**EPISODE 1201**

[INTRODUCTION]

**[00:00:00] JM:** Open source software is software that is distributed along with its source code using a permissive license that allows anyone to view use or modify it. The term open source also refers more broadly to a philosophy of technology development that prioritizes transparency and community development of a project. Typically, development is managed by a governing body, whether a company, foundation or just a group of passionate users, and work is done in public repositories like GitHub. Nearly every corner of software engineering has been impacted in some way by open source.

Kevin Xu is the founder of Interconnected ,a bilingual newsletter on tech, business and US-China relations. He's an investor in open source startups at OSS Capital and formerly served in the Obama White House. He joins the show today to talk about the benefits of open source in the public and private sectors and how open source will be critical to the development of high-tech industry in our country as we pivot to facing some of the 21st century's most pressing problems.

[INTERVIEW]

**[00:00:59] JM:** Kevin, welcome back to the show.

**[00:01:01] KX:** Thank you, Jeff, for having me again.

**[00:01:03] JM:** Let's start off with just talking a bit about your experience in the open source industry. Tell me about your experience in the open source world.

**[00:01:10] KX:** Sure. So I really got my feet wet in open source as of maybe three or four years ago when I joined a company called PinCap, which is an open source distributed database commercial open source company. Their project is called TiDB or TiDB. You can find that on

GitHub and it's one of those Google Spanner inspired open source distributed database and there are quite a few of them out there in the market now too like CockroachDB and Yugabyte, etc. And that was three or four years ago, and I was the company's general manager for their global strategy, their global operations. The company started in China and my job was to help them expand their community, their reach, their developer advocacy and ultimately their business, their commercialization to other parts of the world which included both the US and Europe and other parts, like India actually as well. Kind of everywhere else that's not China. And that's how it got my feet wet into open source. Both the technological part of it, I had to really learn a lot about the database specifically, but also how open source ecosystem work even though I had some academic background in computer science that's partially what I studied in graduate school. There was a lot more I wanted to learn. And that also veered me into the open source foundation realm.

One of the things that I was doing at Pincap was to shepherd another project called TiKV or TiKV, which is a key value store through the Cloud Native Computing Foundation process to donate it to have it kind of move up the rank, if you will, from sandbox to incubating. I think a lot of your listeners might be familiar with that world as well, and that was my first foray into kind of all these different components and players in the open source ecosystem, whether it's venture capitalists or foundations, and of course most importantly the developers who are part and parcel and the fuel of growing open source technology.

And then in 2019 I kind of switched over to the investing side of things. So I became an EIR at OSS Capital, which is a small seed fund that focuses on investing open source companies specifically. And that put me on kind of the different side of the table, but really the same ecosystem as far as helping more founders and entrepreneurs and open source creators understand and better figure out how to create sustainable open source projects. And if you want to build companies around that as well, how do you go about doing that, which is a very different exercise. And certainly I learned firsthand from my experience building kind of the global operation of PinCap a few years ago.

 

**[00:04:00] JM:** So you've seen the open source movement from a couple different countries' perspectives. How do norms around open source vary among different countries?

**[00:04:12] KX:** So this is a good important question I think for a lot of developers to understand even though I mostly have operated within the American ecosystem, if you will. Like I said, the company I was working with started in China, and I think I can speak mostly fluently to the US-China difference, but I'm sure there are differences in other countries as well. I'd say open source in general is a very bottoms up experience. Some developers create something. They maybe put it on GitHub. They really shepherd it from a passion project perspective for a couple of years and then it would take off and then become kind of a thing of its own, right? We've seen a lot of those examples in the past like Elasticsearch will be a really good example.

Now there are also places, countries that are looking to have a more top-down view of open source. They're trying to kind of foster this thing from the top. And I think that's been happening more visibly in recent years in China. That hasn't been the case at all maybe probably up to three or four years ago actually. China has had a pretty long history of open source back in probably even the 2000s as early as that. Linux Foundation has hosted conferences there. But the government hasn't really paid attention up until that point. But now I think with all the other geopolitical issues and threats with technology, with sanctions, with who gets to use whose technology in what way, countries like China, and I've seen that in India as well, have become more involved from the top government perspective in terms of "fostering open source". They really play a hand in open source in ways that I have not seen in America and not in Europe as well. It's more of kind of a natural bottoms up norm that open source people are used to up until this point. And it's debatable whether that will change or not, because as far as like being a competitive landscape is concerned, like I mentioned China, India, governments are getting more involved in getting more open source development to happen within their country, within the companies and their markets in a way that also plays a strategic role, a strategic value for the country when it comes to achieving technological self-reliance is another term that you see a lot with the documents coming out of these countries.

And I know a lot of your listeners are develop – Most of your listeners are developers, engineers. They may not really care about what the governments are thinking about. But I would love for them to maybe think about a little bit more because their expertise is playing a very critical role in whichever country they happen to live in as far as using open source to be a more key ingredient in that country's technological future.

**[00:07:10] JM:** Let's go a little bit deeper there. How do these open source norms drive how these countries are industrializing?

**[00:07:20] KX:** So I think most of these countries' industrial policy probably did not take into account open source until recently. And it probably is a little bit uncomfortable as well, because for these policy makers, from the top, it kind of came out of nowhere. Again, grassroots, very invisible until it becomes all of a sudden very, very visible. And you see this shift from large companies in China like Huawei, like Alibaba, who these are not open source companies but they are starting to embrace open source technology very, very quickly because they're now seeing it as, one, just a better way to develop technology more quickly, more securely, but also because of its open nature. And you have you've had other people on this show debate about what is the open or the freedom side of open source. So I won't get into that. But for them it, is a very quick way to access technology in ways that they don't have to go through licensing, go through other governments. We're seeing that becoming a barrier in the last few years. And all these sort of hurdles and hoops that a country and/or an important company in that country have to jump through to access that technology to kind of take it for what they need for and to keep on developing it for their own need.

You see that a lot in the RISC-V ecosystem, for example. RISC-V being this open source in structures that architecture that helps you more quickly develop chips, semiconductor chips. And that's been embraced very heavily in India, in Pakistan, and they all trying to catch up to hardware development for their own economy and certainly increasingly in China as well. And that is what I'm observing as a way that government people or policy people are seeing open source. And it's very kind of an open subject that government people within these governments are debating how much can they really use open source. Do they really trust it?

There're a lot of people who are very much of the ilk that proprietary software. Going through the vendor procurement process is a better way than just downloading some code off GitHub and start playing around with it. Start using it and even putting those code into government infrastructure.

But we're seeing a little bit of that happening in the US side as well. The defense department is actually a huge user of open source technology, whether it's Kubernetes or Istio or some of these other cloud native technologies. In fact I think each F-16 fighter jet is running a three-cluster Kubernetes deployment right now as a way to make the technology, that is a fighter jet, a more secure but also a better piece of equipment for fighter pilots to use. So that's a very interesting trend that I think we will see more and more open source being part of that government-led industrial policy planning discussion even in the next five years or so.

**[00:10:28] JM:** You've mentioned hardware a little bit with the RISC-V mentioned. How does the open source hardware movement compare to the open source software movement?

**[00:10:39] KX:** So the hardware side is – I think what they're lacking actually is more software in their ecosystem. I think they're kind of cut into different cloth so to speak. Hardware folks has a very different kind of personality or even culture or even ecosystem. So I think there's a lot of difference there. And I think the biggest difference that I've observed as a hardware people, their development cycle tends to be much longer than software. Right now software development is becoming just so quick and even quicker and it will be coming quicker and quicker in the future because of all the different stacks, whether it's CICD or other layers of the stack is allowing software to develop quickly. And you kind of bring in a different side of human nature almost when it comes to the speed of development, when it comes to how to meet consumer demand, which is still mostly a software kind of question. Application developers have to release multiple times throughout the day perhaps and the testing and all that kind of goes into that culture. While hardware is different, right? Like you kind of usually design a piece of chip a lab, you license a structure set whether it's ARM or x86 from Intel or RISC-V and then you have to ship it to a fab, a manufacturing facility for chips. And depending on your leverage

with the fab and how much of a sample size, you may get it quickly, you may not get it quickly. The quality might be not good. So the cycle is different.

And I think what open source hardware has actually changed that meaningfully is that because of the open source aspect of RISC-V, one of the advantages is that now at least the design of chips, that process is becoming much more quickly than it was before and also much more flexibly than it was before. There are a bunch of different ways you can take a RISC-V ISA, instructor architecture set, to plug in different functionalities and is much lower in the system. So you're bringing about a software-like development cadence to hardware. And I think that is probably one of the most meaningful impact that having an open source hardware ecosystem is doing to the hardware kind of community as a whole. And that's still very much an ongoing process. It's by no means kind of a foregone conclusion that this is just the current state of hardware right now. A lot of people are working in that system to have better software actually so that people can develop a hardware in a more software delivery like fashion. Like the people working in Netflix and Google and Facebook are used to. People trying to bring that same level of innovation speed, really, is at the core of this to hardware development. And that is I think a very exciting thing that we're seeing in open source hardware. Obviously there are a bunch of weaknesses still in that community that needs to be addressed, but that's what's most promising about open source hardware, and bring that back to kind of your earlier questions about how countries and governments are seeing this. They see that speed as obviously very, very important and critical as far as developing their own national capability when it comes to hardware, which is very, very important when it comes to national security, but also national competitiveness with other countries.

**[00:14:18] JM:** So it's interesting. You say open source you know from a policy perspective can be a competitive advantage, but also open source is just by its nature open. So is there a tension between this idea that you can have a competitive advantage around your stance of open source versus the fact that everything is open? Like isn't everything that's placed into the open just leveling the playing field? I just want to clarify the tension there.

**[00:14:50] KX:** That's right. So I think the tension there is very much visible. And for countries that are trying to catch up, that is a competitive advantage as far as open source is concerned, because they're seeing this as a much quicker way to catch up and increase their own competitive edge versus countries that are more advanced than they are currently. So in that way, from that perspective, open source is the ultimate field leveling component of this larger kind of chess match, if you will, that countries and countries are playing.

And if you're thinking about from a more competitive vantage point from like keeping yourself ahead and advanced, what open source does is it kind of – It's supposed to be a tide that lift all boats and you can think of these boats as actually countries now, not just companies, right? Before it's very much a zero-sum game in terms of competitiveness. Like I develop my own thing secretly. You develop your own thing secretly and then we kind of go at it so to speak. And we see that kind of analogously within companies as well. And that is actually a very useful example as far as if you look at Kubernetes, the ecosystem is concerned. There used to be a lot of competition within the cloud native ecosystem. And for one reason or another, big companies that used to fight about whose platform or whose cloud native orchestration layer is better have now coalesced around kubernetes as a baseline so that they can innovate and compete in other ways or not fight within this base layer that we can all stand on top of. And that is the level playing field currently for the cloud native landscape.

But if you kind of pull that analogy out to apply to countries, obviously that isn't there at the moment. And the way that I think about open source within the context of geopolitics and within the context of international relations and foreign policy is that open source actually should be a way to reduce conflict by having this open, accessible level playing field. So instead of fighting for technological advantage through other means, like espionage, for example, which certainly happens a lot, right? Corporate espionage and other ways to do it. You now have a level playing field where people can freely access and develop on top of it. Now does every country see that element of open source? I don't think so. And that's something I am keenly observing to see who is getting the open source positive-sum norm right coming back to your very first question. Not every country really truly understands the

open source norm. Even companies still don't – Not all companies understand and really appreciate and take advantage of that norm.

But coming back to the competitiveness question, open source is something that I think could lift all boats and also bring less kind of animosity between countries when it comes to technological innovation. And I want to just cite real quick the most recent GitHub report, the Octoverse report, the 2020 version, the most recent version, where they have a very beautifully laid out global map where open source contributions are happening around the world and how it's pushing the global economy forward really regardless of which country the contributions or the projects or the maintainers are coming from. And that is becoming more and more even as well.

As of five years ago, the United States is the lone bright spot where all the contributions are happening. Obviously we are a nation of immigrants. So we don't really know exactly the nationalities of those people with ethnicity. But over time, there are more and more bright spots happening around the world in all different places, and that is ultimately I think where open source can play a crucial role for not just within these countries' development, but also as they collaborate with each other as opposed to just kind of straight on compete with each other in a more zero-sum way.

**[00:19:06] JM:** So let's talk a little bit about how governments could encourage more open source usage or open source adoption within their countries. Do you have any ideas for how they could incentivize it or how they could support it?

**[00:19:20] KX:** I do. So a lot of that hasn't been happening, but I think we can take a lot of models from the private sector. Right now we're increasingly seeing more and more tech companies, whether it's Uber or Facebook or others have these open source program offices, right? So this is kind of a dedicated function that's specifically focused on developing open source tools probably internally how to absorb open source projects and technology into their company in a way that's compliant with a company's policy. I think this function used to be just delegated actually to the legal department. You have one or two developers in the company

that found something really useful on GitHub or GitLab and they started using it. And then it became part of the company's stack. But there are all kinds of licensing, compliance, security related issues that obviously they haven't really gone through the process of.

So that process of, say, open source procurement is becoming more formalized within private industry. And that is a very good template and a playbook that governments per agency can take. And right now it's still very ad hoc. I mentioned the defense department using a lot of open source technology. That is probably their own process. And I'm not sure how standardized that process is. But I'm sure that same process isn't being used in the commerce department, for example, or the treasury department. All of which are just large organizations that need to use a lot of technology and hopefully better technology to do their job.

So I think having governments, let's just use the American example for now, have a standardized policy, a standardized process of procurement specifically for open source technology adoption. That will be a huge boon to open source adoption within government, which is a very interesting use case for the technologies themselves. And another thing I would say too is that governments also produce a lot of technology. This might be a surprise to a lot of your listeners, but they make their own tools. They make their own stuff. Whether they're share it or not is a different story. But they do. And they should also be willing to share a lot of that technology that they've built internally to the extent that it doesn't compromise anything secret, of course. In the same way that Netflix open sources Spinnaker or other projects coming out of other large tech companies, like Facebook open sourcing GraphQL and stuff like that. That is, again, a playbook that these large tech companies have already kind of walked through in their various lifecycles in the past. And that is, again, a very good way to foster open source, because you don't want to just be the taker of the community of open source coming back to norm question. You want to give back as well, right? Giving back is a very important element of this positive-sum ecosystem that open source can foster in its best version.

And the US government has already done that a little bit. There was a policy back in 2016 during like the very last few days of the Obama Administration called the Federal Source Code Policy, where the policy, among other things, mandate that 20% of custom-made code within

government agencies be open source for the public to use. Just like any other open source repo. And right now you can actually find a lot of this code on this website called code.gov and it just has a bunch of repositories from different agencies, whether it's commerce, or the Federal Communications Commission, or whichever agency that was developing their own code and they're open source. And I've never used any of that stuff, but it's available for people to use and see. And I think that is a good example of how government can play a positive role that helps open source, but also helps themselves be more innovative and keep up with the time so they deliver their end of the bargain in the social contract, so to speak, which is to serve their citizens and to protect their citizens. So you can apply these processes to any government that is out there. So it's not just about kind of top down saying, “We like open source,” but also to contribute their own technology stack within the government and to have a clear process for adopting open source technology into the government. So you kind of have this nice flywheel going where the government plays a positive kind of role in this ecosystem.

**[00:24:10] JM:** Do you really think that the government could play a significant role in contributing to open source? I mean, thus far it's been completely led by industry historically.

**[00:24:23] KX:** Right. I think they should, to be honest. And the impetus of this episode was that I wrote an op-ed in Wired Magazine a few months ago advocating for that specifically from the American perspective I suppose, since the audience is mostly American. But, again, you can apply that to other countries. And I think governments around the world, many governments, are frankly not doing their job very well. And part of that is lack of leadership with politicians perhaps or other sorts of human issues. And we won't want to get into that on this pod. But a lot of that is also just not keeping up with the speed of technology and innovation to deliver services, right?

One of the very basic functions of a government that is quite invisible to most citizens, and we kind of just take it for granted if it's working well, is that it's just supposed to deliver services. Whether it's like veterans, checks, or access to hospitals, access to health care. If you live in America you might still remember the healthcare.gov debacle back in 2014 when the

government could barely launch a functioning website to buy something, right? That is still a good reminder that government needs good technology to simply deliver on its mission or on its role in society. So do I think they will? I think they will. I think there're certain parts of the government that are probably going to be more innovative than others. Government is just this giant organization. Some parts of it are more innovative. Some parts are more kind of legacy-oriented. And you see that within the US government. You have this thing called the US Digital Service now that kind of born out of the healthcare.gov debacle. And they're now this kind of startup-y innovative group that is going around to different agencies within the US government to help them develop better technology. To kind of bring some of the best practices within industry, within private sector, within Silicon Valley to help these government agencies do their job better.

Now I think their impact is still marginal, but it is an example that should be emulated, that should be expanded. So I do think the awareness from government everywhere is there. And this is being pushed actually by the quick advancement of private sector tech companies so that the citizens that you are “governing” or protecting or serving are used to these kind of user experiences from Google, from Facebook, from Netflix, from all these things that are now part of our life. Most of which are actually fueled by open source technology, right? So that the expectations has already been set and the government needs to catch up. If not, then people will be voted out of power and agencies will change. And there is some agency to affect that change even from the citizen perspective too.

So I'm being optimistic about it. I'm not trying to like convince anybody to feel more or less optimistic one way or another. But I do think open source and technology in general will play an increasing part in the planning of government development, if you will, and also how they see themselves within the world as far as industrial policy, industrial innovation and competitiveness is concerned.

**[00:27:49] JM:** What else would you say to policy makers around open source?

**[00:27:56] KX:** So it kind of depends on which policy or which country you're talking about. Again, I'll just go back to the US-China example because these are the two that I personally know the best. To the American policy makers, I would say that embracing open source fully plays to unique advantages that are part of being American. Some of the core values and norms that we talk about within open source like transparency, like openness, like collaboration, like open governance. These are all values within the American fabric or the American society I guess that is natural to what we do. So there's not a whole lot you have to really change the way you think, but you do have to really I think lay in visibly to embrace this as part of the industrial policy going forward as our innovation plan. I think some of our policy makers here in America are a little bit too hands-off when it comes to innovation or they do in a very poor job as far as picking winners within very old procurement process perhaps with some political lobbying behind the scenes, which certainly happens a lot that picks unqualified vendors to build something very simple. Let's just keep on hammering on healthcare.gov for a moment even though that problem is solved at this time now. So those are very important cautionary tales. So they should embrace open source from the American perspective because this is natural to already what we do as a democratic society.

And if I were to have a word with the Chinese policy maker, I would say to let open source be what it is that got you to this point. Right now what I'm seeing is this tendency to want to "nationalize" open source in some way. Certain ministries within the Chinese government that are regulating the Internet or technology sector as a whole are starting to be more hands-on in terms of picking winners within their own domestic industry or the domestic market as a way to kind of anoint these national champions, if you will.

One of the example will be Gitee, which is G-I-T-E-E- is the platform's a name, that is a very similar service to GitHub that started in China. And they are being more and more visible within government procurement processes and documents and you're kind of forcing your domestic developers who are really the source of your innovation, your engineers, to choose between what the government says something you should use versus what is actually best in class in the market, right? And that I think is a little bit troubling. So I hope for their own speed of innovation in China, that they let open source norm play out and really absorb all of it as

opposed to just see it as a quick cheap way to access good technology and then put their thumbs on the scale so to speak, which would not be helpful not just for their own advancement but really for anybody.

**[00:31:08] JM:** In the US in particular, is there a bigger problem that we simply don't have much digital know-how in our government?

**[00:31:20] KX:** I think that's a fair assessment if you look at congress specifically. With our separate branches of government, I think all the hearings that we've been listening and watching from congressional members talking about antitrust or how does Facebook work, right? Like last year we had this bonanza of a zoo meeting basically where the CEOs of the four largest US tech companies, Amazon, Apple, Google and Facebook had this hearing with congressional members. Some of them are okay. But I would say most of these lawmakers do not have a very good understanding of just how the technology industry works, or how on a bits and bytes level, how does technology work in this modern day because most of them are very old unfortunately. And I think some of them have good staffers trying to inform their bosses. That's kind of how that world works. But most of them, like you said, have a poor understanding of how technology works in ways that hamper them from making good laws and regulations and kind of processes, right? And there's a lot of different threats we can take on that.

I would say though there are pockets within the executive branch within the US government. A lot of them are in the intelligence community and in defense and they are very good technologists. They are actually very up to speed with what's going on, which is of course very important for their job as well. And you will not really hear much from these people. They're not visible for good purposes I suppose. But there are technologies within the government who do get it. And the big question here is do they have the power to influence some of these policy level changes that we were talking about just now? Not just technology decisions, right?

Like right now in the private industry, we have this trend where developers, individual developers even within large companies are becoming more influential in choosing which

technology to use. A lot of that is becoming open source technologies. How much is that "developer led", "developer-focused" bottoms up adoption happening within government is unclear to me. But there are good technologists within government that are keeping up with other stuff and they are up to speed. So that is my best attempt at answering this very difficult question, but hopefully bring some more nuance to the understanding for listeners out there, because I think it's easy to just chop up government as like a bunch of dummies who don't get tech. That's maybe like 60%, 70% true, but there is 30% of it where there are people who are trying very hard to figure this out because it is very important in almost the future of government if we're thinking about systemically how will government evolve in a new tech-driven world.

**[00:34:24] JM:** Do you see open source software as actually playing a pivotal role in conflicts, like national conflicts?

**[00:34:36] KX:** I think my speculation is that open source tech as a term will get thrown out more in the next few years as the media, as reporters cover kind of national competition, if you will, in the realm of technology, whether that be hardware, software, so on and so forth. And unfortunately I think most of them don't really understand how open source works and it could confuse a lot of people as just this thing that countries and people, even nefarious actors, bad organizations can just take for free and then do whatever the hell they want with it, which will be bad things because they're bad actors in the same way that we might have seen that even play out a little bit in the blockchain crypto community when it comes to money laundering and things like that. And a lot of crypto technologies are also open source or like all developed in the open and governed openly as well.

So that is something that could become very troubling, because I think a lot of people misunderstand open source for what it really is especially when it's wrapped up in the larger kind of conversation of geopolitics and things like that. And we see that in industries as well when big companies are fighting over certain open source projects when it comes to governance. Who should decide the road map? All these sorts of things still really is happening in industries. It's not like industry has figured out this delicate balance or this dynamic per se

either. So I think that's a little bit troubling. But I do think I'm trying to be glass half full here. And I think having more people at least hear about open source is a good thing. And of course, it's incumbent upon them to really understand what it really is. But open source will become a larger part of the conversation not just within technology anymore, but within international relations and foreign policy. So that may be a nice way to get more of these policy makers to really spend time to understand where did open source come from? How does it work? How does it work within companies? How does it work within government? And how does it work in between markets in a way that is very, very fluid? It's very natural for an open source project to have users simultaneously both in china and the US and Singapore and Germany and Latin America. And that is an aspect I don't think a lot of people still even appreciate just kind of this global reach of open source technology and how positive-sum that is. How much that connects people and developers and engineers from all across the world. So that's my most optimistic kind of interpretation of as open source becomes a more critical part of the public discourse, not just technology discourse. How that could help more people understand what this thing really is and the power that it possesses.

**[00:37:40] JM:** Do you have any other predictions around how open source policy will change in companies and in countries in the near future?

**[00:37:51] KX:** I think as far as prediction is concerned, it's always very – That's always a trap door, right? You want to walk into it and then the prediction market is never really kind. I would say that I think more countries around the world, in particular countries that have a very strong incentive to, one, catch up in terms of technology. And two, becoming self-sufficient when it comes to technology, so they're not subject to trade sanctions or entity list and all these sorts of other things, will more openly embrace open source technology as a whole. And that will happen for sure in the next five to ten years. Whether we hear about it or not is a different question.

Now, which sector do they embrace first? Which part of the stack do they embrace first and how do they embrace it? Do they embrace it from the top to bottom or they play a very light-handed role to kind of offer their support and/or endorsement to private sector players will

be the more nuanced stance that we will see to see which country really kind of “understands open source” and which country is just seeing it as an opportunity to accelerate a relatively short-term strategic goal. So that is what I will be looking for quite a bit as far as understanding how open source will play in the global realm both in terms of its economic impact, which is already very, very significant, its technological impact, which is already very significant, but also how that affects policy between like a country to country perspective and also maybe even international organizations. So that's where I will leave on the prediction front and not to get myself into too much trouble on that.

**[00:39:45] JM:** You didn't write about this, but do you have any perspective on open data? Like I think open datasets could potentially be just as powerful as open source.

**[00:39:55] KX:** Absolutely. And I think open data is almost a flip side of the same coin in terms of technological innovation in the future, right? Like we all I think know here on this pod as technologists that writing really good code and really good technology and application is nice, but you need to feel that with data. And how do you actually properly acquire that data to clean it, to protect people's privacy, but still to make good use of it is a balance that a lot of companies are struggling with. I think a lot of regulatory agencies and bodies are struggling with. The most visible example is probably GDPR out of EU. But there are data governance work happening in other regions of the world as well. And the flip side of open data, which I think open data can really push back on certain problematic trends, is that there are countries that are trying to control data as well. Control data about their own citizens, for example, as another practice of sovereignty. Before, sovereignty really is mostly about self-defense or national defense, weapons, and protecting your borders and all these things like that, which is still very important. But more and more countries are starting to realize that your people's data could be processed anywhere. And that is stirring up a lot of hysteria and scare when people don't really know where their data is stored. How their data is being used? We saw that in the whole kind of TikTok banned that ended up not being a banned fiasco last year, which was all about whether and how this Chinese company that made this really addictive app is gathering Aamerican people's data and where are they storing it? And are we cool with what they're doing now or should we ban it or I guess that Oracle buy a piece of it and just store it on

Oracle server and that will be okay? Like that's a very good example of how governments don't really have a good understanding of data governance and data location.

But to your point, opening up data in a way that provides a transparent standard is important. In the same way that open source tech is producing standards and kind of this base layer level playing field that we were talking about. Open data standards is hugely important to fuel kind of that open source tech standard into the data standard and back and forth and create that loop as well, because without open data, technologies are just not as useful. But if you don't understand how and where data is stored and how to really properly interpret that I think is another question. It can be an easy way to scare a lot of people that will hamper I think innovation and the user experience as well.

**[00:42:56] JM:** Well, while we're what we're talking about controversy, I think we could discuss a little bit the recent knocking off of the Parler company of the Internet. Basically by virtue of these closed environments, do you see a world in which open source software makes this impossible? Makes software uncensorable?

**[00:43:26] KX:** I think one of the more interesting threads I'd say as far as intellectual debate about the Parler ban and kind of de-platforming the president in all these social media platforms, even e-commerce platform has emerged, is how important it is to have an open protocol for communication on the Internet, right? Even though the Internet itself is technically open and there are some open protocols out there like the RSS feed that you might be getting this podcast from. A lot of the power now resides in the very few big companies that are the gatekeepers of distribution of just any software or any application. And it just kind of depends on what happens, right?

And I think a good way to push back on that, which I think is important for us to really think about, think really, really hard, about an open alternative, an open protocol or like a truly open operating system, for example, or truly open cloud, for example, that will have a more transparent way of adjudicating what should be on and what shouldn't be on. Regardless of how you feel about Parler getting removed from a political perspective, which we're not going

to get into, the fact that AWS can just kind of get rid of them, right? Like, “I'm just not going to host you anymore.” It's not like a long-term strategy. It's not a real policy, right? That's a reaction to something that happened that was very terrible in D.C. during this time.

So as far as my thought on this now is that I think if there is, again, a silver lining or a glass half full argument to all this controversy that's happening in the world, is that I hope more and more people think about how the open source norm, how the open source way of developing, of innovating. But I think most importantly, self-governing, right? How do those norms really help us provide an Internet that isn't arbitrary? It's not about whether Parler being removed is the right decision or not per se for me. I think it's about how do we know? How do we tell? How do we verify that this decision was made properly but not arbitrarily? And how can I as just a citizen of the world and the user of the Internet anticipate what the next decision could be if something else gets made. Like I'm sure there will be another Parler made in the future. Where does it get hosted? Should we allow to get hosted? And what is the process for that?

And this controversy I think is bringing at least that sweat of the conversation more into the open. More people in technology I think are talking about it, whether it's an open protocol for social media or open protocol for just like hosting apps, for example, and not just be a part of this duopoly of android and iOS is important. And it's unfortunate that we have to get to this point to have that conversation that probably should have been had a few years ago, but at least it's being had. So I am, again, trying to be optimistic about the things that we can learn from these controversies, whether it's removing Parler or the de-platforming the president.

**[00:46:58] JM:** Okay. Well, Kevin, we've had a pretty wide-ranging conversation. Anything else you want to add or subjects you want to explore?

**[00:47:06] KX:** Well, I just want to kind of encourage folks especially in this audience most of whom, again, are developers and engineers. Policy and politics and foreign policy may not be something that you think about or are even interested in per se. But what I would say is just that your work is very important, whether it's in open source or within your particular companies. And all this technological innovation and contribution that you're making is going

to make an impact and make a big influence in how nations are going to interact with each other. So I hope you at least absorb some of that from this conversation. I encourage you to read the op-ed that I mentioned in Wired Magazine. You can just Google American industry open source Wired, I guess? You can probably find that piece and pay attention to some of this news that's happening as well. And I think that will kind of bring more holistic experience to your engineering journey as well, because I think a lot of folks in big tech companies are probably really upset with the role they've been playing and are looking for more purpose and more meaning. And there are ways to do that within open source within public service and within government wherever you live, whichever country you are a part of that you feel strongly about. There are ways to do that in a more positive-sum way, and I think that's very important for the class of developers and engineers to be aware of.

**[00:48:30] JM:** Awesome. Kevin, thanks for coming back on the show.

**[00:48:33] KX:** Thank you for having me, Jeff.

[END]