgbcz8a.xn----ymcbzivbc0n.xn----ymcbcq8b4b3fj.xn--mgbh0fb.xn--mgberp4a5d4ar is encrypted with 128-bit encryption. The connection uses TLS 1.2. The connection is encrypted and authenticated using AES\_128\_GCM and uses DHE\_RSA as the key exchange mechanism." At the bottom, there is a "Site information" section stating "You have never visited this site before today." and a link "What do these mean?".

طاقات العربية

**SSL certificate info.**

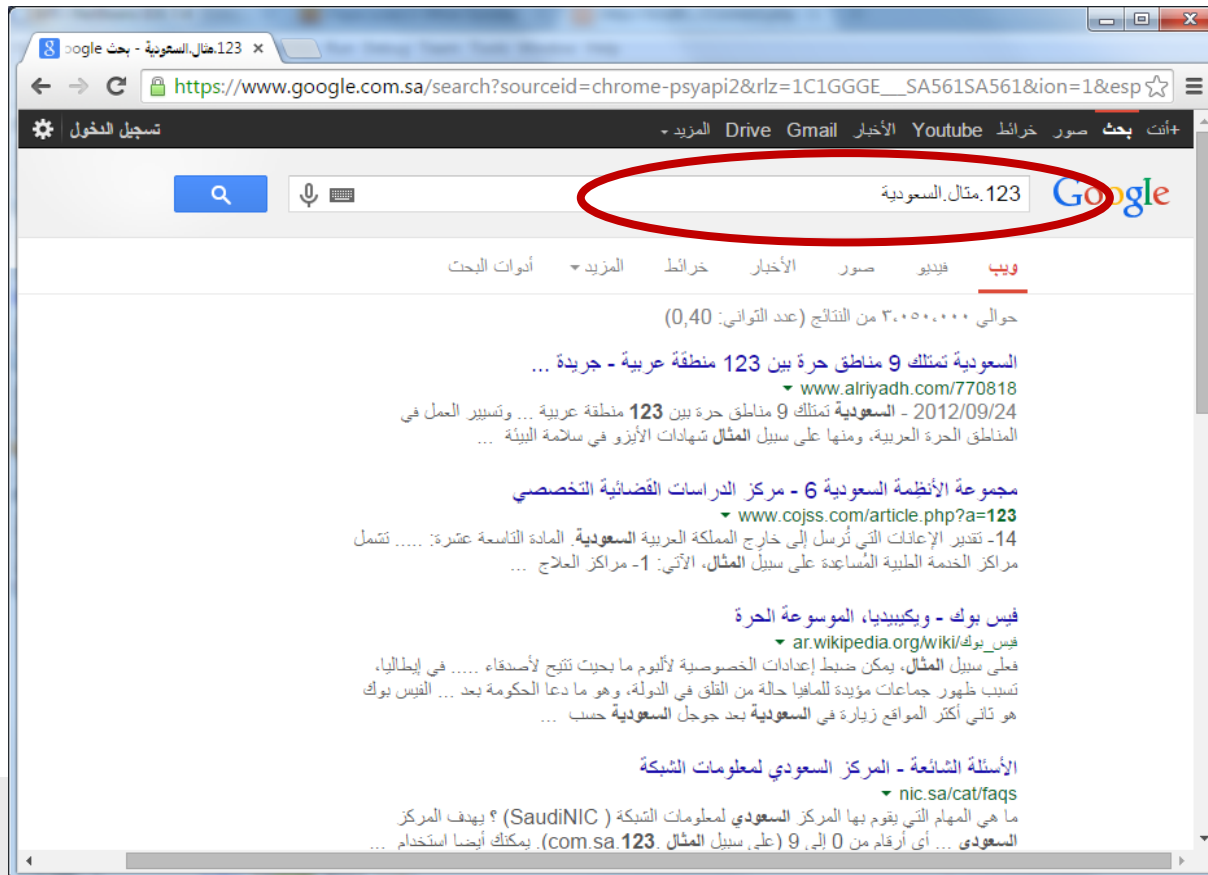


# Examples: Browser



# Examples: Browser

- All Browsers didn't support IDNA 2010 !
  - is was been out there for more than 4 years





# Examples: Office Tools

Untitled 1 - OpenOffice Writer

Default Times New Roman 12 B I U

This is an IDN test for the following IDN string:

مثال.السعودية.ymcbbcq8b4b3fj---xn---خامس-سادس.xn--mgbcz8a.أول.ثاني.ثالث

and this is a regular domain name:

[www.cnn.com](http://www.cnn.com)

even if we add a protocol like http://

<http://مثال.السعودية.ymcbbcq8b4b3fj---xn---خامس-سادس.xn--mgbcz8a.أول.ثاني.ثالث>



# Examples: Search Engine

numbers ranging from:

to

10.135 kg

Then narrow your results by...

language:

any language

region:

any region

last update:

anytime

site or domain:

مثال السعودية

terms appearing:

anywhere in

SafeSearch:

Show most r

reading level:

no reading le

file type:

any format

usage rights:

not filtered b

Google Search Images Mail Drive Calendar Sites Groups More

site:%D8%A7%D9%84%D8%B3%D8%B9%D9%88%D8%AF%D9%8A%I

Web Images News More Search tools

About 69,500 results (0,56 seconds)

Google promotion

Try Google Webmaster Tools  
www.google.com/webmasters/  
Do you own السعودية? Get indexing and ranking data from Google.

الاتصالات السعودية: STC  
الاتصالات السعودية  
شركة الاتصالات السعودية STC توفر خدمات الهاتف الجوال والثابت والانترنت والتلفزيون التفاعلي انجن على مستوى الأفراد وكذلك تقدم خدمات للأعمال الصغيرة ...

برنامج التعاملات الإلكترونية الحكومية - يسر  
يسر.السعودية  
يحدد برنامج التعاملات الإلكترونية الحكومية (يسر) اهتمام المملكة العربية السعودية لتطبيق مفهوم التعاملات الإلكترونية الحكومية. ويتي هذا البرنامج ضمن المبادرات ...

مدونة حكايتي والزمن

You can also



# Examples: System Admin Tools (SSH)

```
User-2:~ Alhamed$  
User-2:~ Alhamed$  
User-2:~ Alhamed$ ssh alhamed@مثال.السعودية.xn--ymcbcq8b4b3fj.مثال.السعودية.xn--mgbcz8a.أول.ثاني.ثالث  
The authenticity of host ' (::1) ' can't be established.  
RSA key fingerprint is 76:c7:22:73:30:ed:90:c6:5c:a4:71:91:e1:03:08:29.  
Are you sure you want to continue connecting (yes/no)? yes  
Warning: Permanently added ' (RSA) to the list of known hosts.  
Password:  
bash: مثال.السعودية.xn--ymcbcq8b4b3fj.مثال.السعودية.xn--mgbcz8a.أول.ثاني.ثالث: command not found  
User-2:~ Alhamed$
```



# What's Next?

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- Need to expand the user experience scope to cover other areas:
  - Registrars & Registries
    - Display IDN domains correctly (Especially RTL)
    - Standardized terminology (U-Lable, A-Lable, Blocked variant ..etc)
    - Consistent way to enable/disable variants
    - Unified variant protection (language tables & variants)
  - ...etc





# What's Next?

Domain Registration
Apply Now
--Select Popular N

**Domain Registration** موقع.

To order your موقع. domain name, enter your domain into the box below, click the "Order" button and then follow the on screen prompts

WWW.

[More Domains Avail](#)

[Domain](#) موقع.

We're pleased to announce

The recent launch of new bound to country level or specifically about who the

Domains such as موقع. allowing you to get your

Please [Login](#) or [Register](#)

[Shopping Cart](#)

[Web Hosting](#) | [Register Domain](#) | [Transfer Domain](#) | [View Cart](#)

Choose Currency: AED

Type in the domain you wish to register below to check for availability.

WWW.  امارات.

**CHOOSE DOMAINS**

Domain Name	Status	More Info
رائدابراهيم.امارات	<input checked="" type="checkbox"/> Available! Order Now	1 Year/s @ AED145.00

**Quick Navigation**

- [Portal Home](#)
- [Client Area](#)
- [Knowledgebase](#)
- [Submit Ticket](#)
- [Order](#)

**Client Login**

Email

Password

Remember Me

**Search**

Knowledgebase



# Conclusion

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- IDNA support  $\neq$  browsers' address bars support.
- User acceptance for IDNA is less than 1% (Excluding address bar in some web browsers)
  - It's been more than 10 years since the publication of IDNA RFCs, and still less than 1%!
- How long do we need for Internationalized Email (IDN Email) to be fully deployed!
  - Do we need to wait 10+ years to get a 1% acceptance!
- RFCs are not enough, we need accelerators.
- For more info. about the report:
  - <http://nic.sa/docs/ADN/IDN-Report-2014-FINAL3.pdf>



**Thank you**

**شكراً**

للمزيد من المعلومات يمكنكم زيارة:

**For more information you can visit:**



المركز السعودي لمعلومات الشبكة  
Saudi Network Information Center

سجل السعودية

**nic.sa**

هيئة الاتصالات وتقنية المعلومات  
Communications and Information Technology Commission



هيئة-الاتصالات.السعودية

**citc.gov.sa**