The Rapid Rise of Space-Based Internet: Broadband From Above

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SPEAKERS

- Ambassador Steve **Lang**, Senior Advisor, Crest Hill Advisors
- David **Redl**, Founder and CEO, Salt Point Strategies
- Evan **Swarztrauber**, Principal, CorePoint Strategies
- Mary L. **Brown**, Executive Director, WifiForward
- Anne **Keeney** Weaver, Executive Vice President, Glen Echo Group

Anne Weaver 00:52

Thank you. Hi everyone. Anne Weaver, really excited to be here today. We have a wonky one, but I think we have the right folks to explain what we're doing. So I'm going to give some very quick who's who, and then I'm going to have our panel actually introduce themselves in slightly more detail and say where their expertise comes into play. Today I'll go line by line. So Evan Swarztrauber, principal at CorePoint previously at the FCC, worked for both then Chair Pai and then Commissioner Carr.

01:24

Mary Brown is executive director of Wi Fi forward and previously led public policy for Cisco, so she is our Wi Fi guru on the panel.

Anne Weaver 01:36
Ambassador Steve Lang is currently a Senior Advisor for Crest Hill Advisors, but spent 30 years at the State Department, so we'll bring that expertise today, and then finally, at the end, here we have David Redl, Founder and President of Salt Point Strategies, previous head of NTIA and Chief Counsel of E&C. So I'm going to have folks first go down the line. I've given this super high level of who the heck you are, but if you could share a little bit more detail and what you're bringing to today's conversation,

Evan Swarztrauber 02:10
I'll keep it very short. When I was working at the FCC for then chairman Ajit Pai, the FCC made the decision to open up the six gigahertz band for unlicensed use and Wi Fi use the full 1200 megahertz of that band. So I remember the fights that we had there and the debates as they were happening, so it can bring some of that to today's discussion. But just generally, been working in tech and telecom for about a dozen years on a range of issues.

Mary Brown 02:40
I've been really deep in Wi-Fi for about 25 years now. At Cisco, I led Cisco's effort to coordinate with companies across the spectrum, not just the enterprise vendors, but client device vendors, the people who make smartphones and tablets and laptops and all the chipset manufacturers, and spent my time focusing on how the Wi-Fi industry was evolving to meet new needs, new demands that we're all placing on it at home and at work, because those have really evolved dramatically over the course of my career. And we're today as we sit here, we're in the midway into the transition to Wi-Fi 7, but already back in those engineering discussion rooms, Wi-Fi 8 is on its way to you in a few short years. So the things are always changing, and the best part of my job is I get to learn something new every day.

Steve Lang 03:42
So I did just finish a 30 year career at the State Department, and that really makes me sound old, but I spent the last 10 years or so of it focusing mostly on international tech policy, and my final role was as coordinator for us international communications and information policy, and in that capacity, I led all of our engagement with the International Telecommunications Union, and that included leading our delegation in 2023 to the last World Radio Communication Conference.

David Redl 04:13
David Redl, after a number of years working in the private sector as an attorney working on Spectrum policy issues, I came to Capitol Hill, where I was Chief Counsel for the Energy and Commerce Committee's Communications and Technology subcommittee. While I was there, I sort of got the bug for Okay, I understand, and I'm helping Congress make policy for Spectrum decisions domestically. But how does that play in a global environment? In a global ecosystem? And started while I was here, going to events like the World Conference on it, the WRC, the ITU Plenipotentiary, and sort of learning how those two things stitch together. I was then fortunate enough to lead up NTIA from 2017 to 2019 as the administrator. And while there, NTIA is one of the three agencies in the US government that are waist deep in the US positions. And the US advocacy at the ITU, those being the FCC, the State Department, which is where Ambassador Lang and I work together, and then the Department of Commerce's NTIA

Anne Weaver 05:11
great, as I said, these are the right people to be discussing this topic. So I want to jump in first. You can see the name of this panel is incredibly long. There's an incredible amount of alphabet soup. WRC,

some call it work, the ITU, I want to start Ambassador link. Can you help help us understand what do these words mean? What is this conference? I've heard it called the telecom Olympics. Maybe that's just my personal preferred terminology, talk us through what, what are we talking about today?

Steve Lang 05:46
So the International Telecommunication Union, or ITU, is the UN agency that works on telecommunications policy. Some would like to see it work on a much wider array of tech issues, but that's a kind of a different conversation, but it has a clear mandate for telecommunications issues, and that includes the international harmonization of radio frequency spectrum, which is what the World Radio Communication Conference, or WRC, does every three to four years. It's one of four major conferences that the ITU hosts on a rolling sequence. So the last one took place in 2023 and the next one will take place in 2027. A couple of fun facts. The ITU is the oldest UN agency. It was founded in 1865 as the International Telegraph Union. The WRC is particularly important; it updates the radio regulations, which are a treaty level instrument, so it is binding, and that makes it more consequential than some of the other work that the ITU does. And then, in addition, another important characteristic of the ITU is that, unlike most UN agencies, private sector companies can join as sector members, and they can't vote, but they can participate in a lot of the discussions independently.

Anne Weaver 07:13
That's helpful. So what is happening in Shanghai in 2027

David Redl 07:19
So as Steve mentioned, we see, every three years, the WRC convenes. This is the World Radio Communication Conference. The world comes together to consider the items that at the last WRC were teed up for study. So at the WRC in 2023 there was a teeing up of issues that they said, okay, at the end of the conference, here are the items we want to talk about in a couple of years. We are now going through that process of working across country borders, working in working parties and working in—I say this all the time when I talk about this—the ITU actually feels a little bit like Congress, if you really break it down, both the congressional staff and the ITU people hate when I say that, because they each think that what they're working on is a far better system. But in reality, the way it works is, after the WRC 23 they come up with a whole bunch of different working parties and different agenda items to work on. And it's tantamount to having a bunch of bills that get sent to subcommittee, right? They get referred to committee, they get referred down to subcommittee, and then you go through the process of building up, what are we going to talk about in three years? And that's, you know, in Congress, we do hearings and then markups, you know, at the WRC, at the ITU, we do working parties, and we do the conference preparatory meeting, where they do a series of meetings over the course of those three years, where you bring your perspective as a country to the conversation, you bring your studies to the conversation to try to figure out what the global position is going to be, all in anticipation of getting to the actual conference where decisions will be made over the course of three to four weeks, depending on the conference, on how the rest of the world is going to agree to these things. And if you think that getting something done in Congress is challenging because you have to get in this chamber, you got to get to 218, the thing to remember about the ITU is, rarely does the ITU vote on anything. It is almost exclusively an agency that relies on consensus. So essentially, you'd have to do unanimous consent for just about everything, and that takes what is a very complicated and weedsy set of issues and makes them incredibly difficult to get to yes on. Everyone has to show up prepared to have a fulsome conversation about what they really want and what they really need and what can get put to the side, because there are just some issues you're going to show up to these events with that are never going

to be agreed to by the parties. And so that's what we're really doing. We are now in the one year ish left before the WRC. It's worth pointing out that, because, as Steve pointed out, there are other meetings that the ITU holds. There's actually a big meeting this fall that is sort of in the interim, called the ITU Plenipotentiary Conference. The plenipotentiary is where they elect officials to the ITU. So it's kind of a big deal. It's a particularly big deal right now because the head of the ITU is an American, Doreen Bogdan-Martin, who is running for her second and last term as Secretary-General. So as we are working to get to next fall's fall of 27 conference, in the meantime, we have sort of these other parallel streams of work going on where we can figure out what our allies and frankly, our adversaries in other countries are thinking by monitoring and viewing what they do in these different fora.

Anne Weaver 10:36
That was very helpful. Thank you. And I think you've teed up my next question, which is, why should we're in the halls of Congress today. Why should Congress care about this meeting happening halfway across the world? And for any of you who want to answer,

Mary Brown 10:53
all right, I'll jump in with the first three reasons. Top three reasons. Number one, US multinationals and their supply chains use spectrum based technology to produce what they produce, right? So they need to have a consistent footprint across the globe and know when they're putting in their IT operations that include Wi Fi or private 5g or whatever they're putting in that they can do that in Mexico or Brazil or Europe in the same way that they can do it in the United States. So it's really important for consistency for our economy, because we have an economy with global reach. Not all economies do, but ours Sure does. The second reason is the military, and I'm encompassing with that, all really federal civilian agencies, they're using spectrum. Two, they have to have a path forward for what they plan to use for their military systems. Or fill in the blank, it could be any, any federal agency. They they have to have a path forward, and they have to have the right spectrum allocated for them. And the third is consumers right? If you can build a consistent commercial approach to the services or or the technologies that consumers use, such as Wi Fi, if you can build something consistently across the globe, this applies to 5g as well, you're going to be able to hit economies of scale that benefit everybody. So those are three of my top reasons, and you guys can you can add more.

Steve Lang 12:29
I'll add three more. One is transportation safety, to make sure that our planes can communicate and are their landing systems work. Another is scientific research astronomers. Radio astronomers, depend on Spectrum. Satellites conducting Earth observation depend on spectrum. And the last, I would just say our technological strategic competitiveness relies on being successful with WRC, because we want to make sure that telecommunications networks built around the world are adopting us approaches that we've developed in consultation with our allies, and not relying on Chinese technology and Chinese networks.

David Redl 13:11
And I'll sort of put a capstone on top of that and say, look, it's sort of a truism in spectrum policy that at some point someone will say to you, radio waves. Don't care about international borders. They're just radio waves. The problem is, people care about international borders, and so what we see play out at the ITU is how we square the circle on we have all these technologies, particularly ones that the United States leads in, like Wi Fi and non geostationary satellite systems, but they have to be made to work in a global marketplace. You can't just be concerned about how well they're going to do, or how well

they're going to operate here. You have to be worried about how well they're going to operate in other countries, along adjacent borders. And frankly, for the systems like our ngso satellite systems, they're built to be global networks, and so are they going to be able to operate globally? So to foot stomp what Steve was saying at the end sort of America's technological dominance, or technological leadership, is really on the table every time we go to the WRC.

Evan Swarztrauber 14:09
And to add, since this was for everyone, I guess industrial policy, spectrum policy, manufacturing policy, are all tied closely together. And you see often countries at the WRC advocating policies that they view as good for their own countries, technologies that they lead in and their own manufacturers. And when it comes to the six gigahertz band, this one really is a key example of this. So the United States is a leader in Wi-Fi, the companies that lead the global market for Wi-Fi equipment are American, right? Cisco, Broadcom, HPE, these are American manufacturers, whereas in other sectors of telecommunications, the United States has ceded a lot of its leadership that it had decades ago to foreign vendors, particularly Chinese vendors like Huawei and ZTE, that we've had bipartisan consensus over several administrations now that they are a threat to global security, they're a threat to US security. We have banned them from our networks, but they are very involved in the WRC. They advocate for policies that they believe will create more opportunity for Chinese manufacturers. The United States position is that we are promoting spectrum policies that we believe will benefit our manufacturers. So it is very much tied to efforts that Congress cares about, which is boosting American manufacturing. The last piece I'll just add is there is a rural connectivity angle here as well. Some of the spectrum that we're discussing here today is important for the efforts that the United States is undergoing now through the broadband BEAD program, other programs to build networks in rural areas. And while it might be easy to glaze over some of these numbers, like six gigahertz or the other bands that the satellite operators are using, some of this spectrum is going to be make or break for certain communities in this country that are still trying to get internet. So that's another reason why this otherwise very wonky topic is worth paying attention to for all congressional staff.

Anne Weaver 16:10
Okay, so you've sold me. I'm in. I'm bought in this matters. Can we? Let's get into the actual key issues that will be addressed at the conference next year. And I think David, you started to key this up pretty nicely, so I'm going to kick this back to you. But you talked about how at the prior meeting, there is a vote on what will be on the agenda in the coming meeting. So what is on the agenda at this coming meeting? So

David Redl 16:34
there's a lot of things on the agenda, but I think the things that you will probably hear the most conversation about, because they are the most talked about are agenda item 1.7 agenda item 1.7 is where the world decides what pieces of spectrum they're going to identify for what the ITU calls IMT, International Mobile Telecommunications, and what most of us call 5g or 6g and that particular set of bands has become an area where there's a lot of pushback, a lot of push and pull on how much spectrum should we be looking at for the wireless industry? How much spectrum should we be looking at for other technologies like Wi Fi and unlicensed technologies that provide connectivity in smaller cell sizes or indoors, as opposed to the macro cellular networks that we use when we're outside and moving agenda item, 1.7 is always the item number. That is the IMT agenda item, and it's always a bone of contention. There's there's a lot of push and pull on on how much to do for each thing. And the reality is, while each country is making its own individual decisions, the ITU puts together what we call

the global table of allocations, which is instructive, and that's supposed to sort of tip its hand to the rest of the world, like, Hey, these are places where we think this spectrum is best suited for this particular purpose. So you can imagine, when you're trying to get a recommendation that can move major industries like the wireless industry or the Wi Fi industry, it is often a contentious conversation about allocation of resources. The other one that will be very highly teed up, and I think it's important for us to remember that while many of us get caught talking about IMT and WiFi, a lot at bottom, WRC, the vast majority of things that they deal with are about satellite and one of the items that will be teed up, it was teed up in WRC 23 and unfortunately, did not get decided there got moved to this agenda is an item called epfd. And while I could tell you what that is by reading it out to you, you will glide. Your eyes will glaze over, and you don't want to talk about power level nonsense, but at bottom, what it boils down to is satellites operate at different altitudes. So you have non geosynchronous satellites that are at a variety of altitudes above the earth, and they move relative to the Earth, in addition to around and then you have geosynchronous satellites. And geosynchronous satellites sit at a position above the Earth, so that their rotation is the same orbital rotation as the Earth. So effectively, it looks like they're in the same spot in the sky all the time. Those are much higher than the ones that are below them, and they're transmitting through the shells of the other satellites. Epfd is the set of rules that have come up for how to protect different sets of satellites from different sets of emissions to make sure everybody can sort of share the spectrum and share the environment as they're beaming radio waves back down to the earth and up to satellites in space, the way the rules have been written to date. I think if you ask the non geosynchronous satellite industry, which that's a lot of companies, some you've heard of probably, you know, Amazon, Leo and Starlink are the two that are sort of the most, sort of in the news at the moment, but there's a host of companies that you probably haven't heard of them and operating for decades and doing very well. Great One, a great American example, is iridium, who has been operating and continuing to put out service. Is to our aviation industry and others. The rules, the way they're currently structured, frankly, are a little protective of the geosynchronous satellite guys. They were, they were sort of up there first, and have managed to get things to be a little bit on the protective side. But what we've seen as non geosynchronous satellites have grown in popularity over the last 10 years is that there's been a growing call to revisit these power levels and figure out how to make sure we can have a fair set of coexistence rules so that you're protecting one set of users without harming or hamstringing the other set of users. And what we saw the FCC a couple of weeks ago is that the FCC agrees that those need to be revisited and revisited and came back and said, Yes, we are going to change the way we look at power levels for these various services. Now that's really important for companies that are doing business in the United States, but because this is a global industry that only matters when your satellite is over the United States, naming energy down into the United States, when you are anywhere else in your orbit, you are subject to the international rules, which will be what is debated at the ITU WRC next year. Are we going to make changes to those rules globally to rebalance the equities between geosynchronous and non geosynchronous?

Anne Weaver 21:17
That was super helpful. So that's the up here description of what the conference will be. I want to dive in issue by issue now. And I first want to start with six gigahertz, which in the United States is the band where Wi Fi can now operate. And I'm going to start with Evan, because Evan was at the FCC in the dead of covid When that happened, if I'm remembering correctly. So can you walk us through the decision that happened at the Commission in 2020 regarding six gigahertz?

Evan Swarztrauber 21:50

Yeah, so the FCC was looking at the six gigahertz band back in the first Trump administration under Chairman Ajit Pai, and what the FCC saw was that the bands that had been allocated to Wi-Fi, the 2.4 gigahertz band, and parts of the five gigahertz band, they had become congested, and that they were not going to be able to sustain the tremendous growth that we had seen in Wi-Fi traffic, and that has continued to this day, right? Wi-Fi is how, you know, 80 to 90% of cell phone traffic is done over Wi-Fi. Wi-Fi is how the vast majority of people are using the internet all the time in the United States, right? So, of course, it's important, and as we see these new use cases come on, whether it's augmented reality, etc, AI, that just increases demand for Wi-Fi. So the FCC was trying to make a forward looking decision, to say, how can we accommodate this tremendous growth that we're seeing. And there were essentially two proposals. One was to open the full band up for unlicensed. And when you hear unlicensed, it's, you know, I'm oversimplifying, but usually unlicensed and Wi-Fi are used interchangeably in this context, because Wi-Fi is the predominant unlicensed technology. So one proposal was full 1200 megahertz of the band, which is what the FCC did. The other proposal was to split it, do half for Wi-Fi, half for licensed cellular. The FCC affirmatively rejected the cellular proposal for a couple reasons. One, it would split up a band that would otherwise have benefits for being contiguous, meaning channels are next to each other. You can grow the equipment sector more easily. There's better scaling opportunities. But one of the key reasons was there are users of the six gigahertz band, legacy users, power companies, earth satellite earth stations, public safety entities. We're talking natural gas, oil, 10s of 1000s of links in this band that would either need to be moved somewhere else or somehow accommodated, and there was no viable proposal to accommodate that. So whereas Wi-Fi could coexist with those entities and would not require the massive disruption of moving all these entities out of the band, the cellular license plan would have required all that disruption. So the FCC, if you go back and look at the 2020 order, there's very detailed sections on why they made that decision. The United States position, ever since, the US government's position has been the six gigahertz band is a great band for Wi-Fi, and other countries should follow us for some of the reasons that I mentioned earlier. Our equipment manufacturers are dominant in Wi-Fi. So if other countries adopt this standard, it allows those equipment manufacturers to scale, which means cheaper equipment and ultimately lower prices for Wi-Fi equipment and broadband service, writ large, in the United States. So that is why we made the decision. There are interests in Washington that want the US to reverse that decision. I think that would be a tremendous mistake for more details we can get into. But so far, the administration's position has remained that the six gigahertz band should be for unlicensed use. We have adopted the full 1200 and allies, as well as, you know, South Korea, Brazil, Argentina, many have followed and... um China, no Wi-Fi in six gigahertz. China's position is the whole thing should be for cellular and for their state run telecoms that we have banned here in the United States, and they want to create more surface area for Huawei to sell equipment, which we think is bad in the United States for obvious reasons, security reasons. So that's our position, and we are pushing other countries to follow suit. Many countries have adopted a partial six gigahertz for Wi-Fi, and we're pushing them to do the full thing. And frankly, Mary would have more of the details of that, so I'm happy to let her fill out.

Speaker 2 25:35
out.

Anne Weaver 25:35
Let's have Mary pick up where you left off. So the FCC makes the decision the full band is open for unlicensed use. What happens next?

Mary Brown 25:46

Well, I can answer in one word, boom. That's what happened. So as we sit here today, we have 114 countries that have opened the six gigahertz band, either in whole or part. Many of the countries that follow the US are here in our hemisphere, so North and South America. It's not complete yet. We're still working on that, but hope to achieve it. But we've gotten a significant part of the GDP of North and South America to open the full band. That's important from a manufacturer's perspective, because if you are trying to manufacture equipment in the Wi-Fi context, Wi-Fi is a global business. You are dealing with hundreds of millions of devices that are rolling out of the manufacturing community every year, and you need to have your production set up for that, your logistics set up for that, your sales organization set up for that. So it's important to have that consistency that I talked about. So in addition to the regulatory decisions, what we've seen is a rapid embrace of six gigahertz on the consumer side and the enterprise side, because, as Evan said, the prior spectrum is congested. It wasn't getting the job done, and we all wanted to stream stuff, and we all wanted fancier TVs with more resolution, and companies are looking at AR/VR for a variety of contexts in the enterprise space. Now we have AI workloads coming in. We needed more spectrum. So here's to give you a sense just of the consumer piece. Now, consumer devices shipping in North America in six gigahertz went from 95 million devices that shipped in 2024 to an estimated 367 million that will ship in 2029; that is a 288% increase that is projected by ABI Research, one of the leading analysts in this space. But you need more than just the consumer devices. Obviously you need access points. So what's happening specifically with access points, the devices that sit on your kitchen counter and enable you to do all the fancy stuff at home? Well, there we're going from 4 million shipping annually in 2024 to 66 million by 2030; that is an annual 66 million per year are going to be rolling into American homes. So all of this means economic growth. Telecom Advisory Services did a study a couple years back asking the question, what does this mean in terms of economic value? Are we getting a benefit from it? And their answer was, by 2027 all of Wi-Fi—2.4, 5, 6—all of Wi-Fi is going to be delivering 2.4 trillion in economic value by 2027. That's a breathtaking number. Kind of makes sense when you think about it, though. Every business in America uses Wi-Fi. You're all using Wi-Fi at home. We use Wi-Fi in public spaces, in airports and transportation hubs everywhere, and that's delivering value to you. So it's a big number, but it helps illustrate how widespread and deep our use of Wi-Fi has become.

Anne Weaver 29:27
So that's that all sounds well and good, right? What's the problem? I want to kick to Ambassador Lang. Can you talk us through we're going into this meeting in Shanghai, the United States. Position is that we should open up the six gigahertz band for unlicensed use globally. What's what's the problem?

Steve Lang 29:50
So I think a few points first we're looking at, we're talking about licensed and unlicensed uses of spectrum, and I think it's. Critical that the US lead in both of these areas. We want to make sure that our companies are are the approach that our FCC has taken is replicated around the world, that our companies have the advantage of being able to produce domestically, the same equipment that they're producing for a global market. So I think it's critical, and I think it is possible for us to continue to lead in both areas. When it comes to the WRC in 2027 a couple things I think it's important to keep in mind. One is that for six gigahertz, we're largely going to be playing defense. It's not actually on the agenda for the ITU as its own separate agenda item, like it was in 2023 so what we've got to do is we've got to try to keep make sure that as many countries are following what has already been adopted when it comes to unlicensed spectrum in the six gigahertz band. And the threat is because what is on the agenda is a general item where countries can add themselves to footnotes that say they're going to do something a little bit different from what's in the radio regulations table. And we have to assume that

China is talking to countries around the world and encouraging them to sign up for as for footnotes to use the six gigahertz bands for IMT. And so there isn't going to be a big discussion in 27 where everybody's talking about this, they're going to be a lot of conversations behind the scene, and we're going to have to play defense in a lot of these and it's a cliche, but I think it's true in this case that the best defense is a good offense. And so what we want to do is we want to go in there with a proactive agenda on where countries should be using licensed spectrum, as David was saying, 1.7 is the the agenda item where that's going to be discussed, and it is going to be, in all likelihood, the most, it's going to get the most attention of the conference, and going To be the subject of the most intense conversations, and the United States should go in there with as proactive a position as possible, so that we can point to countries that are considering using the six gigahertz band for IMT and say, No, this is where you should be allocating spectrum for IMT or licensed use. And I think that we can do that, but we need to make sure that we have that we know where we want to be using spectrum for 6g and future generations of wireless networks, and we need to be promoting that aggressively with our partners around the world and be prepared to do it at the WRC too.

Anne Weaver 32:45
David, I want to follow up on something you said earlier, which was saying that the way that we negotiate in Congress is actually quite similar to the way this might be negotiated. So what are the stakes of this negotiation then? So if, if this doesn't go if six gigahertz isn't decided in the way that we'd like. What does that what does that mean in practice?

David Redl 33:05
So for six gigahertz, it's a good example, because it's one of the places that you can see the most polar look at how, sort of the geopolitics of spectrum plays out six gigahertz when you break it right down. The United States sits at one end of this and says, this should all be for unlicensed this should all be for Wi Fi. And that makes good sense. Wi Fi technologies are American technologies. The leaders in that space are mostly American companies. We have broadly deployed the technology in the United States, as have most of our allies. Conversely, at the other side, you have there should be no Wi Fi in six gigahertz, and that is coming from China. China is pushing hard for there to be IMT in six gigahertz. They're continuing to push that in countries around the world, and it's fairly simple why they're doing that too. Their national champion, Huawei, is the company that is currently, as far as I know, the only one making equipment to operate in that band. The United States doesn't have an IMT manufacturer as a national champion, so obviously we're not going that direction. And the Chinese have said point blank that this is where they're going with IMT. They think that we need to have this technology be pushed around the world. They've done a very good job with their Belt and Road Initiative of going to countries around the world and giving away wireless technology to get it into other countries. Infrastructure doesn't take much to Google Huawei spying and figure out why the Chinese are giving away equipment to other countries of the world that can't afford to buy safe equipment. And so it's it's the area that is the most polar, and not every issue at the WRC, let's be clear, is going to be that stark, but six gigahertz is a great example of what happens when it really gets turned up to 11, and it's a clash of cultures. Wi Fi is a democratized technology. There's a lot going on in it. It's mostly American IP IMT. It's a handful of companies that are making equipment for that space, and it's becoming increasingly more and more. Chinese intellectual property. It's a technology that requires you to run all your information through a core. If you know how a wireless network operates, you run your information through a core. So there's a central point at which, hypothetically, a nation state could monitor traffic. Wi Fi obviously does not work that way. It operates in your home, and can be just in your home if you want between devices, it is, it is rarely that stark, but in six gigahertz, it is that stark, how far apart the two sides are. And then as

you start to move into other issues, it gets closer and closer. You know, when we start to look at Agenda Item 1.7 it is less Stark than it is with six gigahertz, but it is still a clash of two cultures. Do you want to go all in on a particular technology, or do you want to go and say, we're going to have a little more of a mix of technologies that are going to play to connect the globe, not just 5g 6g but 5g and 6g Wi Fi. What we're seeing out of the US in terms of satellite connectivity. There are other technologies we use here that are operating in other spectrum bands that are for medium size technology called CBRs that we use in this country, and we sort of stack them all up to provide different layers of connectivity, and that's really what we're looking at. Are we going to provide opportunities for competition and business models to thrive, or are we going to go all in with a particular technology? It plays out similarly in what we're looking at in satellite, or, as I mentioned earlier, epfd, the issue that is going to be discussed again at the WRC in 27 at bottom is a question of competition. Are we going to foster competition from the new entrance, the new ngsos, by allowing them to potentially have fairer rules for how their emissions interact with each other, or are we going to say, Nope, we're going to continue to protect the gsos that we've been protecting since go so really, at bottom, all these are about competition, and it's a competitive advantage. We're talking about that is being fought about in almost every one of

Anne Weaver 37:00
these. And I want to pick up on what you've just said there on epfd and satellite issues, and this is, this is probably the wonkiest issue that we'll talk about. So stick with us. Okay, Steve, can you help us understand this specific power limits issue that has been on was on the agenda in 23 and is again on the agenda in 27

Steve Lang 37:27
Sure, although I think David did quite a good job of giving the overview, but a couple things I would just elaborate on. So this, as David mentioned, you decide the topics for the next conferences. Agenda at the previous conference in 2023 the United States wanted to have on the duck 2027 agenda this topic of epfd limits and adjusting them. They had not been updated in they were set 20 plus years ago when this ngso technology was much less widely used and now we have an explosion of new ngso constellations with 1000s and hundreds of 1000s of satellites coming online. We wanted that to be on the agenda. We did not succeed. We did succeed in having it included in an agenda item, in the sense that the ITU would produce a report on the topic, but it is not on the agenda to make a decision. So that one challenge there is the conference still has the ability to make a decision on that on that item, because even if a topic is not on the agenda, a WRC can still update the radio regulations accordingly.

David Redl 38:50
It's basically the same as the same as Germaneness rules in Congress. You can move forward.

Steve Lang 38:54
I don't know

David Redl 38:54
what, as long as it's in your jurisdiction, you can move forward on it.

Steve Lang 38:58
Yes, so, so there are still interest in having this topic, having a decision made on this topic, and there's still a lot of opposition to having this, having a decision made on this topic. There are, there are really good reasons for looking at it just the efficient use of spectrum and enabling this technology, which has

so much potential to bridge the digital divide, to bring connectivity to some of the hardest to connect places in the world. And we've seen what it can do already with with Starlink in many places, and with more constellations coming online, there's just that much more potential for innovation and competition in this space, but it's going to be an uphill battle because it's not in the agenda. So the US, if we want to see something happen, we need to be really proactive and working closely with partners around the world. And the FCC action is a really good start in that in that direction,

Anne Weaver 39:58
and to that end, too, I think the. David, you answer this. But can you can we just double down on so what happened at the FCC open meeting on April 30 surrounding this issue, and what does that mean for going into the meeting? Sure,

David Redl 40:11
So as I covered, the disparity between how we're going to protect different sets of constellations in orbit was what was on the docket: whether or not we're going review the relative power limits between the two, so that there was more of an opportunity for the non-geosynchronous systems to compete with the geosynchronous systems. I'm not going to get further into the weeds on the power levels and how that works, because your eyes will glaze over, but it's a thankless step that the FCC took to say, we're going to review this, we're going to take a look at it, and we've decided that, as it turns out, in order to foster competition between these different systems, we need to make a change. That's important for us going forward, because we are right now in the process in this country of coming up with our national positions, called the national committee process. The FCC and the NTIA run two different processes to essentially come up with, what are our positions going to be, going not only into the WRC, but there's a whole host of meetings in advance of the WRC that lead into it, where you get a chance to make your position known, try to rally allies to your cause, see if you need to make changes to get people to support you, both in the global context, that's the ITU process, and then regionally, in what we call the CITEL process. And I should know what CITEL stands for, but it's Spanish, and I never remember what it is, but CITEL is essentially...

Steve Lang 41:25
yeah,

David Redl 41:26
exactly C tell is the is this region's set of countries, and that's all the countries of North and South America. And so throughout that process, we're going to try to hone our position. The FCC taking the action it took two weeks ago makes it pretty clear what the US is driving towards as a position. It is as close as you get to having an established position for the country. Without saying this is an established position for the country, we still have to go through the internal US government process where NTIA and state and FCC and our sector members, the companies that interact with the FCC and the agencies that interact with NTIA will all coordinate to make sure that this position is, in fact, something that promotes the interests of the United States. But the FCC already went through a mini version of that process before they adopted those rules, so it's a pretty clear indication that that is the direction this country is headed, both in Seattle and in the global perspective.

Steve Lang 42:20
Can I just add a couple more points? Well, first of all, I just should disclose that I do work with NGSO companies on this topic. But second, I just want to underscore that this is also important to US strategic

competitiveness. Because right now, Starlink is up and running. It's widely available in countries around the world. Amazon anticipates having its network available by the end of this year. I don't remember the exact timing right now. The US has a substantial lead on China in this technology. China has two similar constellations, Guo Wang and Qianfan, that they are racing to launch as well, and they are promoting them with partners around the world. For the US to have a first-mover advantage on this over China, I think is critical to our national interests, because I think it would be very... there would be a lot of consequences if third countries are relying on China for their internet service through satellite networks.

Anne Weaver 43:23
And that is a great segue. I want to talk more about the geopolitical implications of this meeting. And I want to start with we've sort of been dancing around it, but the meeting is in China. The meeting is in Shanghai in 2027 and I want to start with you, Ambassador Lang, on this, since you have been to these meetings before. But what does that actually look like on the on the ground? What are the implications? Can folks bring their they have to get special phones to go like, what are the what are the day to day implications of the fact that this is physically located in China?

Steve Lang 43:56
Yeah, it's not good. And I was leading our delegation to the ITU Council when the decision was made. So I think it's possible that I lost more sleep than anybody else trying to figure out how we could stop this from happening. But basically, there are two major problems with it taking place in China. First is information security. It's widely known that China is one of the most proactive and effective users of cyber espionage, so in Shanghai, we'll need to be operate under the assumption that unless strong mitigating measures have been taken, that all electronic and in person, conversations could be overheard. And then, in addition, the second important factor is that China, as the Chair of the Conference, the host of the conference, will be able to appoint one of its officials as the chair, and the chair is expected to oversee the conference in an unbiased way. But. Still have a lot of influence on how things are carried out, and we did see that in Dubai that the chair was able to influence how the conversations took place. So that's going to require, I think, the United States working closely with our partners, to watch how the chair is overseeing the conference like a hawk, pushing back in a coordinated fashion whenever there's an issue, working with the ITU to make sure that there aren't problems. But that is also going to be part of the challenge

David Redl 45:33
I've been I've been Debbie downer on these issues, so I'll be a little Mary sunshine for a minute on this, which is to say that the flip side of that is, when you are the host, there is an incredible amount of pressure for it to be a successful conference. And so as we are looking at this, while there will be significant advantages for the Chinese being able to host it in their country and chair the conference. They also do not want to look bad and have this be a failed conference where people walk away and there is not a successful closing of this with an agreed to set of principles. And so that's the flip side. It gets you a lot of privileges, but it also comes with a pretty hefty responsibility. It'll be incumbent upon us to remember that they have that responsibility in addition to the other tools, and make sure as a country, we are using all of our tools to sort of balance those two equities and get to something that we can live with.

Steve Lang 46:23
And can I add to one of the positive side effects is that, because the conference is taking place in China, it's attracted a lot of attention here in Washington, politically at a very high level, and also here

on the hill, in a bipartisan way, I think it's been an unprecedented level of attention and support for making sure that we're we're well prepared for the conference. Because I do, even though I think it's bad, I think I firmly believe that the United States can still succeed in achieving its objectives at the conference.

Anne Weaver 46:55
So despite the challenging logistics, if we have a good plan going forward, it sounds like we can have a successful, good

David Redl 47:02
plan and good execution. And those, those are the two things that have to end. You know, it's you can do all the prior prep you want if you don't have the right personnel in place, a delegation that is going that is prepared to act in the best interest of the country, and as one on the ground, all the planning won't help. You've got to have the right people to execute

Speaker 2 47:22
as

Anne Weaver 47:23
well. So logistics aside, I want to kick to you, Evan, to ask, sort of almost more philosophically about the geopolitics here, like, what does this mean in our differences with China? Was this will the decisions there mean for us competitiveness and our national security more broadly?

Evan Swarztrauber 47:41
Yeah, I'd say going back to, you know, the FCC under the first Trump administration, and this has continued all the way through now, through the Biden administration, into this FCC, we've had, you know, a couple of really big priorities related to the topics we've discussed today. One is secure networks. It is our position as a country, and we have plenty of evidence to back this up that Huawei equipment is enabling espionage and spying by the Chinese government, which is why the Chinese government is willing to subsidize this equipment and allow countries to buy it below market price, or in some cases for free, so that they don't choose the trusted vendors, which are Nordic vendors In Nokia and Ericsson, as I mentioned earlier, the United States does not have a cellular equipment champion that is anything resembling those two. And then Samsung, who is an ally, Korean company, is a smaller player, so it's really dominated by those Chinese companies. So we want countries to either outright ban this equipment. That's one way that we achieve our security objective. Another way is through spectrum policy, even if there are some countries that are just not going to outright ban that equipment, the ones that do by default, they end up having to buy from our from Allied countries in Ericsson and Nokia, which is which is a fine outcome, but there are countries that are not going to outright ban Chinese equipment. So that is why standing by the six gigahertz decision is so important. If you get countries to adopt either in part or in whole, unlicensed use in the six gigahertz band, they are then by default, whether they ban it or not, they're not going to be buying equipment from China for those bands. They're most likely going to be buying it from the United States. And then there's also a Taiwanese company with a decent market share as well. They're an ally, of course, and they're not going to conduct espionage. So those are kind of the two geopolitical goals I see that are directly related to spectrum policy in trying to get countries to outright ban this equipment, but also using spectrum policy to steer countries towards our own manufacturers and away from manufacturers that

are part of China's Belt and Road Initiative and using equipment to try to spy and conduct espionage. And

Anne Weaver 49:50
Mary, I want to ask you basically the same question as the US and China sort of line up on every single item that we've discussed on different sides of the. Point here, like, do the United States and China have fundamentally different philosophies around spectrum policy?

Mary Brown 50:07
Absolutely. I mean, as Evan and David, I think both have mentioned, maybe Steve too. I'm this is this telecom policy and spectrum policy questions? These are adjuncts to their Belt and Road Initiative to try to extend their economic tentacles into the economies of other nations, and they've been pretty successful at it. I mean, we've already seen small economies in South Asia, like Laos and the Maldives in Cambodia, China went to them and said, You will put IMT in six gigahertz. And they said, Yes, we will. We've also seen countries where China has asserted its economic force, where the country is a little more heft and can say, well, I'm going to I'm going to adopt a policy of appeasement. I'm going to let you win in Upper six gigahertz and put your IMT network up there, and I'm going to push back on something else that you want me to do over there. So we see a little bit of appeasement going on as well that the US companies that have been on the ground trying to push for spectrum, for Wi Fi over the past six years have seen again and again the strength of China's reach when they can call the Prime Minister and say, This is what we want your telecom minister to do, and the Prime Minister, does it mean that is hard for us companies to to, you know, work against and as these guys says, it leads to espionage. If they build those networks, it leads to Chinese espionage. It also can lead to economic disruption. So that's why the US has worked so hard to say, if you're a country out there and you're thinking about building a 5g or 4g or 6g network, hey, think twice before you go with Huawei, because it could not be good for you. Long term, we've been very aggressive about that, although not always successful with that argument.

Anne Weaver 52:07
We just have a few minutes left. But I want to ask now, so we've heard the stakes are high. There's much to do. Ambassador Lang, could you talk us through? What does the US need to do now we know this information. What does the delegation need to do to shore up its positions and move forward in the next What is it 19 months?

Steve Lang 52:30
Yeah, a few things. First of all, it would be great for our leadership to identify who the head of delegation will be for the WRC as soon as possible, then we want to make sure that, in general, our preparation process is accelerated and moving as quickly as it can to develop our positions. And that's important so that we can then begin to promote them diplomatically with our partners overseas, globally, and that should involve all of the US agencies that are involved in the WRC, in the preparatory, preparatory process, working together, engaging with their counterparts. It should involve our embassies overseas as well. We should think creatively about tools we can use, like capacity building or maybe hosting a spectrum summit in the United States ahead of time, to bring partners here. And then we also have to work on dealing with the challenges that come with the conference being in China. That includes our government agencies coming together and figuring out what kind of technical mitigations they might want to take, whether it's equipment, VPNs, secure controlled facilities on the ground, and make sure that we are negotiating our ability to use that with China. And then it also involves working with the ITU

to make sure that as many conditions, appropriate conditions, as possible are included in the host country agreement that it is negotiating with China right now. And I think that's, that's, that's a start right there.

Anne Weaver 54:02
So to close, I would like for each of you to let's go down the line and say either one thing you want this group to walk away knowing, or one thing you want Congress to do as a next step moving forward, so walking out of this room. What's the one sentence folks need to remember? I

Evan Swarztrauber 54:21
would just say, present a united front right when, when us, companies across different sectors of the telecommunication sector, are aligned with the administration, with the bipartisan leadership of the House Energy and Commerce Committee, right? These are our priorities. We're going to defend them. Presenting a united front is key to getting the best results out of this conference. So continuing to double down on the decisions that we've made and defending them each and every time we have to go back to the WRC, I think, is the number one thing. And for members of Congress, you know, I would encourage your bosses to lean, you know, into the into your leadership and. Just make sure that you're adding your voice to that united front.

Mary Brown 55:05
So I'll second that and add that it really makes a difference. If Congress is paying attention, it really makes a huge difference. And we've seen some of the bipartisan letters coming out, which is terrific, but China is reading those letters you know they'll know. Is Congress paying attention or does Congress not care about this? It really matters. So please stay in touch with this process and contribute at the appropriate times to hearings and to letters and to showing that your your boss and the offices here are paying attention to this process, because the globe is watching.

Steve Lang 55:52
I kind of gave my prescription for WRC, so I'm in a pivot to the plenipotentiary that David mentioned at the end, because that is important too, and we shouldn't take our eyes off that. We need to make sure that Doreen Bogdan Martin gets reelected to Secretary General, that Jennifer Warren is elected to the radio regulations board, which has lacked a US member for the last eight years. And that also, critically, that the United States is reelected to the ITU Council, which is the governing body that oversees the organization between plenipotentiaries and all of those things will also have an impact on how the WRC goes for us as well

David Redl 56:30
everything Steve said. And in addition, when it comes to WRC stuff, if you want to take one thing away, look critically at everything we're doing and ask yourself, does it benefit us companies and US technologies, or does it benefit Chinese companies and Chinese

Speaker 2 56:43
technologies?

Anne Weaver 56:46
Well said, Do we have time for audience questions? Tim, you tell we have time for one question? Please go ahead. On

Speaker 2 56:57
an abstract level, do you feel that the US is being aggressive enough in its development of how, overall in this industry, and how would you go about more effective difficulty as possible to get more consensus on how we will move forward so

Anne Weaver 57:22
instance, so I can repeat the question, so folks can hear so and correct me if I'm wrong. So is the US being aggressive enough in its position, and how can the US be more effective in these negotiations?

David Redl 57:35
I think from my perspective, you'd be hard pressed for the US to be more aggressive in pushing American technologies, whether it's Wi Fi or ngso technologies, out on the world right now than we currently are. As Mary pointed out, we are aggressively getting the rest of the world to rally around six gigahertz Wi Fi. That's an American technology. We're being very aggressive. The administration across the board has been incredibly helpful and definitive about six gigahertz is for Wi Fi, and we need to push that out there. And between Amazon Leo and Starlink, we are seeing the United States aggressively pushing to make these next generation constellations be American technologies and American constellations. And they're moving out there. I think you'd be hard pressed. And the epfd item we saw come out from the FCC is evidence of that. I think on those two fronts, the US is pushing really hard,

Steve Lang 58:24
and I agree with that. And I would also add that I think one thing we need to make sure we're doing is working in this context very carefully with our allies and partners, because we can't win of the WRC alone, we need to have a lot of international support behind our positions,

Anne Weaver 58:42
fantastic. Well, thank you all, and please join me in thanking our panel.

Speaker 2 58:55
Back.