



ICANN

COMMUNITY FORUM

61

SAN JUAN

10–15 March 2018

Cross-Community Session Name Collision

Hosted by Security and Stability Advisory Committee (SSAC)



ICANN 61
12 March 2018

Welcome and Introduction

Cyrus Namazi
Vice President, Global Domains
Division, ICANN

- On 2 November 2017, the ICANN Board passed a resolution requesting the SSAC to:
 - conduct studies to present data, analysis, and points of view on .CORP, .HOME, .MAIL, and other Collision Strings.
 - do the work in a thorough, inclusive, timely, organized, and transparent manner.
- Fulfilling the Board's request, the SSAC established the Name Collision Analysis Project (NCAP) and wishes to engage the community in open consultations throughout the project

Purpose of the Session

- Raise community awareness on name collision issues
- Introduce the SSAC NCAP Proposal
- Share methods for community involvement in the project
- Receive community input on these and other related topics

Agenda

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Background on Name Collision

David Conrad, ICANN CTO

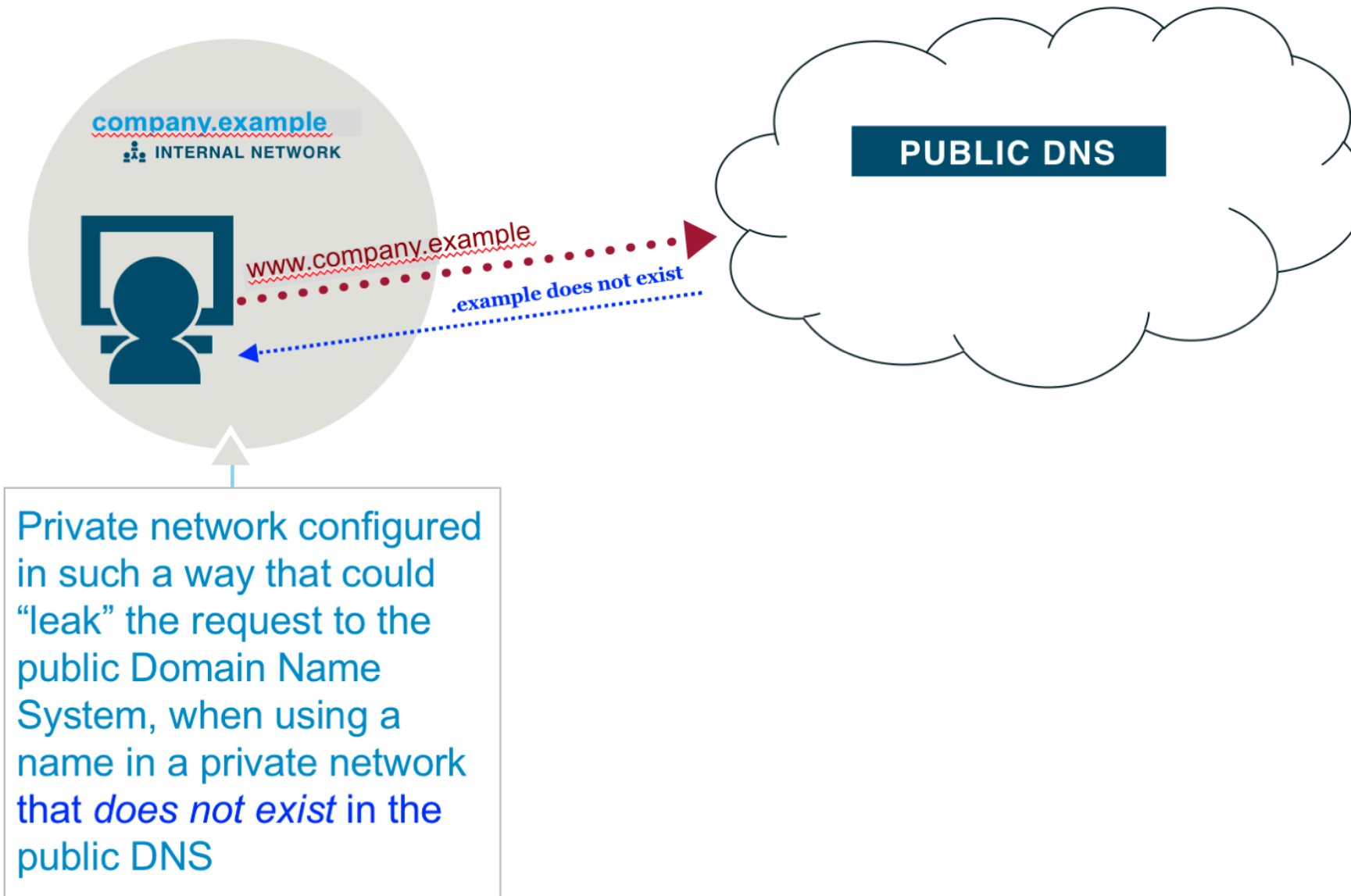
Name Collision - A Definition To Begin Discussions

- A name that is defined and used in one namespace and then appears in another; the DNS is one namespace
- Users and applications intending to use a name in one namespace may unexpectedly use it in a different one, which can result in unexpected behaviors
- Could be accidental or malicious

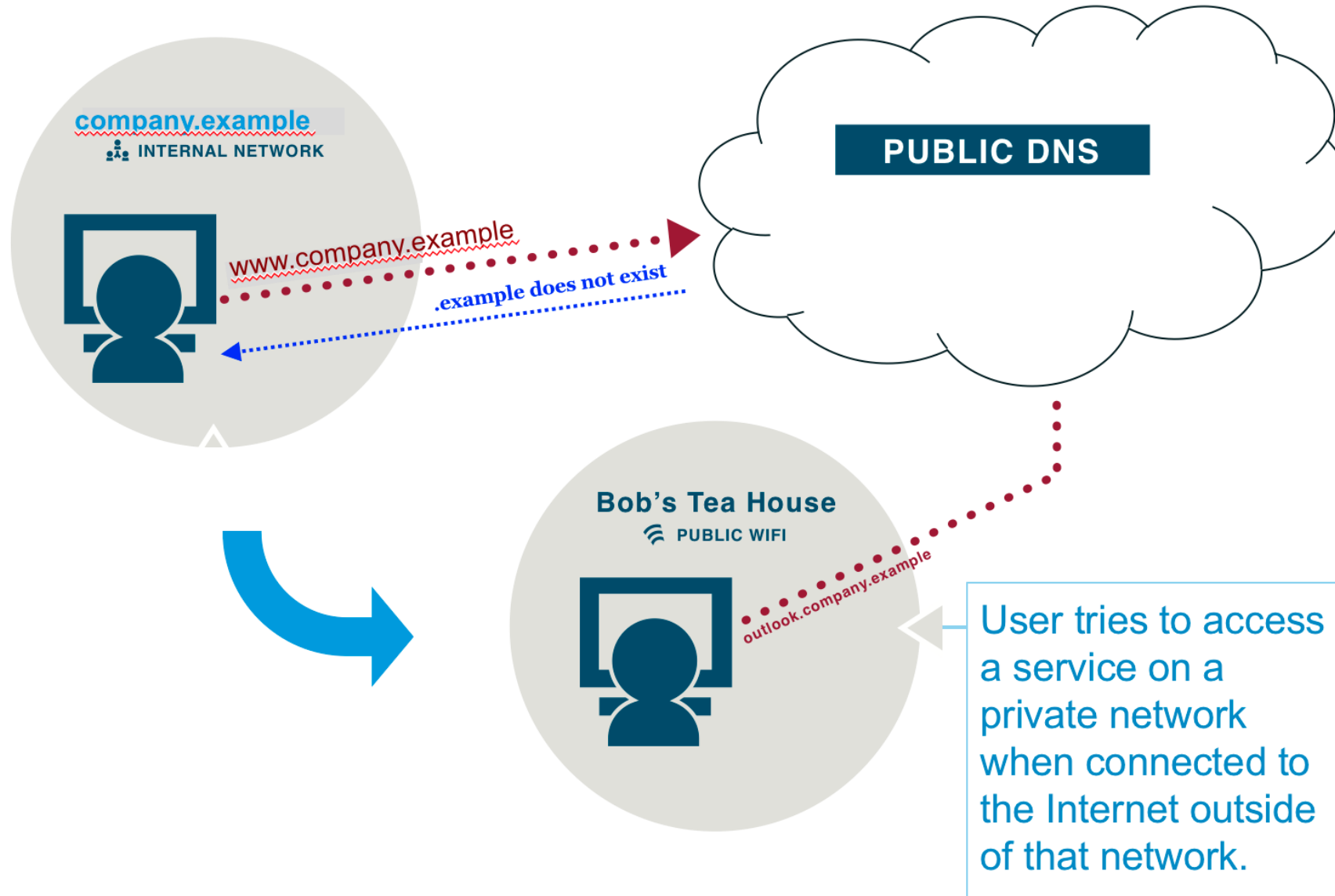
Establishing a consensus definition is a project deliverable

See: SAC062 SSAC Advisory Concerning the Mitigation of Name Collision Risk

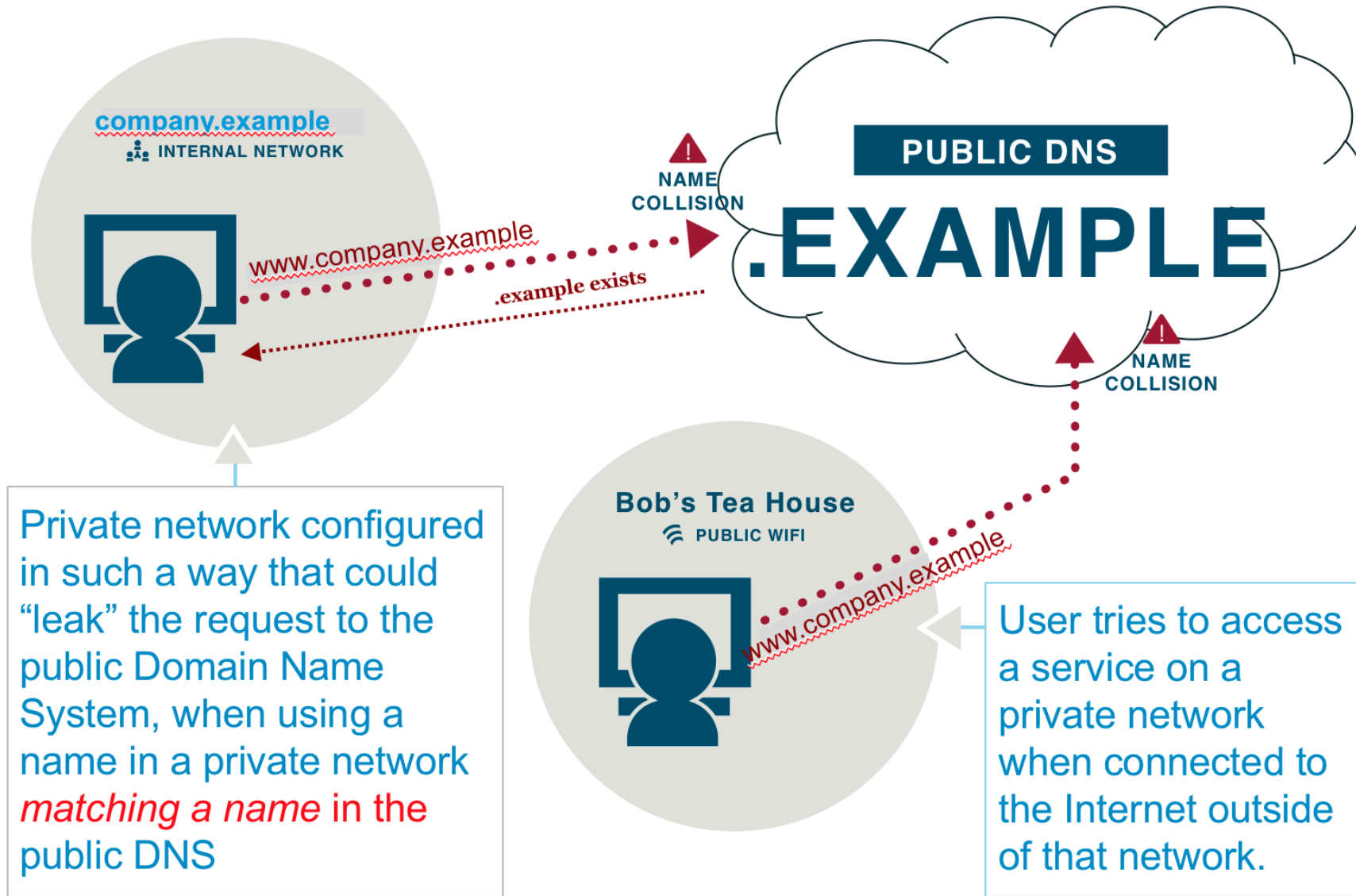
Name Collision - An illustration: Before Delegation



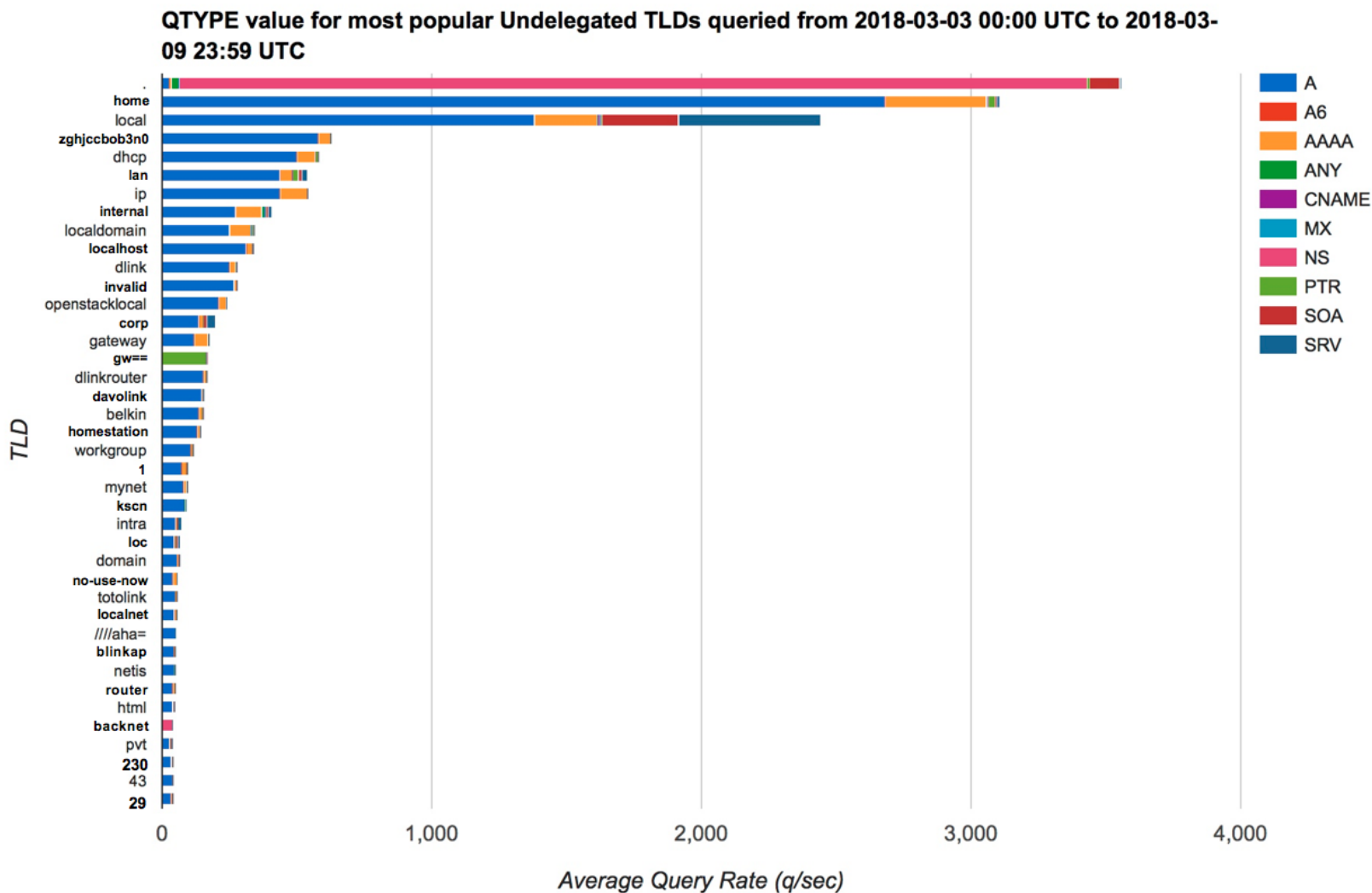
Name Collision - An illustration: Before Delegation



Name Collision - An illustration: After Delegation



Undelegated TLDs at the Root Server Operated by ICANN



Label	Month	Year
HOME	3.44%	3.64%
DHCP	0.61%	0.67%
IP	0.58%	0.59%
LAN	0.58%	0.57%
INTERNAL	0.47%	0.48%
DHCP HOST	0.47%	0.76%
LOCALDOMAIN	0.40%	0.42%
DLINK	0.32%	0.32%
OPENSTACKLOCAL	0.29%	0.38%
CORP	0.23%	0.23%
DLINKROUTER	0.21%	0.19%
DAVOLINK	0.20%	0.19%
_0x83	0.19%	0.20%
GATEWAY	0.19%	0.19%
BELKIN	0.18%	0.18%
HOMESTATION	0.15%	0.18%
MYNET	0.11%	0.06%
WORKGROUP	0.00%	0.13%
KSCN	0.00%	0.11%

Static Link http://stats.dns.icann.org/plotcache/L-Root/qtype_vs_othertld/2018-03-03T00:00-2018-03-09T23:59-all.html

Name Collision Risks

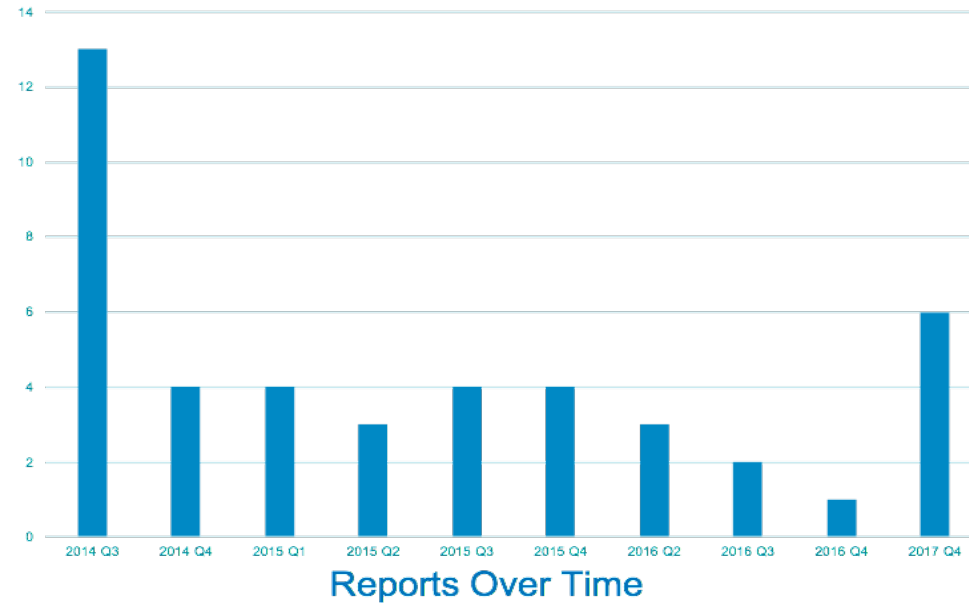
- Man-in-the-middle attacks
- Unexpected application behavior
 - Getting an answer when a “name does not exist” response is expected
 - Complicated by “DNS search lists”
 - Timing differences (slower responses)

Prior Work on Name Collisions

- Community Work
 - SAC045: Invalid Top Level Domain Queries at the Root Level of the Domain Name System
 - SAC057: SSAC Advisory on Internal Name Certificates
- ICANN Work
 - Study of Name Collision in the DNS (2013)
 - New gTLD Collision Risk Mitigation (2013)
 - Name Collision Occurrence Management Framework (2014)

Name Collision Occurrence Management Framework (2014)

- Defer delegation of .CORP, .HOME, .MAIL indefinitely
- Require registries to implement 90 days of continuous controlled interruption
- Implement Name Collision Reporting Mechanism (received 44 reports to date)



After Delegation	Number of Reports
A Day	2
A Week	+7
A Month	+10
A Quarter	+6
A Year	+6
Two Years	+3
More Than Two Years	+6

Board Resolution on Name Collision

Ram Mohan, SSAC Board Liaison

Board Request (2017.11.02.29-31)

- Board Resolution: <https://www.icann.org/resources/board-material/resolutions-2017-11-02-en#2.a>
- SSAC to conduct studies to present data, analysis and points of view, and provide advice to the Board regarding:
 - A proper definition for name collision
 - Suggested criteria for determining whether an undelegated string should be considered a string that manifests name collisions, i.e., is a “Collision String”
 - Suggested criteria for determining whether a Collision String should not be delegated
 - Suggested criteria for determining how to remove an undelegated string from the list of “Collision Strings” (aka mitigations)
- Studies to be conducted in a thorough and inclusive manner that includes technical experts (such as participants of IETF working groups, technical members of the GNSO, and other technologists)

Why is this an Issue?

- CORP, HOME, and MAIL, future strings and Controlled Interruption
 - See Board resolution for further background material
- The effect of name collisions on interoperability, resilience, security and/or stability of the DNS is not fully understood.
 - Internet users can and have been impacted, but the empirical extent and impacts are not well understood.
- Address key questions for all future proposed TLDs
 - Establish guidelines for identifying strings that might result in name collisions
 - Determine parameters for delegation risks and methods to determine whether to delegate, mitigate, or withhold
 - Establish guidelines for evaluating the efficacy of controlled interruption specifically
 - Propose other mitigation strategies, their pros and cons

SSAC Response to Board's Request

Rod Rasmussen
SSAC Chair

SSAC Response to Board's Request

- Accepted the Board request and created Name Collision Analysis Project (NCAP) with the Admin Committee as the executive sponsor
- Initiated NCAP plan and created NCAP Work Party in January 2018
- James Galvin and Patrik Fältström as the WP co-chairs
- The WP developed the proposal for public comment

SSAC Name Collision Analysis Project (NCAP) Proposal

James Galvin
Patrik Fältström
SSAC NCAP Co-chair(s)

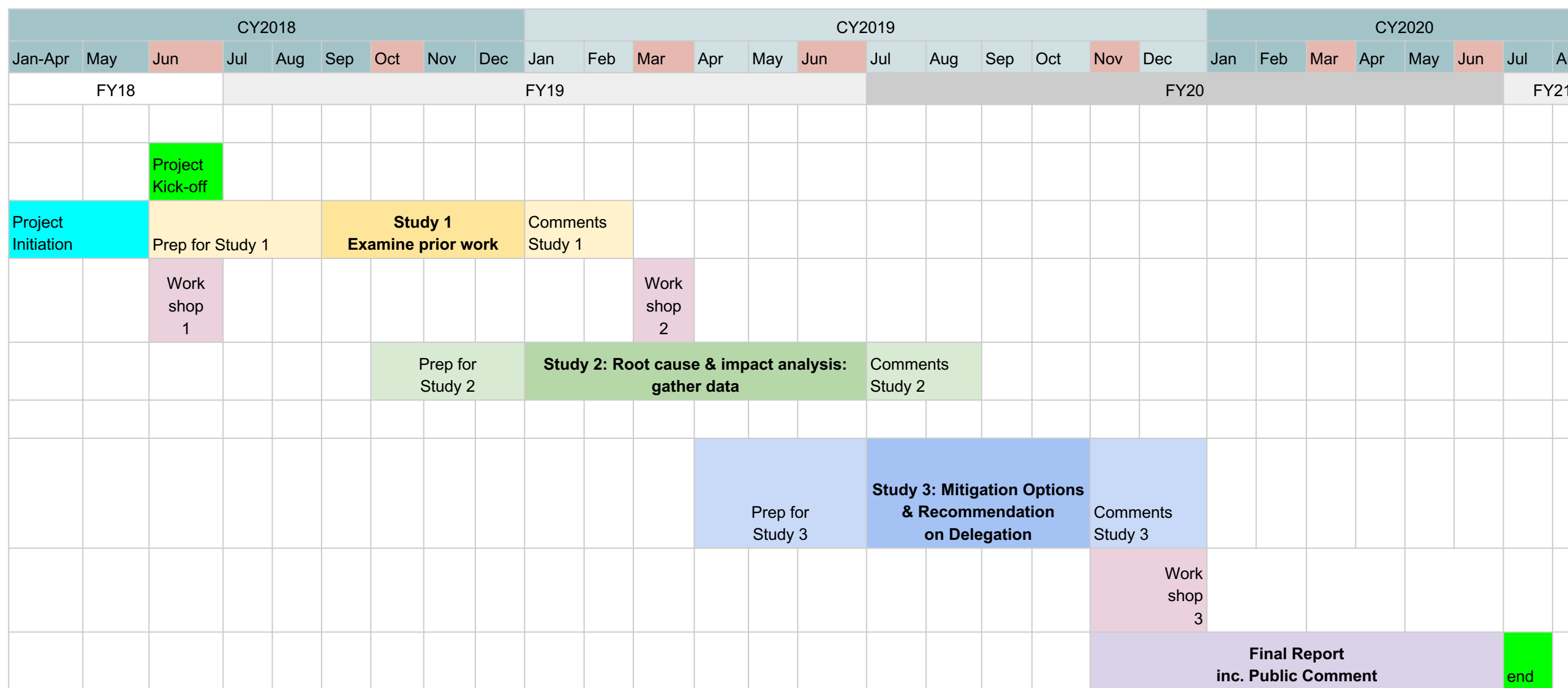
Introduction

- The proposed Name Collision Analysis Project (NCAP) project plan has been drafted by the ICANN Security and Stability Advisory Committee.
- It details their 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 proposed SSAC study is intended to inform the development of policy on Collision Strings to mitigate potential harm to the security and stability of the DNS posed by delegation of such strings.
- The SSAC seeks community input on the project plan before it is finalized and SSAC consensus is reached for submission to the Board for approval and project kick-off.
- Published for Public Comment on 2 March 2018:
<https://www.icann.org/public-comments/ncap-project-plan-2018-03-02-en>

Overall Project Structure

Project Planning/Management		
<p>Study 1</p> <p>Current State of Name Collision and Data Repository</p> <p>Examine prior work</p> <p>Build data repository for Study 2</p> <p>Primer to bring new people in</p>		Workshops (Three)
<p>Study 2</p> <p>Root Cause & Impact Analysis</p> <p>Gather data</p> <p>Build Impact analysis test system</p>		ICANN meeting sessions
<p>Study 3</p> <p>Mitigation Options &</p> <p>Recommendations on Delegation</p>		Reports
Community input tracking and evaluation		

NCAP Timeline



Scope and Deliverables

- Conduct three studies
 - Current status and prepare for data repository
 - Root cause and impact analysis
 - Analysis of mitigation options
- Draft work product from each study
 - Includes a public comment period
 - Opportunity of public contributions
- Final work product
 - Includes a public comment period

Study 1: Current Status and Prepare for Data Repository

Part 1: Analyzing previous work and producing a report

Part 2: Preparing to accept the data needed for study 2

Tasks include:

1. Properly define name collision
2. Review and analyze past studies and work on name collision
3. Develop rules regarding any datasets collected
4. Create a data register which logs the source of datasets, the date or period over which the data was collected, and key identifying features

Study 2: Root Cause and Impact Analysis

Part 1: Collecting the data for the root cause and the impact analysis

Part 2: Conducting the root cause analysis

Part 3: Building the test system for the impact analysis

Part 4: Performing the impact analysis

Tasks include conducting an impact analysis, which aims to identify:

- Name collisions - what happens for each use case under each leakage scenario and for each delegation form
- Name collision impacts - what the system making the query, that is affected by a name collision, may or may not do as a result of a name collision
- Impact sizing - Estimate the scale and severity of each name collision impact.

Study 3: Analysis of Mitigation Options

Part 1: Identification and assessment of mitigation options

Part 2: Production of recommendations regarding delegation

Tasks Include:

1. Identify possible courses of action that might mitigate harm for .CORP, .HOME, .MAIL, and other Collision Strings
2. Testing the outcome of proposed mitigation options
3. Suggest criteria for determining whether a Collision String should be delegated or not
4. Suggest measures to protect against intentional or unintentional creation of situations which might cause such strings to be placed in a Collision String category

Structure: Work Party and Discussion Group

- **NCAP Work Party**
 - 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
- **NCAP Discussion Group**
 - Open public mailing list dedicated as a discussion forum on name collision issues pertaining to the SSAC study
 - NCAP work party will be members
 - Anyone who completes a statement of interest may subscribe

Structure: Workshops and ICANN Meetings

- Three workshops
 - Engage the community
 - Solicit input for the statement of work for each of the envisioned studies
 - Brainstorm, discuss, and review the data, methodology, and results of each of the studies
- Proposed as four days each
 - 1-2 days for public engagement
 - 2-3 days of private interactions
 - First two workshops are planned to be adjunct to an ICANN meeting
- In addition to workshops, the NCAP WP plans to meet in person at each ICANN meeting with time set aside for public engagement

Structure: Individuals and Public Comments

- Contributors
 - NCAP will have a form on its community Wiki that will permit any community member to make contributions for consider by the work party
- Invited Guest
 - Work party will include Invited Guests according to SSAC's Operational Procedures
 - **Invited Guests Criteria:**
 - Details still under discussion
 - At a minimum, an invited expert is expected to have made a material contribution to related work in the past or to the current work
- Public Comment Periods

Statement of Interest

- Will adopt the accepted model used by other ICANN groups
 - “Standard” SOI with additional questions specific to NCAP
 - Objective is to be transparent about interests, actual and perceived
 - Membership will be inclusive, as is typical with PDP activities
- Statement of Interests are expected from:
 - SSAC Members - since the final work product will represent SSAC consensus advice, all members of the SSAC must complete the SOI
 - Members of the NCAP work party, including Invited Guests
 - Subscribers to the NCAP discussion group mailing list, specifically anyone with the privilege of sending messages to the list.
 - Anyone who makes a contribution for consideration
- Exempt from a statement of interest:
 - Persons who only review the public discussion group archives
 - Persons who stand up at the mic at an open, public meeting

Risks

- Insufficient data is available for the studies
- Degree of active testing required may not be possible
- The scope of the project may have been seriously underestimated
- A serious problem may develop with the project or its management
- Credibility of the work product may be a concern because of transparency, interests, methodology, or data sources

Areas to Highlight

Specific Feedback Requested

1. The proposed approach for consultation and inclusion of views and considerations from beyond the NCAP Work Party.
1. The proposed approach for providing transparency on the progress of the work
1. The proposed approach for managing Statements of Interest (SOI)
1. Any additional risks that should be considered, along with any risk mitigation strategies.

Call To Action

- Cross Community Session
 - 15:15-16:45, 12 March 2018
- NCAP Work Party Session (open to the community)
 - 8:30 - 12:00, 13 March 2018
 - Room: 101-B
- Public Comment for project plan
 - Closes on 18 April 2018
- Publish Summary and Analysis Report
- Update Project Plan and submit to the Board
- Project kick-off after receiving the Board Approval

Community Interaction

**Moderated by Cyrus Namazi
Vice President Global Domains
Division, ICANN**



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