

Project Overview for the Name Collision Analysis Project (NCAP) Study 1

Request For Proposal

9 July 2019



1 Introduction

1.1 About this Document

This document provides an overview of the Request for Proposal (RFP). It provides background and pertinent information regarding the requirements. The RFP itself is comprised of this as well as other documents that are hosted in the ICANN sourcing tool (i.e. SciQuest). Indications of interest must be received by emailing NCAP-Study1-RFP@icann.org. Proposals must be electronically submitted by 23:59 UTC on 30 July 2019 using ICANN's sourcing tool, access to which may be requested via the same email address as above.

1.2 Overview of the Internet Corporation for Assigned Names and Numbers (ICANN)

The Internet Corporation for Assigned Names and Numbers' (ICANN) mission is to ensure the stable and secure operation of the Internet's unique identifier systems. To reach another person on the Internet, you have to type an address into your computer - a name or a number. That address has to be unique so computers know where to find each other. ICANN helps coordinate and support these unique identifiers across the world.

See www.icann.org for more information.

2 Scope

2.1 Project Objective

The Internet Corporation for Assigned Names and Numbers ("ICANN") is soliciting proposals to identify a contractor to perform Study 1 of the Name Collision Analysis Project ("NCAP"), which is described in more detail in the "[SSAC Proposal for the Name Collision Analysis Project \(Revised by ICANN Office of the CTO\)](#)"¹ ("SSAC proposal"). More information on the term name collision and background on the NCAP study may be found below in Section 2.2 Background.

The SSAC proposal calls for three studies investigating name collisions to be performed consecutively. Study 1 will serve as a foundation for Studies 2 and 3. This RFP covers only Study 1. However, Study 1 will provide insight in Studies 2 and 3, and an important outcome and deliverable of Study 1 is a recommendation on whether or not to proceed with Studies 2 and 3. (Study 1 might conclude, for example, that it would not be possible to obtain the data necessary to successfully complete Studies 2 and 3.)

¹ https://community.icann.org/download/attachments/79437474/NCAP_Proposal_for_Board_%28revised_by_OCTO_based_on_V2.5BTClean%29_REDACTED.pdf?api=v2

The goals of Study 1 are:

1. Production of a summary report on the topic of *name collision* that brings forth important knowledge from prior work in the area. The report will be a primer for those new to the subject. The report will be based on an examination of all relevant prior work on the issue of name collisions.
2. Creation of a list of datasets used in past name collision studies; an identification of gaps², if any; and creation of a list of additional data sets that would be required to successfully complete Studies 2 and 3.
3. A recommendation if Studies 2 and 3 should be performed based on the results of the survey of prior work and the availability of data sets.

2.2 Background

Name collision refers to the situation where a name that is defined and used in one namespace may also appear in another. Users and applications intending to use a name in one namespace may attempt to use it in a different one, and unexpected behavior may result where the intended use of the name is not the same in both namespaces. The circumstances that lead to a name collision could be accidental or malicious.

Study 1 concerns name collisions in the context of top-level domains (TLDs), where the conflicting namespaces are:

- the global Internet Domain Name System (DNS) namespace reflected in the root zone overseen by the Internet Assigned Numbers Authority (IANA) Function; and
- any other namespace, regardless of whether that other namespace is intended for use with the DNS or any other protocol.

On 2 November 2017, the ICANN Board passed resolutions ([2017.11.02.29 - 2017.11.02.31](#))³ requesting the ICANN Security and Stability Advisory Committee (SSAC) to conduct studies to present data, analysis, and points of view, and provide advice to the Board:

1. Regarding the risks posed to users and end systems if .CORP, .HOME, .MAIL strings were to be delegated in the root, as well as possible courses of action that might mitigate the identified risks.
2. On a range of questions that include, but are not limited to, the following:
 - a. a proper definition for name collision and the underlying reasons why strings that manifest name collisions are so heavily used.
 - b. the role that negative answers currently returned from queries to the root for these strings play in the experience of the end user, including in the operation of existing end systems;
 - c. the harm to existing users that may occur if Collision Strings were to be delegated, including harm due to end systems no longer receiving a negative response and additional potential harm if the delegated registry accidentally or purposely exploited subsequent queries from these end systems, and any other types of harm;

² Gaps in the data refers to types, sources, specific events captured, etc., that were not used in prior work but would have been useful or even necessary for the prior work to have been comprehensive.

³ <https://www.icann.org/resources/board-material/resolutions-2017-11-02-en#2.a>

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- d. possible courses of action that might mitigate harm;
 - e. factors that affect potential success of the courses of actions to mitigate harm;
 - f. potential residual risks of delegating Collision Strings even after taking actions to mitigate harm;
 - g. suggested criteria for determining whether an undelegated string should be considered a string that manifest name collisions, (i.e.) placed in the category of a Collision String;
 - h. suggested criteria for determining whether a Collision String should not be delegated, and suggested criteria for determining how remove an undelegated string from the list of Collision Strings; and
 - i. measures to protect against intentional or unintentional creation of situations, such as queries for undelegated strings, which might cause such strings to be placed in a Collision String category, and research into risk of possible negative effects, if any, of creation of such a collision string list.

Following the Board resolution, the SSAC began project planning in December 2017 for the work necessary to address the Board's request. In January 2018, the SSAC Name Collision Analysis Project (NCAP) Work Party ("NCAP WP") was formed and prepared a plan calling for three studies. Also created was the NCAP Administration ("NCAP Admin"), a smaller group comprising the NCAP WP leadership and SSAC leadership, which guides the NCAP effort both within SSAC and in the larger ICANN community.

In June 2018, the ICANN organization's CEO, after input from the Board, assigned the ICANN org's Office of the CTO (OCTO) to be responsible for completing the NCAP studies since SSAC does not have the administrative infrastructure to undertake and manage such a large project.

In September 2018, SSAC published "SSAC Proposal for the Name Collision Analysis Project", which proposed three consecutive studies to address the Board's request. OCTO proposed minor changes to the proposal and, after discussion between SSAC and OCTO, an updated version of the proposal was published in February 2019. This updated version of the proposal is the "[SSAC proposal](#)" defined at the beginning of Section 2.1 Project Objective and referenced throughout this document.

In April 2019, the NCAP Discussion Group ("NCAP DG") was formed to allow interested members of the larger ICANN community to also participate in the NCAP project. This group consists of both the SSAC NCAP WP and any interested community members.

Because of resource constraints, OCTO is outsourcing the completion of Study 1 to a contractor; the outsourcing is the subject of this RFP. The contractor will be engaged by and report to OCTO, but will also have periodic interaction with the NCAP DG: the contractor will be able to ask questions of the NCAP DG and the NCAP DG might wish to provide information to or ask questions of the contractor. However, OCTO will be actively involved in this communications channel between the contractor and the NCAP DG to ensure that the interaction stays on topic and does not become burdensome for the contractor.

This Project Overview document augments and updates that SSAC proposal. Therefore, in the event of any conflict between the two documents, the information in this Project Overview document supersedes the SSAC proposal.

2.3 Scope of Work

2.3.1 Study Tasks

1. Review and analyze past studies and work on name collision.
 - a. The prior work to be assessed should meet at least one of the criteria below:
 - i. Peer reviewed paper
 - ii. Report/Analysis based on data
 - iii. Qualitative research on name collision experience
 - iv. Proposed or agreed technical standards
 - b. Specific prior work that meets the criteria above and should be included:
 - i. JAS^{4,5} and Interisle⁶ reports on name collision
 - ii. Two data requests to ICANN⁷
 - iii. The name collision section of the final published new gTLD Subsequent Procedures PDP report, if it is available in time⁸
 - iv. Technical presentations, including all those given at the Workshop on Root Causes and Mitigation of Name Collisions⁹
 - v. Relevant correspondence to/with ICANN on name collisions¹⁰
 - vi. Analysis of the impact of SiteFinder that meets the criteria above¹¹
2. Produce a written report from the reviewed material that:
 - a. provides an explanation of the issue,
 - b. summarizes the known (evidenced) harm of name collisions,
 - c. lists all the relevant previous work on the subject using the criteria in task 1,
 - d. documents any mitigations/actions taken so far, specifically including controlled interruption, and the technical impact of those mitigations only (no examination to be undertaken of the non-technical impacts such as resourcing or costs), and
 - e. includes any important points that should be brought forward for this project. “Important points” include but are not limited to
 - i. questions about the data used,
 - ii. the methodology applied,
 - iii. any technical gaps that should be considered, and
 - iv. any competitive or opposing recommendations that may be identified.
3. Identify datasets used in past studies and determine if those datasets are still available and any constraints there may be regarding access.
4. Identify gaps in the datasets used by previous studies, resulting in a list of additional datasets or data providers that would be necessary to successfully complete Studies 2 and 3.
5. Assess the potential availability of these additional datasets.
6. Produce a report on the results of Study 1.
7. Work with OCTO on a public consultation on the results of Study 1.

⁴ <https://www.icann.org/en/system/files/files/name-collision-mitigation-final-28oct15-en.pdf>

⁵ <https://www.icann.org/en/system/files/files/name-collision-mitigation-study-06jun14-en.pdf>

⁶ <https://www.icann.org/en/system/files/files/name-collision-02aug13-en.pdf>

⁷ See Data Request section: <https://community.icann.org/display/NGSP/4.6.3+Name+Collisions>

⁸ See <https://qnsso.icann.org/en/group-activities/active/new-gtld-subsequent-procedures>

⁹ Proceedings of the Workshop available at <http://namecollisions.net/program/index.html>

¹⁰ <https://www.icann.org/resources/pages/correspondence>

¹¹ For example, <https://www.icann.org/en/system/files/files/report-redirect-com-net-09jul04-en.pdf>

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- Evaluate and make a recommendation on how to proceed with name collision research as a result of Study 1.

2.3.2 Study Deliverables

- An Initial Report on Study 1, including
 - Report on past work on name collision (tasks 1, 2)
 - An initial list of gaps in data and additional data sets required to continue with Studies 2 and 3 (tasks 3, 4, 5)
- Final Report on Study 1, including
 - Final Report on past work on name collision (tasks 1, 2)
 - A finalized list of gaps in data and additional data sets required to continue with Studies 2 and 3 (tasks 3, 4, 5)
 - A report on the public consultation on the initial report (task 7)
 - A determination, based on the results of Study 1, if completion of Studies 2 and 3 would be possible and would accomplish the Board's request, and, if so, a recommendation on how to proceed with name collision research (task 8)

To ensure strong community engagement, the public consultation should include, but not be limited to, the ICANN regular public comment process for documents, presentations and community interactions at ICANN meetings, and meetings with the NCAP DG.

2.3.3 Inputs to the Study

As input to the study, the NCAP DG will produce a finalized definition of name collision, which is not expected to differ substantially from this provisional definition:

Name Collision Definition

Name collision refers to the situation in which a name that is used in one namespace may be used in a different namespace, where users, software, or other functions in that domain may misinterpret it.

In the context of top level domains, the term "name collision" refers to the situation in which a name that is used in the global Domain Name System (DNS) namespace defined in the root zone as published by the root zone management (RZM) partners ICANN and VeriSign (the RZM namespace) may be used in a different namespace (non-RZM), where users, software, or other functions in that domain may misinterpret it.

Scope of Inquiry for the Name Collision Analysis Project

A. In scope and subject of data studies

These are situations that fall under the high-level definition of name collision, which will be examined in depth through data analysis as part of this project.

- User Alice intentionally uses .EXAMPLE in a non-RZM context and .EXAMPLE is now delegated in the public DNS. User Alice suffers adverse impact as a result.
- User Alice unintentionally uses .EXAMPLE in a non-RZM context (for example as the result of a software behavior) and .EXAMPLE is now delegated in the public DNS. User Alice suffers adverse impact as a result.

c. Registrant Alice uses EXAMPLE as a label anywhere except as a non-RZM TLD, and relies on search list processing where the label EXAMPLE is the terminal label, as an intermediate step in that search list processing. (e.g. *User searches for dashboard.example.com by typing in dashboard.example*) .EXAMPLE is now registered in the public DNS and the search list processing behavior of Alice now changes.

B. In scope but not intended to be the subject of data studies

These are situations that fall under the high-level definition of name collision, but are not necessarily related to the introduction of new domains and are not intended to be examined through data analysis or in any other way, unless a compelling case is agreed at a later stage.

- a. Registrant Alice uses EXAMPLE.COM (or EXAMPLE.TLD where TLD is any current TLD in the public DNS) and .EXAMPLE is now registered in the public DNS. Registrant Alice now receives multiple queries as a result of search list processing of users of domains under .EXAMPLE
- b. Registrant Alice uses .EXAMPLE as a TLD in the public DNS and then lets the registration expire. Registrant Bob then registers and delegates .EXAMPLE. Traffic intended for Alice's use of .EXAMPLE is now received by Bob's use of .EXAMPLE
- c. Registrant Alice uses EXAMPLE.COM and then lets the registration expire. Registrant Bob then registers and delegates EXAMPLE.COM. Traffic intended for Alice's use of EXAMPLE.COM is now received by Bob's use of EXAMPLE.COM

C. Out of scope

These are situations that some may regard as falling under the high level definition of name collision, while others may disagree. For the avoidance of doubt these are specifically listed as out of scope for this project.

- a. Registrant Alice uses .EXAMPLE as a TLD in the public DNS. Registrant Bob registers and delegates .EHAMPLE as a TLD in the public DNS. Alice now receives **bit flip** traffic intended for Bob and vice versa.
- b. General IDN confusion issues

3 High Level Selection Criteria

The decision to select a provider as an outcome of this RFP will be based on, but not limited to, the following selection criteria:

1. Capability, experience, trust and reliability, including qualifications and availability of key personnel
2. Demonstrated understanding of the scope of work, including required deliverables
3. Proposed approach to the work including timeframe for completion
4. Quality of similar prior work
5. Responsiveness and flexibility to work with ICANN-specific requirements, agreement terms, etc.
6. Financial value / pricing
7. Reference checks
8. Mitigation of any conflicts of interest

4 Business Requirements

Contractor must be able to perform the work outlined in Section 2 Statement of Work.

A summary of the requirements is as follows:

1. Provide a complete response based on ICANN specifications by the designated due date.
2. Participate in finalist presentations via conference call/remote participation.
3. Execute a professional services agreement substantially in accordance with the terms and conditions of ICANN's Contractor Consulting Agreement (contact ICANN staff for copy).
4. Possess the subject matter expertise and in-depth technical skills required to understand, analyze and write about the subject of name collisions.
5. Produce a final NCAP Study 1 report meeting all the requirements as described in the Scope of Work (SoW) in the Project Overview document.
6. Complete all deliverables within a six-month timeframe.
7. Provide bi-weekly status updates via phone/email/meeting, as appropriate. Contractor must be able to accommodate bi-weekly status meetings with key personnel during business hours in Eastern Time Zone.
8. Communicate (verbally and in writing) in English.

5 Project Timeline

The following dates have been established as milestones for this RFP. ICANN reserves the right to modify or change this timeline at any time as necessary.

Activity	Estimated Dates
RFP published	July 9, 2019
Participants to indicate interest in submitting RFP proposal	July 15, 2019 by 23:59 UTC
Participants submit any questions to ICANN	July 17, 2019 by 23:59 UTC
ICANN responds to participant questions	July 24, 2019
Participant proposals due by	July 30, 2019 by 23:59 UTC
Evaluation of responses (estimated)	August 16, 2019
Vendor contracting and award (estimated)	September 3, 2019

6 Terms and Conditions

General Terms and Conditions

1. Submission of a proposal shall constitute Respondent's acknowledgment and acceptance of all the specifications, requirements and terms and conditions in this RFP.
2. All costs of preparing and submitting its proposal, responding to or providing any other assistance to ICANN in connection with this RFP will be borne by the Respondent.
3. All submitted proposals including any supporting materials or documentation will become the property of ICANN. If Respondent's proposal contains any proprietary information that should not be disclosed or used by ICANN other than for the purposes of evaluating the proposal, that information should be marked with appropriate confidentiality markings.

Discrepancies, Omissions and Additional Information

1. Respondent is responsible for examining this RFP and all addenda. Failure to do so will be at the sole risk of Respondent. Should Respondent find discrepancies, omissions, unclear or ambiguous intent or meaning, or should any question arise concerning this RFP, Respondent must notify ICANN of such findings immediately in writing via e-mail no later than ten (10) days prior to the deadline for bid submissions. Should such matters remain unresolved by ICANN, in writing, prior to Respondent's preparation of its proposal, such matters must be addressed in Respondent's proposal.
2. ICANN is not responsible for oral statements made by its employees, agents, or representatives concerning this RFP. If Respondent requires additional information, Respondent must request that the issuer of this RFP furnish such information in writing.
3. A Respondent's proposal is presumed to represent its best efforts to respond to the RFP. Any significant inconsistency, if unexplained, raises a fundamental issue of the Respondent's understanding of the nature and scope of the work required and of its ability to perform the contract as proposed and may be cause for rejection of the proposal. The burden of proof as to cost credibility rests with the Respondent.
4. If necessary, supplemental information to this RFP will be provided to all prospective Respondents receiving this RFP. All supplemental information issued by ICANN will form part of this RFP. ICANN is not responsible for any failure by prospective Respondents to receive supplemental information.

Assessment and Award

1. ICANN reserves the right, without penalty and at its discretion, to accept or reject any proposal, withdraw this RFP, make no award, to waive or permit the correction of any informality or irregularity and to disregard any non-conforming or conditional proposal.

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2. ICANN may request a Respondent to provide further information or documentation to support Respondent's proposal and its ability to provide the products and/or services contemplated by this RFP.
 3. ICANN is not obliged to accept the lowest priced proposal. Price is only one of the determining factors for the successful award.
 4. ICANN will assess proposals based on compliant responses to the requirements set out in this RFP, responses to questions related to those requirements, any further issued clarifications (if any) and consideration of any other issues or evidence relevant to the Respondent's ability to successfully provide and implement the products and/or services contemplated by this RFP and in the best interests of ICANN.
 5. ICANN reserves the right to enter into contractual negotiations and if necessary, modify any terms and conditions of a final contract with the Respondent whose proposal offers the best value to ICANN.