2.3 String Similarity Evaluation

2.3.1 Introduction

The String Similarity evaluation was a review to determine whether applied-for strings were visually similar to existing TLDs, Reserved Names, or other applied-for strings.

2.3.2 Relevant Guidance

The following guidance is relevant to the topic of the String Similarity evaluation and will be discussed in further detail in Sections 2.3.3 and 2.3.4 of this report:

- GNSO Recommendation 1:

  > *ICANN must implement a process that allows the introduction of new top-level domains. The evaluation and selection procedure for new gTLD registries should respect the principles of fairness, transparency and non-discrimination.*
  > *All applicants for a new gTLD registry should therefore be evaluated against transparent and predictable criteria, fully available to the applicants prior to the initiation of the process. Normally, therefore, no subsequent additional selection criteria should be used in the selection process.*[70]

- GNSO Recommendation 2: "Strings must not be confusingly similar to an existing top-level domain or a Reserved Name."
- GNSO Recommendation 5: "Strings must not be a Reserved Word."
- GNSO Recommendation 9: "There must be a clear and pre-published application process using objective and measurable criteria."
- Applicant Guidebook, Module 1: Introduction to the gTLD Application Process[71]
- Applicant Guidebook, Section 2.2.1.1: String Similarity Review
- Applicant Guidebook, Section 2.4: Parties Involved in Evaluation
- Applicant Guidebook, Attachment to Module 2: Evaluation Questions and Criteria
- ICANN Board New gTLD Program Committee Resolution 2013.06.25.NG07 (25 June 2013): Singular & Plural Versions of the Same String as a TLD[72]

[70] ICANN. (8 August 2007) ICANN Generic Names Supporting Organization Final Report Introduction of New Generic Top-Level Domains, Part A. Retrieved from http://gnso.icann.org/en/issues/new-gtlds/pdp-dec05-fr-parta-08aug07.htm
[71] ICANN. (4 June 2012) gTLD Applicant Guidebook Version 2012-06-04. Retrieved from http://newgtlds.icann.org/en/applicants/agb/guidebook-full-04jun12-en.pdf
[72] ICANN. (25 June 2013) Approved Resolutions | Meeting of the New gTLD Program Committee. Retrieved from https://www.icann.org/resources/board-material/resolutions-new-gtld-2013-06-25-en#2.d

2.3.3 Background

The AGB anticipated that Initial Evaluation (IE) (see Section 2.1: Initial and Extended Evaluation of this report) would take five months to complete, all IE results would be published at the conclusion of IE, and the Contracting process would commence at the end of IE. This would allow applicants that passed IE to move expeditiously toward signing an RA if there were no other issues that the application must resolve (i.e., contention resolution, dispute resolution).

GNSO Recommendation 2 stated, "Strings must not be confusingly similar to an existing top-level domain or a Reserved Name." The String Similarity evaluation was developed in support of this recommendation, which reviewed applied-for strings for visual similarity to existing, reserved, and other applied-for strings. As a result of the multistakeholder process, the criteria for the String Similarity evaluation were limited to review visual similarity, taking into account that the overall application process accounted for all forms of similarity. The String Similarity evaluation during IE was considered a preliminary review "to identify many instances of contention [multiple applications for one string] or user confusion as soon as possible in the process."[73]

AGB Section 2.2.1.1.2 further explained user confusion:

> *String confusion exists where a string so nearly resembles another visually that it is likely to deceive or cause confusion. For the likelihood of confusion to exist, it must be probable, not merely possible that confusion will arise in the mind of the average, reasonable Internet user. Mere association, in the sense that the string brings another string to mind, is insufficient to find a likelihood of confusion.*

Section 2.2.1.1.3 of the AGB defined the potential outcomes of the String Similarity evaluation as:

- An applicant would not be allowed to proceed if visual similarity to existing TLDs or Reserved Names is determined
- An applicant would be placed into a contention set with other applicants for strings that were determined to be exact matches or visually similar
- An applicant would not be placed into a "contention set" and would move on to the next stage of the Program if not determined to be an exact match or visually similar to any other strings (existing or applied-for)

ICANN engaged independent third-party providers, InterConnect Communications and the University College London, to act as the String Similarity evaluation panel. For more information, see Section 8.2: Service Provider Coordination of this report. To inform the panel's review, ICANN also used the SWORD Algorithm, which was designed to be a "consistent and predictable tool [. . .] to inform the 'string confusion' element of the new gTLD project."[74] The SWORD Algorithm also provided opportunities for the applicants to inform themselves, as it was available to applicants prior to

[73] ICANN. (18 February 2009). New gTLD Draft Applicant Guidebook: Analysis of Public Comment. Retrieved from https://archive.icann.org/en/topics/new-gtlds/agv1-analysis-public-comments-18feb09-en.pdf

[74] ICANN. (1 October 2008) Minutes of the Special Meeting of the ICANN Board of Directors. Retrieved from https://www.icann.org/resources/board-material/minutes-2008-10-01-en?routing_type=path

application submission and during the evaluation period. As described in Section 2.2.1.1.2 of the AGB, "it should be noted that the [SWORD] score [was] only indicative and that the final determination of similarity [was] entirely up to the Panel's judgment." Accordingly, the panel incorporated the SWORD Algorithm into its processes, but ultimately the expert evaluators made the determination.

While the String Similarity evaluation was limited to visual similarity, the String Confusion Objection process allowed parties to object to applications based on visual and other types of similarity. For more information, see Section 3.2: Objections and Dispute Resolution of this report.

String Similarity results were published on 26 February 2013.[75]

2.3.4 Assessment

String Similarity evaluation results were published later than originally scheduled by ICANN. At the ICANN 45 meeting in October 2012, ICANN had forecast the String Similarity evaluation to be completed in November of that year.[76] AGB Section 2.2.1.1.1 had contemplated that String Similarity evaluation results would be published prior to IE results. String Similarity evaluation results were published on 26 February 2013.[77] This delay was due to the volume of unique strings--there were 1,380 unique applied-for strings, resulting in over 1,000,000 combinations requiring review. In order to ensure the results were consistent, ICANN required additional time for administrative review to understand results before publicizing them.

The String Similarity evaluation results were consistent with the AGB-described outcomes. A string found to be confusingly similar to an existing TLD, a Reserved Name or a String on the "Ineligible for Delegation List" from Section 2.2.1.2.3 of the AGB did not pass the String Similarity evaluation. Applied-for strings found to be confusingly similar to other applied-for strings were placed in contention sets, along with strings that were determined to be IDN variants of one-another. Upon the completion of the review of all applications, results were released on 26 February 2013 in which the panel identified two non-exact match contentions sets (.HOTELS/.HOTEIS and .UNICORN/.UNICOM) and 230 exact match contention sets.[78] On 1 March 2013, an additional two non-exact match contention sets based on IDN variant relationships were published.[79] In total, the String Similarity evaluation identified 234 contention sets, composed of 754 applications.

[75] ICANN. (26 February 2013) Announcement: New gTLD Program: String Similarity Contention Sets. Retrieved from http://newgtlds.icann.org/en/announcements-and-media/announcement-26feb13-en
[76] ICANN. (8 October 2012) Information Paper: New gTLD Update (Toronto Session). Retrieved from http://toronto45.icann.org/meetings/toronto2012/presentation-new-gtld-update-08oct12-en.pdf
[77] ICANN. (26 February 2013) Announcement: New gTLD Program: String Similarity Contention Sets. Retrieved from http://newgtlds.icann.org/en/announcements-and-media/announcement-26feb13-en
[78] ICANN. (26 February 2013) Announcement: New gTLD Program String Similarity Contention Sets. Retrieved from http://newgtlds.icann.org/en/announcements-and-media/announcement-26feb13-en
[79] ICANN. (1 March 2013) New gTLD String Similarity Contention Sets as of 1 March 2013. Retrieved from http://newgtlds.icann.org/en/program-status/application-results/similarity-contention-01mar13-en.pdf

There was one area in particular where several in the community indicated dissatisfaction with the results, which was in regard to singular and plural versions of strings (which were not found to be confusingly similar by the panel).[80] However, neither GNSO Policy nor the AGB defined a specific rule regarding singular and plural versions of a string. As the String Similarity evaluation panel did not find singular and plural versions of the strings to be visually confusingly similar, based on the standard specified in Module 2, ICANN accepted the expert recommendations of the panel.

Following the publication of the String Similarity results, the ICANN Board considered the issue based on community feedback through public comment at ICANN meetings and advice from the GAC.[81] After deliberating the issue, the ICANN Board New gTLD Program Committee determined "no changes to the AGB [were] needed to address potential consumer confusion specifically resulting from allowing singular and plural versions of the same string."[82] However, the ICANN Board identified string similarity as a topic that may be appropriate for the GNSO's discussion of evaluation in the current round and adjustments for future application procedures.[83]

As mentioned in Section 2.3.3. Background, applicants that were dissatisfied with the results of the panel's review had the option to pursue a String Confusion Objection to create contention between two applications. Several applicants took advantage of this process, and some objections considered singular and plural versions of strings. For more information on String Confusion Objections, see Section 3.2: Objections and Dispute Resolution of this report.

2.3.5 Conclusion

The String Similarity evaluation was performed in alignment with the criteria and processes defined in the AGB. Dissatisfaction was expressed by the community in regards to the timing of the results and the results themselves.

The results were released two weeks before the deadline to file a String Confusion Objection, so parties who wished to file a String Confusion Objection based on the results of the String Similarity Review (i.e., create contention where the String Similarity evaluation did not) had a limited amount of time to prepare an objection. The delayed String Similarity results in this round were caused by the high volume of unique strings, but for future rounds, consideration should be given to how to best position the relative timing of these two processes, taking into consideration unknown factors such as the volume of unique strings.

Regarding the evaluation results, the GAC and the ALAC raised concerns regarding the similarity of certain cases of "singular and plural versions of the same string." The ICANN Board passed a

[80] ICANN At-Large Advisory Committee. (16 September 2013) ALAC Statement on Confusingly Similar gTLD. Retrieved from http://www.atlarge.icann.org/correspondence/correspondence-16sep13-en.htm
[81] ICANN Governmental Advisory Committee. (11 April 2013) GAC Communiqué – Beijing, People's Republic of China. Retrieved from https://www.icann.org/en/system/files/correspondence/gac-to-board-18apr13-en.pdf
[82] ICANN. (25 June 2013) Approved Resolutions | Meeting of the New gTLD Program Committee. Retrieved from https://www.icann.org/resources/board-material/resolutions-new-gtld-2013-06-25-en#2.d
[83] ICANN. (17 November 2014). Annex A to Resolutions 1014.11.17.10 – 2014.11.17.12. Retrieved from https://www.icann.org/en/system/files/files/resolutions-annex-a-17nov14-en.pdf

resolution stating that "Due to perceived inconsistency in process results as well as questions about the means used for determining what is confusingly similar (e.g., assessing similarity between singular and plural strings), this is an area where further policy guidance could be provided."[84]

In regard to IDN variants, the String Similarity evaluation panel found two sets of potential IDN variants. Once the Root Zone Label Generation Rules have been established, ICANN should leverage these rules to definitively determine IDN variants among the applied-for strings.

In summary:

2.3.a Review the relative timing of the String Similarity evaluation and the Objections process

2.3.b Consider any additional policy guidance provided to ICANN on the topic of String Similarity

2.3.c Leverage the Root Zone Label Generation Rules in the development of the String Similarity evaluation as it pertains to IDN variants

[84] ICANN. (17 November 2014). Annex A to Resolutions 1014.11.17.10 – 2014.11.17.12. Retrieved from https://www.icann.org/en/system/files/files/resolutions-annex-a-17nov14-en.pdf

2.4 DNS Stability Evaluation

2.4.1 Introduction

The DNS Stability evaluation was designed to ensure that applied-for gTLD strings complied with technical, IDN, and policy requirements, and to ensure that a string did not cause significant security or stability issues.

2.4.2 Relevant Guidance

The following guidance is relevant to the topic of the DNS Stability evaluation and will be discussed in further detail in Sections 2.4.3 and 2.4.4 of this report:

- GNSO Principle B: "Some new generic top-level domains should be internationalised domain names (IDNs) subject to the approval of IDNs being available in the root."[85]
- GNSO Recommendation 1:

  > *ICANN must implement a process that allows the introduction of new top-level domains. The evaluation and selection procedure for new gTLD registries should respect the principles of fairness, transparency and non-discrimination.*
  > *All applicants for a new gTLD registry should therefore be evaluated against transparent and predictable criteria, fully available to the applicants prior to the initiation of the process. Normally, therefore, no subsequent additional selection criteria should be used in the selection process.*

- GNSO Recommendation 4: "Strings must not cause any technical instability."
- GNSO Recommendation 9: "There must be a clear and pre-published application process using objective and measurable criteria."
- Applicant Guidebook, Module 1: Introduction to the gTLD Application Process[86]
- Applicant Guidebook, Section 2.2.1.3: DNS Stability Review
- Applicant Guidebook, Section 2.4: Parties Involved in Evaluation
- Applicant Guidebook, Attachment to Module 2: Evaluation Questions and Criteria
- ICANN Board New gTLD Program Committee Resolution 2014.07.30.NG01 - 2014.07.30.NG04 (30 July 2014): Name Collision Occurrence Management Framework[87]

[85] ICANN. (8 August 2007) ICANN Generic Names Supporting Organization Final Report Introduction of New Generic Top-Level Domains, Part A. Retrieved from http://gnso.icann.org/en/issues/new-gtlds/pdp-dec05-fr-parta-08aug07.htm
[86] ICANN. (4 June 2012) gTLD Applicant Guidebook Version 2012-06-04. Retrieved from http://newgtlds.icann.org/en/applicants/agb/guidebook-full-04jun12-en.pdf
[87] ICANN. (30 July 2014) Approved Resolutions | Meeting of the New gTLD Program Committee. Retrieved from https://www.icann.org/resources/board-material/resolutions-new-gtld-2014-07-30-en

2.4.3 Background

The AGB anticipated that Initial Evaluation (IE) (see Section 2.1: Initial and Extended Evaluation of this report) would take five months to complete, all IE results would be published at the conclusion of IE, and the Contracting process would commence at the end of IE. This would allow applicants that passed IE to move expeditiously toward signing an RA if there were no other issues that the application must resolve (i.e., contention resolution, dispute resolution).

The DNS Stability evaluation criteria were designed to identify labels that did not meet minimum technical criteria for TLD labels and as a result, might cause technical instability in the DNS. The AGB criteria were developed in support of GNSO Principle D and GNSO Recommendation 4, and public comment was solicited for the DNS Stability paper published in February 2008 and updated in October 2008.[88,89] The SAC045 report, published in November 2010 for community and ICANN Board review, was also considered and incorporated into the development of the AGB and the DNS Stability Evaluation.[90] ICANN engaged an independent third-party service provider, Interisle Consulting Group, to act as the DNS Stability panel. For more information about the panel, see Section 8.2: Service Provider Coordination of this report.

The DNS Stability evaluation was performed as part of Initial Evaluation (IE). IE processes are described in detail in Section 2.1: Initial and Extended Evaluation of this report.

Section 2.2.1.3.1 of the AGB stated,

> *During the Initial Evaluation Period, ICANN [would] conduct a preliminary review on the set of applied-for gTLD strings to:*
>
> - *ensure that applied-for gTLD strings comply with the requirements provided in section 2.2.1.3.2, and*
> - *determine whether any strings raise significant security or stability issues that may require further review.*

Section 2.2.1.3.2 of the AGB defined the syntactical requirements for strings.

- Part I, the Technical Requirements for all Strings, required that the ASCII label be valid (as specified in RFC 1035 and RFC 2181), and that the ASCII label be a valid host name (as specified in RFC 952, RFC 1123, RFC 3696, and RFCs 5890-5894). These requirements included the following syntactical rules: 63-character limit, identical treatment of upper- and lowercase letters, only alphabetic characters A-Z, and valid IDNA A-labels only.

[88] ICANN. (6 February 2008) Announcement: Public Comments Requested on DNS Stability: The Effect of New gTLDs on the Internet Domain Name System. Retrieved from https://www.icann.org/news/announcement-2008-02-06-en
[89] ICANN. (22 October 2008) New gTLD Program Explanatory Memorandum: Update to DNS Stability Paper. Retrieved from http://archive.icann.org/en/topics/new-gtlds/update-dns-stability-22oct08-en.pdf
[90] ICANN. (15 November 2010) ICANN Security and Stability Advisory Committee Report on Invalid Top Level Domain Queries at the Root Level of the Domain Name System. Retrieved from https://www.icann.org/en/system/files/files/sac-045-en.pdf.

- Part II, the Requirements for Internationalized Domain Names, required that for IDN labels, labels must be A-labels converted from a U-label consistent with the definition in IDNA and must meet the relevant criteria of the ICANN Guidelines for the Implementation of Internationalised Domain Names.[91]
- Part III, Policy Requirements for Generic Top-Level Domains, required that applied-for ASCII strings must be three or more characters, and that applied-for IDN strings must be two or more characters.

Should unanticipated issues have arisen beyond the defined requirements of AGB Section 2.2.1.3.2, the AGB provided for an extended review by the DNS Stability panel during IE. However, each string was reviewed against the AGB criteria in accordance with the panel's procedures, and none of the applied-for strings required the extended review.

Results of the DNS Stability review were included in the IE reports. Applications that did not pass the DNS Stability Review were not eligible for Extended Evaluation (EE). However, all applications passed the DNS Stability Review in IE.

2.4.4 Assessment

The implementation of the DNS Stability review brought to light one issue with interpretation and scope of the review, referred to as "name collision." The AGB contemplated the potential for collisions as discussed in the SAC045 report, which stated that "potential problems […] may arise should a new TLD applicant use a string that has been seen with measurable (and meaningful) frequency in a query for resolution by the root system and the root system has previously generated a response."[92] The report recommended that "ICANN promote a general awareness of the potential problems that may occur when a query for a TLD string that has historically resulted in a negative response begins to resolve to a new TLD." These findings and recommendations were considered during the development of the AGB, which discussed the issue as a problem that a potential registry operator must prepare for from a query load perspective:

> *Any new TLD registry operator may experience unanticipated queries, and some TLDs may experience a non-trivial load of unanticipated queries. [. . .]*
>
> *ICANN will take steps to alert applicants of the issues raised in SAC045, and encourage the applicant to prepare to minimize the possibility of operational difficulties that would pose a stability or availability problem for its registrants and users. However, this notice is merely an advisory to applicants and is not part of the evaluation, unless the string raises significant security or stability issues as described in the following section.*[93]

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[91] ICANN. IDN Implementation Guidelines. Retrieved from https://www.icann.org/resources/pages/implementation-guidelines-2012-02-25-en

[92] ICANN. (15 November 2010) ICANN Security and Stability Advisory Committee Report on Invalid Top Level Domain Queries at the Root Level of the Domain Name System. Retrieved from https://www.icann.org/en/system/files/files/sac-045-en.pdf

[93] ICANN. (4 June 2012) gTLD Applicant Guidebook Version 2012-06-04. Section 2.2.1.3: DNS Stability Review. Retrieved from http://newgtlds.icann.org/en/applicants/agb/guidebook-full-04jun12-en.pdf

The DNS Stability evaluation panel completed its work in January 2013 and determined no strings should be ineligible for delegation based on its review.

In March 2013, ICANN's Security and Stability Advisory Committee (SSAC) issued a report SAC 057: SSAC Advisory on Internal Name Certificates, wherein the SSAC referred to the issue of "name collision" and provided the ICANN Board with steps for mitigating the issue.[94] To formulate a plan to address the issue, ICANN enlisted broad community participation in the development of a solution, to further study the impact on applied-for strings (the SSAC's list was not exhaustive).

Over the next year, ICANN worked with the community and the SSAC on a mitigation plan. The work included a study of the historical query traffic,[95] a mitigation development effort, and the development of educational materials for IT administrators. On 17 November 2013, ICANN began implementing an interim mitigation approach,[96] termed the "alternate path to delegation" as described in the New gTLD Name Collision Occurrence Management Plan,[97] which allowed most strings to move ahead to delegation with a set of restrictions for second-level names, while the final mitigation plan was further developed by ICANN and the community. On 30 July 2014, the ICANN Board New gTLD Program Committee (NGPC) adopted a resolution directing staff to defer delegation of the high-risk strings (i.e., HOME, CORP, MAIL) indefinitely, and outlined procedures for Controlled Interruption for new gTLDs.[98] On 30 July 2014, ICANN published the Name Collision Management Framework.[99] In the Framework, ICANN described its interest in "providing a good notification measure for those parties that may be leaking queries intended for private namespaces to the public DNS" and required that registry operators implement a period of 90 days of continuous controlled interruption to mitigate risk.

ICANN took numerous steps to minimize the potential impact of name collision. A mitigation plan was implemented for this round, and the NGPC has directed ICANN to "work with the GNSO to consider whether policy work on developing a long-term plan to manage gTLD name collision issues should be undertaken."[100]

Much of the work performed during the DNS Stability evaluation related to IDNs. Since the DNS Stability evaluation during IE, considerable work has been conducted on establishing Root Zone Label Generation Rules, which are procedures for creating and maintaining the label generation

[94] ICANN Security and Stability Advisory. (15 March 2013) SAC057: SSAC Advisory on Internal Name Certificates. Retrieved from https://www.icann.org/en/system/files/files/sac-057-en.pdf
[95] Interisle Consulting Group, LLC. (2 August 2013). Name Collision in the DNS. Retrieved from https://www.icann.org/en/system/files/files/name-collision-02aug13-en.pdf
[96] ICANN. (17 November 2013) Announcement: Reports for Alternate Path to Delegation Published. Retrieved from http://newgtlds.icann.org/en/announcements-and-media/announcement-2-17nov13-en
[97] ICANN. New gTLD Collison Occurrence Management. Retrieved from https://www.icann.org/en/system/files/files/resolutions-new-gtld-annex-1-07oct13-en.pdf
[98] ICANN. (30 July 2014) Approved Resolutions | Meeting of the New gTLD Program Committee. Retrieved from https://www.icann.org/resources/board-material/resolutions-new-gtld-2014-07-30-en#1.a
[99] ICANN. (30 July 2014). Name Collision Occurrence Management Framework. Retrieved from https://www.icann.org/en/system/files/files/name-collision-framework-30jul14-en.pdf
[100] ICANN. (30 July 2014). Approved Resolution | Meeting of the New gTLD Program Committee. Retrieved from https://www.icann.org/resources/board-material/resolutions-new-gtld-2014-07-30-en#1.a

rules with respect to IDN labels for the root.[101,102] Any future instances of the DNS Stability review should incorporate or ensure compliance with such rules.

2.4.5 Conclusion

The DNS Stability evaluation was performed in alignment with the AGB. The review was able to assess many different potential issues, and narrower criteria could limit its ability to identify as many concerns that relate to a particular string.

In this application round, most of the processes in the DNS Stability evaluation related to IDNs. Once the Root Zone Label Generation Rules for IDNs are established, this will reduce the amount of review required for IDNs. Once the Root Zone Label Generation Rules for IDNs are adopted, the DNS Stability Review should leverage these rules and incorporate checks to ensure that the Root Label Generation Rules for IDNs are adhered to.

The Name Collision Occurrence Management Framework provided a plan for registry operators to mitigate the risk of name collision through the use of controlled interruption periods at the time of TLD introduction to the root zone. The NGPC has directed ICANN to "work with the GNSO to consider whether policy work on developing a long-term plan to manage gTLD name collision issues should be undertaken."[103]

In summary:

2.4.a As directed in the NGPC's 30 July 2014 resolution, "work with the GNSO to consider whether policy work on developing a long-term plan to manage gTLD name collision issues should be undertaken."[104]

2.4.b Based on the outcome of the GNSO's work, consider inclusion of the Name Collision Management Framework in the next application round prior to accepting applications[105]

2.4.c Leverage the Root Zone Label Generation Rules for IDNs in the DNS Stability evaluation

[101] ICANN. (27 April 2015) Guidelines for Designing Script-Specific Label Generation Rules for the Root Zone. Retrieved from https://www.icann.org/news/announcement-3-2015-04-27-en
[102] ICANN. (2013 March 20) Procedure to Develop and Maintain the Label Generation Rules for the Root Zone in Respect of IDNA Labels. Retrieved from https://www.icann.org/en/system/files/files/lgr-procedure-20mar13-en.pdf
[103] ICANN (30 July 2014). Approved Resolution | Meeting of the New gTLD Program Committee. Retrieved from https://www.icann.org/resources/board-material/resolutions-new-gtld-2014-07-30-en#1.a
[104] ICANN (30 July 2014). Approved Resolution | Meeting of the New gTLD Program Committee. Retrieved from https://www.icann.org/resources/board-material/resolutions-new-gtld-2014-07-30-en#1.a
[105] ICANN. (30 July 2014). Name Collision Occurrence Management Framework. Retrieved from https://www.icann.org/en/system/files/files/name-collision-framework-30jul14-en.pdf