CLOUD REALITIES

CR067

Digital transformation in microcosm with Nathan Clark, Ganymede

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Capgemini's Cloud Realities podcast explores the exciting realities of today and tomorrow that can be unleashed by cloud.

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[00:00:00] I guess the only question is, uh, is the video recorded with the podcast? No. Dave's got a face for radio, so we keep it all together. I have to live with, this is what I have to live with.

Welcome to Cloud Realities, a conversation show exploring the practical and exciting alternate realities that can be unleashed through cloud driven transformation. I'm David Chapman and I'm Rob Kernahan.

And today we're going to look at digital transformation in biotech, a particular data platform. Welcome That integrates workflow to allow scientists in labs to be able to work more effectively and actually also, um, stands as a really good case study and, and microcosmic look at the possibilities of digital transformation.

But before we get to that, [00:01:00] I was in the office the other day and Rob had taken over the whole kitchen area. And he'd had a big box of Lego out and he was, and he was building something that looked like a workflow. I couldn't quite see what it was. And I said, Rob, what are you up to this week? And he ran over and he had a test tube in one hand and some Lego in another hand.

And he goes, David, what I'm trying to get to what I'm trying to really understand. Cause I think we're so close is the internal architecture of the tricorder. I think we're nearly there. And I'm like, Rob, I think we're quite some way off a tricorder. He's like, no, no, David, I, I think I can prove otherwise.

I bet. Well, I look forward to that. But what else have you been confused about this week? We're not that far away. We're not, it's coming. Yeah. Well, I remain to, you know, you might convince me on it, Rob, let's see. But the other thing I'm confused at is, um, I got, I was thinking about, Ever since we did that show with Anders Insert about simulation theory, I've, you know, become slightly obsessive about thinking about it and, um, [00:02:00] I was thinking the other day.

That could be a bit dark, maybe. Yeah, no, no, yeah, it plays on my mind. The thing is, right, I was then, I also caught up with the film The Matrix. So I watched the new one, quite frankly, stick with the original trilogy, the latest one, you might as well consign to the dustbin. It's not that good. Um, however, I was thinking about it and saying, you see Neo and he's got all these great powers and he has, you know, he can do all these great things in the matrix.

Right. I thought to myself, I Would I like that situation? So, I'm in the Matrix, I'm able to do all this funky stuff and corrupt the system and do all sorts, but I know I'm in a simulation and actually somewhere realistically the robots have won and they've risen, or would it actually depress me the fact that I know I'm in a simulation and I may be able to affect the simulation, but it's very difficult to break out?

I don't know. I can't work out which one I'd prefer because you've got this endless possibility in a world where you can do all this wonderful stuff, uh, actually, but you're still aware you're in a simulation. And I don't know, is blissful ignorance better than having [00:03:00] superpowers in a world that may not be real?

Well, I think they actually touch on that in the film, don't they? Cause they have the guy who is sitting there. He's, he sort of betrayed them and he's sitting there in a restaurant and he's eating like a big steak exactly. And he's like, you know, I could, I could have lived in the normal world, but I'm living in a tin can eating gruel every day when I can live, you know, kind of quite happily here.

Thanks very much. And I can't tell the difference. And I think it's, I mean, it's a, it's a pretty

deep point, isn't it? Yeah, I know. And they play with it in the film. Absolutely. But I can't work out which one's the best option because you don't know the pain of the actual world outside. But you do actually know it still exists.

And that's where you are. So your reality comes down to your perception. How about this, right? So let's say you decided that you did want to be the superhero in the Matrix side of things. Yeah. And that means you have sort of a, a purposeful view. It's, I'm assuming you would be a good superhero in that role.

Oh, [00:04:00] Dave. Because you might, might go, you, you might get a bit, you know, bored 'cause you know it's a simulation, right. So off you go. You could do all kinds of, so I'm assuming you are for the power of good, for the basis of the Well that's nice. You've got experiments, you've got, you see a good side of me.

Yeah. I, think you would generally come down on the good side and. So you put, you know, you've got a purpose to do good with the powers that you have being driven with that purpose. Maybe does translate to, uh, I, you know, I, I would want to be in the real world cause I'd want to try and resolve the problems of the real world rather than hide in the matrix, playing at being a superhero.

This is where, uh, Neo takes the, uh, was it the blue pill or the red pill? I can't remember, but he take, that's the choice he makes to go and help the world. Isn't it? It pretty much is, which is why he's, you know, ultimately successful in what he's trying to do. Yeah. Perhaps. There you go. I don't know. I'm still conflicted by it all.

Well, that was a big one for Friday afternoon. And in terms of torturing yourself with whether you think you're in a simulation or not, [00:05:00] where's your head at currently? For the past, since we did that podcast, which probably about 18 months ago, wasn't it? Yeah. I would say each day, ever increasingly, the percentage belief I am in a simulation is increasing.

This is terrific. This is a terrifically hopeful point on which to start the show today.

All right. Onto the main subject of the show. And I am delighted to say with us, we have Nathan Clark, who's the co founder of Ganymede. Um, so Nathan, do you want to just say hello and introduce yourself a little bit, but also do we live in a simulation, Nathan? If I knew I couldn't say, uh, the, uh, but I'm pleased to be here.

I'm Nathan. I'm one of the co founders of Ganymede. I, uh, on the Ganymede side cover both our commercial and product and platform engineering. Um, and part of this worked in a company called Benchline, which is sort of, it's a electronic lab notebook, sort of like your system of record for wet labs and biotech.

And then Before that have a background in financial technology, but as far as I can [00:06:00] tell when I look outside, I don't see any pigeons glitching or cats repeating for now. So it seems pretty clean here. When was the last time you had a deja vu?

Maybe, uh, When was the last time you had a deja vu? Oh Dave, that was a terrible, oh my word. Ganymede. bio, give us the, give us the real background and the real context for what you guys are, what you guys are trying to do. So we're a cloud connectivity platform between lab instruments, applications in the lab, systems of record that people use for, Life sciences and biotech, we effectively make it so anything that scientists are doing with their hands that can be captured in software and we can actually connect to these data systems.

It's really hard in biotech. We spent a lot of time building out the infrastructure to make that happen. So that's how we're using the cloud is driving connectivity for science. Well, give us

a sense of when you were originally coming up with the idea and the opportunity that you've seen that you've subsequently created the company [00:07:00] around, what was the core problem and purpose that you were trying to solve for those of us that aren't that close to biotech as an industry?

So my background actually originally is in finance years ago, and I made the switch into biotech and went to a company called Benchling, which is an electronic lab notebook company. And what struck me there was. There's so much liquidity to data in the finance world, every other industry has gone through this ETL revolution.

But it's so hard to actually do that in life sciences because the data is so diverse it's impossible to structure or find any schema and the systems that you're connecting to are not nice online databases like, you know, modern AWS based things. It's all Windows PCs in Windows 95 somewhere in a lab buried in, you know, might as well be trapped in a concrete block.

And so the inspiration here was saying, how do we bridge that legacy infrastructure stuff and then still deliver a pretty modern ETL connectivity experience? Because connecting the lab really does require that ETL [00:08:00] like paradigm. This is an interesting thing that I have come to realize over the years, which is, Engineering systems they have the idea that if it's working don't change it and IT has this change, change, change, change, change, change, change, change type culture and when the two come together best characterize the type of world that you're describing is you get these two worlds that come crunching in the middle and you go it's complicated to integrate them so if you had to do that by yourself it would be very difficult so essentially you're gluing these two worlds together and creating value from getting the data across them.

100%. And every company knows they need to do this. We're not, uh, I don't think there's any secret problem that we've identified. And companies will try to do this on their own. They'll build out engineering teams for this. They'll build out a subject matter experts on it. But it's, it's so hard. And like, exactly like you said, Yeah.

The scientists want to do the science and then move on and not necessarily worry about all the standardization and all the structure and ITs in there, wanting to [00:09:00] understand that and capture it and refine and identify the process and then find how to scale it up. And it just, they end up at loggerheads on it.

because of that misalignment oftentimes. So yeah, I think that's where we find a lot of value is jumping in and saying, Hey, we have the infrastructure ready to go, and we can help you structure the data. And the platform is very well suited to that. So it ends up solving both problems at once in a way. Is it effectively like a data platform solution across a biotech value stream?

I think that's right. Yeah. I mean, our fundamental unit of value is what we call integration. So saying, okay, we'll get the data from where it's coming from. Probably some, you know, Windows 95 lab instrument PC. It's usually not that bad, but you might as well imagine it is. Oh, those are the days, eh? Don't get Marcel started on Windows 95.

Go on, Marcel. Go on, Marcel. Marcel was involved, weren't you, Marcel? Go on. This is an audio medium, Marcel. I worked at Microsoft in those days, so I did the Windows [00:10:00] 95 introduction. Yeah, that's correct. Start me up, Marcel. Start me up. Oh, that was a pretty good video. Hundreds of CDs with Rolling Stones, start me up.

So those were the days. Those were the days. Unlimited budgets. Yeah. Sorry, Nathan.

Windows 95 computers. Yeah, no. And to your credit, Marcel, they're still in use. Or maybe to your horror. They're out there. And so our job is, we want to say, okay, a file, some file in some random format on a Windows 95 computer.

Can that be presented as a nice, clean online database ready for ETL, ready for analysis? Because stage two now is, okay, What do you do with that data? We standardize it. We have the connectors for it. We clean it. We also give people in an analysis environment to say, okay, do your scientific analysis too.

Because this data is pretty huge. In isolation, it doesn't mean much. You need to analyze it to make something of it, do some statistics. And then we have the connectors to also put it where it needs to go. So into the, uh, [00:11:00] electronic lab notebook, into the, the LIMS, which is basically your, uh, Operational database for your lab, the lab information management system, so that full process of moving the data, that's what we do in the platform facilitates.

It's really connectors. And then the analysis environment in between to glue it all together. But it's ETL in a lot of ways. And so sort of the, I mean, scientists in drug discovery, et cetera, they're very clever as an example of understanding data and driving forward, uh, like the process. For that, but when you bring the data together into a platform like that, does that mean you've introduced or organizations are introducing that data science concept?

Is that you mean to help them without to get them to understand the power of now? This information is centralized. There's lots of analytics above it. Look at what you can do, and it can cut out a load of stuff of your job day job, which you might not like, because it's highly manual or complicated and boring.

Potentially exactly. Yeah. And I think that's one of the interesting things here is we. Have almost a road map set out for us by looking at how other [00:12:00] industries have gone through their ETL revolutions. And you know, on online modern data stack cloud based infrastructure that's now only just now coming to the world of pharma and biotech.

And so we can just play that forward. And so exactly as you said, get the data online. At first, you can have some data visibility and automation benefits for Yeah. Okay. The users on the ground, the scientists in this case, but then the immediate next step is saying, Hey, there's this wealth of data. Now it's actually finally fully contextualized.

There's so many companies out there. They have, you know, pharma companies have invested in building out their data lakes, but it is hard to make use of this data in isolation. You really got to have that, some business automation first to even contextualize it. And then the data scientists can come in and say, Okay, let's do some meta analysis on all of this.

Let's look at some operational metrics. Let's see how labs are performing. That kind of. Operational data science and wet lab data science is a pretty new discipline in a lot of ways, but we see it definitely emerging. A lot of it traditionally in biotech has been all around high scale bioinformatics use cases.[00:13:00]

And that aspect of workflow that you described, which kind of takes it from being presumably static data into something that puts the data in the right place for the, the right section of the workflow, is that something that you've got built into the, into the data platform, or is that something that runs across the top in all of the various different.

So tools that the labs are hooking into your underlying platform. That's what we built in the platform because I think exactly all those tools, they're very much point solutions and or windows computers. And so they don't anticipate much data structure. They don't expect

themselves to be part of a broader workflow or, you know, maybe they know they are, but it's very hard to know what that workflow will be.

So for us, what we've done with our solution is we've said, let's also, you know, Bring a good way to define data structure as you go. Leverage open data standards. Leverage the data structure. Maybe that you set up in your limbs, your operational database. All the schemas there are very valuable, important business structures.

What can you map data into them from the outside rather than just [00:14:00] saying, Okay, this is trapped within one database. That's I think another big piece of this is how do you Spread that structure across more of the process and talking about it from an outcomes perspective, whether the outcomes in, you know, kind of, you know, treatment development or, you know, whatever aspect that, you know, whatever products are being developed across the top of this, what kind of either acceleration or improvement do you get in the quality of the product or the time to market of the product?

I think for us, it's a lot of it is time to market. And the thing is, the yeah. Root of all the, uh, the value here comes down to scientist time savings. Scientist time savings enables faster time to market. You know, if you're a big pharma company and have as much money as you need to invest in anything, you could always hire more scientists, but it's, it's like the, the old saying of, you know, Multiple people won't make a baby happen faster than nine months.

Uh, you know, the baby will take nine months. What you need to do is take the existing employees we have and speed them up and save their time. I've got [00:15:00] such a vivid mental image. I, I, you know, like from that baby thing, I was going to say almost all people know it takes nine months apart from project managers that think if you triple the resources, you can do it in three.

I've met some of them. I have, you don't, you don't get many project management gags on this show. Rob, well done. Hey, we had the Latin one a few episodes ago. Now, if you just, you know, shuffle around the Gantt chart a little bit. Yeah, yeah, we're fine. Yeah. It's always that, I always say, just a diversion, but is that where the engineers are in the room, the project manager's there, and they're trying, the project manager's trying everything they can to potentially bring the date, and the engineers are just going, No, it's just not going.

Well, you can draw it like that. You can draw it like that. It's maybe not going to happen like that. Anyway, I digress back to the point. So, yeah. So, but there's, but there's even though you can't, you know, make a baby faster than nine months. Presumably there's some aspect about acceleration that's going on just as a result of having the right resources in the right places.

[00:16:00] Exactly. Well, and you know, you have to take the people that you have in a lot of ways who have the context and are doing the science and speed them up with what they're doing with their hands. And that's where a lot of the value comes in is we automate. All this time that people are spending, uh, moving data around, you know, those computers, they have to go USB, stick the files off oftentimes to to get them into something that's, that's Next to their laptop, they might have to go manually file them in some folder somewhere do repetitive analysis in Excel Then do all this data entry into their system of record to go track it And that's a lot of the value speed up because you free people up from this menial data work And then that allows them both to Yeah, you save time, but also they can spend more time on higher level scientific work that they're doing.

They can express themselves as scientists. And so that's where we free them up to have time to drive scientific insights. And we provide them the data set to find those insights. It's

amazing. There's zero ability in the life sciences, oftentimes by default to compare any data between experiments. These experiments [00:17:00] are Yeah.

Oftentimes done pretty much in isolation and people have peaks into this, but it's always a huge manual exercise to do any comparison. So enabling that actually starting to capture the data in a structured form where you can compare it is transformative for people. So time savings and then scientific insights.

That's that's the The other thing that occurs to me as you, as you're describing the solution and we're getting our heads around the solution is, is just sort of what a good case study it is for digital transformation generally, because you're dealing with kind of sorting through the underlying data.

But you're not leaving the data static in a, in a data lake, and we might come back to data lakes in a second. Um, what you actually do is you're, you're knitting it into some sort of understood workflow that then in a loosely coupled way, you can bring other tools to and have your data in the right place.

So is that, is that a fair characterization of it? And do you think there's lessons that can be learned from What's going on here in terms of understanding [00:18:00] this value chain and be applied more widely to organizations? I think that's exactly right. And what's really going on here from my perspective is life sciences.

You're dealing with human biology. Oftentimes you're dealing with some sort of R and D component. Everyone's trying something new, even if you're late stage and you're manufacturing some drug. You know, that's still a novel process. There's zero standardization. I always say this is just business automation, but it's the worst case ever for those reasons.

And so what we found is all the time, you know, pharma companies, they know that they need to do some digital transformation, and so they'll oftentimes embark on the thing to go create a data warehouse or data lake. But if you only do that top down and you're only saying, okay, I've collected all the data.

I have all this raw data. It's all the files from my, Windows computers everywhere are in one place. Now you still can't do anything with that because there's also all this context. There's the business process. There's the what people are doing with their hands. And I think the lesson that we've learned from that is that if you want to make value of that, you want to contextualize that data.

So from a top down [00:19:00] perspective, if you do business automation, if you automate what scientists are doing with their hands, get the data off the instrument, analyze automatically, put it where it needs to go. You both Are building a richer data set from that data like perspective, because now you know where the data went.

You have all this rich metadata. You see the process and how it was analyzed in from the bombs up perspective. The scientists are like, Oh, my life is better. I've saved a bunch of time. I'm not doing all this repetitive data entry. So that's great because now you have much more organizational alignment.

All these data lakes and digital transformations. Five years in, you start losing a little bit of organizational theme when people are like, Okay, well, You know, who's pounding the table to keep doing more of this? But when you get the scientists on board and the scientists run these companies, they will pound the table to say more business automation, please.

Well, it's the thing, isn't it? So you get an industry that maybe digital forgot the land that

time forgot, and they've been working with Windows 95 and all the follies that come with that platform as much as we loved it. It's had its day. Start me up. And then you come along and you provide utter magic, and then they see the outcomes.

I bet that creates quite a lot of [00:20:00] excitement. in their realms. And then once you've done a few of them, they start going more, more, more because they just didn't know you could do it. And now they're getting like, Oh, my God, this is transforming everything. Yeah. And that's the magic of where cloud infrastructure is these days.

You know, we have the benefit of Being founded fairly recently in a very modern world with the cloud. Everything can be serverless. Everything you know is all just terraform apply, create your entire infrastructure and it feels so good to us how quickly we can develop solutions and how quickly we can modify the infrastructure and build out exactly what the clients need.

And I think it feels good to them. The efficiency with which you can build as a software engineer these days is such that you can get it. Further into these little nooks and crannies of solutions that you can develop to solve harder and harder use cases. And I think biotech is, and pharma is the final frontier in that way.

It's the most complex, it's the messiest, it's ever changing, but if the cloud is good enough and if you have the right tools and the right development kit with your software engineers, you can actually start solving that now. You can [00:21:00] say, okay, you know what, I know this is going to change every month, but it's so fast now to make a one liner code tweak over here, I can change it every month if I need.

Yeah, no, I had a conversation once and it went along the lines of, uh, we've got to spend ages making sure we've specked the machine. Right. And I went, why? And they went, well, when we start it up, it's got to work. And I went, well, we start it up, we give it a go. And if we don't like it, we'll shut it down, change the config file and start it up again.

And they were like, you are. I was like, you can do that. And I went, that is literally what cloud gives you the ability to throw something away really easily and start again with the right thing. And it was like, and then they just went, Oh my God. And then all these problems just lifted and suddenly they got very excited.

So I do, that's, that's the bit I like where when you actually understand what this thing can do, the Eureka moment, and then suddenly all these ideas come to mind and flood, but there's still, you know, it still happens today. You get some people who don't quite get what you can do and what the potential is of the mechanisms and the systems that just are at the fingertips.

Yeah, and this is abstract, but I think this is [00:22:00] our real arbitrage in our strategy overall is saying you have to focus a lot of time figuring out the business logic of all this stuff. So if we can strip away every other consideration, how do you connect to the windows 95 computer? How do you handle the network access?

How do you turn this into a database? How do you handle the infrastructure? You know, auto scaling lambdas? I don't know. Done. Never think about it again. Don't worry about it. It just works. Get on with it. And now you can have people focus. We say it's a low code solution because they're just writing Python scripts that say, okay, mylabpc thisdata You know, do dot this analysis and then put it over dot here in the lab system. Um, that gets to the point where it's an easy and fast enough development cycle to permit the fact that it's going to change every month and that someone's going to have to go tweak it and rework it. But that's fine

now because it's so easy.

You're not going to have to go reconfigure the infrastructure and do a two day long deploy to handle the fact that someone's process in the lab changed. And that's what enables you to actually capture the data in the lab finally. The other thing that occurs to me as we, as we're [00:23:00] talking this through is inevitably, it wouldn't be a conversation about technology at the moment without bringing AI into the conversation.

You've said it Dave, you've said it. I know. Well, Ruchelka is not here, she's the one who normally says it, and I felt that somebody should say it. It keeps us contemporary Rob. Everything's got a keeps us right up to date, but being serious about it, though, one of the issues that they are that I think is reasonably well recognized, though probably quite unsolved is it's only as good as the data.

And now for 20, 30 years, organizations have had a data issue or the vast majority of the mouth, particularly larger, older organizations that have let data grow organically. Some of the world of big data, what 10 years ago kind of helped with some of this. So the ability to search on structured data better in giant volumes, some of that helped, but actually organizations kind of now arrive in the era of AI with [00:24:00] their data still being haphazard, probably not particularly well understood and certainly not attached in the way that you were describing to sort of an ordered, an ordered workflow.

I guess I've got two sort of threads of conversation on this to explore with you. The first is, does the, presumably the ordering in, in the way that you've, That you've done it within your platform kind of helps the deployment of AI. So when you're thinking about the deployment of AI across the top of your process, is it easier to implement in terms of what you've done with the underlying data platform?

And have you got any good examples of that? Let's maybe go there first and then just teeing up. Later on, I guess is the question is AI finally good enough to justify the amount of effort that's going to need to go into ordering the data to justify the lift, but let's start with your platform to start with an AI exploits on top of the data sets that you provide.

I think it's interesting that you brought up big data here because I think it's instructive. What [00:25:00] is the legacy of big data and what's the value of big data? And I would argue big data actually did drive a lot of very successful change, but it's not exactly what people thought. It's more along the lines of, you know, you have all this work to create high scale analyses and derive insights from data, ended up, when it worked, getting people to have data structures that they agree on.

Data products, I would say, are kind of the, the legacy from, um, My perspective of saying, okay, the business understands what it wants to see what it has learned to ask the questions of its data. And then we finagle the data into the shape needed to answer those questions. It's a dashboarding and data set creation sort of exercise.

Um, and I think AI from our perspective has similar utilities in a kind of similar arc, I would expect in labs and life sciences in a lot of organizations where it's not a silver bullet that will help you Ask the question. You need to know the question that you want to ask of it, and then it will help you answer it much more efficiently if you have the data also to help supply it.

[00:26:00] So from our perspective, what we're doing when we talk about this idea of saying, Hey, we're getting a better, richer data set because we're actually controlling the data and moving it from A to B. We have all this more metadata. That's very important because you're

giving the AI more context and then also As you've automated your process that helps you understand what your process even is to be able to ask the questions of it, you know, in science, people are trying new things all the time.

And so if you try to say, well, how do I, you know, how do I improve my process? How do I make this experiment run faster? Well, what aspect of the experiment? What are the steps? And those are oftentimes not even recorded or in any data structure. So to us, I would say, Okay. The benefits of AI will be there, but it is built on a foundation, a kind of pyramid.

It's at the top of the pyramid, and at the bottom of the pyramid is good, crisp understanding of your business processes, clean data coming out of that, and ultimately AI itself is also a data product. I like to say it's the most powerful, amazing, just statistical analysis that you've ever heard of in a lot of ways.

And so, yeah, [00:27:00] that's been something I've seen throughout my career from, uh, Managing super high scale enterprise machine learning systems in finance where, you know, that is the cutting edge, I would say, of, uh, productionalized, value generating AI machine learning. It's a data product. And then moving over and doing the same thing in the life sciences with my prior company, Benchling.

It's a data product. It's all about just getting the data set there. And then, uh, modern AI tooling is good enough that once you have that data set, you can immediately start generating value. You gotta get the data set. I see. And I guess the getting of the data set, I'm sort of getting from your answer that Those organizations that have not managed to do the heavy lift around their data.

Does it feel like the payoff with AI is big enough this time around? That's a very good question. I don't know if I could answer it generally for everyone, but I do think the payoff will be proportional to the heavy lifting you do, because I think the payoff is really proportional to how much on the ground business automation have you driven?

How much have you connected this into the day to day [00:28:00] workflow? Because if you're doing AI from the perspective of your top down CIO level perspective data lake that. Looks across the organization. It's just too broad. It's it's not going to be able to have the context to actually answer the questions that those people on the ground have.

And I think having a I answer questions that the line level workers, the scientists, the technicians, the accountants in a finance company are asking. That's really the secret sauce. But that requires their questions to be known. That is a fantastic way of thinking about it. I really like that, which is your value of AI is proportional to the amount of blood, sweat and tears you put into sorting your data and your context out.

So if you've done a good job there, expect magic. If you haven't, don't expect too much. And I really like that ratio of did you put the heavy lifting in to get the magic at the other end? Or did you just leave it in its silos all over the place, unstructured and not understood? Well, then you're going to have to work a bit harder to get your value out.

Feels like it needs, uh, some sort of formula worked out. I was just [00:29:00] thinking, Dave, there's probably a bit of math you could whack into that. Yes, I quite like the idea of it. Well, and you can get all, you can even get all the way to that formula in a way. When I was in finance and financial technology world, you can almost measure that.

You can almost find that number because we had, you know, circa 2015. productionalized AI and machine learning that was driving underwriting decisions and working before the entire current cycle, and it's a data product. And we would say, Okay, yeah, there's a value to every

single data set that we glue on to this.

You can almost see the dollars in it. That's an unusually crisp and clear case, but I think it applies to every industry. Um, there's some hidden dollar value on that data set, but that's it's the machine learning model is nothing but a bunch of those data sets glued together a bunch of those dollars stacked on top of each other.

Well, well, let's maybe bring our conversation to a bit of a close just by talking about operating model implications of the sort of technology that we've talked about. And we talk a lot. And I guess everybody does really in terms of modern organizational structures around [00:30:00] tech of around platform and product organizations with, you know, platforms being your cloud platforms, your data platforms, your developer enablement platforms, and then vertical products sitting on top of that, which might be A very purist view of products.

It might be one single product stack with a product owner, or it might be a portfolio of products within a domain or something along those lines. It sounds like Nathan that this product set and the and the microcosmic example of biotech industry that you talked about fits pretty well into that structure.

I wonder if you had any reflections on that. I think that's exactly right. And it's interesting seeing a lot of biotechs out there trying to see how much they should Emulate the the product management and product ownership model of tech companies. Um, I would say that the closer they can get The better.

It's, it's also one of those things that, you know, can you actually get that close? Do you actually have the, the process and the organizational buy in to say, I have a product management team or a product owner [00:31:00] team that's just out there trying to understand the business and trying to interview scientists and, uh, see what their problems are.

But the more embedded and the closer that they can get to that line level back to that same notion of, you know, this has to be something that's answering questions that people on the ground have. It has to speed up their work at the end of the day. I think the better. So I'm a huge advocate of saying, let's have fine grain product owners as much as we can align pretty closely to business domains, and then they'll have an expertise and a vocation in developing data products and developing infrastructure and software products or managing them.

But they really need to be aligned through the business use cases. That also requires though, that those use cases are identified and stratified properly.

What you've been looking at this week, Rob? So platform. Helps the future of science and technology. Right. I thought, what better than when am I actually going to get my tricorder? Right. So we all watched our track. There's a bit [00:32:00] does that the medical communications, what everything. Right. So it's like a mobile phone on steroids.

So I did a bit of investigation into what's actually going on in the scientific instrument area. Well, before you go into it. It's a good time to ask the question, because we've got line of sight to the Star Trek communicator, haven't we? The universal, the universal thing on your chest that you can answer pretty much any question.

And the bit that gets me very excited is, Dave, it's all landing on Convergence. It's been a while. It's been a while for a while, but actually I'm quite excited because if you look at what's going on in the industry, there's loads of convergence. I was just going to run through a few of the things to see where we think the maturity of it is.

But we are actually getting closer, which is quite exciting. And I mean, like, well, I'll go

through through them. But the first one that came up was miniaturization and portability. So all the little sensors and sensing things that we go through and the things that can measure are getting really small. So yeah.

Can I actually fit them in a tricorder? Um, lot of automation and AI that we discussed and enhanced data analytics collection and [00:33:00] the power of the data thing. So we've, we've discussed that. But then, um, instruments that do multiple tests as a sequence. So you put the thing in at the front and it does three steps for you.

As opposed to like just the one and then the scientist moves it along, moves it along. We've already discussed that with the value chain, um, loads of improvements in image sensing. And we know that about the fact that we can, the computer can detect stuff and it's very high res, so you get a huge amount of detail from it.

So lots more to go out from a data perspective. Um, lots of the concept about the eco friendly materials and energy efficiency in the process. So you're not using nasty things to build these companies environments. Everything's connected as well. So the IOT, so the lab machine to the computer and everything else, and then that personalization and customization.

Quantum, when that romps over the horizon, so solve big problems fast against the data model. So basically you got this massive convergence and the miniaturization going on. And I thought, you know what? Maybe, just maybe, it's not as [00:34:00] far away as we might think. And I just thought to myself, what do you think, guys?

Well, it sounds quite, I mean, you put that well. And the other thing that was occurring to me as we went through that was, there's, I guess, elements of it that's already deployed. So in smartwatches, Where it's already kind of constantly tracking your, you know, blood pressure and heart rate and all of those sorts of things like re, you know, the reusable tech from that has been maturing already for the last X years.

Can't remember how long those things have been out at this point. I don't know. What do you, what do you think, Nathan? Does that resonate with you as it might be on the horizon? It's funny, uh, this actually almost perfectly describes the last few partnerships that we've done. We just partnered with a company doing environmental sensor data, and people are starting to say, Oh, I realize in my lab, too, I just want to glue these sensors on everywhere.

They're getting cheaper, they're getting commoditized, um, now it becomes a data product, and I just want to see the health of my lab, just like my body, with the, the sensors and the smartwatches. So, yeah, it's, it's funny, there is definitely a convergence going on, and I feel like everyone's starting to think a little bit more in [00:35:00] terms of data, and in terms of, you know, what would I want to understand about my lab?

I don't know how hot is it in there. Maybe that's affecting my experiments too. I think a lot of the inspiration definitely comes from seeing how far things are getting for personal devices and being able to see, you know, your heart rate and blood pressure and everything continuously all the time.

People realize they want to see that everywhere for everything. Right. Although one folly of all this understanding of our own bodies does mean that it does tell you there's something up with you and quite frankly, I don't want to know. It says, it tells you what you should, you already know, right? So it's the, uh, you should eat healthier, do more exercise, stand up more.

And I'm like, yeah, I know. There is something, there is something about the the constant,

you know, sort of chirping in your ear, you're doing the wrong thing. You're doing the wrong thing. You're doing the wrong thing. It's like, I don't know whether humans are wired in a way that that's needed, but on Star Trek, of course, it wasn't continuous, was it?

The tricord, it's sort of like a handbag, wasn't it? That they would wear, and then they would open the [00:36:00] top. In the later episodes to a handheld thing that looks a bit more like a mobile phone. Right, right. I'm sort of thinking, oh gee, Oh no, that's not actually a proper Star Trek now. Everyone says the next generation is the one that set the universe up properly.

Yeah, yeah. So this is the original. Yeah, no, no, no. There's lots of posts online about this. And, uh, you can think romantically about the original Star Trek, but there were lots of problems with it that when you go back and look at the detail, you'd want to gloss over. So the next generation is the one you start from.

Sorry David, I've ruined your childhood. But I think all of the core tech innovation that we're talking about today is all comes from the OG. We're talking, you know, computer, being able to just ask the computer universal information, the tricorder, and you know, the mode of medical analysis, the process that you described to actually taking something and actually getting to some sort of conclusion.

Well, there's the transporter, which honestly, I think we should crack on with an ethical debate about that though. Dave, are you the same human as you arrive at the [00:37:00] other end? Well, that's true. I feel like that when I'm just commuting into work though. I'm not, not convinced I'm the same after that train journey, a long trip sometimes.

Well look, Nathan, thank you so much for spending some time with us today, having a bit of fun and really bringing a very thought provoking Subject in terms of the industry, but actually also, I think there's just a ton that can be learned here about what really good digital transformation looks like. So thanks for your time today, man.

Thank you all. Now we end every episode of this podcast by asking our guest what they're excited about doing next. And that could be I've got a great restaurant booked at the weekend, or it could be something in your professional life that you are dying to happen. So Nathan, we'll What are you excited about doing next?

I just bought my first house. Oh, wow. It's exciting. I moved into New York. So I mean, the buying is something that luckily is in the rear view mirror now, but now I'm excited to start [00:38:00] actually unpacking and then renovating. So we have a lot of woodworking projects set up. We're going to tear out the floors, tear out the cabinets, everything.

Um, see how smart, I guess on the subject of convergence, we'll set up the smart home as much as we can get everything in the app. Get Alexa so I can have my, uh, computer I'm talking to, but yeah, it's going to be great. Now, are you going to go with, for your smart home? First of all, congratulations, like very, very exciting, very exciting period and an amazing city.

I hasten to add some of the best pizza in the world in your city. Uh, so like, you know, envious of that, but the home installation you're putting in the smart home. Are you going like wired one specific smart home technology? Are you going to like integrate loosely coupled cloud stuff? We're going to integrate.

When I was in my last house, I actually used the enemy to integrate some of the, uh, nice. I love that your own product integrated your, uh, your house. Brilliant. Probably the only person who ever set up the developer API for that. Or a little thermostat. That's brilliant.

Innovative use of cloud stuff like that really blows me [00:39:00] away.

On cloud busting, the previous show I had, we had a chap on who had used Azure and some of the Azure data and analytics components to help him monitor his diabetes. And so he hooked this whole thing up, like, you know, he bought some kind of sensor that was one of those spikes that you put in your arm that he wore constantly that the data was monitored from that.

And then he got on the little app he built, he basically got constant information. And he basically through that app basically reduced his diabetes down to nothing just by tracking it on an ongoing basis like that. Incredibly innovative use of, uh, of technology and love hearing about that stuff. So Nathan, thanks again, man.

Really good to see you today. So a huge thanks to our guest this week, Nathan, thank you so much for being on the show. Thanks also to our sound and editing wizards, Ben and Louis, our Windows 95 legacy loving producer, Marcel. And of course, to all our listeners, We're on LinkedIn and X, Dave Chapman and Rob Kernahan. Feel free to follow or connect [00:40:00] with us and please get in touch if you have any comments or ideas for the show. And of course, if you haven't already done that, rate and subscribe to our podcast.

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