

SSAC Proposal for the Name Collision Analysis Project

(Revised by ICANN Office of the CTO)



February 2019

Preface to the Revised OCTO Proposal

This document is a revision to a proposal originally produced by SSAC in September 2018 for the ICANN Board Technical Committee (BTC). The original SSAC NCAP proposal details SSAC's proposed approach for studying name collision in response to the ICANN Board's request in resolutions 2017.11.02.29 - 2017.11.02.31. The project scope is envisioned to comprise three studies (known as Studies 1, 2 and 3), workshops, ICANN meeting sessions, community input tracking and evaluation, and production of reports.

In October 2018 the BTC asked for OCTO's assessment of the NCAP proposal, which OCTO provided on 27 November 2018. Subsequently, OCTO and SSAC had discussions that provided additional information and further clarification to OCTO on the details of the proposal.

OCTO provided its assessment on all three studies that comprise the NCAP proposal. In that assessment, OCTO expressed concerns about the scope of Study 1, that the goals of Studies 2 and 3 might not be achievable, and that the overall project might not ultimately provide the necessary information to the Board to make decisions on whether or not a TLD is a "collision string" and can be safely delegated. OCTO also noted the high cost and long duration of the overall project.

Study 1 is focused on performing a survey of all the research that has been undertaken in the area of name collision since 2014 and evaluating if this work could meet, or assist in meeting, the objectives set out in the Board resolutions. The study includes a decision on if the project should proceed based on the results of the survey and the availability of data necessary to perform Studies 2 and 3. Study 1 also calls for creating a data repository and associated policies and processes to store data necessary for use in subsequent studies. According to SSAC, the creation of the data repository and the rules governing its use were included in Study 1 to parallelize the project by laying the groundwork for Studies 2 and 3 while Study 1 was in progress.

OCTO concurs that a survey and summary of previous research on name collisions would be valuable, and that Study 1 should include a decision point on whether or not to continue with Studies 2 and 3. However, OCTO believes that the data repository should not be included in Study 1 because it is not necessary to complete the primary goals of the study and could represent unnecessary and wasted effort if the Board decides not to proceed with Studies 2 and 3. As such, OCTO believes that the scope of Study 1 should be refined to eliminate the data repository and its associated policy development.

This document is a revised version of the original NCAP proposal with the following changes:

- Study 1 is reduced in scope (and therefore also cost and duration) by removing the creation of the data repository and deferring this work to Study 2. Not all work with data sets is deferred, however: an analysis of available data and what gaps would remain if that data were procured is still performed. The length of Study 1 is reduced by three weeks and the cost reduced by [CONFIDENTIAL FINANCIAL INFORMATION REDACTED].

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- Study 2 is unchanged except for the addition of the creation of the data repository and associated policies and code, which is estimated to add six weeks and increase the cost of Study 2 by CONFIDENTIAL FINANCIAL INFORMATION REDACTED].
- Study 3 is unchanged from the original proposal.

The rest of this document is the original SSAC NCAP proposal with revisions only to the sections related to the scope, deliverables and cost of Studies 1 and 2 as described above. Sections with revised text are clearly marked. Unless otherwise noted, other text from the original proposal remains unchanged.

Preface to the Original SSAC Proposal

This project proposal has been prepared by the ICANN Security and Stability Advisory Committee (SSAC) and details its approach for studying name collision in response to the ICANN Board's request in resolutions 2017.11.02.29 - 2017.11.02.31.

The SSAC expects a final project proposal, taking account of public comments, will be ready for Board approval in October 2018.

The SSAC focuses on matters relating to the security and integrity of the Internet's naming and address allocation systems. This includes operational matters (e.g., pertaining to the correct and reliable operation of the root zone publication system), administrative matters (e.g., pertaining to address allocation and Internet number assignment), and registration matters (e.g., pertaining to registry and registrar services). SSAC engages in ongoing threat assessment and risk analysis of the Internet naming and address allocation services to assess where the principal threats to stability and security lie and advises the ICANN community accordingly. The SSAC has no authority to regulate, enforce, or adjudicate. Those functions belong to other parties, and the advice offered here should be evaluated on its merits.

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1 Introduction

On 2 November 2017, the ICANN Board passed resolutions (2017.11.02.29 - 2017.11.02.31) requesting the ICANN Security and Stability Advisory Committee (SSAC) to conduct studies to present data, analysis, and points of view on .CORP, .HOME, and .MAIL (C/H/M) and other Collision Strings. In the resolution, the Board also requested the SSAC to do the work in a timely and organized fashion, with adequate visibility on costs and schedule, which shall be subject to review and approval by the Board.

Following the Board resolution, the SSAC initiated the project planning in December 2017. In January 2018, the SSAC Name Collision Analysis Project (NCAP) Work Party was formed. It has been meeting weekly to discuss and prepare the project plan.

In February 2018 the SSAC delivered its initial version or “snapshot” of a proposal to the Board in response to the resolutions of February 2018.

After considering the proposal the Board Technical Committee requested an Administrative review of the proposal in May 2018. This review concluded that “The issues identified in this report include some serious shortcomings which would significantly increase the risks associated with the project and should be corrected prior to its approval.”

At the ICANN 62 meeting in June 2018 the Board identified OCTO as being responsible for the project since SSAC does not have the administrative infrastructure to undertake and manage such a project within the ICANN organization.

The NCAP Admin. has been working diligently since July 2018 to review the proposal to address all the issues raised in the Administrative Review. This proposal represents a complete project proposal for NCAP which is being submitted by SSAC and OCTO in response to the Board resolutions of November 2017.

2 Background

2.1 Terminology

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 actually 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. In the context of top-level domains (TLDs), the conflicting namespaces are the global Internet Domain Name System (DNS) namespace reflected in the root zone as published by the Root Zone Management Partners and any other namespace, regardless of whether that

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other namespace is intended for use with the DNS or any other protocol. Definitions of other terms will be added as the project progresses.

2.2 Board's Request

In resolutions (2017.11.02.29 - 2017.11.02.31) the Board requests the 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;
 - 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.

In addition, the Board requests that:

1. the SSAC conduct the study in a thorough and inclusive manner that includes technical experts (such as members of IETF working groups, technical members of the GNSO, and other technologists); and
2. the SSAC conduct the study in a timely and organized fashion, with adequate visibility on costs and schedule, which shall be subject to review and approval by

the Board.

3 Project Proposal

In this section, the SSAC provides the following proposal for the Board's consideration and for the information of the ICANN Community and other interested parties. The proposal has eight subsections: project team, project scope and deliverables, project timeline, project cost, project communications, project procurement, project risk management, and conflict of interest discussion.

It is important at this point to position this proposal vs some of the other major studies on name collision that were funded by ICANN. The Interisle Study (August 2013) and JAS Report (June 2014) were done before the delegation of new gTLDs and with informed consideration of what collision events might happen. The conditions today are significantly different from when those studies were undertaken since there are now a vast number of additional TLDs in the root.

Given ICANN has not been involved in any other studies on name collision since the above mentioned ones the first part of this project, Study 1, is focused on performing a survey of all the research which has been undertaken in the area of name collision since 2014 and evaluate if this work could meet, or assist in meeting, the objectives set out in the Board resolutions. Once this is completed Study 1 will decide if the project should proceed based on the results of the survey and the availability of data.

If the project proceeds it will undertake the work necessary to respond to the Board resolutions in a thorough, inclusive and timely manner.

3.1 Project Teams

As part of the resolution, the Board requests that the studies be conducted in a thorough and inclusive manner that includes technical experts (such as members of IETF working groups, technical members of the GNSO, and other technologists). To fulfill this requirement, several teams are identified to perform the work of the NCAP.

SSAC NCAP Work Party ("NCAP WP" or "WP") will be the primary team for overseeing the work and responsible for all deliverables from the project to the Board.

- **Purpose:** The WP will study the name collision issues requested by the Board resolution. To inform its analysis and deliberation, it will arrange through OCTO to contract independent third parties to assist in the data collection, analysis, and modeling of name collision and mitigation methods.
- **Membership:** Membership of the NCAP WP will start with volunteers from the current members of the SSAC. Membership will be extended to non-SSAC technical experts (SSAC Invited Guests) by invitation from the NCAP WP with a set of criteria determined by the WP. Membership for the NCAP WP will be limited to about 30 experts. Contracting and engagement of independent third parties will be performed through OCTO using ICANN' standard procurement process.

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- **Chair:** The SSAC Administrative Committee has appointed two interim Chair(s) to lead the preparation of the project until the Work Party is fully formed (with external experts) and able to appoint its Chair(s).
- **Criteria to Invite Experts:** Details are to be determined by the WP. At a minimum, an invited expert (Invited Guest) is expected to have contributed to related work in the past or to the current work on name collision through the opportunities provided to the public and will be expected to also meet significant COI requirements.
- **Working Methods:** The NCAP WP will follow existing well-established processes for SSAC work parties, including but not limited to the ability to handle confidential materials and invite external experts to be members (Invited Guests). According to those processes, the NCAP WP will determine and publish its working methods for its email group list(s) and its meetings. Since there may be confidential materials made available to the WP, it is likely that some of its work will need to be conducted on a closed email group list and in closed meetings. Open meetings where the public may participate and contribute to the work will be scheduled at least at every ICANN meeting.

NCAP Discussion Group (“NCAP DG” or “DG”) is an open public group dedicated as a discussion forum on name collision issues pertaining to NCAP.

- **Purpose:** The DG is provided as one of the methods by which the community may engage with the WP and make contributions for consideration by the WP.
- **Membership:** All members of the WP will be part of the NCAP DG. In addition, anyone can join this group and there is no limit placed on the size of its membership. Similarly, to WP members, non-WP members of the DG will be expected to complete a SOI declaration which will be reviewed and approved prior to being allowed to join the group.
- **Working Methods:** Members of the NCAP DG can share any data, analysis, and viewpoints on the study on its list. The NCAP WP will share its latest work products with the DG and solicit feedback on its draft work from the DG

The SSAC Admin Committee or NCAP Admin Committee (NCAP Admin.) is a monitors project progress and serves as the escalation point for the NCAP WP.

The Office of the Chief Technology Officer (OCTO) will be the ICANN group who will be responsible for the administration of the project and will also contribute resources and expertise to the project. It will make resources available for project management, legal, secretariat, technical writing and meeting support.

To enhance transparency and in accordance with ICANN standard practice, all members of the NCAP WP, the NCAP DG and the SSAC Admin Committee will be requested to submit a Statement of Interests (SOI), based on the ICANN standard SOI with additional specific questions relevant to this project.

3.2 Conflicts of Interest

The SSAC recognizes that the risks around conflicts of interest are potentially higher for this project than many other projects that SSAC undertakes. The SSAC has a detailed and well-established process for managing conflicts of interest in its Operational Procedures that will be used for this project.

- All members of the NCAP WP, the NCAP DG, the SSAC Admin Committee, and potential Invited Guests and contractors will be required to fill out a detailed statement of interest declaration.
- This declaration will ask specific questions, including about any financial relationships that may exist.
- Any conflicted SSAC members will be expected to recuse themselves and the declarations will be reviewed by the SSAC Admin Committee to ensure this is properly applied.
- The SSAC reserves the right to decline participation by any potential Invited Guest or contractor who has a conflict of interest.
- All members of the WP, whether SSAC members or Invited Guests may be required to sign the same NDAs and possibly other confidentiality agreements that are developed throughout this project covering the project work, access to the data and the findings produced.

SSAC wishes to specifically draw your attention to the following:

- Due to the limited expertise available in what is a complex and niche area, the SSAC Admin Committee does not plan to exclude members of the WP or their affiliated companies from bidding for the work. However it is important to note that those members interested in bidding will be isolated from the procurement process, including the development of statements of work and costing estimates, and that the standard procurement process, including conflict of interest concerns, will be stringently adhered to.

3.3 Project Scope and Deliverables

The scope of the project answers the Board's questions in its resolutions 2017.11.02.29 - 2017.11.02.31. Currently, the project is envisioned to be composed of multiple contracted studies, workshops, ICANN meeting sessions, community input tracking and evaluation, and production of reports. These are described in detail below.

3.3.1 Study One: Understanding the Current State of Name Collisions (revised)

Name collision is not a new issue and much work has been done on it before. Past work is likely to have utility going forward for this project and so needs to be thoroughly examined and the pertinent issues brought forward. In addition, given the work that has already taken place, some people know much about this issue while others know little and so the output needs to include a means to bring the latter group up to speed quickly.

Study Goals

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1. The first goal is to examine all prior work on the issue of name collisions and produce a summary report that brings forward important knowledge from prior work into this study, and which can act as a primer for those new to the subject.
2. The second goal is to create a list of data sets used in past studies, identify gaps, if any, and list additional data that would be required to successfully complete Studies 2 and 3.
3. The third goal is to decide if the project should proceed based on the results of the survey of prior work and the availability of data.

Study Tasks

1. Properly define name collision.
2. Undertake an informal public consultation of the definition of name collision developed in task 1.
3. Review and analyze past studies and work on name collision.
4. Produce a written report that provides an explanation of the issue, lists all the previous work on the subject, any actions taken so far, and any important points that should be brought forward for this project.
5. Present the report as widely as possible to ensure strong community engagement.
6. Identify datasets used in past studies.
7. 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.
8. Assess the potential availability of these additional datasets.
9. Produce a report on the results of Study 1.
10. Undertake an informal public consultation on the results of Study 1.
11. Evaluate and recommend to the Board how to proceed with name collision research as a result of Study 1.

Study Deliverables

- Definition of name collision in the DNS
- Report on the informal public consultation on the definition of name collision
- Report on past work on name collision in the DNS
- Final report on Study 1, including:
 - A list of gaps in data and additional data sets required to continue with Studies 2 and 3
 - 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
- Report on the informal public consultation on the final report on Study 1

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Roles and Responsibilities

- SSAC provides high-level technical oversight and has final responsibility for the study.
- OCTO has responsibility to ensure that project deliverables are completed and provides day-to-day technical and management oversight. OCTO anticipates that most study deliverables will be outsourced, with RFP processes to select and engage appropriate vendors.
- Other ICANN staff will provide project management and secretariat support.

Duration

The estimated duration for the study is approximately six months.

Budget breakdown per task

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3.3.2 Study Two: Name Collision Root Cause and Impact Analysis, and Data Repository (revised)

The goals of the second study are threefold:

1. Build a data repository and develop associated policies and code (e.g., data sanitization).
2. Understand the root cause of most of the name collisions.
3. Understand the impact of any choice made regarding .CORP, .HOME, and .MAIL, including leaving them undelegated.

Study Tasks include the following:

1. Develop rules regarding any datasets collected. This will need to consider:
 - a. Anonymization of data to comply with privacy laws
 - b. Protection of data submitted under confidentiality provisions
 - c. Defining data retention policies
 - d. Determining whether instrumentation for performing the data analysis should be made available for public use
2. Develop agreement for obtaining data.
3. Create a data register which logs the source of datasets, the date or period over which the data was collected and key identifying features
4. Create a common data repository where the data can be stored and processed efficiently and, if necessary, confidentially.
5. Develop a set of guidelines for data depositors on how they can sanitize their data, removing all unnecessary information, while still allowing all the expected analysis. This may be in the form of levels of sanitization with guidelines for each level
6. Develop code to implement the data sanitization guidelines on common DNS data capture formats.
7. Gather data from past studies.
8. Confirm data gap analysis produced in Study 1 and documented in Study 1 final report
9. Define additional datasets or data providers that are needed
10. Gather new data
11. Conduct root cause analysis
12. Build a test system which can be used for impact analysis and to test possible mitigation strategies.

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13. Conduct impact analysis
14. Produce a report on the results of Study 2
15. Undertake an informal public consultation on the results of Study

Study Deliverables:

- Draft agreements for data providers
- Data Register and repository
- Guidelines for data providers
- Code for data providers to implement data sanitization guidelines
- Report on root cause analysis
- Delivery of a test system which can be used for impact analysis and to test possible mitigation strategies.
- Report on impact analysis
- Report on the results of Study 2
- Report on the informal public consultation on the results of Study 2

Estimated Time duration for this study is approximately eight months.

3.3.3 Study Three: Analysis of Mitigation Options

The goals of this third study are twofold; First is to identify all the possible mitigation options, particularly those proposed by applicants or other interested parties, and examine each in depth to assess the potential mitigation each can offer. Second is to produce guidance on the delegation of C/H/M and other strings where name collisions will occur.

Study Tasks includes the following:

1. Identify all choices that might mitigate harm for C/H/M and explore choices that might mitigate harm for other collision Strings.
2. Test or otherwise attempt to predict the outcome of proposed mitigation options
3. Identify and analyze factors that affect potential success of the courses of actions to mitigate harm
4. Identify and analyze residual risks of delegating Collision Strings even after taking actions to mitigate harm.
5. Identify 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

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6. Identify criteria for determining whether a Collision String should not be delegated, and suggested criteria for determining whether to remove an undelegated string from the list of Collision Strings
7. Identify 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.
8. Identify and analyze risks of possible negative effects, if any, of creation of such a collision string list.
9. Produce a report on the results of Study 3
10. Undertake an informal public consultation on the results of Study 3

Study Deliverables:

- Report on the results of Study 3
- Report on the informal public consultation on the results of Study 3

Estimated Time duration for this study is approximately ten months.

3.3.4 Production of a Final Report and recommendations

Production of the Final Report and recommendations will entail reviewing the results of Study 3 vs the requirements of the Board resolutions to produce recommendations on the possible delegation of .CORP, .HOME and .MAIL, and possibly others, including recommendations on mitigation options as well as general observations and recommendations with respect to name collisions.

Tasks include the following:

1. Produce draft recommendations
2. Prepare draft Report and Recommendations
3. Undertake a public consultation on the draft Report and Recommendations
4. Prepare a Final Report and Recommendations (this may entail an additional public consultation if there are significant changes vs the draft)
5. Transmit the Final Report and Recommendations (Formal SSAC Advice to the ICANN Board) to the ICANN Board and publish.

Deliverables:

- Draft Report and Recommendations
- Report on the public consultation
- Final Report and Recommendations (Formal SSAC Advice to the ICANN Board).

Estimated Time duration for this study is approximately five months.

3.3.5 Summary of Project Deliverables (revised)

- Study 1
 - Definition of name collision in the DNS
 - Report on the informal public consultation on the definition of name collision
 - Report on past work on name collision in the DNS
 - Final report on Study 1, including:
 - A list of gaps in data and additional data sets required to continue with Studies 2 and 3
 - 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
 - Report on the informal public consultation on the final report on Study 1
- Study 2
 - Data Register and repository
 - Guidelines for data providers
 - Code for data providers to implement data sanitization guidelines
 - Report on root cause analysis
 - Delivery of a test system which can be used for impact analysis and to test possible mitigation strategies.
 - Report on impact analysis
 - Report on the results of Study 2
 - Report on the informal public consultation on the results of Study 2
- Study 3
 - Report on the results of Study 3
 - Report on the informal public consultation on the results of Study 3
- Final Report and Recommendations
 - Draft Report and Recommendations
 - Report on the public consultation
 - Final Report and Recommendations (Formal SSAC Advice to the ICANN Board).

3.4 Workshops & ICANN Sessions

The NCAP WP envisions holding a one day workshop prior to each ICANN meeting to allow the WP to focus on the NCAP project and allowing the SSAC to continue its other work during the ICANN meetings.

In addition to these workshops the WP will hold a public session at each ICANN meeting to present the status of the NCAP project and engage with the community on the project.

When key milestones have been reached the WP will offer to present these at cross community sessions at ICANN meetings.

3.5 Project Timeline

Note: This section is unchanged from the original SSAC proposal and the timeline is therefore now out of date. OCTO opted not to revise this section rather than delete it.

The Board has requested SSAC to conduct these studies in a timely and organized fashion. While noting the duration of each task in full, opportunities for early starts and overlaps have been considered to optimize the total duration of the project. The critical path of the project is primarily defined by the sequential tasks of the studies that have dependencies on earlier studies. The project duration from project kick-off is about two years and three months

The project kick-off is assumed to be in November 2018. The project start is dependent on the Board approval and allocation of resources by ICANN organization..

The timeline summary view of the project is provided in the figure below.

Timeline - Summary View									
Q42018	Q12019	Q2-2019	Q3-2019	Q4-2019	Q1-2020	Q2-2020	Q3-2020	Q4-2020	Q1-2021
	Study 1		Study 2			Study 3		Final Report	

3.6 Project Cost (revised)

The project cost is estimated at this time to be [CONFIDENTIAL FINANCIAL INFORMATION REDACTED] over 3 fiscal years. Costs are in three major parts: contracted studies, travel cost for workshops and ICANN meetings, and project support cost.

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Project Support cost includes secretariat support, technical writer and project management.

3.7 Project Communications

The project will be conducted in a thorough and inclusive manner, with adequate visibility. At a high level, the SSAC intends to meet these requirements in the following ways:

- Public consultation and feedback will be sought on the Project Plan, study methodology, study findings, analysis, and recommendations, throughout the project.
- A community wiki page will be used to communicate project background, plans, status, calls for inputs, and FAQs. This will be the project home workspace facing the public. An NCAP Data Submission Proforma will be available on this page for formal inputs. The project wiki page will be located under the “Projects” tab and titled “NCAP.” <https://community.icann.org/category/prj>
- The WP welcomes both formal and informal inputs throughout the project from anyone, at any time, in person or remotely. All formal inputs will be tracked and responded to by the WP.
- The Discussion Emailing List (ncap-discuss@icann.org) will be created to facilitate sharing of data, suggestions, coordination, and discussion. This email list will be open to any interested person to join upon submission of an NCAP SOI in accordance with standard ICANN procedure.
- The WP will produce summaries of activities to be reported out by the SSAC as part of its ordinary reporting and newsletters for the ICANN community.
- Public sessions will be held at every ICANN meeting to update the community on project progress. The work party meetings will also be open to the public at ICANN meetings.
- Public announcements will be made on ICANN.org for key project milestones.
- Project financial reporting will follow PCST guidelines and will be published on the NCAP wiki.

3.8 Project Procurement

- The NCAP plans to procure study services for all three studies. The procurement will be via OCTO using ICANN’ standard procurement process.
- Due to the limited expertise available, NCAP plans not to exclude members of the WP or their affiliated companies from bidding for the work but will ensure there is no conflict of interest issues as defined in the standard ICANN procurement process.
- Evaluation criteria for qualification for the work will be publically made available at the time of the RFP.

3.9 Project Risk Management

The NCAP WP has identified the following set of risks. At this stage, they are recorded with a simplified methodology that will be expanded as needed. In particular, no mitigations are presented at this stage and the risk is rated atomically rather than using a more detailed combination of likelihood and impact. The NCAP WP notes that some of these are sufficiently highly rated that they render problematic any estimates of timelines or budgets to complete this research.

The NCAP WP and the SSAC Admin Committee will monitor the activities and progress of the NCAP WP to identify additional risks and consider mitigation steps throughout the project.

Risk	Triggers	Rating
The WP may not be able to produce any useful and/or authoritative output (Note - this is the top-level risk under which all other risks are listed as triggers)	<ol style="list-style-type: none"> 1. Insufficient data is made available for the studies. 2. The degree of active testing required is not possible. 3. The output of the WP has low credibility within the ICANN Community. 4. The scope of the project has been seriously underestimated. 5. A serious problem develops with the management of the project. 	High
Insufficient data is made available for the studies	<ol style="list-style-type: none"> 1. 	High
The degree of active testing required may not be possible	<ol style="list-style-type: none"> 1. Legal concerns that certain forms of active testing are unacceptable due to perceived risk of negative impact may exclude those from the studies. 2. A precedent for an unwillingness to sanction certain forms of active testing 	High

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	<p>may have been set by ICANN Org with the introduction of Controlled Interruption rather than other forms of active testing recommended by the ICANN Community.</p>	
<p>The scope of the project has been seriously underestimated</p>	<ol style="list-style-type: none"> 1. The production of an upfront plan when so much of the project is not yet understood leads to a significant degree of estimation, which may contain several errors. 2. The nature of this series of studies is largely dependent upon what is found in earlier steps. Results of examination of data from known sources and those volunteered by new ones are likely to present new areas for exploration. That makes estimating subsequent work a best estimate based on experience working on complex projects. Thus, the estimates for project scope, timelines, and costs may diverge significantly in later stages. 	<p>High</p>
<p>A serious problem develops with the management of the project</p>	<ol style="list-style-type: none"> 1. SSAC has never managed or overseen a process and project of this scale, and complexity, and dimensions outside our areas of expertise, such as the legal issues around data sharing. 2. Even with good management and highly skilled contractors, many factors are simply outside of our control. 3. The ongoing availability of WP members to devote effort and enthusiasm as volunteers to this project is not guaranteed and there may be changes in the WP membership and leadership throughout its duration, impacting on project continuity. 	<p>High</p>

4 Comparing the Proposal Against the Board's Requirements

4.1 Fulfillment of Board's Overall Requirement

In resolutions 2017.11.02.29 - 2017.11.02.31, the Board requested that the SSAC conduct the study in a thorough and inclusive manner that includes technical experts (such as members of IETF working groups, technical members of the GNSO, and other technologists). In addition, the SSAC should conduct the study in a timely and organized

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fashion, with adequate visibility on costs and schedule, which shall be subject to review and approval by the Board.

The SSAC interprets the five overall requirements of the Board are for the Project to be: thorough, inclusive, timely, organized, and transparent. In this section, we describe our understanding of these requirements, and how SSAC plans to meet them.

4.1.1 Thorough

The SSAC understands the thoroughness requirement to mean that the work be done with great care and attention to detail.

The SSAC's proposed work meets the thoroughness criterion in the following way:

- The three studies ensure that the name collision issues are considered in a thorough and methodical manner.
- Additional inputs taken through public workshops and individual contribution submissions ensure that additional and relevant input is considered in the deliberation.

In addition, the collection of facts, perspectives and analyses are to be presented clearly. Both findings and recommendations will be based on clear lines of reasoning. Opinions and subjective judgments, if included, will be identified carefully.

4.1.2 Inclusive

The SSAC understands that "inclusive" means that all points of view are welcome. Proponents from the GNSO, ALAC, IETF, OCTO and the Board's Technical Committee are welcome, encouraged to contribute and will be given adequate time to present viewpoints and data.

The SSAC's proposal meets the inclusiveness criterion in the following way:

- The NCAP WP is inclusive in the sense that experts that have contributed to related work in the past on name collision or to the current work through the opportunities provided to the public may be invited to join.
- The NCAP discussion group is inclusive in the sense that anyone with an interest in name collision may participate.
- The NCAP WP will hold public meetings at every ICANN meeting so that anyone with an interest may participate.

4.1.3 Timely

The SSAC's proposal meets the timeliness criterion in the following way:

- The SSAC has identified opportunities to overlap tasks as much as possible while not allowing the quality of the work and research to suffer. All the non-critical path tasks will be run in parallel.

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4.1.4 Organized

The SSAC's proposed work is to be done with a methodical approach using widely accepted project management practices, involving subject matter experts at clearly planned and identified points in the schedule, seeking regular input and feedback from the community, and is supported by qualified project support staff. The procurement follows standard ICANN procedures.

4.1.5 Transparency

The SSAC's proposal meets the transparency criterion in the following way:

- Members interests (SOIs)
- Public Wiki
- Sessions at each ICANN Meeting
- Public Consultations (informal and formal)
- Data submitted visible on (Data Submission Proforma) noting there may be some need to make provision for confidentiality
- Tracking of all formally submitted data
- Public Comment Period for Final Report
- Newsletters

4.2 Fulfilment of Board's Specific Tasks

In resolutions 2017.11.02.29 - 2017.11.02.31, the Board lists a set of specific tasks and questions to be answered. In this section we list in tabular format how each of the Board's questions are answered through the studies, the deliberations of the NCAP WP, and the deliberations at the workshop.

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		D-WP: Deliberation by NCAP WP					
		S1: Results though Study 1					
		S2: Results though Study 2					
		S3: Results though Study 3					
		D-WS: Deliberation at Workshops					
		Comm: Consultation through Communication Plan					
	Board's requirements	D-WP	S1	S2	S3	D-WS	Comm
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 choices that might mitigate the identified risks.	x		x	x	x	x
2	a proper definition for name collision and the underlying reasons why strings that manifest name collisions are so heavily used.	x	x	x		x	x
3	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;	x		x		x	x
4	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;	x			x	x	x
5	choices that might mitigate harm;	x			x	x	x
6	factors that affect potential success of the courses of actions to mitigate harm;	x			x	x	x
7	potential residual risks of delegating Collision Strings even after taking actions to mitigate harm;	x			x	x	x
8	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;	x			x	x	x
9	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	x			x	x	x
10	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.	x			x	x	x

5 Next Steps

The next step for the project proposal is to submit it to the Board for approval and identification of a project manager. Project kick-off will be scheduled upon approval from the Board and allocation of the support resources by the ICANN org.

6 Acknowledgments, Disclosures of Interest, Dissents, and Withdrawals

In the interest of transparency, these sections provide the reader with information about four aspects of the SSAC process. The Acknowledgments section lists the SSAC members, outside experts, and ICANN staff who contributed directly to this document. The Disclosures of Interest section points to the biographies of all SSAC members, which disclose any interests that might represent a conflict—real, apparent, or potential—with a member’s participation in the preparation of this Report. The Dissents section provides a place for individual members to describe any disagreement that they may have with the content of this document or the process for preparing it. The Withdrawals section identifies individual members who have recused themselves from discussion of the topic with which this Report is concerned. Except for members listed in the Dissents and Withdrawals sections, this document has the consensus approval of all the members of SSAC.

6.1 Acknowledgments

The committee wishes to thank the following SSAC members and external experts for their time, contributions, and review in producing this proposal.

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6.2 Statements of Interest

SSAC member biographical information and Disclosures of Interest are available at:
<https://www.icann.org/resources/pages/ssac-biographies-2016-05-31-en>.

NCAP Statements of Interest for Work Party Members are available at: <TBD>

NCAP Statements of Interest for NCAP Discussion Group Members are available at:
<TBD>

NCAP Statements of Interest associated with NCAP Data Submission Proformas are available at: <TBD>

6.3 Dissents

There were no dissents.

6.4 Withdrawals

There were no withdrawals.