KIMBERLY CARLSON: Hi and welcome to today's NCAP Discussion Group call on July 15th at 19:00 UTC.

In the interest of time, there will be no roll call. Attendance will be taken based on those on Zoom. Kathy and I will update the wiki with the names of the participants as quickly as possible and we'll put the link in the chat. We have apologies from Barry Leiba and Rod Rasmussen. All calls are recorded and transcribed, and the recording and transcripts will be published on the public wiki. And as a reminder, to avoid background noise and echoing, please mute your phones and microphones when not speaking. With that, I'll turn the call back over to you, Matt, thank you.

MATTHEW THOMAS: Thank you so much for that, Kim. And good afternoon, everyone, welcome to our weekly NCAP Discussion Group call. We took a little break last time so the NCAP Admin could do a little bit more working on the mapping of the Board questions specifically to the tasks on Study 2, which I think we're going to cover today.

But going down the regular agenda, does anyone at this time have any updates to their SOIs? I see no hands so I consider that a no. We don't have any new members this week. That's okay.

Going into the next thing, the final work product update. As you all know, the Study 1 final report went out for comment and I think the Staff report has been published. Matt Larson, if you don't mind, if you

could take a few minutes and just kind of update the group with what was published in the commentary and Staff report and where the report is now and any kind of other details that ICANN OCTO plans on providing in conjunction with the report out. We'd greatly appreciate it, if you don't mind.

MATT LARSON: Sure. Thanks, Matt. So we did have the final public comment. There were not a lot of comments. And of the comments that we received, none called for any material changes to the study. So that's basically what the Public Comment report says.

We did send Study 1 to the Board Technical Committee on June 30, so I had been committing to that date all along. So I was pleased we managed to squeak it in and get it to them by the time we committed to. OCTO did write a Board paper to accompany the study when we sent it to the BTC. That will eventually be public, but it's not public yet, it doesn't have an official number. So that's why I haven't forwarded it to the group. I didn't want to put the cart before the horse, but it will be public, just as all other Board material is public. I would say there's nothing unexpected in it. It can be summarized that OCTO is in substantial agreement with Karen's report. That's really what it boils down to.

We suggested that the BTC suggest to the Board that they consider – you know what, let me just read from the final paragraph of this document. That's probably easiest. So it's "OCTO recommends that the BTC suggest that the Board consider seeking input from the community

on any revised proposal for possible Studies 2 and 3. OCTO recommends that the BTC consider recommending to the Board that any updated proposals for Studies 2 and 3 should be carefully evaluated by the BTC to confirm that the results of the studies would satisfy the Board's request and questions to SSAC in the resolutions from 2017, the ones that initiated NCAP work."

So that is the substance of the Board paper. There's been no reply from the BTC that I'm aware of but that's not surprising considering it's the middle of summer and also a pandemic, to the extent that that's making other people's lives as crazy as it's making mine. And that's really all I have to report. I'd be happy to answer any questions.

MATTHEW THOMAS: Thanks for that, Matt. We really appreciate the update. I guess just a quick question. What is a typical turnaround time for something like that from the BTC that you would anticipate?

MATT LARSON: Well, I don't know that I know the answer to that. We didn't ask them for any response. We didn't ask them for any action. We were just providing it for information. So I would say we don't really have any expectation. I wouldn't have been surprised had there been an e-mail or two maybe following up with questions or anything, but on the other hand, certainly as I think everybody's aware, we've kept the BTC up to date this whole time. The NCAP Admin Leadership has joined the BTC calls at the beginning of every call to give a brief update as to what's going on. So there really should have been no surprises. It's not like

anybody was seeing this for the first time. So I guess in light of that, I'm not terribly surprised that there was no immediate reaction or questions from the BTC.

MATTHEW THOMAS: Fair enough. Thank you, Matt. I appreciate that. Steve Crocker, I see your hand up. Please go ahead.

STEVE CROCKER: Thank you. Just to follow up on that line of questioning, Matt, it is it common or not for somebody from OCTO to sit in on BTC meetings?

MATT LARSON: Oh, it is. In fact, let's see, we have David Conrad, Adiel Akplogan, John Crain, and me. We all sit in on almost every BTC meeting.

STEVE CROCKER: Again, to follow up, how frequently are the BTC meetings these days?

MATT LARSON: Approximately once a month. The next one is early August but they haven't settled on a date. The initial date they chose I think might be changed to every month to six weeks, two months.

STEVE CROCKER: Just to tie these pieces together, from where we're sitting, it would be a nominal expectation that within a month we would know or you would

know and you could tell us that the BTC has considered and will recommend or may have other thoughts about whether to recommend to the Board what to do.

MATT LARSON: Right. Presumably, yes. I guess the short answer is yes. After the BTC's next meeting in early August we'll know more. I don't know exactly what that will be. I haven't seen the agenda for that meeting yet. I don't know if it's been developed. It would certainly be –

STEVE CROCKER: Sure. I'm not trying to push it any further. Just said a kind of nominal expectation about the normal pace of things.

MATT LARSON: But I guess I will say the ball is kind of back in the BTC's court in that we delivered the study to them and we didn't make – just to reiterate – any explicit request for next action. So it's going to be incumbent around the BTC itself to decide what to do next.

STEVE CROCKER: Sure. Thank you.

MATTHEW THOMAS: Thank you again, Matt and Steve. Does anyone else have any other questions they'd like to bring up? Jim Galvin, I see your hand up. Please go ahead.

JAMES GALVIN: Yeah. Thanks, Matt. Just wearing a co-chair hat and also representing SSAC in this discussion for the purposes of this comment. I think I would offer that it's also up to this group. And in fact, that's going to be the discussion that we're going to have here and the rest of today to decide if there's something more that we want to do and how we want to approach it. I just want folks to keep that in mind. That's really what we're going to jump to here in the next major topic as we move on. Certainly the BTC is going to see whatever actions it wants to take, whatever they might be, given work product 1, but we do have a Study 2 and Study 3 to complete, and we have to decide here if we have a preference on how we move forward with those, and then we get to submit that. For our purposes, we submitted in to SSAC which then would submit in to the BTC to also have that consideration along with the work product 1 as it decides what next actions might be. Administratively, I just wanted folks to keep that in mind and we're going to get into that discussion here in just a bit. Thanks.

MATTHEW THOMAS: Thanks, Jim. Does anyone else have any questions or comments about the Study 1 final report? I'm not seeing any hands. So why don't we get into looking at the Study 2? If we can maybe try and bring up that Google Doc and I will try and paste the URL into the chat room for everyone as well.

Last week, unfortunately, we didn't have a discussion meeting but we did take that opportunity to – Jim and I – sit down and kind of work

together through some of the proposals from the group of the previous week of explicitly mapping the Board questions to Study 2 and also discussing in general what the overall kind of a revised Study 2 and 3 might look like. We all remember the study. I think Karen's comments were specifically that the study [should] proceed as it fits on, so we're taking this opportunity to look at that as designed aspect. And I think we've all kind of somewhat agreed that that makes sense for us to revise that given our now better understanding of the work products that we've all been working on over the last year and going forward.

That being said, on the screen you can see the general study tasks along with some of the proposed changes that Jim and I had put forth into the suggestions there. Really, because this study task did go out for public commentary and review, we wanted to make sure that we don't deviate from the scope of what the ICANN community has already reviewed and agreed upon, and we want to stay in spirit of that but we wanted to revise that based off of our gap analysis, the document that we all produced together.

I would say that I think the only major suggestion that we have forth is #2 in there and that is repeating the analysis from 2012. As part of that, it kind of includes two major aspects. One is just looking at that data from 2012 again and longitudinally analyzing that and seeing it as it evolves as we've seen the DNS ecosystem evolved over the last decade as to how that kind of data analysis back then can still be applicable to today's environment or if it cannot be applicable given the infrastructure changes. And one of those things that we would like to look explicitly inside of that is the emergence of resolver data since the last 2012 analysis.

But if you remember, there's actually two different types of active Board resolutions put forth to the NCAP group here. The first one was, I believe, the 9 questions that we've been working on but there's actually kind of, we almost consider it 10 questions because the second one was focused on what should be a kind of advice and guidance we should give around .corp, .home, and .mail. Jim and I were discussing that those are unique strings and they can almost be an exemplar case study for the Study 2, specifically as it relates to conducting this repeat analysis of 2012. Since those TLDs or strings have never been delegated and are still non-existent domains at the root, they kind of would provide a very good litmus test of what is changed and how is our observational window or capacity for understanding DNS traffic could have been impacted for those strings over time. And so to the end, we were somewhat proposing that those three strings specifically be called out as separate kind of case studies that allows us to look at the impact of the changes or the gap analysis that we've already talked about.

Does that make sense to everyone, or does anyone have any thoughts or comments around that? Or, Jim, do you want to expand any more on our thinking there? I'm not seeing any hands so I'm just going to keep on going.

The only other major portion of Study 2 then that we – Jim and I – talked about wanting to expand on with the group was really expanding item #4 for Study 2, and that is conducting of the impact analysis.

The bulk of Study 2, a lot of the meat comes down into what we're going to want to try and put into the scope of the impact analysis there. Now, some of this might turn out to be a tabletop analysis exercise for

us. But there are some specifics from the item 2 when we revisit doing a repeated analysis that we might have some new questions to ask of the data or some ways to better understand the impact to name collision risk assessment based off of DNS traffic data. That's specifically time to item number C.

One of the things we discussed last week was most of this risk assessment on TLD strings is it had been done primarily by DNS traffic data collected at the roots, specifically the day in the life at the DNS network infrastructure there. But going forward, as strings need to be evaluated for the Board, it's not exactly clear in terms of if those data sets will always be readily available to ICANN or whoever's assessing the strings at a given moment. So maybe one of the important items out of conducting the impact analysis is what sensitivity is there when you only have one root server versus half of the root servers versus a full data collection or if you only have access to a few recursive resolvers, how does that influence the results of the questions that we need to answer and how does that impact the risk assessment that needs to be considered by ICANN when they're evaluating various different strings?

I see Rubens. You had a suggestion for looking at other TLDs that haven't been delegated since the last round. I agree. I think there's a long list of persistent strings or unicorns out there that are in the root that we could take a look at and look at longitudinally, and hopefully those will help provide some more insights in terms of the impact.

Sorry, I'm just trying to catch up a little bit in the chat room here with everyone. Okay. So if we can go ahead and scroll down, I think that kind of described at a high level where we wanted to change the study tasks

to keep the Study 2 a little bit more relevant but still not deviate too much from the prescribed or put forth a plan and suggestion to the ICANN community. I think a couple of meeting ago, Jeff Neuman suggested that we explicitly start to map the Board questions, the Study 2 tasks explicitly so it's very clear to us as well as the Board in terms of why certain components of the Study 2 is necessary to influence and provide advice for the specific Board questions.

So this is the matrix mapping or whatever you want to call it, that we created last week during our Admin call. It tries to map each one of those nine questions to the specific area tasks within Study 2. So I think it might be useful for us to kind of slowly go through each Board question one by one. There's only nine going here, so it shouldn't hopefully take us too long and kind of just generally describe and discuss if we think the mapping makes sense, and if it doesn't, how we might want to change it and tailor it to make it something more useful. That being said, I think the end goal of this is that we are able to take this mapping along with our gap analysis 3 along with some introductory text that I drafted below and that we'll need to flesh out as a group, and then that is going to be a work product that the group can put forth to either SSAC or the appropriate parties or suggestions on how we believe that the Studies 2 and 3 should be revised and become relevant and more informed.

The first question from the Board was really just focusing on a proper definition and name collisions. I don't think it really has any relevance here to Study 2. That was kind of an out-of-scope item that doesn't really impact the Study 2 work in mind. We've agreed upon the changes to the definition going forward, and I believe Jim has the token to

update a document at some point on that. But I think we already have consensus and that actual definition isn't really the main crux or scope of Study 2.

The second question that the Board put forth was taking a look at the role that negative answers currently play to queries. Our feeling was that is really one of the main goals of item 4 of Study 2, which is conducting the impact analysis. And so we need to take a look at why are these queries coming up to the root, why are they being leaked up. Are they due to various different suffix search list or are they explicitly depending upon a negative answer like Chromium queries to test for network redirection. Take a look at that inside of the Study 2 and figure out if there are different impacts from those NXD responses being changed to something else.

Anyone have any other thoughts or comments so far? I'm not doing a lot of talking here but – okay. With that, we'll just keep on cruising along. Please feel free to raise your hand or keep chatting along.

Question #3 is taking a look at what harm existing users may occur if the collision strings were no longer to be delegated. And so I think answering this question kind of touches on multiple different parts of the Study 2. First, we have to conduct the root cause analysis. We need to understand why are those queries even coming up to the roots? Why are they being leaked out? That kind of understanding will build the foundation of why it may or may not impact subsequent systems downstream that are sending or admitting or leaking those queries up.

And two, I think looking at that from a longitudinal perspective, we should consider repeating the analysis from 2012 to see if we've experienced any kind of signal inside the data that indicates the various different problems from the delegation of either the strings and/or how other new strings are being leaked inside of the DNS like .console or other various different ones like .dlink or whatnot, and how that influences the overall stability of the DNS if these were to no longer resolve as NXDOMAIN, which ultimately then just leads into conducting the impact analysis. This is, again, where now we understand why they're coming up, we understand how prevalent they are from revising, looking back to 2012 study to now, we can kind of come up with a better assessment of what impact it would actually have to that end.

Question #4 then starts to kind of switch from the Board's – I would say the first few questions are kind of giving them an understanding of the underlying mechanisms in which name collisions occur and what kind of role they play. And I think the next several questions – 4, 5, and 6 – start to switch gears from the Board's perspective in terms of mitigation and how to mitigate the risks from name collisions and what can possibly be done to help mitigate that risk. So Question 4 calls out for explicitly asking what possible courses of action could be done to mitigate that harm. So in terms of Study #2, I think you can't really mitigate harm unless you know why it's coming out. So, us being able to conduct that root cause analysis or build upon the root cause analysis that we know from Study 1 report and from any other anecdotal research beginning Study 2, that is going to inform our ability to create mechanisms to help mitigate harm. And then again that will go into item 4 in Study 2 which

is conducting the impact analysis. So, if we know why they're being leaked out and understand the underlying systems from what they are coming out of, then that will allow us to then better assess possible different mechanisms that allow us to mitigate them either through non-delegation, redirection, sink-holing, controlled interruption, so forth and so on.

And then obviously, this question along with Board's Questions 5 and 6, these all ultimately will influence Study 3. Study 3 again was to take a more close look at the mitigation frameworks and the best ways actually to name collision mitigations. So this is almost I would say a precursor dependency for a revised proposal on Study 3 is to kind of understand some of the nuances or the details that we tease out of Study 2, specifically looking at the impact analysis and the root cause analysis that are answering Board Questions 4, 5, and 6, to come up with a more appropriate design for Study 3 as we see fit based off of that.

Yes. Steve Crocker, I see your hand up. Please go ahead. Steve, I think you're on mute. I can't hear you.

STEVE CROCKER: That will make a difference, won't it? Sorry about that. I was imagining a kind of diagram to make it easy for others to understand how all these pieces fit together. It seems to me that the picture I have in my head is you've got a bunch of strings coming in to a kind of sieve at the top and these various questions are laid out in a way that moves the string from one column to another until it arrives at the bottom, and the final states

are either okay to delegate with mitigation or not okay to delegate with mitigation or whatever. And then it makes it easy to track where we are and makes it particularly easy to explain to others – Board and the community, etc. – what the resolution of all of these are. Then for any given string, there is the details of what caused it to be rooted down one path or the other.

MATTHEW THOMAS: Yeah, I like that. That's a great analogy in terms of how this would look from a visual process flow. I think that's exactly right. I think the only caveat I would give on that is I don't foresee, are we being the ones to provide the advice on delegation or not. I think it's more of our role to provide advice to the Board for how to think of the context for each one of those questions and let them be able to use our insights and understandings that we gain from doing these studies to answer those questions.

STEVE CROCKER: Yeah, I absolutely agree. We can separate in such a diagram who's making the decision versus the fact that that decision get made and annotate the thing appropriately.

MATTHEW THOMAS: Excellent. Yes. I have to think about trying to maybe dust off my art brush and come up with a nice little diagram if I can come up with something for that.

STEVE CROCKER: Hopefully, there are other people around that can do that.

MATTHEW THOMAS: Yeah, I don't have a very artistic mindset, I'll tell you that. Thank you for that comment. I appreciate it, Steve. Anyone else have any other thoughts or comments at this point?

Jothan, I see your question in the chat around, would there be a means for a sole applicant to make an NCAP appeal for appropriate circumstances? I think under this, Jim, if you want to fill that question, I'll defer the floor to you. Go ahead, Jim.

JAMES GALVIN: Yeah, thanks. Jothan, I would say that that question is not in scope for us here, okay, because it's not our job to make decisions about applications. We're just providing guidance on how to evaluate the presence or absence of collisions, and guidance on how to manage the list of names that might be regarded as collision strings to use Board technology. Everything else is policy, and outside our scope belongs to the Board.

Jeff Neuman is suggesting it could be an issue for SubPro. Sure. I mean, that's right because SubPro is, to a large extent, your sort of defining the overall application process, and so that's a discussion happening over there, but not here. We're just dealing with the technical issue of presence or absence of strings and managing what string is or is not on that list. Thanks.

MATTHEW THOMAS: Thanks, Jim. I appreciate that.

STEVE CROCKER: And for my prior comment, the kind of diagram that I have in mind could include a explicit place for that kind of process, not representing just NCAP's role in things but giving from a user perspective, from the applicant's perspective, all of what the different stages of the decision process are. Of course, that diagram would have to be approved by the Board and others.

MATTHEW THOMAS: Sounds like a good suggestion to me. Thanks, Steve. Any other questions or comments at this point, or should we proceed back into the Board questions? I'm not seeing any hands so I'll just dive back into Board Question #5 on the left and that is "What kind of factors affect the potential success of courses of actions to mitigate this harm?"

This maps into the third item within Study 2 and that is building a test system. Obviously, this is going to build off of Question #4, which really kind of again relied on us understanding the root cause analysis of why these strings are colliding or leaking up into the global DNS and how those will ultimately impact the applications or operating systems or systems behind it. So this is kind of dependent on those. But again, this is also going to be a fundamental portion of Study #3, which looks at more of the efficacy of data mitigation systems.

To be honest, I see that the building of a test system, it I do feel like that is a very broad and all-encompassing system and it might be more

appropriate for us to think of that as a tabletop exercise to understand the different kinds of scenarios rather than trying to do a catch-all system for – I don't even know what, I'm just thinking of this from my software engineering hat and I'm having a hard time envisioning a system that can be all-encompassing of everything if you don't understand the ever-evolving causes of name collisions, so it might be a little bit more of a tabletop exercise thought exercise for everyone on that front.

And then moving on into the last mitigation question that the Board has put forth, which is #6 and that is what potential residual risks of delegating collision strings happen after you've been taking actions to mitigate the harm? Again, this is going to build off of that test system or the tabletop exercise that we talked about. And then again, this is also obviously going to look at some kind of the impact analysis in terms of looking at the data and looking through our understanding the data that we tease up in Study 2 about the efficacy of any kind of mitigation systems or the ability or inability to actually effectuate on that because the application or system doesn't properly handle the mitigation controls that we're trying to do or pass up kind of a meaningful error message or whatever up the stack to the user or admin or operator.

No questions? Numbers 7, 8, and 9 kind of start to go in a different direction from the Board. To be honest, I think these really kind of depend on all of the overall substance of Study 2 and us executing on the questions and the study tests that we put forth in it, and ultimately we'll lie on or depend on the report of Study 2. I think the advice that the Board is looking from there to answer 7, 8, 9 is going to be primarily driven from that report with Study 2.

So Question 7 is, what kind of criteria for determining and undelegated strings should be considered a string that manifest name collisions be placed in a category? That answering or providing advice on that really is like the overall entire, like encompassing of Study 2 repeating the analysis, conducting the impact analysis, building the test mitigation harness framework or whatnot, and us understanding better data driven research and science to be able to provide some advice on that.

This is also where one of our previous comments that I talked about data sensitivity I think comes into play. And that is one of the things that I think we really should stress in Study 2 is that the ability to have a global or holistic view of the DNS is not always possible and that having only subsets of data and inferring risk assessments off of that is more than likely what's going to be the norm going forward and understanding and profiling the impact of only having subsets of data or various different levels of the DNS hierarchy to do your assessment off of is very important to contextualize all of the advice that we're putting forth in answering or providing advice to each one of these questions for the Board. Because if we, going forward, suddenly QNAME minimization and aggressive [inset] caching and everything else becomes super popular and the root traffic suddenly disappears or it's diminished by a magnitude or two magnitudes overnight, how do you conduct a risk assessment when the infrastructures changed so much, especially given then at that point in the DNS hierarchy you're forced to look at the lower mid-levels where you're looking at recursives, but then you have implications around private DII and all kinds of other privacy aspects around data.

Then Question 8 I think is just really an extension of Question 7 again, and that is this is just the criteria for determining whether a collision should be delegated or not and determining how to remove an undelegated string from the list of collision strings. So if a string is being shown to have risky data profiles for exhibiting name collision behavior, how does our Study 2 influence the ability for us to provide advice off of removing that string from such a list, again with understanding the data sensitivity issue? Just because we're not seeing traffic at certain points the DNS hierarchy doesn't mean that it's necessarily not there and colliding. So I think it's a very important question for us to answer.

Yes. Warren brings up an excellent point that localization is a very important aspect of this that the query or profile recursive resolver is very different based on the locale. And so there's definitely going to be a locale aspect of this that we need to consider. That is something that we should definitely include in our repeating of the 2012 analysis going forward and stuff too, I think.

Does anyone have any questions on 7 or 8 because I think those two are pretty well tied together? Yeah, Warren, please go ahead.

WARREN KUMARI: Thank you. I'll just be reiterating what I said in the comment and you also commented on. The advantage to the root is there is only one, and so currently the visibility for it is global. If and when the system changes and it no longer has full visibility, the locale problem becomes really important in terms of where you get information from a recursive – a recursive which covers Northern Virginia is going to have a bunch of

queries which looks very different to a recursive server, which covers Japan. And so, unfortunately, it seems like if data from recursive is used, it's going to require data either from a very wide range of recursives or from some of the sort of global large public open recursives.

MATTHEW THOMAS: I totally agree with that, Warren. Thanks for that. I appreciate it.

Anyone else have any other questions or comments so far? Otherwise, I will move us into Question #9. Sorry, I self-muted myself there for a second. This one is a little bit different than the rest because this one kind of starts to get the question around of unintentionally, I want to say "gaming the system" in terms of how can we detect the behaviors in terms of which negative effects on the creation of such a collision string from that. Again, I think this is kind of a byproduct of the overall Study 2 and us looking at this data longitudinally. I think influencing risk assessments is somewhat pretty difficult to do given the nature of the DNS. Detecting gaming of the system is something that would be best suited for taking a repeated analysis of the 2012 data going forward to understand if we see commonalities or patterns or observations or anything of that. But overall, I think that is part of the entire Study 2's portion of us answering Question #9. And obviously, this will also tie into Study #3 as well.

Warren, I see your hand up. Or is that an old hand? Okay, just an old hand.

As I mentioned before, the Board put forth the two resolutions. One was the nine questions, but the other one was specifically looking at the

.corp, .home, and .mail. As I discussed before, we can think of this as Question #10. It seems to me that those three strings, given their nature and the "unicorn" aspect of them along can be really an interesting case study for us to take a look at longitudinally how is their risk profile and traffic patterns changed and how is that influenced with the general DNS ecosystem evolution through various technology changes, protocol changes, consolidation of DNS traffic through major popular versus resolvers and pyramid, so our observation space or ability to actually do risk assessment on those as a proxy to looking at other strings within the DNS.

So this is the suggested matrix or mapping that we put forth last week. I think we had some good questions and comments on it so far. Essentially, I think the plan is we'll let the discussion group to keep on thinking about this evolving our understanding and mapping of how these specific nine questions map to the specific study tasks. But if we can scroll down just a little bit more. I think it might be all the way to the bottom where there's another section I suggested. Just a little bit up. A little bit more. Just above this table.

So this is just some introductory text to formalizing a work product out of the discussion group that we can provide to SSAC or the appropriate ICANN party here to solicit some feedback from the discussion group in terms of how we foresee the need for Studies 2 and 3 to proceed but also how we would like to stay within the scope and the remit of what was already put forth, but possibly tuned those studies to make them a little bit more relevant to the Board questions and also our understanding of how the gap analysis that we identified. So this is just some light text that I threw together for some of you out there.

Everyone, please feel free to edit this and put your suggestions in there. It's basically a recap or summary of our main points that we put it in our gap analysis. Some introductory text of why we're proposing to alter Study 2 explicitly to provide this document so it gives better guidance on how Study 2 answers the Board questions. And then the suggestion that we're going to explicitly do case studies within the Study 2 on .corp, .mail, and .home and those will be as a proxy for also answering other questions as well.

I think Jim wanted to maybe talk a little bit more about the cost analysis and timing. I'm going to admit that is not my bag. That is not my favorite thing to deal with. But I think there will be some other input that we need to solicit from the group or Admin Committee, at least, to put it in there. Jeff Neuman, I see her hand up. Please go ahead.

JEFF NEUMAN: Thanks. I'm just trying to wrack my brain because this is eight years ago now. But when we say repeat what was done in 2012, to my recollection, wasn't it a couple different things that were tried at different points? In other words, what is it that we consider? Which is the study that we want to repeat? I guess the follow up to that is if it's the study I'm thinking about where they basically took every string that was applied for and looked at the query volume within those couple given days of – the data set was three days or something like that – why would we need to do the complete thing all over again? I mean, I think we would suggest more of a random ... Well, first is what exactly is the study that we're talking about? And if it's the one I'm thinking about, I don't think we would need to look at all 90 or 1200, 1300 strings,

whatever it was. I think we could do a random sampling, plus obviously .corp, .home, and .mail. So I'm just trying to remember which is the 2012 thing that we're talking about.

MATTHEW THOMAS: Thank you, Jeff, for that. I see a couple other hands up near. Before I put my thoughts and comments, let's give a little bit more discussion in the group. So Warren, please go ahead.

WARREN KUMARI: I think that's an interesting question, although I'm assuming that whatever analysis we do end up doing would largely be automated. So looking at 5 strings versus 5000 strings should be fairly close to the same amount of effort. If we're not doing this or at least if we're not doing a bunch of the work in an automated fashion, I suspect we're probably doing it wrong.

MATTHEW THOMAS: I agree with that, Warren. I suspect that whatever analysis we're going to do is "big data" in crunching and that the upfront cost of doing it on one is no different than conducting it on X. So it would seem that we'd be able to do it on all of them.

Jeff Schmidt, I see your hand's up. Please go ahead.

JEFF SCHMIDT: Hey, folks. This issue of creating some predictability to future applicants, I get it. I'm really concerned about how to balance what is a subjective evaluation. I've looked at these things back in 2012 and, sure, the numbers were a part of it but we really did look at the "story" as well and that was a really important part of how we decided. For example, .mail was bad but the fritz boxes were okay. You can debate whether we've made the right call on that or not but it was subjective based on principles we had at the time.

So let me propose a really crazy idea. I don't know if this is the right place for it or not but I'm trying to figure out a way to be productive here on this issue. What if we made it the applicant's responsibility to research their string and provide evidence or an argument in their application that their string will not create systemic problems? As opposed to the other way around where ICANN and/or us, this group and these sorts of folks on this call, are looking at a pile of strings at some point in the future and trying to figure out whether they're okay or not. We could provide principles to the applicants and have them do the research and present a story in their application that states that they believe the risk is not material based on some criteria. I know there's lots of problems with that, it's not perfect, but it's a crazy idea that I thought I would throw out to try to provide options here. Thanks.

MATTHEW THOMAS: Thanks for that, Jeff Schmidt, nothing like a suggestion to get the brain thinking on it. I think that's what we're all here, to try and figure out the best way forward on this. It's something that I think we should talk about as a group.

Jeff Neuman, I see your hand's up. Please, go ahead.

JEFF NEUMAN: A couple of things. First, that didn't address the question I had as far as what are tests we're talking about. If it's the study done by Jazz, which, Jeff, you did that in 2013, 2014, I'm trying to remember now. But there was something that was initially done. I think it was by Lyman's Firm, right, where he's the one that looked at – sorry, was it the Boston? I'm trying to remember the name. Interisle, that's it. So that was done in 2012 after the applications were submitted, or maybe that was early 2013. But in either case, we need to kind of be specific as to what – we can't just say repeat what was done in 2012, we need to be really specific as to what part of it that we want to repeat.

And then separately on Jeff Schmidt, he and I normally agree on almost everything, but this we don't. We cannot just supply applicants with a bunch of subjective criteria that they will not have any expertise in doing that kind of analysis that we expect them to justify why they're not a risk. I mean, we just can't put that burden on applicants that for the most part, they have a business idea or it could be nonprofits. I don't mean business in the sense of commercial making money, but they have a business plan and they would usually outsource it to a technical provider. We're thinking of having some sort of pre-approval process or pre-evaluation process for technical service providers. There's no way we can ask them to justify something that half of the technical experts don't even understand, much less these applicants. So we do need to put forth some set of criteria as a baseline. I know, Jeff, you said you didn't look at numbers, but you sort of did, right? Because

you start with the number and if the number is above a certain threshold, that's when you look further into it. You wouldn't look further into maybe a TLD string that had three queries in the root. You just wouldn't waste your time. So there's got to be some objective criteria, followed by and what I sort of envisioned, that I'm not the technical expert, but is that if it rose to a level – let's say called a level one incident or level one type string that's got some level of risk, then you would apply this mitigation technique. If it rose to a level two, you do some other mitigation technique. Finally, at some point, though, there is a line which says that there's no mitigation that we think you're going to be able to do to salvage your application and therefore it shouldn't be applied for or it can't go forward. There has to be those types of things in place. Otherwise, we've sort of failed in our mission. We can't just say it's completely subjective. Thanks.

MATTHEW THOMAS: Thanks for that, Jeff. Just looking at the clock and being cognizant of time, I'll take Warren and Steve's comments quickly, and then I'd like to still kick it over to Jim Galvin. He's just going to give a little bit of commentary on cost comments that I made earlier, as well as timing. Then we'll probably wrap this up, but we're obviously going to continue this discussion next week on this specific discussion. So Warren, please go ahead. You're muted.

WARREN KUMARI: I'll do this quickly. I just largely kind of agree with Jeff Neuman, which terrifies me that I'm doing that. But yeah, I don't really see any way that

.calvinklein would be able to evaluate any sort of data, nor do I really think that they would have access to the data. So I don't see how they would be able to justify why .calvinklein is not dangerous to delegate. It's outside their scope of expertise and it's also outside their scope of being able to do. I do think this might end up creating a lot of work for a bunch of consultant people who could set up a service, which will craft you a justification. But I don't really think that that's helpful either because whoever is applying for this, by definition is going to try and come up with a way to say that it's okay and acceptable. That kind of terrifies me. You know, .cancerresearch, this is so far outside their scope of knowledge. It's outside our scope of knowledge. We've spent many months discussing it. We've all agreed this problem is hard.

MATTHEW THOMAS: Thank you, Warren. I appreciate that. Steve?

STEVE CROCKER: Thank you. I too want to agree with Jeff's comments. But one aspect I wanted to flag, the idea of which strings are too infrequently looked at, too infrequently show up in the root is fine, but I would not want to carry forth the idea that there is a specific threshold at which point a string is considered properly mitigated. It's much more important, in my view, to look at the qualitative aspects and the impacts of the collisions rather than propagate the idea that there is some specific number and if you can only get the number of queries down below that threshold, it must be okay. I think that's an idea that should not be supported.

MATTHEW THOMAS: Thank you, Steve. As we're close to the top, Jim, I'll switch it over to you real quick. You're going to make a quick comment and then we'll wrap up.

JAMES GALVIN: Comment about costing. Just as a reminder to folks, there are a number of new folks here who were not following when we were first launching off the statement of work for one. What we need to do here in this group is come to some consensus. We're all asking good questions and we're solution solving here which spunk – our proposal here, it's about there should be a Study 2. We need to come to some agreement about what that is and then we're going to make that proposal. The actual costing numbers that the real point that I want to make here is costing will not be discussed publicly. What we'll do here in this group is decide if there'll be a Study 2 and that there'll be work to be done. And then the Admin Committee will handle all of the costing issues itself and figure that out and the numbers and working with OCTO and ICANN to get all that. The reason for that is because it does allow people who might be participating in this group could still bid on doing the work if there is such a proposal going forward. Actual numbers and the details of that cannot be publicly disclosed in order to ensure that everyone gets a fair shake at bidding if they're so inclined to do the work. So that's the most important thing I want to bear out here. So we'll have to continue this discussion and then we'll hopefully turn this into something that we can submit and move forward with. So back over to you, Matt.

MATTHEW THOMAS: Thanks, Jim. With that, we'll wrap up the discussion. Does anyone have any other business that they'd like to discuss at this point? I think that's an old hand, Warren. I'm going to assume. Okay. Well, with that, it was great discussion today. We'll discuss this again next week. Hopefully I will be here. Kid number three is due any moment so I may or may not. But we'll keep the ball rolling and you all have a good week.

KATHY SCHNITT: Thanks, everyone.

[END OF TRANSCRIPTION]