
ICANN81 | Prep Week – Blockchain Name Technologies
Monday, October 28, 2024 – 7:30 to 8:30 PM TRT

DAVID HUBERMAN:

Hello everybody and welcome to this prep week session on blockchain name technologies. My name is David Huberman and I am a participation manager for this session. Please note the session is being recorded and it is governed by ICANN's expected standards of behavior and ICANN's community anti-harassment policy. Interpretation for this session will include Arabic, Chinese, English, French, Portuguese, Russian, and Spanish. During the session, please type any questions or comments into the chat. I'll capture them and I will read them aloud during the questions and answers part of this session. If you would like to speak during the questions and answers period, please raise your hand and zoom and when called upon unmute your microphone to speak. State your name for the record and the language you will speak if speaking a language other than English and please speak at a reasonable pace. With that we're ready to begin so I will now hand the floor over to Paul Hoffman, an ICANN distinguished engineer.

PAUL HOFFMAN:

Great, thank you David. So good morning, good afternoon, good evening. It is morning for me here in California. We have about an hour to talk about blockchain name technologies and again this is the format of this is that this we are during prep week for ICANN 81. So this

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presentation will be helping prepare you for sessions at ICANN 81 and as you'll see at the end of the talk it's more than just sessions.

So let me give you a quick overview of how this morning's session will be. We will definitely have time for questions, answers, comments at the end. It's my intention to leave plenty of space for that partially because blockchains are still new for many people. I see some faces on in the list of attendees for whom they're not new. But I would say for the vast majority of us they are new. So really the overview of what we're going to say is why are we here. I'll talk about a couple of recent ICANN publications that came out. And when I say recent I mean just in the last few weeks as a way of preparing you for the ICANN 81 meeting and for blockchain discussions after that.

I'll do a very brief overview of understanding blockchain technologies. I want to emphasize that there is no expectation that you could learn enough from even a long presentation, which is why I wrote the documents that we'll discuss. We'll spend more time talking about blockchain name system technologies. And note the difference here. Blockchain technologies are about how blockchains work. Blockchain name system technologies are in fact about how the name systems that we have started hearing about in the ICANN community, how they work, how they work with blockchains and also how they work as name systems. I'll have a couple slides towards the end about what to expect on these topics at ICANN 81 and then we'll open up for Q&A.

I'm hoping that people on this call and at ICANN 81 who show up for the sessions care about blockchain name systems. If you don't care you don't need to know about this which is fine but many people are

starting to care and when I use the word care I mean have concern with, are interested in, are intrigued by, are being told to learn about. These are not things that when you say, oh, I care about that, that really means something. Because most of the ICANN community cares about the global DNS. That's what we've been working with for the last however many years in ICANN and that's our major concern. But the global DNS is just one name system. There are a zillion other name systems, some of which seem to overlay on the global DNS and others seem to overlay on the global DNS and others that don't.

So most countries for example have their own postal codes. Postal codes are a name system. They don't really have anything to do with the global DNS but they are a name system. They often use numbers, some of them use letters. So when we think about blockchain name systems and which are a subset of alternative name systems all of these name systems have a niche in your mind. So for example, some of you live in cities where the street names actually are sort of organized. They might be alphabetical as they go up or things like that. You have these things in your head in the same way that you have the global DNS in your head.

So the reason why you might care about blockchain name systems currently is that they are being marketed and advertised to the same people who global DNS names are. Most of these blockchain name systems also have their names look just like global DNS names. So you might not be able to tell the difference between two of them. That causes people to say, well, then I need to know about these because they look alike. They don't look like the street names in my city. They

don't look like the postal codes and such. So this is sort of why you might care about blockchain name systems. But like I say, there's many reasons. And there are some folks who are on the call who in fact are folks who are creating and marketing blockchain name systems. There are some folks on the call who would really prefer that these name systems didn't exist. So there's a whole panoply of why you might care.

Because of this, many people have been asking for more information about blockchain name systems. Now again, because blockchain name systems are not part of the global DNS, it's not like that we can say, oh yes, here is how they fit in to the global DNS because they don't. They're actually quite separate. ICANN's remit is on the global DNS, but we do need to be looking at what else might be integrated with the global DNS. What else might be competing with the global DNS.

So many people have been asking questions and pretty much relying on the marketing for the blockchain name systems and have been saying we want something more definitive. So ICANN has published two documents earlier this month, just a couple weeks ago, both on blockchains and on blockchain name systems. One of the reasons that the longer document is on blockchains is many technical people in the ICANN community understand how the DNS works technically. They understand about authoritative name servers and recursive name servers. They understand about TCP and UDP and such like that. And it's very hard to find almost anything like that about various blockchain name systems.

So there is a document that is both on blockchain name systems and one on blockchains themselves so that you can see, if you are

interested, especially on the technical side, you can see what the relationship between those two are. And so here are the two name systems. If you've got a copy of the PDF, those are direct links. If not, you can look, there was a recent blog post on ICANN about the two. But OCTO 039 is the introduction to blockchain name system technologies. And it's the first one because that's what is sort of central to what ICANN's remit is, which is name systems that are like the global DNS. Octo 040 is the introduction to blockchain technologies themselves. So Octo 040 goes much more into what is a blockchain. What isn't a blockchain. Why is there more than one blockchain? What are the differences?

And to be clear, both of these documents are technical and neutral. They are not saying these are good blockchain name systems and these are bad ones, or these are good things about blockchain name systems and these are bad things. They really are neutral. And I know that there will be many people on the call who will be a bit disappointed about this, but they are both technical in nature. They really have as little marketing as we can in them. And the reason for that is you're going to hear plenty of marketing from the systems, both from the blockchains and from the blockchain name systems. You don't need to hear that marketing from us. So we stuck as well as we could to the technical aspects. As you read the documents, hopefully before ICANN 81, you may have questions and such like that. They say where you can send questions and such like that. We expect them to be the basis of a lot of the discussions that will be happening over the next year or two about blockchain name systems within the ICANN community. And just as a note here, I didn't put it on the slide, but it's really hard to get clear

technical information on blockchains, much less blockchain name systems. A lot of what they say is technical information is actually fairly promotional and such like that. There's a reasonable chance that there are errors in OCTO 039 and 040. So we've already made a commitment to update these documents in six months with any technical errors, or if people say, gosh, it would have been a lot clearer if you had covered this and this. You can certainly read them now. So far, they've been out a few weeks and no one has slammed them yet for any obvious errors, but I'm still expecting that there will be some. So please do read these before ICANN 81 if you are interested in what we are covering here this morning.

So let's talk just super briefly about blockchain technologies. And the reason why this comes up is, some people say, I don't know anything about it, but some people say, oh, yeah, yeah, I get them. It's a database, it's a ledger. You can query the database and figure out who owns which coins or where the names are and such. And it turns out that's not true at all. They are much more complicated than what many people take as their initial impressions. And so, for example, one of the most common ones, one of the reasons why I really felt that Octo 040 was important is people say, oh, well, you can just query the blockchain. And in fact, you can't. The blockchain itself is a ledger of transactions. You don't wanna query the middle of a ledger because you don't know what happened after it. You have to query a database that was created from the ledger. And once you create a database, it doesn't have the same properties as the ledger. So that's just one example. There are plenty of other things that many people feel that they can simplify in blockchain technologies. I tried to keep the documents as short and

concise as possible. I probably missed that. I will know if I did well if half the people thought it was too long and half the people thought it was too short. But there's plenty in there.

Now, one of the things that you often hear in blockchain marketing is that blockchains are based on cryptography and they're safe. Actually, it turns out the cryptography, and I cover this in Octo 040, the cryptography that is used in blockchains is interesting, it's secure, but it's also one of the least important parts of it. So if you are swayed by, gosh, this has great cryptography, well, the entire web is based on great cryptography. Most of your secure email is based on great cryptography. That's not enough for you to understand what's behind blockchains. And really, the most important part, it's not even the blockchain itself or how the ledger becomes the database, it's the trust models. And the trust models are a technical aspect that says, who do I trust? Or who will I let control the data that goes into the blockchain and also how I read the database? These are the things that we're very used to in the world of the internet, how do you trust a certificate for a website such? There's lots of technical information on that. This is the part of blockchain technologies that I think most people here who are wondering, well, how does this interact with these name systems? The technical aspect that is going to hit you the most is, well, why is that blockchain made this way and why is this other one different? It's based on the trust model. So you'll see plenty more of that in Octo 040.

So now we can talk about the blockchain name system technologies. And I've got two slides on this. And again, Octo 039 has much more on these things. But when people started creating blockchain name

systems, they had to decide, well, how are we going to make this different than the global DNS? What can we do that's better than the global DNS? Or even if it's the same as the global DNS, what can we do that is more tied into the blockchain ecosystem? Because the blockchains have their own ecosystem. We hear about Bitcoin and Ethereum. These are the names of blockchains that have millions, tens of millions, maybe even hundreds of millions of people who are active in them, who use the terminologies that are based around those ecosystems. So the blockchain name systems have to think both about what do people already think about names, the global DNS, and what do the blockchain ecosystems themselves want?

So one of the first things that we've seen, one of the ones that they are most heavily marketed on is that you can return, when you ask this name system for something, what you get back is an account identifier. So we are very used to in the global DNS that most of the queries for names, the idea is I want to get back an IP address. In many of the blockchain, almost all of the blockchain name systems, when you say what's behind this name, what you get back is an account identifier. And you will often hear these referred to as wallet addresses. Both of the words in wallet address are inaccurate, so we use the term account identifier. But that's really what the initial main purpose of these were. Now, there are plenty of other purposes that have been added on, but that's the main one. Here is a name I'm looking up, what is the account identifier for that? And by the way, you can do this in the global DNS as well. It's been true in a non-standard way for many years. Now it's true in a standard way. But the blockchain name systems are really sort of centered around this idea.

And then the other thing that really comes from the blockchain ecosystem, sort of the thing that everyone does there is that they believe that once the data is stored in the blockchain permanently, it's visible to everybody, you can follow how things have changed so that any activities in a blockchain name system are permanently stored on a blockchain. That's not something that we have in the global DNS. We could have it in the global DNS. That is, anyone who runs a zone, whether it's the root zone or a TLD, whether it's a generic TLD or a ccTLD, could do this. They could, in fact, keep a public ledger. But basically, almost no one does. So this is a thing that blockchain name systems heavily market as something, whether we in the outside world care about it is not as important as this is a belief that's very core in the blockchain world. And another thing, that because every blockchain has a coin associated with it, you should be able to buy your name and updates to your name with that coin instead of the traditional currency. Right now, right now, there are a few registrars that will take blockchain coins for payment and such like that. Most of the global DNS runs on either, you know, cash, credit card, or for free. You know, there are plenty of zones that are free. Within the blockchain name systems, the purchasing with blockchain coins is a big thing because that's one of the center parts of those technologies.

Now let's get to two more things which get a bit dicier for those of us who are in the global DNS space. One is that alternative top-level domains, which we call alt-TLDs in blockchain name systems, are often strings that are not delegated as TLDs in the global DNS. They have picked names that do not conflict with the global DNS yet. They will possibly conflict in the future. I think probably everyone on this call

knows about the next round of global TLDs that will be coming in a few years. This call is not about that. There are other prep week calls on that. But many of the blockchain name systems have picked names that are not currently in the global DNS but may be within a few years. Separately, some blockchain name systems are using names that are already in the global DNS. So their alt-TLDs match existing TLDs, and then they are trying to do something that will hook them together.

So on the level of user confusion, these two points are quite different. And when I'm saying user confusion, I'm talking about user confusion in the global DNS. Within a blockchain name system, there isn't user confusion within one system because they're using the alt-TLDs in a very consistent fashion. But because there are many blockchain name systems, each one is technically capable of choosing alt-TLDs that they want to use. So you might have two different blockchain name systems using the same alt-TLD. So there would even be user confusion there. But of the ones who are also choosing to use names that are in the global DNS, there will be user confusion. That may be a positive. That may be a negative. Any time that you're wanting to expand on something that's already popular, you want to sort of tie back to it. But you don't want people to think this is wrong or whatever. So this is where these two points are the ones where I think there will be the most discussion going forwards within the ICANN community. Within the communities that are running the blockchain name systems, these are not as important.

So let's talk a moment about that last bullet point where some of the blockchain name systems are using names that are already in the global

DNS. And so they talk about integrating with the global DNS or bridging to the global DNS. And they talk about different ways of doing it. Again, there are many different blockchain name systems. And again, I looked through who's participating even on this call, and I see folks who work for many different ones. And the term integrating with or bridging with is probably something that we're going to want to hear a lot more about from these alternative name systems. Because it's undefined. And some of them have started to define them, although the term, the definition changes over time. This is not what we're used to in the global DNS. In the global DNS, the IETF writes a spec. Sometimes it's readable. Often it's, you know, you have to sort of squint to get through it. Especially, you know, the basis of the global DNS are RFCs that were written 35 years ago. Using language that was common then and maybe not now. But the participants in the IETF keep trying to hone in on better definitions that are more globally understandable. We will start seeing this more with, you know, the folks integrating blockchain name systems with the DNS. They will try to say, what does integrating mean? They will try to say what bridging to means. And that will be a discussion. It will happen both in their own ecosystems and it will happen in ICANN in some ways. It's not clear where. These discussions have not really taken hold yet. But we're assuming that they will be taking hold more in the coming years. Because those discussions, in fact, will also be related to the next round of global TLDs.

But it's not just about the next round. To be very clear, some of the blockchain name systems are using names that already exist as ccTLDs. So they will need to integrate with or bridge to existing ccTLDs. They may do that differently than they integrate with or bridge to gTLDs. All

of that is future discussion where we will get better definitions. And we will get more agreement between the two ecosystems about what is really going to be best for the users. And without being too negative about it, integrations and bridges always comes with cost. And it's usually a cost of reducing security on one side or both sides of the system. And again, this is not a criticism of blockchain name system. This has been true forever in the Internet. When you integrate, for example, two different secure mail systems, the result is always a reduction in security. Because you had solid understood security on one email system, solid understood security on another. And when you bridge them, it is always a melding of the two, which means one is usually stronger than the other. So again, when this comes to the DNS or either the global DNS or the alternative name systems, when we have these discussions about integrations and bridges, we need to be aware of what we are getting, the positive things that we're getting, and what the costs are. The cost might be directly in cryptographic security. The cost might just be in confusion. But again, these are the kinds of things that will be being discussed more and more over the next couple of years.

So let's talk a little bit about the who in all of this. So there are probably, if you're on this call, and if you're intending to participate in the related discussions at ICANN 81, you may be a gTLD registry operator. And so some of them have already said that they want to integrate with the Ethereum name system, ENS, which is one of the best known, but certainly not one of the only, blockchain name systems. The idea of that integration has been talked about sort of in the background. That's coming more to the fore, especially because ENS changed its technical

rules earlier this year to allow names from the global DNS to be handled differently. And I want to be clear, if you're interested in how ENS is meant to integrate and such like that, you will not find that in Octo 039. It is very generic across all of the blockchain name systems. It does not say, you know, this is how ENS works, this is how Namecoin works and such like that. Some of the feedback I'm getting is it could have done more of that. Maybe in the new version that comes out six months from now, I'll have some more pointers on that. But ENS is one of the ones that I think we will hear more about because they've done the most marketing about integration. But other blockchain name systems will also be talking about them, especially the ones that are using names that are not currently in the global DNS. But we have heard that some of them have said, we are using this name now in our blockchain name system and we are going to apply for them in the new gTLD program next round.

It's still 2024. We don't know what we'll be applying for means. We don't know what the rules will be and such like that. These are business announcements. They are not actual applications. This is another thing that, you know, will impact the ICANN community because, you know, we have current gTLD operators who are interested. We've got potential future gTLD operators who are interested. And there is the whole thing for the question of the ccTLDs, ccTLDs that are being integrated either by choice or by force. They are also going to be impacted by any of the discussions that we're going to be having here.

There are two sessions coming up at ICANN 81. There's going to be a how it works session on Sunday, early afternoon, which will cover some

of the topics we've covered here, but in more detail. There will definitely be more detail on blockchains, probably about the same level of detail about blockchain name systems. So that will be an hour and 15 minutes. And again, there'll be plenty of time for Q&A during that session. And a few days later, on Wednesday, ICANN at the AGMs, at the fall meetings, often has a session called Emerging Identifier Technologies. And in the past, we have invited companies that are already running alternative name systems, which these days is mostly blockchain name systems, to give presentations at those. And the same will be true for this upcoming one. So that meeting will both cover blockchain name systems in general, and it will definitely cover one that has not been presented yet, which is D3. And so we hope that those of you who are going to be attending in Istanbul can attend both of these if this is your interest.

But one of the things that I want to emphasize is that, you know, the reason why I'm speaking to you today is not just to say, please come to one of these two or both of these two. There's going to be a zillion hallway discussions about blockchain name systems. There's going to be a zillion hallway discussions about blockchains themselves. Now that we've published OCTO 040, there will be a much greater understanding of blockchains, especially about the trust models. People will not say, oh, I don't understand blockchains, but I need to understand blockchain name systems. There will be a lot more people who feel comfortable with talking about some of the technologies. So some of the discussions will be around the blockchain name systems that we've already heard about. And you'll hear things about, like, the number of the names sold, how many of them are actually being used.

Because as we know very well, especially in the global DNS, especially under generic domain names, there are a lot of names that have been sold that are basically never used. Or they're used once or twice a year. They are the name for my personal website, and there are 12 people who care about my personal website. Some of the names are used all the time. So the question of the number of names sold versus their usage of the resolvers.

There's also going to be discussion of the resolvers for these blockchain name systems. The blockchain name systems use a very different resolution mechanism than what we're familiar with in the global DNS. So not only will we be hearing about what is the current use of blockchain name systems within the blockchain ecosystem, but then there's going to be the discussion of how to integrate or bridge, and what does that mean, and such like that. Those hallway discussions will be, especially since they might mostly happen between the how it works on Sundays and the emerging identifier technologies meeting on Wednesday, those will be among people who care. Some of them will be among people who only care about the global DNS and are defensive about blockchain name systems. Some of them will be people who care about the global DNS and want to integrate or bridge even more. That's the kind of thing that we are hoping happens. I would love to hear about results of these hallway conversations. We certainly won't have time in the Q&A from the two sessions to hear everything that happened in those. But again, ICANN is a large community with a lot of sub-communities. Some of these sub-communities do a very good job of saying what has happened in the hallways, not just in their meetings.

So I look forward to, after ICANN 81, to having reports on what happened in the hallways.

So with that, I think that we have plenty of time left for questions and comments. I keep seeing on the bottom of my screen that people have been saying things in the chat. I have seen none of it. So I'm going to trust David on this one to either call out some of those or call on people and I will answer as best I can.

DAVID HUBERMAN:

All right. Thank you, Paul. We have some questions that have been submitted during your session. Anne Aikman-Scaliee asked, are there protections that exist for consumers, i.e. registrants, in the DNS versus in blockchain technologies? What about accredited registrars? Do they have any contractual provisions that apply to the marketing and selling of blockchain names? Does that have any meaning for registrants?

PAUL HOFFMAN:

Thank you, Anne. Great questions. And I'm the wrong person to answer them. I will give an overview of what I think I know. But those are, in fact, questions for GDS, for the people with whom the registrars have the contracts. Of course, registrars have contracts with ICANN. It is GDS Global Domains Solutions, I believe, is that acronym, the department with whom the registrars deal with all the time. There are different protections for registrants in the global DNS than there are in the blockchain name systems. We know this because you can go out and buy yourself a blockchain name yourself and see what they say your protections are. And you'll see that those seem very different.

For example, one of the big protections that people care about for generic TLDs is how are names transferred. Names are transferred in a completely different way in different blockchain name systems, for example. So I'm sorry to give sort of a non-answer there. And there are people who can answer more specifically about your questions about registrars. And I'm not it. But those are very good questions to ask either in the hallway or, even better, during some of the Q&A sessions at ICANN 81, where there will be people in the audience from GDS, from our legal team, and such like that.

DAVID HUBERMAN:

From Patricio Poblete, “Paul, do you think the .alt TLD is relevant for integration?”

PAUL HOFFMAN:

Oh, Patricio, thank you. Thank you for throwing me the softball on that. For those of you who aren't familiar, .alt is a name that has been reserved in the IETF for alternative name systems that want to have a space where they aren't using their own TLD. Some of the blockchain name systems or alternative name systems have started using .alt a little bit, but we've seen almost no interest in it. It's always available. There's RFCs on it, plenty of technical information, but what we have found so far is that the blockchain name systems want to look like they've got their own TLDs. Which makes sense, because when I'm telling you, “Please look up this name so that you can find my account identifier,” saying that my name is PaulHoffman.something makes much more sense than PaulHoffman.something.alt.

DAVID HUBERMAN: From Victor Zhou, “What's the best mailing list in the communities of ICANN to subscribe to for the topic of blockchain name systems?”

PAUL HOFFMAN: Well, OK, that's the opposite of Patricio's. That's not a softball. That's a hard one because the answer is we don't have them yet. I see David laughing here. I have a funny feeling that, Victor, that your question is going to cause an answer, possibly an answer that, you know, before ICANN 81. As far as I know, there are no mailing lists within the ICANN community about this. Now, there certainly are mailing lists and discords and message boards and such for the various blockchain name systems, each individual one. I don't even know if there is one that sort of overarches. But there isn't a place yet in the ICANN community. But given that part of the job of the office of the CTO is not only to do research, but it is also to do technical engagement, this may be a thing that we need to look at and we will start discussing. So thank you for poking at that, Victor.

DAVID HUBERMAN: From Siva Subramanian, “How do blockchain names in the alternatives space resolve as on date?” Or perhaps as of today.

PAUL HOFFMAN: Ah, how do they resolve? Well, so thank you. Very good question. Different blockchain name systems have different resolution mechanisms. Basically, if you have an alternative name system, such as a blockchain name system, the fact that you've stored the names is

almost inconsequential because having stored names is not interesting. Having names that can be resolved is interesting. So different blockchain name systems do this differently. Some of them have a web API where you can send a nice standardized message. Some of them allow you to look through the database in different ways. A very good example of how these things are different is some blockchain name systems let you see all of the names, doing the equivalent of what we in the global DNS would call a zone transfer of the entire blockchain name system. But others don't. So to answer your question, you would have to look at the technical documentation for every single blockchain name system that you're interested in. In Octo 039, I have some links in the appendix or last section, I don't remember if it's the last section or appendix, to a couple of blockchain name systems and that list will probably expand when I do the revision. But there is no generic answer.

And again, this is one of the biggest differences between blockchain name systems, plural, and the global DNS. In the global DNS, if you want to know how do resolvers work, you can look up the documentation or you can talk to at least, I see half a dozen names of people who are on this call who can answer those questions for you. In the blockchain name systems, not so easy.

DAVID HUBERMAN:

From Anne, “Do blockchain names resolve more slowly than DNS names? What browsers are predominant?”

PAUL HOFFMAN:

Fast and slow are about time and they change over time. Quite frankly, different names in the global DNS resolve faster or slower over time and depending on where you are and whether the hotel you're in has good Wi-Fi or not. I would say that anyone who's doing measurements on that, I don't have any confidence in those measurements.

The question of browsers, so let me talk about that a bit because we are used to, in the global DNS, that many, if not most, domain names that users see are from browsers. But that's not always true. Almost all of us have email and in our email messages, we also have links. We have domain names on the right-hand side of the at sign and such like that. All of those names in all of those contexts are what are important for resolution. Within the blockchain name systems, especially the ones that are only focused on giving you an account identifier or a wallet address, those are sometimes entered into a browser and they only work in browsers where the address bar where you're typing something knows that you might be going to one or more alternative name systems, but they also might be used in apps.

So, a common use for blockchain names is when you are in a blockchain-related app and you want to do a transfer and you say, here, you can take the money out of my account and here's my name that you can find it for. This is an area that almost no one has done much looking at, which is when the users are using these, what do they see? Where can they enter them? What is the round-trip time? And also, how do they even know that the information is valid? It's the same question we have in the global DNS. When you type a name into your address bar, you hope you know who your resolver is. You hope your resolver is one

that's telling the truth, but you don't really know. They have the exact same problems in the blockchain name systems.

DAVID HUBERMAN:

From James Stevens, “Some blockchain name operators use the term domain name, when what they have is clearly very different from what ICANN understands by domain name. Can ICANN do anything about this, for example, by trademark, etc.?”

PAUL HOFFMAN:

You've just asked a legal question. You've just asked a legal question of a technologist, which means I do have an opinion, and I'm probably wrong. Those are interesting questions, and there will be people from ICANN Legal who will probably be able to answer them a bit. But let's remember, the basis of all of this is the fact that blockchain name systems are not part of the global DNS, and that they are alternative name systems, and there is a zillion alternative name systems that ICANN is not within ICANN's remit. Saying that these names outside of the global DNS are in ICANN's remits, but these are not, there lies madness.

So there may be actual answers to those questions, and again, the last person you want to ask is a technologist, because we technologists always feel that we understand the law much better than we actually do, especially a technologist like me, who's actually studied the topic of blockchains. That makes me think more that I understand it. Legal questions really should go to lawyers, and in the ICANN space, I'm not only talking about the ICANN lawyers. There are actually, by looking at

the names of the people on this call, there are lawyers on this call who work for some of the gTLDs, for example, or at least I see two whose names I recognize. Those are the people to ask, and I propose that those are probably better done as hallway conversations than at the Q&A for the two sessions that I gave, but I would love to hear the results of those hallway conversations.

DAVID HUBERMAN:

David Mackey, “You refer to an unspecified number of blockchain systems. Approximately, how many blockchain systems are out there that are relevant to ICANN?”

PAUL HOFFMAN:

Okay, thank you. Good question. This is an opinion only. Somewhere between five and ten. Other people would say the number is two. I think that what we've learned in ICANN, especially because these are emerging technologies, is that if we say, oh, these are the only things that we care about, we are eliminating some that are in fact doing more interesting work, even though they're smaller and therefore might be relevant. We really won't have a good answer for that question, quite frankly, for about two years, until we have seen which of the companies that are currently doing blockchain name systems also are intending to be in the next round. Now, we will know something before then, but I would put the number somewhere between five and ten. And even at five, you probably haven't heard of all five that I would name, and I'm not going to name them here. But let's keep our minds open to the fact that because blockchain name system, anyone can set one up. You can

set one up. Well, actually, I can't set one up. I think I would get fired if I did. But, you know, it is easy to set up a blockchain name system. And the ones that will be most interesting to the ICANN community are the ones that either lean into the global DNS in the most appropriate way or have features that are just really not covered very well in the global DNS, but are really desired by users.

And I'll give you an example of one sort of general type of technology that we're starting to hear more from, not in the ICANN space, but around, but about blockchain name systems, is that blockchain name systems can do much more than tell you an account identifier or, you know, as they call them, wallet addresses. They can be used for general identity. Within the blockchain world, a lot of identity is based on your account identifier, but it's not exclusively about that. So we're starting to hear some blockchain name systems that are going more towards identity-based things than just, you know, how do I give you money, how do you give me money. We see those in the global DNS as well. We've been seeing people using DNS names for personal identity in different ways for a while, but they haven't caught on that well. Maybe they will catch on in the blockchain name system, and then that will slop over to the global DNS, and some of those ones in, you know, the seventh most popular one now might hop up because they bring technologies to the global DNS that we just haven't done a good job with yet.

DAVID HUBERMAN:

Vadim Mikhaylov, “In blockchain name systems, are there any common mechanisms against DNS abuse like in regular DNS?”

PAUL HOFFMAN:

Thank you, good question. Not common in the sense that they all do it the same way. Some blockchain name systems have some mechanisms for that, others don't. Some proudly don't. That is that they say, you know, register whatever you want. So, no. If you come to the blockchain name systems with that as a concern, I think you're going to be sorely disappointed. But that's today. Blockchain name systems might start working with each other more. You, as somebody who cares about this topic, might be able to inject concern like that into the blockchain name system. And the more that they try to bridge with the global DNS, the more they're going to hear from the ICANN community where that topic is quite important, and they may add more at that point. But right now, no, not as formal as you would hope. Certainly not as common as you would hope.

DAVID HUBERMAN:

Sivasubramanian, “Is there a way of filtering out or blocking a certain cluster of blockchain names from interacting with the authoritative DNS slash web space, even if the resolution happens indirectly through a bridge of some kind?”

PAUL HOFFMAN:

Thank you for a technical question. At this point, that filtering would have to happen at the resolvers. And if a resolver is being used as a bridge, it would also have to be used as a filtering bridge. And those, we've barely scrapped, excuse me, we've barely scratched the surface on those rules. Good question. And that would be one that you would take to some of the folks who are making the resolver software.

DAVID HUBERMAN: Anne Aikman-Scalese, “Why should new registry operators prefer the new gTLD DNS naming system over alternative naming technologies such as blockchain? Is ICANN.org concerned about future lack of demand for new gTLDs that stand within its remit?”

PAUL HOFFMAN: The question of why should they be concerned is a marketing question. And the global DNS is well understood. The blockchain name systems are not as well understood, excuse me. In the future, the blockchain name systems will be better understood. And somebody who's thinking of doing a name in one place and not the other will have better information. But for now, at least from the research I've done, I have not seen any good numbers from the blockchain name systems about how actively are they used. We see numbers about how many names have they sold, but not how actively they've been used and for what they're used.

So the bigger question is, is ICANN concerned? Of course, we're concerned. That's exactly why we have the emerging identifier technologies sessions at every fall meeting.

DAVID HUBERMAN: Victor Zhou, “Have there been conversations within ICANN about using blockchain to track ICANN name holdership and make transfers faster and more secure as opposed to creating non-ICANN namespaces?”

PAUL HOFFMAN:

So thank you, Victor. When you say within ICANN, remember there's ICANN staff and then there's the ICANN community. I'm not aware of any discussions within the ICANN community. And again, staff is supposed to be responding to the ICANN community, not the other way around. So what you're really asking is, have there been any significant discussions within the ICANN community on using blockchains for, you know, what we talked about earlier of keeping the permanent record and such? I'm not aware of any, but I'm not aware of all the discussions. If that is something that is of interest to you, you absolutely should start that discussion. Find out if other people are interested. This is one of the wonderful things about the ICANN community. We not only talk about what we've always been talking about, but we can open new discussions at any time.

DAVID HUBERMAN:

Okay, it is the bottom of the hour and our time is up. Paul, thank you very much. And this session is now concluded.

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