ICANN78 | AGM – Emerging Identifier Technologies
Wednesday, October 25, 2023 – 10:30 to 12:00 HAM

DAVID HUBERMAN: All right. Hello everybody. My name is David Huberman from ICAAN, and I will be leading our session today on Merging Identifier Technologies. As you heard, please note this session is being recorded and it is governed by ICANN's Expected Standards of Behavior. We are very fortunate today to have two very distinguished guests to talk to us today about our topic.

We have from AFNIC, our friend Sandoche Balakrichenan, the head of R&D Partnerships. And to my left is Bradley Kam. Brad is the co-founder of Unstoppable Domains. We are going to have presentations, and then we're going to immediately follow each presentation with a round of question and answer. There is plenty of time built in for a long round.

Those in the room, simply raise your hand or let yourself be known to me and I will take note. Also, for those online, questions and comments will only be read aloud if they are submitted within the Q&A pod, and I will read them aloud when I receive them.

This session does include automated real-time transcription. Please note, the transcript is neither official nor authoritative. And to view the real-time transcription, please click on the closed caption bar in

the Zoom toolbar. Interpretation for the session includes English, French, and Spanish.

Please grab a headset if you're in the room or click on the interpretation icon in Zoom and select the language you will listen to during this session. Finally, to ensure transparency of participation in ICANN's multi-stakeholder model, those of you online, we ask you to sign into the Zoom sessions using your full name, for example, first name and last name or surname.

To rename your sign-in name for this webinar, you will need to first exit the Zoom session. You will be removed from the session if you do not sign in using your full name. Okay, so Brad, welcome. Thank you so much for joining us this morning here in Hamburg. Give me just a quick moment to bring up your slides, and then we will begin. Share screen. There we go. All right. Brad Kam, the floor is yours.

BRADLEY KAM: Thank you. Everybody hear me?

DAVID HUBERMAN: You have to turn the mic on.

BRADLEY KAM: There we go. Thank you, David. Thank you to this group for letting me come and speak with you. I want to talk to you a little bit about Web3 domain names and the opportunity they provide for the domain name industry. So about me, my name is Brad Kam. I'm a technology

entrepreneur based in San Francisco. I'm a co-founder at Unstoppable Domains.

And I've been a cryptocurrency enthusiast since 2013, and I came from that world first and discovered the domain name world from problems that existed in cryptocurrency land. So DNS has captured the business identity market. You all know this, more than 300 million domains, 140 million registrants, billions in annual revenue, but not the consumer identity market.

And the consumer identity market is actually bigger. It has 20 plus billion domains across payment handles, social media handles, email addresses, phone numbers, et cetera. And Web3 domains give domain names a new opportunity to win this consumer identity market. These are universal usernames for consumers to use across apps and across use cases.

One domain name is meant to be a consumer handle that serves multiple purposes for that user. And what a Web3 domain name is is an NFT that is stored inside of your crypto wallet that you own, and it can be attached to any information source or data. So unlike a traditional domain name, which is focused primarily on websites, Web3 domains are built in such a way that you can attach all sorts of different types of data. There's almost limitless fields that you could attach.

And if we're right, this is going to be a massive market. If every internet user will eventually have a crypto wallet and every consumer app will want to add support for that crypto wallet functionality. And this is something we're already seeing, major social media apps across

the world have enabled crypto wallet technology, major payment applications as well.

So they're already accessible to more than a billion people around the world. So Unstoppable Domains was founded in January of 2018, and what we want to be is the one-stop shop for Web3 domains. We have a registry business, so we have written smart contracts launched on a blockchain, we have 14 different TLDs.

We are on Polygon, for those of you who are deep in crypto land, it is a blockchain. We're also a registrar, we sell our own TLDs, but we also sell other Web3 TLDs that were created by other companies in the space. We also build APIs infrastructure for enabling Web3 domains, and we also build features. And features in our world can be many things.

I'll actually get to the features in just a moment. So what do we believe about the market? We believe that blockchain tech is updated infrastructure for DNS, not an attack on the current system. Web3 domains were built on multiple different blockchains and all of those platforms can interoperate with each other and respect each other's namespace.

We also believe that ICANN system for preventing website spam, abuse, fraud, works great and does not need to be replicated. And the path for Web3 domains ultimately should be integration with DNS.

So we've registered more than a hundred million dollars' worth of domains, just under 4 million, we have more than 500,000 unique users, more than a thousand integrated apps. This ecosystem

launched six years ago now, has gotten reasonably robust. So key use cases, payments, login, social media profiles, messaging, and websites.

Here's an example of crypto payments you can see here. What you're seeing is somebody goes into a crypto wallet, they type in a domain name and they're able to send money, they're able to send Bitcoin or Ethereum or any other cryptocurrency. And what's amazing about this from a crypto user perspective is, I might have 20, 30, 40, I might have a hundred different wallet addresses, all of those can be tied to this single domain, and it can work across any application that I use for sending money.

So it's sort of like Venmo, but on steroids. It is the same user handle that works across literally hundreds of different applications for any blockchain. This is an example of logging into apps. And the way this works is, is that you log in with your domain name, you sign a message with the private key that controls the domain name, and you're able to share data with the app.

Sharing public data, as in data that's already on the blockchain, is something that is trivial. What is unique here is that you can also share data that was not on the blockchain. So you can have data that is stored by you, data that is stored on an AWS server wherever, but you're using your domain name as the key to provide permission to an app.

So it is a permissioning system that is controlled by the user, and this is currently integrated into around 800 different crypto apps. This is an example of a user controlled digital profile. And what you're seeing

here is a whole bunch of different, and this is very deep into the crypto weeds, you can see some NFTs, other things like that.

But what's special here is that this is profile information that has been verified. So I can prove that the domain owner also owns these NFTs, also owns these crypto wallets. And what you get from this is sort of a verified profile. And what we think we're building here is sort of a bottom-up identity. The user decides what information that they want to share, they attach that information to their domain name, and then they share it with the world. So this tech is new, this tech is early, and there are some issues.

And I think one of the biggest issues that would probably concern folks in this room are slow response times. We're looking at around 200 milliseconds right now, sometimes higher, for resolving a domain name. And I know that in traditional DNS land, it's vastly, vastly fast. There are some solutions, but in general, the tech is early, and companies like Unstoppable Domains are not building all of the underlying infrastructure, so we are also reliant on other builders.

And so I would say that if you're asking, is the tech ready for all 6 billion internet users today? I would say no. I would say not yet. We are early, but it is improving year over year. Another thing are transaction costs. And in blockchain land, if I register a domain name, if I make an update to my domain name, each of those actions is a transaction that costs money.

And right now, the cost on our system is approximately 2 cents per transaction, but you can imagine that if you needed to make 30 updates to your domain name, paying 60 cents for that, it doesn't

break the bank, but it's also not a user experience that's quite ready for all 6 billion users.

And that's why today, most of the users are crypto users. Some policy challenges, preventing collisions, protecting brands, dangerous domains, and mechanisms for abuse when it occurs. So preventing collisions is probably the one that concerns people most in this room, us as well. And the thing to know is that most conflicts that have appeared in the Web3 domain space have been resolved cooperatively through partnership deals. I can think of almost a dozen cases.

And what happens most often is that two different blockchain communities launch the same TLD, they're unaware of one another at the time, and then you get to this place where you need to figure out who actually owns it and how that's going to work. And there are multiple ways that this gets done. But one of the key things is that applications, mostly crypto wallets and other crypto applications, rally around a specific version of the TLD, and that effectively makes it the one, so to speak.

But the thing that I think the good news is that the majority of players in the space understand that collisions are dangerous for users and dangerous for applications and work actively to prevent them. We've also-- oh, sorry, I've got a little more there. We've also created a organization called the Web3 Domain Alliance, which is an industry trade group dedicated to avoiding these collisions.

And it includes ourselves, it includes several of our competitors in the Web3 domain space, it includes crypto wallets and crypto applications that care about collisions. And the way that we see this is that this is

sort of early days for the industry, but we hope that this organization can help to represent the industry to the ICANN community, and potentially in the future become more integrated with the ICANN community and can represent what responsible parties in the Web3 industry can and should do.

Protecting brands: so UD has built extensive lists, and we run multi-year sunrise periods. In fact, our sunrise periods don't typically end. And the reason why we do it this way is because the tech is new and we're worried that if brands are unsure, like let's say when we launched in 2019, brands were unsure about the space, what might take them three or four years to get comfortable, and if after three or four years their names are gone, they can't onboard.

And so that's the reason why we've done this. The other thing is, is that domain names are stored and held by the user, and they cannot be revoked by the registry. And because that's the case, we think that you need to be even more conservative than you might be in the traditional domain name world about allowing brand registrations to happen.

And so we've built a list that I would say is more conservative, I would say more restrictive than what exists for the TMCH. And we've also gone and built very large lists of consumer brands, celebrities, influencers, other people who we think could potentially be at risk of having their names registered and have bad things happen when people do that. And so that's the direction that we've gone on protecting brands.

And this is something that we would like to open up to other Web3 domain name providers so that we can all collectively protect brands in this space. And when I talk to people here and at other domain name events, this tends to be the thing that brands are most concerned about, this reputation risk and this sense that maybe the blockchain community is trying not to follow the rules.

And I think that I've heard this argument that it's decentralized and it's on the blockchain, and therefore there's nothing you can do, that is untrue. What you do is you block the domains from being registered in the first place, and so there is a solution. If anyone tells you otherwise, I can show it to them.

Dangerous domains: similar to protected brands, we think that in the Web3 domain space, the risk of having dangerous domains out there is potentially greater because you can't revoke the domains. And so there are several lists that we've used. One was created by a nonprofit called Thorn that identifies terms associated with exploitation on the internet, others associated with terrorism or other nefarious behavior, and we blocked all of those so that those cannot be registered.

And again, this is much more restrictive than what you would see in traditional domain name land. And we've tested this where we've gone and looked at domain names that we identified as dangerous, tried to see if those were registrable at other registrars, and we found that oftentimes they are, and so we think that's where we should be in terms of restrictiveness, we think that we should be on the conservative side given the way that the technology works.

And we got a little bit of I guess what I would consider to be praise, and it may or may not have been intended that way from a report that came out written by Audrey Randall about this where she identified that Unstoppable had low abuse rates, and I think that this is the reason why.

So measures for preventing abuse. Fortunately, there has been very low abuse so far. One other point that I think is really important for people to understand is that when there is a bad actor identified, just because it's on the blockchain and it's in that user's wallet, does not mean that you have no recourse. Your recourse is to go to applications and ask those applications to stop resolving that domain name.

And it is trivial for them to do it, it has happened thousands of times. The place where this happens most frequently are in marketplaces that sell Web3 domains. And so what'll happen is somebody may get a brand name and then try to sell it, and then a request will come to those marketplaces and they will stop listing and they will stop resolving that domain name.

So I think just because it's on a blockchain, I would say, you can effectively make something disappear from the collective crypto application community through similar processes that you would use today. Now, there is no UDRP equivalent yet, but I think the thing to keep in mind is that all of these applications that provide features, that provide user experiences for crypto users, those are companies, you can call them up, you can get them on the phone, you can send them letters.

And so, it does not have to be, and it is not this wild, wild west. Other things are safety scores. And so what we think is going to happen over the medium term is that there's going to be lists, public lists that people can use, that applications can use to identify dangerous, abusive domains, et cetera. And there may not be one single list in this world, there may be multiple lists, but unstoppable beliefs that a list is important, and we think that this is something that the Web3 Domain Alliance can also tackle.

So what is the future? We believe that the best path for Web3 domains ultimately is integration with DNS. And the Web3 Domain Alliance is ready to act as an industry trade group for the community to help achieve this goal. We're committed to domain safety, and we believe that a community effort within the Web3 domain space and in partnership with the ICANN community is the best path forward for realizing this goal. Thank you.

DAVID HUBERMAN: Okay. Thank you very much, Brad. That was a very enlightening and excellent presentation, and I appreciate you coming to Hamburg to share it with us today. The floor is now open. I will take questions from the audience, I will take questions from the Zoom. If you are intending to ask a question, there are a lot of people sitting behind me, you have to please come to the table. Okay, I saw the gentleman over here first, so please go ahead, state your name for the record, and ask your question.

ANDRIY KHVETKEVYCH: Hello, my name is Andriy Khvetkevych, I'm a registrar at nicknames.com and nick.ua. We actually are one of the first ICANN accredited registrars that's starting to work with Unstoppable Domains, we're integrating right now. And I have a question to Unstoppable about the actual system that works, like your domain names doesn't have expiration, and we see it's a little problem because we can register domain name, we cannot unregister, we cannot delete this domain name, and there is no renewal, which means if the user is not using this domain name, in some time, it will be just trash, right? And also, people are dying, right?

So, like, if there is no way right now to pass this domain to someone else, so what's going to happen in a hundred years, for example? So this is our concern, the main concern. And we are also integrating with the ENS, they have expiration, and they have an interesting thing that you can renew your domain for any amount of years, what you want, what you like. And this is first question. The second question is what's going to happen if a domain name that registered will become fraud domain name or bad domain name if there are no technology to revoke the domain name? So, thank you.

BRADLEY KAM: Yeah. So I'll answer the revoking part first. So like I mentioned before, if you have issue with abuse, right now what happens is you go directly to the applications and you ask the applications to stop resolving that domain name. And this has happened thousands of times, the applications are responsive, and we haven't really seen difficulty on the part of brands for getting that done.

In terms of no renewals, so yes, Unstoppable does not have renewals, you own the domain name forever, and we felt like that was an important-- blockchains enable this new feature where a user can own a digital asset independent of any third party. And that's a very powerful new thing that the technology can do, and we thought that that was a very important, important feature to offer to users for Web3 domains.

And so we did it intentionally, and we think that it's been probably potentially one of the biggest reasons why we've been successful in the market is because it's unique from the way that traditional domain names work.

Now, in terms of recovery, recovery is a problem that exists across the blockchain industry. So recovery is a problem for your Bitcoin, it's a problem for your Ethereum with which you hold, it's a problem for any of your NFTs, it is sort of a universal problem in blockchain land. And the way that the solutions are moving is to what they're calling multi-- there's a bunch of different terms for it, but basically, you will have schemes where you'll have multiple people have part of your key to do recovery.

And there are early versions of this, Unstoppable is building versions of this as well. The tech, I would say is broadly not quite there yet to where it's not easy enough for me to just go tell you, go click here and set it up. But what is going to be developing over the next few years are things like social recovery.

I'm able to say that two out of three people I appoint are able to recover my assets for me, or two out of three companies I trust are

able to recover assets for me. And exactly for cases that you mentioned, like for in cases when somebody is deceased, or in cases where somebody loses. The argument that subscriptions are necessary to solve this problem, I don't buy it.

If you are so concerned that you want to give yourself that extra layer of, if I forget to pay, then it can be recovered or it can go back, you could build a subscription service on top of your Unstoppable domain, optionally, but it's not required. But you could build a system that says, if I don't take some action once per year, then the domain name goes to this address.

So the technology is very agnostic, like you can use it to design any of these systems that you want. The renewals are not required to solve the problem. And I think that the arguments that I hear for renewals when I hear them, what I really hear is, I would like recurring revenue. And I understand that, I would like recurring revenue too, I just think that the best way to do that is to build features on top that are optional because renting, it's just not a requirement of this technology you can own, so we wanted to make sure that people could own.

DAVID HUBERMAN: Our next question comes from online. Marco Paloski asks, "What is your level of KYC and AML for your crypto payment function?"

BRADLEY KAM: So we actually don't do crypto payments. We are the name that you attach to your domain name, sorry, we are the name that you attach to

your crypto addresses in order to send money. And people are sending money in self-custody wallets that typically don't require KYC, and they're sending money in crypto exchanges that typically do. So that is something that's happening outside of our application, outside of our user experience, but the applications that our customers use, they follow the laws in their jurisdictions.

DAVID HUBERMAN: John.

JOHN CRAIN: Hi John Crain, ICANN CTO. First, I want to say on the record that I really appreciate that Brad's here. We've had many discussions over the last year or so around this. He asked me to ask mean questions, so I'm trying to think of one. So the issue of immutability and the names keeps coming up, right? Everybody's like, but we can't unregister this name.

What are we going to do when the bad guys start using these names? And as we've had conversations, I told you they will at some point. And what you're saying is it's not our problem, go somewhere else. You're saying it's these apps people. And so far all the apps people have been good players and have played along. Is that process documented somewhere?

So say a law enforcement agent or even an end user or offset guy can go and figure out an easy path to do that, or are they going to have to talk to 10,000 apps in five years' time? Or how's that going to work

and what are you going to do when the bad guys get their own app, which of course that's what they've done in our world, and they will in yours eventually?

BRADLEY KAM: Yeah. I do think that this is something that is part of Unstoppable's responsibility. I'm not putting the responsibility on the apps. I'm saying that today, there's fewer than 10 applications where the problems today tend to come up. And so that's the reason why the starting point has been call those apps and we help, we help when we're asked.

What I think that we need to do as a community is I think we need-- well, so one thing that we just started, which I hope is going to be a precursor to the ultimate solution which is these safety scores. And we just launched a safety score technology just a couple of weeks ago.

And this is early version of what we want to build is a public list of dangerous domains that has multiple writers to that list and has a deliberation process that makes it fair, and that that will be able to be open and public and easily accessible to apps so that you don't actually have to call the app, you just have to get on the list.

Applications will be able to easily read that list, and then be able to behave well. So that's what I think is going to be the ultimate solution, and we want the Web3 Domain Alliance to work on an initial version. But ultimately, I do think that this is a good problem for the ICANN community because you all have so much experience with similar problems, and I could see us working together on building this.

JOHN CRAIN: So we've tried blocklists in the industry, we have them, and what we came back to was-- and we've tried not the apps, well, we've done a little bit of the apps and we've done the hosting providers, and we've still come back in the end to the idea that at some point you have to be able to disable the name. So maybe something to think about. It's like we've been doing this for about 25 years. So I think it's great that you're here because we've gone through some of these things too.

BRADLEY KAM: And you can disable the name in the sense that you can't take it away from the user, but you can make it invisible, and that is effectively the same thing. So that's what's happening. Blockchains are just these giant public databases and you can shove all sorts of data into them, and applications have to read that data and make it useful.

And if you've got data that they're not reading, it's essentially invisible, you would have to be a clever developer to even go and find the data in the first place, and you'd have to structure it. So that's what's been happening. I know it's not identical, I know some people will say it's still out there, or it's still in the hands of the abuser, and so that's not as good.

I would agree that in some ways that's not as good, but the flip side of that is that the technology is enabling a new type of peer-to-peer user empowerment around the world that I think is going to be a net positive for the world, so long as we can prevent bad actors.

HOUDA CHIHI: Hello, everyone. Thank you so much for this great presentation. My name is Houda Chihi, a newcomer to a fellowship program. The question is, have you faced any security issues in these apps?

BRADLEY KAM: In what sense? What kind of security issues?

HOUDA CHIHI: In payment, for example.

BRADLEY KAM: I'm sorry, I still missed the end of your question.

HOUDA CHIHI: In the payment. For example, application of payment, any issue of fraud?

BRADLEY KAM: So early on there were some issues around characters like capital versus lowercase, there's also some issues around different types of characters. And you'll see in our approach, we try to be very conservative. And so most characters that are non-English characters are not available for registration right now because we were concerned that people would be able to make something look like a certain letter or a certain domain when it wasn't.

Also emojis, emojis are a very popular concept in blockchain land, and we didn't enable them because we were worried that somebody might send to the wrong smiley face, something like that. So don't have perfect solutions to those problems, and we have punted on them because we couldn't find a way that made us feel like it would be safe.

And because the tech is new and because the concept is new, we thought if even one person sends money to the wrong person and loses their money, and when it's Bitcoin, you lose it forever, there's no one to call. So we thought that if that happened even one time because of the way that the technology worked, it would undermine the entire system.

And so we've just tried to go as conservative as possible. And I hope there's going to be some better solutions because we're leaving a lot of users out by only having English characters. I think there's more to do, but we just haven't come up with a good solution yet.

DAVID HUBERMAN: We have a question online from our friend, Hervé Hounzandji from ISOC Benin, "Brad, do Unstoppable Domains concern all extensions like ccTLDs?"

BRADLEY KAM: Do we concern…?

DAVID HUBERMAN: If ccTLDs are registered.

BRADLEY KAM: So we are only selling Web3 domain names as of today, and so those are TLDs that were created by Unstoppable. We also sell ENS, .eth, and we're getting ready to support .sats, which is a bitcoin-based TLD, and probably several others as well. So you'll see us supporting Web3 TLDs, and then possibly some some other things in the future.

DAVID HUBERMAN: We still have a very long queue. The next person I believe I saw was the gentleman from WIPO.

BRIAN BECKHAM: All right. Thank you. Brian Beckham from WIPO, World Intellectual Property Organization. Thank you, Brad. That was a very, very informative presentation. And I had a similar question to John, and I should also mention that we are providing UDRP services already for name-based TLDs, which are built on the handshake domain, and we are having discussions with other blockchain operators to see If the UDRP or UDRP model understanding that sometimes due to the technology, it's not possible to a cut and paste of the UDRP for these spaces.

But nevertheless, we're exploring rights protection after domains are registered if they're not caught on preventative lists. But my question kind of picking up on John's question was whether it's possible to somehow sort of centralize that if there's a decision that, whether you call it a score or there's an expert determination like we have in the

UDRP process, if there's a way to sort of centralize that at your level to deliver a knockout blow to avoid a situation where you have a race to the bottom, or a scenario where like shadow entities where the infringing domains are still existing and people are able to access them.

We had a similar situation in the UDRP with respect to cyber flight. So someone would get notice that there was a case filed against them, and because a registrar wasn't locking the domain name, they would run around and cause havoc for the brand owner. So it was necessary to specifically define what a lock meant in the UDRP to avoid what was termed cyber flight.

So just a question or food for thought that if it's possible to centralize that at your levels so that all of the app providers, browsers are on the same page, certainly that would make rights protection and enforcement more meaningful.

BRADLEY KAM: I think that's generally the direction that we think it should go, and so we are starting with a early versions like the safety score and public lists. And I think that over the next few years, we hope to work with people in the Web3 domain industry as well as people in the ICANN industry to make this a robust shared type program that can be used by all apps.

To be clear, these are open-source networks, and so I think there won't be a way to stop every single app at once, I don't think, from a technical perspective. But I think from a practical perspective, you can

stop for 99.9% of internet users. So I think it's going to be probably quite similar to kind of what you see with basically-- that 0.1% of dark web that exists on the regular internet, I think will also exist here. I think that the good news in some ways is that all the data on blockchains are public, and as a result, it actually in some ways has become easier to identify and stop bad actors.

And this is a narrative that people are learning. There's a great company in the crypto space called Chain Analysis that does a lot of great work here. And they are good at identifying violators of sanctions and various other activities to the point where the word is now out from a lot of bad actors, don't use blockchains because you are creating this massive set of data that somebody can then go use to go and track you down.

I think because of the public nature of blockchains, I think by and large we're going to be able to actually create a safer internet, and partially because coordination I think will become easier.

ROSEMARY SINCLAIR: Thank you, Rosemary Sinclair from .au ccTLD. I was really interested in your presentation, Brad, and thank you for it. I think there are matters that are of shared concern such as technical performance, both speed and security, transactions, costs, and also very importantly for my CCLT and our shared community here, trust. And a number of the questions that you've just been asked go to that issue of trust.

My question is about the integration that you talked about before. And at one level, you are already integrated. We are talking about

blockchain domain names and we are talking about TLDs. So that's a level of integration at language. So what are your objectives? What are your next steps for integration with the ICANN multi-stakeholder community? And what would you bring to the table to enable that to happen?

BRADLEY KAM: Yeah, so I think that in terms of steps, I think that is my mission in being here and in participating is in trying to identify what that should be. And we've started from a place of we need to bring together the good actors in the Web3 domain space, which is what the Web3 Domain Alliance is meant to do, and talk to people and create study groups and start working on what solutions and what integration could look like.

So I don't have a set answer for what that path is. I think I would consider us to be on the early part of the journey, we've been engaging for a little over a year now, I think, and the Alliance has been around for about six months.

So I think that we are on the early phase, but we are trying to figure out exactly how that should work. In terms of what we can bring to the table, we're one of the larger players in the space. We also see ourselves as a technology company, we are not ideologues, we are not philosophical, radical, libertarian radicals, whatever kind of stereotype you imagine about the crypto community, we are not that.

And I think that the role we can play is in encouraging all parties to follow the rules, to cooperate, and to try to do what's good for users

and for apps. And so I, I hope that we can help provide some of that ethical type encouragement for the Web3 community. And I mentioned that an archaic libertarian strain and, it is out there and just like it was with the early internet community. And I think that as you go mainstream, you need to move away from that. And I think that we can be a voice for rationality.

DAVID HUBERMAN: Our next question comes from online, but I think you are here, Tom Barrett.

TOM BARRETT: I'm here.

DAVID HUBERMAN: Oh, there you are. Please.

TOM BARRETT: Brad, good to see you again. Great presentation. You just gave me a great comment about rationality, so the early adopters of Web3 have been promised forever names, and so it's great that you can blacklist those so that if they are doing trademark abuse or some other kinds of abuse, they don't function anywhere.

But rationally, that might not be enough as we learned 25 years ago, trademark owners want some of their brands back. And so smart contracts is just software, we know they're all upgradable, so why not just add UDRP or some other sort of dispute process to the smart

contract and be rational? And sure, there'll be some anarchists who are upset, but the mainstream internet will then adopt Web3.

BRADLEY KAM: So the argument for having user ownership is not any radical, philosophical argument, it's really a security argument. And I think one of the benefits of the technology is that you don't have to rely on a third party for your security. You can control your own security, which is not the case with a traditional bank, it's not the case with a traditional registrar either where they're essentially providing the security for you.

So I think that the value of having security for the user is extremely important. Where this goes in the future and what is the best way to protect users and have a healthy ecosystem over the long term, I think that remains to be seen.

So I'm not convinced that the problem is insolvable, and we intend to solve it, so we're going to start there. I think we should see where we get because I think the value of users being able to provide their own security is a feature that is worth existing in the world. And so I think we wanted to try to make that exist in the world, but we'll see where we wind up.

ALAIN DURAND: Hello, this is Alain Durand from ICANN in the office of CTO, I wrote some of the paper talking about challenges when you deploy technology like this, what happen to name collisions in the name

space. So I've noticed that you talk about Web3 domains, not domain names, really, and you are offering names under strings we call TLD like .x, .crypto, .nft, and a bunch of others, what have you, from your website that are not today allocated by ICANN.

And somehow, I wanted to address the elephant in the room here, which is what do you think would happen or should happen if and when those strings get allocated by ICANN?

BRADLEY KAM: So I think that there are real businesses and real communities that have formed around a small number of these Web3 TLDs, and they involve hundreds of thousands or millions of users, they involve hundreds or thousands of apps that represent hundreds of millions of users. And I think that those users in those communities should be respected, and how that actually works in practice, I don't know yet.

But I would keep in mind that when this industry came about, and it's really 2016, 2017, when this industry really got going, there was no open ICANN auction. The last ICANN auction was 2013, we had no idea when it would be again. Now we know it's 2026, but that's 10 years after the industry got going.

And so, there was really no path for the Web3 domain industry to go through ICANN processes for getting TLDs, that wasn't an option. And as you know, technology innovation needs to move quickly in order to make an impact on the world. So there was no choice for the industry other than to go and launch TLDs in this void.

So I think that was sort of the first phase of the industry. What happens in the second phase of the industry, I think should be cooperation and integration, and I think we need to work to figure out exactly what that looks like.

DAVID HUBERMAN: We have an online question from [00:48:30 - inaudible] from DNS Simple. "Brad, without recurring costs to own a name, how do you prevent or deal with name squatting?"

BRADLEY KAM: So, I don't always know what people mean by name squatting. What we mean when we say squatting would be trying to get somebody else's name that shouldn't be yours, and then sitting on it. If you are buying a collection of names in hopes of using them in the future or selling them in the future or anything like that, I don't see how that is negative for a namespace.

In 1999, I became a little bit of a .com nerd as probably many folks did here, and I bought hundreds or thousands of them, and paying eight bucks a year, that didn't deter me from keeping my collection. So I don't know how unique that is to Web3 domains that are owned forever. And really like the way that-- yeah, so, I don't know why it's bad, I think it was good for .com. So, yeah, I guess that's my answer, I'm not sure it's bad.

VICTOR ZHOU: My name is Victor, and I'm an Ethereum EIP editor. And thanks very much for the presentation. I get my .dao domain more than a year a half ago, so one of your customer. I think as one of the few Ethereum or the blockchain people who come to sit in the ICANN room, we share the same view that it only works if Web3 domains can collaborate and be compatible with Web2.

And so my question for you is that I think the gentleman who asked the question, how do you avoid or what happens if ICANN issue it? In general, what is Unstoppable Domain's roadmap in terms of avoiding a collision with the next round of gTLD, because apparently a lot of people also come here for that reason?

A friend who had a very painful experience with handshake, who auctioned out a TLD that was actually reserved by gTLD, I also know that some blockchain people is issuing TLDs that a lot of people were looking at. So I like to know what your views are. Another thing is that I care about compatibility.

I noticed that Unstoppable Domains also issue .x and .888. These domains are cool, I like to collect them too, but also, it turns out to be not compatible with RFC 1034. So what's your views on solving those policy challenge and technical challenges here?

BRADLEY KAM: Yeah, I think that from the first part of your question, I think that there are several Web3 TLDs that have built big communities of users, of applications, with hundreds of thousands or millions of people relying on them and using them on a regular basis. And I think that those

need to be respected in some way. And then there's also a practice in the Web3 domain community of just printing thousands, tens of thousands, hundreds of thousands of TLDs.

And I don't see that strategy as being able to cooperate, so to speak with the ICANN community in the same way because I think that your justification for being respected is your user base and your application base that's using it.

So I think that there's two parts to the market. and I think it's the first part of the market that's probably going to be respected. In the case of .x or .888, we also have .go, you're right, I'm a relative novice at ICANN, but I think my understanding is that it would be a tough sell to get those respected inside of ICANN community.

We're still going to try unless I become convinced that it's absolutely impossible. But I do think that that is-- the path there is less clear. And I think that it may be that those are not able to get into, to be respected in the same way or on the same timeline. And if that happens, I think that's okay, but we'll try.

VICTOR ZHOU: Thank you.

FRANCISCO ARIAS: Hello, this is Francisco Arias, I work for ICANN. I was wondering, you mentioned that I think something to the effect that you don't envision this technology to replace DNS but instead to integrate with DNS. I wonder what you mean by that. Do you mean by technology-wise,

policy-wise, or some other means, and how do you envision that to happen? Can you elaborate?

BRADLEY KAM: Policy-wise, I think that the technology stack that Web3 TLDs are built on is different from DNS. I think it also works from a technology perspective where you can mirror systems, and there's actually already examples of this coming out. I think that the most recent example is .box.

And I don't want to say that this is, and for those of you who are familiar, I think that that's a system where the blockchain is the canonical record, so to speak, and then the registry mirrors that information and pushes it to DNS. Now, regardless of what you think about that solution, that may or may not be the best ultimate solution, but that is an example of what both policy and technology integration could look like.

And exactly what it should look like for the Web3 domain industry at large, I'm not ready to say. I think that I think that there's a lot of stakeholders here and we've got a lot of work to do to figure that out. And so I think that's going to be a process, and I don't want to presume at this stage exactly what it should look like, but I do want to get the conversation going in a more formal way, and that is what the Web3 Domain Alliance is meant to do.

And we would love to get more involved if appropriate set up a working group inside of the ICANN structure to help work on this problem. So I think that we do not want to presuppose what the

answer should be, but we do want to bring the entire Web3 domain industry to the table and encourage them to be cooperative.

DAVID HUBERMAN: We have a question online from [00:56:09 - inaudible]. He actually has two questions, both of which I'm going to ask you. "How do you intend to bridge the gap between universal acceptance in Web3 domains and potential security issues? Do you see in the near future a partnership between, for instance, Binance as a registrar and Unstoppable Domains to sell Web3 domains?"

BRADLEY KAM: So just like any registry that's here, we want third parties selling our domain names, that's the best way to go to market. Coincidentally, we have actually done that with Binance US where they have acted as a registrar for Unstoppable Domains. So yes, that is a big part of the future for sure. Also, traditional domain name registrars as well.

So I think that those are probably the two largest groups of potential registrars, traditional registrars, and then crypto wallets and exchanges that are already offering crypto payment solutions to their customers. And they want to give those users access to a name to make that experience better. So, absolutely.

DAVID HUBERMAN: Paolo had one second question unrelated. "On the scalability of Web3 based domains, seeing that Ethereum, for instance, is able to process

20 to 30 transactions per second, he asks if a new blockchain technology appears, would that mean a new DNS every few years?"

BRADLEY KAM: No. Unstoppable has migrated blockchains two or three times, and as part of our technology roadmap, we expect that we should migrate approximately every two to three years based on new tech. And this is just where the industry is, the technology is early, so no that is absolutely not required.

One thing that you do see in the blockchain space is that new blockchains and new blockchain communities tend to want a Web3 TLD to represent their community. So when you have a new blockchain, you will likely have a new Web3 TLD that wants to represent that community. And so that's where you would see additional Web three TLDs based on new blockchains.

But I'm not actually convinced that that trend-- that that trend has played out over the last five years, I'm not convinced that that trend is going to continue to play out in the blockchain space quite so much. It could, but no, Unstoppable is on Polygon today, and Ethereum is too expensive. We were on Ethereum and we moved to Polygon already, and we may move again.

It's kind of like traffic and highways. Like you build a new really good highway and then sometimes you get bumper to bumper traffic and then you gotta go build another highway. And that's kind of where we are phase wise in the tech, and that's okay. It requires a big engineering team is basically the moral of the story there.

DAVID HUBERMAN: All right, great. Thank you, Brad. We are going to now receive a presentation from our friend Sandoche who is here along with the entire leadership team of AFNIC. I'm going to bring up your slides, and we are going to elevate this conversation just a little bit away from one product to talk more about the ecosystem. Mr. Balakrichenan, please, the floor is yours.

SANDOCHE BALAKRICHENAN: Thank you, David. I hope you can hear me clearly. So I work at AFNIC, the .fr registry. I think that after such an excellent presentation by Brad, it'll be difficult to present here, but I hope the discussion and the Q&A will set a preamble for my presentation. So when I started looking at the definition for emerging identifiers, I couldn't find one. But I think that from my scope, the emerging identifiers, I assume that those identifiers that are not using DNS, so I will try to have a look at it and not only for blockchain-based domain names. Next.

So what we see here is that for the domain name service, it's a lookup service, as you all know, but we have an ecosystem that is working behind it. So the ecosystem is the naming conversion for the domain names and the IP addresses. So these are standardized by the IETF. Then we have a provisioning system ecosystem, and we have many stakeholders there. We have like 3000 people attending ICANN.

So there is a strong base there, and we need the DNS protocol that has been there for like 40 years now. So all these ecosystem plays a role to do the simple lookup service. So when we see from a DNS perspective,

it's not just mapping domain names to IP addresses, but it has several other things behind it, policy, legal, there are a lot of system behind it to make it sure that it works for the last 40 years. And as Brad said, that it's a $6 billion industry with around 350 million domain names.

Next slide, please. So when we say emerging identifiers, most of the focus currently is on blockchain-based domain names. But we at AFNIC, we have a peculiar thing that we have been working with the IoT industry since 15 years now, and we work with the supply chain, with the IoT-based like [01:02:13 - inaudible].

And so there are also identifiers there, and as Brad put it, there is a scope for DNS to move from 350 million domain names to 20 billion in blockchain. But when we see it, the IoT, it's more than that. So there is a scope here and I would like to have a look at both the scope, not only blockchain.

So next slide, please. So from a provisioning perspective, so I assume that for example, gs1 is the supply chain here like ICANN for the supply chain, it is gs1, and every country has a gs1. For example, France has a gs1 France. So I assume that there is a top level domain for gs1 and a top level domain for ETH and a top level domain-- not a top level domain, but it's a second level domain for object identifier. So object identifier is ITU standard, and it uses the DNS as an overlay for object resolution system to resolve the object identifier to its service.

So similarly with gs1, we have the RFID, the barcode, et cetera. So they have also the identifier, which can be hierarchically structured like the domain name. For example, .eth is for Ethereum Name Service, I'm assuming here, so it's a flat type of identifier. So with the

provisioning system that is already there with the DNS, both flat type of identifiers as well as hierarchical identifiers could be integrated with the DNS provisioning system. Next slide, please.

So let's try to have a focus on blockchain. So what I would like to show here is that, they say that there are about 7 million blockchain domain names, and when you say ENS Ethereum name service, there're about 2.8 million. So I tried to find some information regarding the registration. So if you see in 2022, there is a hype, there is a high registration being done.

It was not clear for me what the orange bar represents here, but I feel that it is a release of domain names. So that's why I took another source here. So if you see, there are more releases of domain names being done registered. So if we have a look a little bit further, there is a feeling that there is a hype that is being going on, and then finally that hype goes down, then slowly domain names are getting released. Next slide, please.

So if you know earlier to handshake, ENS, Unstoppable, the first part was which became more famous was namecoin.bit. I tried to look at how the name coin domain names are working in. I had a study from Princeton, which was done in 2015. So they did a study here and they saw that at that time in 2015, they found out about 196,023 total names were there.

So they opted some criteria that you see in the left Tableau column. And finally, they found out that there were about 9,354 valid DNS names. And with the port 80, when they tried to access that, they

came down to 5,374. And from 5,374, there were three squatters who were having like 4,000 some domain.

And finally, they took it out and they came down to 745 domains. And they further without duplicates, it's like 4 55 domains. So finally they do all this structuring and they see whether there were already domain names that were also with the DNS domain names, for example, sandoche.eth or sandoche.fr pointing to the same website.

So finally, without ICANN host names, there are only 28 names. So now if we see the name coin, it seems to have been gone down and it is not relevant now. So do we have a hype and does it go down? So that's what I try to look at here. So, next slide please.

So if you see from alternate name service advantages, and I am focusing on blockchain here, so the argument that most of them put, if you see the web, the media everywhere, it is censorship resistant. There is no third party that is controlling your domain name. So that's the argument that has been put. That's good when you are small, but when you grow large, you need the system to have some type of control.

Finally, the second is immutability, so that when the information that is there, it cannot be erased. So that's one of the most advantages being seen in the blockchain domains. The third one is cost. They say that you have a domain name, you pay once in your lifetime, and then it's over, it's for you. But if you see Ethereum name service and all, they're slowly moved to the TLD type cost type.

So if you see six months, you have a cost, one year you have a cost. So for recurring Ethereum name service is also having a renting service for you, not only giving you more applications. Another advantage that we see in the blockchain-based domain names is you have a security, you have a cryptographic system that provides you security. Next slide, please.

So when you compare those with the DNS, so it's true that DNS was not built with the security in perspective, but we have different security systems, protocols like DNSSEC, DANE [01:08:27 - inaudible] that in been implemented. But it's true that the deployment is a little bit stagnant, but it's growing up.

So from a security and privacy perspective, DNS names and DNS infrastructure are moving up, but it's difficult, elephants cannot dance easily. So we have a big infrastructure and easily modifying and doing that in that infrastructure, it has been difficult. If you see that we have like 3000 pages of standards RFCs just for DNS. So it's difficult to move, but it's standard it's going up, and hope that it'll also go up.

But another thing is that as we discussed here, when we see blockchain based domain names no control, it shows a little bit of an anarchy. So we can see the anarchy and democracy, democracy takes time, you see, but it's standardized. Similarly, there is a need for a little bit of control centralization so that we don't have terrorism-based domain names, domain names that are harmful for the society, information out there.

And even if you see, even in the TLDs, we have different laws in different state, different countries. So the ICANN-based DNS

perspective, DNS hierarchy abides to those laws and policies. So that's an added advantage of DNS. Another thing that we have discussed here, it's mostly, you see there were questions about that, trademar, there are issues with trademark, and if you want to reduce trademark, don't have issues in trademark in blockchain, then you go from decentralized to centralized because there is some authority looking at that, that trademark infringement is not done for brands.

Squatting is a big issue in blockchain-based domain names. So all these to be structured and reduced, there is a need for these name services to be integrated into the DNS. Finally, user-friendly. It seems, there's a very good study by ICANN OCTO34 where they talk about name collision. That is a big issue here.

And if you want to control name collision, then you need a little bit of centralization. If you see there were a lot of name services in blockchain and they need to coordinate with each other. So DNS does that, it avoids name collisions. If you see the internet at the beginning, we needed certain know-how to use a browser, to access the information.

Currently, the population is said that they don't need a real extra know-how to access information corresponding to DNS domain names. But with Web3 currently, that is the case, and there is a learning curve to be here. Finally, we talk about energy. So if you see, the blockchain-based infrastructure is based on proof. So there are proof of service, proof of stake, all these are enormously energy consumption. So if you've seen ENS, I see that they had a proof of service earlier.

Now they are moved to proof of stake, and they say that they have reduced the energy consumption by 99 percentage. And even if you see from that perspective, we did a comparison, but it's a comparison between oranges and apples, I can say that. So at AFNIC, we studied what is the cost of energy consumption of a domain name for a year?

And with involving the real estate, the employee, the infrastructure, the travel that we make here. So all these are taken into consideration. And then we study about one domain name, how much it cost as per energy. We came to a conclusion based on the study, it was 153-gram CO2. So when you compare that to ENS, so one ENS transaction with proof of stake, it is about 10 gram. One transaction I'm saying it's 10-gram CO2.

So it's true that it's a comparison of apple and oranges, but if you see if there is more than 15 transaction in a year for an ENS domain name, so it goes more than a DNS domain name. And the problem with the blockchain that we see here is that as you grow big and big, you need to have a proof, that gets more complicated and that becomes more energy consumption. So all these, when you compare that with blockchain domain services and with DNS, so DNS is from a energy consumption, it is energy friendly. Next slide, please.

So the discussion or the conclusion here is that from a perspective, it's good, it would be useful because we, the DNS industry has been there for the last 40 years and it has worked well. So not only blockchain, but all other people. Well, sorry, all other identifiers may come under the scope of the emerging identifiers.

It could be sensor Mac ID, it could be RFID, it could be barcode, it could be NFC. So they all see a need for interoperability, and if you see, all of them have standards, which uses DNS, so if they integrate with the DNS, existing DNS infrastructure, then we can avoid, for example, name collision, squatting, trademarking infringement because the infrastructure is already there.

And from the DNS industry and from an ICANN perspective also, I think that we might involve more, we should also involve more and identify the different stakeholders who feel the need for having interoperability and to be resolved or identifier to that information.

So we get involved with them and to educate them and to make sure that they can easily integrate with the existing DNS infrastructure. And with that, we can move from three 50 million domain names to more, as Brad said, 20 billion or more. So that's what we could do here. Thank you.

DAVID HUBERMAN: Okay. Thank you very much, Sandoche. Those are a very good, a very thoughtful view from higher up. Thank you for that. Okay. We have 12 more minutes left in our session, I am reopening questions and answers. You are welcome to ask questions for Sandoche, you are welcome to ask questions of Brad, you are welcome to stand up and make comments. I only have two people in the queue. So first off, Patrick.

PATRICK JONES: Hey Brad. Patrick Jones from ICANN Org. So in the generic top level domain space, a common element is that all the TLDs in that space are subject to the same technical protocols, naming convention requirements, and a base registry agreement, ICANN consensus policies. So do you see Unstoppable domains being the connector between the generic space and the blockchain space? Have you thought about the complexity of doing that in the global environment we work in?

BRADLEY KAM: Yeah, so I do not think you're necessarily going to see only one tech stack in the Web3 domain space. And the reason I say that is because there's already multiple, Unstoppable has their own tech stack, ENS has their own tech stack, there's others as well. I think that what we should do as a community is work on standards so that these systems can interoperate. But I do think that this is part of the innovation of new tech is that there's not going to be just one tech stack going forward, and that is going to introduce complexities, of course.

But I think that standards can help solve that problem, and we're already working on on technical standards and policy standards via the Web3 Domain Alliance, and I think that there's a lot more. I think that's the direction that we can go in order to make everything interoperate and work well.

DAVID HUBERMAN: Okay. We have an online question. It's from Alisa Heaver from the Dutch GAC. It's for Sandoche. Sandoche, do you have a link to the

report on energy consumption of the different types of domain names that you can share with us?

SANDOCHE BALAKRICHENAN: Yep.

DAVID HUBERMAN: Okay. I'll get that into the transcript and send that to you, Alisa. Please go ahead.

VIVEK GOYAL: Thank you, Brad. My name is Vivek Goyal. It's a comment and a question, an observation. So these identifiers are being called domain names, right? So you know how people get touchy when they use geographical indicators to sell something else. So what you are selling is actually wallet names, they don't have to be called domain names.

So if you call them wallet names, it might create less of a confusion when this becomes popular to the masses, and they don't confuse between domain names, which they know and know how to use, and these new things called wallet names, so they won't get confused.

Second point is the way that these identifiers are written are a string dot and a string, which is very similar to how we know domain names. And the reason the domain names are written such a way is because of technology stack that is based on. But for example, these new identifiers could be string hash, another string. I don't think there is

any tech technology challenge unless you tell me there is to have it that way.

So any way, either through branding, marketing, or through the technology where you can separate these two out, it'll go a long way in clarifying this doubt in the minds of consumers and reducing abuse of this as the challenges that you're facing now. Thank you.

BRADLEY KAM: I think that's the first thing that John Crain said to me when we met was why don't you call them something else? So we think Web3 domains are going to do more than just one thing. They are going to be your crypto wallet identifier, they're going to be your username for social media, they're going to be your username for messaging, they're going to be your website address, they're going to do all of those things, and so I think domain name is the appropriate term. It's just a domain name with a lot more features.

And in the same way that I call my rotary phone a phone, and I call my iPhone a phone. I that's, that's really what this is, is that this is a new type of domain name technology that has a lot more features. So, far as I can see, I think domain name is the proper term form. The formatting, I don't know if there's a technology limitation so much, but there is a expectation, for example, on the part of browsers that this format exists with string.string.

And so that was a motivation for following that standard. And our domain names work inside of opera browser and Brave Browser, for example. And that may not have happened if we used a different

standard. So those are the reasons behind those choices. I've heard this feedback for a while, and I think that we're not ideological about this. But I do think that I would argue that they are domain names. They're just domain names with more uses.

GEORGIA OSBORN: Hi, Georgia Osborn from the DNS Research Federation. Thank you both for your presentations, Sandoche for your research, and Brad for presentation. My question is in regards to-- you mentioned the Web3 Alliance, and I guess partly a comment for the benefit of everyone in the room as well. There are many different competing initiatives around this.

My concern is that there'll be fragmentation within the blockchain domain name community. I know that you yourself can't comment on that as Unstoppable Domain names because you're not control of everyone else. But what do you see as the role of Web3 domain names in light of all the other initiatives that are happening within the blockchain domain and community?

BRADLEY KAM: So, I think it's very similar to the early internet where there is kind of two somewhat competing narratives. One narrative is this sort of philosophical purity, this kind of anarchic view that we need to be self-sovereign individuals with absolutely no one telling us what to do, that sort of thing, and that's a narrative.

And then there's another narrative, which is we are building new infrastructure for the internet Web3, and that should be for everyone in the world. And if it's for everyone in the world, it's going to need to follow the rules of the world. And so if I were to describe the fragmentation, I would describe the fragmentation broadly along those two lines.

And I think that candidly, I think one is a winning strategy and one is not a winning strategy. And so we are pursuing the strategy of technology and integration. Not everyone will do that, and I don't think that all of these-- some of these systems will be viable because of that. Now, they may exist in dark corners of the internet as there is a dark web that exists.

So I do think that they may not disappear entirely, but I don't think that that other narrative is going to be particularly impactful in the future. And so, we are trying to encourage more people to move into the camp of cooperation and integration, but it won't be everybody. And I don't think every single technology experiment needs to succeed. So I'm okay with that.

DAVID HUBERMAN: Okay. We have one last question. Andre.

ANDRIY KHVETKEVYCH: Thank you. I want to say that I agree with Brad that a proper name for Web3 domains is a domain name, because main purpose of the domain names is to resolve addresses, right? So Web3 domain names

also resolving addresses, so addresses of the wallets, addresses of the digital assets, of the smart contracts, and stuff like that.

So this is a proper name, I agree with that. But I want to return to the question about the blacklisting, about this blacklist I feel like if we will blacklist a lot of domain names, it'll be like in 10 years, in 100 years, just infinite the blacklist, right? So it's not the great solution from my point. But we have Web3 Aliance, and have you considered to create the voting process to shut down domain names using the smart contract, because this is possible.

And also the alliance could, for example, have a application that this domain name is like fraudulent or suspicious and the members of the alliance could vote with their wallets to revoke registration or transfer back domain name to [01:25:24 - inaudible] for example. Thanks.

BRADLEY KAM: So I think you might be describing a DAO. There's been a lot of governance attempts in crypto land on chain based. I haven't seen a lot of them work quite yet. I think the problem with doing it at that layer is again, the security, like you can potentially undermine the security for the end user. Your comment on blacklists, I think that there is a risk.

I would say that the best solution would be competition, would be more than one blacklist, would be more than one list based on different sets of ethical codes. Because I do not think, just in the same way that Twitter X doesn't have the same filtering standards as

Facebook does, that not every application in the world is going to want the same filtering standards.

And I think that's good, I think that's going to help be a check on a bloated abused blacklist is that you could have multiple lists by multiple credible entities, and applications can choose based on what experience they want to provide for their users.

A very practical example of this would be child safe. A child safe filter is going to be much more restrictive than an abide by all the laws filter. So I think there's going to be multiple, I hope there's multiple, and I think that's the future I would like to see.

DAVID HUBERMAN: Okay. I would like to thank Sandoche Balakrichenan. I would like to thank Brad Kam. Thank you both for being here. Thanks to everyone for an excellent conversation. I'd like to thank the interpreters for all their hard work today. And this session is now concluded.

[END OF TRANSCRIPTION]