

Workshop on
Internationalized Domain Names for Local Content Development in Pakistani Languages

May 15-16, 2009

National University of Computer and Emerging Sciences

Organized by the National IT Development and Promotion Unit (NIDU), Ministry of IT Pakistan



The second workshop on “Internationalized Domain Names for Local Content Development in Pakistani Languages” was organized by the Ministry of IT and Telecom on May 15-16, 2009 at the Center for Research in Urdu Language Processing (CRULP), National University of Computer and Emerging Sciences, Lahore.

This was in continuation of a previous workshop on Internationalized Domain Names (IDNs) held at NUCES FAST, Lahore in April 2008, where a number of language and technical experts collaborated to create the first-cut language tables for different Pakistani languages including Balochi, Pashto, Punjabi, Saraiki, Sindhi and Torwali.

The workshop was divided in two sessions (detailed agenda in Annex-A). On the first day, an open general public meeting was held where participants from all related fields of interest were invited for discussions on IDN related matters for Pakistani languages. This was also advertised in the newspapers for getting interested people involved (Annex-C). The open discussion was followed on the second day by a closed meeting of a group of technical and language experts who provided recommendations for the resolution of the issues based on general public feedback on day one. List of attendees for each day is attached as Annex-B.

The workshop commenced with an opening ceremony where Mr. Arif Aslam Kundi, Director IT, Ministry of IT and Telecom, Dr. Arshad Hussain, Director NUCES Lahore, Dr. Sarmad Hussain, Head CRULP and Mr. Adnan Saeed, Project Manager NIDU addressed the audience. Efforts from NIDU for promotion of local content, including Cyber Library project, and other general initiatives by the Ministry of IT were highlighted. The speakers also discussed the importance of IDNs. This was followed by a presentation session by Dr. Sarmad Hussain, giving an introduction to and issues faced by IDNs in Pakistani languages. The slides for this presentation are available at <http://www.crulp.org/idn/IDN2009>. The first session on day one was concluded with a presentation by Mr. Inam-ullah on the diversity of languages spoken in the northern areas of Pakistan. The following issues were highlighted in the context of IDNs.

1. Character status revision
2. Single vs. multiple language tables
3. Confusability resolution
4. Digits and mixing
5. Label and character separator
6. ccTLD string and gTLD translations

The second session on day one began with a discussion on issues identified in the previous session, one at a time. Suggestions from the audience were elicited regarding each issue and recorded for the discussion on second day. A closed group meeting was arranged on the second day where a smaller group of technical and linguistic experts (from the first day) participated. All the issues regarding IDNs were brought under discussion and recommendations for each were agreed through consensus. These discussions and recommendations are given in detail in the subsequent sections of this report.

The meeting concluded with some general recommendations for the registries implementing IDNs for Pakistani languages.

Discussion and Recommendations on Issues Related to IDNs for Pakistani Languages

The issues taken into account for IDNs in Pakistani languages along with the discussion and decisions taken on each are presented in this section.

1. Revision for Characters Status

Arabic characters occupy the Unicode code blocks 0600..06FF, 0750..077F, FB50..FDFD and FE70..FEFF. IDNA 200x divides these characters into three categories: Protocol Valid (PVALID), Disallowed and Contextual characters. PVALID characters can be used in IDNs and Disallowed characters cannot be used. The Contextual characters are only allowed if the contextual rule defined for the character being used is present. The status of each character is derived using the properties associated with these characters in the Unicode standard. For example, if a character is a punctuation mark it is Disallowed, but if it is a character, it is PVALID.

In case of Arabic script, however, there are some PVALID combining characters which are not required by script and/or language community. This is based on two observations. First, that these are not used in written language, and second that their use in IDNs might cause confusion and security risks. Such characters can be broadly classified into the following three classes.

1. Quranic marks and stylistic/formatting characters (0616..061A, 06D6..06DC, 06DF..06E8, 06EA..06ED)
2. Honorific characters (0610..0614)
3. Diacritics/ Harakat (064B..065E, 0670)

In June 2008, the Arabic Script IDNs Working Group (ASIWG) proposed that the first category of combining characters including Quranic and stylistic marks be Disallowed at the

protocol level¹. The primary reason for this proposition is that these characters are usually used in Quranic verses only, and are not needed for IDNs. As a result, these can be prohibited at script level for all languages using Arabic script. Their usage may cause security problems, as most of these marks are diacritical, optional and can thus cause confusion for users, who may not be able to distinguish two websites, with and without these marks.


For the second class of characters (honorifics), ASIWG decided not to ban them at protocol level, though suggesting that their use in IDNs be deferred to a time when security threats caused by them can be technologically mitigated.

Similarly, for diacritics, the working group proposed not to disallow them at protocol/script level, rather limit their use in IDNs till technology advances to a point where security risks posed by these characters in IDNs can be handled. Both honorifics and diacritics can therefore be blocked at the registry level at this time.

The following section presents an overview of the discussion on all classes of combining characters and the decisions taken by language community for status revision of these characters in Pakistani languages.

(a) Discussion

A couple of views exist on this issue. One of these is that honorifics are like punctuation marks and not required in domain names, therefore should be Disallowed. Another view is that honorifics are a means to follow cultural etiquette when addressing messengers and Prophet (p.b.u.h). If these are not allowed in IDNs, then the whole string has to be

used (for example,  in place of ٠), which will make domain names longer and

difficult to use. There is a general consensus towards keeping honorifics allowed at the protocol level and imposing restrictions at the registry level at this time. Based on this consensus, the following decisions are made.

(b) Decisions and Recommendations

The following recommendations are put forward.

Quranic and Stylistic marks (0616..061A, 06D6..06DC, 06DF..06E8, 06EA..06ED) –

Since Quranic marks are not used in writing by any of the Pakistani languages (Baluchi, Pashto, Punjabi, Saraiki, Sindhi, Torwali, Urdu, etc.), and their only use is in Quranic text, hence it is recommended that their status be changed from PVALID to DISALLOWED at the protocol level. All agreed to ASIWG recommendation.

¹ IDNA200X Review for Arabic Script Block.

http://www.arabic-script-domains.org/wiki/Image:ASIWG_IDNA200X_Feedback_1.2.pdf

Honorifics (0610..0614) – Honorifics are used for salutations and required when addressing certain individuals, for instance, names of prophets and messengers. These are essential part of the culture. Therefore, these cannot be blocked at the protocol level. It is recommended, however, that these should be restricted at the registry level until confusability and security threats imposed by domain names containing honorific characters are resolved technologically at application layer.

Diacritics (064B..065E, 0670) – Diacritics or Harakat are used in Pakistani languages to distinguish among the meanings of words. It is, therefore, recommended that their status be kept PVALID at the protocol level. Since the use of diacritical combining marks in domain names can lead to potential spoofing attempts at this time, their use should be restricted at registry level, allowing them when such security risks are take care of in the future.

2. Single vs. Multiple Language Tables

The first step in the deployment of IDNs in the Internet is the formation of language or script table. This table lists characters of a language and/or script which are allowed in IDNs for that language or script. In case of Pakistan, there are multiple possibilities. The complete Arabic script table of Unicode could be allowed, but that will include many characters from Arabic and other languages not used in Pakistan. The other extreme is to only include letters of one language in a table and make a table for each language of Pakistan, making more than 66 language tables. A third possibility is to have a single table which collectively contains all and only the letters used by the languages spoken in Pakistan. The following section discusses pros and cons of these approaches as raised during the discussions.

(a) Discussion

A single table containing letters from multiple languages is easier to maintain and any missing letters from languages can be added conveniently. It can accommodate all languages spoken across Pakistan without having to maintain separate tables for each one. Multiple tables, one for each language, are difficult to maintain. Every time changes are made to the table, a new version has to be released which is time-consuming if the process has to be repeated for all the languages. International community has gone through this exercise for character encoding, have a different code page for each language, and eventually converged to a single large table, called Unicode. So there are real examples and we should learn from history.

In addition to this, multiple tables may be difficult to implement at a single registry. The multiple-tables approach gets even more inconvenient from a registrant's perspective for domain names containing copyright strings or trademarks. A registrant will have to register over all 66 language tables, if multiple tables (one for each language) exist. It

will also be difficult to explain these details to a registrant and thus to implement multiple tables through registry.

Conversely, creating one table listing letters for all Pakistani languages might compromise representation of certain languages. This happens when confusability between languages is resolved in a single table. For e.g. Sindhi code-point ڪ (06AA) and Urdu ڪ (06A9) are similar looking. If both characters are present in the same table, only one of the two strings (using one kind of Kaf) ڪتاب and ڪتاب can be registered. Confusability across languages is mitigated with multiple tables, since each language's characters are represented in a separate table.

(b) Decisions and Recommendations

Based on the above discussion, it is decided that a single language table listing all letters needed for all Pakistani languages be developed. The main reason was that it would be difficult to maintain separate tables for all languages spoken in Pakistan. It was also realized that have one table will support most of the languages in the first go. If separate tables had to be developed, only the major languages will be served in the near future and some less spoken languages may never be serviced.

Confusability should be addressed at the registry level through policy, blocking or bundling confusable string on first come first served basis. Copyright disputes should be handled through sunrise period and using standard dispute resolution procedure.

3. Confusable Characters

There are a number of characters in Arabic script that look visually similar. These can be similar in their initial, medial, final or isolated forms. Two types of confusability exist: shape confusability and composition confusability.

Shape confusion is either caused by exact shapes of two characters (in any one of the four positions) or similar character shapes (where the two characters are slightly different). Example of characters causing exact-shape confusion in IDNs are ڪ (0643) and ڪ (06A9) having same initial and medial shapes. Characters such as ڪ (06CC) in Urdu and ڪ (06CD) in Pashto fall under the category of similar-shape confusable characters.

Composition confusability exists among pre-composed/composite characters and their corresponding decomposed sequences. Both are exactly the same visually but yield different ASCII translations for IDNs. For e.g. ڪ = ڪ+ڪ. The following sections discuss methods to resolve confusability in IDNs and recommendations made in this regard.

(a) Discussion

There is a general consensus that confusability in IDNs leads to security risks. One possible solution to this problem is collapsing/merging domain names containing similar looking characters (exact shape/similar shape/composite). This means that if a domain name is registered using one character, then the same name with an exact or similar shape variant cannot be registered. For e.g. if کتاب is registered using letter Kaf (ک) in Urdu, then تابک using Sindhi letter Swash Kaf (ڪ) is automatically bundled/reserved and vice versa.

This can give rise to disputes over domain names containing confusable characters. However as mentioned earlier, dispute resolution can be done through registry policy (first-come-first-served, etc.).

(b) Decisions and Recommendations

Based on a general consensus, it is decided that confusable characters should be collapsed/merged together in same IDN strings. This should be done for all three kinds of confusability: exact shape, similar shape and composition confusability.

Domain names should be available on a first-come-first-served basis, and copyrights should be handled through sunrise period. Special names should be reserved, as per registry policy.

Specific confusability cases need to be examined on a character-by-character basis and a list of these should be created. This should be done by a smaller expert representative committee formulated by the Ministry of IT.

4. Digits and Mixing

Arabic script block contains two sets of digits namely Arabic Indic and Extended Arabic Indic digits. Unicode provides Extended or Eastern Arabic Indic digits for Persian languages including Pakistani languages. Thus, for languages using Arabic script, two digit sets are available for use in IDNs.

ASCII digits are by default allowed for use in domain names and thus, can be mixed with Arabic digits. Therefore, there are two issues: which digit set(s) are allowed, and whether they could be mixed.

(a) Discussion

Mixed digits labels cause confusion among users. Although there may not be visual similarity in labels, yet users might perceive two mixed digits domain labels the same. For e.g. 123اردو۱۲۳ and ۱۲۳اردو123, though unique, can be looked at as similar labels.

Digit mixing in a label can also lead to a combinatorial problem at the registry level where all combinations of labels with mixed digits have to be bundled, blocked or reserved.

The digits set(s) which can be used in Pakistani language IDNs need to be decided. Among Pakistani languages, Urdu and Sindhi use different glyphs for digit four (۴ for Sindhi and ۴ for Urdu). ASCII set of digits (0,1,2...9) can also be used based on the context.

Three viewpoints exist in this regard: (i) Only Arabic digits should be allowed, (ii) Only ASCII/English digits should be allowed, and (iii) Both Arabic and ASCII digits should be allowed.

(b) Decisions and Recommendations

It is common consensus that mixing of any two digit-sets be disallowed in IDNs for Pakistani languages.

Both ASCII (0030..0039) and Extended Arabic-Indic (06F0..06F9) digits should be allowed and supported in IDNs for Pakistani languages. The Arabic Indic set is not to be used for Pakistani languages.

Also, ASCII and Extended Arabic Indic digits should be mapped to each other for domain name labels by the registry. For e.g. ۱۲۳کبر and 123کبر should be treated as same. These will follow the same policy as confusable characters at the registry level.

5. Label and Character Separator

In Arabic, words form cursive connections with surrounding characters for proper display. However, sometimes words may assume wrong shapes without a separator e.g. دنس will be displayed erroneously دسن without a character separator. Space cannot be used to separate such words because it is not allowed in domain names. Unicode provides an alternate character called Zero Width Non-Joiner. As the name implies, a ZWNJ inserted between two otherwise combining characters causes them to be displayed as non-joined. The problem lies in the fact that most users in Pakistan are unfamiliar with this character and it is not available on keyboards.

Another related issue is that of label separator. A label separator is used to delimit individual components of a domain name. ASCII domain names use dot 002E (.) to separate labels. In Pakistani languages such as Urdu, dash 06D4 (-) is used as an end of sentence marker and thus, is a candidate label separator. Also, the dash is mapped onto the dot on the keyboard, and the latter is not available on the Urdu keyboard.

(a) Discussion

A number of different views exist on this issue. One solution is to use joined words without any character separators. For example دسدن instead of breaking the word at س. This idea supports the fact the domain names need not be meaningful strings.

However, if characters need to be separated for achieving meaningfulness, then an alternate solution to ZWNJ is the use of Hyphen (-), since it is the only punctuation character allowed in domain names by IDNA.

Another possibility is to allow space-to-ZWNJ mapping at the application layer. Thus, users need not be trained on ZWNJ, rather space can be used to separate characters (or words) which can be mapped to ZWNJ before the IDN is translated to ASCII and looked up. This solution is, unfortunately, not viable because it does not take into consideration clickable URLs and embedded links. URLs can appear anywhere in text for e.g. in word processor file and email applications. Space-to-ZWNJ mapping has to be standardized for all applications where a URL containing a domain name might appear.

Since ZWNJ is required for proper display of words in almost all Pakistani languages, one alternative is to allow ZWNJ in IDNs as a character separator where necessary and users in turn be trained/familiarized with its usage. This can be achieved through adding an additional key for ZWNJ in conventional local language keyboards. Registrants can advertise registered domain names with ZWNJ to users.

Since user training and awareness of use of ZWNJ in domain names is a prolonged process, therefore, hyphen can be used in addition to ZWNJ as a character separator in the meantime. It is already allowed through ASCII so can be immediately put in effect.

As far as the choice of label separator is concerned, most languages in Pakistan (except Urdu) use dot (.) as an end of sentence marker instead of dash (-). Dot is also easier to use as it is standardized in the Internet and currently being used in ASCII domain names. The domain name system only supports dot between labels. Browser applications also support use of dot as label separator.

If dash is used, the dash-to-dot mapping has to be standardized in all URL based applications. The only advantage of using dash is that keyboard switching is not required since it is encoded on Arabic keyboards by default.

(b) Decisions and Recommendations

It is decided through general consensus that dot (.) should be used as label separator.

Both hyphen (-) and ZWNJ should be available for use as character separators. Registrants who use ZWNJ in domain names should advertise and train users appropriately on ZWNJ in web addresses.

The keyboards should be revised and make available dot, dash and ZWNJ characters, as @ sign has been made available for emailing, which the users also had to get used to.

6. ccTLD String

Currently, ccTLD strings are taken from the ISO-3166-1 standard two-letter country codes (.pk for Pakistan). With the advent of IDNs, though, the need arises for a standard country level string that can be used as an IDN ccTLD for all Pakistani languages. This requires the selection of one string in Arabic script.

(a) Discussion

Two suggestions are discussed regarding the choice of ccTLD string: use complete string for the Urdu translation of Pakistan or use an abbreviated string. The two contenders for ccTLD strings are ‘پاکستان’ and ‘پاک’. Advantages and disadvantages for adopting both are given below.

Although ‘پاکستان’ is an unambiguous and complete representation for word ‘Pakistan’, it takes longer to type in than ‘پاک’. This is also supported by the fact that the ccTLD for Pakistan in English is ‘.pk’ instead of the complete country name. An abbreviation in Urdu such as ‘پاک’ can therefore be used.

However, ‘پاک’ is not a semantic equivalent to ‘Pakistan’. It is a distinct word of Urdu language with a meaning different than what is represented by ‘پاکستان’. Also, auto-complete options exist in today’s browsers which automatically complete a string by inserting remaining characters after the first few are typed by the user. This will resolve the typing issue with a longer ccTLD string.

(b) Decisions and Recommendations

Observing the general consensus among all participants, it is decided that the country code top-level domain string for Pakistan will be پاکستان., where as پاک. will be reserved by the registry.

All variants strings for all characters of the ccTLD string ‘پاکستان’ will also be reserved with ICANN.

For user convenience and ease of use, auto-completers should be implemented at the application level.

The full name, Islamic Republic of Pakistan, اسلامی جمہوریہ پاکستان, should also be reserved by ICANN.

7. gTLD Translations

Like country-code TLD strings, appropriate translations for Generic Top-Level Domains (gTLDs) also need to be developed. These could either be complete strings, for instance ‘اداره’ for ‘.organization’, or abbreviations comprising of first two or three letters of the translated string.

Another important decision is regarding choice of language for the translation of gTLDs. Various possibilities are given in the subsequent section.

(a) Discussion

Translations of common gTLD strings (such as .com, .org, .net, etc.) can either be done in a single standard language (Urdu for example), or each language community can propose its own set of translated gTLD strings.

Translations in a single language are easy to implement at country level, and can be used by registrants as standard gTLD strings. Multiple gTLD translations in all (or more than one) languages will be difficult to implement and can cause confusion among registrants.

There are a number of propositions for translations of gTLDs. One is that English gTLD strings should be transliterated and adopted as they are. For example, کم. for .com, بز. for .biz, etc.

Another possibility is to take only the first three (or few) characters of the translated string to provide shorter gTLDs, as in English, though such abbreviations will not be meaningful strings.

Yet another option is that of using complete gTLD translations to preserve meaningfulness and using auto-completers to save typing time.

(b) Decisions and Recommendations

The following decisions regarding gTLDs for Pakistani languages are made.

Meaningful translation should be developed for gTLDs, and provided to the registry. This should be done by a separate representative expert committee. Auto-complete options should help in typing them. Which gTLDs to offer would depend on registry’s business model. gTLDs could be language specific or in Urdu, the national language, again determined by the business model of the registry.

General Recommendations for Registries Implementing IDNs

Following are some of the general recommendations for registries that wish to implement IDNs.

1. For labels containing variant characters, the registry should clearly define and draft a policy for handling such variants. Variant include all such characters which cause confusability in domain names. These fall into the following categories.
 - Exact shape variants
 - Similar shape variants
 - Composite character variants
 - Digits
2. If a domain name contains characters that have variants (in the same or other languages), the registry should provide, at registration time, all possible labels that can be generated to the registrant. For e.g. when registering اردو۱۲۳, the variant label اردو123 should be bundled and made available at no extra cost so that all users globally with varied keyboard layouts should be able to access domain names in Pakistani languages. Ease of use, searchability, predictability and dependability are the only features which will make IDNs successful in local languages.

General Recommendations for Application Vendors

To make combining characters such as diacritics and honorifics available in Pakistani language IDNs in the future, browser application vendors should enhance the display of IDNs in the address bar and elsewhere. This would reduce confusability when using diacritics in domain names.

Annex-A: Agenda of Workshop on Internationalized Domain Names for Local Content Development in Pakistani Languages, May15-16, 2009

PROGRAM FOR 15TH MAY, 2009

Time	Agenda
09:30 – 10:25	Registration and Tea
10:25 – 10:30	Recitation
10:30 – 11:00	Opening Ceremony
11:00 – 1:00	IDNs for Pakistani Languages
1:00 – 1:45	Linguistic Diversity in Pakistan
1:45 – 2:15	CRULP Open House
1:45 – 3:00	Lunch and prayer break
3:00 – 3:30	Disallowed characters
3:30 – 4:00	Single vs. Multiple Language Tables
4:00 – 4:30	Resolving confusion
4:30 – 5:00	Digits and Separators
5:00 – 5:30	ccTLD String and gTLD Translations
5:30 – 6:30	Tea Break

PROGRAM FOR 16TH MAY, 2009

Time	Agenda
09:30 – 10:25	Registration and Tea
10:25 – 10:30	Recitation
10:30 – 11:30	Summary of Issues and Public Feedback from Day 1
11:30 – 12:00	Issue-1: Disallowed Characters
12:00 – 12:15	Conclusion
12:15 – 12:45	Issue-2: Single vs. Multiple Language tables
12:45 – 1:00	Conclusion
1:00 – 1:30	Issue-3: Normalization and Confusability Resolution
1:30 – 1:45	Conclusion
1:45 – 2:45	Lunch and prayer break
2:45 – 3:15	Issue-4: Digits and Separators
3:15 – 3:30	Conclusion
3:30 – 4:00	Issue-5: Choice of ccTLD String and gTLD Translations
4:00 – 4:15	Conclusions
4:15 – 4:30	Concluding Remarks
4:30 – 5:00	Tea

Annex-B: List of Attendees

Workshop on Internationalized Domain Names for Local Content Development in Pakistani Languages

May 15, 2009

S#	Name	Designation	Organization
1	Muhammad Nadeem Chishty	System Analyst	Sybil Academy Pakistan
2	Umer Khalid	Student	NUCES
3	Dr. Atiqul Durrani	Project Director	Center of Excellence for Urdu Studies
4	Syed Rishi Khan	Analyst	MOITT
5	Sana Ghani	Sr. R.O	CRULP
6	M. Abul Faza	Project Coordinator	MOITT
7	Huda Saif-uz-Zaman	Dev Engineer	CRULP
8	Tehseen Zahra	Research Officer	Urdu Science Board
9	Rashida Farooq	e-Research Officer	NLA
10	Dr. M. Qasim Farooq	Professor & Dean	Univ. of Sindh
11	M. Zameer	Program Manager	FLI
12	Fiaz Mujeeb	Student	COMSATS
13	Asma Bashir	Lecturer	GCU-I
14	Sarwar Hussain	Prof.	FAST-NU
15	YASMIN KHAN	Lecturer	GCU-CH
16	Kiran Khumbar	APM	CRULP
17	Ammara Shabbir	Research Officer	CRULP
18	M. Aslam Javed	Visiting Lecturer	FAST-NU
19	Ahram Saeed	PM	MOITT
20	M. Zahid Saif-uz-Zaman	Linguist	CRULP
21	Jonting Ahmed	Web Master	CRULP
22	Faiz Ullah	R.O	Urdu Sci. B
23	Nabid Bhatti	Student	NIBQA U Islamabad
24	Luqman Ali	Associate Prof.	FAST-NU-Lahore
25	Dr. M. Saleem	Professor	Punjab Univ.
26	Talib Jan	Executive Director	ISWDO
27	Karim Gulam	Research Officer	CRULP
28	Ahmed Mujeeb	Associate Dev. Engr	CRULP

S#	Name	Designation	Organization
29	Naseem Haider	Training Coordinator	FLI
30	Mudita Jaffer	Sr. Research Officer	FAST-NU
31	Aamir Nawaz	Asst Prof	"
32	Fiza MANSOOR	Training Admin & ACCT OFFICER	CRULP-EGD
33	DR. SHAFAY SHAMAR	ASSOCIATE PROF	LUMS
34	Dr. MURTAZA APZAL	Program	KICSIT
35	Dr. Shafiq Chaudhry	Professor	FAST-NU Lahore campus
36	Adna Nasseer	RO	CRULP-FAST
37	Maria Javid	RO	CRULP
38	SHAFIQ BASHIR	Assoc Professor	FAST-NU
39	Abida Bano	Ph.D Scholar	Univ. of Sindh
40	UMAR SELAM	student	NUCES
41	Nayyara Khatun	RO	NUCES
42	Ahmed Raza	RO	NUCES
43	Fareeq Ahmed	SRO	SCRC FAST-NU
44	Ahsan Ali	Ph.D Candidate	CRULP, NU
45	Riffat Bokhari	ARO	CRULP
46	Ahmed Syed	AIO	NLA Islamabad
47	Mehboob Khan	P. Manager	NLA
48	Dr. JS Mirza	Advisor	COMSATS
49	Dr. Imdad	Professor & Director	ISE-T Sindh Univ. Sindh
50	Kamran Ali	Asst. Professor	BUTEMIS, GCU
51	Mujahid Iqbal	Student	COMSATS
52	Hamayun Khan	IT Consultant	UIT Karachi
53	Shakeel Ahmed	Manager system	PSEB
54	Zubair Iqbal	Coordinator IBT, FLI	IBT, Radio Social
55	RAFIA BOGHTA	PH/PC	CRULP
56	Mudita Jaffer	Research Officer	FAST-NU
57	Zeshan Latif	ARO	CRULP
58	Shahid Siddiq	Student	FAST-NU
59	Muhammad Usama Bhatti	Asst. Prof.	FAST-NU
60	Dr. M. Saleem	Professor	Punjab Univ.

S#	Name	Designation	Organization
61	Qurat ul Ain	AIO	NLA
62	Tanzila Fatima	AIO	NLA
63	Azif Aslam Khan	Director IT	Min. of IT, Govt
64	Taj Jogi	Secretary	Sindh Govt Authority BZ
65	Dr. M. HAFIZ SAFWAN M. CHOTAN	MANAGER DATA NETWORK/ Sr. LECTURER	BZ Govt Authority
66	Imran Ullah	R.O	CRULP
67	Fauzan Ali	Asst Network	CRULP
68	Syed Irfan Ahmad	IT Consultant	Proneep
69	ATIF MIRZA	R.O	CRULP
70	Mahwish Bano	Sr. Dev. Engineer	CRULP
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**Workshop on Internationalized Domain Names for Local Content Development in
Pakistani Languages**

May 16, 2009

S#	Name	Designation	Organization
1	Dr. M. Abid	Prof. and Chairman	Dept. of Computer Science UIC of Pesh.
2	A. Attah Durrani	Project Director	CEU
3	Dr. M. Afzal	Director	KICSIT
4	Dr. Imdad Ali	Prof. Z. A. Voch	ICT S. U. Tomsonline
5	Taj Jojo	Secretary	Quadrant Language Authority
6	Infan Chaudhry	Associate Professor	UET
7	M. Zaman	Program Manager	FLI
8	B. H. Qasim Bugti	Professor's Dean	Chair of Studies
9	Kamran Ali	Asst. R-Coord	BOITEMS, Ate
10	Rabia Gulmine	Research Officer	CRULP
11	Shahid Siddiq	Student	NUCES
12	Fareed Ali	ASST network	NUCES
13	M. Zahid Saqib	Linguist	CRULP
14	Imtiaz Ahmed	Web Master	CRULP
15	Khalid B. Qasim	Assistant Prof. Qasim	NYP QAU
16	Arif A. Karsidi	Dir. IT	M/IT
17	Abul Hasan Bhatti	Chairman Dept. of Sanskrit	B. Z. U. Multan
18	M. ABU UL FAYAZ	Project Coordinator	MOIT
19	Asma Naveen	OR	CRULP
20	Syed Atique	Analyst	primisys IT
21	AAMIR WAH	ASST. PROF	NU
22	SHAFAY SHAMAL	ASSOCIATE PROF	LUMS
23	Hameez Gurecha	IT Consultant	UIT
24	Faiz Anwar		
25	Dr. Khair Za	Dean, School of IT	GNU
26	Muhammad Naveen Chaudhry	Superior & Deputy	Superior/Res. Dept.
27	Hafiz Safwan	Manager Data Network	PTCL
28	Nasim Haidry	Training Coordinator	FLI Islamabad

S#	Name	Designation	Organization
29	Inam ul Haq	R.O	CRULP
30	Zubair Iqbal	Coordinator	IBT, FLI
31	Adnan Saeed	Project Manager	M/IT
32	Shahid Ahmed	Manager Systems	PSEB
33	Shabbir	Student	
34	Rashid	student	
35	Shahid Iqbal	Student	
36	Abida Bataal	Ph.D student	Univ. of Education
37	Sarmad Hussain	Prof.	NUCES
38	Ahmed Muzay	ASSOCIATE DEVELOPMENT ENGINEER	CRULP
39			
40			

Annex-C: Newspaper Advertisement

PID(I)5730/08 www.pakrad.com

 **GOVERNMENT OF PAKISTAN**
MINISTRY OF INFORMATION TECHNOLOGY
IT & TELECOM DIVISION

Workshop on Internationalized Domain Names (IDNs)
for Local Content Development in Pakistani Languages
Call for Participation

National IT Development and Promotional Unit (NIDU), Ministry of Information Technology (MoIT) organized a public discussion on **15th May, 2009**. The issues and solutions for the development of language tables and associated details for languages spoken in Pakistan will be discussed in the meeting. Detailed agenda is available at www.crupl.org/IDN. The outcomes of this work will be published as recommendations by the MoIT, and used by relevant registries to facilitate the deployment of IDNs in Pakistani languages on the Internet.

The workshop will be held at the **National University for Computer and Emerging Sciences, Lahore Campus**, from **9:30 a.m. - 5:00 p.m.**

Interested individuals are encouraged to register in advance by contacting the organizers below. There is no registration fee.

For program and registration, contact: Sarmad Hussain National University of Computer and Emerging Sciences, B Block Faisal Town, Lahore Ph: 042-111-128-128 Fax: 042-5165232	For further details, contact: Adnan Saeed Project Manager NIDU Ministry of IT 4 th Floor, Evacuator's Building Agha Khan Road, Islamabad Ph: 051-09209269 Mobile: 0300-5100022
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