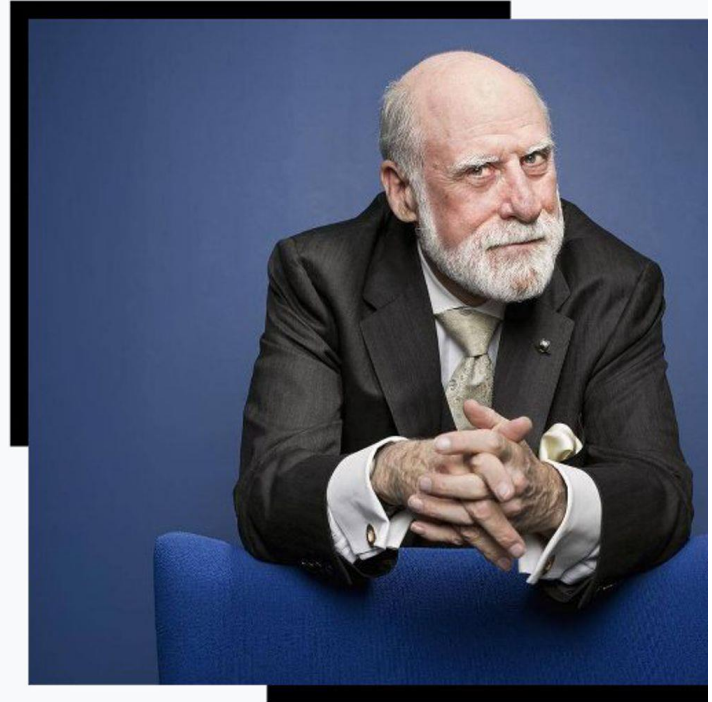# The Metaverse: Future of the Internet with Vint Cerf

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SIMULCAST BY Internet Society

The Metaverse: Future of the Internet with Vint Cerf

Disruptive Technologists in NYC – April 12 2022

Lauren Keyson

We have one hour to discuss the metaverse led by Oliver, our moderator, who is an artificial intelligence architect who works with leading edge nodes in the commercial and defense space. Google moonshot, IBM Watson winner, and who is proud to support diverse talent to better create a better world. Do you all ever cure all floors all yours?

Oliver Christie

Yes. Hello. Well, welcome back and wherever you are. Welcome to another disruptive technologists where you're going to be discussing the metaverse and really how we got here. With me tonight is Vint Cerf. The American Internet pioneer, father of the Internet. So joining him is Noreen Whysel, the director of validation research at Me2B Alliance and a good colleague. Vint is going to be joining us a little later on. He's wrapping up another call as we speak, so he'll be on shortly.

Vint Cerf

Actually, I'm already on.

Oliver Christie

Oh, you are fantastic. Well, welcome. Welcome back.

Vint Cerf

Yeah, I managed to jump off the call promptly. The other one that I was on, so I'm here to annoy you.

Lauren Keyson

We love you Vint. Thank you.

Oliver Christie

So I thought without further ado, I thought we would actually start with a quote from Alice in Wonderland where Alice asked, Would you tell me please which way I want to go from here? And the cat replied, Well, that's great. That depends a great deal on where you want to get to. Let's start with the first question, which is how did we really get here and was it inevitable? Then you help create an awful lot of the Internet as we know it, a lot of the structure. You think we were always going to reach this point of a somewhat controlled Internet

Vint Cerf

No, I don't think that this was a shared or guaranteed first of all, it wasn't clear that technology was going to work. That's what the ARPANET project was, was for to show that packet switching could actually be used to solve some really fundamental problems for inter computer communication among different brains and computers.

Vint Cerf

Second, there was no guarantee that its use in the command and control context with the different kinds of networks that Bob Kahn contemplated, the packet radio net back and satellite net, the original ARPANET Ethernet that showed up at Xerox PARC at about the same time in 1973. No guarantee that we'd figure out how to actually get all that heterogeneous networking assembled to to look like a uniform thing.

Third, the idea that, that you would tell people, okay, so this is what's going to happen. We're going to build this demo, and then we're going to go build like crazy versions of this particular set of protocols on every operating system we can find. And then we're going to force everybody to use it that's on the Defense Department sponsored networks. And then the Department of Energy, the National Science Foundation and NASA are all going to buy in spite of the fact that the

Open Systems Interconnection model, which got launched in 1978, just as we're freezing the Internet, is, hammer and tongs coming after us through an International Standards Organization, which most governments set Oh, well, of course, we should adopt that because it's already international standard. And who the hell are these US military? People? Why and why would we want to have anything from them? Apart from the fact that we gave it away? I mean, we basically said here's the spec. If you want to build it, it should work. And by the way, we tested it.

And then we would say, oh, and guess what? We're not going to charge each other for carrying each other's traffic. It's just going to be appearing relation we all benefit from carrying each other's traffic. So there won't be any charging mechanism, except maybe at the edges, when somebody has to pay for equipment to push data in and receive data coming out. But we didn't dictate any business models for anybody. Some huge number of interconnection agreements among home with 10s of 1000s of networks on the Internet, or on a handshake basis. With no exchange of revenue. If I had sat down in 1973, and I told you, this is how it's gonna work. And oh, by the way, in 1991, Tim Berners Lee is going to come up with this thing he calls the World Wide Web, and it's going to take off like a rocket you'd look at me as what have I been smoking or shooting up or whatever.

So, even though I have been I still am and was then and am now totally committed to getting this thing in the hands of everyone who wants to use it, and doing everything I can to keep it as open as possible to resist the desire to build barriers around it to prevent the free flow of information, the indexing and discovery of information. I will fight tooth and nail for that. But the other guys have all the guns. So I don't think this was inevitable. And I didn't let myself imagine that it was inevitable. That didn't keep me and 10s of 1000s of other people being committed to trying to make it happen. That is going on today.

Oliver Christie
I'll come back to your comment about openness in a second. Noreen, you've been involved in a lot of the standards for some time Do you do you think they're still fit for purpose? I mean, you what's been your what's your feelings about the Internet we have today versus where it came from and those ideals.

Noreen Whysel
I can go back to the beginning I started designing for the Internet. Probably 1992 Or maybe even earlier. And I kind of picked up on what you were saying at the beginning when you said it depends because that's kind of a user experience designers mantra, right. It always depends on the context and your ability to create something online. And early on when the Internet was

largely web based. It was very easy to see what everybody else was doing. You can open up the code. And it was very almost craft based. And the small communities kind of developed around this idea that there is this new technology and everybody can kind of look under the hood and see you know what people are doing. And you could follow those standards and understand how everything is supposed to work and build something really interesting and creative.

And then as new technology started coming in. Mobile applications are much more blackbox closed off, you don't really see you know what's going on. Maybe you can get the javascript, and take a look at what people have been doing but it wasn't as open as it was before. And a lot of new frameworks started coming out for developing on the web. Um, and it became very much around, understanding those frameworks, all the way up to like, a lot of websites are on WordPress. So if you know Gutenberg, it's it makes it a lot easier for you understand those websites. I'm from the standards perspective, where I'm working right now is the b2b alliance, and we started out describing ourselves as a new kind of standards organization, but we're really kind of moving past the idea of being a standards organization, largely because a lot of standards are on basically the working groups and a lot of the standards are populated by people who work for those large businesses.

And I remember I want to say it was around 2012 I went to a W3C multimodal interaction event, and everybody in the room except for me, and a couple of other people were in big publishing, and they were all directing the standard toward whatever, the the media companies that they belong to, what, what they were developing in house. Um, so it's kind of like, you want to be part of these open standards, communities, you want to understand how the technology is moving, so that you can stay on top of designing and developing for those different those different standards. And there are standards that I really am a proponent of that I really like the ARIA standard, if any of you see all of the accessibility standards are I think really important and help you to develop a more inclusive web, but it's harder to see know how people are developing your website, and you can't really see under the hood as well.

Oliver Christie
Well, let's keep let's keep to that point, just for a little bit. Then, do you see the standards and who is controlling them as a threat to the open Internet, as the Internet being ceded to nation state and some very, very large corporations.

Vint Cerf
First of all, the attempt by the Chinese to introduce new IP he failed miserably as far as I'm concerned. There's a piece of dangling around somewhere in one of the committees in the ITU T,

but doesn't have a whole lot of truth. You can what's the right word traction. I was amused when Noreen said let's go back to the beginning and then she says 1990 to 1969 in my diary anyway but I want to emphasize several things. First one is that there are a number of different organizations that contribute to the pieces that make up the Internet. Some of those pieces have been invented, of course, well past the early stages of just getting packet switching to work. The World Wide Web being a good example since that shows after 1991 Whereas a lot of the other stuff came decades earlier.

Vint Cerf

I would like to emphasize the differences among the various standards activities that influence why the Internet operates the Internet Engineering Task Force is a remarkable organization that's part of the Internet Society now before it was literally supported by government grants from DARPA and OSF and so on. But what's peculiar about it is you can't join all you can do is show up there's no there's no membership was he just show up if your ideas are attractive to people who are adopting them, and if they're not, they won't and then that's it. You check your guns at the door for the most part. The World Wide Web Consortium is quite different. The IETF has an antipathy for intellectual property constraints on ideas. And so it standards are almost always bereft of licensed technology. They try very hard not to adopt things that require licensing unless it's a defensive license where the party offers a license free of charge and just wants doesn't want to be prevented from exercising its own invention.

The W3C got started in a very different context. And in there are much more intellectual property concerns. There are a lot of agreements that are part of the participation of the members in that organization. The IEEE is focused on the lower layers of the architecture, and it's a mixed bag when it comes to intellectual property rights. So, so that's one thing is to observe the different standards organizations as operating different practices. The other thing that I think may be important to recognize is although worldwide web element of the Internet is it's layered on top of a bunch of other stuff. The not everything is going through the web, not everything. Is HTTPS or HTTP. A lot of it is triggered by those interactions, and then some other protocol takes over and does streaming video streaming audio.

What we're doing right now, for example, has a number of calls that are being used in order to produce the results. They're not all running necessarily on HTTP. I only mentioned that because we shouldn't be allow ourselves to think of the Internet as being oversubscribed, or limited. The design was open enough that you could keep building more protocols and each horizontal layer and if you needed to, you can stick another layer on which is what Tim Berners Lee did with HTTPS.

So, and now I'm just rattling away here, reacting to Noreen. I want to come back to your question, which is are are we in a state now? Where the Internet is going to become increasingly constrained and tight and, not in less open than it was before? And the answer is there is risk of that. Part of the risk is that governments see bad things happening on the doubt and they want to protect their citizens. Some governments want to protect themselves have different motivation for control. But however, it's motivated by theirs to keep the government from being attacked by the citizens or trying to keep the citizen from being attacked by bad guys. It leads to more desire for control over the Internet by governments, who then appealed to the 350 year old treaty or Peace of Westphalia 1648, which settled an enormous number of disputes. I mean, it was really a truly remarkable event took place over months. And resulted in the notion of sovereignty. And this is a very important construct, and it's been with us for quite a long time.

What's happened is that in the digital world, it is now popular to speak of data sovereignty and to interpret that as meaning that if there's data about my citizens, it should stay in my country. And there's this barrier around the edge and we won't let anybody touch it, except us, meaning the government and to be quite frank, the government so that they can get access to the data by demand, and nobody else can.

Oliver Christie
Absolutely. Actually Noreen, I'll follow up with you on that. data sovereignty is it the right fit for what we really need to be looking at today or is it and other standards we have a good fit for the sort of freedoms that we want? What's been your experience with current standards?

Noreen Whysel
 I feel like we're kind of operating in this paradigm that's dictated by the governments and the roles that they create. So things like GDPR, CCPA in California, and various other laws that are trying to address our data privacy, are kind of wrapped around this idea of data as property and often as data as property held by some database, not by means right. And so our personal data privacy, that's a really, really new idea. And I don't know that the data standards, um, I don't know that that is addressing those issues that that understanding of what exactly is personal data, and how legally Is it our property I'd be interested to know if there, is some thing out there that's trying to figure that out from a standards perspective. Because right now, it feels like the legal perspective is kind of overshadowing it all.

Vint Cerf

It's really weird. If I could jump in. And the reason it's so weird is that the notion of ownership is different from access to and the concerns about data privacy, are more about access and control access than it is who owns it. Regardless of who owns the data, I might still want to say something about who gets access to it. My willingness to share the data may be dependent upon the willingness of the other party to control access. So when I hear countries saying we want to build this, Chinese firewall around the country, my reaction is, wait a minute, that's not really going to do what you want it to do. First of all, I may not protect it any better than any other place. But if cryptography is your friend, it could be in this case. And if you want to protect access to something you can encrypt it and then decide who gets the keys. Then you might say your terms and conditions associated with getting keys to the encrypted data. If you fail to meet the criteria, there may be consequences. You might want legal frameworks in which there is accountability for and liability for abuse of access to information.

So I see this as a mechanism for access control, which doesn't require us to build boundaries around various pieces of the Internet, or rather, to build access control mechanisms, which by the way, also we do some other things like strong authentication, strong identity, the ability to prevent someone from pretending to be you and doing things that you didn't want them to do. Whether you wouldn't do. So all these authentication things and the cryptographic means about them are really important. They operate layers in the architecture which don't require us to build barriers between the free flow of information across the underlying Internet.

Noreen Whysel

And it's gonna be a big thing in the metaverse because right now we are kind of used to accepting cookies or, adjusting our, our cookie settings and other access settings. So there's also this big idea that the b2b alliance is really developing around the consumer having some say, but what happens when you're completely immersed in a metaverse? I mean, we're already kind of immersed in this kind of data verse thing that's going on around us in the physical world, through the, devices that we have. But once you're in this metaverse Are you going to be so dazzled by it so immersed in it, that it you don't really understand or notice these different, tracking that's happening? It knows where you're going in this in this space that it created. It may be sending you messages that you wouldn't necessarily notice as an advertisement, because you're completely immersed in that situation. So that's, that's concerning.

Oliver Christie

For both of you, is the metaverse something you're excited about fearful of, or just wait and see?

Vint Cerf

I'll let Noreen respond first. I have an answer to that.

Noreen Whysel

Yeah, I mean, my kids, they're digital natives. They're in their 20s they've been -- ever since they were on my lap when you were a year old. playing CD ROM games back then, it was all CD ROM, a little bit of Internet stuff. They build worlds in. I guess they're doing Dragon Age right now. They spend hours on character development, and they spend hours building these houses. And things like that, that their characters live in. And it's really fascinating to me, but I also see that they from their own personal identity experience. They don't really think of themselves as that avatar is just some character that they created, and then maybe the next time they go on they create a completely new character. But I also remember when they were very young. Second Life was kind of starting up in the mid 2000s. And I was in an organization that information architecture Institute, which used to rent office space from NYU Law in Second Life, where we would have meetings on and we would we would presentations, and sometimes invite people in, and there were also a lot of political things, events that you could go to or conferences that you could go to. And that was really interesting, because in that case, you're actually creating an avatar who is you? Who represents some aspect of you? And I mean, it. It was a really interesting and exciting world. There were a lot of adjustments that you had to make for how you move your character around is certainly wasn't seamless. Lots of like using the arrow keys and mouse and things like that.

So I think that that could be really exciting. Right now. It's not that exciting. I mean, I think the closest experience I've had to anything like that because I don't have the VR headset is going to like a Gathertown or Hopin, conference where you're like this little, eight bit thing kind of going from room to room and maybe talking with somebody in a window will pop up like the ones he's seeing right now.

Oliver Christie

Are you happy to use Zuckerberg version of the metaverse and the VR gear that's out there?

Noreen Whysel

Actually, I'm a little worried about it. I also don't want to be that old lady, you know who's

Vint Cerf

Ha!

Noreen Whysel

He's laughing again. I have 20 year olds, and they're used to this and I'm like, kind of, moving my way around in it trying today to see what's going on. So yeah, I'm a little worried about that. I mean, just taking zoom calls I've had to have I've had like, voice to dysphonia therapy because of the way that you have to express yourself in order to get the floor in zoom. What kinds of things like that are going to be in the metaverse for people who, are prone to these kinds of things. Or are we creating a generation of kids who are going to have no problem with that? Because they're so used to, talking to each other, in these spaces.

Oliver Christie

Vint, what do you think?

Vint Cerf

Well, first of all, I'm not yet totally sold on the metaverse. But my kids are a little older than Noreen's. They're in their 40s, getting close to 50, which tells you something about how I must be. What it was surprised me is that the younger one was describing how he was using a virtual an Oculus headset or someone's I don't remember which, and the exercise was exactly were you doing he says I'm boxing. And I said wait a minute, let me get this straight. You stick this thing on your face so you can't see anything except what it shows you and now you're dancing around the room. How do you keep from running into the wall and falling out the window? And I guess the answer is, well, the virtual reality thing, draw some boundaries that are functionally determined by how big the room is. You're moving around, I support about tripping over the furniture and he says, Well, you've got to move that out of the way. So he's saying that he actually gets pretty good workout out of this Well, that was a surprise for me. I didn't anticipate that I thought you know if you're going to do that you needed to padded room, which also implies other things like you must be crazy. So that's surprised me.

I think that there will be plenty of entertainments arising out of this. I think there will be appropriaception problems. That's a 50 cent word which means that your body is getting signals from one sence like your eyes that are not matched by your semicircular canals or the muscles in your legs. And it becomes very confused and some people get nausea, some are nauseated, I'm sorry, nauseated. Whenever somebody says, I nauseous, so you can say, Yeah, you sure I hope I don't have to look at you anymore.

Oliver Christie

[laughs]

Vint Cerf

It's a little language lesson that you want to give people. So I am persuaded that there will be conditions under which this metaverse notion can be interesting and useful. For example, here's a crazy thought. Suppose a bunch of us decided we were going to do some research. And we said let's meet at the library, and which one let's Well, this is Metaphysical Library, which is on in the metaverse and when we go into the conference room, it's a bookshelves it's the bookshelves are already populated with everything we need. We can pull things off the shelf we can open them up. We can take the books apart if we want to you know the pages are, we can mix and match and do all kinds of things we can get that simulate an environment that we couldn't even create in the real world. So I can see that as being an attractive exploration.

However, think about what we're doing right now. And imagine we're doing it in the metaverse and we're all wearing these, hats. Well, if the if our cameras were showing us we all look like Darth Vader. And so probably nobody wants to look like Darth Vader. Okay, well, there are a few people who might. What happens as a result of that is that people say oh, okay, there must be a market making you look good in this metaverse. And so I would have hair and maybe my beard would be a little darker. And the oh and by the way, you have to wear something in this space. So what do you wear and maybe you can rent? I can rent three pieces from Ralph Lauren or something for five bucks a month. You can imagine businesses building around making people feel comfortable. And in the metaverse looking maybe better than they really do.

Which now leads you to wonder, I wonder what this person actually looks like. What's reality in this face? I have no good answer for you there. I just don't know what to tell you. But being unable to tell the difference between the metaverse and the real world could become very, very disconcerting, which is why the deep fake question is makes me uneasy. Because the metaverse could generate a substantial quantity of something. So now that leaves us with the question, can we teach people ourselves and our kids to exercise critical thinking? So they can distinguish what's real from what is imagined or is fabricated? Or they will

Oliver Christie

Actually that was the question I was going to ask well, the first question I have to ask, which I'm sure the audience wants to know is, have you tried VR boxing?

Vint Cerf

I have not. I have not. I'm a little hesitant to do that because I'm afraid I'd trip over my own feet

Oliver Christie

This is for Noreen, as well, do you think we'll become more separated from society and possibly more vain as we fall into the Metaverse more?

Noreen Whysel

We kind of are already, which one of us doesn't have the make me look better filter on right now?

Oliver Christie

This sounds much, much more important.

Vint Cerf

There is a story that people on this call should read. It was written in 1909 by E.M. Forster, a very well known author. The story was called The Machine Stops, it was about a society where everyone lived at home. The machine delivered food and provided the ability for people to communicate with each other remotely. Now remember, the telephone had been invented some 30 plus years before but television was in the future. Forster imagines this thing and then of course the opening lines, the machine stops, it stops working what happens to that society? Well, we are kind of that society, especially with the pandemic. And so you should read this to find out what happens to me at least an enforcer is visually what happens to a society that was dependent on this and that went away.

Oliver Christie

Noreen, are you seeing the same thing, a stopped society

Noreen Whysel

I mean, yeah, I live in New York City. And if it weren't for the people who are delivering things during the pandemic, it would have been really, really hard to live here. And I think there's always going to be people who will fill in those roles, but there's a huge risk that it becomes and has become even a bifurcated society, where you have like the time machine being the Eloy, and I can't remember the other group, where you have like a servant class and someone who's very dependent on that servant class, but also sees themselves as elevated.

Noreen Whysel

And so I've heard people talking about, Web3 being this really, great thing that will elevate people from having to do those drudgery jobs, but then who? Yeah, how do you get things how do you get packages delivered to you? if everybody in the world is doing nothing but mining coin, so it's

there's a lot of kind of ethical, moral and political issues that we need to really work out to understand what? That kind of world what the, the risks are, of creating that kind of world.

Vint Cerf

So, what Noreen is saying tells me that we should do something that Xerox PARC did way back in 1972 when the Ethernet was invented, and the Alto machine was invented. The 250 people at Xerox PARC got workstations, and they were living in a world 20 years in the future. And so Xerox because the guy who was running part of the operation was Bob Taylor, who had been the director of the Information processing techniques office, which led to the ARPANET. Taylor hired anthropologists and sociologists and neuro psychologists to try to understand how people's behavior was affected by having this technology. And I really wished that we Google and other places had more of that kind of talent around to help us understand consequences of choice that we make the designs that we, that we develop, because we might get some insight from that and maybe anticipate problems before they happen.

Oliver Christie

Right and how do you think we could build a better to better Internet but better, better digital technology? Is it a case of much better diversity? Probably more open, more access?

Noreen Whysel

I do really like Open Access diverse development, making sure that the people who are shooting that future aren't the people who are, the ones who are in power right now. is interesting. I was just thinking about this video from Apple from like the early or late 70s early 80s. Where they're envisioning the future, and yet the biases of that era, were still showing through in that vision. It was still a man in the corporate office with the secretary who was making his lunch appointments. even though he had an iPad like thing that he was creating. His plan for for the day. And we always look at the future based on the biases that we have in the current in the current day. And so you have to really think about how is society going to change and what biases do we have that we need to let go of when we're envisioning that future? So that you create something that's actually going to be good for everybody. And that's going to be a safe place for everybody to live in. Or it may not happen at all, it may be that kind of augmented experiences that we participate in. You know that isn't something that we completely immerse ourselves in. Because we will decide that we don't want to have the exposures to those risks of being tracked and being social engineered into, certain kinds of behaviors.

Oliver Christie

So you think maybe society will self police, or maybe just on an individual level, we'll stop at a certain point. If it's not open enough?

Noreen Whysel

I'm not gonna say that that's my prediction because I don't know what the future is going to bring. And I do worry about the social engineering of our society right now. And where we might be going and the fact that the regulatory things, they work at the speed of government, which is not very fast, certainly not as fast as technology. So what you need to have is people who have that kind of watchdog role, to make sure that people are understanding their data rights are, what their physical rights are even in these spaces, and what kinds of damages and harms might affect them, that can be mitigated somehow through the way that we plan for those future activities online.

Vint Cerf

So this actually brings up a really important point, Noreen, it has to do with what's the framework in which people are protected. And because the Internet doesn't recognize the passage of traffic across international boundaries, the IP address space was designed to be topological but not not organized around country codes. It's true that we have domain names that include country codes, but they also have the generic ones like .net, .org, and so on, .com, that are non country specific. So both classes up at the domain name level, and down at the Internet level, it's completely invisible.

The consequence of that is that the system, as currently operating, allows a party in one jurisdiction to interact with a party in a different jurisdiction, potentially causing harm, which leads one to two problems. One is how do you hold people accountable for bad behavior? How do you uncover any hiding that they've done in an attempt to be anonymous? And how do you get cooperation from another nation state that you track down the parties who are causing harm? And how do you agree on what's harmful? How do you agree on reciprocity and things like this that are still in debate, as you probably are well aware, not only within the European Union, but elsewhere in the land. In the effort, the Secretary General of the UN has promoted the digital cooperation notion implies to me anyway, the potential for nations to work together to uncover bad behavior and to bring it to justice.

Noreen Whysel

And every jurisdiction seems to have a different definition of what those harms are, and what that theory is. The California law defines dark patterns as UI patterns that, cause harm basically, and it's not really very detailed understanding of what these patterns are, that should be avoided or

that should not be included. So, and then also, all of these other states in the United States are having their own privacy data. Regulations. There's a regulation in Virginia and California. There's one in New York that is on its way and a number but I think Ohio as well and a number of other states are working on their own regulations and it's going to I mean, one of the things that I like, like have this hope for is that it's going to make the company say I don't want to have to deal with all of these regulations. I want. I want my users now to tell me what, you know what I can do, rather than me trying to enforce this on them because then otherwise I have to like make sure that compliance and all these different jurisdictions, or you go to the most stringent jurisdiction and you say, Okay, we're going to, we're going to follow that law.

Vint Cerf

Well, one possibility, of course, is that if you get diversity among the states, just looking at the US for a second, when you get diversity among the states, and there is an interstate component to it, the federal government has a legitimate reason to step in. They say this needs to be more uniform across the states. And that's what Congress can do by passing laws that apply to all states. So I doesn't stop people trying to be more stringent perhaps than the federal government. But it may be impossible to be less stringent than whatever the federal rules are. And of course, this just gets more complicated when you start asking what happens on an international scale.

I'm frankly hoping that there will be at least some agreement on how we should protect people from harm in the online environment. What do they need to know what what does digital literacy mean? And how do we agree on on the basis for reciprocity to protect people? And as I said before, there are some governments that just want to be protected from their populations, as opposed to protecting your populations, but setting those aside for a moment. I think the there is reason to hope that there will be some commonality but it probably will never be quite uniform, but your argument about companies trying to deal with conflicting items is very real. It's a tough problem. And frankly, I was thinking for myself, I hope we can find a way out of that thicket.

Noreen Whysel

And I hope it's not all of these little toggle switches that we have to -- it's hard enough to like, find out where the location setting is on your phone. And now...

Vint Cerf

Imagine we haven't touched on this already. But imagine for just a moment that we have several metaverses that have been invented. Some of us think it would be really cool if you could move from one metaverse do another and you could invite a friend. I'm not 100% clear how to get that

to happen because it didn't work with instant messaging. It worked okay with email, email kind of is interoperable pretty much broadly. Instant messaging didn't happen, and there are reasons for that. You had to know what the other guy's installed base was in order to correctly tell somebody, there's someone that you normally correspond with online in another, instant messaging system and they didn't like that. So I'm hoping though, that somehow we come to common standards enough that the memories will allow back and forth. But I can imagine that there are going to be business reasons that will inhibit that kind of openness.

Oliver Christie
Maybe But it sounds like you're describing a really good party.

Vint Cerf
Well, we come on over to my place, we have we have better metabooze than they do.

Noreen Whysel
[laughs]

Vint Cerf
Will you taste my virtual 1879 Madeira? you won't believe how great this is.

Oliver Christie
Oh, sold. Fantastic. Noreen, what would what would tempt you into another metaverse?

Vint Cerf
I love this, metabooze. This is a great thing.

Noreen Whysel
I'm thinking back when I was when I had my second life avatar going from one event to another, you know in the metaverse and they had paywalls and things like that. So there are ways to kind of virtually geofence places. And I remember loving the idea that you can make these little things you know that would be catered or part of your personality or things that you could share with each other. And there was one point where I was having this event at the information architecture Institute. And we were at the end of the event we had a virtual buffet where you could pick up platters of things and I had this little platter that I've made with cucumber sandwiches and you know Long Island Iced Tea and things like that.

And then later on I was at Netroots Nation online conference with a bunch of the I think it was 2008 candidates for office. And we were basically in this kind of auditorium outside. And everybody was kind of like bored because the speaker was a little late and we didn't know what to do. He started talking and I just went into my little bag and I just pulled out my cucumber sandwiches and started like it was fun. That was a lot of fun. I started sharing it I was like we want to Long Island Iced Tea. You know when people are like where'd you get that? I was like, oh, like the last thing that I was at.

So there are ways I think to do really quirky things, fun things. And, direct recognizing that you're probably going to be tracked in there by whatever system is monitoring and giving you access to the spaces. So, you have to take care and be cognizant of that and be cognizant of who's in the room with you, so to speak. Um, and also what's going on with your body. the whole light, haptic visual balance issues that Ben was talking about are going to be a real thing I think. I do have a friend who is Regina Gilbert, who's at NYU who's studying VR to help kids I think kids with accessibility issues. So they're actually using this as a way to kind of, explore, the treatments for children with mobility issues. And I think that that's also another really great place to do research right now. But you just have to, like, really think about it. from our perspective today, where that trajectory is going and what biases we're bringing with us.

Vint Cerf
Could I? Noreen just brought up something that I find extremely appealing. And that's the possibility that we can provide to someone who has accessibility problems or mobility problems and experience that approximates and maybe just visually anyway in audibly, what will be likely to go on so far. And I think even people who don't have disabilities, a virtual surprising might be a lot of fun. And, I find that note, very appealing and very freeing, in the sense that we can bring an experience someone that's not exactly the same as the real world, but it might be good enough that you would enjoy it and you would learn from it. And that would be a pretty good outcome.

Oliver Christie
Fantastic. Well, Change of pace, thought we'd have some questions from the audience. So anyone with a question put it into the chat and the best ones to ask.

Vint Cerf
However, there are about 10,000 of them.

Oliver Christie

There are about 10,000 So we're gonna be here all night, but..

Vint Cerf
they've been just racing by and there's so many corresponding

Oliver Christie
..we can in 10 minutes. This one I liked because I'm interested in the answer, which are coming or project have you both enjoyed the most?

Vint Cerf
This specific with regard to the metaverse or just generally?

Oliver Christie
Anything at all, as you like.

Vint Cerf
Speaking for myself, the thing which I have found, I've had more fun with than almost anything is the interplanetary extension of the Internet. And that is well underway. We've got standardized protocols. We're in the International Space Station. We're looking towards the return to the moon. We've already figured out what the configurations could apply on a Mars mission. So, this is real. This is engineering, not just speculation, and so for me, it's tremendously fun. Having grown up on science fiction, the possibility that you could actually do something like this is really cool.

Oliver Christie
Definitely. Noreen, which kind of things have you really enjoyed or projects?

Noreen Whysel
I had the most fun when I was, I gave a talk at the San Diego supercomputing center on mentoring. It was basically a science gateways community Institute. org and lots of academics was very nerdy. And it was just so much fun to be talking to people who were developing data science interfaces, and talking to them about how to make these spaces accessible. And yeah, talking to them about mentoring because I'm also a very big proponent of mentoring I enjoy when people can share what they learn. And I especially like to be mentored by people who are a little younger than I am. I'm because they do have a different perspective and often know so much more about, things that I do, but that's probably the most fun that I had and I had been involved with the science gateways community Institute for a while. I've written a paper on accessibility in science gateways, and I'm always looking for opportunities like that, because it's really, these are people

who are creating spaces that are on there. They're basically sharing knowledge with the world. But it needs to be in accessible ways. It needs to be in ways that people can actually do something with that data and make the world better.

Vint Cerf

So Noreen brings up this wonderful topic and I want to emphasize two aspects. of it. First one is that people with disabilities are often the most creative people around because they have to cope with whatever their problems are, they have to figure out how to accommodate and so I found people with disabilities are often the ones I turn to for creative thinking this first one second one is to the extent that you care about redressing accessibility problems and making things more accessible and useful.

Vint Cerf

It turns out that you hear this statistic a billion people in the world have a disability. That's the wrong number on which to count for the value of the work and the reason for that is that for every disabled person with whatever disability they have, there are a whole bunch of other people who are benefited by a person that needs the help. So that they can they can be accommodated in the use of these technologies. And so the real benefit is not the billion people with disabilities but the other 6 billion or 7 billion people that they interact with. And so the power of what Noreen is talking about is amplified by the number of people who are benefited by a good response. To accessibility needs.

Lauren Keyson

Thanks for bringing that up. Really appreciate that. Our summer webinar is going to be on technology accessibility. You're like right on. We're having you back Vint. And Noreen.

Noreen Whysel

I'll be there.

Lauren Keyson

Cool.

Oliver Christie

Let's see another question. Do we think the multiverse is going to be able to help with wealth equality, which in a way is an inclusion question?

Vint Cerf

Yeah.

Lauren Keyson

Do we think the digital divide is simply too big at the moment to be included enough people?

Noreen Whysel

Well, I mean, I think there's a possibility that you will allow access to things just like the Internet did, to things that are typically only available to people have certain classes. One of the earliest projects and this is another really fun one that I did in 1996. I got to go to the Pine Ridge Reservation, and teach web design to middle school kids. And it's open for them because they're living in the reservation. Never leave and or do leave, you know. And they're like looking at websites from Australia. They're looking at websites from all over the world. And they're building one that they know that people from Australia and other parts of the world are able to find online. And that was really, I think, very empowering for a lot of those kids. And so that was a that was like a real honor for me to be able to do that. And for me to start my career in that way. I think a lot of the projects that I chose from then on.

Vint Cerf

Two things occurred to me. The first one is that there's no guarantee that this metaverse thing will necessarily have an effect on the digital divide or on the equality and economic equality problem, which is quite severe. I mean, we are at the point now in our present day, that health disparity is approximately as bad as it was during the late 1800s. And at some point that's going to it's cannot continue this way. The reason that we have this problem is outlined in a book by Alec Ross called 'The Raging 2020s'. And I would recommend that book to you.

Vint Cerf

Alec was a senior technical adviser to Hillary Clinton when she was Secretary of State, and did serious research on this topic. What's important here is that we have to recognize why wealth inequality happens, and the primary reason is that the current structure of capitalism that lets people with any excess income get on an escalator, they can make investments, they can invest in stock, they can invest in companies. The people who do not have any excess income, living paycheck to paycheck, never get on that escalator. We need to find a way to reward people who make companies simply by their work. An example of this is the Gallup company, which is privately held and the employees own the company. And so they get paid for their work, but they also benefit from ownership of the company, and so if its value increases because of work, holdings increase in value as well. And so all the members of the employees of the company benefit from the value of their work. So I anticipate the recognition of this will eventually cause us

to rethink the way capitalism works, so was to open the doors for more women to benefit from its opportunities, or at least I sincerely hope so.

Vint Cerf

Noreen, are you as optimistic that this could happen?

Noreen Whysel

I think there is a lot of room for education in this in this area. To really give everyone a chance and an opportunity to be on that. And I don't know I'm not sure I'm kind of on the fence with it because a lot of it's really exciting. A lot of it just really feels like it's a road to that increased disparity between the wealthy classes and everyone else.

Oliver Christie

Gosh, I feel like we need to end on a positive note. We've got a couple of mutes left.

Vint Cerf

Well, there is something positive to derive looking forward For one, this is a new space in which to be creative. And it's just software. Software is an amazing amplifying tool you can make that sort of drew me into competing in the first place the idea that you can create this world and it would do what you told me to do was absolutely, rising. Then later I figured out it does what I told it not necessarily what I wanted to do and the difference between this is called a bug. And I discovered very commonly find the mistakes that you made but nonetheless, this is a huge canvas and an increasingly true palette on which to paint new ideas. And so I anticipate that there will be we'll be surprised by some of the things that people discover they can do in this kind of an environment.

Oliver Christie

Fantastic. Well, that feels nice and uplifting. Nice, nice point to end. Noreen, any last thoughts of what we're going to come to new and bright canvas.

Noreen Whysel

I mean, I feel like if we can bring back some of that, skill share, craft, in the development, especially among younger generations. And really, pique their interest and excitement in building worlds and in building better worlds. I think they're probably going to raise a lot of really interesting and effective and, and I really think that my kids are part of that. And I'm looking forward to seeing what people can build.

Oliver Christie

Fantastic. Welcome to the future. Thank you both so much for a very interesting conversation. Unfortunately need to tie up as we're getting close to the hour. Lauren are you there? Do you want to end with sponsor thanks?

Lauren Keyson

Thank you, everyone for coming. This was a really great webinar, a lot of chat. Bruce is going to put together the chat questions. I may have to send them back to Noreen and Vint, thank you guys so much, to maybe answer some. I'll post everything on our meetup page. We love our members, we love our Disruptive Technologists members.

Lauren Keyson

I wanted to thank our sponsors Esther Dyson, Ramona Wright, Brad King and Scott Moss for recording us. This is really exciting year I think things are gonna start happening. I desert prescient, we're going to have our summer webinar on access technology accessibility, and I wanted to remind you to send your name, title, company and email address to info@disruptivetechnologists.com and enter our email lottery for a chance to win in our entrepreneurial books by Rebecca Costa. also giving away two day Upflex office passes from Ninja Diwali. Be sure to register second webinar at the end of this month with Uber Angel Esther Dyson, we'll have another take on that. Thank you for coming. Thanks Vint and Noreen, you guys, big fans. Anyway, see you in two weeks. Take care.

Vint Cerf

Bye bye for now.

Noreen Whysel

Thanks

Lauren Keyson

Thanks