RUSS HOUSLEY: Or whoever starts the recording.

KATHY SCHNITT: Thank you, Russ. Welcome to the SSAC Evolution of the DNS Resolution work party teleconference on Thursday, the 19th of May, 2022. Russ, back over to you.

RUSS HOUSLEY: Okay. So the actions were to focus on the four paragraphs that we designated at the end of the last meeting.

[BARRY LEIBA:] Right. Russ, you were not on. You had a conflict on last week's call.

RUSS HOUSLEY: Correct.

[BARRY LEIBA:] As we discussed at that meeting, some of the main things we discussed last week was how broad the focus of the document currently was and whether we wanted to focus on something smaller so we could actually get something done. And so Andrew has ... Let's take a look at, Andrew, the charter change proposal. We decided to look at the main focus being the blockchain-based naming systems and the other, the non-DNS naming systems that are coming up out there.

RUSS HOUSLEY: I see because have said plenty about DoT and DoH already. I see.

[BARRY LEIBA:] Right. And so certainly we can say more about them. But maybe as we are starting to work on this document that we need to pick a particular focus. And that seemed to be what the people who were on last week's call were interested in focusing on. And so we're looking for agreement that that's what we would like to go forward with.

RUSS HOUSLEY: That makes total sense with me, given the history.

[BARRY LEIBA:] Yes. So the question is do we have any discussion on that? I don't remember who was on last week and how many new people we have this week. It looks to me like other than Russ, we might have the same set of people.

RUSS HOUSLEY: Yeah, that Russ guy, you know.

[BARRY LEIBA:] Well, the Russ and the Russ. Russ Mundy was on last week. And Tara says in the chat she was not on last week but she's fine with it. So okay. Well then, I guess there's not much to discuss about that this week. I

was hoping we would get some of the people who were missing last week coming on, some more than Tara. So okay. Well, then let's get into the discussion.

Well, and I guess the other one is that Russ Mundy suggested last week that we change, at the bottom of the deliverables, the intended audience of the report. And we had said it was for the ICANN community and the greater Internet community. And Russ said we should just pare that down to the ICANN community. Russ, do you want to say another word, again, about why you wanted to make that change?

RUSS MUNDY: Well, I think it will help us in the work party maintain our focus. And it doesn't prevent us from having something that is useful to the broader community. But because this is such an area that covers so many different things, I think it's a way to aid us in keeping a narrower focus so we can complete a document.

RUSS HOUSLEY: Well, it's not like the ICANN community is not diverse.

RUSS MUNDY: Exactly.

[BARRY LEIBA:] My thought was that the greater Internet community is certainly part of the ICANN community. So that doesn't really change much. And I guess Russ' point is that as we are writing it, we need to think about who we're writing it for. And if we think about the ICANN community as our target, it will focus us in writing. Is that correct, Russ?

RUSS MUNDY: Yes. Yes.

[BARRY LEIBA:] Okay. I'm okay with that because I think it's not going to really change the document much. And at least it will give us something to think about we write. Does anyone have an objection to making that change? All right. So Andrew, I guess we're good with both of those. From a procedural point of view, do we need to do anything? Do we need to get approval from SSAC as a whole on this, or are we just okay with the work party making that change?

ANDREW MCCONACHIE: I would send it to the SSAC, to the full SSAC, for review again, not so much for approval.

[BARRY LEIBA:] But just for comment.

ANDREW MCCONACHIE: Just kind of informing the SSAC. And if people have opinions, it might actually change the makeup of the work party. It could be that it triggers someone to join the work party now. You don't know.

RUSS HOUSLEY: Just for clarity, Andrew, you are suggesting as part of your readout of this meeting, you say that's the direction we're going.

[BARRY LEIBA:] He would actually post this as a change to the charter.

ANDREW MCCONACHIE: Right. Exactly. Yeah, I would put it as a change to the charter. And that's why I haven't merged the edits yet so that if anybody wants to review it, they can see what's changed.

RUSS HOUSLEY: I see. Okay. So you would do that two places. You would mention it in your weekly readout and then put this in the Wiki or whatever.

ANDREW MCCONACHIE: Yeah. There would be two mails to the mailing list. So there would be the weekly readout that I send immediately after this call. And then, there would be another mail saying, "The work party has updated its charter. Please review if you're interested," something like that.

RUSS HOUSLEY: Okay. Cool.

[BARRY LEIBA:] Perfect. Okay. So let's go back, Andrew, to the document and let's get into discussion of this stuff. Let's see if we can start getting some text in about the blockchain stuff and other related technologies.

RUSS HOUSLEY: So that was down ...

[BARRY LEIBA:] In section four.

RUSS HOUSLEY: In four, right. So I put a couple comments in trying to spur other people who might have come along behind me. One place I tried to needle Geoff to put his rant. My hope was that he has written it down for some other reason. But that would give us a strawman.

GEOFF HUSTON: Sorry. Sorry. Yeah, I hadn't written it down.

RUSS HOUSLEY: You haven't? Oh, that's a shame. I do know you do write for a lot of different venues and such. So I was hoping maybe that rant had got written down at some point.

GEOFF HUSTON: Yeah. No, not yet. I haven't wandered into that. I'm actually doing it with resolverless DNS. I'm toying with the idea of you only provide DNSSEC credentials if you're using DoH. And if you're using UDP, the name looks unsigned. Why would you do that? Because UDP and DNSSEC validation are a toxic combination.

[BARRY LEIBA:] Oh, I see. Just to keep the MTU size down.

GEOFF HUSTON: Well, just to avoid large payloads in UDP if the answer is well, don't even offer the option. This name is unsigned because you asked over application A or transport A. And if you ask over transport B, it's kind of if the server's going to give me some stuff over DoH, I really care about its validity. So if I've got a string transport, here's all the stuff to go with it.

And so, this whole issue of application-based DNS resolution actually talks about differentiating between UDP and application base. But then comes the next issue, which this delves into. If I'm a Google browser, Chrome, I might see a generic name like config and resolve it differently than if I'm running Firefox browser. And it might be different if I'm running Microsoft Word, etc.

[BARRY LEIBA:] In your example, if you run over TCP, would you get DNSSEC?

GEOFF HUSTON: In my head, the answer is no because I don't know, it just seems that if you've got to go that far, you need to authenticate the other party that's giving you this answer. You need the full bundle of TLS and DNSSEC to actually say, "I don't know who I'm asking, but I want to trust the answer," whereas with TCP it's kind of all bets are still off. DNSSEC doesn't get you further down the path, does it? I'm sorry, TCP doesn't get you further down that path.

[BARRY LEIBA:] Actually, I think it does because you know that the server didn't make it up that the ...

GEOFF HUSTON: You know that but you don't know who the server is.

[BARRY LEIBA:] That's correct but you know the server gave you the right answer.

SUZANNE WOOLF: Why do you care?

GEOFF HUSTON: If I was in Turkey and Turkey telecom is intercepting all eights and running a DNS resolve but it purports to be Google, and offers me crap over both UDP and TCP, I'm no better off.

RUSS HOUSLEY: I disagree. But if it's DNSSEC signed, you'd know.

GEOFF HUSTON: But I'm saying neither UDP and TCP don't behave as [inaudible].

RUSS HOUSLEY: But you're saying over TCP, the MTU issue goes away. So why not sign it?

GEOFF HUSTON: Yeah, I understand. Maybe I was getting down into a deeper issue. Why don't folks sign?

RUSS HOUSLEY: Well, that is a deeper issue.

GEOFF HUSTON: Well, there are two reasons. One, it's damn hard and I don't want hard in my life. But two, I am dead set scared of the way the DNS behaves with my big answers. And why doesn't Google sign? Blah, blah, blah. And it's all this if I could do the full box and dice, change responses, handle the validation answers, get the whole thing done in basically one massive RTT, but it's just here's all the things you need. Go validate all the way down to the client. Yay. It's brilliant. If I can't do that, it's wow, this is painful.

And it is maybe another bullet point here, which you might want to think about, which is not really application-based DNS resolution. But it's kind of transport media-based DNS resolution. The DoH and DoT and DoQ offer a comfortable fit for different ways of thinking about the DNS that DNS over UDP/TCP don't.

SUZANNE WOOLF: So the argument is that you don't want to ... I'm just making sure I'm following. You don't care about DNSSEC validation. You don't want to do it. You don't want to spend the overhead. You don't care unless you're using encrypted transport. Is that right?

GEOFF HUSTON: I don't want to make life hard for dumb users. If they and their recursive resolvers are using basically crap DNS over UDP/TCP as a failover, then the answer is well, let's not waste time. Here's an answer. It can't be validated because I'm purporting that it's not. It's kind of like you set the DNS okay bit to zero by default for everything except DNS over authenticated secure transport.

SUZANNE WOOLF: Okay. I thought it reduced to that. I just wanted to make sure I was following the argument. Thanks.

GEOFF HUSTON: I don't know if it's a convincing argument or not. But it's that same kind of issue that the original idea, it doesn't matter who you are, where you

are, when you are. The answer's always the same because the DNS is always the same. The answer is well, this is not getting us into nice places. But I think I've digressed here, Russ, and I'll blame you.

RUSS HOUSLEY: It's always my fault.

GEOFF HUSTON: There you go, then.

SUZANNE WOOLF: Russ, I did not give it away. It was not me.

RUSS HOUSLEY: Well, if in your writing that up, you end up explaining your usual rant about metadata and so on, please share.

GEOFF HUSTON: Oh, I will. I will. I've become a big fan of serverless servers, resolverless DNS. Oddly enough, it actually arose from our understanding how bad OCSP really is.

RUSS HOUSLEY: Okay. That seems like a real [digression].

GEOFF HUSTON: In OCSP, me, the client, exposes to the CA's OCSP server who I am and what I'm doing because I'm asking that certificate's validation status. So Geoff pops his head above the parapet.

RUSS HOUSLEY: Yep, that's correct.

GEOFF HUSTON: Not good, not good in a privacy sense. Geoff's exposing himself. In resolverless DNS, the server does all my questioning for me. It just sends me answers. Geoff is invisible to everyone but the server.

RUSS HOUSLEY: Yeah, we had a proposal for solving that that never gained traction but ...

GEOFF HUSTON: I've seen a few. oblivious this, oblivious that, etc. There's a bunch of these things. But it just seems that resolverless DNS is being trashed I think for all the wrong reasons. And maybe it shouldn't be trashed at all. Maybe the combination of DNSSECC, it's true, and the server that's doing it for me, I'm not exposed, is actually a powerful combination.

And when you're talking about mechanisms, the ever-present problem with the DNS is the whole metadata exposure issue. We're going to extraordinary lengths. Look at Apple pushing everyone behind a VPN.

And it's kind of can you do this without the dramatic solution of tunneling all the traffic all the time everywhere?

RUSS HOUSLEY: Well, that's what DoH does. It's just a different tunnel.

GEOFF HUSTON: But it's not everything, all your traffic.

RUSS HOUSLEY: That's right.

GEOFF HUSTON: Right. So it's sort of do you want the scalpel or do you want the mallet? Pick your weapon.

RUSS HOUSLEY: Well, doesn't Mozilla VPN do the same thing so that all of your web traffic is tunneled, not all of your traffic, just all your web traffic?

GEOFF HUSTON: Opera did it, I think. I'm not sure about Mozilla. I can't answer that. Maybe others know.

RUSS HOUSLEY: Okay. I just read it in the release notes when it came out. But I didn't try it.

GEOFF HUSTON: Well, I feel we have gone down a little alley here. And I've actually lost track of what the original theme of this conversation was.

RUSS HOUSLEY: Well, the original theme was did you already have text with this?

GEOFF HUSTON: Let me answer that. No.

GEOFF HUSTON: Oh, let me answer that. No, I don't. But it's an interesting space, and there should be text about it. I will make a note.

SUZANNE WOOLF: The discovery so far is that this is what he has text for. Do you want it?

RUSS HOUSLEY: Yeah, right. I don't have text for that but ...

SUZANNE WOOLF: Anyway, okay.

RUSS HOUSLEY: So I've added in the next bullet point the observation that domain names aren't the only things that apps consume. A ton of apps also use email address-looking things, even though they're not for email. But the observation that the right-hand side, of course, looks like a domain name. Just thought it was interesting that domain names and email addresses have become pretty darn ubiquitous.

GEOFF HUSTON: Well, I thought one-to-one synonymous.

RUSS HOUSLEY: Well, the left-hand side people do some weird things with plus signs and such.

GEOFF HUSTON: Yeah, but they're left-hand side people, yeah, said he, condemning them in one sentence.

SUZANNE WOOLF: Sight unseen.

RUSS HOUSLEY: Is Warren not here today? He's one of those. I think he uses the plus sign to help segregate his traffic automatically into folders.

SUZANNE WOOLF: I used to do that when I had a real mail user agent. Now, I use Outlook all the time. I haven't decided. I feel sorry for my IT director. So I haven't picked a fight yet.

RUSS HOUSLEY: Yeah, this is a long time ago back when Jim Schaad was still at Microsoft and was the developer for S/MIME in Outlook. I had it crash on me one time. And so I tried to get the debugger to work, and it wouldn't. And I called Jim, and he said, "Well, yeah, the first thing Outlook does is find out how much free memory there is and take it." And I was like, "Okay. That convinces me to never use this."

SUZANNE WOOLF: It's a travesty.

GEOFF HUSTON: That's very, very practical.

RUSS HOUSLEY: Yeah, exactly. No room for the debugger.

SUZANNE WOOLF: In Outlook, no one can hear you scream.

RUSS HOUSLEY: That's true.

SUZANNE WOOLF: Anyway, sorry, I'm digressing.

RUSS HOUSLEY: Maybe we should not turn this into a rant.

SUZANNE WOOLF: Yeah, I digress.

RUSS HOUSLEY: That’s over the screams of all the other Outlook users.

SUZANNE WOOLF: It's my fault. I digress from a digression. [inaudible]

RUSS HOUSLEY: Wait. It's always my fault you just said. All right. Okay. Looking at the next paragraph, is there anything else people want to bring up?

SUZANNE WOOLF: Let's see.

RUSS HOUSLEY: Well, set of bullets maybe. I don't mean paragraph.

SUZANNE WOOLF: All right. Where are we? Section ...

RUSS HOUSLEY: Hearing silence, I think people are basically happy with the direction that's going. The last of the indented bullets, there's an implicit search order. There is a search order but isn't it an application-by-application search order? It's not like you set your search path that it works for all of your applications.

SUZANNE WOOLF: That's more or less what people used to expect with them. For instance, setting a search list through DHCP that was host-wide.

RUSS HOUSLEY: Right, but it doesn't work that way anymore is my point. It does for the DNS part. Then it goes on. Right? Or does the other first and then it tries DNS, whatever the ...

SUZANNE WOOLF: Oh, okay. I see what you're saying.

RUSS HOUSLEY: So I guess I just want to add, "Application-by-application search order."

SUZANNE WOOLF: Application-specific search list.

RUSS HOUSLEY: Yeah, that works too.

SUZANNE WOOLF: Yeah, it sounds pretty awful either way.

RUSS HOUSLEY: It is pretty awful.

GEOFF HUSTON: But isn't there also a difference? When I get provisioned and it's /etc/resolv.conf, I get a default domain name suffix to add to all single-label names. I'm not even sure if it's two-label names. Yep. My application doesn't necessarily obey or even look up that convention.

RUSS HOUSLEY: That's right.

GEOFF HUSTON: Well, you say, "That's right." But when I resolve Geoff from, I don't know, Firefox, and when I resolve Geoff from the command line, I get different answers.

RUSS HOUSLEY: Yep, you do.

GEOFF HUSTON: And it's not clear that I've had implicit suffixes added. I just get different answers.

RUSS HOUSLEY: Oh, that's interesting. What you've observed is you and I have read implicit to mean different things in this sentence.

GEOFF HUSTON: Yes, we did.

RUSS HOUSLEY: Because I read it to be application-specific search order, and you ... So Andrew, can you tease those two points apart about implicit suffixes versus the order the resolution mechanisms are tried?

ANDREW MCCONACHIE: And by mechanism, we mean application?

RUSS HOUSLEY: Well, we mean the order they try other versus DNS, whether they do DNS first or other first.

GEOFF HUSTON: Right. Do I consult [inaudible]?

ANDREW MCCONACHIE: And the way Geoff interpreted implicit was suffixes that you don't type but it tries anyway.

SUZANNE WOOLF: Yeah, the problem there is where ... Right. I had a rant last week, I think, about distinguishing between protocol and name space. And those are the two things you're talking about there, different protocols for resolution and different synthesized fully-qualified domain names.

RUSS HOUSLEY: Yeah, untyped but tried. Yes, exactly.

SUZANNE WOOLF: You're changing both what protocol you're using and, in turn, what name you're actually looking at.

ANDREW MCCONACHIE: Right.

GEOFF HUSTON: Remember, was it Explorer that prepended www and added .com?

RUSS HOUSLEY: Yeah.

GEOFF HUSTON: I think it's stopped but it's the same problem, yeah.

RUSS HOUSLEY: Yes, it is. Correct.

SUZANNE WOOLF: SSAC actually did an advisory that search was considered harmful quite some time ago.

ANDREW MCCONACHIE: I think that one was about the one that gets set via DHCP. That's the old style /etc/resolv.conf search list.

SUZANNE WOOLF: Yeah, the one that iterates through the possible names, rather than possible resolution mechanisms.

ANDREW MCCONACHIE: Right. But then Geoff is also talking about stuff that browsers do, or browsers do the same thing where they put the www.

GEOFF HUSTON: Stuff that applications do but it's only some applications. It's sort of I type the same name into three different places and I get three different answers. Wow. My expectation, which is what we're talking about, what

people think is going on is, well, it's all the same, isn't it? And the answer is well, no.

SUZANNE WOOLF: I've got some bad news for you.

GEOFF HUSTON: Yeah, nice try but no.

ANDREW MCCONACHIE: There's three different things here then. There's the traditional search list processing, right? Applications that themselves do their own kind of search list processing. And then, the order of applications that get—or the order of mechanisms that get used ...

RUSS HOUSLEY: By the application, right? Because different applications have different lists and they use them in different orders.

GEOFF HUSTON: Yes.

ANDREW MCCONACHIE: Yes. And each application and mechanism may also have its own search list processing.

RUSS HOUSLEY: Yeah. That was the point that Geoff drove home by interpreting implicit differently than me.

SUZANNE WOOLF: That unique identifier thing is tougher than it looks.

GEOFF HUSTON: Damn it, we can't all stick to the same script.

RUSS HOUSLEY: Or even want to.

SUZANNE WOOLF: Yes, but I want them to.

RUSS HOUSLEY: No, you want everybody else to.

SUZANNE WOOLF: Well, yeah. I didn't say I wanted me to stick to the same script. And with appreciation to our staff team, we are actually getting progress made here.

RUSS HOUSLEY: Yeah. Well, hopefully, we're having a little fun while doing it.

SUZANNE WOOLF: Yes.

RUSS HOUSLEY: Okay. This transport media stuff is new. So that was not part of the homework. But the diverse name spaces was part of the homework. If we could put the whole set of diverse name space bullets on the screen, that would help. There you go. So that last part, Barry, the last bullet, I was hoping you would say something since the whole Yahoo thing was your point.

BARRY LEIBA: The last bullet of which? Where are we talking about?

RUSS HOUSLEY: Well, it's yellow on the screen right now.

BARRY LEIBA: Perhaps squatting on TLDs part?

RUSS:HOUSLEY: Yes, that.

BARRY LEIBA: Oh, right. I see the ... Let me get my brain back into the context when I suggested that. Okay but the part about Yahoo was just doing part of a maybe they don't care thing. So I think that's a red herring.

RUSS HOUSLEY: But it's your red herring.

BARRY LEIBA: Oh, yeah. Yeah. I guess I was just sort of babbling with my fingers there. So forget about that. Just delete the parenthesized part because it's not really relevant. So what I was getting at here with ... Going back to the home/corp/mail part, kind of like what Microsoft did with .corp and said, "Well, just use .corp, and all will be good because nobody else uses .corp," that kind of thing. How does that connect with say what Ethereum is doing? They're not squatting on a TLD, but they're saying, "If you use our TLD, it branches you off in another direction."

RUSS HOUSLEY: Well, .link is doing the same thing in a potentially even more diverse way.

BARRY LEIBA: Right. Is there a difference in doing that with a TLD you've registered that has been delegated to you and doing it in a TLD that you just picked and said, "Okay. If you use this through our app or our system, we're going to do something different with it?"

RUSS HOUSLEY: I think that there's a difference.

GEOFF HUSTON: There's a big difference.

RUSS HOUSLEY: Good. We agreed. Oh, no. Now, let's see if we come up with the same reasons. Go ahead first.

GEOFF HUSTON: Well, the issue is at some point, you need this metadata because if you're trying to corral from this sort of larger set of all possible domain names, right, and you're saying, "Well, .link, I'm going to segment that and use a different resolution mechanism, but I'm not going to tell you. I'm just going to assume that .link is corralled out by the very virtue of using .link as the TLD," the problem is that where's the registry, where's the mechanism that does that corralling?

Now, you either have a super, super top level, a zero level TLD that says, ".link is special. .onion is special. Blah, blah, blah is special, and all the rest are done the other way," which actually means they're not TLD's at all because you've just added a super top, top level, or you're going to have these collisions and colliding because none of these folks are busy. "Oh, I'm sorry, I'm treading on your toes. I'll take a step back." That's not part of the game and so ...

RUSS HOUSLEY: There's a consequence to the latter. And that is if you run .corp for your local installation and somebody else does too, mergers and acquisitions create collisions, guaranteed.

GEOFF HUSTON: Oh, absolutely. Absolutely, yes, and that's perfectly valid. So you either do that or you do the Warren Kumari approach of ... I've forgotten the name he ended up with. What was it, .internal or something?

ANDREW MCCONACHIE: Yeah, .internal.

SUZANNE WOOLF: Yes.

GEOFF HUSTON: Which is actually the zero level TLD of second-class citizens who want to differentiate themselves from everyone else, which in sociological terms is never going to fly.

RUSS HOUSLEY: Well, it's Net10.

GEOFF HUSTON: Well, but it's Net10 with attitude. We're already labeled as third-class user. [inaudible].

SUZANNE WOOLF: But in practice, a variety of things are happening, right? Ethereum is promising that their names won't collide with names already designated

in the DNS root by ICANN. I don't think they're making any promises about future rounds of TLDs.

RUSS HOUSLEY: How could they?

GEOFF HUSTON: Well, they can't because Geoff is going to apply for the names they are currently using. Yay.

SUZANNE WOOLF: Yeah. No, no, no. But they have a stated intention of trying to avoid collisions. How they're implementing it remains to be seen.

RUSS HOUSLEY: Which Geoff? A few, or the Donuts one?

SUZANNE WOOLF: For handshake and unstoppable, they are making no guarantees at all. So the point is that there are several different approaches that people have mapped out, but there's no way of knowing at this point which, if any, of them actually works for compatibility.

GEOFF HUSTON: And unless you have some meta conversation about what resolution mechanism is being referred to by this name, or as we currently do in the DNS, you add another label, you add another context into the name

that says, "Oh, this universe of places means I need to do something else," then, we've always got this problem that that's an unresolved tension. People want names and they don't like the existing process. For some reason, they don't like the existing DNS. The answer is, is the answer I cannot have that thought? That's a forbidden thought. That would be a novel concept.

SUZANNE WOOLF: Yeah, I dare all of us to try to document that.

GEOFF HUSTON: You're right.

RUSS HOUSLEY: I think it's been tried several times in history.

GEOFF HUSTON: I would call that an unthought. The thought you had is not valid. Go away.

SUZANNE WOOLF: A badly-formed thought. NXDOMAIN. Yeah, this is one of the things that actually if we can say clearly and work out some of the implications in this document, I would become happier because people find it really hard to wrap their heads around the fact that there is nobody that can stop people from inventing other ways of doing names. There just isn't.

RUSS HOUSLEY: Okay. So under this list, we should add a bullet that says, "And many yet to be invented."

GEOFF HUSTON: Oh, God, yes.

SUZANNE WOOLF: Yes, yes, that's definitely ...

RUSS HOUSLEY: Because that's the point is ha, ha. You thought we had our hands around it. You were wrong. There's more coming.

SUZANNE WOOLF: I will be happy to consider it a bonus if we can find a way gracefully to point out that globally unique identifier is not in fact a thing.

RUSS HOUSLEY: Well, it is only if everybody plays.

SUZANNE WOOLF: It's always with respect to something. It's always relative to something.

GEOFF HUSTON: That's actually a very big thought.

SUZANNE WOOLF: I'm sorry?

GEOFF HUSTON: It's always relative to some frame of reference.

SUZANNE WOOLF: Yes.

GEOFF HUSTON: And I think it's often misunderstood. We just say," globally unique," and move on thinking that everyone agrees. And the answer is well, if you're talking about evolutionary pressures, the answer is, "Well, that's not true."

SUZANNE WOOLF: Thank you. That's exactly what I was getting at.

RUSS HOUSLEY: Well, it requires cooperation. And any party refusing to cooperate breaks it for everyone.

SUZANNE WOOLF: I don't think so because even cooperation does not take away the fact that somebody could do something different pretty much any minute.

RUSS HOUSLEY: That's my point.

SUZANNE WOOLF: It doesn't take away—

RUSS HOUSLEY: At the point anyone does something different, it breaks it for everyone.

SUZANNE WOOLF: And that's the world we have been living in for pretty much since the beginning. The initial formulation there only existed in some ... Assume it's spherical name space.

RUSS HOUSLEY: Spherical.

SUZANNE WOOLF: Yeah. The globally unique name space does not exist. It never has. It's a useful hypothetical construction, but people think it's a thing, and it's not.

RUSS HOUSLEY: Well, Mac addresses work only because chip manufacturers, NIC manufacturers, all play by the rules. If there were any that didn't, collisions would happen.

GEOFF HUSTON: Digital. Do you remember when Digital rewrote the bottom—

RUSS HOUSLEY: Yeah, I remember when they let you set your MAC address and did so programmatically.

GEOFF HUSTON: They rewrote the bottom 16 bits to your DECnet address. That worked well. So even then, people were abusing a damn fine idea with a damn silly one.

RUSS HOUSLEY: Yep. Yep. Oh, DECnet phase four or five. I forget which one it was.

GEOFF HUSTON: It was a full job. That was my day job, yeah.

SUZANNE WOOLF: I've thought for a long time that the property we like about DNS is not that it has a global name space so much that it has a plausible default name space.

GEOFF HUSTON: And you're actually saying when you talk about the DNS, we actually carry this baggage of a frame of reference with us.

SUZANNE WOOLF: Yes.

GEOFF HUSTON: And when we talk about alternate name spaces, a different frame of reference is there, and it's not there at the same time. We're in this kind of weird multiverse.

RUSS HOUSLEY: Andrew, this observation is so important to the context of the whole document, it belongs in section one.

ANDREW MCCONACHIE: Okay.

GEOFF HUSTON: I fear we're having a discussion about theoretical physics of 1819.

RUSS HOUSLEY: And then somebody walked in and said ...

SUZANNE WOOLF: Special relativity. It's a thing.

GEOFF HUSTON: I think special relativity is the next thought. Yes.

SUZANNE WOOLF: Exactly. Thank you. This is exactly where I thought I was going. But I do think it's important. I've thought so for a long time. Yeah, the problem is that none of this is absolute. It still moves.

RUSS HOUSLEY: And it could only be absolute through cooperation. That's the really, which doesn't happen. Right?

SUZANNE WOOLF: Yeah, the difference between those that happen and can't happen, well, we'll discuss it over a beer some time. Maybe drag a real philosopher in [inaudible].

RUSS HOUSLEY: Right, Peter Saint-Andre, yeah.

SUZANNE WOOLF: Yeah. Anyway, I don't hate myself that much, not this week.

GEOFF HUSTON: Neither do I. I don't live that long to read that much.

RUSS HOUSLEY: Oh, come on. He doesn’t write as much as [inaudible].

GEOFF HUSTON: Yeah. I don’t read [inaudible] either. Sorry.

SUZANNE WOOLF: In any case, no, I think that is an important notion that the name space ...

RUSS HOUSLEY: It really is.

SUZANNE WOOLF: Name space, the names and the resolution of the names is always relative to some frame of reference. The thing that people think they're carrying around is that they didn't—a certain sense they don't need frame of reference. What's really happening is there's an implicit one.

RUSS HOUSLEY: And worse, because it's implied, the two parties involved may have had different ones.

SUZANNE WOOLF: Yeah, that's a risk factor. That's a whole class of risks is that people are working from different frames of reference and don't know it.

RUSS HOUSLEY: Correct. And that's what ... And really that whole discussion about the user gets confused and frustrated is exactly based on that point.

GEOFF HUSTON: So the new rounds of gTLD expansion assume that ICANN offers the privileged position that everyone else is bounding their exceptions but ICANN is not. Now, you could make that same claim about every other player in this space, including the blockchain folk who, as you just said earlier, Ethereum said, "We won't touch on anything that exists."

So they're kind of saying, "The space is unbounded but we're putting a stake in this." But we're saying, "Everything else out there is bounded by what exists on this day at this time. We're not going to touch that but everything else is ours." The new round of gTLD expansion says the same thing, but us is then ICANN. And you can keep on listing this out. Microsoft was saying the same thing when it said, "Use .corp." It was really saying, "Everything that isn't already corralled is ours."

And it's that sort of frame of reference, tussle, where you're trying to say, "Well, let's all inhabit my frame of reference." And then someone else comes along, "Well, let's inhabit mine," is where we have these issues because in some ways the evolution of the mechanism becomes an evolution of the space itself. We can't just resist ourselves around saying, "Well, it's the way we resolve it." And the answer is, well, no, it's the name space itself.

And that becomes almost a commentary on the title here, but you might think that you're talking about the mechanisms that take a name

and produce a mapping. In actual fact, you're looking at the names and tying the names to mechanisms that cause some of these issues.

SUZANNE WOOLF: Yeah, I'd go along with that.

GEOFF HUSTON: And I take as an absolute classic case in point IDNs.

SUZANNE WOOLF: Oh, God.

GEOFF HUSTON: No, but you structure the name to cause an action. As soon as I see there's magic characters, XN--, my brain explodes and I have to do different things.

RUSS HOUSLEY: It’s much harder after your brain explodes.

GEOFF HUSTON: Well, as we've seen in practice.

[BARRY LEIBA:] Are you proposing that someone's going to come up with an alternate for IDNs and use that?

GEOFF HUSTON: Oh, don't even go there.

SUZANNE WOOLF: I haven't looked closely at the structure for names in the others yet. But Ethereum actually is LDH or emojis, which I ...

GEOFF HUSTON: So I use emojis. And as soon as I use XN-- something, I go to Ethereum. Why not XM or XE to explicitly say, "Look, no matter what, if it's XE--, it's Ethereum." And the answer is well, you could do that but ...

SUZANNE WOOLF: Well, and that's where ... And I know I'm going to live to regret this but that's where a lot of the discussion about reserved names, not just in the name collision context, becomes extremely difficult because people get absolutely hung up on what the string is rather than what function it serves. And if we could ...

RUSS HOUSLEY: Naming has always been that way, period.

SUZANNE WOOLF: Yes. Yes.

GEOFF HUSTON: And we have had such a good track record of maintaining the subtle and weird distinction between domain names and host names, haven't we?

SUZANNE WOOLF: Oh, it's all brilliant. It's all brilliant.

GEOFF HUSTON: It's all brilliant. Just everyone understands that distinction. What do you mean, I can't have _geoff? You can't.

RUSS HOUSLEY: .arpa.

GEOFF HUSTON: _geoff.arpa. There you go.

SUZANNE WOOLF: At least it's not _geoff.int.

RUSS HOUSLEY: Oh, just a different set of broken rules. I'm not sure we're getting ...

GEOFF HUSTON: Well, see the point I was making is that some ways when you want to talk about the evolution of DNS resolution, the issue comes that we're trying to not make different forms of resolution all yield the same

answers. We're actually quite happy they're proposing different forms of resolution. They'll actually give you different answers. And this then becomes incredibly confusing.

And so what we try and do then to delineate the fact that you've stepped into a different frame of reference is we start delineating in the names themselves. So families of names, frame of reference, then are tied up with families of resolution contexts.

And so it's very, very hard to talk about an evolution of DNS resolution without taking onboard the issue of how do we structure the larger universe of names to accommodate varying forms of resolution? And I suppose my point is you can't talk about one without talking about the other. I witnessed the IETF discussion where the real issue was Tor is different. Therefore, I want the Tor name. Name plus mechanism got married.

SUZANNE WOOLF: Oh, yeah, and the GNU people wanted a name, and the Ethereum people at one point wanted a name. And none of the blockchain people could tell you, seemed to understand that what they were really asking for is a whole set of names because hey, one of the great freedoms of blockchain-based naming is you can fork it any time you want. And then, what name are you using to designate a different blockchain?

GEOFF HUSTON: Right. And so when we talk about frames of reference and resolution contexts up there in the introduction, the whole issue is it's a name space discussion as much as it is a resolution discussion.

SUZANNE WOOLF: I might be [sobbing] now but yeah.

RUSS HOUSLEY: I think that is a consequence of Suzanne's observation.

GEOFF HUSTON: Let's blame Suzanne. Yay.

SUZANNE WOOLF: Hey, these scars I got from previous incarnations of this discussion are finally worth something.

GEOFF HUSTON: That's right. That's right. You wear the badges of honor. I've been there before. Here are my scars.

SUZANNE WOOLF: Yeah, well ...

RUSS HOUSLEY: It's ID/locator split all over again.

SUZANNE WOOLF: Yes. I can agree with that.

GEOFF HUSTON: Yes, it is.

RUSS HOUSLEY: That just says that we just did it again in a different layer.

SUZANNE WOOLF: I actually believed that the default or the context around, I don't know, conventional domain names, having a default context has been really useful and is worth preserving. I don't want to go from domain names mean you know how to resolve them to gee, if it looks like a domain name, you need an additional attribute of what protocol and name space you're using to resolve it. I think it's actually pretty useful to have a default.

RUSS HOUSLEY: Well, Geoff has actually convinced me that I didn't even have a clear default when you talked about the difference between host names and domain names.

GEOFF HUSTON: And so is the issue you as a human, Suzanne, or the computers you use and their demands? In some ways, us humans are quite used to

switching frames of reference and contexts. It's sort of everything around us determines our frame of reference. You put a blind, deaf, dumb computer in the same context and it says, "Give me an explicit table to look at. Give me a deterministic instruction. I can't handle fuzziness."

And so we keep on applying human behaviors into the name space. And we keep on thinking the consumer is a human. They'll understand. And the issue is well, you're going to make this an algorithmic issue. Where's the flag? Where's the registry? Where's the context? How do we make that explicit? And it becomes do I change the name? Do I make another lookup? Do I make it slower? How do I provide that context for computers? And if you go to accommodate this human-oriented diversity in the space, this is where the problem's going to walk in the door.

SUZANNE WOOLF: I need to think about that a little bit. I'm not sure whether I agree with it or not. So I will think about it but I'm not sure what I think of it yet. In any case, I think this does count as progress in how we're thinking about this.

RUSS HOUSLEY: Okay. My mind is really trying to digest all of this.

GEOFF HUSTON: It’s not where my brain was 52 minutes ago.

SUZANNE WOOLF: Yeah, well, if I broke anybody's brain, I'm sorry.

RUSS HOUSLEY: No. I just need to digest it.

SUXANNE WOOLF: Yeah, it takes a while.

BARRY LEIBA: I think today's been a good discussion. I'm very happy with this. Andrew's doing a lot of typing. That's always a good thing.

ANDREW MCCONACHIE: That's not me. It's somebody else.

BARRY LEIBA: Oh.

GEOFF HUSTON: It's not me but I'll mute anyway.

ANDREW MCCONACHIE: Well, we're coming up on the top of the hour.

RUSS HOUSLEY: Yeah, I was about to say let's turn to where we want the homework for next time. Do we want to focus on this introduction now that we've totally exploded it?

BARRY LEIBA: I think that's a good idea.

GEOFF HUSTON: Yeah, I think so too.

RUSS HOUSLEY: All right. Well, that came to closure much faster than I guessed it would.

BARRY LEIBA: Well, I expect that we will go back and tweak it.

RUSS HOUSLEY: Oh, I'm sure we'll jump around a lot, but this is where all the context setting got moved, right?

BARRY LEIBA: Yes. I think fleshing out the introduction will definitely give us a good basis for filling out other stuff later.

RUSS HOUSLEY: Thank you, guys, I think.

ANDREW MCCONACHIE: There's two action items. There's the work party should focus on thinking about this introduction and fleshing it out a bit more. And then, I have an action item to send the charter to the full SSAC.

RUSS HOUSLEY: Yes. I'm sorry. That just doesn't nearly break the rest of the heads of the SSAC.

BARRY LEIBA: Well, what we're asking people to do between now and next week is A, go into the introduction and type in some text or make comments or both or whatever. And B, even if you don't do that, at least think about it and have things to discuss next week related to that.

GEOFF HUSTON: It sounds good.

BARRY LEIBA: Okay. All right. Are we done ?

GEOFF HUSTON: Suzanne, aren't we about to meet for the root server governance working group?

BARRY LEIBA: Oh, that sounds like fun.

GEOFF HUSTON: Yeah, you wouldn't believe it.

SUZANNE WOOLF: It's more fun than a human being should be allowed to have.

GEOFF HUSTON: Way too much, yes.

BARRY LEIBA: Probably almost as much fun as the NCAP work party, which, you know.

GEOFF HUSTON: Oh, no, no, no. You don't understand Dante's levels of hell.

SUZANNE WOOLF: No. Think of Dante's levels of hell as a protocol stack.

GEOFF HUSTON: Yeah, right. This one is down way below media. All right.

BARRY LEIBA: All right. So we'll see everybody except for Andrew next week.

SUZANNE WOOLF: Yeah. Imagine a spherical name space.

ANDREW MCCONACHIE: Thanks, everyone.

GEOFF HUSTON: Thanks.

RUSS HOUSLEY: There's a black hole in the middle.

RUSS MUNDY: Bye.

[END OF TRANSCRIPTION]