UNKNOWN SPEAKER: Welcome to the Evolution of the DNS Resolution Work Party Teleconference on Thursday, the 25th of August, 2022. Russ, I'll hand it back over to you.

RUSS HOUSLEY: All right. Thank you. Last week, our heroes were trying to define the terms and got bogged down doing so. I think that we did make some progress, and I hope that we can maybe finish the definitions today, and if so, then we'll move on to look at the text that Andrew drafted up based on the discussion two weeks ago which is section six in the Google document. Andrew, why don't you walk us through the changes you made here in the definition section, and then we'll see how far you get before someone feels they have to jump in.

ANDREW MCCONACHIE: Sure. I think last time we ended on discussion of the definition of domain name space. I didn't touch any of the text here, I just added two new definitions, alternative naming protocol to distinguish it from alternative naming system, and then also domain name. This definition of domain name, unfortunately, depends upon the definition of labels, but it's something I just took from RFC 8499.

I added these, in the hope that they're helpful. If they're not helpful, we may not need them. We certainly don't have to feel wedded to them, but they're there, yes, in the hope that they're helpful. Russ, do you

remember if we finished talking about the definition of domain name space?

RUSS HOUSLEY: Well, we mostly did. We explored all kinds of things about whether it's related to SSAC 90 or it's not related to SSAC 90, and what not a domain name space was and stuff like that. I think we explored a lot of area around it as well, but I think we were just closing on domain name space and realizing that that's probably as good as we are going to get, but that it was important to realize that an alternative name space, and this is what we were discussing, either did not use the DNS protocol or did not use the IANA root. Then we started talking about DeMorgan's law and whether the current definition was logically the same or not. Anyway, that's where we ended up. Go ahead.

ANDREW MCCONACHIE: Yes, sure. I was just going to say one more thing I added towards the end of last week's call. Warren had given a bunch of string examples, and based on my memory, I recreated that. I'm sure I got some of the classification wrong, and again, this may not be helpful either. I'm sure we could talk about this for a full hour if we wanted to get into this classification. Maybe it will be helpful for the document, maybe not, maybe we'll rat hole on it. I'll leave it up, but yes, that's everything I've added in this section, Russ. I don't know precisely where it is you want to start.

RUSS HOUSLEY: Let's go through all the definitions and see if we have settled or not. An alternative naming protocol is a protocol that's not the DNS protocol. Does anyone have a problem with that?

ANDREW MCCONACHIE: See, Warren has his hand up.

WARREN KUMARI: Warren is actually for the next one. I think it's an ordered list of one more DNS labels, but that's the next one.

RUSS HOUSLEY: Okay, that makes sense. I still think it forces us to define DNS label.

WARREN KUMARI: Yes, which I think is hopefully in footnote one. But it still seemed like having DNS in there.

SUZANNE WOOLF: Yes, label that conforms with DNS format as there's host format and domain format, but they're defined. 8499 is our friend.

WARREN KUMARI: I still, and I suspect I'm in the rough year. I think that it's easier to explain alternative naming protocol as saying one that is not the DNS naming protocol and then define the DNS naming protocol, but I don't

find to be in the rough on that. It just, to me seems weird to define an alternative to something without first defining the something.

RUSS HOUSLEY: It's really an alternative name resolution protocol.

SUZANNE WOOLF: Yes. Now, that goes back to the conversations we've had in the past about DNS is not sort of normative except that it has a useful default, so alternative is not the default. Does that make sense?

RUSS HOUSLEY: Yes.

JEFFREY BEDSER: Well, you are mixing together two concepts here. There's a name space, which is actually defined in RFC mumble D1034 and so on, which have syntax rules for what we call DNS names, and there's a resolution protocol defined again by RFC mumble [00:06:27 - inaudible]. Now, you can have DNS names and a non-DNS resolution protocol. Now, if it's a different resolution protocol, perfectly fine.

You can also in theory, use the resolution protocol against non-DNS names in terms of syntax and that's okay too. And so I'm actually really wondering what you meant by alternative naming protocol and even if you meant alternative name resolution protocol, which is, I think, what

was being meant. I don't understand that either. What are you trying to talk about, the labels or the resolution system?

RUSS HOUSLEY: Both.

JEFFREY BEDSER: Oh God.

RUSS HOUSLEY: We will ultimately be talking about both. Here, we're trying to separate the protocol from the name space by saying an alternative naming protocol is the one that's not the DNS protocol.

JEFFREY BEDSER: Okay. See, protocol to me says the dance you do when you resolve. It's not the semantics and syntax of the space you are computing across.

RUSS HOUSLEY: Great.

JEFFREY BEDSER: It seems that the first definition is actually alternative name resolution protocol.

RUSS HOUSLEY: I agree.

SUZANNE WOOLF: Yes.

RUSS HOUSLEY: That's so helpful.

SUZANNE WOOLF: I think would it be a reasonable --

RUSS HOUSLEY: In the left-hand side, Andrew, change naming to name resolution.

WARREN KUMARI: Do we actually need the first one, because you've got alternative naming system? Isn't it fairly clear that an alternative naming system needs some way to be used?

RUSS HOUSLEY: No, because as we spoke last week, one could use the DNS protocol and be an alternate name space.

SUZANNE WOOLF: I think we're saying that the phrase alternative naming protocol mixes the concepts that Jeff just pointed out, and as such, that expression

doesn't mean anything because you could be talking about alternative resolution protocols, or you could be talking about alternative mechanisms for coining names, but if we're separating them, we have to be consistent about separating them. Is that where you were going, Jeff?

JEFFREY BEDSER: I'm actually sorry. Mouthful of food.

SUZANNE WOOLF: Sorry.

JEFFREY BEDSER: Caught me at lunchtime. I'm actually happy with altering the left-hand side, alternative name resolution protocol. It doesn't really matter what the subject of that protocol is, whether DNS names or whatever, it doesn't matter. It's simply saying this is not the DNS, it's the anti-set. I've already moved on the next one, which is naming system, and my brain is whopping over that one.

SUZANNE WOOLF: Then I will go back on mute and get some popcorn.

RUSS HOUSLEY: Okay, Warren.

WARREN KUMARI: It does seem a little crazy that you can use an alternative naming system, but not using the alternative name resolution protocol.

JEFFREY BEDSER: You are not using them?

RUSS HOUSLEY: Wait a minute, you're the one who said this last week using Yeti as the example.

WARREN KUMARI: No, I don't disagree that there are other ones like Yeti, but it does sound crazy that you can have an alternative naming system that isn't using an alternative name resolution protocol, or that you can use. I think we need some old words there to stop people tripping over that. Yes, Yeti is actually a good example.

RUSS HOUSLEY: You agree that is right, but you want some explanation.

WARREN KUMARI: Yes. Or, I agree it's right, I'm just wondering if maybe our definitions are oddly worded in a way that is not helpful to us.

RUSS HOUSLEY: Odd. Oh, if we're going to get to the editing pass, I think we need to get the content, then we can get the editorial. I'm just struggling with big concepts now. Okay, Jeff.

JEFFREY BEDSER: The next thing is what you call a naming system. I think I know what you're talking about, but I'm wondering if that's the right now. Now, you're talking about the collection of names that are resolvable starting at the IANA One root zone and using the DNS protocol, and you're talking about the protocol. It's applying the protocol to a structured space gives you a system. Is that what you're trying to say? Then you're trying to say even worse, the anti-set of that is the alternative naming system.

RUSS HOUSLEY: Okay. How we got there was we have the domain name space, which is all possible names that could be used with the DNS protocol, and we had the IANA root, and if you use those two together, that's what we are used to talking about as Suzanne has been calling the default. Whatever is not picking both of those defaults, the IANA root and the DNS protocol is an alternative naming system.

JEFFREY BEDSER: So just to take a timely example with this, let's call it alt proposal, which has a bunch of names underneath it, which are syntax conformant, but because alt is not in the root, are not part of the current resolvable set of names.

RUSS HOUSLEY: Correct.

JEFFREY BEDSER: Is that in the naming system or out of the system? Is that an alternate naming system or not?

RUSS HOUSLEY: It is.

JEFFREY BEDSER: Ah, so it's more than the structure, it's the current snapshot.

RUSS HOUSLEY: Mm-hmm, because of the IANA root.

JIANKANG YAO: Jiank here. Sorry, I'm driving right now, so I can't raise my hand. This is all about having a dot at the end or no dot. So .ca. is in the root and it's DNS, and out, there's no dot at the end. If it's a DNS naming structure that is compliant with the DNS and there's a dot and if it's not that, then it's alternate. The dot is important. That's I know, right.

RUSS HOUSLEY: Yes.

JEFFREY BEDSER: Let me suggest something here that was causing my confusion, which is actually in the right-hand side. The text says a name resolution system, whereas natural fact, what you're talking about is a system of names and it's or their resolution. You're talking about two things. You're not talking about the resolution, you're talking about names and their resolution. It's a system of names and their resolution. That does not use both the root zone and the DNS resolution protocol if you really want it to be strict. That's really what you're talking about, I would've thought.

RUSS HOUSLEY: Could you do me a favor?

JEFFREY BEDSER: Who're you talking to?

RUSS HOUSLEY: You.

JEFFREY BEDSER: I haven't got a document in front of me. I'm just looking at the --

RUSS HOUSLEY: Oh, I'm sorry.

JEFFREY BEDSER: If there's one in the chat screen, I'll go there and type it.

RUSS HOUSLEY: There is.

JEFFREY BEDSER: Thank you, Andrew.

SUZANNE WOOLF: At risk of sounding foolish, like even more than usual, I am going back to something I thought I heard a minute or two ago, names that are not in the DNS, even if they're otherwise reserved are not part of the system we're discussing here,

RUSS HOUSLEY: They are not part of the default default as your terms, but they are part of the domain name space.

SUZANNE WOOLF: I might have to split an even finer hair there.

RUSS HOUSLEY: Okay.

SUZANNE WOOLF: Putting on my day job hat for a minute. There is a bunch of names that live in a registry database, and in some cases are the subject of economic activity that do not resolve in the DNS. I'm not completely sure where you want to put those in this emerging taxonomy.

JEFFREY BEDSER: In the current taxonomy, Suzanne, for better or worse, that land up in the big set of alternative. There are lots of reasons why you're in alternative being in a special use registry, being reserved, being whatever. This taxonomy would say it's either a or not a, and if it's not a, it's alternative.

WARREN KUMARI: Well, hang on. No, I don't think so because an alternative naming scheme is something like, or at least I think, something like GNS or ETH or something where you can actually resolve the name. Some set of names like International Olympic Committee is a name which cannot be reserved using an alternative resolution system, but ICANN, for example, has said they will reserve that and not delegate it.

JEFFREY BEDSER: I understand what you're saying, Warren, and you are having an argument with the right-hand side of these definitions. I was looking, this is almost a set theory problem where writing side says-

SUZANNE WOOLF: I understand what you're saying, I'm just not sure I agree with it. Let me think about it.

JEFFREY BEDSER: You agree with the idea that everything that is not A is alternative, and that's the assumption going on here.

UNKNOWN SPEAKER: Right, and I'm not sure I agree --

JEFFREY BEDSER: Well, I'm not sure I agree with it either, I was just trying to make sense of it.

SUZANNE WOOLF: Okay. I will go back on mute and continue to see how this evolves.

WARREN KUMARI: What would actually work well, except that I don't think we could easily do it is if we were in a jam board and we could actually just like-- so I'm actually trying to do like set diagram things to try and show where things overlap. If I draw this up and show a picture and people going to tell me, no, you should move that from here to there and that's not going to work very well. Maybe I will create this picture and then maybe we do actually want to see if we can make it so multiple people can edit. I don't think that Zoom has a shared whiteboard. Does it?

JEFFREY BEDSER: Not that I'm aware of.

RUSS HOUSLEY: Not that I'm aware of.

WARREN KUMARI: Okay. Let me see if I can make a quick diagram and share it, because I think that until we actually can draw something like a set diagram, we're going to be tripping over ourselves.

JEFFREY BEDSER: I suspect while you are drawing it, that what was attempted to be defined here is that a naming system is a collection of rules about names and a mechanism for their resolution. Of all of these couples, coupling of name and resolution, there's one we refer to as the DNS and an alternate set of couplings that we collectively refer to as alternate, no matter what it is, recognizing that some name collections do not have a resolution mechanism and are therefore not part of set A or set B, they're not an alternative naming system if there's no resolution. I think that's what the definition is trying to drive at, but I can't be sure.

RUSS HOUSLEY: I believe that's where we ended up at the end of the call last week. That doesn't mean that's where we will ultimately end up. Does that make sense?

JEFFREY BEDSER: Oh, no, it does. I think you are actually defining implicitly this concept of a naming system, which is not defined somewhere, which is actually a collection of names and name space, syntax and semantics of names and a resolution mechanism that attempts to map names in that space to an alternate characteristic or attribute. That then gives you an alternate naming system as being naming systems that aren't the DNS, but you're trying to do both in one sentence here.

RUSS HOUSLEY: I think that leaves multiple sentences.

WARREN KUMARI: There's a document from 1978 called IEM number 19, which is a note on internet naming, addressing, and routing, which is, you know, in spite of the fact it's really old, has some very useful things which we might want to take a look through and explains a name is a resource that indicates what we seek and addresses how it is where it is, a lot tells us how you get there. It has some better, like a name is a symbol, usually human readable string, identifying a resource or set of resources, blah, blah, blah. While it's is very simplistic, I think it is actually useful for us to have a look through, as I say, 1978 by John Chuck. I'll put the link in.

JEFFREY BEDSER: Those are like really old IEMs.

WARREN KUMARI: They are. I think that what we're actually talking about here is a fairly fundamental or foundational type problem, and so looking at them might be useful again.

ANDREW MCCONACHIE: What was that number again, Warren, 1978?

WARREN KUMARI: I put it in the Zoom chat?

ANDREW MCCONACHIE: You put it in the chat?

WARREN KUMARI: I put it in the Zoom chat. I did not put it in the Zoom chat.

RUSS HOUSLEY: I wanted to say, what are you talking about? I don't see anything in the Zoom chat.

WARREN KUMARI: I copied and paste, but I did not actually click the button. There we go.

ANDREW MCCONACHIE: Thanks. Are there definitions I should crib from this and put into this definition section or is the idea that we should all just read this maybe as [CROSSTALK].

WARREN KUMARI: I think this has some useful foundational things that are worth keeping in mind. I don't think it actually has a useful definition.

UNKNOWN SPEAKER: This is looking at the beginning of that reminds me of the arguments that we've had about the difference between URLs and whether something is a name or something is a locator and things like that. That's been going on for a lot of context and a lot of time.

JEFFREY BEDSER: I think this text is making the bold assumption of assuming what we are talking about in terms of what is a name, what is resolution, and what is a name system, and then you immediately leap into alternatives, and what is a name, well, systematic way of syntax and semantics to assemble compound labels typically for human use, but not necessarily.

Resolution normally is a way of defining it and associated attribute of individual names, and resolution means defining an audited operation on a name in order to discover or somehow elicit that attribute. Then you start talking about naming systems, which is actually a coupling of a collection of names consistently defined and a resolution protocol, an operation across those names, and that then gives you a naming system.

Then what you're trying to say is the DNS made a choice. In fact, they made two choices. They made a choice of the syntax and semantics out of the arbitrary collection of things. You could put bunch together in ones and zeros. These are DNS names, everything else is not, and in terms of resolution protocols, this is the one that DNS uses, there are others, but they're not the DNS.

That then gives you this idea that once the DNS had made specific choices, alternate choices, which exist in both the space and the protocol and in what you'd call the system, the coupling of space and protocol certainly exist. There are alternatives out there, there are paths not followed by the DNS. You've got this problem. I think it started by alphabetizing your definitions.

You're introducing some of the complex topics that should have come logically at the start, and then the other bits and pieces follow on. It doesn't work in your brain because the alphabetical taxonomy actually gives the worst, the most complex bits alternative at the start of the list, rather than at the end. Maybe you should do a structured walkthrough and not use an alphabetical list. Just a thought.

RUSS HOUSLEY: Yes, that may be a way so that we get to default default, alternate is anything that is not default default.

JEFFREY BEDSER: Basically, yes, and that's what you're building towards. Yes.

ANDREW MCCONACHIE: I will put the easy ones first and then you can see what you think.

SUZANNE WOOLF: Yes, building from the simple to the complicated is going to be hard enough if having this document do some of that heavy lifting would be good. [AUDIO BREAK]

RUSS HOUSLEY: How's that ordering?

JEFFREY BEDSER: Looking better, but the circular reference from domain name space to name resolution irks me. Domain main name space is indeed just the set of names in its syntax. It's not qualified that could be used, and I think that that phrase should be sucked out.

WARREN KUMARI: Do we have a name for names that follow the DNS syntax and protocol, but not in the IANA root?

RUSS HOUSLEY: No.

JEFFREY BEDSER: [00:31:58 - inaudible] alternate name space.

RUSS HOUSLEY: We don't yet distinguish ones that only could use the DNS name space from ones that have a completely different name space.

WARREN KUMARI: Oh, yes, and ones that use the DNS protocol, like Yeti for example. Or people who've done alternate roots. Because I think that that's also needed to help make it easier to explain. This is almost definitely the worst idea I've ever had. I will share a link and people will tell me how I'm wrong giving that this link works for anyone.

ANDREW MCCONACHIE: Should I put that on the screen?

WARREN KUMARI: I'd prefer that people just click on the link and move things around themselves.

ANDREW MCCONACHIE: Okay.

WARREN KUMARI: I suspect that will end with a fight, but hey, that always entertains me too. Note that the drawing tool sucks.

RUSS HOUSLEY: We're all here to entertain your, Warren.

WARREN KUMARI: That's what I've always thought. People try and claim otherwise, but.

JEFFREY BEDSER: I don't understand.

WARREN KUMARI: What I'm doing.

JEFFREY BEDSER: No, the anti-set of DNS names and alternative names. The bit that is what you call domain names LDH, LLDH, LLDH. What's an example of one that is neither a DNS name nor an alternative name?

WARREN KUMARI: Printed up local.

JEFFREY BEDSER: Why is that different from example that's given?

RUSS HOUSLEY: Wait, why is that not an alternative because it's using the mDNS?

WARREN KUMARI: Any of the ones which were alternative roots, they use the DNS protocol, but they don't use DNS root.

RUSS HOUSLEY: Right. It either uses the DNS protocol, that one does not, or the DNS name space, that one does use the DNS name space. That makes it also local. What I think people are saying is we need a definition for naming systems that are not the domain name space and protocols that are not the DNS. Then we can say an alternate uses one of those two.

JEFFREY BEDSER: Or both.

RUSS HOUSLEY: Yes. That's what I hear people getting riled around.

WARREN KUMARI: Basically I should change this, so this is alternative names, and then within here, there are two more circles. One which is DNS name, sorry, DNS protocol, not IANA root. Then another one, which is not DNS protocol, not IANA root. There is also then presumably not DNS protocol is IANA root, which is weird, but it could be done.

RUSS HOUSLEY: It could emerge someday, but doesn't exist today, right?

WARREN KUMARI: Yes, as far as I can tell, there's nothing that does that and it seems like it would be hard to make. Perhaps what I'm drawing here will. DNS

[00:36:30 - inaudible]. Let's put the word not instead. Then, we need the same thing again, which is, not DNS. You can fix circles in some, but is that generally what we are doing? Does this match most people's?

JEFFREY BEDSER: Well, this is where I come up against some basic, I suppose, syntax or definitional quibbles. You see, I think in the left, when you say DNS names where you're actually assuming a name system and a common resolution protocol and a populated root, you are in fact talking about what the document described as a naming system. Over on this area that I've just highlighted in blue, that's a DNS naming system, because it's a bunch of names, a root, and a resolution protocol.

WARREN KUMARI: Hang on. I have no idea where you're talking about that you just highlighted in blue.

JEFFREY BEDSER: Oh, do I need to figure out how to type some text here? I should be able to edit this, right?

WARREN KUMARI: In the back, on the picture?

JEFFREY BEDSER: On view only.

WARREN KUMARI: Are you?

JEFFREY BEDSER: Yes, I haven't got edit access.

WARREN KUMARI: Let me have a look and see maybe I -- Oh, it's viewer only.

RUSS HOUSLEY: You have to request edit.

WARREN KUMARI: No, here we go. I just changed it, I don't know if that automatically changes or just use this link instead. Sorry, I'd forgotten to make it you're the editor.

JEFFREY BEDSER: Okay.

WARREN KUMARI: Computers are hard.

JEFFREY BEDSER: That's right. What I want to do is add a text box to say, this is what I would call the DNS name. It should have been a carpenter. I wouldn't

have to type then. Okay. That's what I would call the DNS name system, which is a collection of names, and it's a DNS root, and it's-- Oh, God, need another text box. You see where I'm heading, Warren? Its names and protocol and context is a system.

WARREN KUMARI: Yes. Where does dubdubdub.food.bar go if bar has not yet been delegated? Because this is DNS route and DNS protocol. Ones that are not yet existing in the DNS route.

JEFFREY BEDSER: It's an alternative name at this point. If someone defined a resolution protocol for bar, the answer is always one. Then it would have both a resolution protocol and a name and it's not the DNS as we know it because the answers are always 1, 42, whatever.

WARREN KUMARI: Until something is delegated, it is an alternative name?

JEFFREY BEDSER: In this taxonomy for better or worse, yes. If the taxonomy is, they're either there or they're not, now you are trying to actually make a distinction in alternative to say there's actually things that are viable and things that might be part of a future DNS, but aren't really that far away from it. Non-delegated top level domains that are candidates to be in the future root zone don't really seem to be alternative to you.

That's what I'm hearing from what you're saying, and I can understand that. You see, if I can draw a circle.

WARREN KUMARI: Circle, it's up at the top, there is a shape thing. What is printer.corp?

JEFFREY BEDSER: I've drawn a blue circle and I wish I could make the interior transparent.

WARREN KUMARI: Do you want it transparent? Yes, I'll do that. Give me one second. You click on fill color.

JEFFREY BEDSER: Okay, good. That's the one. You see, that blue is actually the set of DNS names. Some of them are in the root intersection with the orange circle and some are not. Printer.corp, which is the non-delegated name at this space, sits outside the current domain name system. What we're I think talking through is the concept of whether the fact that it's a perfectly valid name, it just doesn't exist in the root, makes an alternate name or not.

One argument is, well, no, it's not really an alternate name, it's just not in the root yet as you've said in the green line, it's just not in the root yet. The other view is, everything that's not a DNS name in the current root is an alternate name that just doesn't exist in the DNS root. It's two different views of that anti-set.

RUSS HOUSLEY: Well, it's also a temporal aspect to it. Because it might someday or where someday we could have one that's removed.

WARREN KUMARI: Why is printer.corp in this and not in the pink, which is DNS protocol, but not IANA root?

JEFFREY BEDSER: Because I made the pink a definition of name plus root plus protocol. You needed to satisfy all three in order to be in the pink set, and that's a definition.

WARREN KUMARI: Your pink and my pink are different.

JEFFREY BEDSER: Oh, sorry. That makes it confusing. I have bolded three terms.

WARREN KUMARI: Yes, just thinking, mate.

RUSS HOUSLEY: I think that one of you is talking about peach.

WARREN KUMARI: There we go.

JEFFREY BEDSER: Right, I'm with you now.

WARREN KUMARI: Printer.corp is over on the left, not in the pink because it's a -- I still don't quite understand why.

JEFFREY BEDSER: Well, no, I'm just struggling with what we call alternative, and I'm pointing out that printer.corp could sit outside alternative names or it could sit inside alternative names. The basic reason why it's not in the name system is it's not in the root, not that it's a perfectly valid syntactical DNS name, that's all.

RUSS HOUSLEY: It's a valid domain name that just doesn't happen to be in the root, so it's not an alternative name.

WARREN KUMARI: Hang on a second, by your definition, then-

RUSS HOUSLEY: Domain name space would include printer.corp. It's an alternative name. Yes, this is complicated.

WARREN KUMARI: I think that the intent is also important.

RUSS HOUSLEY: The reason it's part of an alternative naming system, that's the problem, is because it's not in the IANA root.

WARREN KUMARI: Intended to be used as an alternative resolution, so alternative name intended to be used with the DNS system. So, yes.

RUSS HOUSLEY: That's the issue.

WARREN KUMARI: The problem is when one has a collision.

JIM GALVIN: Wait, say that again.

WARREN KUMARI: The use of a name and the actual resolution system,

RUSS HOUSLEY: The example printer.corp, they were calling an alternative name, and the problem is it's a valid domain name, but it is part of an alternative

name system because you can't get there from the IANA root. Did that help, Jim?

JIM GALVIN: I understood the words of what you said, and I've been listening to this conversation, and I guess I'm struggling with the notion that we're trying to provide generic definitions. It feels to me like we are, SSAC part of ICANN and ICANN is a name system, and why shouldn't we have terms and words and whatever it is that we want here for our name system, and alternate in our context, doesn't alternate mean something outside of whatever context you're in, so we have a context, let's define our context, domain name system, DNS name system, and alternate is anything that's not that.

We get to define the context in which we work. I really am struggling with this notion that just because something isn't delegated means it's not part of the system. It feels to me like a system has to include not just the technical part of it, but also, in like our ICANN context, the system includes the policies and procedures that make it work and make it valid. That's what it means to be a system. Whether it's delegated or not is a usage issue, but I don't think that's part of the definition, and alternate is anything that's not part of whatever definition we create. I'll stop there.

RUSS HOUSLEY: I think I've mostly agreed with you, Jim. I just don't think that's where we landed last week. That I asked Andrew to write down. There's this third dimension to this, right?

WARREN KUMARI: According to Jim's definition then, what would printer.corp be? Or what does-

JIM GALVIN: Printer.corp would be a DNS name and it would be something which is part of the DNS name system, part of the blue circle. Now, it's eligible to be in the DNS root, but I don't think the DNS root is a requirement, meaning that you have to be in the DNS root to be part of the DNS name system. The DNS name system, when it's used, has a DNS root. In that use, it has the DNS protocol, it has a syntax for its names, and the system is everything that's eligible to be part of the usage.

WARREN KUMARI: Food.crypto, according to your definition then, would be a DNS name because it is eligible to be in the root.

JIM GALVIN: Well, I think this is the fundamental problem that we're living with, right? The fact of the matter is it's in both naming systems, it's in an alternate name system and in the DNS name system, that's the fundamental problem. Because they share a syntax for their names in their system.

WARREN KUMARI: Well, they are both domain names. That's why we had the domain names thing, which is things which fall within the syntax of naming.

JEFFREY BEDSER: I think that's okay. The alternate name systems are using domain names, so they're using that syntax and what they do, and then the interesting thing is when the name exists in isolation, when the name exists without a context, you don't know which naming system to put it in. That's the collision, but it could be both.

WARREN KUMARI: How do you describe food.crypto, then? You just keep saying it's a DNS name.

JIM GALVIN: It is a domain name.

WARREN KUMARI: Yes, we agree it's a domain name, but you keep saying it's a DNS name.

JIM GALVIN: Well, I think that it's a domain name and we don't know whether it's a DNS name or an alternate name. In fact, it's eligible to be in both.

WARREN KUMARI: By your definition, DNS name is the same as domain name, right? Because what is a domain name that's not also a DNS name?

JEFFREY BEDSER: Well, yes, when you said DNS, I automatically associated that with DNS name system. I guess the problem here is maybe DNS and domain are equal, and maybe we should declare that they're not and stick to using domain, and DNS simply refers to a particular protocol.

RUSS HOUSLEY: I think that's where we tried to go last week by calling it the domain name space.

WARREN KUMARI: Yes, and why we've got this box up here saying domain names, which is anything of the syntax that [00:52:05 - inaudible]. Okay.

JIM GALVIN: I think quite honestly that alternate name systems and the DNS or domain name system, I don't care whether you call it DNS or domain given this diagram, I think that the only thing that distinguishes them, those things are like overlays of each other. Because the only thing that distinguishes them is what the resolution protocol is. Otherwise, they're one-to-one and map onto each other, right?

WARREN KUMARI: Well, that's why we have the big green box says domain names and we have other shapes within them. Because food.crypto follows the syntax of a domain name and example.com also follows the syntax of a domain

name. Food.crypto is expected to be resolved using something that's not the DNS. Whereas example.com is expected to be used something that is the DNS, which is what I thought were showing with the nested diagrams.

JIM GALVIN: That's my point, we can't show them as nested. I think you're assuming context that's not in evidence. When you say that food.com has to be in the alternate name system, or I'm sorry, when you say that food.crypto has to be in the alternate name system, you're assuming context, not in evidence.

WARREN KUMARI: Yes, but that's exactly what we're trying to describe.

JIM GALVIN: I don't think this diagram does that. From my mathematical point of view, the only way for this to work is to show a CRISP crotch hash colors, and to put DNS name system and alternate name system right on top of each other. They one-to-one map on top of each other in the sense that they are both domain names, and as a domain name, you just don't know which one of those two it's in. They're not distinct.

WARREN KUMARI: That's what we keep saying is the problem is that names do not have context associated with them. I don't really know what text you want to put in, other than people keep using the syntax of domain names and

you can't do anything about it and you can't really discuss them, so let's go home.

JIM GALVIN: I think what I'm saying is that you have domain names and you have a system which is built on domain names and the system uses domain names and it has to be a coupling, it has to be a pair. like we said before. I think that's the definition that we want to create. We just get to say that that's the context in which we work. Alternate is anything which does not use the pairing of a name and our choice of protocol. That doesn't mean that the name can't be valid in multiple places, it's just that there's an assumption here about the protocol in use. Yes, so that's the definition.

A domain name is something which uses a syntax that is derived from the DNS protocol. That's just a coincidence. We can restate it so that we don't depend on the DNS protocol. Then, the domain name system is a domain name using the DNS protocol. In ICANN, that's what we care about. An alternate name system uses a domain name with some other resolution protocol that we have no control over, and don't see it.

JEFFREY BEDSER: Jim, at this point, I think you've gone too far and you are overclaiming. I actually think the domain name system in the context of ICANN is actually the syntax of domain names. Labels cannot be so long, names themselves cannot, anything up to so many characters, LDH, blah, blah, blah. A DNS resolution protocol, and the third leg, a populated root

zone. If I run an alternate route, I am almost by definition into an alternate name system. It's the three combined that actually-

JIM GALVIN: I agree.

JEFFREY BEDSER: -define the name system. It's the syntax of names, the resolution protocol, and the populated root. Now, in that definition, printer.corp is not there because it's not in the root, and it does not necessarily have a DNS resolution protocol associated with that name, whatever it might be, it's not in the DNS name system. If you want to say, if it's not in the DNS name system, let's just call everything that isn't alternate, then it's alternate.

If you want to use some other definition of the word rather than alternate, I'm fine with that too. You see, I think we're agreeing violently, it's just, there are three parts, the syntax of names, the protocol of their resolution, and the populated root zone that grounds a subset of these names and gives it a context.

JIM GALVIN: Okay. I'm saying the only thing that I want to press on here is it's not that it's a populated root zone, it's the set of policies and procedures that let you have the root zone. The policies and procedures that define what could be in the root zone, but is also eligible to be there, but just not in use yet for whatever reason. It's not the existence -- a root zone has to be there, but it’s [00:58:36 - inaudible] to put it there.

JEFFREY BEDSER: I'm untethered and out into orbit at this point, Jim, I've lost earth. Could you explain that a bit more because I don't quite understand that kind of well, it's not in the root, but it could be.

RUSS HOUSLEY: Let me see if I could use different words.

JIM GALVIN: This gets to Suzanne's comment, [00:58:56 - inaudible] reserve names and stuff like that, which don't appear in the root zone, but clearly are part of the DNS name system

WARREN KUMARI: Really? Dot, dot, dot, dot.

RUSS HOUSLEY: What I think Jim is saying is it's not default default, it's default default default, that there's three dimensions to it. Name space, protocol, and policies for managing the first two.

JIM GALVIN: Yes.

SUZANNE WOOLF: Another way of saying that is more or less, name space, protocol, and specific instantiation, root zone, TLD databases, et cetera.

JEFFREY BEDSER: No, Jim was trying to say, it's the policies that populate that database.

RUSS HOUSLEY: Correct.

JEFFREY BEDSER: It's laying claim to a whole bunch of names that aren't in the root zone that would conform to the policy structure that would sit inside that system as well. It's what I heard.

SUZANNE WOOLF: Okay.

JIM GALVIN: Yes.

RUSS HOUSLEY: It's what I heard too.

JEFFREY BEDSER: I'm not sure I agree with you, but that's what I heard.

SUZANNE WOOLF: Fair enough. That's an important distinction.

WARREN KUMARI: Jim then seems to say that any string that could possibly be a domain name counts within the ICANN space, because ICANN could decide to use it.

JIM GALVIN: Not quite because the set of domain names is larger than the set of names that can be in the root that the policies allow because of things like well, the protocol has limits in terms of the size of a label, but the policies have limits too, in terms of the characters that you can put in a domain name.

WARREN KUMARI: No, we said domain name is things that are DNS and syntactically valid, so those are already excluded. Things that are too long or that use the smiley face emoji. Those are already excluded. We said they're syntactically correct DNS labels. Then you're saying anything that could possibly be constructed following the rules of domain name, LDH, LDH, LDH, not too long, blah, blah, blah, is a DNS name.

RUSS HOUSLEY: I want to highlight that we've run out time.

JEFFREY BEDSER: I thought he went further and said, it's part of the DNS name system, Warren.

WARREN KUMARI: Yes, he did.

JEFFREY BEDSER: Good.

WARREN KUMARI: The list of things that are reserved is also just crazy, but separate thing. I still think that a definition that says food.crypto is a DNS name is not helping anyone because-

JIM GALVIN: Exactly.

RUSS HOUSLEY: But it's a domain name.

JIM GALVIN: It's a DNS name.

WARREN KUMARI: Well, no, Jim says it's a DNS name. He's repeatedly said that clearly and loudly.

RUSS HOUSLEY: Well, it does meet the syntax.

WARREN KUMARI: Yes, which makes it a domain name.

JIM GALVIN: It's also a name in our DNS name system, but I think Russ is right. We're actually after the top of the hour here.

RUSS HOUSLEY: I do think we need to stop. I know I need to go, but what I'd like everybody to think about is, are we after only two things here, the format of the name and whether it's part of the IANA root, or are policy part of this or not, and we'll pick up there next week.

JIM GALVIN: Thanks, Russ.

JEFFREY BEDSER: Barry, over to you to lead that one.

BARRY LEIBA: Well, nothing more to say today, but yes, indeed. Thanks everybody for coming, and we'll see you next week and kick this back off.

SUZANNE WOOLF: Bye, everyone.

[END OF TRANSCRIPTION]