KATHY SCHNITT: Welcome to the Evolution of the DNS Resolution Work Party Teleconference on Thursday, the 26th of May 2022. Okay, Russ, go ahead.

RUSS HOUSLEY: I've been giving a fair amount of thought to this idea that Suzanne threw out that really permeates the whole topic, that there's this implied context to a name that people apply but the computers don't have any idea what's going on. The .onion is an inherently segregated namespace from others and so on. I think it's a really important thing to capture. I'm just trying to figure out how we crisply explain that this is going on in people's heads but the stupid robots that process them have no earthly idea that's the case.

BARRY LEIBA: But it's actually worse than that. It's not just that it's going on in people's heads, for some cases it is. For other cases, it's going on in various software that's wrapped around it, but not the DNS software, not the generic software.

RUSS HOUSLEY: Some people don't know that .onion is different and they think it's the same.

BARRY LEIBA: Correct.

RUSS HOUSLEY: So there's multiple levels of confusion. And how we explain that Venn diagram, I just thought we should maybe brainstorm that for a while. Because I think it's a really important concept for us to get across for the later part of the document to even, I don't know, explain, rationalize. Explain the consequences of, right?

BARRY LEIBA: Right.

RUSS HOUSLEY: Really, I thought about it a lot this week. I didn't come up with any brilliant ideas or at least I'm not even comfortable sharing.

BARRY LEIBA: Well, maybe Geoff has. Go ahead, Geoff.

GEOFF HUSTON: Well, you're trying to represent a couple of things and one is a name. And secondly, the context of the name resolve this using Tor, resolve this using DNS.

RUSS HOUSLEY: Right, exactly.

GEOFF HUSTON: That split of name and context, essentially, when we designed the DNS, we kind of had this model implicitly of a single context. So we started with the root. Then we pushed all the names underneath the root saying, "Well, if you're in the root, you're in this context." The alternate sort of context came up going, "Well, it looks like one of yours but it's not." There are two ways of doing this. And oddly enough, as usual, when given a choice, folks chose both, which is just bloody horrible.

RUSS HOUSLEY: Which is just humans.

GEOFF HUSTON: Right. Number one, you try and take what you thought was part of context A and pull it to one side. Dot onion is a TLD with an implicit meaning of a context switch. But just to make sure, we then did a knee-jerk reaction and said, "Let's have an entirely different thing called a registry and let's put the top-level label onion in this registry," so that no one's going to look it up, but at least we feel we've done our job and reserve to context label.

RUSS HOUSLEY: Yeah, you're right.

GEOFF HUSTON: The folks who are trying to make sure that everything is recursive and there is no additional craft that you got to carry around that isn't the DNS, wanting to squeeze all this back together, and the natural reaction,

which never really added steam, was to invent a new uber route, a route above all routes, where different contexts could register in this top-level domain, and that should only be reserved things that have a different context. Of course, for the DNS, this went down like a lead balloon, right? We are the context. What are you talking about?

For others, the concept of Warren Kumari's approach, let everything else go under a reserved label that says, "We don't understand what particular context is it we're going into, but it ain't the one you use to," which .internal, whatever the favorite name was, which quite frankly, had no support from everyone else who was mucking around with context because it kind of puts you into the isolation ward.

RUSS HOUSLEY: I agree with everything you said but I think there was an intermediate explanatory step. Host file is replaced by DNS, and then all the software gets written that uses that name form, then people want to leverage all that software but want to use it in a not DNS context, then everything you said.

GEOFF HUSTON: No, no. Absolutely true, absolutely true. If you're going to invent a new name context, inventing a whole new set of applications, infrastructure registries, blah, blah, blah, extended list is kind of brain explodes, not going to go there. Leverage all the existing work, big tech, this is trivial. Yeah, you were so right.

RUSS HOUSLEY: Trivial but boom, the software is now complete, and thus, then users of that software.

BARRY LEIBA: Some of this alternative resolution is doing the same sort of thing of turning a name into some sort of locator. But some of it isn't even doing that, it's turning the name into some other sort of thing that they're using or directing it in some other way. So yeah.

GEOFF HUSTON: I'm sorry. The DNS is done already?

RUSS HOUSLEY: Isn't that in the DNS, what resource record you want?

BARRY LEIBA: Well, yeah.

JACQUES LATOUR: I just pasted the picture based on what you were talking about, which is you have a computer. It's a computer, just go down, but the operating system which has aligned to IANA, the dot, the root, and then you have an app that goes to the ENS, other namespace, and then you have a browser that goes to onion or whatever. So that chose different namespace, and then 1.1.1.1 Cloudflare, if you point to that, you can go to either space because they result both.

RUSS HOUSLEY: That's also true and it makes it even more complicated.

GEOFF HUSTON: But the issue is for anything in a network to work, the referential framework that I use, when I communicate an entity from that framework and try and share it with you, guess what, you have to share my framework. So what you've drawn there inside your machine, I have to replicate. While there might have been choices, applications you loaded, etc., in your space, how do you know it's in my space? And that becomes the nature of why the DNS kind of work so easily and why these alternates are always such a pain because the DNS is a single context space. And our efforts to make multiple contexts outside of resource records have kind of fallen foul of a whole bunch of objections from the incumbents, legitimate objections, might I add, perfectly valid going, "That's crazy. I'm not going to go there." So while you can load up a context of 10 different spaces in your machine, to communicate something to me, I have to load up the same set of spaces ordering, etc., that you've done.

RUSS HOUSLEY: How do we put that into the story?

GEOFF HUSTON: Well, the issue is, are you talking about the evolution of DNS resolution?

RUSS HOUSLEY: We're talking about name resolution, not DNS name resolution.

GEOFF HUSTON: Oh, sorry, I was reading the title on my screen, SSAC Draft Report of Evolution. We end up back in the workgroup that Lyman Chapin chaired a few years back on to the namespace once more, which, oddly enough, was triggered by the IETF adopting a special use name registry and having ICANN kind of not recognizing it.

RUSS HOUSLEY: Yeah, right.

GEOFF HUSTON: You're out of gTLDs. Yes. Any name not on the list of the things I can ask for? Well, the ones that are already gone. What about the IETF list? No answer.

RUSS HOUSLEY: Yeah. There was that list that was created when ICANN was formed but it hasn't been revisited.

GEOFF HUSTON: Right. But the IETF when it created a special use names registry, which is great, it reckoned it had the right to do that. But ICANN was neither consulted nor acquiesced, nor, nor, nor, and that's just typical set of tensions.

RUSS HOUSLEY: Yes. I remember when that happened.

GEOFF HUSTON: Don't we all? So we find ourselves back in that and it's an unpleasant place to be because there's no clarity of answer there. It's a great diagram that then draws a second computer in that diagram, Jacques. How does computer A communicate the context of computer B?

JACQUES LATOUR: Yeah. It's more around the resolution, right? But if you scroll down at the bottom, there was just the OS going to a name resolution to the root to IANA. And now, it's complex and it's hard to understand how names are resolved by what and where. So I think the context is the resolution of name, not the peer-to-peer communication between different things.

GEOFF HUSTON: Like I said, the typical computer science reaction to that creates a synthetic top-level domain that encapsulates all that resolution context. So the context itself is a name and you descend through that context label your inherited context and everything below that just kind of works.

RUSS HOUSLEY: Yeah, except that we can't do that without breaking that software.

GEOFF HUSTON: I said academic. I didn't say practical.

RUSS HOUSLEY: Fair enough.

GEOFF HUSTON: And it's true.

RUSS HOUSLEY: Into the level of indirection all result to problems. I'm really not sure how to—I mean, I think I could flow how all that happened, the history. But to what end? I end up with this place where, okay, and then we say, "Stop it." What are we really trying to say?

GEOFF HUSTON: Oh, okay. So then you get back into the economic and sociological nature of the Internet itself. So 50 years ago, to get the telco system to adopt something, I'd knock on AT&T's door, and if I really want to be truly international, I might knock on Deutsche Telekom's door. I would convince them and there'd be no trials, no nothing. It would either get adopted or it wouldn't, and everyone else just has to play tag. It's a command-driven economy.

To get something adopted now, and I reckon it's a great idea, how do I prove it? I need to deploy it somewhere, don't I? It's a market. Oh God, I can deploy it in my backyard. I can deploy it on Jacques's computer. So

what? To get adoption, I have to demonstrate viability. To demonstrate viability, I have to poke and prod at the existing reality and disrupt it. Dot onion, dot unstoppable names, dot any other bullshit you like, is a demonstration that we got what we wanted, we got a market-driven marketplace of ideas where the testbed and the production bed are the same. There's just no difference.

JACQUES LATOUR: So based on that, I think you can abstract the picture up a little bit. Let's say you have a computer and you have name resolution to the Internet as we know it to the dark web, to the Web 3.0, and Web 3.0 has multiple emerging spaces. From that, just show it as a high level picture that you surf the Internet, now we've got multiple things that have their own resolution. And then there's mechanisms and techniques for each one. They're all [inaudible] on one computer device for an end user. The end user doesn't really know what gets resolved where.

RUSS HOUSLEY: So, Jacques, let me pull on one little thread in that. So say you do your name resolution through 1.1.1.1 and you give it a dot under your name. So it gives you back an IP address. But if you don't use the Tor Browser to go there, it's crack. How do you know?

JACQUES LATOUR: That might not be the right example. But ENS with IPFS, you can make it there with the alternate space.

RUSS HOUSLEY: Okay. So like a theory in .link, it's going give you a thing you can sort of use but you have to use different software to go there.

JACQUES LATOUR: Yes, for sure. But you can have an app on your mobile that talks Tor, right? Tor built in the [Reno].

GEOFF HUSTON: It's interesting point you raised there, Russ. It's a really interesting point, because in some ways, what you're saying is dialing in is not only the context of resolution that they're trying to differentiate, but also the subsequent response that a client gets has a context in the forwarding environment, the transport system, where you're saying you can't use IP per se. That address is unhelpful. You have to wrap this up in Tor or oblivious HTTPS or name your favorite—oh, I know, Apple's private relay servers. Because if you don't use that, it ain't going to work.

RUSS HOUSLEY: Right. I think that was a piece in our evolution or a dimension of context that has to be explained as well. I don't know where to write that down.

GEOFF HUSTON: It's an interesting concept. What if I put up a resource that was only accessible via Apple's private relay service?

RUSS HOUSLEY: Or only accessible by v6?

ROD RASMUSSEN: Doesn't Apple do that already?

GEOFF HUSTON: The DNS kind of allows that to be perfectly usable.

RUSS HOUSLEY: They do if you were to populate only a Quad8, right?

GEOFF HUSTON: Correct. If I wanted to go down into these twisty little corridors, Apple's private relay service is not an address space distinguisher. It's deeper or more weird. In essence, if I knew it, I could do it. If I didn't know it, it's completely unhelpful.

RUSS HOUSLEY: Right. I think .onion is the same way.

GEOFF HUSTON: But the trick is, if you think this is just a mechanism to identify what context of—I'll call it resolution, for one of a better word—that gives you back effectively an answer that is independent of the mechanism of resolution that is useful no matter what. It's an IP address. It takes you somewhere. Then a Tor-based destination doesn't obey that rule, does it?

RUSS HOUSLEY: That's right.

BARRY LEIBA: Nor does a Bonjour-based one or a Microsoft, whatever-the-fuck-they-call-it-now-based one or whatever.

RUSS HOUSLEY: I'm sure it's a layer two thing, right?

GEOFF HUSTON: Layer two and obscurity and privacy and empire building and get all that.

RUSS HOUSLEY: Okay. So part of this context is at what layer the address is useful?

WARREN KUMARI: Sorry. I think I might have missed a word in that. Bonjour is used across a lot of layer three domains as well now.

RUSS HOUSLEY: In the mDNS kind of—

WARREN KUMARI: Yes. It's terrifying but if I go to an office and open my laptop, I see printers scattered all over the building, city, region, whatever. There's mDNS proxies which are deployed.

RUSS HOUSLEY: It was supposed to be link relevant.

WARREN KUMARI: Local or something like that? I guess not.

RUSS HOUSLEY: Well, local to me. So I didn't know they were proxying it to some arbitrary administrator's definition of local. So all the land segments in a what?

WARREN KUMARI: In whatever the provider decides seems sane.

RUSS HOUSLEY: Yeah. Cool.

WARREN KUMARI: Yeah. What could go wrong?

RUSS HOUSLEY: I remember when I worked at Xerox, this guy was looking at our system, and the guy says, "See, I can see all these file servers all over the world." And the guy goes, "Do you mean I can open that one in Tokyo?" And he goes, "Yeah, but don't." He's like, "Why?" "Because it works. You'll be waiting a while." It's like, "Oh, great. Now the paper's coming out in Tokyo."

GEOFF HUSTON: That's the fax system reinvented. In theory, you could print on any connected fax device. If you knew its number, you could print on it.

RUSS HOUSLEY: That's right. Access control. What's that?

GEOFF HUSTON: Yeah, what's that? Here's the number of the fax machine. Don't tell anyone.

RUSS HOUSLEY: This is just making my head hurt. All right, Barry, what brilliant idea do you have for pulling this all together?

BARRY LEIBA: Well, I don't yet. But the discussion is good and I'm sure Steve has lots of notes going in there. So as we flesh it out, we will—

RUSS HOUSLEY: I think it's interesting that Suzanne through this "Oh, it's all in the context" idea, what we've actually learned by thinking of exploring it is this context is in own self multi-dimensional.

BARRY LEIBA: Yes. And why is that surprising?

RUSS HOUSLEY: It's far worse than what I thought when she said it. It made my head hurt when she said it.

GEOFF HUSTON: But I think there's a deeper thing, too, and I would actually hearken back to the fact that A, this is inevitable, and B, no matter what you try, it is unstoppable, and it's partially because it's not a command-driven economy. In the marketplace of ideas to prove an idea, oddly enough, it's circular. It has to be seen to work. And for that, it has to be seen. You're always going to find competitive entrants in the market trying to demonstrate their viability and including all their weak points because that's the way you do it. If you're used to a model of communications, which was command-driven, which was the previous century, then this becomes pretty frightening. Because you can stamp on .onion but it's not going to do a damn thing. You can stamp on all of these. It's not going to do a damn thing. Because if I have a good idea, convincing the incumbents that their model is broken and my model is better is kind of hopeless. So I've got to seize the user and seduce the user into playing, and that will draw the attention of everyone else and demonstrate the

viability of my wonderful idea. Whether you call that evolution or just market-based dynamics, it's the same thing.

WARREN KUMARI: The other thing is you spend millions and millions of dollars on marketing Unstoppable Domains, and then all of the users decide that they really, really want this even though they've got no idea what the hell it is. But yeah, that's largely what you said.

JACQUES LATOUR: On that topic, we had a person that reached out to CIRA because they wanted to transfer all of their .cira domains that they own to Unstoppable Domains and they couldn't get the DS record move. And they discovered it didn't really work. The guy did it live on the Internet not knowing it would break in.

WARREN KUMARI: If you look at the Unstoppable Domains webpage and all of their stuff, they say 2.3 million domains registered, 275 coins and tokens supported, 190 integrations, no renewal fees, blah, blah, blah. It all sounds great. Apart from the fact that they don't mention that they're not actually domains and don't work.

RUSS HOUSLEY: That's because they called them domains on purpose.

WARREN KUMARI: Yes. But actually, it's really hard to figure out what these are and that they don't work.

GEOFF HUSTON: Again, you're so right, Warren. And typically, before we had public agencies that were entrusted with consumer safety. The modern equivalent is—

WARREN KUMARI: Much like ICANN. Didn't you know they regulate and organize this domain and are responsible for stewarding the namespace?

GEOFF HUSTON: Oh, the namespace. Okay, fine. I'm with you totally.

JACQUES LATOUR: So i2B is another one, the invisible Internet.

GEOFF HUSTON: Yes. Right. But I'm sure we could go on listing them. I'm sure even as we try, each of us will think of another great idea and can add it to a list. As I'm trying to point out, it just is. And the issue is, in some ways, the market will shift depending on the dynamics of billions of individual decisions, what drives the collective will? It's random. It's not an ordered world.

WARREN KUMARI: A reasonable amount of this is actually a reaction to the new gTLD system. If you look at Handshake as an example, they are making it very clear that that's one of their drivers, right? Let me just put a link in here. This isn't just an old me griping but it is worth understanding the incentives behind some of some of these. Name basis, basically one of the wrappers around Handshake domains—sorry, handshake.org—and they are specifically calling out this as a sort of a significant driver. I don't know if that's something—

GEOFF HUSTON: I think the generic lesson—and it's something I think we thought about in the first round of gTLD expansion or even before that—the difference between .table and .onion and .com, if they all behave the same way, are just letters. Quite frankly, they're in marketing terms undifferentiated products or merge, and quite frankly, don't create differentiation in the market. So ICANN's effort to maintain a consistency of performance characteristics and behaviors across all these labels condemn them in terms of market-based differentiation. So at some point, folks who want to distinguish their string of characters, they're forced into behavioral differences. They're forced into saying mine has a natural advantage, not because it's just another top-level domain because that kind of gets you nowhere. It's because it cryptographically validates and manages the zone which removes the need for CAs, full stop, to quote Handshake, or some other crap. So you start to try and change the behavior.

WARREN KUMARI: What are their primary sales pitches? A couple of primary sales pitches, one, no renewal fees, and two, these domains cannot be seized, which is potentially a massive—

RUSS HOUSLEY: What's the point of a domain that can't be seen?

WARREN KUMARI: Seized.

RUSS HOUSLEY: Oh, seized? I just heard it wrong.

WARREN KUMARI: Fair enough.

RUSS HOUSLEY: The government can't come turn it off, right?

WARREN KUMARI: Yes.

GEOFF HUSTON: Right. So again, behavioral change. And whether behavior is in the administrative control or the financial control or the behavioral change in the control of resolution and trust, everyone who's really looking at

this market hard reckons that finding a string of ASCII characters and preserving everything else gets you absolutely nowhere other than burning your money. If you want to differentiate, you've got to differentiate on behavior. So the evolution of this is not just more names because that's just rubbish. You need more behaviors. And the market is responding to that by having wacko behaviors. I can only go so far inside ICANN's rule set, and then I go, "Well, stuff it." I don't need ICANN if I'm going to break this rule set. That's my differentiator.

RUSS HOUSLEY: Wow. Just writing a crisp introduction that says—

GEOFF HUSTON: That's crisp.

RUSS HOUSLEY: That says, "All is lost. Run away."

GEOFF HUSTON: Well, again, not necessarily. The fight to become an incumbent never has an assured outcome. While these innovative concepts—and to quote, I think it was Thomas Edison, "Fake it until you make it." While these things are largely fakery, their outcome is never assured. That's why Venture Capital is sitting behind it—actually, no, I withdraw that. Conventional banks are even crazier than Venture Capital. But the point is still it's a bet, it's not a sure thing. It is a venture.

JACQUES LATOUR: So in the end, there are multiple namespace, there's nothing we can do about it. We just saw a registrar reselling an alternative namespace. Cloudflare was resolving across multiple namespace. Browsers, they do the same thing. But you know that the Internet works because there's unique identifiers. So I think one recommendation is we need to ensure that it stays unique, that namespace don't overlap over other namespace identifier.

GEOFF HUSTON: [Inaudible] that on its head.

RUSS HOUSLEY: But not knowing how to learn the context associated with a string is difficult.

WARREN KUMARI: I should also point out that number nine on the Handshake list is the string gay, which conflicts with the ICANN TLD gay. Number 10 is wiki. There's the ICANN TLD wiki. Inc is 11, there's the ICANN Inc 11. And interestingly 12 is pw. And obviously, pw is Palau or something in the ccTLD world. So we've already lost the uniqueness of namespaces.

JACQUES LATOUR: For .ca, we had a request from Handshake and from the other one, Unstoppable Domains I guess, to register .ca with them to ensure that

they don't overlap. So they did put in a request. We haven't answered yet.

RUSS HOUSLEY: Oh, great. So now if you want to be a TLD, you got to go reserve your name in every other namespace to keep them from overlapping.

JACQUES LATOUR: Yeah. So that's something I think in this report we should lay out. Internally, I'm going to do some research on this to figure out how and what the impact is for .ca. But if Gs and other Cs need to confirm their intent or not to be in those space, then there will be a duplicate and overlaps.

GEOFF HUSTON: Let's get real here. Let's get real here.

WARREN KUMARI: Welcome to the world of everybody else who's got a domain, who has said exactly the same thing about all the new gTLDs. A new gTLD launched, Google and others said, "Hang on a second. This is purely extortion, I now need to go and register my name in a thousand new TLDs, including ones that charge huge chunks of money." Simply saying, now this is happening at the TLD level is likely to end up with like, "It's been up then one layer down already. It sucks to be you."

GEOFF HUSTON: But as I said, let's get real here. If I can convince the Cloudflare recursive resolver to add under different family of resolution, I've captured a stunning less than 1% of the user market doesn't matter in the slightest. If I convinced Chrome to shift a space of names that were automatically thought of as search terms and force Chrome to treat them as a domain name with an alternate resolution path, I have captured 80% of the world's users in one fell swoop. So who controls the uniqueness of a namespace? Google through the Chrome product or ICANN? Pick any one and choose carefully.

WARREN KUMARI: What happens when you start searching for Viagra in the Google search box and they take you to a different naming space?

GEOFF HUSTON: Right. And if Chrome—

WARREN KUMARI: But it's not only Chrome, it's also—

GEOFF HUSTON: If Chrome does it, other browsers do it. If other browsers do it, Chrome goes near.

WARREN KUMARI: Sorry. I'm not even talking about the browser. What happens when search engines and other applications like that? Start using—

GEOFF HUSTON: But isn't this just a market of—let me call it out—naked force? The biggest application that forces everyone else to align is the browser. And in the browser space, there is only Chrome, Safari, and don't care. And because the imbalance between Chrome and Safari is so massive, realistically, in terms of just naked power, Chrome is everything. If Chrome does it, the rest of the world goes, "Yes. Where do we jump?" If Chrome doesn't do it, ultimately, it's dead in the water.

WARREN KUMARI: Some of what you say, although there is confusion between Apple and Chrome in terms of—

GEOFF HUSTON: Right. But 80% market share versus 12% market share—meh. So the point is in some ways, the true guardian of uniqueness and coherence, pick it carefully, but it's actually is the folks behind the Chrome product and their assumptions about how they treat labels that drive everyone else. I'm not saying it's good, bad, or anything else. Just dispassionately, they have a huge amount of say in this environment because a huge number of users use them unconsciously. They don't question Chrome's choices. Chrome just made choices.

WARREN KUMARI: Who has a browser open? Go to wkumari.eth.link.

GEOFF HUSTON: Challenge accepted.

BARRY LEIBA: Okay. I get to wkumari.

JACQUES LATOUR: Redirecting.

WARREN KUMARI: Sure. You get to wkumari but that was resolved through the Etherium namespace. So the name is actually wkumari.eth and the .link stuff is Cloudflare's front end to that. So eventually, it ends up on a real DNS page. But already Etherium DNS crypto, etc., names are usable by the average user.

BARRY LEIBA: Well, more to the point, I think, with some of this, in that example, it did some forwarding around and turn things into an IP address and it worked. In other contexts, something that looks just like that doesn't work at all in a browser. It only works in a particular app that's designed to work in that context. So it may well be that if I type wkumari.eth.link in a browser, it eventually redirects me to wkumari.com. But if that same domain name-ish looking thing gets put into the Banana app, it does some magic somewhere and does something entirely different.

WARREN KUMARI: Yes. But for 99.999% of the users, the Internet is the web.

BARRY LEIBA: True, but not so much with apps now. As more people are using tablets and that sort of thing, apps are running things and you won't know what that app is doing. All you know is that it does something you want it to do from a user interface point of view and you have no idea what's behind it.

WARREN KUMARI: Yes. I think we're in violent agreement on whatever we're saying.

BARRY LEIBA: Right. But the problem occurs then when things leak and something that was intended to be used only in this app winds up leaking into your browser somewhere because A URL got stuffed somewhere. And then all kinds of bad shit happens.

WARREN KUMARI: I believe that you're a member of NCAP Work Party.

BARRY LEIBA: Yes.

GEOFF HUSTON: But you call it bad. Others might call it demonstrating the superiority of my wonderful innovation that's so good, it can disrupt the status quo,

and disruption is good, right? I'm demonstrating that my approach is, oh, so much more evolved and superior.

BARRY LEIBA: When I said bad, I should have said confusing.

WARREN KUMARI: There is a huge amount to be said. There's a lot of really cool stuff that many of the ultimate name resolution systems are doing and provide like ENS and .crypto, etc., which is basically ENS, are much, much, much better in terms of privacy than the regular DNS. They are much better in terms of distributedness and stability against dos than the regular DNS. You don't have to involve anyone else if you want to do a transfer. So I am somewhat playing devil's advocate, but in many ways, the blockchain-based domains are strongly superior to the system we are currently using for most things.

GEOFF HUSTON: In every dimension except scaling to trillions.

WARREN KUMARI: I believe that they would scale better than—

GEOFF HUSTON: But you see what I mean? In some ways, what we've built is a system that scaled and the price of scaling is pretty horrible in so many ways. Stasis inertia, you know.

WARREN KUMARI: I think the biggest advantage, other than the fact that's deployed that our system has over blockchain systems is the fact that there is a governance structure. So when somebody registers www.kiddieporn.org, it can be potentially helped, although that's also one of the largest failures, is that it has that. Whatever the case, I don't think we can A, both say that permissionless innovation is good, while also saying that this is bad. But also, I don't think there's anything we can do about these other systems other than sort of recognize that they exist and that we have to co-exist with them.

BARRY LEIBA: That's exactly where the badness comes in. Because if we built a system that was meant to improve on DNS, we would make it co-exists with DNS in some nice way. If someone else builds that, there's no guarantee that it's going to co-exist well.

RUSS HOUSLEY: To recognize that and say we—

GEOFF HUSTON: Who's the "we" here that's building the system, Barry?

RUSS HOUSLEY: Humans.

GEOFF HUSTON: Right. If I want to innovate, I'm going to poke and prod at reality and twist and morph it because that's why I'm innovating. Otherwise, I'd just be replicating. In some ways, it's up to me what parts of the reality that you live in I wish to distort, not you. Now, you might say I'm making bad choices if I deliberately tread on the toes of things that you rely on, and you may be right, but equally, you may be wrong. The fact that these collisions in innovation is inevitable, just literally inevitable—and I'm not saying come to terms with it because I think that's the way the status quo pushes back on innovation. This is never going to work because … and because the incumbents complain like crazy that some idiots nibbling away at the margins in .pgp, for example.

WARREN KUMARI: But there's also nothing that we can do to stop Handshake crypto, GNU naming service, etc. And try and do that says you all are bad is going to play nicely into their "you're the incumbent where the crypto anarchists"—of course, you say we're bad. Hey, look, now we've got more publicity.

RUSS HOUSLEY: Guess what? [Inaudible] is part of it and we have to live with the consequences. But what the problem is, is these things come with these different contexts and there's no way to learn the context until the human users are educated about it. That's the piece that we haven't captured.

WARREN KUMARI: Yes.

JACQUES LATOUR: So Mozilla is coded to look at one alternate space, pick it on Unstoppable Domains. And Opera is going to be using a different one. So the same domain name [geek] is going to go to different place.

WARREN KUMARI: Yes. According to the GNU naming people, that's actually a feature, not a bug.

RUSS HOUSLEY: Yeah, which is interesting. They are doing it on purpose. All right, Barry, I'm going to tag you. We got 10 minutes left. We need to figure out how to get some work done between now and this time next week. Yes, exactly. All good information but we got to figure out how to do something with it, right?

BARRY LEIBA: Yeah.

RUSS HOUSLEY: I mean, clearly I'll think about it but it'd be nice if we had a more concrete homework assignment.

BARRY LEIBA: Right. Are we at the stage where we can say those of us on the call should put some text in? Or are we at the stage where we need to digest this stuff and talk about it again next week?

RUSS HOUSLEY: It would be nice to have that evolution of, okay, host name to DNS to software that insisted on this name form to the context, and then the understanding that the context is itself multi-dimensional. I don't know how to capture all of that yet. But we need to. Because about half of the work party isn't here, we're going to need to have something to put in front of them to not just repeat everything.

BARRY LEIBA: Right. This is the general problem we have in work parties, that we tend to get different halves of the work party showing up in different weeks.

WARREN KUMARI: And everybody has an opinion and they're all equally valid. Keep in mind, we have the consensus work party too.

GEOFF HUSTON: Yeah. It's Lyman Chapin's problem. Every time he held another meeting, the entire workgroup, at the point of that meeting would shift 180 degrees.

RUSS HOUSLEY: That will guarantee no progress.

ROD RASMUSSEN: Lyman had the worst of it.

RUSS HOUSLEY: But the interesting thing that we haven't captured yet is how that context gets into the human's head that .onion meaning something … If they can't use a different piece of software, right?

BARRY LEIBA: Well, in the .onion example, that's not actually a good example of this because humans don't really deal with the .onion. It's passed around in the software.

WARREN KUMARI: No. I mean—

RUSS HOUSLEY: Why not?

WARREN KUMARI: A lot of people, depending on your audience and how you define a lot, a lot of people are using faceb00c, whatever it is, whatever .onion to browse Facebook over Tor, and they actually use that address and see that address.

RUSS HOUSLEY: Your example, when you use a different app that is using a namespace, a subspace of overlapping space or whatever, then you are unaware of it. But when it does have a representation that overlaps, the human has to learn the context.

BARRY LEIBA: Yes. Okay. Is there any hope that the people on this call can put some text in, does not have to be complete sentences, does not have to be fully formed clause sometime in the next week?

RUSS HOUSLEY: So again, focusing on Section 1, right?

BARRY LEIBA: Yes.

RUSS HOUSLEY: Well, I will do my best that I hope others will too.

BARRY LEIBA: Geoff, Warren, Jacques, do you think you can throw some thoughts in?

WARREN KUMARI: Honestly, probably not.

GEOFF HUSTON: I'm just throwing in two bullet points. Summarize I think what I was saying.

BARRY LEIBA: Good, good. Thanks.

RUSS HOUSLEY: Somehow the permissionless innovation aspect of this needs to—yeah. Because of that, it's going to keep happening, get over it. Great.

WARREN KUMARI: Yeah. One of the things which I've been seeing happen again, and again, and again in the name collisions discussion in a bunch of places, actually, is people within ICANN having a serious built-in bias whatever, that anybody who's using another namespace or a name that isn't registered in the ICANN namespace is, by definition, bad and doing something bad and should be punished. Maybe they're right—

RUSS HOUSLEY: Isn't that just generally the attitude of an incumbent?

WARREN KUMARI: Yes. But it's the incumbent who's going to read this document. And so when we say permissionless innovation—and by the way, some people use this thing for their own use, they're going to hear, "There's some bad people who do bad things and we should beat them."

RUSS HOUSLEY: Well, if you're into that.

BARRY LEIBA: All right. So we are almost at the top of the hour. Do your best to throw some more ideas in there, rudimentary texts that we can massage and discuss next week. And let's see if we can have a discussion next week that includes new people, and moves forward from this rather than repeats this.

RUSS HOUSLEY: That would be really helpful.

JACQUES LATOUR: I'm off the grid next week on vacation.

BARRY LEIBA: Okay, Jacques. Enjoy.

RUSS HOUSLEY: Lucky you. Enjoy it.

ROD RASMUSSEN: I'm going to be in Hawaii next week.

BARRY LEIBA: God dammit. All right. Well, then we'll see some of you next week and some other people next week, we hope. Bye-bye.

RUSS HOUSLEY: Take care.

WARREN KUMARI: Did you want to talk about something else after this?

[END OF TRANSCRIPTION]