

Moqui Conference 2023 Day 2 (2023-05-26 10:06 GMT-5) - Transcript

Attendees

abdullah shaikh, Adam Heath, Al Byers, Amir Anjomshoaa, AmirReza Anjomshoaa, Andrés Ponce de León, Ayman Abi Abdallah, Ayman Abi Abdallah's Presentation, David E Jones, Ean Schuessler, Ean Schuessler's Presentation, Girindra Mohan, GuruDharam Khalsa, Igor Galligani, Janvi Talreja, Jens Hardings, Lawrence Tran, Marco Grossi, Marwan Dessouki, Matt Warnock, Michael, Michael's Presentation, Pandor Photos, Ragheed Abdel Khalek, Rohit Pawar, Sakthivel Vellingiri, Shahbaz Khan, Vince Clark, Visvendra Rajpoot, Visvendra Singh

Transcript

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David E Jones: Is a?

David E Jones: Looks like there's a problem with this Vendra, hopefully, he can rejoin. So this is a An open panel discussion. We don't have anyone. Included or excluded explicitly so everyone's welcome to chime in a few thoughts. I've had about I artificial intelligence that and related to Moki and a lot of these come from discussions with various people who are here today. So, after I go over these and I added them to the Google Doc that has the meeting agenda and such

David E Jones: After I go over these then as Gurudharam suggested. Why don't we go around in alphabetical order and give everyone a chance to introduce themselves. And if you have any thoughts on things, you would like to share related to Artificial, Intelligence and Milky, then mentioned that briefly and then we'll kind of coordinate and go from there.

David E Jones: So the general idea is I had or these are some possible applications of artificial intelligence, one of the more obvious ones and the one that's come up a lot and in current use cases, with various tools is generating code. So, starting with and some sort of plain English description of what you want and let it fill in the gaps, or even start with some code, and let it finish it out. Defining methods, naming it adequately, hopefully to describe what it does. And even some of the tools, get into those things. This is an area where I think especially for screens, might be very useful and they tend to be somewhat labor-intensive. So And then getting into services and logic, there's a lot of potential for that. Although a lot of stuff in artificial intelligence, seems to be

David E Jones: Very boilerplate. Good for boilerplate and common code. And if you're creating something very new and novel, that's something I don't have so much experience yet, but my guess is that it might have more difficulty with that. and then the data model, the entity definitions in mochi, that's an area where AI might be helpful to

David E Jones: Adds Things Certain things Certain patterns like there are certain things like the effective dating pattern and with from and through dates or certain entity concepts like the master primary entities that have their own single field, primary key and like product or party or order header. And then related entities, to them like detail entities, that that are have a many to one relationship with a primary entity. These would be things like an order item, an agreement item. A lot of these item entities throughout or like these. And they're dependent on the primary entity, they have its primary key plus an additional one to distinguish them.

David E Jones: And and then things like joint entities. So these are typically going between two primary entities. Like party relationship is a good example. That is that's a joint entity between two party records and has additional fields to describe, or constrain that relationship. And that the joint entities are where things like the the effective date pattern comes into play from and through date, most commonly, although can be used elsewhere. So a certain patterns like that. It, there might be understanding applications of AI to help generate refine or offer suggestions for data models. Um, so that's that's one possibility.

David E Jones: Another is to help with generating more detailed requirements. So guruharam talked yesterday about business process stories and that is an interesting potential application for AI, starting with a summary or brief description and or even something like a top level business process story and then using AI to help generate more detailed ones that can then be edited as needed in such. But but to push out ideas and language that that can help in writing those and then the next one on the list is Generate Designs, given requirements and this

David E Jones: Would be designs. Might include screen designs. They might include, which could include outlines of screens, for example, what's on the screen or even layouts of screens And also possibly technical designs that could help with this perhaps a lot even. So given a business process story, that is sufficiently detailed. It could help identify which entities and services and existing screens and such. That would be most useful for that most or potentially applicable for that business requirement. Um, those are some thoughts on the on those first three. The next is a little bit more.

00:05:00

David E Jones: Of an out there thing where we talk about generating code which is interesting but even better as if we can do away with code and let AI substitute for that. And that would be something like using plain text either speech to text as more convenient, or typing it out,

David E Jones: Saying you want to do something, like place an order and, you know, for a particular customer or for a new customer in the described details of that customer describe which products you want on the order, other other things related to it. And then let the AI figure out which services to call in order to make that happen. And with preferably with some sort of user interface. That generates a form that fills in the data that you specified kind of notes additional fields. That might be, that are either required for services that identifies to call or that are available and recommended sort of thing. And then the human can

David E Jones: Describe the data they want there or with the generated form on the fly. You type in things or correct data and such as needed before, pushing the big button and saying Go and, you know, call the services and record the data and such So, that's so I think that that might potentially be one of the most useful applications of artificial intelligence, where we do away with applications as as Thought of these days and moving towards, what's the term for it? I think it's ambient computing. I think that was the, the

Star Trek term and where it's sort of the computers around and you interact with it in a more natural way. Sort of sort of as if you were interacting with a human

David E Jones: Then the last one is similar to the the idea of using it as an alternative screens and that is for a report query builder and we talked a little bit about this yesterday. Some things that have been done in other applications along these lines. But this is a useful thing. That's very low risk, if you will because there's no data mutation involved, it's just gathering and and gathering data joining at viewing it in different ways and such and that could potentially be very powerful including data from the relational database and data from elastic search as well for generating graphs on the flying charts or or tabular reports or whatever, whatever is needed for a particular for particular usage scenario.

David E Jones: so, with those ideas, Why don't we go around and do some introductions? And then if so for each introduce yourself and a little bit of your background with mochi and, and with artificial intelligence as well, anything you've played with there. And if there's anything you'd like to share on that topic, mention it briefly. And then we'll get back to those after we go through the round of introductions. So let's do this in alphabetical order. Looking at the meeting list and first on the list is Abdullah shake, if you want, if you would like to introduce yourself and anyone who does not want to feel free to pass and and we'll move along.

David E Jones: Be there Abdullah and in a position to talk for a moment.

David E Jones: okay, why don't we move on to aim and then aiming if you'd like to introduce yourself and your background with mochi and artificial intelligence, anything you've done there thought about there and and might like to talk about in this panel

Ayman Abi Abdallah: Sure. So my name is Evan Abdullah and I'm currently working at Alchemy. We're in the alchemy headquarters today, so it's a good day. I've been using monkeys since 2015 or 16.

00:10:00

Ayman Abi Abdallah: I I basically, I told my story last year about how I met Monkey, which is I started with, Oh, I've been and then

Ayman Abi Abdallah: And join the joint mochi and start learning learning mochi. So that was my the beginning basically. I've used mochi and multiple production.

Ayman Abi Abdallah: Systems and applications. And I continue using it until this day. So my experience with AI is limited to academic experience. So I basically took a few machine learning courses and university and

Ayman Abi Abdallah: Basically, coming up with machine, learning, algorithms, for particularly, for real estate. That was the project that I worked on at the time. Yeah, that's that's it from my side.

David E Jones: Okay, great. Looks like Amir joined and he's in alphabetic order even before Eamon. So Amir, if you'd like to go next, just doing introductions and some of your background with mochi and, and any relevant, artificial intelligence, things that you've looked at or thought about. And, and might like, to talk about as part of this, this group discussion

David E Jones: And I can't hear you.

Ayman Abi Abdallah: Alright, good to meet everybody. My name is Amir Anjomshoaa. Currently, I've been working at Alchemy for almost two years and about a year and a half before that would MK decision. My whole history of mochi started from getting higher. That the company of Mk decision where my interview process was a, basically, a question of getting to know Mohan writing a simple service in it where it was kind of like the whole mind-blowing process for me, where I was like, this is actually a fun framework to work with everything is playing simple already to give and from there I've been hooked on it honestly and it must be honestly, one of the main reasons that sticks around the company and sticking around with this product has been an easy way to implement. Yeah, bugs are everywhere. But it's just a very fascinating process for me to work on Mohan. Go forward for this.

Ayman Abi Abdallah: And in terms of artificial intelligence and AI's, I've been experimenting a lot with the Moki with with the concept of because it's open source. So we are allowed to fix some stuff into that gpd models and see what we can do with it. But you said at the end we'll discuss it more. So I'll try to see if I can hang around and talk about it. But I've done some experiences with it. In terms of being able to write services, being able to feed it. The Universal Data Model Book, being able to see that schemas that we have and actually giving it a good business process story to be able to get me some services written or actually give me some basically implementation done in a service. Some of the fun facts that actually realize about it was very easy to recognize that you could write Ruby instead of the XML or actually right. XML link it to a groovy file and from there some other experiments is I did with it but that one yeah at the end if there were time I'll talk more about it. What I experimented and what I saw about it but I'm happy that you're also interested in it to move on with this topic, which I think.

Ayman Abi Abdallah: One of the biggest power that you have is that example component that we have. I think that's where a lot of ideas for the gpd itself is coming from mainly when I was fetching the data into it and also the mantle usl and the UDM were, I basically put those as the instruction that these are the base data that you should use and look up to, to, basically find the next steps to do the code. So, yeah, it's been a fascinating. Yeah.

David E Jones: Yeah, that's great. Thanks Amir, yeah. Let's see. Oh, I I Adam wasn't in the list, but looks like you've joined individually now and I should have thought of you. Why don't you go ahead and go next, Adam?

David E Jones: You got the mute figured...

Michael: And yeah,...

David E Jones: There you go.

Michael: I'm on an owner level.

Michael: Technical. Okay, there we go.

Michael: I am one half of brain food. My partner in crime is nearby. We have used off biz, going back to 2003 or so we've Love of bears because it lets us not write all that code. We've been, we're a small company. We are limited in what we can do. So we're always looking for existing technologies to then integrate together and let us move fast.

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Michael: Is a check mark that we can just say, Okay, we trust that that code is going to do what it needs to do. And we can Service. Our customers a little bit faster. We?

Michael: Tend because of our small company, we do have a lot of odd things. We will connect to the Java-based stacks. Over time and not always integrate tightly with. Monkey that we're talking about today.

Michael: Got a couple things. We might be showing off a little bit later. I don't want to kind of tip my hat too much. But stay tuned. We'll it's gonna be a fun day.

David E Jones: Okay, sounds good. Thanks Adam. And it turns out, since we did a few out of order, I think you're next in the list.

Ean Schuessler: Ruby, can you hear me? Okay good.

David E Jones: Yes.

Ean Schuessler: Yeah, so like Adam said, we've been a long time admire of the community and David's work. And, you know, at the time we started using of biz, it was really the only Serious to me. Open source ERP competitor. On the landscape and a lot of ways and still and a lot of ways, I feel like is still the King or queen as a case. Maybe these days and they them. And but like Adam said, we tend to use a lot of different technologies. I guess, you know, our history with the with free software kind of goes back to Debian in a lot of cases. So we've always had a very kind of operating system view.

Ean Schuessler: Of the landscape, right? That it's so we try to put components together into a distribution to solve problems with regard to AI. I've always had a real interest in in AI going back to school. I read Perceptron's by Marvin Minsky back when I was in college and the whole concept of synthetic neurons, you know, and at that time,

Ean Schuessler: In the kind of early The Matrix and so on the those in the 90s it was like You're gonna scan our brains and we're gonna live forever in a computer man and you know, that obviously is not materializing so quick. But then again, now it's like some of that craziness with neuralink is actually starting to happen where you may actually have computers hooked into your brain. But so my roommate in college is David Hansen, the guy, who built the super realistic robot that talk to kill humanity. So Sophia, Sophia the robot, Google, Sofia the robot. You can find all kinds of stuff about about her. Put a quote. Um, and so I've I've been

Ean Schuessler: you know, I've always had a real interest in natural language processing and like the chat script language and some of the other early AI stuff and then I got into word vectorization. I guess like, 2016-217 trying to improve on what you could do with Chat box. I guess my biggest contribution to the Sophia thing is. I wrote the initial version of integration between the Blender animation system and Ross, robotics tooling to be able to animate the robot using kind of the disney-ish. CG CGI workflow and blender. And now I'm just super excited about what's going on with large language models and specifically the open source ones. I think Openai chat GPT is really cool but I don't know how many.

Ean Schuessler: Of you all have read the, the memo that got leaked out of Google where they were noting that the open source community was lapping them to use their words because the, you know, I guess because the community is Google's focused on how big and powerful they are, and what they can do with all their computing infrastructure. And the community is focused on like, well, how can we make it? How can we do the same thing with a lot less? And to the extent that the community is succeeded in that? It

means you can do it a lot more. Like if you can do the same thing with a lot less, it means you can do a lot more of it because you can Distribute in parallelize that effort and that's what's happening. So I think that's why we're seeing incredible innovation in the open source, AI space. so, Excited.

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David E Jones: Yeah. Okay. Thanks Ian. I don't go next to gurudharam. Your? You signaling, you want to pass?

GuruDharam Khalsa: Now, I we couldn't hear you because we were all muted.

David E Jones: Oh, okay, that's just saying. Okay. Yeah,...

GuruDharam Khalsa: But we're having difficult.

David E Jones: that's audio challenges in the conference room.

GuruDharam Khalsa: Y. Yeah, my name is Gurudharam Khalsa. I work for Mk Decisioning Systems with a couple people here and then became part of alchemy. I'm a low-key power user. Meaning I think I've used almost every screen. I actively instead of just research based use of the screen. And I I love the system primarily because I own it and I want to convey that to all of you take ownership for this product and it take ownership of building new features, delivering them to the community and really enjoying it. I'm fully against the term, ai. I think it's a misnomer and most cases. And in a lot of cases, we mean, conversational search or different features that I competing can provide to us if we program it correctly. So, I'm excited to add some new features.

David E Jones: Great, thanks. Jens would you like to go next?

Jens Hardings: Yeah. Hi all And well, if my background is I have been in academia for a couple of years before getting to the industry. There I've been mostly focused on. I've always had an interest in open source in the process of open source. And social security, networking etc. Then I won a few years in the entrollogistics business, which is basically all of the movement inside a warehouse or And that kind of movement. And I've been using monkeys since 2015, when I started a few projects and playing with it, then I got more serious. And we also have a co-work where we have an office and we have Tenants or customers, who use them facilities. So,

Jens Hardings: We've done a few things with reservation, bookings, or reservations of the spaces, one of the invoicing, etc. So we use it on a, on a daily basis at least one part of it. And and for external customers, we have been mostly focused on something which is very local. We have this concept of, we call it fiscal tax documents which is basically the invoice but It mimics the whole process. We once had on paper and now in electronic form. So once you had the papers you had to take them physically, have them stand by the tax authority so you could use them. And that whole process is now. Meaning in electronic form, where you have to use a free authorized, Sequence number. So, which is signed by the tax authority in digital form, you have to include that in your documents and they have a certain XML format and everything

Jens Hardings: and so the only thing that really changed in that aspect when it was digitized was that somehow the technicians could convince the lawyers that it made, no sense to call some documents the original and some documents the copy when it's in electronic. Sign document. And everything else is really mimicking, the the working of the paper. Um and what we have done some other projects. For

instance, we have Made the software with which helps big organization. The the judicial system here in Chile, to make its in turnover evaluation process, where you have external evaluators, who have to evaluate a few thousands of aspects of every one of the of the sits there. And

Jens Hardings: and they have a very strict process. So they were running it on on a spreadsheets and now they have it digitized. So it was a really interesting project. And some stuff like like that and mostly, yeah, we haven't not used much of the standard monkey business processes but we have mostly done things that are not considered in the in that part and now we're working on incorporating. Some of them more general workings.

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Jens Hardings: About ai we haven't done much. We haven't have much experience except maybe for the sales tax so we like to do them using some some input from from some tools like Chativity or things like that. So it sounds better because we don't have really specialized sales team and so that has helped us a lot and what we

Jens Hardings: Can expect in the future is that we might need some help in getting their unstructured information or information that's structured in different ways. For instance, I don't know receipts from from some other systems or even written on paper so you can recognize them and translate them into the mochi model so we can then process them and stuff like that. That's what we've been thinking about. So that's it. Thank you.

David E Jones: I guess I should turn my microphone on Thanks. Jen's Lawrence, would you like to go next?

Lawrence Tran: Hey sure. So my name is Lawrence, Tran I work at a company called Noggin. We, We focus on e-commerce. And we've kind of pivot company a little bit. One of offerings, we do is commerce as a service, I'll be going over that. And in a bit, but we've been using Moki since about 2018. And we've been able to, let's say, operate a fairly large instance with with the relatively. Small team. In terms of AI, I would say, You know, I have a little bit of background in terms of the machine learning type of things like that, in a kind of agree with the security of arm with these. These things are are quite a bit of the marketing buzz around the actual things that go on. But have a little bit experience from I'd say academic level as well a little bit more.

Lawrence Tran: And nothing, I'd say, super practical from ML side, you know, we've done stuff, but nothing too groundbreaking there. On the S side, I or the newer stuff like the late large language models. I've been more of a consumer of them at this point and it's pretty fascinating because it does, you know, work as a great tool to To accelerate some of the ideas that I have, you know, or do some of the stuff that I don't want to do from a thinking perspective, it's pretty interesting. And, you know, maybe for future stuff I do.

David E Jones: A great. Thanks Lawrence. Matt, looks like you're next in the list if you'd like to like to share.

Matt Warnock: Sure, I met Warnock I'm with Richard Custerables I have been involved in the open source community, so it's Well, I started using Linux at 93.

Matt Warnock: I have. Been.

Matt Warnock: in, I've known of David. And and of is since about 2000, but didn't actually start using it until 2015, About 18 months of that was more than enough and converted to mochi out at the end of that time. Period.

Matt Warnock: As far as a guy goes, I've been following it kind of loosely in the development and and keep an eye on it but have not played around with it very much. So, I'm all ears.

David E Jones: Okay, great. Okay, great, thanks Matt. Michael would you like to go next?

Michael: Sure, I can go.

Michael: So I started Smokey out of high school. Wrote some tests. That with mochi, I had just gotten out high school. I was I was doing robotics programming. and I and I Went to school for a bit and eventually. And and that wasn't working out super well. So I decided to pursue a programming career in it worked out and here I am With AI, I did a bit of it in. I was trying to make a completely autonomous robot right out of high school as I was working on these tests.

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Michael: I, I never really got into it a ton. I thought I didn't realize the potential that it had, and

Michael: and even in fairly basic things, but even more somewhat more complicated things, and I've

Michael: I think that it is the It's, it's the new platform shift that it's the, the adapter die. Kind of thing.

Michael: Where we need to, we need to really get a grip on it and and be able to use it in our everyday life, to increase our productivity, whether it's smokey, whether it's GPT models conversational, AI prediction algorithms, all this kind of stuff. And I think that it's A big missing thing in what Mochi is right now. And I think that With a bit of a bit of effort with a bit of work. We could We could really make it shine.

David E Jones: Okay, great. Thanks, Michael.

Michael: Alright.

David E Jones: Rohit, looks like your next on the list if you'd like to. Introduce yourself.

David E Jones: I guess we don't hear from heat. Now, we can always come back by the way for anyone who we skip as we go. Sock thee. You you there available to share?

Sakthivel Vellingiri: You know, David sorry for the background noise. I'm in the train station but The production.

David E Jones: Okay, sure.

Sakthivel Vellingiri: Yeah, so my experience with Moki, it all started with all this, like, other people mentioned. Now we are using all this for some projects, but still continuing to use that but You know, I hit upon Moki just like, you know, other people mentioned where I was. I'm a big fan of David by the way. So and then they started looking at what other new work that he has done and that's how I found monkey. And for newer projects we are using Moki. Currently we are building a finance automation platform. You know, basically automating. Of account, payable receivable and expense management.

Sakthivel Vellingiri: And our goal is to have like a straight through processing for you know it's it's for like service providers or you know service organizations or manufacturing or any any sort of organizations just take care of the finance peace. so, what we're doing is, We are using some you know, tools that use machine learning to process the invoice. So that will eliminate the manual reconciliation part. Currently, we are building the finance payable part.

Sakthivel Vellingiri: Where, you know, when you send the purchase invoice to the vendor and the vendor sends you, the sales invoice. We use a tool called Mindy which you know kind of processes the document and gives you, you know, the invoice details and you kind of match that with your purchase invoice you know without any manual intervention. And also, like, gonna be integrated with real-time payments. So, which means if there is no recon break, then you'll be able to initiate the payment automatically.

Sakthivel Vellingiri: And but if there is any recon break, then it kind of create a reconciliation report and somebody will be manually intervening, you know, to fix the brakes and they can reach right, you know, the financial transaction part and also we plan to integrate with accounting systems and to recon like a three-way recon basically between orders invoice and accounting. Currently we are targeting the India market. So and we are building accountable first then we move on to receivable an expense management. um, and I think yesterday, I was, you know, Dialed in for part of it, I'm currently in India. So you know the timings it is like nighttime here but then I just wanted to mention I know we are trying to build a new team, you know. We just had like fresh out of college folks.

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Sakthivel Vellingiri: And pretty much our source for training is the monkey documentation in the website. And we have been able to go through that documentation, do the tutorial.

Sakthivel Vellingiri: And that by itself is just enough for people to get started and then you know as just like anybody else, the rip open the code and you know, be able to get productive in like two to three weeks and just like one feedback that the new journeys have given is maybe she can add some more code snippets in the documentation that might be helpful. But I know as part of the community forum discussion, we have talked about this multiple times, and it's going to be hard to maintain forward within documentation. So, the best way, I mean, I've been just telling them The best way to learn is to look at the code by itself, right? And that is working for them. So again, like, thanks to the community for the great work. It's really a good framework for people like us to get started and get productive pretty quickly.

David E Jones: Alright, thanks Sakthi. And that's that's an interesting application as well automating. Certain more cumbersome tasks like reconciliation? Yeah. Um, notice someone joined who I'm not familiar with r*****. Abdel Colic. If you'd like to introduce yourself, feel free.

David E Jones: Or if not we can come back to you as well Shabbos. You you around? Oh, okay.

Shahbaz Khan: Yeah. Hello everyone.

David E Jones: Okay. Yeah,...

Shahbaz Khan: So myself,...

David E Jones: go ahead. Jump on

Shahbaz Khan: I started my career in early 2017 with Android technologies. So there I come to me which going to Singh Rajput and he told me about them. Okay, framework. So basically what we are doing, we are using okay to solve various challenges that come into e-commerce individual life of empty vendors. Okay, and as offline, not exposed anything about AI, but I'm very excited to use AI with Mocky as we all planning to integrate. It with walking. So that's it from my head. This

David E Jones: Okay, great. Thank you. And Ruggy, looks like you started talking for a minute if you'd like to Share. Now that would be fine.

Ragheed Abdel Khalek: Yes, hello. Good evening everyone. How's everything that one go everyone doing. I'm ready. I'm from the Clarion company. I'm sorry. I'm on the road. So I just wanted to to go and listen to the conference. It's very great conference, actually, and thank you for this for helping us, with with monkey framework. I love it. Actually, maybe one I want to arrive. I Make a better production to this. Thank you.

David E Jones: Sure. Sure. That's fine. Yeah. Okay.

David E Jones: And let's see what we're going back in the list a little bit. Rohit, if you're if you're around, feel free to share now.

Rohit Pawar: Yes, hello everyone. My name is Rohit Pawar and currently I am working in a hardware commerce and in a, if I can say mockage in my journey of, but

Rohit Pawar: Part X comma to, in which I'll get home, mocking, Multi instance, and and I have started exploring and how to work make work. Mocking Multi instance, and how internally it works. I will understand. And I put the questions related to Mochi, multi instance of, I got some doubts in the Mocky Forum and related and at last by sleight of struggling. Like I have a confusion in the next working, how it is working. How it is mapping a load balancing, it was a fun of me.

Rohit Pawar: So make a worker mocking multi instance. And so I have were completed the mocking, multi, instance, poc, and plus we in a hot wax commerce, we are going to use this poc for in future regarding to like scale up or a multi instance thing and a plus. I also did a poc on a mocking hazelcast which we are using for the Asian Asynchronous Remote, execution services, like Yeah, that's from the side.

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David E Jones: Okay, great. Thanks, right. Yeah. Let's see.

Rohit Pawar: Thank you.

David E Jones: Vince looks like your next on the list if you'd like to share now.

Vince Clark: Okay. You turn my speaker on. There we go. Alright, hello everyone. Thanks, try to make a brief.

Vince Clark: Worked with mochi or because years ago. And I've been working with Moki for the last couple of years operate, under some of you. Most of you, I think on the call, probably, we're on the call yesterday. I operate under the umbrella called the Solve Group solve with an X. And there's a couple of repositories out there with components that are public and open source. If you're interested in checking

them out a sales component and what I'm calling a work management component which is just a simple simple version. Of using work efforts. Aka Simple version of hive mind.

Vince Clark: For Tracking Ticket Products, Project Contest, one notable point. That's interesting to look at on that one is we've converted all the screens to quasar screen. So, you know, a little more modern look and feel and, and gives us a little more flexibility in terms of, you know, not having to do a full page refresh in those kinds of things. So feel free to check those out if you want. Also, for those of you that saw the presentation yesterday, Here's the link to my website with the quote to revenue topic that I that I just passed. It has some screenshots in there, how we're using agreements and product catalog for pricing, with respect to AI, I'm mostly interested, I'm kind of in Guru dorms camp. It's It's a big term, You know, it can mean a lot of things and it's also You know a label that's getting slapped on a lot of things just because everybody's you know, it's what they're all the cool kids are talking about right now. So I'm mostly interested in.

Vince Clark: Practical Use Cases. And David I think a couple that you mentioned are real areas of opportunity possibly or you know around code generation and and how you interact with the application as more of just kind of another interface that's more natural. Like placing an order, things like that. I think that's where there's no opportunities.

David E Jones: Okay, great. Thanks Vince. There's Vendra. Would you like to go?

Visvendra Rajpoot: Yeah. Hi everyone. This Will Shrender from Annoy Technologies and I started my career with the exploration of obese in 2013 and I started exploring Moki from 2014 and I built one of the projects application while I was working for hot work systems at the time. Which was built on top of Smokey. And after that, I have build so many applications on top of

Visvendra Rajpoot: Smoky Framework and I started come a company. I know a technologies in 2016 and since then we have been providing the services development and consultancy services on top of Smoky framework. And I also started another company at. I mean, in India if in media private limited and that is providing the smart city solutions, to urban local government bodies, the municipal corporations and all So those all solutions are also built on top of smoky framework. So it's been like, I mean, the backbone for our company is monkey framework. So End-to-end. All the developments that we do here. That I know that countries are mostly based on the hockey symbol.

Visvendra Rajpoot: And when I talk about the AI opportunity that we can have, certainly because I explored yet deputy for generation of the code for various languages, even some languages like fine script. So I mean That was really great to see a lot of lines of code. Being generated so smoothly so nicely you know like few minutes. So I would like to see that happening for Moki Fember also like I type something and it writes, the code for generating, the screen or like services. So I don't know like how and how much time that is going to take but certainly, it will be great to see those things happening.

00:45:00

David E Jones: Great. Thank you.

David E Jones: Before we move on, is there anyone else in the conference room? Who's not, who hasn't joined directly and is intend the list or that's joining with anyone else?

David E Jones: No. Okay. Hopefully, we got everyone then.

GuruDharam Khalsa: And we would add 30 minutes to this session and cut lunch. And

David E Jones: I think you're doing that extending a little bit. Yeah, yeah. Okay. Yeah, might as well sure.

GuruDharam Khalsa: Oh yeah.

David E Jones: The. Let's see, as we get into this. And a couple of other thoughts like when I use the term artificial intelligence. I think about it as the old school term, not large language models or machine learning or anything and in particular but the the entire umbrella and

David E Jones: The SO that includes primarily things that are based on neural networks and and forward and back propagation algorithms and that sort of thing. But there are other things that emulate human intelligence. I suppose you could say that that would fall into that category. One thing that I firmly believe in is that while artificial intelligence is a very useful tool, it will never replace human ingenuity and and what humans are capable of. There are certainly a lot of things that humans do in jobs and the funny way we structure society and organizations that can be replaced or heavily augmented or improved, efficiency improved by use, of artificial intelligence tools. But, but I'm still a firm believer that especially with more open access to artificial intelligence that it's not

David E Jones: Thing that would replace humans in society would help each human and society to be much more productive. And, and able to do the work they want to achieve their goals that sort of thing. So,

David E Jones: The. And and it's interesting looking at, by the way, I forgot to mention on the topic of the ultimate with alternative to screens and knowing about services in which services to call part of the reason I think that is a better application other than manipulating data directly in the database is because artificial intelligence itself and including large language models that are getting more advanced have difficulty with mathematics and and getting exactly the right things in the right places with with the, with a very good consistency. So there's sort of a balance there between what is algorithmic and predefined. And then what is kind of figured out on the fly by by some sort of artificial intelligence tool? um, so, that said,

David E Jones: Let's see, I guess. Some mentioned, having done specific things with it.

David E Jones: And they're let's see a mirror, For example, you mentioned you you tried playing around with some feeding mochi details into it and and code generation. How was that like how successful was that in terms of generating useful things or, or helping you with with tasks, you have or other experimentation you've done?

Amir Anjomshoaa: so currently there are some cons to the process specifically especially going through just the chat GPT process for everybody is more familiar with You still have to feed it, a lot of data, in terms of being able to explain the system to him, like the packaging structure, or maybe basically the services in use and the purposes behind them. So, currently, as what you said, correct, it doesn't have that much understanding of trying to figure out the algorithm behind it, or basically being so smart enough to understand certain services and the task behind them to benefit those services in the code that it writes for you.

Amir Anjomshoaa: And one of the other thing that it kind of, like, got me interested in learning about vector databases and because of memory management issue and we're currently most of the GPT

services out there. You have a limited amount of data where you're the GPT instead itself can remember and can reference on and move forward. This is more. Like, if I want to feed it the whole universal data model and maybe give it two more schemas after feeding it. The second, schema, it would start for getting about half of the universal data model. As it goes forward, the issue becomes more memory management system, right that it needs to basically remember these tasks. So this is where I kind of did it prompt engineering. In terms of, hey, Here's a summary of everything about mohani. Some of the use cases that it can do, what are everything is used for services screen and then from there being able to output some results,

00:50:00

Amir Anjomshoaa: So, that was one of the cons that I had. But realistically, some of the main services that I was able to basically implement with it was, I was able to explain to him. What is order header? What is order item as an example? And from there, maybe given tasks on aggregating, some data on these entities or Write me a service where you can join a couple of databases together, make a service call. From there, maybe like Cascade, like, concatenate the first name and last thing together give me an output, very simple straightforward services, where it can basically look up on the information. I gave it to him to practice on and give you an output on it.

David E Jones: Interesting. I wonder if those, some of those things, I guess are probably limitations to the, to the systems like that are built in like chat GPT and

David E Jones: Possible solutions are additional training, especially with open models where there's more potential for that. You can only do so much of that with the commercial ones, but with open models,...

Amir Anjomshoaa: One second.

David E Jones: where they could be, additionally trained on most specific details.

Amir Anjomshoaa: Absolutely but then from there, there are these recent tools where like something like Autogpt where it's a combination of Gpt itself, creating a multi-thread process of multiple agents on there, GPT, and being able to communicate to each other, we're expand the memory knowledge. Now, it's basically having 10 instances of GPT running each with their own limit of memory and day. Now, can all remember a certain task and they can communicate with each other. My recent experiments being with that kind of a concept, which is currently called Auto GPT, which is just basically based off of the Gpt4, but With little bit more data management behind it. And but a little bit more tools added on upon it, to be up to date with the news, having access to the Internet and being able to just practice based off of those.

David E Jones: It's interesting neat. Yeah. Great. Thanks, Amir. And then Michael, I think if I remember, right, you mentioned you had done some experimentations worked on some things. I don't know if you were going to talk about that during your presentation or if there is there's anything you'd like to talk about now.

David E Jones: Figure out Audio.

Ayman Abi Abdallah: For synchronizing. So,

Ayman Abi Abdallah: My website basically put it in the Making Python program. And I would basically able to index a whole bunch of different logic different data. And then AI was able to, I was getting to figure out the document. I'm not sure how many chain does it, just? But it was actually able to where he is

the very softness in memory database and find which one was most relevant for, the question that I was asking. And and wasn't super great at I was, but

Ayman Abi Abdallah: Mean, exactly right. That the problem to actually use it with such a company, you just understanding the services. It requires something like it. It's all about, and it's it's smart, but it's, it has a very small memory. and so, what we need to do is we need to We need to have some like an electric basis. But let's start right now. They're basically doing that I'm but they're Basically, taking this massive. It's not. And it's interesting because it's, it's actually using the AI models to use. which is a, which is like

Ayman Abi Abdallah: Super Easy, Semantic Search. So if you have one documents in database then either able to Embed. The. Embed the difference.

00:55:00

Ayman Abi Abdallah: And ideas that the text represents in a way. Because we search through.

David E Jones: I would last you Michael the audio. I think you were it was going through Amon, so

David E Jones: And aiming you're on mute still. There's That's okay.

Ayman Abi Abdallah: Yeah, sorry about that. He won 20 seconds.

David E Jones: You're talking about documents and I don't remember exactly what it was, but yeah.

Ayman Abi Abdallah: Okay, yeah. So basically the Was him to do is a semantic search where you have all these different documents and it's basically indexing them in a way instead of being married. It's But I mean this is actually good numbers, but that's fine. it's like, I think that for Something like It's the use of such a complicated system in asset. It has to get you that isn't searched right with natural processing. So the actually asked the database but that's the databaser but it's documentary, relational. Whatever. In asking for surgery, It's the medicine.

David E Jones: Yeah. That that reminds me of another one that I didn't include in my list earlier, but I think you had talked about at one point Michael is the Maybe a different sort of document, I think maybe you're referring to, like elasticsearch documents and such as opposed to documentation sorts of things, but the

David E Jones: The potential for, I user support with a chat bot of some sort that has been trained on all of the Mokey documentation, and other things, when the forum and other resources that are out there, and if it can read code even better, and explain, like, How do you go about doing this? Like, How do I sorts of questions? Like, How do I record a credit memo for for customer service reasons? Or How do I handle an overpayment or less frequently, less frequent things like that that people sometimes need to do especially, or more or developer documentation. Like How do I

David E Jones: Structure this form on this screen so it looks this certain way or or whatever. The.

David E Jones: Yeah. So for documentation, kind of a text generation as opposed to even Providing references to existing documentation which would be useful like kind of a fancier search I guess but but even describing based on what it learns from reading the documentation, how to go about certain, things would be would be a need application for it.

David E Jones: Let's see.

Amir Anjomshoaa: Alright, to add one more thing for you. David, but you guys are saying is also like the newest thing that just came out...

David E Jones: Sure.

Amir Anjomshoaa: which has been an on and off beta where it's called the coding interpreter right now that it's being created by the open AI company and...

David E Jones: Hmm.

Amir Anjomshoaa: it kind of has this concept explained in pretty nice details where you have certain directories. So it's basically like an IDE, you define certain directories in certain directories, you define certain documentation, maybe how to do and the schemas of your system where it can be a point of reference now. So, instead of using the memory to being able to always remember all of these information. Now, I had the point of reference to. So, basically, based on the tasks that you provide, it would be able to chop it up and say He wants to create a service. Now, like, maybe it's a reference to the schema that it tells you how to create a service. And if the service is that to you to use a certain entity, now he uses the point of reference, where I know where to go, look up this, entity the documentation on it.

Amir Anjomshoaa: The use cases, may be honored and how I should approach this process. And instead of using all your memory to remember, all of them is now a point of reference, this is the newest thing they have implemented, which is mainly for coding presentation. And that's where I think is headed. I think we're saw the very beginning stages of this, but it's definitely coming up along pretty nicely.

01:00:00

David E Jones: Interesting. Yeah, that's that's neat. Actually the term code interpretation, I guess that's that's getting to something very specific there. But another potential application is like If the AI can read through existing code and then describe in in English or whatever language in human readable form, what it does then summarizing it or in detail that that could also be very useful or even to the point. Like when I push this button What's it going to do? And a lot of people using moki applications have that question frequently. So

David E Jones: Um, yeah, that's great. I guess. Adam you mentioned maybe you and Ian were going to talk about some things in the next section. I guess that was mostly focused on Kubernetes but is there anything that you guys have done with AI that you'd like to share in this session?

Ayman Abi Abdallah: I want. Yeah, I'd say I'm everything. I've done is fairly preliminary, you know? I've played with Ling Chain and Llama CPP to be able to run some of the models just on CPU. I think that the Star Coder project is really interesting which is a specialized open source code, LLM targeted. It kind of doing a co-pilot like feature. So you know that I think we can talk. Yeah. Like, some of the discussions about the memory or I think we just content memory, right?

Ayman Abi Abdallah: And it's limited. And so I guess what we want to do is a fine-tuning where you take an existing model and then further train it on the mochi materials. And so that then it's sort of working memory is focused on your query or prompt or whatever you're trying to do or maybe like some of your live train tracking data. But that the baseline code and schemas and everything in Moki is already trained into the model so it doesn't have to consume the working memory. So I actually did research a bit about

that kind of process. Yeah. And what I realized is that, I mean that people actually do it. So the actual format of the response and the but rather than the actual knowledge that

Ayman Abi Abdallah: But like most of the time like but actually getting that knowledge in there is another process. Because like I know star credit they had to start really based that covers like 80 different programming languages but then they have a fine-tuning on top of the base that's for Piper. yeah, and like it sends its knowledge for Python so like we want to Take the base and train it on Smokey and Smokey's infrastructure. Yeah, so yeah, probably. I mean, I honestly, I like, I'm again. Totally green and this stuff some emerging so quickly. It's like, it's hard to even keep up with what's going on. Let alone do something. Yeah. Right. What what I would like if I had a magic wand that I could wave.

Ayman Abi Abdallah: I back in the university days. I majored in software, testing it, computer science and and my work towards the master's degree was related to software testing. So at the time, there was a concept called testing software by following something called a du chains, which is definition usage, chains and the concept says that if you find all the definitions for a variable and you test all the usages successfully, then you basically tested that piece of code. So what would be interesting is if we can have like some sort of AI tool that would examine a service and derive. Test cases based on. Do you change? That would be.

Ayman Abi Abdallah: Something interesting to improve the quality of the code.

David E Jones: yeah, that would be good application, especially with Continuous delivery, sorts of processes, and having more confidence. And

David E Jones: Either. Avoiding regressions or new functionality as much as it can understand those things, you know.

01:05:00

Ayman Abi Abdallah: you know, because I think the trend is, you know, people want to take AI and add at and so I think a better initial usage would be Okay. Let's let's use AI to improve the quality of what we have first. And then we will think about adding

David E Jones: And even like, and that's an issue with anything that comes out of AI, especially in these early days where they tend to just make stuff up and, and including with code or or other things that they generate other things, they do. So, having other AI, that keeps an eye on what the AI does is might be a useful application. As well as keeping an eye on what the what the humans do in some cases.

David E Jones: Huh. Yeah, that's an interesting point David. Yeah.

Matt Warnock: Are you saying that that automatic coating still requires code review?

David E Jones: You pretty thorough code review.

Matt Warnock: Right.

Ayman Abi Abdallah: Oh, do we want to take a short break before jumping into the Next topic.

David E Jones: Sure. Yeah. Why don't we do that? So we've gone over a little bit but I think is there anything else anyone would like to talk about before we close this session on mohanai? I was wondering

if anyone had looked into. Mosaic ML. I've heard that has come out, the MPT 7B model. It's, it's one of the large language models and it's says, It's open source. I was trying to look up what the license is, but I haven't been able to find it yet, but anyway, that's that's one of the more successful open ones that I've heard of recently. In terms of some of these standardized tests that are that a bunch of these large language models are being run through.

Matt Warnock: What was that again?

David E Jones: Mosaic ML. And you can see it at Mosaic ML.com.

Ayman Abi Abdallah: it's crazy how fast like, It, thank you. If it's progressing so fast that it's like, is it really? Like how much is worth putting time into legacy project?

David E Jones: Yeah.

Ayman Abi Abdallah: Yeah. Wait, so it's going so bad. It's like by the time you learn it.

David E Jones: Up. Yeah,...

Ayman Abi Abdallah: There's another project that you should learn. Exactly.

David E Jones: it's crazy. Yeah, it's yeah. um,

David E Jones: Let's see. Yeah, okay. Before we close the session. Oh, looks like janvi, is that how you say your name? Looks like you just joined. We were doing a round of introductions and people sharing their history with Moki and the topic of this session is smokey and artificial intelligence. And so if you've done anything along those lines, sharing about that as well, would you like to introduce yourself?

Janvi Talreja: Yeah sure. Thanks David. So I'm Janvi Talreja and I work with Heart Attacks Commerce as a software engineer. I've been working with them from the last two years and I've been primarily working with Mohan. Knowing something around data, models and services. And Working on integration systems and that's my history with Monkey, and that's how I got started with that. So

Janvi Talreja: A talking about Maqui and AI, really haven't done much work but really haven't thought that way in terms of Moki and AI together. But since AI has been trending, a lot and a lot of things that we can do with AI so integrating Rocky with the I may be using them together would definitely be something that I and a lot of people in my team will be looking forward to. So maybe from all of your conversations, I'll take something back.

David E Jones: Sure. Yeah and we've recorded these sessions so you can you can watch them later as well and share them with your team. So great,...

Janvi Talreja: Yeah. Thanks.

David E Jones: thanks for introducing yourself. It looks like there was one other person who joined as well. Oh Ruggy, did you have something you wanted to say?

Ragheed Abdel Khalek: Yes, hello everyone again sorry for that. I just finished my work, it's seven in the evening gear. So we've been working on mokis since a long time ago, right now I'm not a technical person, I'm a computer science but I left development since since sometimes so I'm I consider myself a business,

analyst more or functional. We worked on one of the ERPs with one of the construction companies and we used a lot of more modules.

01:10:00

Ragheed Abdel Khalek: Available in Milwaukee, starting from the party management to the procurement purchase requisition, purchase order, shipment receiving issuance and definitely the accounting system and we added some kind of segmentation segmentation on the accounting system. Like you, you add the project to add the department to add for more cost management...

David E Jones: The picture.

Ragheed Abdel Khalek: because they one of the things that they criticize about the system maybe because cost control. So we did some segmentation on that counting part And we also added some stuff related to projects and the tasks like what material they issue when the issue material. And from from the inventory, what, how do they determine the cost of these material and, and also the human resources, like What are the rates of these employees? And also the equipment, we use the time sheets for both the employees and equipment.

Ragheed Abdel Khalek: To make some kind of cost control on every task within the project. So we use a lot of modules and inside the inside the ERP, and definitely we extended many, many modules that are not available, and will be happy to contribute on this later on. Also, I started a new company in end of 2022. We also used the monkey entries to make some kind of product related to Social Support. I called it social support platform where contributions contributors and beneficiaries are linked together to where the contributors, you know, our countries and stuff like that. So they like of social support where the contributors contribute money to the organization, like an NGO stuff.

Ragheed Abdel Khalek: And the beneficial is take. We use the request entities for like healthcare for social support for for a career, for experience, five kinds of different requests. Also we use the financial accounts for this to make some kind not accounting system. The financial accounts so that we we know each beneficially how much we we gave to him and each contributor how much we he contributed. And we used the project management module as well like a crowdfunding as as kind of crowdfunding. So it's still in process but I would like to say one thing about the look and feel that yesterday Guru has already mentioned. I hope that the look and feel can be

Ragheed Abdel Khalek: We work more on the look and field because sometimes the clients repel such such look and feel. So we are obliged to do what Guru has said that we have to avoid it, the making APIs. So what we're using the API system and connecting it with the front and and other other Front and systems. And for example, I'm using also that chatbots right? Right now through Whatsapp.

Ragheed Abdel Khalek: To create beneficiaries to create contribute contributors through Whatsapp. So this is part of the AI that will trying to introduce. And I would like to add something regarding to, to messaging if we can do, since there is a messaging module, also inside monkey, if we can do, like some kind of summarization one for the customer support. So, once one person sends a message to the customer support, after five seven days or many tickets, we can have a summary of this customer, so that when the customer support, sees our opens, a new request, gets a new request from my customer. You can see his history because every time you call a customer support here you have to repeat the whole story from the beginning because he doesn't have the time, maybe to check all the messages sent or

tickets opened. So this is one of the things also, we should take it into consolidation in addition also to the, to the auditing stuff, if we can, for example, make an AI module where

Ragheed Abdel Khalek: What to see, which, which orders are maybe for,...

David E Jones: And interesting.

Ragheed Abdel Khalek: again, the preferences of each of each customer, that would be a. Also, a good idea to

David E Jones: Yeah, yeah, summarizing because you can get all the communication events and so on that stack up over time or notes on on parties and orders and they get scattered around in different places. And yeah that's an it's an interesting thought. Okay? Well that great thank you, ragheed; and see another person who joined and we'll close this session soon and take a break but girindra wanted to give you a chance to introduce yourself.

01:15:00

David E Jones: You're unmute looks like. There you go.

Girindra Mohan: People. Thank you. Thank you David. Hi everyone.

Girindra Mohan: Recently, I'm working on development part also in Moki, but mostly my work is in develops. Part means deployment of the monkey. So I always follow Michael working the forum. So he always mentioned everything. Yeah, how we can use Docker coordinates and the deployment file and Docker composed file. So, all those things and we have done tremendous job in forum. Also to bad system, keep somebody is doing and somebody is coming up commenting, the questions and we will get the badge, all those things but mostly my work is related to the Devops part so how we can do the deployment in best way. The walking like content and so, and I'm helping wins because I am working with the Vince. So aliens always want to do different different things in our employment part also. So currently he's just yesterday, he already stood everyone, how he's trying to use the AWS market.

Girindra Mohan: This so when everything gets done in my AWS, then we will move to a jure and the CP. So everything is moving slowly. But let's we will catch up and we will make some extender deployment method for everyone should follow. Also, because you already done a good work in deployment parts, in Docker Also, you created how we can take database back up all those files also you have created, okay and if somebody use postgres and my sequel. So all those deployment composed file you already done that but I will also learn from all those files and make some contribution in future. Definitely And thank...

David E Jones: Okay, great.

Girindra Mohan: You are giving good opportunity for everyone to contribute and do something. Thank you. Thank you everyone. Thank you. David.

David E Jones: Okay, great great. Thanks for sharing your Andrea. That's that's a good lead into the next session where Ian and Adam will be talking about well titled patterns of Kubernetes. So it'll be look forward to seeing what they have to share there. Why don't we close this session? Take a break for about 10 minutes or if we can get started a little bit sooner than that, then people are gathering. Then we'll do that to move up some time. But we'll go into the lunch hour a little bit. And in and Adam if you can, you know, see how the timing is on yours. I don't know how much time you need or planned, but I get still

about 45 50 minutes in there. And then we'll take a late lunch. And, and if we need to go a little bit later into the hackathon and such, that's, that's probably fine. So thank you for sharing everyone and

David E Jones: Let's see, I should stop the recording now and then we'll take a break and meet back here. So, see you soon.

Ayman Abi Abdallah: Wait. So it'd be great to have all these here on the what he calls. Every two weeks on Friday. Just but I mentioned here.

Ayman Abi Abdallah: Because it's great, it's great time. to talk about all these ideas that we have, all right. Smokey monkey or other like your other? Yeah.

David E Jones: Yeah. That's it. That's a good point. Yeah, reminding about the the calls on Fridays, every two week which would have been today except we're doing the conference. So in another two weeks we'll have that open community call and yeah that's a good place to join in and we get into a lot more depth on different topics there too. And more kind of open free discussion on things. So yeah. Good reminder. Thanks Michael.

Ayman Abi Abdallah: So, don't have to wait for one year to exchange, good idea.

David E Jones: All right.

David E Jones: Yeah. Okay, great. Those.

Ayman Abi Abdallah: See you in a bit.

David E Jones: Yep. See you back here soon.

01:30:00

David E Jones: I don't see many cameras coming on yet. Are people starting to gather?

Ayman Abi Abdallah: We don't have everybody back here yet is your head. He's headed back or not.

Ayman Abi Abdallah: I guess we're doing that and we're

David E Jones: Okay, well I guess Ian and Adam. Let me know when you're ready to start.

Ayman Abi Abdallah: Really loose on it. Yeah. That's why.

David E Jones: Yeah.

Ayman Abi Abdallah: Let's see. Michael Ayman. You guys want to? There we ready? David's asking mine a little bit.

David E Jones: Hey, Al good to see you joining in. Are you on mute? But

Al Byers: It's good to be here. so,

David E Jones: yeah.

Ayman Abi Abdallah: Everybody, everybody think this mic and everything works, okay? I muted It's like, we can use that one. That's okay, good. Let me make sure does it get confused If we by share from this screen, Use your mic. Is that at all, that's okay. I guess it would.

David E Jones: I should be okay if you can one thing I should notice that I noticed in the transcriptions it identifies who's talking by which, Connection is coming from so like who's microphone that's coming from so we'll have some people misidentified but

01:35:00

Ayman Abi Abdallah: I'm the most active person on the call that

David E Jones: Here, incredibly active. And yes, all sorts of wisdom coming from you.

Ayman Abi Abdallah: Was impersonations. They're amazing too.

David E Jones: Yeah, yeah, your voice skills.

Ayman Abi Abdallah: And okay, can we see this here? Yeah, good.

David E Jones: Yeah, that's coming through.

Ayman Abi Abdallah: so, this is what

David E Jones: Well it's let's see. Yeah, before you ready to get going?

Ayman Abi Abdallah: I think so. Are we ready? Yeah.

David E Jones: Okay, so I'll start the recording.

David E Jones: We're ready to go. So go ahead. Ian, I'll let you take it away.

Ayman Abi Abdallah: Okay and Adam and I guess are just going to kind of trade off, we didn't really rehearse. So forgive us for any, any wandering or being disorganized, but this is not gonna try to be a talk, really to

Ayman Abi Abdallah: Introduce Kubernetes or really deeply educated about Kubernetes because it's just, it's a big topic area. But we're gonna try to give a perspective on how we got started with it, and why we use it and what we like about it, once we got into it and how we've leveraged it. Now, how we probably, you know, that I didn't, we are trying to use it for everything we do because it's it provides certain capabilities that just once once you get over the learning curve which is significant for sure. Um, it does provide real value though that the learning curve, I believe it's worth it. Yeah, yeah, but so it's, I hopefully everybody knows a little about Kubernetes it.

Ayman Abi Abdallah: you know, it's it's basically, whereas Docker, lets you manage containers, maybe on one machine, Kubernetes is tailor-made for managing containers on a lot of machines and sort of, you know, managing that whole ecosystem of containers, interacting with each other, and before you switch slides, the two graphics at the bottom of this slide is a hint after what's going to come later. The left side shows usage. The right side is a snippet of a monkey machine that shows the bill for the usage. That's in the left side graphic. Desert seconds. But this is a bill word discounted. Because yeah, it's like that of 952,000 compute seconds.

Ayman Abi Abdallah: So and then the left side is a tool called grafana and sort of each band of color in there is an individual compute job and it lets you see all the jobs running together over time and how much CPU they're utilizing. So, Um, we came from both biz on Docker. We were early docker. A doctor. And we really benefited from the sort of the discipline that you get from packaging, your application as a container. because at the time we loved off Biz, it was

Ayman Abi Abdallah: A black box application, it just worked. And so we used it for all the customers we had. But then each one had kinky their requirements and alterations and changes that they needed custom to their system. So, we packaged each customer's office in their own doctorage, and then deployed them on the same machine. And it allowed us to isolate all that stuff without having to allocate many virtual machines which particular customer or physical health. And that when you're developing like it,

Ayman Abi Abdallah: You know, if a customer is right isn't necessarily pushing updates as hard and they've just been in an operational mode, and you have to come back to their job that all your dependencies, you know, are packaged as a unit. And so if you're have a new job where you're adopting new, you know, versions of libraries and older job that you're having to go back to those older versions of libraries. It's super easy to switch between them and you and everyone else you're working with on the, on the job have consistent dependencies and you don't get as much of this. Well, it works on my machine kind of thing. So that was a big win. And we moved to Kubernetes specifically because we did a 3D rendering intensive job where we needed a lot more CPU than a single machine. We needed to harness a whole network of machines to do what we're gonna do.

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Ayman Abi Abdallah: I was watching Ian while he was doing a watching, of course, being listening to him, complain about stuff and his initial attempts were doing it by hand.

Ayman Abi Abdallah: Where he got the request from the customer and then would set up a shell script that would run all of the render jobs in series on his desktop initially and then started running them on a cloud machine, still one at a time and then it played a little bit with tech time to do a little bit of scheduling of that. Give it a shell script. Yeah. But it was still kind of limited in how many machines that were scaled well and we really the problem. There was yeah, we initially did it using Jenkins and the The I I use the terraform pipeline and Jenkins and it would provision a machine to run each render and then shut it down when each render finished. So we were wasting a lot of machine time, you know, starting and stopping machines. It's sort of pointlessly. But that was just the way the Jenkins Terraform pipeline work. And so we needed something where we could

Ayman Abi Abdallah: Up all these jobs and then sort of then spin up machines to process that cue on demand. But then use the machine over and over, as long as there are work items in the queue and then, as the cue gets emptied out and the work goes away, then spin the machines back down, and we looked at a number of different options. Adam spent some time with Dr. Swarm. Oh yeah, there's a I was trying to get doctor's form to run in Docker initially because I didn't have hardware at the time I could run enough. So and this was a valid way to do it. They said if you wanted to play with darkest form, just set it up to run nested and not. So I set up a three notes warnocker Well then. my UPS battery decided to

Ayman Abi Abdallah: Give up the ship, they died. And my computer rebooted which is normal Power Loss app. Well the three note darkest form is that? Oh we can't reach Forum. Yeah, and couldn't recover from a power outage. And I'm looking at this form, I'm not looking at the code, I'm just looking at the Or

you're pushing this as a fault tolerant, highly scalable recoverable system and it can't function when all the nodes of the cost to go away. I don't trust you. Bye-bye, see you later and I just said, We're not using form. Yeah, and there was, I can't remember. Now, there are other things about swarm that just seemed not ready for prime time. And so even though Kubernetes

Ayman Abi Abdallah: Was on being on the front end of the learning curve really? Well, it's a lot to figure out. It just was pretty obvious that it was already kind of the dominant player. And so we just, you know, that's what we did. And we learned how to use it enough to do what we're trying to do. Um, so the

Ayman Abi Abdallah: That and scaling and like auto scaling scaling. Hardware scaling processes is something that actually Kubernetes has a lot of support for us deep support for and that complexity as you, I think maybe a good way to put it is, you know, everybody that everybody that tries to avoid using Kubernetes is going to recreate Kubernetes you know, like that to get its capabilities, you end up with something complicated and I think that was sworn was trying to be more simple but it just you you end up With the tools that Kubernetes has if you're trying to do the tasks that it does. So I think it's it's worth it to get it. The flexibility and the ability it has to like, create

Ayman Abi Abdallah: Application specific zones with different hardware, for different, kinds of tasks. And you know, spin those up and down independently our very robust in Kubernetes, which is definitely, you know, got to be a part of it coming from Google where they knew that upside down backwards. I don't have too much more to say on this. Taking a topic, We get these fees for free from Kubernetes so anytime we're doing a lot of different Compute resources. It just works. And that's a benefit for us having something that just works. We don't have to write.

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Ayman Abi Abdallah: Um and so for development we we went through I actually started on Cube Admin or Cube ADM to trying to use it to develop on my desktop and that was kind of painful way to start out. I did get it working but it was not easy. And then also we still had a, quite a few applications that were docker based and so you know, kind of Docker and Kubernetes were, you know, fighting over who gets to use the network card and stuff like that, it was, and I just kept looking for something better and that's how I came across K3. Yes and K3d, which are from Rancher, who rancher makes a really nice UI for managing Kubernetes and they built a version of Kubernetes that has scaled down services. Targeted specifically, it like you're developer running.

Ayman Abi Abdallah: That he's on a low resource machine. I mean, when I say low resource, I mean kind of in the sense of your laptop as opposed to like a giant honken server and then pay 3d packages k3 s as a docker container. So you can actually run multiple docker. Plus you can run multiple Kubernetes clusters on your laptop and you know as long as your application isn't too aggressive, you can actually run two customer jobs at the same time and be able to bring one up and do something without taking the other one down and that's a huge convenience. um, the comments on this, you work here while Ian was working on Cuba. And I was also kind of Raising him to the goal. We were both trying to figure this out at the same time and

Ayman Abi Abdallah: he did win eventually. And so I kind of stop off on some of that, one of the issues I had you bad and it's It have no opinions. And so you end up having to pick all the different backend, implementations that Kubernetes that you deal with and that was too much at the time, whereas, K3s and K3d. Came up with simple defaults so it just worked out of the box. Yeah. And then we could learn

Kubernetes particular object definitions without having to deal with all virtual drives, virtual CPU and virtual network and all the other things that give too many terms like

Ayman Abi Abdallah: Although, within the when you do get into actually running it in production, you admin actually is a is great. And that sort of lack of opinion does give you a whole world of options about how you deal with the network. How you deal with storage? How you deal with your compute. So, the that there are whole pluggable you can completely change out. How the software defined networking is defined between, say flannel lb and your storage, same thing. So that there's a lot of discipline in Kubernetes for making these resources, generic and pluggable. And that is also a huge advantage of Kubernetes

Ayman Abi Abdallah: And I think is letting them continue to really innovate because those opinions aren't baked into the ecosystem. It lets people go. I've got a new idea for creating storage and they can create a storage layer that that is can plug in. So, another tool helm is the kind of dominant software deployment.

Ayman Abi Abdallah: System for Kubernetes and you could, it's similar to Docker, but it has way better templating like to template. The, the definitions you could think of it as a docker file where you can have, you know, decisional logic in the Docker file or in the Docker compose, it's more like Docker compose, but importantly it also is hierarchical. Like you can have a docker compose that refers to other Docker. Composed would be the analogy and then Helm file is a tool that sits on top of that sits on top of Helm and it actually can rewrite helm files. So in you can do things like and you can it's like a macro processor where you can rewrite somebody else's chart, even if they don't expose that functionality, is an option. You maybe have another analogy.

Ayman Abi Abdallah: A helm chart is similar to a Debian package. And then Helm file is similar to a PPA. Yeah, there's a little bit of overlap there where you, you can have repositories of packages and install all of them and then configure their scripts to work together or separately. it's Go centric, it is ghost and you're very ghost-centric. The variable Russian logic is no templates. So, okay, yet another term do you learn? There's a lot of that in the Kubernetes landscape and the large learning curve. And so another capability that Helm file brings with its rewriting

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Ayman Abi Abdallah: Function is this idea of environments where you can retailer the deployments based on your based on the environment you're deploying in? So like you can have your local development environment and your staging environment and your production environment and have the chart rewriting the different in each of those. So we got an example of this, yes, coming. So there's a lot of tens up learning heads up talking about the things thinking stuff out before you get into the fun areas code.

Ayman Abi Abdallah: But I do think you make a good point with the idea though of Helm being like a debian like a dad like a Debian package. It lets you really compartmentalize your infrastructure in a way that is generic and reusable, like is components. So whereas in a docker composed if you make a docker compose for one customer, it's got a lot of that customer stuff baked into it. Whereas if you make a helm chart that then you can, if you break your application down into separate, helm charts, like we have a monkey helm chart. We have, you know what we have.

Ayman Abi Abdallah: You know, that our postgres helm chart, you have your mail server every those each of those becomes a separate component that you can pull in and stick together and it lets you get a lot of reuse out of your out of that, that infrastructure definitions. So, will you have a slide moving forward? Where that shows how you put all these together? We some that yeah like

Ayman Abi Abdallah: Now, that where is that? Okay, keep going, keep going. Well, we should talk. Yeah. Um, not actually serve your flow. Yeah, no. And actually, the continuing on some of the just raw capabilities that Kubernetes has in contrast to docker. So, in Docker, when you define a container, say, your database, it that container, it starts up and you're running postgres, but it's kind of that you have that postgres container, you can't, you can't as easily sequence, the order that they start in and tasks that happen in the process of doing that. So Kubernetes has this notion of a side containers that are like containers that run before your container so that then the actual main container doesn't know anything about. So you can do things like this. Slide shows that I want to fetch my backup from S3. I want to start a copy of Postgres just to load that back up and you know, let's say with F Singh turned off. So you

Ayman Abi Abdallah: Go really fast. And then I want to start once that all succeeds. I want to start postgres and then my the mochi container. Meanwhile, here you the monkey container that second row there. Our first attempt at the Moki chart use the pre-existing prevail monkey demo image. We did that on purpose. So that we could, of course not, we write it while we were figuring out the best, the parts we needed in Kubernetes. But it also validated that what we had was, Going to work in a real environment that we didn't have our own opinions built into the monkey image itself. And treated it like a black box like everything else we've been talking about, we just trust the software. So once we had that going Generally.

Ayman Abi Abdallah: The monkey demo image immediately starts Java and it goes off and tries to connect to the POST database. Well. In Kubernetes land. It is defined for everything starts up at once. Magic happens, and then everything works. But of course that's not the way real world works. Things start in parallel or their delayed. And so you've got to kind of wait a little bit for things to get settled in the system. So using the existing monkey demo image running as a container. We had to use helm file Patches, which are coming in the next slide. to add a

Ayman Abi Abdallah: Bash shell script, effectively. That fetch variables. And then another image possibly that uses a postgres image to then say Hey postgres, you're ready, no, wait a postcards, you ready? No wait. And just continue looping like that. and then a nut image after that, that synchronizes the database does a system upgrade or run seed or whatever, Does that first? meanwhile, while all of these init containers are going, the front end knows that the mochi pod isn't ready yet because it's in an interface.

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Ayman Abi Abdallah: So it can put in a special web page saying. It's not ready. Please? What not ready. Please. Wait with if we just immediately. Ran monkey. It would say matters. It's not ready here already error so that's why it did container phase is much better than Kubernetes in compose area. Or a darker area, you can't. initialize Containers in Sequence, You can add scripts to a container using volume modes, but you can't really add new binaries into that like, you can with Kubernetes and it containers So you have to rewrite, the entry point, you have to be right there. Any point inside of a regular docker container to do this kind of

Ayman Abi Abdallah: Practical step traffic to visualization from. So it's like a wait state it's a waiting. You can do whatever you want without having to tamper with the upstream image and I guess it's worth. When we're saying the original mochi container that if we were clear Kubernetes uses docker containers, you can use your existing docker container, but it gives you this extra layer of control and kind of traffic control on top of it. And then so I don't know if this is gonna be readable but this is a specific example of using environment settings and switches that you pass in to change what the chart does. And this is actually an

example of a patch where we're adding Adam, what you explain this. I think this is yours. So in how Eighth one of its config files. It's yeah, but it's also more than you

Ayman Abi Abdallah: and when it first reads the text device it interprets it as a gold template that first and so you see the double curly bracket goes into the gold template syntax and it gives you binary conditions and you can look at variables and this is showing that Is the postgres image going to have S3 connected to it? It is. Okay let's go modify. The postgres are stateful set. We're going to add a temporary directory to store the S3 backup. We're then going to attach that temporary directory to the restore backup container, which already exists in the staples.

Ayman Abi Abdallah: Then we're going to add the init container, before the restore in the container to download the S3 files.

Ayman Abi Abdallah: In here. The secrets. Necessary for that are in the container only. Post, Press Run On never sees the S3 access parameters. Those are a security layer requirements. So you can do all this fancy stuff in the Indian container phase extracting things. We've got one example. To speed up developer process where we fetch the file from F3. I do a z-cat. Count how many bytes are in this historic? And then the one example I had it is one gift. Then I add a postgres, config snippet, that sets the wall wall. To the right of the historical. And then import to the store file and post. This never commit to anything watch restoring this line.

Ayman Abi Abdallah: It's all going really fast. Really fast. And then you get it done it, commits everything. And then regular about false graph, just learned with normal wall, size and normal commit. Periods. And that's only done on the developer. Works that Because you'll do something programming while I screwed up today. Let's go back and reset to a known working state and so you want that flow fast. And so this that's us have the production data which I'm getting ahead now. Production staging and local Dev scenarios With all these different knobs, you can tweet. And it's all encoded in a concise way here.

Ayman Abi Abdallah: Right. Like the production deployment would deploy the live data set using credentials, that the developers don't even have access to, but that the local Dev environment would look, you know, have different credentials to load a sanitize data set that doesn't have real data for real users in it and that sort of thing. And you just, you know, you don't have to go through and change all these settings. Locally as a developer, you can just say I'm I need the local devonment and So that's, you know, I guess it's worth noting here that this is using then the upstream postgres chart, doesn't change at all. Like we don't know me from vietnami. We're using their postgres chart, and we don't have to fork or do our own local copy to add these capabilities like the, you know, the S3 restore fetching that Vietnam. He doesn't do that, but you can, Add that without having to modify their chart. And then as they continue to come out with new releases, it just plugs in

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Ayman Abi Abdallah: Um This is a good example of different that we're changing memory sizes, changing the number of CPUs to use based on what environment you're deploying in. And I'm, I'm showing the same presentation of my laptop on one side ahead of you. So I'm doing this kind of like leading leading into the next bit of information. We're going to talk about my previous, talk about the previous lie was showing how we can have S3 turned on or off based on some variable well on the current slide, it's the second image is the local overalls. I write a file in a particular location and I can change the values that make sense for my particular worker and this set up is for my desktop back at home.

Ayman Abi Abdallah: The first slide is the defaults that we've decided on when we were. We just like both some guys and then, okay, we're going to make these be the defaults and Leading or going back to the graphic, on the first slide where you saw the resource utilization. This is representing how many compute nodes could be automatically allocated and then utilize. So the default here says 24 CPUs, and 30 gigs, my desktop, being a little bit smaller than the cloud. I've told it to use four CPUs and four gates. That way I can have some space left over to run Google Chrome because it's a big huge fat pig and so I wanted to limit the blender to not over run my system.

Ayman Abi Abdallah: And then you also see how I've got the postgres S3 parameters listed there, but I've got them blacked out for. Security purposes. In my local Dev environment, I don't have access to production as three so I've got the developer F3 access and that's a manual process to get it from the production area to the developer area and we've trimmed things down in that system. So we can really isolate production and staging flows with various security remains.

Ayman Abi Abdallah: If we got there. Yeah and I guess this is continuing, this is a continuation and now you're seeing there's a staging setup and a production setup and I should have those pretty well aligned. So you can do a visual compared back and forward. One of the things we're doing when we're comparing files is, I'll have two Windows side-by-side and do a virtual window switch to see, okay? And same thing, works visual difference. So, it's a technique I have trying to find changes And in this file here, it's not only the resources that are different but the actual branch that gets checked out to run terraform machine allocations. so we can have a staging on production machine, it's completely

Ayman Abi Abdallah: rebuilt by just changing these variables. Here, we don't have to go edit a whole bunch of files. Every time we do that.

Ayman Abi Abdallah: I guess anybody has any question. I guess you can say the questions to the end. So another interesting thing we've used under Kubernetes is the Terraform operator. Operators are sort of these containers that are long-lived containers that manage a process for you in your cluster and this lets you The terraform operator, lets you.

Ayman Abi Abdallah: Do get OPs kind of things where you define your machine environment using Terraform. And then, as you change the, you know, as you change your definition, your terraform files actually, define the infrastructure. That then this terraform is always this operator is always watching and when you're definitions change, it will manipulate your, your runtime environment, your actual computing infrastructure to update it based on the definitions in those terraform files. So it really gets you into that your software that your whole operational infrastructure is kind of this software artifact, that is being updated in real time by this operator.

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Ayman Abi Abdallah: I don't know if that adequately. There's a lot a lot going on here in. I don't know how many people have used terraform. Do, we have many terraform users? I don't know the audience you guys use terraform here. You know, we've spectated. It's usage. Yeah. It But then it wasn't easy. Yeah. Yeah, the Alchemy team uses the terraform and some capacity.

Ayman Abi Abdallah: We are big fans at this point because it's yeah, it's complicated to get it set up, but man, like if you have everything done as turnkey terraforms and you need to stand up another environment. It's, you know, you just say Do it and everything. DNS, everything gets stood up automatically, it really does deliver. The promise of being able to define your your computing environment

as a software artifact. And then enforce it from that definition, or to produce it From that definition, it can bring up our 3D rendering app in 15 minutes that hands off, too. You know, that it's restoring stuff and restoring the database dump and doing everything.

Ayman Abi Abdallah: So then some of the other infrastructure you get, there's robust logging system called fluent D that can take all of your logs coming from all of these containers running in your cluster and load them up into a elastic, search enabled webvironment, where you can kind of I guess like splunk or something like that, where you can then very rapidly search all your logs for information and match patterns. So that's that's a really powerful tool. And if the way fluently works is, it uses a feature of Kubernetes called a Davidson? so fluent D or equinase have decided, it needs more resources so somehow magically a node or more nodes have shown up Well, a node is a virtual machine or physical computer.

Ayman Abi Abdallah: Kubernetes uses a thing called the David said. So, every time I know comes in it goes I'm going to run a system toxins on that. And and grand special permissions to those. Containers that are running so it can mount the whole file system. It can look in far. Along, look at all the containers and add a listeners. So that every time a container starts up fluidity, okay? Give you the date. And so all of, you know, because the system are running a fluently pop and that's automatically. Then food D has pluggable receivers and out of the box it recommends using elasticsearch. Brief aside that's currently being changed quite a bit upstream. The whole open surge elasticsearch kind of split it.

Ayman Abi Abdallah: So this application, it was elastic search and so that's what we're demoing here. The screenshot you see is a very small window into the terraform machine, allocation that happened on stage in a couple of days. Where it has called Terraformed Terraform called Amazon. And you see the very end where the very first line says, the machines not running yet. And then Terraform operate, something goes, Okay, allocated The machine is now talking about Kubernetes and then our logic picks up and goes. Oh, it is running now. I've accepted that it's running. And the second column of that is the Kubernetes Partning. And that's the benefit of fluent, D, and elastic search that all these positive running in parallel.

Ayman Abi Abdallah: And they're all outputting their Lawrence in their events separately. And you get a unified stream view of these based on a time component that searchable, that searchable and the monkey community is familiar with elastic surge. And there's a cabana tool that talks to elastic search and get you access to all the fancy parameters. So it's really fluently. That's new to the monkey side.

02:10:00

Ayman Abi Abdallah: And so, another tool we've used is istio which is what they call a service mesh. And it lets you control, not only ingress traffic or like, traffic, ingress, and egress traffic coming in and out of the notes, or the cluster, in the case of istio. But even all communication, if you want between every container in the system, so you can create security rules and enforce security rules about what can talk to what and under what conditions. And it knows how to it knows how to talk to open ID. So here, you know, it you, if you try to talk to Moki coming into the cluster and your connection, doesn't have an authorization, yet you're gonna get bounce to key club and you don't even get an opportunity to talk to those network services. Yet you're gonna go through open all.

Ayman Abi Abdallah: And and get authenticated before you can even talk to US service. And that that's a really cool capability to the. One of the things that represented in this graph, from here, it looks like istio is only intercepting external traffic to your back and services. It can actually intercept services or

communication between back and And if you've fully implemented the HTTP header forwarding, that's available, every external request that has istio. It's a particular ID added to that particular request. The back-end can take that header and when they talk to the next level back in, they forward that ID along with it,

Ayman Abi Abdallah: if istio has been configured to do, what is it blue-green deployments or you're rolling out a new back-end version? It can know that at all levels of communication and make certain that version two or postgres and version 2 of Mohan version, two of people, all kind of being forwarded along the same pack, we haven't deployed that yet. But it's in the documentation.

Ayman Abi Abdallah: And we are only discussing in detail of things we've done because that's a more truthful scenario, right? Yeah, but I think that's a very like, the, IT istio can route. Your connections actually based on OAuth grants and those law grants could even you know, where we've been working on hooking key cloak and mochi together. So that for instance, if you get a parting classification that that turns into an OAuth grant and key cloak. And you could do like Beta user and that the beta users requests get routed to, you know, you're you can have your next revision of your app deployed. Simultane you have two mokis talking to the same database. For instance, you have to do obviously some cash clearing tricks there, but that you could say, these users, get the new version and all the other traffic passes through. So that's like the ability to have this fine. Grain deployment is.

Ayman Abi Abdallah: Really powerful. Now there is overhead, you know, as much as like 30% but you know, the talks you have around istio. What the consensus is is like the the ease of the developer experience of being able to work this way is justifies the additional cost.

Ayman Abi Abdallah: Um, Another tool we've used is techton, which is a batch processor and but it runs each step in the batch process. Each one is a separate container. So you can think of it as like, if docker compose files, rain and series instead of in parallel, like in a docker compose You're saying service, You know, if you got five services in your docker compose they all start up and they're all running at the same time and tech on. You can say, I want to run this red hat image that does this thing to fetch some data and then I want to run this Debian image that's gonna do something with the data. It lets you define completely separate container environments in steps working together and that they can share storage and other resources between the steps and we use that, this is what we use to manage the 3D rendering process and it's it's a really powerful tool.

Ayman Abi Abdallah: And because that because everything each one of these is a full-fledged Kubernetes pod running in series. To what he can't actually adds a few more definitions into that the unexpanded. Boxes are what are called tasks? then underneath the task is called us that and they are all run in sequence. Most of the time there are some ways to run tasks in parallel. There's a little capability so you could have those like expanded on 50 taps, all at once. Each task, it's just dispatch, Kubernetes Kubernetes and makes various hardware, allocation decisions to deployed on nodes, which could be expanded. so, if all the same thing over and over and over again,

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Ayman Abi Abdallah: A tecton gives you a little bit more variable control over these things. It techcons use a lot in Cid, and it has relationships with Jenkins if jingles that there's some back and forth between who gets it, right? The various things in those communities. So Tech, Khan is a Kubernetes. And we're using tecton directly not by objective X. Before you go back to that slide, if you read the text, this is a blender. Little thing and that's part of our 3D rendering application. And this particular, Tecton task is we're

someone has uploaded a file and we're trying to figure out what the file can do. By calling Blender and say Hey give me the stuff.

Ayman Abi Abdallah: And in this snapshot, we had a syntax there in a shell script. And we weren't voting our variables and so that's what that particular error message means. We could have found that via the fluent D aspect too because it grabs the same logs but we're showing this interface comes a little bit prettier than the flu in the interest.

Ayman Abi Abdallah: um, alright, this year we had split screenshot on our introductory slot and it is a View of one of the Mokey backend screens. Actually, this foot back to the previous slide briefly. The appropriate. Task. We expanded this. There are two containers running into probate tasks. One is start time entry. One is finished time entry. The initial definition for this only had the probate pass, which ran blender. Well. Got all that working. Need to figure out how to do billing. So now we used helm file patches to add automatically.

Ayman Abi Abdallah: Hooks around every single part of the tecton process that needs to have its time report. And these are elementary and finish time entry. Take the current task type, do a RESTful, call back to monkey then records that in its database. Now flip for the next slide.

Ayman Abi Abdallah: We're getting close, we're getting close in this next slide. We then have a batch process that runs at midnight. Take up all of the computes that were run during that 24-hour window and in the lower, right? It shows that in that 24-hour, segment 952,000 compute seconds. If you do a little bit of calculator, magic, that's 11 days for single computer to do the work, that was represented here. Well, this is a batch process burning every 24 hours. How did you do? 11 days of work in 24 hours, you don't? But that's because Kubernetes that figured out. It could allocate, we run these things in parallel. And 40 days or sorry. 40 computers To do that much work in 6.6 dollars.

Ayman Abi Abdallah: Not represented here. There's a second order that brand the next day because it's actually spanned Over Midnight and it was 550,000 seconds of additional compute to finish up the job.

Ayman Abi Abdallah: And now we get to the graphonograph that shows that particular job running on kubernetes. And the customer had started this request. And then, they were confused because it wasn't processing yet. So, they called us, we started monitoring it. And it was actually doing what I'm supposed to, but they just submitted a whole bunch of work and so it wasn't going fast enough yet. This particular request had 2,000 renders that needed to get done. And we configured the system to only allocate 10 notes and so that you see at the beginning of the graph. So we log in and we reconfigured things bumped, it up to 40 and you see it slowly increase with a little bit of around and then continued on and were work. It's but off.

02:20:00

Ayman Abi Abdallah: Each color wave through here is a pod of a tecton pipeline. And so, it's all doing all these things in parallelogies. Downloading the file, it's doing a blender. Render of that, then it goes and chops that render up into tiles and then uploads it back to F3. So, each one of those little color pieces in the processing Kubernetes, and Kubernetes graph, all that stuff. Prometheus Profile displays it. We really like the farm. It's it colors are really nice.

Ayman Abi Abdallah: And I guess we need to hurry along here. The yeah, we kind of covered all this.

Ayman Abi Abdallah: but so this is actually, we think a really potentially interesting place that Mochi could Play a role in the. You know, open Source Universe is there already this cube cost and open cost. APIs for tracking cluster utilization. But you know what? Are you going to load this data into? Well mochi, might be really good choice for that. So then you can fill your customers or bill your departments internal departments. And this could be like a channel marketing opportunity for us to get into a lot of existing Kubernetes installations Cloud inbox. Cloud build. Yeah. Internal cloud building so that's QA I guess real quick I'm going to show what this application I guess. Looks like Yes this is exactly what I've been waiting for you. Some of the people on the community.

Ayman Abi Abdallah: have seen this before, which goes back to what Michael said that we talk about a lot of people and show them what we're working on or So, for instance, so this is a, this is the actual site. This is a word print. This is a WordPress, The marketing site is WordPress, but then when you log in, this is key cloak. Like we were talking about. Yeah. And if I sign in, but the this neat thing.

Ayman Abi Abdallah: That I though, like all for instance, if I go look at my invoices that, you know, all of this is coming from, this is all driven from Moki, like, all this business data is driven out of Moki. What is the, you is a solar impressive, this is react here. And so the like this kind of the brochure stuff is WordPress, but actually then we stub in this React menu bar. So, even though this is WordPress, this is react. And then like, when you get into your Project browser, that's all this is all react here and that let me go back to that. So in essence, like you enroll, you create an account and you submit files to be rendered, you? Okay, you attach your Dropbox or your Google Drive and you can take your blend files out of that and generate energy and then you are. Okay, we have the

Ayman Abi Abdallah: Lawrence and we currently support Dropbox and Google Drive. Okay? And then you build the eventually, you build a computer. You use to, to render the model, okay? And then what the way we, you know, so the it's the function is to let you visualize different options, construction options. And you know, like the floor finish here, I can change to like a dark floor finish and that, you know, you have these panoramic views that this is not like a super high resident or Yeah. Yeah, great about this. You preferred this way, but you preferred another way. Our system, renders all the different ways. So then you can flip back and forth when you're trying to sell this arrangement to the customer. And in the backend, you're basically, you have the Kubernetes cluster that does not have any resources when the system is idle.

Ayman Abi Abdallah: And then you spin out, you spin up resources on demand. Yep, okay cool. Yeah, and so good is a piece of that helpful, but not The main part of the application. Any part is the blenders that are running. And so, you know, I can control If you are not even that that's a tour to help us bring your life. So how do you, how do you like, what's the trigger? I know the ticket is from the website when you actually upload the project, but what happens behind the scenes like after you upload the project? What's the secrets of provisioning the The Kubernetes Resources. The. is that initiated from Mochi or

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Ayman Abi Abdallah: You click the buttons in the front End website, you've selected a file, you can figure all the things you go somewhere, and you're gonna start render. Yeah. That then talks to Monkey we create a series of work efforts for every single presentation combination and we set their statuses to

Ayman Abi Abdallah: Begin. And I can't remember the exact term then. Mohani now talks to Kubernetes and creates all the tectons for the 2000 requests talks to Tecton. Yeah. Oh Kubernetes, technical thing. It's all running into Kubernetes database Tecton, then goes, and does nothing because there's no cloud

resources yet. The terraform particles. Oh, I've got things that need to be processed it spins up a node. You know, does it work to get soft configured?

Ayman Abi Abdallah: Talkback Kubernetes Kubernetes, then schedules, the tech on onto the node, the first part of the tech town process. Now talks back to Kubernetes because okay, I have begun. Okay. So the step between Moki, talking to Kubernetes / Tecton. Is that the, the Kubernetes APIs or tacked on APIs, or How's that Step completed attack on API. So Mochi, talks to the Tecton API and says, Start render job. Start render job start render job and then we have an external process that is watching. External pot. That's watching the backlog of pending jobs that need to be finished and based on that says, Okay terraform start ramping up servers and then once the backlog clears out, it does okay. Any jobs waiting to be done? No. Okay, start shutting equipment back now. Okay, some things I'd like to mention while we're in that,

Ayman Abi Abdallah: Question. The very first attempt at the monkey talk. Detect on the flow was being done on the developer workstation. And since the developer workstation only had limited resources, I configured the project at the time to only do one camera and no options, so it was just a single vendor, everything worked great, well then send it over to state game. You didn't have full cloud access and so somebody decided to test the system and upload a large file with a lot of cameras, and a lot of options and I got a transaction time. by default is either somebody well it could have been a good problem and well there's a two minute transaction timeout and my initial logic,

Ayman Abi Abdallah: Tried to talk to Tecton in a single transaction for all of the vendor requests that we had going on, right? And of course and fell over. And from now, we had Tech Khan's running, but the monkey status of that, the work efforts. Did it exists? So, in that particular case is, I had to implement a back and forth recovery mechanism and each call out the technology and isolated transaction. And I did it unlocked that fashion so there's one job that continues to run to drain the work efforts out of mochi. Back in the Tech Khan. And it goes Start transaction sector work effort status, okay? I'm going to start talking tech on, it talks to technon tecton. Then, give me a ID back, and then I accept the status in Loki again and then finish it. I

Ayman Abi Abdallah: and when that ended up taking like, 30 minutes or so, to get technology. Depending on low. So there's a lot of where initially you do it all in a single transaction code, it's easy. But then eventually you have to go. No. I got to manage the transaction myself. Just because I'm talking to an external resources and temperature. So finally is it are using AWS as the infrastructure. Yeah, here we are. But the we also do it on our desktop and you know that also we could run it in after. And I guess that's another interesting thing about centering on Kubernetes is that you become right? Well, it's cloud diagnostics but in production are using like eks or are using. Are you hosting Kubernetes yourself? We host Kubernetes or so, okay. Yeah, the mainly

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Ayman Abi Abdallah: This video. Well, the block in and it was it's kind of like they they just charge you a premium on EC2, you know like for what eks has a premium on top of ecgen that's on me, so it's cheaper for us to just run and wait since we already had it running. We're like, let's see. Alright. Um, great so I I this is blender rendered it but blenders running in no no, no. This is a tool called and

Ayman Abi Abdallah: Yeah, that is a doing a graduated fetch of tiles that came all of the blender static image. It actually makes a spherical grid and does like progressive like what the way progressive JPEG works. So like, as you zoom in, you know, if you do a very high resolution, remember, you can keep

zooming in it. That's one reason it loads. Like, you notice, when I'm switching options that it's it, loads really quick, like the new, like, when I change these tablecloths or whatever, you know, it, it loads pretty much immediately. And that's because, like, it's not actually loading that full resolution. It's actually only loading the part of the scene that you're looking at and only at the level you zoomed into. Yeah, but by the way, the browser animation is super smooth. It's just that on Google meets, it's the frame rate is not, It's not super cool. Yeah, let me, yeah, here I can, This is public. So yeah, it works well on phones.

Ayman Abi Abdallah: So like you can hit this even on your phone. Well it uses the gravity center on the phone to do the standard. You turn around. Fall into your chair. So people want to hit this locally you can take people. Yeah. Very good. Very good for sure. I asked a lot of questions because I am doing something it's it's similar, probably to the architecture. But not, of course not the use case like we don't have anything to do with rendering and graphics.

Ayman Abi Abdallah: But there are some major differences. Which is. We don't spin up resources on demand, I mean, we do split them up on demand but not for a limited time period. Like once you spin up a resource it's going to stay for a long time. So, we don't have to worry about the Like monitoring the the resources as they get spun up. So, what I will be researching in the very near future is the instruction from Moki to, Kubernetes to spin up the resources. That's why I asked specifically about it. Now, the, I've already Basically established the first way, I would like to attempt it which is directly interfacing with the API, the Kubernetes APIs.

Ayman Abi Abdallah: So I'm going to give that a try first, but I wrote down Tecton, just in case that does not work and terraform too is really, I mean, because we use Terraform because we'd already use it to start up Kubernetes to begin with. Kubernetes have another thing called Cloud Auto Scale that Turlock talks directly to the APIs not by Terraform.

Ayman Abi Abdallah: But at the beginning, we were learning so many new things that we decided to stick with tariff one. We already learned that before in the Jenkins era, so we decided to limit the scope of the project but I think it's worth like auto scaler is great for if you have a single cluster that you want to scale the resources that it's running on, but it doesn't do all the other stuff that Terraform does. Where if you're like trying to say you have a whole stack of things like cloud, front, DNS entries, and a bunch of other things. That whenever you create a customer account or something, you need to provision. All those things that terraform, what you soup to nuts, just do all that stuff. Interesting, thank you very much. That was a very informative facts. Slightly.

Ayman Abi Abdallah: When Ian logged into the front end Web app, you briefly saw the key Club screen. Briefly. Well, we do push that through the entire system. The front and logs in the key code it has a token. When the front end talks to monkey, the talking gets passed. It, it's looking at the JWT parameters. When Mochi, then talks to Tecton that same tokens, this past techtime,

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Ayman Abi Abdallah: Is. An elevated permission model. So now Tecton says Okay. I'm taking the simple permission model in the front end token. I have to increase my permission. Because the File download. That's coming from drive. Needs a little bit more access. So it goes in tech time gets a higher permission from its Token. It then talks back to Smokey. Gets the storage token parameter, which you can access in the front end. Packed on them, talks to Dropbox and gets an offline stores that it has to remember for days, sometimes because these jobs take a long time. Again, more token stuff and then eventually when

the tech time processes talk back to Smokey, the same toki comes around and Milky goes I know what the user ID is.

Ayman Abi Abdallah: And that you access just your budget. So it's fully Jaden E token integrated across the board, right one really cool side effect. We get out of using that key club thing is key close supports user impersonation. So that's really nice. Like, you know, does it? Yeah I think you. Yes Sir. Login as oh permission on the under the Advent as an advance we've got external sso. I give the path down to all the other different layers that have already been integrated with the Selfie stuff.

David E Jones: Yeah, yeah.

Ayman Abi Abdallah: Some people are hungry. Yeah.

David E Jones: The login has thing is fairly recent. Well, when we close this, this session, maybe Yeah, I'll stop the recording. Well, thanks Ian and Adam that was I give a good like overview of all these tools and...

Ayman Abi Abdallah: Yeah.

David E Jones: how they fit together and such. Yeah, it's really good.

Ayman Abi Abdallah: Thank you.

David E Jones: So why don't we break for lunch? Maybe is 45 minutes adequate. Then we'll be about a half hour over time. Okay. So planning on plan,...

Ayman Abi Abdallah: Yes.

David E Jones: on meeting back here at 1:30, it'll be then.

Ayman Abi Abdallah: Coffee.

David E Jones: Then the Then Mike will be presenting about. Ideal business software.

Ayman Abi Abdallah: I might switch my presentation with Michael because I was reviewing the slides and I think I could fit it in 30 minutes.

David E Jones: Oh, you want to do that or 30 minutes or 45 or something.

Ayman Abi Abdallah: Yeah. We'll see, I'll ask Michael. I'll let you know as soon as

David E Jones: Yeah. If you and Mike want to talk about that. Yeah. Or Michael, what do you think about that?

Ayman Abi Abdallah: For an hour and even start the actor. That's two hours and

David E Jones: Yeah, if we go into the HACKATHON time, that's probably not a. Not so big a deal. So That's yeah.

Ayman Abi Abdallah: Over anyways.

David E Jones: Yeah. Okay, we'll meet back here at 1:30 then about 45 minutes. So Okay, see you.

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David E Jones: You see signs of life over there and

Ayman Abi Abdallah: I think that we're already here, David, so anytime you're ready.

David E Jones: you're already, okay.

David E Jones: Did you talk about did Eamon? Did you and Michael wanna switch session? So did you want to go first?

Ayman Abi Abdallah: Now he's he's ready,...

Ayman Abi Abdallah: he's ready. So

David E Jones: Now he's ready.

David E Jones: Okay. Michael next. Okay.

Michael: like,

Michael: Alright, alright. Alright.

David E Jones: At the Mike figured out and...

Michael: Okay.

David E Jones: everything. And Okay.

Michael: Yep.

David E Jones: Do you have anything to like screen share? Michael? Okay,...

Michael: I do, yep.

David E Jones: when you get that started, then I'll start the recording and And then, I'll Let you on your way.

Michael: Great.

David E Jones: Okay, I'm starting the recording now.

Michael: Okay.

David E Jones: so, this session by Michael Jones, Is about. How does the ideal business software behave?

David E Jones: I'll turn it over to you Michael.

Michael: Alright, so thank you all for coming. I basically have. So I spent six months on this problem. And initially it all started. With how does the ideal ERP software behave? But it really ERP isn't really good. Example of what this actually is, it's more business software. but,

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Michael: so, this is going to be Different from a lot of the other talks here, it's going to be more academic. and but I think that it really builds on What?

Michael: What mochi is and kind of the kind of taking that the data model up several layers of abstraction and how exact to to how people behave. And the main thing that I want to get across here is that the main point of business software, is to. Is to basically help it is to measure value. Is to and, and we'll go into this. But that measuring value is what people and businesses do all the time. And so what that this, what the softer needs to do is it needs to help people measure value. So the story starts out with thinking about how I can actually improve moki.

Michael: I started out with data.

Michael: Data is interesting because there are so many different. data is is like the fundamental thing that that powers all of this stuff because because we are we as humans are are very good at making decisions and at and it prioritizing various different things and And there's some things that humans are better at and there's some things that computers are better at. and computers are very much better at Memory, and remembering things and, and handling things. And having simple logic that is very fast. And so part of what I was doing here is I was trying to understand what actually makes a database work well like, how does a database really scale? How can, how can we

Michael: How can the most value be be created through through a database? and through data and managing all of this and and given data model, And so one, what one of the main things that I learned from this? Is that?

Michael: As so, this is primarily answering the question about data. At scale.

Michael: The the primary problem of data at scale is consistency and availability. Consistency is basically there's one set of data. And it and for, for it to change. It needs to. I It basically is a relational database. So it keeps the actual data consistent where If you are a, if you primarily think about availability, then you sacrifice consistency for being available all the time. So this is what the hyperscalers use, like Google like Google Cloud and AWS and all these different things.

Michael: But the actual data that is in, that is in this software is very important. As. As we as we write business software. Now, the next thing is basically a display. So what, what exactly how is this data being displayed? And there's this great design book called The Design of Everyday Things by Don Norman.

Michael: basically, the the idea of a display, this is similar to think of, like A Like a nuclear. Our plant, they will have a dashboard of all the different controls, and all the dials. And all the, all those things that actually represent the state of the, of the system that may be a mile away. Or maybe close by or whatever, but it's it's the original UI and and UX, is this is this, this whole design thing. And the primary thing that I got away from that is that the display of the software that we have needs to be an accurate representation of the, of the internal system. That makes it so that there's a clear one-to-one mapping between the mental model that that people have in their head and the

Michael: And and and in the state of the actual system so that so people can be more efficient when they're actually using it. now, and it in addition and it in addition to this, there is a lot of Different technologies that can be used to display. To display things. There's lots of platforms. There's mobile.

There's desktop, there's Command line. There's all these different, all these different ways that data can be displayed. And so I was I was basically thinking about well if you're actually creating an app that needs to be cross-platform, well do you choose React? Native you choose flutter to use all. There's all these different cross-platform

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Michael: Platforms to actually create your application on.

Michael: um and there's there's all sorts of architectural questions about whether you should use these and I'm not going to answer these today, but the question about how, how display How to display data to to an end user is really fundamental to the software that work on.

Michael: The in another. that I was kind of contending in this space is the actual logic that they basically takes this data and and may present it in a in a certain form. Or.

Michael: So like so right now Mochi is written in kind of XML actions but also groovy and Java and I was thinking Well you you want to get this on to a mobile device? Well how do you do that? Well well the Web browser is like if it's a fundamental it's the most Cross-platform that any technology has ever been with HTML CSS, and JavaScript, and also being able to connect to a server on the back end. But there's, there's a lot of questions about which, which technology should actually be chosen for this? Should is it better to use flutter? Is it better to is? Is react better than view is? That there's lots of decisions to be made here. And what I realized is that all these decisions

Michael: Their fundamentally based off of a certain traits that a that the software needs to behave. As you may, you may prioritize security over over system performance. You may prioritize security over human performance. you may think that the think that the longevity of the software is, greater than

Michael: Is, is greater than some of these other traits. And so there's there's a whole bunch of potential different things that could that potential things, that could be chosen for a given solution. But how do you actually determine whether one of these solutions is the right one? so,

Michael: So basically all these I was thinking about all these different possible solutions and I was getting a bit more into privacy. And I realized that if we,

Michael: Prior. So how we actually prioritize? These these different traits matters as to the decisions that we make about the technology that we use in the decisions that we make every day.

Michael: these and, and how we actually determine the rank of these of these traits is I think similar to something that I discovered when I was looking at financial charts with my dad, one time. so, Financial charts are very interesting because they are a They're basically how we measure. Value. So if you take, if you take gold, if you take bitcoin, if you take US dollars. And you actually,

Michael: And you and you think about what actually makes them valuable over time. It's it's kind of this Mysterio this mysterious force that is similar to to how we make financial decisions.

Michael: as I thought about this more, I came across this economist. Named named Mises. And he was a he was in an Austrian economist and kind of his conjecture, was that? The reason that the value of a, of a, an asset will go up or down is predicated upon. The actions that people take with that. So if a lot of people want to get into gold, then a lot of people

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Michael: will basically,

Michael: Will. Well, that'll make the price go up. If a lot of people want to get out of gold then up then that'll make the price go down.

Michael: so, one of the one of the one of the parts of how, The economy operates is. Their.

Michael: Is there are lots of decisions that people can make people can decide to get coffee, they can decide to get tea, they can decide to get soda. but all of these objectives, Are so all these are basically objectives or end results that that we have. So in a business business will also have an objective and key results. And so this same objective is where that's coming from.

Michael: So, the so, part of this is, Answering the question of how do. How does a business actually use its resources? Efficiently.

Michael: I think that the Primary.

Michael: Like, so this is basically the process of how economies work and how it and how resources are used efficiently. And the most efficient way to use resources is first to have an objective that they're being put forward, that they're actually being used for and having that objective be important in for, for the business, for the business, for the business decisions that you're actually making. And so, this prioritization, is basically saying that what makes part of part of the decision process is that we have to choose one objective. We have to prioritize the list of objectives that we could potentially do to one objective. That will. That will actually be, that will actually use the resources effectively for the goal that we're working towards.

Michael: So, an example of this is a project management system. Where in a project management system, we basically have a whole bunch of objectives, a bunch of potential things that we could do. And we, we assign. A priority to them. It's usually a number. But this also happens in in the decisions that we make every day. And in all different parts of a business. To actually determine whether the, whether the objective is worth. Will to determine what the objective is actually worth.

Michael: so, As we?

Michael: Once we choose an objective, then we need to allocate resources to actually meet that objective. And this is part of the Value. Estimation that we do. When, when we choose an objective. Now, this is the cost of actually achieving that that objective. And the cost of actually achieving an objective isn't just the financial cost. It's also the psychological cost of of something. So the cost of the financial cost of Moki is not

Michael: is not very much but the psychological cost of it. Can be great compared to eating some pizza.

Michael: So the, so the Value of the objective. Needs to be less than the actual value of the cost.

Michael: Typically in in financial accounting, we will measure this cost in money because money is the best. Estimator that we have of value for most things. It doesn't measure psychological costs nearly as well. But it does. Measure general cost for a phone or for, Most things it's the best universal. Estimator that we have of value.

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Michael: And so the the last thing here is what is the actual cost? Of the actual value of the cost. So this is this is US measuring value. The measure of the cost needs to be less than the actual end result that we are trying to reach and the reason why it needs to be less is because if it's greater than if the cost is greater than than the potential. End result, then we don't do it. Because if, if we do do that then

Michael: then basically, it would be the same as not making a profit in a business, and the reason why this model still works Why? Why basically, Companies, don't make money often. Is that the Is it the value estimation at the choice of decision is just an estimation. we don't actually know what the value of something is before we actually enacted out and so the, so the last part of this of this financial model perhaps Or this economic model. is that we actually pay the cost of

Michael: Um, of achieving the end result so that we actually do. So if we're in a warehouse, then we use the, We use the forklift and the palette and the product to actually deliver this and ship this to customer where the end result that a customer wants is a pallet of product. And so, what we do is we spend the price, we We pay the employee. We we pay for the forklift, we pay for the warehouse, we pay for the cost of what it actually takes to achieve the end result. And then that that action, that human action. Over time. Will. Prop, what will potentially result in what we and what we actually expect.

Michael: and so, Basically here, whenever we make a financial decision, we need to think about how we prioritize. Our, our goals, our our objectives into Into what, what is most valuable for us for our business? We're for our current objective. And we make sure that the cost is worth the actual objective, if we want to literally go to the moon, then the cost may be greater than the potential value, that would result in that. Because if you want to go to the room to, if you want to go to the moon, to eat a sandwich because you think it'd be cool. Then the cost of it is almost certainly not worth it. If it if it is even possible. and so, from an economics perspective, The actual value that we get from.

Michael: The actual way that that value is measured is based off of the belief. That what that a given resource will will result in the objective that we require.

Michael: and so, one of the problems with this is that how do you tell whether the belief of Some of some individual person or, or an economy. Is is worth it because because this is, this is all about measuring whether something is is valuable or not. Is it is it is it valuable to higher one employers? That is it more valuable to hire one employee or three? Is it more valuable to Use Use Product A or using ingredient A, or ingredient B. In our in our product that we're actually selling.

Michael: so, so this this problem with belief is basically. if we actually want to measure value, The. Actual the the world is way more complicated than we actually think it is. Because As we as we measure the value. Of of something. We like What does that actually mean? Well, every time we buy a product that is a that is a value assignment for that that this cost, this financial cost for this banana is worth one dollar. and we are basically validating this, this assumption that the cost of of this banana is less than than the actual objective of eating a banana.

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Michael: And so, as we

Michael: As as we basically go through this. this thought process, alright, well, so as I went through this thought process, I realized that economics doesn't really factor in everything about value because it's

because what Mises believed is that Economics is all about people and the actions and decisions that they make. and so, I decided to go to a behavioral psychologist and professor called name, Jordan Peterson and I basically went through his. On through a course that he has online called maps of meaning. Um, and throughout this course, I was able to more realize what people's beliefs and some of the missing

Michael: Parts of what value actually is in the and the economics field. and so, the primary The primary part of this. is is similar to to the Conjecture that I had at the end of setting economics that the world is way too complicated to actually understand all of it. One of the initial reasons that AI was actually developed in the first place is so that we could have machines actually perceive the world. and so this, This idea of Perception. And actually understanding the complexity of the world, it's a really difficult problem to solve. And how people do it is, they do it through an objective. They do it through a goal. There's a current state that that we are in.

Michael: And we have a certain need. We have. A, We have a motivation. Are we hungry? Are we do? We need to find fulfillment? Do we need a do need emotional connection? Do we need social connection? Do we need any of these things? Do? We need to be fulfilled this summer to Maslow's, or Maslow's hierarchy of needs. Which may not actually right.

Michael: but, This. The that we actually choose our objectives based off of the motivations. and the and the things that are that our business or a person requires And so this is what actually sets our objective in the prioritization for how we actually see the world. Because if so, our Our perception system is similar to a neural network that actually needs to prioritize. the world and we don't actually see things based off of like because there's too much information out there. We don't actually see things based off of

Michael: like because we don't see everything, we see things based off of an objective. And so there's this experiment called the invisible gorilla experiment called Dan Simon and we're actually going to do this right now.

Michael: Not entirely sure how this will. Work for those streaming. but, Let's give it a shot.

Michael: How many times the players wearing white pass the basketball?

Michael: You okay?

Michael: It is. I'm looking at all three of our laptops. The next year that's all Frame jumping. How many passes did you count?

Michael: So the correct answer is 15 passes. There's all about. You see the gorilla. Alright. Okay but but this is the whole point of it. So This, you can't see the gorilla. But they're actually was, but did you see? Gorilla.

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Michael: This video is from research. So halfway through it we hadn't we had an objective of counting how many passes they were, but because we had that that objective, we didn't actually see the gorilla. And that this experiment has been proven over and over again, that we don't see the world based off of just everything. We have to see it based off of an objective so that we can narrow down The actual perceptions that we have. two enough information that are that are brain can actually handle I just found that fascinating.

Michael: This is a test of someone. It's playing again. so now that we've prioritized things we need to categorize them into Things that. So, so basically, as we prioritize things part of the prioritization process is based off of whether something is a tool or whether it's an obstacle or whether it's something a relevant that we can ignore.

Michael: The. So this is tool in the broadest sense and obstacle and the broadest sense. where, Tools is, I mean, this is similar to the assets and liabilities.

Michael: Like part of of actually of accounting. But accounting assumes the objective of profit.

Michael: but this also applies to everything that we see and everything that we do,

Michael: I just found this fascinating because this is this is an inherent categorization. This is part of the the data model of people. And how in people's logic and people's. And, and people's data model is to actually categorize Things and into tools obstacles and things that are irrelevant. And so, a theory about why this is is because like, if you think about it, about a caveman to actually stay to actually survive, You need to. You need to find tools that help you. You need to you need to use a club to to help you. You need to, you need to find food. You need to find all these different, all these different tools that will help you stay alive.

Michael: And you need to avoid obstacles, this could be a predator. This could be, this could be a gator, this could be a snake, this could be all All sorts of different things and we don't necessarily know. Inherently what whether something is a tool or an obstacle in the first place. And so we need to avoid everything that is irrelevant. Because we we are limited beings, we can't actually, we can't take in all the information, just like a computer. Can't take in all the information. About the world or about. A given set of data. Well, computer can we can't but a computer can't understand it.

Michael: so, So this. So as we as we categorize things and into tools obstacles and things that are irrelevant, we build up a mental model of how the world works. So this is the, the actual this is basically the physical data model of a people that we are constantly changing all the time. as we take in new information, and this model is built up. From.

Michael: So that this model is built up from our previous experience. It is built up from our perceptions and and our better based on the goals that we actually have

Michael: so, Basically, this is similar to the idea of

Michael: Training a classifier. So as we as we feed in more, More data, more labeled data, basically to to the to the actual artificial intelligence. Then we are more able to to predict and and classify what it actually is.

Michael: so, so this is This is fundamental to the economics discussion that we had before. where, The.

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Michael: Where the, the actual decisions that we're making based off of prioritization and based off of the actual cost of something is based on the belief that we have about to give a product or about a given thing. But, In this scenario like we could say that it's a product. So what sales? should do from A biological from from a psychological perspective is, Sales. Is all about.

Michael: it is all about presenting the mental model of the of the product accurately, so that the customer can decide whether the product is, is fit within their beliefs and with, within their motivations on about how they make decisions, or you could say their values, So, a lot of

Michael: So values inside of a business is often something that you put up on the wall and you put up on your website and you say these are our values but that's not really how values work from. if I'm really deeper perspective, the values of a business are integral to every single decision that and every single action that a company makes. And these. these values are built upon the previous knowledge of Of the business or of other people. In inside of it and this is fundamentally how we actually see. A certain product is, is do we believe that?

Michael: Moki will fit, like, Do I believe that Monkey will fit my perceptions. Do I believe that this product will, I believe that Coca Cola will make me satisfied. Do I believe that apple? Really does make. A computer that will solve my computing needs. So this thought was based off of Vinaigrevia and Saklav. Which, which is based on the work by Alexander Luria, who is one of the greatest psychologists of the 21st of the 20th century and the interesting part. Is that? Is that this thought is actually. So Alexandra. Alexander Luria, actually. Influenced Norbert Weiner, who was the? Who was the initial person who came up with cybernetic theory? Which was?

Michael: Crucial to how AIS actually work. To to how neural networks work and that. And this idea of Having an objective and and evaluating the evaluating that objective. Is. Based off of the things that actually get.

Michael: like the the reward function of an AI program is basically evaluating evaluating the objective and telling whether something is a tool or whether something is an obstacle that gets in our way,

Michael: The. The interesting. Yeah.

Michael: So, as we So we have a, we have a certain mental model of the world. And we're constantly taking a new information. But the world is really complicated. And we can never actually have a complete mental model of what the world. Actually is. And so, an inherent part of the systems is that they need to handle.

Michael: and these systems that I'm like, business automation software, or this whole This whole business software.

Michael: Person domain is that we need to handle unpredicted things. This is this is an error. this is an error in the mental model that we have, and we need to understand and we need to come up with the way to fix it. but what, but what's crazy is that this

Michael: Is is about this comparison between the mental model that we have and the new information. And the comparison between the, the new information that we're getting is actually what regulates emotion. Emotion actually comes from. The. From the the prediction system that we have the mental model that we have of the world. And as we

04:05:00

Michael: as we basically, Take this. And compare it to this new model that we have. That is where the that's where the thing called affect comes from.

Michael: because I, if you think about it, like you, you break up with your significant other, the mental model that you had Of. Your of your significant, other of your life has changed. And so and so you may get very upset, there's a threat, There is anxiety about, not knowing exactly what's going to happen. And so, the emotions that we have are the feedback.

Michael: There that are the feedback about the state of of the world. The The actual. The. The state of the world. And the, and whether the state of the world is what we think it is.

Michael: So that's I know. So that's actually based off of some thought by Lisa Feldman Barrett. Who wrote the book, how emotions are made? And so this is why people say go with your gut. going because because your gut is, basically the thing that we say about when we think about our emotions, our, our subconscious basically knows what is is takes in all this information and tells whether the mental model that is coming in is different from The.

Michael: Is different from the one that we have.

Michael: and so basically, as we So, the often the best decisions that are made are based off of like we may not be able to rationally. Explain why we're making a decision. But the actual emotion that we get when we're thinking about about the decision, whether it's something that we should do or something that we shouldn't is the best.

Michael: Is the best approximation for making a decision. And so this is why Emotions are critical to actually decision making in a business. that it is, our it is our best under understanding of

Michael: Of the situation.

Michael: So, let's kind of put this whole thing together. We have a place where we're trying to go, This is our vision. This is this is the objective that we're trying to to reach.

Michael: We have a place that we are and in our business. And we have a place where we would like to be. So, we plan. We plan it, what the actions and steps that need to, that need to be taken to actually get to that point.

Michael: We do that based off of our values based based off of our beliefs of Of what we'll get us from point A to point B. And as we, and as we set this objective, as we set this point, as we define it clearly in our business, then we actually see the tools in the obstacles that will get us in the way. And so, this is why. We, this is why we need to define clear goals. Instead of vague ones is because the more clear a goal is, the more likely we are to see the things that get that will help us to get there and the things that will get in the way and then, as we continue to, as we as we continue to progress towards towards this goal, we are continuously checking to see whether we are making progress.

Michael: To that goal. And that is where the positive emotion. Or the or the pleasant emotion comes from and when the and when when we have, when our mental model of the world isn't completely there, then that is when we get negative emotion. and then as we and then, as we continue to, to go across the path, of actually getting to this to this place where we would like to be We whenever we see a tool, we we continue there. We we use, we use that the tool to better, to be better, able to get to our objective. Or we see an obstacle and we either go around it or we overcome it. Or. Or that kind of thing.

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Michael: And so this, this whole process is The. Fundamental data model of the actions that that people take and also the businesses take.

Michael: As we continue. On our

Michael: on our way down down this path. This is basically the simplest

Michael: if I can, if I can explain this to you, in 45 minutes,

Michael: That is that is very that is very simple and it is the It is the simplest most effective way. That.

Michael: That we can operate that the people can operate. But also that our business software could operate. If we, if we kind of incorporate this into into how we do things and to how and do how our business operates in the software that is being used in it.

Michael: so, this is this is and so in every, in every step of this process, as we as we find as we prioritize our objectives, as we tell, whether the cost of a decision is worth it. As we as we predict The cost of a given objective. As we plan certain things, these are all based off of our beliefs, and our values that we have, in the way that we see the world. And this is why measuring value and and this is all this is all part of what measuring value is. So that we can actually make a decision that will create the most. Benefit that we use resources, effectively. That will. That will help businesses actually achieve their vision.

Michael: so, What is the ideal business software? Actually behave. Well, what it does day in and day out isn't measures value, so that people can make decisions. and they're in their business and their life and and what they're actually doing that are That are worth it so that you so that you can see the tools. I mean, you can see the things that will help you avoid or overcome the things that don't and and show you that you're on the right path.

Michael: So yeah, that is my talk.

Michael: Thank you. That's really how businesses work like all you can do this forecast before and right then. See how it goes, you launched and you discover it you import test was like or not. Alright tested with us.

Matt Warnock: Yeah, measuring value. And economic terms is always been problematic. I mean, now accounting has been working on it for 400 years now and and we have We have a lot of

Matt Warnock: methodologies, but I'm not sure where closer to measuring actual value, and of course, the one of the big reactions that we have right now is that, you know, for the last 50 years, there's been this brand of thinking that businesses are only about creating Economic value. And

Matt Warnock: The, the whole B Corporation social. entrepreneurship all of that kind of stuff is built around the idea that that Economics doesn't cover all of the values that that need to be covered. It's an interesting. It's an interesting area but I I'm having a hard time, seeing how

Matt Warnock: In a practical way, we can change the the software to be more effective along the lines. You've described, particularly, if you're measuring emotions and psychological parameters that are notoriously, difficult to measure in any in any real. Comparative sense.

04:15:00

David E Jones: To your point. Matt, the idea of economic value, it's kind of the proxy we use for actual value. And unfortunately, Too many people get confused that it is a representation of what people actually value. The. and...

Matt Warnock: Yeah.

Michael: but,

David E Jones: even in business, where There's a responsibility and accountability involved so that you have to manage economic value. There are still plenty of other values to consider

David E Jones: And I suppose even emotion plays in there where we over focus on economic value, we lose sight of other things and and feel that as we go and...

Michael: but,

David E Jones: then eventually that causes problems for economic value in a lot of businesses. But but it yeah,...

Matt Warnock: Abdullah Blue.

David E Jones: it's an interesting question. Like measuring other things, there are Other things that can be measured in the system.

David E Jones: Aside from pure economic things. time and results of certain things, if we I guess it's easier with something like manufacturing physical goods with something like a task, where you don't know how long it's going to take.

David E Jones: Especially most creative tasks are like that. It's a bit harder to Measure it numerically but yeah, it's an interesting question.

Michael: Yeah, Matt you're exactly right. That measuring value isn't simple at all like a lot of time Thinking about what exactly measuring value is. And you're right. It's not obvious exactly how how to apply this in software. But this is the method that people measure value and it's the closest thing that I found to actually measuring. Third to actually figuring out how to make decisions. Like what? Like if there's one way that you If there's one. One, if statement. That. Determines all that. It's the determines. All the decisions that you make in your business and everything that you do, it's value.

Michael: and so,

Matt Warnock: What those values?

David E Jones: And does it add value? Can you define it? Even if you can't reduce it to a number? Like I can still guide decision making at least yeah.

Michael: yeah.

Matt Warnock: That's that's kind of assuming that there's an objective value and and I'm not sure that's that's entirely true.

Michael: So okay, the objective value versus

David E Jones: Subjective. Is that what you're thinking? Yeah.

Michael: So it doesn't really apply here. So like if this is objective and this is subjective, this is a whole different plane of existence. And the reason why is because this kind of value isn't subjective, it isn't objective. Because it's too complicated to be sub to be objective and it's too rigorous to be subjective. So what it is is it's pragmatic. that like like this is The whole point of this is that we don't have a complete mental model that we can tell whether something is valuable or not. And so, so us as, predicting the value of something is the

Michael: It's not it's not it's not subjective and it's not subjective. It's pragmatic because it enables it enables us to operate in a world that is way too complicated for its own good. Us being limited creatures.

David E Jones: so I guess then that gets to the point of defining things like goals or a vision for a for a project or an organization or whatever and...

Matt Warnock: Okay.

David E Jones: using that, I Yeah, that kind of what you're getting at the and whether it's subjective or objective. It's That those are kind of funny terms. And in my opinion, there are anyone who thinks something, who is purely objective is probably not sufficiently humbled to realize that they are the subject that's making that assessment. so, The. So it's a value in my opinion, is purely subjective, and assertions of objectivity are usually overblown but Yeah.

Matt Warnock: Sure, for sure. Yeah, as they say, it's differences of opinion that make horse races, right?

04:20:00

David E Jones: Alright.

David E Jones: Yeah.

Michael: Alright, well, thanks for you comments,...

David E Jones: Yeah, interesting.

Michael: and thanks for listening to that. I know that it was Bit of mental work there.

David E Jones: A lot of lot of different thoughts to pull together. Well, thank you Michael. Yeah. And that's the simulation.

Michael: And that was a single version.

David E Jones: Okay, we'll stop the recording now and then.

David E Jones: yes, we can take a break for that, 10 minutes, and then, We're looking at the next presentation of Mohan production environments by Amon.

Michael: I wish to apologize for having your drinking problems or...

David E Jones: so,

Michael: early in the day.

David E Jones: It is that a caffeine drinking problem.

Michael: Know. That's it, right? My experience. Measuring objective. Measuring value is important. But if you've been creating it diminishes, you're right. Yeah.

David E Jones: Mmm, it's been too much time trying to measure it. Yeah, interesting. Yeah.

Michael: You get the mission in value. That's what I said. Like create value in place. but,

Matt Warnock: Yeah, very values are really interesting thing to try and measure a, You know, The muzzle of famously said that a guy with a hammer in his hand thinks everything's a nail, which is kind of what economists do for a living, right. Everything's got to be reduced to dollar value somehow. Yeah, that that works up to a point and...

David E Jones: Yeah.

Matt Warnock: then it doesn't, but a lot of the psychological stuff, you know, things that we talk about as values. Are things that are notoriously hard to measure and a lot of that psychological stuff. Even when you run the experiments you can't replicate them. You know there's a there's There was a recent review that said North of 50 percent of the psychological experiments. In fact the entire behavioral science field the the experiments couldn't be replicated That makes you wonder how how good your your measurements are going to be in those areas, but it's an interesting question.

David E Jones: Yeah, and with highly contradictory results in a lot of studies and such. Yeah.

Matt Warnock: Yeah. I I recently attended a movie called,...

Michael: This is what?

Matt Warnock: What Was It Uncharitable and the premise There was that the methodology that we use to

Matt Warnock: to gauge charitable institutions is usually their efficiency at delivering goods to The recipients. And we consider any overhead that they that they use as An inefficiency, that, that prevents them from. We basically measure them based on their efficiency.

Matt Warnock: Investments, we usually think about Roi. How much you get back for every dollar that you invest? Those are nice numeric. Kinds of measurements. But If you are so worried about being efficient that you don't get your message out there. Then your charitable institution, is always going to be small. So that's that's an example where choosing the wrong kind of metric. May limit your your growth and your ability to accomplish your actual mission, which is to help more people, right?

David E Jones: Yeah. And that that reminds you the like in both economic and for charitable institutions, the idea of quality of life which is difficult to measure and highly subjective. But there are certain parts of that that can be measured and both economists and A charitable institutions, use money as a proxy for quality of life. And it's not a very good proxy.

Matt Warnock: Wait, it's not a very good proxy and one of the other things that's interesting about measuring some of those kinds of things. Is that our human perception? Is that losing something that we have? Is more painful. Then gaining something that we don't have. And so the the plus and the minus sides of the scale are on different scales if you will That that makes it a little hard to apply mathematics.

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David E Jones: Yeah. Yeah. And the way things are perceived and experienced. Yeah. Yeah.

Matt Warnock: Well, absolutely.

Matt Warnock: It kind of throws, Jeremy Benthan's utilitarian and utilitarianism under the bus.

David E Jones: and then, Like with Charity, there's the teacher man to fish thing which most charitable. Institutions don't really follow. And in fact what they do often leads to the opposite, they make people dependent on the charity instead of self-reliant and then it's actually counterproductive even though the numbers look fine by monetary measures,

Matt Warnock: Well yeah. Yeah, it's an interesting area.

Matt Warnock: One. I like to think about but haven't come up with any concrete solutions yet.

David E Jones: Yeah.

Matt Warnock: Yeah, I wrote an article a while back on, on Friedman's the On the Freedmen Doctrine. The idea that corporations only social obligation is to increase its profit shareholders. The concept that's been widely accepted in the financial community for 50 years now, and it's just been Disastrous. You look at all of the financial scandals that we've had in the last 50 years. And you can trace a lot of them back to that doctrine. It's it's really an atrocious idea, but it's kind of woven into Financial and Securities Law At this point. It's it's really kind of sad.

David E Jones: Yeah, and...

Ayman Abi Abdallah: I think.

David E Jones: even looking back more recently, how much that's escalated in the last say, 50 days.

Matt Warnock: Yeah.

Ayman Abi Abdallah: Mean, well, I think nature may roll up and show everybody who's really in charge of value.

David E Jones: Yeah, yeah.

Matt Warnock: Alright.

David E Jones: No kidding. Well, this is one of the reasons why I like a lot of this stuff. This is one of the reasons why open technology and so important because it is like a charitable institution, really wanted to do good in the world then they would open access to technology more technology to more people that Does far more to help people help themselves, then? Any institution with however, much money could possibly do on behalf of those people. So,

David E Jones: yeah, so that,...

Matt Warnock: yeah, Mark The marketization of power is an important concept and...

David E Jones: you know,

Matt Warnock: and I think open source software as a as a big role to play there.

David E Jones: Yeah. Yeah.

Matt Warnock: As played a big role already.

Ayman Abi Abdallah: Consensus is key. And yeah, I think that when the power is built through consensus with the lobster,

David E Jones: Right. Power from a base like ground up as opposed to top down. Yeah.

Ayman Abi Abdallah: Yeah. Yeah.

Matt Warnock: Yeah. Well the consensus is built through, the marketplace of ideas, you know, you thrash things out. You figure out what the what the best solution is and then you actually try it, see what works in the real world.

David E Jones: And if a bunch of people are doing that and collaborating and sharing results, it's amazing how quickly things progress. So yeah.

Matt Warnock: Yeah.

Matt Warnock: But the sharing results part is key and and a lot of science that's going on now. happening in a proprietary way, that that I, I don't know in my view isn't really science.

David E Jones: Yeah, it'll often corrupts the science too, because with a profit motive involved. I don't know. He's even see this with open technology, where, like, in the AI stuff. We were talking about where a lot of the open stuff is just, what was the term that used earlier in lapping, the like,...

Matt Warnock: While having?

David E Jones: the Google efforts Um, and I think the big reason for that is they're like with open technologists are not trying to monetize it, they're just focusing on the solution and not corrupting it as it were by how we're going to make money on this. I mean, open the technology and kind of figure that out after

Matt Warnock: Yeah.

Ayman Abi Abdallah: Yeah.

David E Jones: whether the mostly gathered back at the conference room there and such

Ayman Abi Abdallah: We're missing one. Just yeah. Michael will be back in a minute. Alright.

04:30:00

David E Jones: Okay, I guess we're just coming up on the 10 minutes now, so, yeah.

Ayman Abi Abdallah: Yeah. There is okay. So he We can get started.

David E Jones: Okay, I'll start the recording the name. And And hand it over to you in a minute.

David E Jones: okay, so this next session is by Ayman on Mohan Production Environments. I turn it over to you Ayman.

Ayman Abi Abdallah: Thank you. So We're taking off the theoretical hats and putting on the real world hats. Okay, so in this presentation, we're going to focus on a couple of things. which basically it sort of classifies under Sharing real-life experience of using moki in a production environment. Particularly from aspects related to you know like connecting to AWS resources and achieving compliance and like a commercial setup where audit is taking place.

Ayman Abi Abdallah: okay, so I'm going to start off by Reviewing a few deployment scenarios for Moki. And the tweaks we had to do in order to achieve other compliance. Then I'll discuss a few changes. We did to the mochi AWS component. In order to properly, utilize it in the business. Now, you're going to see this quick note in today's presentation and in tomorrow's presentation, because it's, it's an important point that I understood the hard way. While working with Monkey and it's I'm going just to read it out and then I'll explain what it is. So the monkey framework follows industry best practices. It is it is designed to help you hit the ground running.

Ayman Abi Abdallah: However, it is inter intentionally developed to be equidistant and not biased for a specific environment or a line of business. Therefore, it may not address your exact requirements to the letter and it's out of the box form. The assumption is that you would fork and tweak the monkey for a framework to match your exact requirements and business needs. Because initially when we started using moki we're like Why doesn't the upstream version do this or do that? And we sort of assumed that you know since it's an open source project, it should do everything. So this is a lesson that advise everyone to take the heart because It's it's the pure intention of how the the usage of this framework is intended. So, Just a note and I'll bug you again with it tomorrow.

Ayman Abi Abdallah: So, Getting. Into business here.

Ayman Abi Abdallah: So first, you know, and it's simplest possible for you can get mochi setup on an EC2 instance in AWS and all the examples refer to AWS. By the way here. Okay, so you initialize your domain, your domain is on Route 53. You pointed to an easy to instance, you log into the EC2 instance, you deploy Monkey there? You could you hook it up to an RDS and possibly to an open search cluster? If Your credit card is in good shape. so, The parts that will pass the audit are highlighted in green and the parts that will fail are highlighted in red.

Ayman Abi Abdallah: So in this case and again, this is like the, the simplest possible installation mochi, installation. So I didn't include proxies and I intentionally highlighted the problem here. So in this case, we have the EC2 instance, running jetty on port, 8080, which is the default behavior, and Mochi is accessible on an SSL port, which is an immediate red flag, and then the connection between Moki. And the RDS instance is not encrypted So that's another red flag. So we take it up a notch. and we now add in the EC2 instance, an Nginx Proxy. And basically we proxy, the nginx traffic on port. 443 to go to mochi on port, 8080?

Ayman Abi Abdallah: So what happens is we removed one of the red flags which is the traffic hitting easy to now headset on an SSL port. and since the connectivity between, Nginx and jetty is within the same instance, so no. Traffic is traversing the network on encrypted. You may be able to like you may be able to get away with it. Some will still say, you know, have a tunnel between the applications just unnecessary complications. Okay. So in this case, the only problem we still have is that the connection between the EC2 instance and the Rds instance is Unencrypted. Okay, but in reality, you may not really want to run easy too. You may want to use an orchestration tool like Eks or ECs.

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Ayman Abi Abdallah: So, you offload some of the configuration efforts into that area.

Ayman Abi Abdallah: So in this case, we have a ecs cluster. Where we have more key defined as a ECs task. And again, we're back to square one where the traffic between the application load balancer and the ECS cluster. Is not encrypted.

Ayman Abi Abdallah: because the ECS cluster is basically running on the default port which is 8080 and again the traffic between ECs and RDS is again not encrypted.

Ayman Abi Abdallah: So, what we did in our As. Referring to the quick node slide. We took the out of the box smokey and we did the necessary changes to it so that we achieved compliance. And when I say compliance, I mean the data should be encrypted at rest and in transit. So when an auditor looks at the flow of requests and data back within the your network, he or she should not be able to find a spot which serves data on encrypted. And the way we did that is we extended the Monkey Start application. I'm not sure if that's readable or not but we added a few A few parameters to the Mocky start which basically allow you to specify the HTTPS port.

Ayman Abi Abdallah: You want and the key store path and password and the trust store and trust password. Those are basically fed into jetty. To so that. So jetty basically serves requests over a SSL port, it's interesting to note that the application load balancer. Here doesn't care if the certificate itself signed in the ECs task. So if you try to access the ECs task directly, you're going to get a warning that the certificate is self signed and you need to trust it. But if you're going through the route of the al B, it won't really care that. It'll just accept the connection. Which was news to me. And we finally added a trust. All

Ayman Abi Abdallah: Flag which basically says, I don't want to set up a trust store and just trust any connection that is coming into into monkey. These developments are available in our fourth. So, feel free to check them out.

Ayman Abi Abdallah: Question. Somebody asked a question, the presentation? Okay, cool. Great. So...

Ayman Abi Abdallah: what yeah.

David E Jones: Um Amen.

David E Jones: When you stay here for, what's the group name on on Github? It's the MK decision to have one.

Ayman Abi Abdallah: MK Decision. Dev

David E Jones: Okay. Slash monkey framework basically. Okay great thanks.

Ayman Abi Abdallah: Correct decision slash smoking framework.

David E Jones: Yeah. Okay.

Ayman Abi Abdallah: Yeah. And by the way, most of the code was already there commented out and it's Jar Class Format. So you know, and mochi start. We're not, including like we initialize classes, using the class loader as opposed to a direct import from the jar. So it the code we used was actually in the commented section. But in the JAR format, we just had to convert it to the class format and we got it right. Great. So that's for that basically describes the the first problem we encountered, which is achieving compliance from the applications perspective.

04:40:00

Ayman Abi Abdallah: We're left with the last bit, which is between the ECS cluster and the RDS cluster. So here we basically want to establish an SSA SSL, database connection. And the way you do that is you simply just add SSL equal to the JDBC drive jdbc URL. however, in the case of postgres, because we're using the xa properties, there was not like we were not exposing the JDBC URL to in in the case of posters so what we ended up doing in that case is we basically just customize

Ayman Abi Abdallah: And you can see it In the first paragraph. We customized the jdpc connector for postgres, and we basically passed in the URL. Attribute. And the way, the way it works, the JDBC driver wants a detects, the URL attribute. It sets a number of attributes out of it. So it's like parses the URL and gets the host name, it gets the port and It gets a bunch of other things from it.

Ayman Abi Abdallah: Okay, so the default JDBC. URL, which is the entity DS URL is for H2. So you see like JDBC colon H2 so we had to put in this condition that if it's the default. Don't do anything, like just set it to NULL, but if it's not, if it starts with JDBC postgres, then actually use that.

Ayman Abi Abdallah: Use that URL here and for the server name we're basically saying if the entity DS URL contains JDBC postgres then do not set a server name because it will get automatically parsed from the URL. Otherwise just set the Set the entity DS, host in here. And similarly, for the port.

Ayman Abi Abdallah: So in the URL, we basically set the host the port. And the database, schema. And the additional SSL attribute. So if you look at the second paragraphs, second parameter, this is what the URL looks like. Okay, so it looks like JDBC Postgres, local host, column port slash. The database name and if you want an SSL connection, you just add question mark as SSL equal through. And then you have established the SSL connection with the database. Of course, this requires that the database system is SSL features is enabled there.

Ayman Abi Abdallah: So with these two changes, we basically were able to achieve a end-to-end encryption on the between the browser and Mochi on the database actually and the database yes.

Ayman Abi Abdallah: Okay, so jumping through the neck before I jump to the next section any questions on this first part. Were you encrypted with the database on this also with RDS? I'm not sure if the infrastructure team is doing that but from the application perspective, all pii and sensitive information are marked as audit. Audit through basically in the entities in the entities. So they are they are encrypted through sorry not all the true in the end it is so the data in the database is encrypted at least from From the applications perspective. So on disk it is encrypt. Ed on.

Ayman Abi Abdallah: It's likely but it's self like the hard drive isn't cricket, but the data on the hard drive, that's the database. Ation only the sensitive data so like PI and card numbers.

Ayman Abi Abdallah: I'm pretty sure like if it's not done, if it was not already done that, it's already. It's done now because and a topic came up recently that that was an audit finding and they wanted to

David E Jones: Are you talking about the sorry?

Ayman Abi Abdallah: Yeah.

David E Jones: I was a way for just a second. About the, the audit log history being encrypted.

Ayman Abi Abdallah: Notes, The actual,...

David E Jones: Or.

Ayman Abi Abdallah: the actual data in the field.

David E Jones: Yeah, so, oh, okay. So oh. So you were flagging additional fields as as encrypt. Okay.

04:45:00

Ayman Abi Abdallah: Yeah, I'm Michael was about the actual database this which I believe is, is encrypted as well. Now, it's Are you guys using Keck key encrypting key at all anywhere? Uh, do you know what that is? I know what it is, but I'm not sure if we're using it. I would have to I would have to ask the infrastructure team, ready, doing and so you read your pink blob from database and then only the application layer can then decrypt that You don't store that key in the database itself. Yeah, that's the case and that's the monkey case, Isn't it? Like when you haven't seen key encrypting key support in Monkey? I mean, but when you, when you mark, when you mark a field as encrypt,

Ayman Abi Abdallah: What the value that actually gets written in the database is the encrypted value. In the ECs task. So out of the database. It's in. It's an application environment. Yeah, yeah.

Ayman Abi Abdallah: So it's in the application. It's it's an issue initialization variable in the application. I,

David E Jones: And it can be either in the Milky Conifexml file. If you want to drop one of those in somewhere or typically it's in an environment variable,

Ayman Abi Abdallah: So it at closely resembles, the scenario that you described. Yes. In our case, we pull it from. Yeah, which and that's that's a great segue to the second problem that we solved. Which is you know, in production in reality, when the business grows you probably have your resources scattered over multiple AWS accounts. So the first thing the infrastructure team said is Hey we don't want to maintain API keys anymore in the application. It's really a nightmare. So what we want to do is we want the application to assume the role in from the AWS task. It's running from And we wanted to use the permissions from there. So with it, some research. on that, and it turns out,

Ayman Abi Abdallah: That. The AWS SDK. Supports supports multiple concept of credentials credential provider.

Ayman Abi Abdallah: The out-of-the-box implementation of monkey. AWS does not set a credential provider by default. Which means that the default credentials provider is used. This is what it means when

you don't set, when you don't set your own credentials provider, and what the default credential provider? Does it takes you through a number of attempts, a number of authentications six and total? So it starts by checking the Java system properties for AWS DOT Access, KEY ID and Secret Access key. If it doesn't find it, then it goes to the environment variables. And then it goes to the web identity token. And then it goes to. The credential profile. And if it doesn't find it, the fifth one is actually the interesting one, because we ended up using that.

Ayman Abi Abdallah: it actually, when you run a, when you run mochi in ECs the ECS engine, automatically populates a field called AWS container credentials relative URI and that that URI is A Um, so you alright that becomes accessible from within the container and it gives you the credentials that the container can use. And the AWS SDK automatically picks these up so you don't really need to do anything.

Ayman Abi Abdallah: And that was an excellent discovery. But then, you know, because a developers life is never easy. So after we made this outstanding discovery and we told the team, the infrastructure team that, you know, we feel that your requirement is covered with. What's available out of the box? We discovered that the actual resources are not in the same AWS account. So the assume role on the task will not work. Exactly. Because the resource we were attempting to access is in another AWS account. so, we went back to the drawing board and we checked the credentials provider, And interface and the available implementations. And we found that AWS SDK. Offers something called an assume role credentials provider.

04:50:00

Ayman Abi Abdallah: So, what we ended up doing is we added an additional field called AWS Underscore Role Underscore name. Alongside the key and the secret access key. Yeah.

Ayman Abi Abdallah: Along with the key and the access key. And we basically as part of the initialization of the tool factory, we checked if that role is set, then we assume the role and we initialize the The tool factory with the assumed role. so, this is backward compatible in the sense that You could very well not as humoral and just specify your API and secret that's option one. If you're running ECs, you can set the role. on the task and remove the API key, and the secret key from your configuration and have that have the AWS Component fall back to fetching the credentials from the ECs task.

Ayman Abi Abdallah: And the third option is you use the container credentials alongside with the role name to facilitate assuming roles and accessing resources from other AWS accounts. I did link the SO I pasted the code snippet that used here and I did link the full example availability, and the AWS Documentation website.

Ayman Abi Abdallah: So those are a few interesting. Problems, we have to solve when taking mochi to a production environment. Any questions?

Ayman Abi Abdallah: Sure thing.

Ayman Abi Abdallah: Was it better?

Ayman Abi Abdallah: It ends on how you want our magic. I guess when you work local that workflow is. How would you, how would you? talk about like, Did, do you have those considerations in devonments versus production and how do you do that? So we primarily use local live environments so we don't really worry a lot about

Ayman Abi Abdallah: Security stuff. But QA and onwards, that's when Those come to life and they pretty much mirror. Yeah. Production With, with, of course, less resources. But yes, they matter. The configuration change its own. The.

Ayman Abi Abdallah: Target.

Ayman Abi Abdallah: Cool. So send email, discover

Ayman Abi Abdallah: Like like how security needs to be there for compliance? Or like, I guess what, the How to Securely deploy Monkey.

Ayman Abi Abdallah: Um, I mean, more kids, pretty secure and it's out of the box form. If you of course, have it behind Nginx it's more about Taking the compliance checkboxes Yeah. I interpreted his question for deploying monkey, is how you make certain that the code that's running in. The server is a couple you actually built in your ci/cd. Oh means got to have someone signed the images and get verified. All your air gapping or machine if deploys and there's a whole other series of terms. Yeah, modify that code which standing now that can hack your data. alright, so The.

Ayman Abi Abdallah: Images that are. So we're on a container based environment. So the engineering team basically builds images and publish publish them, publishes them to AWS ECR to a private repository. So technically for anyone to tamper with the images, they would need to have access to our AWS account and then we're in deeper trouble that just the image

04:55:00

Ayman Abi Abdallah: Yeah, that makes them.

Ayman Abi Abdallah: look at I

David E Jones: Yeah. So go ahead and close this session and Allah, stop recording them.

Ayman Abi Abdallah: Sure, don't. Ever online. Yes, I say for Ffh part of it's the customer call he goes, please, he sends me you. Okay. Please check your email and sometimes even I have, alright. In that.

Ayman Abi Abdallah: So, what are the ideas for the high Castle thought? I have a few ideas?

Ayman Abi Abdallah: Well, just give me a moment. I'll give you. It's interesting since we don't really I guess there's no SSA on the in the water here. No. Yeah. So it's disabled that's sort of That sort of imposes. Well, and then there's the individually. I just gathered to my phone. Yeah, that's gonna be. Yeah. Okay. I'm not gonna have anyone else, connecting my tether and we have to do that on their own device. It's more secure that way too and the brain food phone bills gonna be For the night. you know 17, I could just say just Using the whole time. Really? Yeah. Are you on outcome? Are you on the guest network? Yeah.

David E Jones: Well yeah,...

Ayman Abi Abdallah: I cannot.

David E Jones: the Alchemy network they proxy. SSH, right? So that's it's Re-encrypted. and then you get,...

Ayman Abi Abdallah: Okay.

David E Jones: you get a bunch of like key warnings and stuff or like the Earth Certificate, warnings, if you try to connect to A

David E Jones: And I don't know if you get it in the browser so much but if you try to use get over ssh, it'll run into that.

Ayman Abi Abdallah: It was just not transmitting any data whatsoever and I was trying to ssh to get help just to make certain, it wasn't one of our particularness so I couldn't get to get up. I see. So, I have like a Notes Document and it's titled Mochi Ideas. So you can you can sort of

Ayman Abi Abdallah: gather what it's all about and it has it has a few. It has a few ideas which I think are straightforward and simple enough for us to tackle and I hackathon and some of these ideas were discussed at some point in, in the past. So, I'm going to skip the ones that don't really apply but like an email tester. So we currently have the email server entity. We don't really have an email tester screen. So basically just a screen that sends out an email and says you're good or or not. And then we a a screen that controls log levels So currently. When you use the

Ayman Abi Abdallah: The log facade.

Ayman Abi Abdallah: Technically, you have the ability to change the log level at runtime. But you would need a script to do that. Like, you need, you need some coding to do that. So the idea was that, we have some screen probably within the log viewer, maybe a pop-up dialogue or something that allows you to view the current log level on the logger, facade and change that. Then the depth.

David E Jones: The one quick note on that the Doing it through the logger facade or anything. That's logged through the logger facade. That'd be pretty easy to do or log for J and gets a lot more complicated. Because of all the different,...

Ayman Abi Abdallah: Hmm. Yeah.

David E Jones: there are different log levels for different packages and all these sorts of things. And and I think also I remember looking at that at one point and and I don't remember if this is correct actually, but seemed like you had to if you change the log for Janet, a configuration, you had to reinitialize it. There's some funny things about that.

Ayman Abi Abdallah: Yeah, that's That's correct.

David E Jones: So Yeah.

Ayman Abi Abdallah: Yeah, that's what I explicitly said, the logger facade.

05:00:00

David E Jones: Just the log of the sun.

Ayman Abi Abdallah: The Log4j version 1 had like a quick and dirty solution where it's a couple of clients but look for J2 requires a complete initialization of the library. so, I,

David E Jones: We're also logging through SLF or j and then that is configured to use Log4j by default, but and then there are different libraries used in milky that use log for J. Or some of them go through SLF or J. So yeah, there's some complexity underneath there. Yeah.

Ayman Abi Abdallah: What? And then I have the adding a deprecated flag to the service definition. So that like when you call a service you can The surface runner would basically just log a warning that this service is deprecated. It's a simple one. Just basically attribute in the excess D and stuff like that. And then a integration with AWS secrets. So that you can read.

Ayman Abi Abdallah: Secrets from the Secrets Manager, another Ps.

David E Jones: And use that. As an alternative to environment variables, or or properties in the like the default properties in the multi-com files is that kind of the idea. Or or API access to secrets sort of thing.

Ayman Abi Abdallah: Both. So in some cases like like when you have an integration or a system message, you may want to put in the password field. The the secret are as opposed to the actual secret, but the way I thought about it for the environment variables is because the environment valuables currently all go through one class. If I remember correctly, like they're fetched from a central place. So we would just add the condition that if it's if it starts with AWS slash something, then fetch it from the secret manager. This way, it would be, like, backward compatible to the existing. Systems.

David E Jones: Yeah, and maybe the AWS component could plug into that somehow or something like that.

Ayman Abi Abdallah: Yeah. And...

David E Jones: Yeah. Okay.

Ayman Abi Abdallah: then the final one, which is a bit more challenging. It's there's this documentation component called MK Docs, It's pretty on online. And it's it's used for generating documentations.

Ayman Abi Abdallah: Yeah, but it's not related. It's not related to, Okay? I believe it's, it means like MK make as the, you know, like the Linux command. So what I was thinking is because we've like In our line of business, we've received a number of requests over time. To provide documentation about our data model. So that The. Financial institutions that we work with know what data they could use in their reports and all that. so they basically want like a an offline version of the entity details creates And Mk docs, generates some pretty good looking documentation. so the idea here was, maybe develop a standalone component that we could integrate that would add

Ayman Abi Abdallah: The ability to export or generate documentation from the existing. Entities.

David E Jones: Output. That's printer friendly. And have a screen that does it for.

Ayman Abi Abdallah: Hmm.

David E Jones: A whole bunch of inches entities, instead of just one at a time as the current screens to. Yeah.

Ayman Abi Abdallah: We can just make those screens offline capable.

Ayman Abi Abdallah: And pws.

Ayman Abi Abdallah: We were talking about adding paging. The hive Mind Admins main screen. Nice. That's also that's also a An excellent addition. You have it running Oh yeah, we we can kill your Web browser Oh with the 10,000 projects. There's no aging on hive mind admining. We made a decision to not right back in screens and we use whatever screens were there. So we bottled our 3D app as working for project. And of course Customer went down and got it all wanted project, but it's cool. but then, every time we hit out of my head, Hive mine admin. It tries to fetch all the projects that are in the systems like Mommy.

05:05:00

Ayman Abi Abdallah: I'm here.

David E Jones: Did you did you do that? And just using the, There's pagination support for section iterate these days? Wasn't there? When I might add, when Admin was written, but the section iterate,...

Ayman Abi Abdallah: Alright.

David E Jones: pagination would be pretty easy to add there.

Ayman Abi Abdallah: That sounds good and we know a little bit more about the screen stuff now than we did when we were building this app. Yeah, because I'm doing that. What are you doing? it's like, Look at the memories that it's like, Are you on this thing? Look at yeah, look at the context size though. It's bigger than where I am. So it is swapping. Oh it's like Oh he is trying to run a conversational ai. No, this is star coder. Oh wow. He's running ai python Tool on his laptop right now. And it's it. It is choking.

David E Jones: So it looks like Mk. Docs is mostly marked down. Render kind of thing.

Ayman Abi Abdallah: Yeah, that's that's why I felt that You know, it's easily I don't say easily but it's it's the approaches straight forward. because,

David E Jones: Yeah.

Ayman Abi Abdallah: The basically being able to generate offline documentation of the data model. To share it with third parties. there's,

Ayman Abi Abdallah: The email tester log levels service, deprecated, AWS secrets and MK docs five. Five ideas.

Ayman Abi Abdallah: I think it'll be interesting, just Then they get something. It's an easy presentation. Like really use that I put. This is how it looks.

Ayman Abi Abdallah: just, He?

Ayman Abi Abdallah: and we could make the ultimate So with abundant I just would be like the ultimate docs questions. You just say you want you on the data model heaters, like the data model explained in plain English. Or you're

Ayman Abi Abdallah: Or your needs. Yeah.

Ayman Abi Abdallah: I like that. I don't know how much we'll be able to mess with. I think that. I kind of

Meeting ended after 06:20:39 🖐️