

Statement of Work for the Development of the Name Collision Occurrence Management Framework

Contractor/Consultant: JAS Global Advisors LLC

Job Title: Contractor

Reporting to: Francisco Arias, Director, Technical Services

Dates of Performance: 1 November 2013 to 30 June 2014

Description of Tasks and Requirements:

Develop the Name Collision Occurrence Management Framework described in section 3.1 of the [Plan for New gTLD Collision Occurrence Management](#) recently approved by the ICANN Board New gTLD Program Committee. The Contractor will develop the Name Collision Occurrence Management Framework with community participation through the ICANN public comment process and in-person presentations in Buenos Aires and others, as agreed with ICANN. The framework will include appropriate parameters and processes to assess both probability and severity of impact resulting from name collision occurrences. The Framework will specify a set of name collision occurrence assessments and corresponding mitigation measures to implement per SLD under a TLD and the TLD itself, if needed. An initial draft Framework will be developed to serve as the starting point for community participation.

1. High level components of the Study

1.1. Develop a Risk Assessment Model

1.1.1. Impact of malware/adware/clickfraud tools

The DITL datasets are dominated by queries to seemingly random/algorithmically-generated strings. Aside from the well-understood “Chrome 10” strings, it may be possible that malware/adware tools generate a large majority of these additional patterns. This analysis is dependent on time and budget factors and will be completed on a “best effort” basis.

1.1.2. Analysis of Collisions in previous TLD delegations

DITL data exists prior to delegation of several generic and country code TLDs. Contractor will study and present data describing potential collisions in prior TLD delegations and seek evidence of problems that were caused to develop “case studies.”

1.1.3. Analysis of Collisions in existing TLDs

Namespace collisions exist in currently delegated TLDs. Leveraging a number of fora, contractor will specifically seek “case studies” where collisions have caused damage – ranging from minor inconveniences to significant impact – to inform

mitigation plan development. If meaningful consequences were identified, contractor will work with recursive DNS providers¹ to obtain data regarding collisions in delegated space to build a quantitative model including probability and consequence.

1.1.4. Monte Carlo Analysis

Contractor will construct models using Monte Carlo analysis² comparing the risks associated with new TLD collisions with risks that IT departments experience and manage every day such as patch deployment, hardware failures, communications link failures, meteorological events, and the like for comparison.

1.1.5. Survey Instruments

Contractor will openly solicit operational information regarding all forms of DNS namespace collisions through several quantitative survey instruments broadly distributed in several fora.

1.1.6. Develop a Taxonomy of Queries

Initial analysis indicates that the queries fall into one of several categories. Contractor will develop a defensible Taxonomy based on:

1.1.6.1. Number of DNS requests for the applied-for string:

1.1.6.1.1. As TLD

1.1.6.1.2. At 2nd-level and below

1.1.6.1.3. As dotless domain name

1.1.6.2. Type of DNS requests (e.g., dynamic update, query)

1.1.6.3. Type of DNS queries (e.g., A, AAA, MX, SRV, NAPTR)

1.1.6.4. Source of query (e.g., IP block, ASN):

1.1.6.4.1. Coming from enterprise networks

1.1.6.4.2. Coming from ISPs

¹ Recursive data may be necessary to completely analyze collisions in delegated space

² One of the most effective mechanisms to understand “tail risk” – long, low probability event chains leading to high consequence events – is Monte Carlo modeling. Monte Carlo analyses are used to help decision-makers compare long event chain risks that are not well understood with more pedestrian risks that are better understood.

1.1.6.4.3. Coming from DNS Resolver services

1.1.6.4.4. Geographic distribution

1.1.6.5. Appearances in internal name certificates

1.1.6.6. What users currently infer from the semantics of the proposed TLD string itself and/or the SLDs

1.2. Options to manage risks

1.2.1. Options to gather additional information (for example, Huston et al proposed study to assess name collisions using web ads, similar to what APNIC has done in other areas³)

1.2.2. Reserve SLD either for a period of time, or indefinitely

1.2.3. Make the SLD available to the single entity that is the sole originator of name collisions for that SLD.

1.2.4. Notify DNS requestors

1.2.5. Controlled-brokenness/honeypot with message to requestors

1.2.6. Email to requestor's Regional Internet Registry's (RIRs) point of contact

1.2.7. Request to pass the notification down the DNS query path (e.g., request ISPs to pass it to their clients)

1.2.8. Email to web-access IP address RIR's point of contact, logged by using Huston et al approach.

1.2.9. Other options that surface during the engagement

Contractor will create specific opportunities at events outside the typical ICANN sphere to present and solicit participation/feedback on these issues.

Additional SOW Terms:

The Contractor will provide periodic (at least once a week) status updates to ICANN regarding progress of the project via telecoms and management reporting.

The deliverables will be developed in an iterative fashion allowing for ICANN review. The Contractor will consider and incorporate relevant input from ICANN and ICANN community (where requested) into the documents.

³ <http://tools.ietf.org/html/draft-kolkman-root-test-delegation>

The Contractor will have available for this work, experts with at least the following skill sets: DNS, knowledge of various Internet protocols (e.g., SMTP, HTTP, XMPP), Security, Risk management, Data analysis, and Statistics.

Other tasks as mutually agreed.

Deliverables, Fees, and Expenses: All fees are in US Dollars and are to be invoiced to ICANN according to the deliverable-fee table below, upon ICANN approval of the related deliverable as specified above. Invoices will be payable 30 days after ICANN's receipt.

Deliverable	Target Delivery	Fee (USD)
D1. First draft of presentation materials for Buenos Aires to include 2-3 page briefing paper and slides (public) for ICANN comment including a timeline for the development of the framework	12 November 2013	
D2. Second draft of presentation materials for Buenos Aires	15 November 2013	
D3. First complete draft of the Name Collision Occurrence Management Framework for ICANN comment	20 December 2013	
D4. Second draft of the Name Collision Occurrence Management Framework for Public comment	6 January 2014	
D5. Third draft of the Name Collision Occurrence Management Framework incorporating public comment input	10 US business days after public comment ends	
D6. Final Name Collision Occurrence Management Framework	5 US business days after D5	

ICANN will pay for reasonable, documented expenses actually incurred in providing the services under this agreement, provided that expenses individually in excess of US\$250.00 shall be approved in writing in advance and follow all existing ICANN expense policies.

Other:

In light of the nature of services and confidential information involved in this project, Contractor agrees that it will only involve the services of team members approved by ICANN (the "Project Team"). No other individuals will be engaged on this project or have access to the confidential information provided by ICANN relating to this matter. ICANN will have the right of approval before any other persons are involved in the project, and a delay on ICANN's part or failure to approve additional persons by ICANN will not be a breach of this agreement.

Any and all ICANN property provided to Contractor for use during the pendency of the Agreement, including, but not limited to, keys, parking card(s), security card(s), computers and related equipment, documents and copies, cell phone(s) and related equipment, and client contact information, shall be returned by Contractor to ICANN on or before the final date of performance under this Agreement.

ICANN acknowledges that the DITL datasets are maintained and controlled by The DNS Operations, Analysis, and Research Center (DNS-OARC). Analysis of these datasets will be performed by Contractor pursuant to a Membership Agreement between Contractor and DNS-OARC. Pursuant to that Agreement, DITL data must remain resident on DNS-OARC equipment and cannot be removed, duplicated, or replicated onto any outside machine. Contractor notes that the DNS-OARC technical infrastructure is currently undergoing significant churn and technical operations are only recently being professionalized. As such, performance limitations, periods of unavailability, data loss, and other factors impacting DNS-OARC equipment and data are out of Contractor's control and may materially impact contracted timelines. Additionally, research based on the DNS-OARC datasets is subject to review and approval by the DNS-OARC Board of Directors prior to publication.

ICANN acknowledges that gTLD Applicants are involved in DNS-OARC research and Contractor frequently communicates and collaborates with Applicants in this context.