

EPISODE 720

[INTRODUCTION]

[00:00:00] JM: Many people have saved some money, which they want to invest for the future. Some people are happy investing their money in a robo-advisor. A robo-advisor programmatically puts money into long-term investments. Other people want a more personal approach involving a certified financial planner, or a CFP. A CFP is a human who allocates capital for an individual based off of that individual's preferences, such as how much risk do you want, or when do you want to retire?

A certified financial planner spends time and effort researching the options for a client. If the client only has a small amount of money, say, \$15,000, it's not worth it for the CFP to spend that much time on the account. As a result, there is a type of client who is saved a little bit of money, but is not saved enough to be an important client for a CFP.

Facet Wealth is a software company that makes software for certified financial planners to work more effectively with their client accounts. Facet Wealth has in-house certified financial planners who work with the software to manage these client accounts. In addition, Facet Wealth buys client accounts from independent CFPs who have small accounts which they do not have time to manage. This is an innovative way to aggregate users on to the platform. If all of these sounds really confusing and strange and foreign and you're wondering why does this matter to me as a software engineer, this is a pretty interesting episode. It has a lot to do with human computer interaction and the identification of a market opportunity that many other people probably wouldn't not have seen unless they really studied this market.

Gorkem Sevinc is the CTO at Facet Wealth and he joins the show to describe the business and the software architecture of the company. We touched on many different areas, from human computer interaction, to the future of investing. I really am fascinated by this company just because it's got such a strange model of coming to market and the kind of software that it builds and you'll see what I'm talking about if you listen to the episode.

I want to mention that we recently launched a new podcast dedicated entirely to covering fintech, and that podcast is Fintech Daily. Fintech Daily is about payments and cryptocurrencies,

trading, the intersection between finance and technology. You can find it on fintechdaily.co, or on Apple and Google Podcasts, wherever you listen to podcasts. We're looking for other hosts who want to participate. If you're interested in hosting for Fintech Daily, you can send us an email, host@fintechdaily.co.

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[INTERVIEW]

[00:04:05] JM: Gorkem Sevinc, you are the CTO at Facet Wealth. Welcome to Software Engineering Daily.

[00:04:09] GS: Thank you for having me. I appreciate the reach out and we're looking forward to chatting.

[00:04:14] JM: Definitely. Facet Wealth is technology for financial advisors, financial planners, and we will get into why that's an interesting and a difficult technological problem. Let's start with the top-level business use case. What is a financial advisor?

[00:04:32] GS: That's a great question. A financial advisor is basically a blanket term that covers different types of advisors ranging from customer service representatives at like a financial institution, through an investment only advisor all the way to full financial life planner. Most commonly, it refers to what we call the certified financial planner, the CFPs, which is a certification that is awarded by the Certified Financial Planner Board of Standards. The CFP designation comes after extensive exams in the areas of financial planning, taxes, insurance, estate planning and retirement. It really is a mark that says this person really knows what they're talking about when it comes to your estate planning, your retirement, your holistic financial planning.

[00:05:23] JM: Yesterday, I got a phone call from somebody at my bank who already holds all my money and makes money off of it and they were trying to sell me on more services that I should buy from the bank, and I was appalled at this. My relationship with my bank is deeply conflicted, because they keep trying to upsell me on stuff. In the past I've tried to talk to personal financial planners in a couple of different context. I think I had somebody who was working with me when I had a Schwab account. They were always trying to sell me stupid stuff that I didn't care about. Then I had somebody that was sort of almost like a financial therapist that I would go and talk to every three months and he would have some printouts and he's like, "Here's what you're going to do and here's how your money is working."

All of these different people that I've talked to, they have such an unscientific, disreputable approach, and it's just based on low sample sizes, unscientific assumptions, small time horizons. Speaking personally, I have no trust in the world of financial advisors and I believe this is why millennials, such as myself, have gone in the direction of the Robo-advisor, where we can say, "Okay. We've got an algorithm that's completely powering this thing."

Throughout this conversation, I think we're going to be talking about the tradeoffs between the Robo-advisor, completely algorithmic side of things, versus the human side of things, versus the thing that's in the middle where you have a human-aided by a computer. Can you help me draw out the tradeoffs along this spectrum of options for financial planning for finance?

[00:07:07] GS: Yes. You bring up a really good point, and this is part of the reason why we started this company. I'm one of the cofounders here as well. The financial advice world is really

vast and it really depends on what does the client need? What type of advice do I need? If I'm making investments and I need advice on what sort of investments I want to make, and it's only about the investments with the mixing of stocks and bonds and mutual funds. It's a whole different thing with balancing your portfolio and diversifying your portfolio, et cetera, than the financial planning only service, which is talking about how do you prepare for, in your case, for college? How do you pay off debt? What's your retirement planning? Also, investment management.

That's more the full financial life planning is what we call it. In that realm, it's actually quite interesting too, because traditionally you get – You said or you talked about your financial psychiatrist basically, or financial therapist. When you're getting these reports, sometimes you're getting a lot of information that is not really easily understandable. If you're getting 140-page reports with a lot of graphs on it that talk about, "Here are the things that you should do," but it's just advice and there's no follow through and there's no making sure that you understand what is being talked to you. That's where we saw actually a lot of value in helping explain to people, helping understand what are your financial goals? What are you trying to get to and how are you going to get there? Here is the plan. Here is the –

We spent a lot of time on actually defining what that facet standard is for the quality financial advice that we'll be giving through the CFPs and we spent a lot of time on actually UI/UX perspective of things that actually touches the tech side quite a bit, because how do you actually communicate that information or to the client in a sense that they actually understand it and stock informational workload? Does that make sense?

[00:09:23] JM: It does. These different financial advisors in different context, they have different strategies. You've got the Robo-advisors who are trying to make this algorithmic. You've got the financial therapist who is trying to make it as opaque and seemingly professional and, "Oh, you couldn't do this. I need to do this for you and take 3% or whatever." Then you've got something in the middle, like Facet Wealth. Okay. What is Facet Wealth? What are you trying to build?

[00:09:52] GS: That's a great question. Facet Wealth is a full service financial planning and wealth management firm with specific focus on what I was talking about with this full financial life planning. It's about helping people realize their financial goals.

We saw that CFPs are really, really highly valued people who give really sound advice to people on how to plan for their financial goals. They generally work with – They base on assets under management. Let's say you have \$500,000 in assets under management. Most advisors now charge an annual fee that's a percentage of those assets, and they manage clients that way.

Now, what we saw there is that CFPs are only available to those who have assets on their management above a certain limit, above a certain threshold. That leaves the majority of U.S. households not available to actually use that service and talk to a human who can give you sound financial advice.

On the other side of things, you have the Robo-advisors that you were talking about. These are the Mint, these are the Betterments of the world, which are great. They have really, really, really cool machine learning AI algorithms that do really, really complex calculations to give people advice. Let's call them – What we call the mass-affluent people who are less than a million in assets on the management. They only have these Robo-advisors as an option. They're affordable and they're convenient.

If we go back to the minimum most advisors have, you can see that the vast majority cannot have the option to talk to a CFP because CFP's won't take them on because they're below the threshold. The other option are Robo-advisors, which are good at providing advice based on hard data. So let's say, for example, you're calculating which credit card to pay off first. How aggressively you want to pay it off? But they cannot provide the full financial planning a dedicated CFP can.

For instance, I'll give you an example. We had a client who had divorce papers and in the divorce papers there was a certain clause that would actually impact payoff of a debt that was getting paid through the divorce agreement. Something like that that has context that is buried in some documentation somewhere is really hard for a robo-advisor to capture. That's when you have humans actually catching certain clauses, certain cases and really giving this holistic financial advice.

[00:12:45] JM: Right. Your point is that the context in which you plan your long-term financial goals and risk allocation and so on can be very subtle and it can depend on all these different variables. It would be very nice if we had some amazing smart contract programming interface where we could plugin all the different variables in our lives and have some risk factors that get evaluated because of that and maybe somebody we will have that. But today, we basically have to rely on the fuzzy, but often well-performing work of a human, and the human sorts through the documents and talks to you and does their best to understand your goals. It's not perfect. It's far from perfect, but it's pretty much the best that we have for evaluating subtle situations.

I mean, this is the same thing you have in healthcare today. You go to a doctor, compared to how a doctor is going to treat you in 10 or 20 years, what we have today is like bloodletting. It's so crude. It's not based in sort of data-driven science. It's more based on, "Well, this worked for like the last patient I had that had a broken leg. So we're going to do it for you. Hopefully it works." The medical journal says it might work, but it's not really data-driven, and we kind of have the same thing in financial planning, because things are just too complicated.

[00:14:14] GS: Yes. Actually, that's a really good point that you're bringing up, because my background is actually coming from healthcare.

[00:14:21] JM: I saw that.

[00:14:21] GS: And some of that actually goes into – What you're talking about is precision medicine, right? Making data-driven decisions based off of the data that you're provided, which is not only what is in the patient's medical record but also the other factors that you have to take in place.

Actually, I would say, the financial planning world is actually more behind than healthcare. Healthcare, at least we have – At least the data is digitized. In financial planning, you still have paper. This is 2018. We're almost in 2019. We're talking about paper.

One of the things that we had to do – One of the first thing that we did is actually taking a more design-driven approach, a design-thinking driven approach, how do we actually capture as much data as possible with a consistent way? Because one of the things we haven't touched on

yet is how we're using machine learning algorithms to help the financial planner to work more efficiently and consistent quality? Consistent advice? The facet way of advice that we're giving?

But your machine learning, your AI is only as good as the data that you get. We, from the beginning, took holistic look of what is the data that we're getting automatically from accounts, from retirement accounts or spunk accounts, etc., etc., but what is the data that we're getting that is an input from our clients that actually helps us drive what their holistic financial profile is and drive what are the attainable financial goals, the attainable versus where they want to be and how can we help them get there?

[00:16:14] JM: Right. This is a Facet Wealth, from what I can tell, seems like a business that's in some way similar to – There are these businesses like Atrium, for example, that legal company that Justin Kan is building, or Palantir. There's a number of other companies in this category that maybe you could call them human computer interaction companies, where a lot of the innovation is around the human computer interaction. It's around design. It's around better ways of interfacing with your mobile app. What is the mobile app that we're using to view like a picture of our financial health? That's a very difficult question.

I mean, we had smartphones before the iPhone. The iPhone was really about the interface, sort of about the way that you put the organization together that produces the phone. These are not things where we necessarily need some massive breakthrough in the algorithm. It's more about how are we approaching the problem and how is our team going about it and what is our product design strategy?

[00:17:28] GS: You are reading my mind, but because this is exactly the approach that we're talking with how we are thinking about our product. Our product is a service. It's a service that is a human for service. The tech is an enabler to the service. The certified financial planners, the CFPs are part of our team. It's actually a remote workforce, so some of them are in our office. Some of them are remotely working. But they are consistently using our tech to deliver this service.

That's part of it. Part of it is understanding how does a CFP work. What are the specific items that they do? What are the things that calculations that they would normally do that? Any

software that they would normally use out there wouldn't do and they would have to do in Excel. How do we automate some of those? What's part of it?

Part of it is the full UI/UX perspective of the financial planner, because we our financial planners to be very efficient as well. Part of it is also how do we present our data to the client's data back to them, and these goals, these plans that we make that are based on the goals; your retirement plan, your college plan. How do we actually communicate that, that going back to what I was talking about before is not informational workload? Because it's absolutely worthless when you give somebody 140-page report that has all the pretty graphs that you can generate. I can do that all in D3. No problem. That's not the point. The point is what is the clean UI/UX that enables me "to get the point across", communicate the point, and help people understand, "These are my goals. These are the things that I need to do. Here is where I am. Here is where I'm – Actual plan to be if I follow my advice in this timeframe.

We have spent a lot of time on that. We have spent a lot of time with our beta clients on that as well getting a lot of input from the clients, from our initial pool of clients, because the engineers and designers are not going to be the best people to make those decisions. I mean, given the input from clients, given the input from CFPs, we built something that's – Of course, I'm biased, but it's quite awesome.

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[INTERVIEW CONTINUED]

[00:22:11] JM: You have certified financial planners that work directly with Face Wealth. You have people who come to Facet Wealth and are looking for help with their financial planning. Is it fair to call you a two-sided marketplace that connects people who have money that need to be managed with certified financial planners?

[00:22:35] GS: Yes and no at the same time. The certified financial planners are a part of the Facet team. In Facet, we differ in the sense that every client gets a dedicated certified financial planner that have access to this dedicated CFP who then in turn gets supported by the platform, the tech side. It's our company's DNA to really get the best of the best of the CFPs. These CFPs are actually nationwide. They're not only based in our offices in Baltimore, Maryland. They're nationwide and they connect with our clients via conferencing or on phone, depending on what the client prefers. But we're not really limited to talent in a specific region. So we're getting the best CFPs in the country and we are also getting clients. Now clients we're getting organically, but there's also another way we're getting clients, which is – Actually, we work with other advisors out there who have – It's actually a normal thing in the financial planner planning world to do these partial book sales.

Partial book sales are essentially, let's say, you are a financial planner in Washington, D.C. You have 200 clients. Out of those 200 clients, 30 or 40 of them are actually below your threshold in

the sense that you either have to have them or there are many reasons for why you have those clients. But these are people that you are not essentially making much of, because these people, these CFPs are working based off of a percentage of assets on their management.

We are actually buying those books for business from other financial advisory firms. That is – It's very, very interesting, because we're enabling those advisors to focus more on the higher net worth individuals which makes sense from their business perspective with their percentage model of one person they may – And the time that they would spend on them, they may actually make the same as much as three people that they would have to do.

Well, those three people are the same for us, because in our perspective, we're a flat fee based service. We have different levels of service that we provide, but they are – It's a flat fee. So we have eight service levels. They range from \$500 a year to \$5,000 a year. It really depends on what the client needs rather than the percentage. As we buy these books of business, we have a whole process in which we convert them into clients. Of course, it's up to them to join the [inaudible 00:25:22] family or not. But, generally, what it means is that they are paying less and they're getting a pretty high-touch service.

[00:25:30] JM: This is really subtle and it's one of the most interesting kind of market expansion go-to-market strategies that I've covered on the show just in terms of its subtlety. It's subtle, but the market is giant. So if I understand correctly, all of these certified financial planners, the financial therapist, where you go to their office and you sit down with them for like an hour and they have all these printouts and they're like, "We've been putting this into oil, and this into index funds," and you're like, "Cool."

These financial therapists, I think when I had one, I had like \$30,000 or something. They were managing like \$30,000, and that's a considerable amount of money. I think my dad had told me to go see my financial planner. I was like, "Okay. Cool." I went and I sat down and he's like, "Okay. You have \$30,000. That's some money, but we can't do a whole lot with that. I mean, we can. We can do some, but it's not going to be that interesting." I don't know if that's a small or a large book of business, but I would assume – That's kind of on the small side, right?

[00:26:33] GS: Yes.

[00:26:34] JM: Yeah. For this financial therapist, he doesn't want to spend his time managing a \$30,000 account. That's not interesting. He's not going to make much money. He can do much for me. So what you do, what Facet Wealth does, is you go to financial planners, like this guy, this financial therapist that I had, and you say, "Hey, look. We'll take that off your hands. We'll take all your \$30,000 accounts. We'll pay you some fixed amount of money."

So you get them on to your platform and you go out and you do that for every financial therapist in the world and you can get economies of scale. You get all those \$30,000 accounts and then you have in-house certified financial planners who can kind of probably manage these things maybe on an individual basis, maybe at scale. Maybe you just give them like a sort of Uberized kind of platform where they can – Really, the problem is my financial therapist, I'm going to his office, I'm sitting down with him. He's printing – He's got to spend time printing the paper. He's taking all these time. If you give this kind of certified financial planner an Uberized platform or like it's like Tinder. He's just like swipe right, swipe left. Okay, manage this person's finances. Hot problematic. It's very quick. This kind of person can get like 10X improvement in productivity, and that's basically what you're doing. You're closing the loop there so that these \$30,000 accounts can be managed at scale. They could be managed on an individualized basis and they can be managed much more efficiently probably for lower cost.

[00:28:04] GS: Exactly. You got it perfectly right. I wouldn't say we're Tinder for financial planning, but that's a pretty good analogy. Financial planners in a traditional way, if somebody is running their own shop, they're doing business development, getting new clients. This industry averages about 75 clients that they are generally managing. Let's just be honest. They have very inefficient workflows, because they are using – There are a lot of tools out there that they're using. There's a lot of software that they can use. Some of them are proprietaries. Some of are like portfolio modeling applications. Even Salesforce offers some – They're in their financial cloud. But there's no one tool that they can use for everything. So they end up using multiple software systems. They end up having to hire IT guys. They can integrate these systems if they can be integrated, and then they do all these printing and trying to communicate, as you said, the therapy.

In our side, we are optimizing the workflow, right? The tools, the tech that we build actually integrates really well with all the systems that we have, but that's not it. The data that we get from the clients is really what's driving everything else. We have machine learning AI algorithms that enable our financial planners.

Let me give you an example, let's say the client goes through our intake process and they are inputting all their information and one of our algorithms may say, "This person is a good fit for a ROTH IRA, because it has gone through all our decision trees essentially. Based on previous data that we have, it can suggest that this person may be a good fit for a ROTH IRA."

These are mental checklists that a CFP would go through normally. There's a lot of logic that they actually get to learn as part of this financial planning certification process and the continued education that they do. What we're doing is really helping automate parts of that so that they can focus on building the relationship with the client, understanding their financial goals. Using the system, but also it is a human that is making the decisions. The ML artificial intelligence only enables them to work more efficiently. To go back to the example that I was giving, the industry averages 75 clients. We're shooting for 250 per our CFPs.

But these CFPs also are not doing business development. They are not dealing with IT people. They are not doing many of the other relationship building ones. A lot of CFPs actually travel to older customers. They're traveling all around the U.S. Whereas our workforce, it's remote. We avoid a lot of the inefficiencies in this financial planning world so that we get to the meat, we get to the beef, right? What is the beef? The beef is what are your financial goals? What is our advice? How could we help you get there?

[00:31:15] JM: Okay. Let's say one of the certified financial planners that you have in-house at Facet Wealth. I wake up in the morning – So I'm working remotely, like I'm working at home?

[00:31:26] GS: Exactly.

[00:31:26] JM: Okay. I get to work remotely. I get to work at home. So I wake up in the morning, I sit down in my computer and I'm going to start managing some accounts. What is my day like? What is the software that you're giving to them? Because they're basically coming from a world

of spreadsheets, spreadsheet in just terrible cluttered – What are your certified financial planners doing throughout their way and what is the software that you're building for them and how are your product teams interfacing with them? Tell me about the software and the user experience for your certified financial planners, because these are essentially – I guess this is one side of your “customer base”.

[00:32:06] GS: Yes. That's a great question. First of all, our product team, our engineers and a good portion of our CFPs who are actually helping drive the product, they're in the same office. They're in the same office and we're building things together. Building the relationships there, getting the right people in who are thinking differently is key.

I mean, from our design engineering perspective, we don't have anybody here who actually has financial planning experience. I like the fact that we're bringing people who have other experiences with other experiences who are looking into this industry with a different lens. Now, I cannot say that that's going to continue. Again, on the product and engineering side, that may be different in the future, but I believe that there is value to be had there.

Now, financial planner wakes up, they get their coffee, they get to their desk, they login to their computer and they log in to our system. Our system is web-based obviously, and the system essentially has a few things. It tells them what their day is going to look like. Who are they talking to today? Some basic information as reminders about who they're talking to and what their portfolio is. They can go into their portfolio in a detailed way.

But we also have a management of tasks. The task management is these action items that we keep track off per customer so that you know what you need to do on a daily basis. Almost like Kanban, right? We're implementing the Kanban-like methodology into a financial planner's world, where you have the basic to-do doing blocks done and you can keep track of those per client.

Now, when you go into each client's portfolio, everything is web-based as I said so. There's a lot of data input that is done while the financial planner is on the phone or on a video call and even screen sharing with the client. The data is input into their portfolio, let's call it. There's of course some data that is input by the client initially, and there's some data that is input by the financial

planner. That spits out – Part of it is the AI and machine learning spitting out some recommendations. It's more like a recommendation engine.

Then it's up to the CFP to accept or not accept the recommendations, which actually becomes a learning problem and our algorithms learn more from that. But part of it is actually these inputs generating the outputs for the customers, right? Actually, instead of doing paper-based records, we're giving web-based platforms, plus we're giving PDFs to our customers. Some of our clients actually like to keep track of documentation. Those are stored in our repository that we give them access to. That's through mox actually.

Of course, we didn't build that from scratch. But it's really interesting that there's this whole workflow that we go through that starts with the initial client's input from a questionnaire, to the intake process that we go through, to the touch points that we have with the clients on a recurring basis.

[00:35:43] JM: Let's start to look at this from an engineering perspective. Talk a little bit about how the product is managed. Tell me about how product ideas and product concerns are translated into engineering decisions and how that has shaped your engineering stack today.

[00:36:00] GS: Great question. I have some really, really awesome team members here, my colleagues here, who are really pushing the baton on how do we think about product. Of course, we do the typical things of Scrum, Agile and having a product roadmap with the quarterly planning for what are the things that we're trying to hit in this quarter and what are the features that we're building. The typical that everybody follows. That's just best practice for engineering management.

But we're unique in the sense that my cofounders and I strongly believe that everybody's voice matters in the company, and that means that even our junior engineers when they have ideas, they can talk to the CFPs about, "Hey, what about this? What do you think about that? What if we were to do this?" Likewise, with talking to our CEO, or me, or whoever, we have this really – I don't want to call it a flat organization, but culturally it's close to flat, that every idea matters.

Now, those ideas sometimes are good ideas, sometimes are bad ideas. The good ideas then get discussed with product, and product and engineering get together with the CFPs. I mean, these huddles happen multiple times a day to be honest with you. We are talking about, “Hey, if we were to all this to this interface, this would give me this,” and the engineering gives their advice on, “Hey, here are the things that we can do.” Then next thing you know it’s actually part of the product. Of course, there’s a challenge of managing a product roadmap with realistic deadlines, and if we’re adding something, we have to remove something, all that stuff. But it gets really exciting that it’s not about this really, really long product roadmap, we know what we’re going to build in two years. It’s actually quite the opposite.

Additionally, of course, we all want to hire 10X engineers. I think we had been pretty lucky, but also our process really has helped us a lot with getting people in here, our colleagues, who are the 10X engineers, who are the 10X designers, who are the 10X CFPs. The engineers that we have – I mean, a lot of my engineers actually love to do side projects and these are the kind of people that really get to learn different technologies on their own and they can bring the fresh perspectives and they are the 10X engineers, right?

Some of these engineers, their site project started becoming site projects for the company. One of them goes home on a weekend and then says, “Hey, I’m going to try this new machine learning algorithm with our test data and see if I can actually draw some interesting conclusions from this.”

Comes to work on Monday presenting it, everybody is excited about it. Next thing you know, it’s on the product roadmap. That’s the kind of culture that we like to cultivate, and the power of collaboration between engineering, design product and the CFPs here is the key. That’s what’s setting us aside.

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[00:39:13] JM: How do you know what it’s like to use your product? You’re the creator of your product, so it’s very hard to put yourself in the shoes of the average user. You can talk to your users. You can also mine and analyze data, but really understanding that experience is hard. Trying to put yourself in the shoes of your user is hard.

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[INTERVIEW CONTINUED]

[00:41:35] JM: You are in the process of moving from your MVP to your scalable platform. Tell me about what the MVP was and what your big vision for the more scalable version of the software is.

[00:41:53] GS: Sure. Well, an MVP starts organically. It grows organically. For many reasons, we actually built our MVP in – The first version was PHP with JQuery, then we added React and it was a sort of a monolithic application. For many purposes, that at the time made sense. We were trying to prove that this model is going to work and we have to get something up.

Now, we're in the process of building a scalable architecture. What does a scalable architecture mean? We like the microservices oriented architectures. We like React because of its

component-based architecture, and we're building a microservice oriented architecture in Go Lang right now. So our platform backend is in Go. Our platform frontend is in React with Redux. Then on the infrastructure side, we're of course utilizing our cloud provider, which is AWS. We're utilizing services like the queues and notification systems and some of the NoSQL databases that they're using, they're providing, that helps us go faster.

In my mind, in the recipe of a scalable cloud architecture, there's so much that actually you can utilize from AWS, from Google, from Microsoft. Each of the core providers have their own versions of many things that we can utilize. But defining the recipe for what that cloud architecture in a scalable way needs to look like is interesting. It wouldn't have made sense for us to build it that way initially, because it was an ever changing thing. It was growing very quickly and quite organically.

Now, now that we have a recipe for what we are currently using, we're still managing our monolithic application while we're building this true scalable platform. Of course, there are some integrations that we have with external things, because we're not going to do document management. So we're going to use Box. We're not doing to do credit card management, we're going to use Stripe. There are some external tools that we utilize with, but the core of the business logic lives with us.

[00:44:07] JM: Right. I've talked to some different companies at this point about their increasing shift towards "serverless", and serverless obviously means a lot of different things. It can mean functions as a service, like AWS Lambda. It can mean managed services, like DynamoDB. It can mean companies like Stripe, or like Box. I think Box is a great example. I've seen Box used in these kinds of applications where you have a lot of document management. Box is a great API for document management.

There's also thing like container instances, where you can have long-lived containers, or you can be managing your application on a Kubernetes cluster. That's the thing I'm kind of curious about, because you said you're keeping the core application logic under your own control, and I'm curious, what is the deployment medium there? Because I think we're kind of in this curious time where people do have to manage some core application logic, whether it's legacy logic, or it's greenfield logic in a way that is not as easily manageable as these API services, Box or

whatever. Like managing your containers, managing your application, that's still going to be harder than managing these APIs. Maybe that's just the way things are. But I'm curious about what your strategy for deploying services and managing services is and what that deployment medium is, whether it's Lambda functions, or container instances, or Kubernetes.

[00:45:33] GS: The answer is actually all of the above. We are fans of Lambda. Lambda makes sense for certain things, not for everything in my mind, because if you have a service that has – If I'm running an ML service, I'm not going to do that on a Lambda instance, because the economics of that is not going to make sense. I'm going to put that in something like Kubernetes in a container that is a manageable container.

I like the management perspective of those. Actually, one of the things, one of the cool things that we did is we hooked Kubernetes up through Amazon EKS to our code deploy with Bitbucket pipelines. Through that we actually, for every QA, every feature that we release for QA purposes, we spin up a new instance, new pod, and that enables our product, the MR CFPs, to test that one feature without having to wait for a release and test many different things at the same time. That just makes more sense for us.

We like Lambda. Some of our goal routines are going to Lambda. It makes sense for certain things and it doesn't make sense for certain things. There's sort of a – That's mostly based on the economics. Then from the database perspective, of course, some of the data that we have is very quite relational. Some of that is for any of the ML purposes we go to non-relational. Using something like Dynamo makes sense, because it is part of the infrastructure that we're using through our cloud provider where it's essentially a service.

My philosophy is that I want my team focused on the value that we have with the business logic that we're building as partly in Go routines, partly in React, and the design, the interactions of clients and CFPs with the system, but also the interactions of the different parts of the platform.

I think when you're building a scalable platform, of course you want to really understand each blackbox, if you're treating them as blackbox, sometimes you run into issues with your document management system, for instance. If it has API limitations that you're hitting, not to throw anybody under the bus, but I personally have run into problems with Dropbox API before,

because they had a limitation of 25,000 API calls in a month, versus something like Box, which gives me 50,000 API calls per day.

For the scalable exercise, where I am doing document management and I'm using it as a service, I'm going to look at those volume metrics as a basis for my cloud architecture exercise and decide which parts of it are the value ads and which parts of it are things that I can outsource.

[00:48:26] JM: Indeed. When you look at the spectrum of engineering challenges that you're working on, what's the hardest engineering problem you're facing today?

[00:48:35] GS: I think as part of a growing startup, the hardest problem is actually deciding when you're going from your MVP from your monolithic application to a cloud-based scalable microservices-oriented architecture. If I am a startup with five people, I'm likely not going to build the Ferrari that I may need in the future, because that doesn't make any sense. I'm going to focus on my MVP.

How do you identify when you need to go from the MVP to your eventual platform? I think that's the hardest decision to make. It's really easy to keep adding stuff to your MVP, keep adding features to your MVP and it grows organically, and that's great, but the you end up having to rebuild the whole stack from scratch.

I think there are some lessons learned, of course, and there are some things that of course we could have done better, like implementing an API from the – The restful API from the beginning rather than having this tight coupling between our frontend and backend that could have saved us time. We did it in a good time where it actually helped us define it for our cloud architecture, but I think from a CTO perspective, from any tech leadership perspective, I think it's of utmost importance to know that, "Hey, I may be building an MVP now, but I need to have the maturity to know that I may have to throw this away and build the scalable architecture."

[00:50:14] JM: At Facet Wealth, you don't actually control the money. The money is in a Schwab account or it's in whatever account that the person wants. Is that right?

[00:50:25] GS: Yeah. We use low cost ATFs for our clients.

[00:50:28] JM: Okay. Do you plan to kind of move those assets into some sort of – I mean, how full stack do you want to go in terms of the money management? Because it seems like if you can move down the stack into management of the actual financial assets, you can make a lot of money, a lot more money than you're making today.

[00:50:49] GS: Yeah. The asset management and investment vehicles that we use for our clients, that's not the main focus of this company. The main focus is financial planning, giving the advice, helping people realize their financial goals. It's sort of an added bonus almost that we do the wealth management perspective.

Now, we will know soon if more of our clients actually demand that and there are more systems that we should be working with. Of course, we have more integrations that we would have to do with different investment vehicles such that we can still manage them through our platform. Is it a technical challenge? Not really, because it's certainly doable. I think it's more of a focus. Our focus is certainly on heavier on the financial planning. Even if we were to manage more and more assets, it's part of this flat fee based service. It is not an additional fee that we would do for asset management.

[00:51:52] JM: As we begin to wrap up, I just like to take a higher level view. We're in this time of rapid financial turbulence in a sense that there's a lot of financial technology that we've been covering in various forms, certainly the crypto side of things as comprehensively as we can. One of the things looking at crypto has made me realize is how much of a house of cards the entire financial system is. I mean, many aspects of our lives are houses of cards and just like bubbles are everywhere. But crypto really reveals is a better way of managing the ledgers of our accounts. It's a lower level refactoring of how our accounts are managed and the degree to which the value that exists in the economy in different places can be scrutinized.

We have these kind of competing financial systems emerging. On the crypto side of things, we have a system where we can understand how much value is being represented within the crypto economy. Then two, this house of cards style, perhaps overinflated but definitely opaque traditional financial system, and it seems like there's a tension there, and that tension is in the

near term we're going to see, "Okay. Yeah, you add crypto to your retirement balance, and that's great. So you're offsetting it, or crypto is a replacement for gold in terms of a long-term durable asset, and that's great." But overtime, it seems like there's a tension there between those two types of assets. Do you see a tension between the crypto asset category and the conventional asset category?

[00:53:42] GS: Yes, and I think that's going to come in the future, because – Well, first of all, blockchain is cool. Blockchain is very, very cool and it's stuff that we want to really do. We would consider using as a technology. Cryptocurrency itself is a more complicated question.

[00:54:03] JM: But you can't have a blockchain without a cryptocurrency.

[00:54:05] GS: Yeah. The question is that it's actually more important that the SEC – We're an SEC regulated firm, right? We have fiduciary responsibilities by law to deliver advice that's in the best interest of the client. The SEC is not – Because of the SEC regulations, we cannot give advice to people on anything related to cryptocurrency currently.

[00:54:34] JM: I see.

[00:54:35] GS: We cannot give advice to somebody saying, "You should invest in Bitcoin." That is at this point not allowed. Is there going to be a future in which we can? Perhaps, but I think we have to be extremely careful about the compliance and legal requirements of what sort of advice is acceptable to give.

[00:55:00] JM: Fair enough. Now, my whole issue with the financial planning industry and all my interactions with it has been that ultimately the data that we have is such a short time horizon. How much data about the stock market do we have? 100 years? 150 years? How many cycles have we gone through? Maybe like 25, or 30, or 50 cycles, or you could argue we'd go through a cycle on a daily basis, or a minute basis.

In any case, the problem with financial planning is the world of finance is, in many cases, guided by like tail events, tail risk, and you can have a single event for which there is no president wipe you out if you're not properly hedged. In my conversations with financial planners, I will be like,

“Okay. So you’re trying to map out this financial plan for me on a 30-year time horizon. What’s your protection against black swans? How do you think about black swans?” They’d be like, “Whoa! Those happen very rarely.” “Well, okay.” First of all, that’s based off of 150-year dataset, which is really small. So you can’t even really say that with much confidence. Second of all, the financial world is always changing. It’s almost like Poisson process, or I think that’s the right term, where it’s just like you can’t actually predict what the probability of this black swan is. You just know that they happen sometimes. It felt so religious to me and so misguided. I don’t have a good solution to this other than like keeping everything in cash or something? But even that’s a bad solution.

[00:56:38] GS: Well, actually, the answer is diversifying your portfolio. Not putting all your eggs in a basket. Figuring out with your financial planner what is the risk portfolio that you feel comfortable with, because some people actually on the opposite end of the spectrum and they say, “You know what? I want to make a lot of money in the short term and I’m willing to take a lot of risks.”

That’s exactly why you need to actually talk to a person that would understand your perspective in the sense of what are your short-term and long-term goals and provided we have to understand that there are external factors. You can imagine that actually even your – Let me give you a completely different example. When you change a job and when you start a new job and now you’re income has changed, or let’s say you had a kid, you have a new kid. Great. Congratulations, and now your financial goals probably have changed, right? When is a good time to talk to a financial planner comes up as a good question. How do we actually mine external data to help us make the decisions on when our financial planners should be initiating a discussion if the client doesn’t reach out to us? That’s one.

Number two is what I was mentioning, which is how do you prepare for those black swans? How do you actually – Our financial planners can speak as much better than I can. I’m just a computer scientist, but the diversification of portfolios is really what’s geared towards helping people get ready for any such events that we have no control over and we have no knowledge over.

[00:58:14] JM: Well, that seems like a good place to wrap up. Gorken, I want to thank you for coming on the show. It's been really good talking to you.

[00:58:19] GS: Thank you so much and I really appreciated it and really enjoyed the conversation.

[END OF INTERVIEW]

[00:58:27] JM: We are running an experiment to find out if Software Engineering Daily listeners are above average engineers. At triplebyte.com/sedaily, you can take a quiz to help us gather data. I took the quiz and it covered a wide range of topics; general programming ability, a little security, a little system design. It was a nice short test to measure how my practical engineering skills have changed since I started this podcast. I will admit that though I've gotten better at talking about software engineering, I have definitely gotten worse at actually writing code and doing software engineering myself.

But if you want to check out that quiz yourself, you can help us gather data and take that quiz at triplebyte.com/sedaily. We have been running this experiment for a few weeks and I'm happy to report that Software Engineering Daily listeners are absolutely crushing it so far. Triplebyte has told me that everyone who has taken the test on average is three times more likely to be in their top bracket of quiz course.

If you're looking for a job, Triplebyte is a great place to start your search. It fast tracks you at hundreds of top tech companies. Triplebyte takes engineers seriously and does not waste their time, which is what I try to do with Software Engineering Daily myself, and I recommend checking out triplebyte.com/sedaily. That's T-R-I-P-L-E-B-Y-T-E.com/sedaily. Triplebyte, byte as in 8 bits.

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