AI LEADERS PODCAST DIGITAL TWINS
AUDIO TRANSCRIPT

Bob Messier [00:00:00] Oftentimes, the data and the math will tell you something that is counter to people's historical bias. It's counter to how they've always run the business before.

Arnab Chakraborty [00:00:18] Hi, everybody. I'm Arnab Chakraborty, the Managing Director for Accenture Applied Intelligence practice. I'm here today with Bob Messier, Senior Vice President, Global Technology Services at SAS. Bob, great to have you here today and we are going to have a discussion on digital twins. It's so great to have you today in our in our podcast.

Bob Messier [00:00:39] Arnab, excited to be here. Glad to be part of it.

Arnab Chakraborty [00:00:41] Wonderful. Wonderful. So, so Bob, I think, you know, we are talking about digital twins and given the fact that, you know, digital twins can be interpreted by many people in many different ways. Let's kind of give it some definition, you know, from your perspective as to what do they mean in today's world, you know, where everything is going digital, there is data, analytics and AI. What does digital twin actually mean, you know, in your context?

Bob Messier [00:01:08] Arnab, that's a good question. Everyone has probably a different definition of digital twin, and they see digital twins in a different, in a different light. So, in some places, I see digital twins really just being a simulation of an expected real world outcome, right? We're simulating what's going to happen. So, you see that with like auto manufacturers where they build a car and they just simulate how the cars are going to interact in the real world based on how fast people are going to drive or how slow they're going to drive and how many right hand turns, and left hand turns and braking. So, they do a simulation. I think that's part of the process, right? Especially for manufacturers. But to go one step beyond that is when you want to instrument an object or even, not just something that's being manufactured, but potentially even a person. And you want to connect to that in real time and assess how that product, good or service, assess how it's performing against the simulation that you had made. And to me, that's the end state of digital twinning. But there's steps along the way that, you know, that everyone can make to kind of to kind of get started because I think we're all going to have to get started.

Arnab Chakraborty [00:02:25] Yeah, yeah. No, absolutely. And I think it is interesting that you say Bob that, you know, we all have to get started, and by that, it means it's the journey. And, you know, part of my personal journey, I was in Germany for a long time before I moved to the U.S. and I would say five to six years back when the whole Industry 4.0 revolution, you know, was becoming big in the German engineering landscape. Digital twin was something being talked about, you know, like five or six years back in terms of the engines and, you know, kind of creating the whole simulated view of how a shop floor would work with all integrated sensors and IoT devices connected to it. What does smart manufacturing mean in the context of tomorrow? And digital twin was becoming a very hot topic. This was like five years back now. Now we are in 2021, you know, getting to 2022. I mean, what are you seeing as some of the big trends, you know, and application areas for digital twin, you know, given that it has been there for, you know, the last few years now?

Bob Messier [00:03:21] When you think about the manufacturers, I'm going to pick on them because I think they have taken the lead in this area in terms of what they're trying to do. So, there's digital twinning almost within the shop floor. There's digital twinning as we're taking readings from the product good or service that they've made, that's in the field to feed that back in. And, you know, like the turbine companies, wind power companies, what they want to do is they want to do basically asset performance, right? They want to test and see that asset. I think if we go one step beyond that in manufacturing, it's not just digital twinning within the manufacturing environment itself, but it's digital twinning through the entire supply chain of the underlying parts and the subcomponents that make up that product, good or service that's then being manufactured. You know, that has all sorts of different technical hurdles that most organizations, manufacturers, I would say we're not there yet in terms of tackling that. But I do see digital twinning coming up in retail. I see it happening in health care, different use cases. So, I do see the whole concept starting to come together with other use cases that are not necessarily manufacturing asset performance centric.

Arnab Chakraborty [00:04:39] Well, that's great. I think, you know, manufacturing definitely is that is a very key area. I also see certain industries like health care, you know, life sciences, for example, as you think about, you know, creating new drugs and medicines, right, how you can start doing, you know, intellectual trials, clinical trials in a digital twin set up, right? That definitely seems to be, you know, especially in today's COVID world, you know, the pace at which we bring new drugs to the market. And I think digital twin is going to have a very significant impact in the R&D of new drug discovery. Thoughts on that in on new areas, new emerging areas that you're seeing?

Bob Messier [00:05:17] Well, that's a good one, I mean, if we think about the clinical drug trial process as an example, I mean, essentially there's the studies that they have to do as part of the FDA submission, but then to simulate exactly what's going to happen to a person, not just a segment of the population that's targeted for the medicine, but at some point we're going to get to the point where we'll be able to simulate how that drug is going to interact with the person if we have the right data to capture but other places, not just in the pharmaceutical, drug manufacturing and delivery process, but in health care,

there's different ways you can use digital twinning. One example would be you could take a computer vision or an image of a person walking, and you could see their gait and there certain tests that physicians do. One is a balance test right before you come in and maybe after you leave the physician site and it's called the bird balance test. And we could take a digital spine. Imagine like this skeleton that of you walking. And over time, we can see has your gait and has your balance improved? And one of the things that hospitals need to do is, right, they need to predict and ensure that we reduce patient falls. But if you go even further and if you think about injuries. So, imagine if I could project onto a football field or soccer field, either one. And look at what point do people have, let's say, an ACL tear cruciate ligament injuries. And at what level of force and angle does that happen on someone's knee? And at what point is the knee starting to weaken over a certain number of, let's say, in U.S. football hits? But let's say it in the rest of the world, the other football? Or they would say U.S. football is the other football, but real football, you know, when does someone at what angle that they're running in pitch, do they start to put pressure on that knee? And would we be at a point through digital twinning that at some point we pull a player off the pitch or out of the field because we could see the strain and the number of pounds of pressure, they've had on a on a ligament throughout the course of the game is actually putting them at risk for injury. And so those are I mean, we're not there yet, but those are things that are being thought about and considered in terms of how do we use the technology to that in that case, prevent injury?

Arnab Chakraborty [00:08:08] No, I think that's great Bob. I think the way you bring the example from sports entertainment to human health, you know, to energy, to manufacturing is fabulous, right? I think the interesting thing that in all three examples is that digital twin helps us see the future, you know, before we actually start making those big investments. So, we know, you know, what can we expect as a concrete outcome before we make those big investment decisions, and we can be more proactive about it? Having said that, right, I mean, what do you feel is the future, you know, with digital twin to become like mainstream technology solutions? Where do you see that and what do you think are some of the considerations which companies have to keep in mind as they start thinking about bringing digital twins into mainstream?

Bob Messier [00:08:58] Well, when will it come in the mainstream? I think a lot of organizations are dabbling in and around it. I think it's going to be probably another four or five years. I think for the first thing is let's talk about IoT, Internet of Things, right, where your streaming information, let's just say off a device, right? You're streaming the information off a device. One is the challenges we see our customers have is at times the sensors aren't very good. Now, if it's a sensor on utility grid, it's probably a thousand dollar sensors. Probably a very good data, but a lot of that data has to be streamed in real time. Sometimes the sensor itself is faulty. Other times you're streaming a lot of data that I will call is just noise, right? It's not really indicative of what's going to happen. So, the first thing is you really have to get your arms around the magnitude of data, the size of the data and how the data itself, the landing spots, are architected. Because that's going to impact your cost.

From there, you have to build, you know, kind of test and learn models and you have to iterate on these models. And you, then really in the IoT world, you're actually feeding the data that's streaming directly into the model, where in a traditional analytics world, you'd be feeding the data into a landing spot and then building the model. So, the architectural nuances of building a digital twin system, these are all going to be mainstream. That is exactly how the analytic modeling process is going to be in play for most for most companies, because in my eyes most organizations, now they model risk, but most organizations, what do they do in their modeling customer behavior? So, if a customer is using a device and we could stream the data off the device, it does tell us something not just about the device, but how the device is being used, which enables the company to figure out how they can better serve the customer. So, I think we think about digital twinning, I think the first step is to start to think through how do you build an IoT like architecture that's going to enable you to get to that endpoint? The other, the other challenges I think customers are going to have is not just feeds and speeds of data, but you get into size and complexity. We get customers very, very excited about doing computer vision. And it's, you know, it's actually it's fun. It's expensive. So, we often think, you know, at home, most of us who are of a certain age demographic myself, you know, we all have that computer that's in the closet, right, with a bunch of family pictures on it. And we're going to do something that we haven't figured out yet. But we know the computer can start, but we really can't do anything else with it because it's loaded full of images. While images require a lot of processing power and until the kind of the cost of GPUs go down. I think that element of digital twinning is probably going to lag a little bit. But you know, there's other there's other techniques that can be used to kind of fill in the gap of the data, and that's what we're seeing happening. But I still think we're four or five years away from these IoT digital twin architectures being mainstream. I'm not saying they're not happening right now, but it's not proliferating at the pace it could be.

Arnab Chakraborty [00:12:21] Very interesting, very interesting, Bob. And given that you know you're from SAS I'm sure this is also a big part of your own product strategy at SAS. So, anything you want to share about, you know, what is SAS doing in this space and what are the future investments you're making in this space?

Bob Messier [00:12:37] Well, when we look at the space there's a couple of things that you know, our customers, the market needs. One, they need a landing spot of cloud native software. They need the right modern access technologies. They need a streaming platform. They need a robust set of analytics. So, from an architecture standpoint, you know, our latest version is all cloud native. And actually, it does run on all three major cloud providers, and that, that was by design. We want to make the customers where they are. Within that is a is a streaming capability. But probably the most important piece of all of it is a model management capability that allows our customers to build whether they're building a model in our technology, SAS via or they're building a model in R or Python or other open source technologies, we allow our customers to pick and choose, let the models compete against each other. And then the champion model is the one that gets deployed through the system itself. So, if it's a Python model or an R model.

And so, for us, probably one of the biggest things that we've been focused on is how do we adapt our technology to be cloud native? How do we ensure that we can support your real time analytics and then how do we embrace the analytic community no matter what tool they use? And so those are some of the tenets of our latest release of software that we're excited for and they do support this kind of the go forward state of digital twinning.

Arnab Chakraborty [00:14:15] No, that's awesome, Bob. That's awesome. And you know, I think, you know, companies like yourselves will bring the best technology options for the clients, and then the clients will have to deploy them at scale, you know, to kind of create the impact. And one of the big challenges that organizations have today is about the adoption. And one of the things about adoption is really at the core of it is trust. And how do you create trust, you know, with these solutions, especially when you talk about digital twin. How can the business user trust the digital twin, right? And there will be challenges that come as a result of that. So, any thoughts on that as to how to create trusted, you know, solutions in digital twin and how to use that to drive adoption into the businesses or community?

Bob Messier [00:15:05] Let's take out of the digital world but go on to the real world. Trust takes time to build, right, between people. And I think, you know, I'll just say my experience with analytics over the years, analytics will often tell you something that's counter intuitive, and I think that is one of the challenges I see. It has nothing to do with our math or someone else's math. Oftentimes, the data and the math will tell you something that is counter to people's historical bias. It's counter to how they've always run the business before, and it does take a little bit of time for people to get confident in what these mathematical models are telling them, because in many cases it's telling them something nuance to what they know and how they've been working for a long period of time. So, I think, you know, Arnab I'll give you a funny example. Years ago, this is sad, but true, we actually modeled my golf game. I captured a thousands of shots. This is before all these new technologies. And so, we build a mathematical model on my golf game. And at that time, I had figured I'd taken two million swings. I'd been playing for 35 years. I had, thought I had, a very good understanding of my golf game. And I thought, number one, I'm terrible off the tee. I thought I was a brilliant iron player. I thought I was an OK putter and a lousy chipper, right? Those were the assumptions going in based on all my but all the data I had of these two thousand shots. As it turns out, ninety two percent of the time I hit my ball in play, off the tee. My iron play, if anything, was the weakest part of my game and I thought it was the strongest. And my putting was very good, and my chipping was not nearly as bad as I thought. And my point telling that story is I had built up biases around my own observations of my own game, but the data told me a different story and I will tell you it was very difficult for me to adapt to what the data was telling me to change what I was doing and change how I approach the game. It's really no different in business, and the more data we have streaming in, it really brings a different complexion of how we see our customers and how we approach our customers from a modeling standpoint. So, for me, the word trust takes a little bit of time. And I think the other thing it's not just trust, I would argue it's transparency. Our customers are saying, look, we need to know. I want to know when you build a model.

I want to know the data source for the model. Who did the feature engineering on the model, what data scientists, what mathematical model did they use? How many years of experience that they have? And how did that model? What other models did it compete against before we deployed it? They want to see that full spectrum. So, and I think, you know, for our customers, they're asking for, I call it trust and transparency. So, these are these are really, I think, important tenets of what we're trying to do and what the market expects.

Arnab Chakraborty [00:18:19] Absolutely, Bob. I think trust and transparency go hand-in-hand and very well said, and I'm inspired with your golf story there. It's going to be another time to go into more detail.

Bob Messier [00:18:30] Yeah, Arnab, maybe not.

Arnab Chakraborty [00:18:33] Now this is great. I know we're kind of coming to a close for our podcast here. Fascinating discussion, Bob. But before we sign off here, what would be your word of advice to our audience, you know, as they get into this journey of digital twins?

Bob Messier [00:18:45] Well, first of all, I think most important thing is probably to go out and self-educate and look at the expanse of what's being defined as digital twin. Because chances are you have a project somewhere within your organization that is either it's a digital twin project that's being called out, or you have a project that's leading toward kind of a twinning effort. And so, for me is, A. to get some education about what's happening and think about it in the forward context of where your company is going. And I would challenge everyone to get started because my worry for everyone is if your organization isn't getting started, I'd be worried that your competitor's organization is getting started. So, you probably need to find a place to start because I think this is going to happen across all industries.

Arnab Chakraborty [00:19:36] Wonderful, Bob, well said. And the message is clear, you know, get started otherwise your competition is going to win over you. So great message and great stories, Bob from Utah. Thanks again for all of your time today and sharing your perspectives and the big thank you to all of our listeners. And, you know, feel free to share our podcast with your friends and colleagues. And you know, Bob and I will be happy to follow up on any additional questions from any of you.

Bob Messier [00:20:03] Arnab, thank you for having me.