

EPISODE 782**[INTRODUCTION]**

[00:00:00] JM: Cryptocurrencies enable a large number of applications. Trustless reputation systems, decentralized identity tools, micropayments, non-fungible internet items, borderless currencies, just to name a few, but cryptocurrencies have not yet impacted daily life for most of us. Why is that? One reason is that it is still very hard for developers to build within the cryptocurrency ecosystem. The programming languages such as Solidity are not widely used by software engineers. Building and deploying smart contracts is not as easy as deploying a simple Ruby on Rails web app. The open source tooling is immature as are the paid developer tools.

Sean Li is the CEO of Fortmatic, a company that is building tools to improve the Ethereum developer experience. Fortmatic simplifies wallet creation, user identity management, security and money transfer for Ethereum developers.

Before starting Fortmatic, Sean was the founder of Kitematic, a company that made the developer experience of Docker easier. Kitematic was acquired by Docker, the company, and Sean is one of the few people with significant experience in both the enterprise container ecosystem and the cryptocurrency ecosystem. Sean joins the show to discuss his time in the Docker ecosystem, his new company Fortmatic, and his perspective on how to build tools for developers, whether we're talking about enterprise Docker developers or cryptocurrency developers on the wild.

Someday there will be hundreds of thousands of developers building applications around cryptocurrencies, just like people use cloud computing today. The road to getting there is unclear, and Sean provides useful insights and predictions for the future.

Before we get started, I want to mention that the product that I've been working on, called Find Collabs, is having a hackathon right now, and if you're interested in Find Collabs, you can listen back to the episode from this Sunday, or you can go to findcollabs.com, or findcollabs.com/hackathon to find out about the hackathon that we're running.

Now let's get on with the episode.

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[00:02:29] JM: Hired.com is a simplified job search process for engineers with a data-driven personalized matching engine. You can head to hired.com and create a profile today. By creating a profile you'll be matched with over 10,000 companies looking for engineers like you. You probably know about hired.com already. What you may not know is that Hired's 2019 state of software engineers report shows that global demand for blockchain engineers is quite high at a 517% increase year over year.

Hired's data reveals the most in-demand in demand engineering roles. The hottest coding languages based on activity on the platform and how software engineers feel about open source. You can get all the details at hired.com/blockchain. That's hired.com/blockchain to find all the details on the blockchain increase in developer skills that are in high demand.

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[INTERVIEW]

[00:03:45] JM: Sean Li, you are the CEO at Fortmatic. Welcome back to Software Engineering Daily.

[00:03:50] SL: Hi, Jeff. Thanks for having me here.

[00:03:52] JM: Yeah. The last time we spoke you were working on tooling around Docker. You're one of the few people I know who has moved from the enterprise distributed systems world, which is containers, and Kubernetes and cloud technologies, but you've now moved to the blockchain cryptocurrency world. Why did you make the transition from the world of enterprise distributed systems to the world of cryptocurrencies?

[00:04:17] SL: Yeah. So I made that transition last year in May, and one of the reasons is I do think containers appeal to a lot of developers as well, just less of a transition from enterprise to

blockchain tool and it's more like what do developers want and then how we can make it easier for developers to get started.

Basically, I feel like the same vibe and passion among the developers from the container world and that's present in the Ethereum community as well. So it was like a really clear transition for me, and you can do the same thing that capture developers in the containers world and then into the blockchain world as well.

[00:05:03] JM: How would you contrast the two cultures of the container world, the enterprise distributed systems world with the crypto decentralization world as it stands today?

[00:05:14] SL: Yeah. There's a lot of similarities. So if you take a look at Docker, it essentially has two layers. One is the open container standard, the protocol, that is very open and almost run like a decentralized organization. Compare that to the Ethereum protocol, which is also decentralized.

What is different is that for Docker, there's Docker Inc, the parent company of the technology. For Ethereum, it's truly decentralized, which allows different companies to basically contribute to this open standard and collectively improve it.

[00:05:55] JM: The containerization world has moved so quickly. There were tons of startups that were raising lots of money and finding lots of business. Other startups were going out of business. The world has moved really quickly and their acquisitions, it was quite a fast pace of development for a while, and I guess it's continued basically, because it's moved on to the world of Kubernetes and this kind of cloud native refactoring that a lot of large enterprises are going through.

So just for some context, your company, Kitematic I think was the name, was acquired by Docker and then you worked at Docker for a year and a half, two years. What did you learn from your time working at Docker?

[00:06:38] SL: Oh! Well, yeah, I learned a lot at Docker mostly around how to build a product for developers and then making sure that we can capture new developers into the ecosystem,

and that's primarily what I've worked on with Kitematic, with Docker for Mac, Docker for Windows, essentially removing the barrier of entry to new developers into the ecosystem.

There're a couple of things I learned. We basically made Docker a field native on the Mac. So in the beginning there're virtual box requirements in order to use Docker on Mac and Windows, and later working with the [inaudible 00:07:21] kernel team that was also acquired into Docker. We made it feel like Docker is running natively on your Mac by leveraging some of the virtualization capabilities in the Mac OS system.

So that's really cool, and essentially the trick here is to reduce the cognitive workload for new users to understand what the container was and also getting started and get a container running within like 15 minutes.

[00:07:52] JM: One thing that surprised me at the Kubernetes conferences that I went to in the last year and a half or so is that there wasn't much discussion of crypto at the Kubernetes world. To some people, that might be obvious, like, "Oh, yeah. Kubernetes, that's the thing that enterprises use to run their centralized infrastructure," and then the crypto world is this world of decentralized crypto anarchists and they're trying to build their own currency, and these worlds have nothing to do with one another.

But in fact there are plenty of opportunities for these two burgeoning ecosystems to have applications built in each other's worlds. I'm sure we'll see it eventually, but why isn't there more collaboration between these two worlds today?

[00:08:40] SL: Right. So my perspective on this is I see both the blockchain and the container world as a transition from one thing to another, and what I mean by that is – So containers are a transition from on-prem infrastructure to cloud infrastructure, and people want this transition. People want to use container for this transition is because there's no vendor lock-in. Switching from traditional on-prem infrastructure to cloud, it's a quite scary and risky proposition. So it makes sense to put your software into containers and then distribute it to different cloud providers and hoping that there's no vendor lock-in.

I think in terms of blockchain, it's another transition. Essentially from long-running services into a serverless world or function as a service, because essentially an Ethereum contract is a lot like a Lambda function. Even though that the scalability and performance issue is still being addressed, I think this future will make software development easier, and we can definitely see some union among the two transitions as well, because containers and orchestration tools are also being used quite heavily in setting up blockchain infrastructure. For example, like a node and all of that.

[00:10:10] JM: Let's talk about that in more detail. So the centralized distributed systems tooling, things like Kubernetes, or Kafka. How is this stuff useful for building cryptocurrency applications?

[00:10:23] SL: So in terms of building cryptocurrency applications, it's not quite useful. However, those infrastructure tooling is great for spinning up the base infrastructure for blockchain applications, which blockchain applications doesn't even interact directly, and that leads into this Web 3 thing, because essentially there's no more servers. The client application will talk directly to basically like a uniform set of servers that could be running on infrastructure tooling from the container generation.

[00:11:03] JM: Well, let's start to talk a little bit more about Web 3, because that's what you're working on at Fortmatic. Your first company, Kitematic, was as you described around making Docker easier to use. You got acquired by Docker. Your new company, Fortmatic, is focused on improving the developer experience of Ethereum. Why have you focused on this area of developer experience in both of your companies?

[00:11:28] SL: Because I feel like that is one of the most important things to tackle for any platform to take off. If there's no one building for this platform, it's really difficult to build or use. Then the benefit of this platform doesn't happen. So just kind of like Microsoft really focuses on the developer experience and tooling earlier in their days as well.

So it's very similar, and basically by lowering the barrier of entry into these platforms, we get more developers building, we get more creativity, we get less friction in terms of user experience and more variety that we can explore. So that we can more efficiently find what works for this

platform and what doesn't work for the platform. So in general, the speed of innovation will be sped up and then that's what I want to see by making the developer experience easier.

[00:12:28] JM: Describe the developer experience of working with Ethereum today. What do you have to do?

[00:12:34] SL: Yeah, there's actually quite a bit of things that you need to do right now. One thing is figure out all the tooling. So there's no one tooling that fits all, and in fact it will take around a new developer, around 7 hours at least from understanding what it is to making their first decentralized application. You have to learn about smart contract, solidity smart contracts. How to deploy contracts? What are test nets and how to use the Web 3 interface, understanding what MetaMask is how their keys are stored? A lot of different things that are also very different from how traditional applications are build. So the barrier of entry is really high right now.

[00:13:22] JM: What are you doing at Fortmatic to improve that developer experience?

[00:13:27] SL: Right. So for our first project is making – It's actually making end users be able to interact with decentralized applications better. So what a lot of these developers have to do is to integrate with a Chrome extension called MetaMask, which is a de facto standard of how users interact with Ethereum applications right now.

So I was running like a user experience analysis. It takes 22 steps for an end user to make their first transaction to the blockchain through like a DAP. DAP is decentralization application. Given this kind of friction, it's really difficult for anyone to get started. Also, the users are very limited to being on the desktop or browser that only support extensions.

So the first thing that we did was we removed the requirement of needing to install a Chrome extension before interacting with a decentralized app, and we basically made it seamless so that any application that was working with MetaMask before will work with Fortmatic by only changing a couple lines of code. So basically get the developer to transition into this new user experience, which is at least 14 steps less compared to the older experience.

[00:14:57] JM: Right, and this is no exaggeration what you're saying with the number of steps. I was on a show recently I did and I was relieving, talking to somebody about the process of interacting with Gitcoin, and Gitcoin is a great example of a decentralized application and it actually has use. It's an app where you can put bounties for open source projects and other people can complete those bounties. They can solve bugs in your open source project, and then the bounty that you have locked up in a smart contract can get unlocked. That all sounds great, until you realize that in order for any developer to go through the claiming of the bounty or somebody with an open source project to post that bounty, they have to interact the Web 3 ecosystem, which is difficult to say the least.

So mentioned MetaMask. What role does MetaMask play in the Ethereum ecosystem?

[00:15:55] SL: Yeah. So there's many ways to see it. The way I see it is a lot like identity or key management system, because for any user to interact with the blockchain, they need to sign transactions with their private keys. Basically, it's a long-lasting debate between where the key should be stored.

So for MetaMask, the key is stored on the desktop, and basically using – It acts like an interface for you to sign transactions with the key on your laptop and then submit the transaction to the blockchain. So it's like this middleman or it's a bit like one password as well that associates the developer's identity – Sorry, the user's identity with the Chrome extension and then use that to interact with the apps.

[00:16:53] JM: What are the problems with MetaMask? What makes it so hard to work with?

[00:16:57] SL: So it's definitely a very great project and a good step towards at least making Ethereum apps usable, because I think one of the challenges in my opinion is that it's a very presume-based. It makes sense to developers who understand inner workings of the blockchain, but it's not quite the experience for mainstream users, because it's too much of a mental model switch from the Web 2 world into Web 3 world.

For example, with things like a 12-word world phrase that when users sign up, they'll have to write it down somewhere on pen and paper and make sure they don't lose it, and if they lose it,

all their assets will disappear, will be locked up. Also the fact that it's a Chrome extension, that user have to install before interacting with any application.

The context switching is too jarring and a lot of users will be scared off from this. One thing that we are doing at Fortmatic is making sure that the user experience is very similar to a Web 2 world. Basically for us, the user will type in their phone number, we'll send them a one-time passcode and boom! They'll have their account ready, their wallet ready to interact with decentralized applications.

[00:18:18] JM: All right. Let's start to unpack what you do. There's a term I want to articulate here, which is Web 3 provider. What is a Web 3 provider?

[00:18:29] SL: So for a Web 3 provider, it's essentially a programmatic interface to talk to Ethereum nodes. So it sits on the client side. So one thing that Fortmatic does is switching – I'm probably not the best person to explain this technically, but essentially it's an interface that is being used to talk to Ethereum nodes.

For MetaMask, they'll inject a Web 3 provider into the webpage in order to interact with Ethereum nodes on the backend. For Fortmatic, we replace the MetaMask Web 3 provider with Fortmatic provider and talk to basically – Essentially the same backend node, and that's kind of like the beauty of this decentralized protocol is that the backend, the server is very homogenous in how users and developers interact with it.

[00:19:26] JM: Yeah. So I remember MetaMask has a tight relationship with Infuria I think. Is Infuria, is that the Web 3 provider that Metamask uses?

[00:19:37] SL: So Infura is essentially infrastructure, the backend infrastructure that Metamask or any Web 3 application talks to. Essentially they host Ethereum nodes that all these applications can to and then provide services on top. It's a bit like AWS providing infrastructure to developers, and in this case is very similar.

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[00:20:13] JM: The blockchain is a new computer science primitive. It allows us to build applications that we could not have built before, and we're in the early days of blockchain applications. It's a great time to get started.

Blockstack is an open computing protocol for building applications where users truly own their data. They own their identity and even their content and connections. With a Blockstack ID, users can have a more transparent identity system rather than the modern internet identity systems that are closely tied to advertising. At blockstack.org/sedaily, you can learn about how to build decentralized applications easily. Blockstack is open source, it's free and it's an application stack that won't serve you ads or demonetize online media personalities or be subject to the whims of an individual CEO.

Developers who build on Blockstack can even get paid to build better applications using Blockstack via the app mining program. To find out about Blockstack including these programs, you can go to blockstack.org/sedaily. You can learn how to build decentralized applications that are private and secure and easy to build, thanks to Blockstack.

Cryptocurrencies are a huge unexplored space. If you're a developer, there's no better time to get started. Just so you know, it's not easy to build decentralized applications today, much like it was not easy to build internet applications in 1994, but we know that things get easier overtime, and Blockstack is one of the easier ways to develop on the decentralized internet today.

So if you're getting started, it's a great place to go. Go to blockstack.org/sedaily and learn more about how to build decentralized applications.

[INTERVIEW CONTINUED]

[00:22:20] JM: Right. So what's interesting about Ethereum of course is that these nodes are all supposed to be the same. They're supposed to be doing things that are very, very similar. They maintain the same information for the blockchain. Now I've heard some people say, "Well, if everybody is going through MetaMask or many of these applications are interacting with users through MetaMask and MetaMask is talking to Infura and Infura is maintaining these Ethereum nodes, you end up with a large number of transactions that are going through Infura's nodes

rather than a wide distribution of those, I guess, ingressed transactions into the Ethereum world. Is that problematic? Is that a source of centralization?

[00:23:07] SL: Yeah, it's definitely problematic, and I feel like that's one thing that we'd like to bring is variety, having more varieties. There are already a lot of infrastructure providers like Alchemy and a lot of developers do host their own nodes as well. But still, every app goes through MetaMask is an issue, and there are – One of our goal is to provide more variety towards that so that not everyone is going through the same user experience and rely solely on MetaMask, which definitely helps the ecosystem grow, offering more optionality to end users and developers.

[00:23:51] JM: So you were describing the onboarding process for a user that wants to use a DAP. With Fortmatic, there's some kind of integration with phone numbers. Can you explain that in more detail? What do you need SMS for?

[00:24:04] SL: Yeah. So the experience is very similar to how a Stripe checkout or Plaid works. Let's say the user clicks the buy button in a DAP, the Fortmatic modal will open asking users for their phone number. After a user types in the phone number, we'll send them – Basically, it's like a one-time password or the kind of security code that you get in two factor auth. It's the experience that users are very familiar with.

So after they type in the SMS code, an account will be either created or existing users will be logged in to their Fortmatic wallet. Then after they're logged in, they'll be able to make their first transaction through a blockchain without ever leaving the application.

[00:24:49] JM: Fascinating. Now, of course, the decentralization people listening to this are thinking, "Oh my God! This is just appalling. You're using SMS infrastructure. You're using the centralized insecure phone world. How dare you inject this kind of centralization and insecure infrastructure into our developer, or I guess our consumption experience."

Are there problems with using SMS, or I guess maybe you could just talk about the pros and cons of building around this kind of two-factor SMS infrastructure?

[00:25:27] SL: What Fortmatic wants to do is take a more pragmatic approach to solving all these problem, and the problem is really there are only around 8,000 daily users across all the apps right now and we're nowhere close to any kind of mainstream adaption.

So for this industry, I think the biggest thing that needs to be solved is making sure that we ease Web 2 users into Web 3 rather than forcing them into an experience that's very unfamiliar. With that context, the easiest and the most frictionless experience is through phone numbers and SMS, and then the philosophy here is to offer them optionality as the end users know more about their own needs. Let's say eventually they'll be able to attach like a recovery email or authenticator app and potentially more advance security so that they can store a more substantial amount of funds.

So by kind of easing the end users, we make sure that we get more people into the ecosystem at least and then providing them more options later on. So this way it's less of a very jarring switch and a much better experience compared to what's out there right now.

[00:26:53] JM: Now you're talking about making the consumption of DAPs easier, but for my perspective, I haven't been covering Ethereum in as much detail as I was a year ago, but I haven't seen very many DAPs that people actually want to consume today. I mean, I used Gitcoin because I think Gitcoin was pretty sweet and useful. CryptoKitties seems like something that people would want to use. What's the state of DAPs? Are there any killer DAPs you've seen recently? It doesn't even have to be killer DAPs. I hate that word. I hate the killer word, but just useful ones. What you have seen that's useful?

[00:27:31] SL: So one thing that's really useful is it's definitely financial primitives. It's not usually perceived as an app, but these primitives offer essentially financial service capabilities to people that was never able to access them before. So there's really interesting project like compound protocol, which you can stake stable currency called DAI, and they're an interest. There's decentralized exchanges and there are lending and borrowing protocols.

A lot of these financial primitives added together, I think the implication is unlimited. On top of that, you'll be able to pay people with cryptocurrencies through projects like GitHub, or what Opal is working on, and even one of the projects at the Hackathon that use Fortmatic [inaudible]

00:28:32]. So it's a way for people to get paid in other countries who doesn't have the luxury of the U.S. ecosystem and the regulations and all that.

[00:28:46] JM: Right. So this is the same stuff that people have been talking about for a very long time, the micropayments transactions, the unbanked transactions. It's just that these things take a while to actually build out. It takes a while to get the infrastructure in place. It takes a while to get the developers mobilized. It takes a while to get the users mobilized. Is this stuff all happening? Is it actually coming to fruition? It's just taking a very longtime.

[00:29:14] SL: So with any technology compared to the early days, it takes a longtime. The first example out there, the whitepaper for relational database came out 7 years before Oracle made the first application.

[00:29:30] JM: Incredible.

[00:29:31] SL: And it's a very, very longtime. I think we're close to the cusp of Ethereum and the generalized blockchain heading mainstream too, because it's been a couple of years and you get the most talented and incredible developers building for blockchain right now. So right now it kind of feels like a Cambrian explosion of all project and protocols just like how when operating systems are being created. There's Unix, there's other different Oss. Essentially, the one with the most developer following will hit more mainstream. Unix, and then you have Linux, and then you have the Mac OS, and I feel like the same thing is definitely happening with the Ethereum or the blockchain world.

At least we have the best, one of the best developers working in this industry. Now given the price drop of cryptocurrency, there's definitely a lot more pragmatic people trying to make things easier, make it more user friendly and bring Web 3 mainstream. So I feel like it's definitely happening.

Then very similar to how when I was in the container ecosystem, the kind of buzz and talented developers working for containers, and then it took around two years for containers to really hit mainstream. So I definitely see like patterns repeating here.

[00:31:05] JM: There is a streak of Bitcoin maximalism that I've seen talking to some people. Some of the Bitcoin maximalism to me is very rational. Like I hear these arguments where people will say, "All you really need in the layer one is a trusted append-only transaction sequence with this cryptocurrency infrastructure to make it trusted, and everything else should be on layer two. We should have smart contracts. We should have lightning network. We should have CryptoKitties. Whatever you want to build on layer two. Therefore, Ethereum is not useful. We should all be Bitcoin maximalists." What do you think of that argument?

[00:31:49] SL: I do think the argument makes a lot of sense, and to me it's just much harder to build complicated applications on top of Bitcoin right now. For Ethereum, there's much more tooling and content and more developer building actually usable applications on top of it. So I agree with the philosophy of having layer one being fully trusted and then have the second layer be where the most interaction is. It's a lot like our current financial system, where gold, which is supposedly the layer one. But you don't really know how much there are. Then the layer two would be currencies that's supposedly to be pegged to gold, but you can't be sure of that either. If you move that into this new financial system, whether it's Bitcoin or Ethereum, it doesn't matter.

But one thing that matters is you know how much exactly there are, how many Bitcoins there are or will be, and then you're going to have a second layer of more performant tokens that's pegged to Bitcoin and you know exactly how they're pegged to each other, the one-to-one relationship.

Ideally, the Bitcoin don't even have to move that much just like how gold doesn't move as much. They're just sitting in vaults. This way, with this new blockchain system, you know exactly you have like for transparency into the store of value and the currency. So I definitely agree with that philosophy.

[00:33:36] JM: It's so hard to know if it's going to be winner take all. I mean, you see some areas of software engineering where you have winner take all dynamics, like Linux. Linux is kind of – Linux is the open source operating system, or Kubernetes. "Kubernetes" won. Kubernetes is the container orchestration tool that has captured all of the mindshare for better or worse, the Docker standard for Docker containers. Winner take all. I'm not a complete student of financial

history, so I'm not sure if I can say what the standard is or what the history has been, but you could just as easily imagine it being winner take all. I don't know, I think the U.S. dollar, like so many things in the world, are denominated by the U.S. dollar. I think a lot of the commodities markets, people just look at the U.S. – Or they think of it in terms of the U.S. dollar, but I don't want to speak out of my expertise.

But then like another non-winner take all world was the cloud providers. Early on people were like, "Oh, AWS is going to take all of it," and the now, today, you look at it and it's like a thriving ecosystem or many, many cloud providers. In some light, these cryptocurrency platforms look more like cloud providers than they look like currencies. So, interesting. Interesting developments.

Fortmatic, if I want to buy a CryptoKitty – Actually, I have no idea how that works. So maybe do I buy it? Is that why I do? I just pay money for it from CryptoKitties Inc., or how does that work and how can I use Fortmatic with CryptoKitties?

[00:35:14] SL: Right. So to buy a CryptoKitty, you have to start with having some cryptocurrency. So currently, without Fortmatic, if a user wants to buy a CryptoKitty or have to visit the CryptoKitty website, and CryptoKitty will tell these new users to download MetaMask. After a user downloads the MetaMask and goes through the setup process, they'll have to transfer their cryptocurrency from either exchange or another wallet into MetaMask. Then after the funds arrive, the end users can submit a transaction to buy a CryptoKitty. With Fortmatic, it's a very similar flow, but without having the users to go to the Chrome extension store to download, to download a Chrome extension in order to interact with the DAP. The user can sign up with just their phone number and then they're ready to go.

But one of the challenges still is to – What is best way to get cryptocurrency from somewhere into Fortmatic. There could be fiat on-ramp, user to transfer another exchange, a user to even transfer from MetaMask if they want something that's more secure. Then there's also – We're exploring the potential to basically pre-seed wallets so that users can just get started right away with a little bit of crypto. Get their first Kitty, kind of get the hang of what a decentralized application is and incentivizing them to get more cryptocurrency.

[00:36:47] JM: All right. You might hate me for saying this, but just in case decide to go over to the ICO side of things, you could make your own Fortmatic cryptocurrency, you can AirDrop it into your wallets, and there you go. There you got a business. There's your business model. Back to reality. So you're operating wallets. So you are handling the wallets of the users so that they don't have to deal with annoying wallet infrastructure.

[00:37:13] SL: Yes, and that's quite some work to do that.

[00:37:16] JM: Yeah, tell me about that. I guess just to clarify for listeners, why you are operating the wallets here.

[00:37:23] SL: Right, because it's essentially Murphy's law. So if users keep the teeth, we're not talking about like the users now, the mainstream users. People are going to mess up. They're going to lose their keys. They're going to have to hide their private keys somewhere or the seed phrase somewhere and they're going to forget. Something is going to happen to it and their funds will be locked up. It's kind of like how people used to hide cash in a vault and then burry it somewhere, which is like a pretty primitive way to secure something.

So with Fortmatic, we take the effort to really secure, help the user secure their private keys using architecture called Cryptographic Anchor. So the difference is that like a traditional system or a traditional hack would be the hackers get into a – Let's say this company's database of encrypted user data with the private keys. The hacker can just download the entire content and then crack the content within their own infrastructure and on their own time. Sometimes the companies don't even know that, until two years later there's like a huge leak of a user's private key or a user's data and is really catastrophic.

Versus with the Crypto Anchor system, we basically use hardware to encrypt the keys. Basically what that does is force hackers to crack the passwords or the encrypted private keys within our infrastructure. That means we have full visibility and we can make the environment adversarial to the hackers and like detect, impede, and monitor this process so that we can mitigate the damage by a lot.

So there's no such thing as like absolute security. It's more about, "Okay, how do we handle risk? How do we mitigate a damage and how do we recover from it and improve the security model further?"

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[INTERVIEW CONTINUED]

[00:41:32] JM: This is giving me a vision into what you're building, how significant this could be, because if you have to build all these difficult infrastructure for security management, and I'm

assuming I'm taking you on face value that this security stuff is actually difficult to build. But if you actually have to build difficult security infrastructure and then you put a layer of high usability above it and high convenience for the end user, it does start to resemble a product like a Plaid or a Stripe, one of these companies, where we've seen that developer experience plus financial transactions can result in a really interesting company.

[00:42:14] SL: For sure. That's why I'm super excited about this project.

[00:42:17] JM: Tell me more about what you've built. What is difficult about setting up a Web 3 provider and being a crypto infrastructure company that manages wallets? What's going into that?

[00:42:28] SL: Yeah. There's so much to it. Just the security side alone is a huge amount of work, getting security audit. Make sure we get hackers to try to crack the system all the time and then make sure that we're staying on top of the trends and make sure the employees are educated about security and how to keep their information safe. That's just one thing.

Then there's also the SDK. How do we make it so that developers can onboard to Fortmatic relatively seamlessly managing the versions of SDK releases? What features do developers want and how do we want it to be accessed? So that's another crazy amount of work. Then on top of that, there's a very well-crafted user experience that's exposed to mainstream users and refining this experience.

So essentially what we built doesn't seem like a lot on the surface, but underneath there's a huge amount of work that's going towards it. I think it's a small but a very necessary step to really bring the technology to mainstream.

[00:43:46] JM: Then let's describe the developer side. So if I am a developer, why is Fortmatic useful for me? You have an SDK, you've got documentation. Me as a developer, what am I getting out of using Fortmatic?

[00:43:59] SL: Right. So right now what the developers are getting out of it is that they're able to provide a much better user experience for their users so that they'll get more conversion,

they'll get less signup friction and then just get people to try their product at least. So Fortmatic kind of opens the door to that. Also, there are more custom methods that Fortmatic is providing the developer such as they can easily pull all the balances for their end users like really easily or the transactions for the particular user so that they can – Also, we're working with some of our DAP partners on figuring out what kind of experiences better cater to their use cases.

So one thing that we do is we make ERC20 interface look more like an actual transaction and less like a smart contract call. So this way for end users, it's really intuitive. It's like, "Oh! I transfer ether and then I transfer other tokens too in the same way," rather than, "Hey, why is the ERC20 transfers look different?" So we do a lot of work to tailor and customize the user experiences for specific use cases that the users want and we provide all of that to the developers.

[00:45:25] JM: Is anybody else doing this?

[00:45:27] SL: Yeah, there're a few other companies doing this as well. One is called [inaudible 00:45:32] and then there's Bitsky, and also there's MetaMask.

[00:45:37] JM: Right. Oh! Is MetaMask a business also?

[00:45:39] SL: MetaMask is a project under Consensys.

[00:45:43] JM: Oh, okay, and Consensys is that collection of companies/projects. So maybe it's a project right now. It could get turned into a business later. Interesting. You can integrate with Coinbase I saw. Why is that useful? Why would somebody want to integrate with Coinbase through Fortmatic?

[00:46:02] SL: So we don't support that right now, but we're considering, because I feel like for mainstream users, they won't be that comfortable sending public addresses around and making sure that it matches what they copy and pasted in. If they can just connect to and exchange and transfer directly from the exchange to Fortmatic wallet, it helps reduce the chance of human error. It feels safe just like transferring from one bank account to another bank account. It's

really seamless without the exposing the inner workings in this case, which is the public address.

[00:46:39] JM: Got it. So one thing I have trouble figuring out is the role of exchanges. I mean, Coinbase is kind of more than an exchange, but I'm trying to understand like the surface area of the preexisting big players, like you have ShapeShift, you have Coinbase, you have decentral.ca or what is it? That's a wallet company. I don't remember.

Anyway, I can't figure out the surface area of these companies. Are they all just like collections of products? Like you start with a wallet? I guess I'm just looking for a mental model to think about crypto companies, and it seems like a lot of them start with we are a place where you have a wallet and you have some money stored there, and then we kind of like build applications, and usability, and security, and trading around those things. Can you give me like a mental model for how to think about some of these centralized crypto companies, like the Coinbases and the ShapeShifts of the world?

[00:47:43] SL: Yeah, I could be wrong. Just given the model where like for blockchain to work, there needs to be a bridge between our physical world and the legal realm and then the blockchain, the digital world. I don't think that normal users will be using exchanges. I feel like the people who need exchanges would go through it in like the best way, the regulated way to obtain cryptocurrency, and then using the tooling that's built around the blockchain to get it to the hands of people and exchanging.

So I see the exchanges as being like a great gateway actually for mainstream adaption, including custodial solutions that store larger amount of assets. I think the existence of these companies are crucial for the mainstream adaption of the blockchain. But the most action on transactions will be happening elsewhere.

[00:48:41] JM: Okay. You were just at ETHDenver, and we're talking about that a bit before the show. I like for the show to generally be like evergreen content, but just to take a snapshot in time for early 2019, the market is in a lull, but you've told me that the state of the people building cryptocurrency infrastructure is quite excited. Take me inside ETHDenver. What was it like? By

the way for those listening, that's a conference where people show up and give presentations and talk about what they're building and so on.

[00:49:12] SL: Yeah, just a little more context. So despite the price drop, there are still 9% recorded month per month growth on the number of DAPs build. So with this context, going to ETHDenver, you have a lot of developer who's willing to build DAPs still despite the price drop, because they see the potential of what this could be. There are developers who hack on building DAPs. There are developers who build base layer protocols of site chains, financial primitives and also just contributing anyway possible to the impact that the blockchain can bring.

I feel like there's like very virtuous ideals that's driving all of these development of these technology and products. Also at ETHDenver, it's a very tightknit circle where people are really open about sharing their ideas and then working together. So it's definitely one of a kind of an ecosystem, and yeah, with a lot of talented engineers and designers and product builders.

[00:50:22] JM: What's the focus of the core Ethereum developer team these days? There's the sharding and plasma and the scalability attempt, scalability solutions that are in the works. What's the state of the Ethereum developer team's focus?

[00:50:38] SL: I can't speak on their behalf, but just from what I see, it's a lot of effort making sure that it scales and more ecofriendly by moving into proof of stake, there's sharding, there's plasma. A lot of focus seems to be on there, But because it's such an open ecosystem, there's a lot of great proposals out there to improve it and then for more powerful DAPs being built.

[00:51:05] JM: As a developer building a company in this ecosystem, you don't necessarily need to go into the weeds to understand those details, right?

[00:51:13] SL: It definitely helps to go into the weeds to understand like what's coming up and the things that the limitations that we may have. It's definitely to know everything that's going on in the ecosystem.

[00:51:26] JM: Interesting. Well, I guess just to wrap up, I mean can you say a bit about what the goals of Fortmatic are both short and long-term and what your vision for the company is?

[00:51:36] SL: Yeah, the short term is really fulfill the demands of our launch partners. We signed up a lot of partners, DAPs, that we want to make sure that Fortmatic work seamlessly with what they're building. So that's our top focus right now, as well as developer feedback, the quirks people found during the hackathon, the event. So our team is going to address all of those things and just make that experience more seamless and more frictionless, less steps.

For the long-term, I think I want Fortmatic to be able to help more developers getting started and by offering more Fortmatic endpoints that basically makes their job easier and also launching publicly with our partners. Our partners connected with Fortmatic and then making sure that they get exposure to the users to the experience that's brought by Fortmatic.

[00:52:29] JM: Sean Li, thanks for coming on the show. It's been really great talking to you.

[00:52:31] SL: Great! Thank you. Thanks, Jeff.

[END OF INTERVIEW]

[00:52:37] JM: GoCD is a continuous delivery tool created by ThoughtWorks. It's open source and free to use, and GoCD has all the features you need for continuous delivery. Model your deployment pipelines without installing any plug-ins. Use the value stream map to visualize your end-to-end workflow, and if you use Kubernetes, GoCD is a natural fit to add continuous delivery to your project.

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