Episode 144: Why the future of manufacturing is in the cloud with Shaun Mitra from IBM

Shaun: [00:00:00] I see the future of supply chain as one that is intelligent, adaptive and connected. End-to-end with special emphasis on being connected end-to-end, where planning, manufacturing, and execution operate on a single data backbone and respond to disruptions in a real time. So as a COO, as a CFO of a company, you should be able to make real time decisions.

Richard: I'm Richard Howells, and this is the Future of Supply Chain, a podcast where we discuss hot topics, best practices, and the latest innovations in today's global business. In this week's episode, we'll be discussing why the future of manufacturing is and always will be, I assume in the cloud. To do so I'm excited to be joined by IBM's Shaun Mitra. Shaun, it's great to have you on today. Maybe you can quickly introduce yourself and your role at IBM.

Shaun: Absolutely, and thanks for having me. [00:01:00] My name is Shaun Mitra and I'm a partner at IBM focused on manufacturing and digital transformation. I work closely with industrial and manufacturing clients globally, helping them modernize core manufacturing, engineering supply chain and asset management capabilities. So as you can imagine, this is a topic very close to my heart. And I would like to say that, my background spans both IT and OT. So a big part of my role is helping organizations bridge that gap as they transform.

Richard: Great. It's great to have you on this this week. I know you are sitting in a manufacturing facility as we are talking today, and manufacturing plants have probably been the most resistant to moving to the cloud from a business perspective with the argument always being, but we need to be up a hundred percent of the time, so what are some of the inhibitors that you've been seeing and why is now the time for manufacturers to move their [00:02:00] manufacturing systems to the cloud?

Shaun: That's a great question and I would say for a long time, manufacturers, and I'll include myself had very valid reasons to be cautious, right? Talk about latency, cybersecurity concerns, reliability, and real-time control requirements really made the cloud feel risky. Especially for shop floor, right?

That's where I'm sitting. The moving parts, heavy equipment lots of issues with, people accessing their systems. So these were always challenges. Now what's changed is that many of those barriers no longer exist. First edge computing has closed the latency gap. Time critical execution still happens locally at the plant, but most of your analytics, orchestration, and intelligence can now live in the cloud without truly impacting performance. Second zero trust. [00:03:00] Security architectures have significantly improved. I would say over the past several years. In many cases, hyperscalers now provide stronger security than what your traditional IT team at the manufacturing site can provide. And then third hyperscalers offer resilience and availability that most manufacturers simply can't achieve or at least achieve to scale. Especially across regions. And finally, I would say manufacturing data models have evolved, right? So typically in manufacturing, you would talk about like a manufacturing bomb, as built genealogy, traceability are primarily available as cloud native applications or capabilities, which makes large scale analytics and AI practical. So all of that combined truly makes this the right [00:04:00] moment.

Richard: You mentioned several key topics there, things like edge computing, analytics, orchestration and most importantly, which is one of the main inhibitors that I was hearing, cybersecurity. But what does cloud manufacturing really mean today for people that maybe are not fully aware and what are some of the technologies and functionality we only see in the cloud?

Shaun: That's a great question, Richard. In fact, one that I'm dealing with right now as I'm sitting on the shop floor as we speak with a lot of folks on the shop floor, they think that cloud manufacturing is about moving PLCs or real time machine control into the cloud. That's really a misconception.

What it really means is cloud-based intelligence layered on top of local execution. So some of the capabilities we are only seeing at scale in the cloud include AI and [00:05:00] machine learning at enterprise scale. Especially as you talk about multiple plants across regions or across different time zones, global harmonization of manufacturing processes.

So without forcing every plan to be identical, we all know that, two manufacturing plants as much as you have standardized processes are never the same, right, there's always nuances. A truly connected supply chain and manufacturing ecosystem, right where planning, execution, and logistics all operate on the same data foundation, which is special emphasis on data, and then real-time insights across multiple plants, not just within a single site. In short, the cloud truly gives manufacturers speed, scale, and visibility that they just couldn't achieve before.

Richard: You [00:06:00] mentioned manufacturing, logistics and others planning supply chain capabilities, being on the same platform and leveraging the same data. So how are cloud platforms transforming the way manufacturers design products, produce products, and also maintain products and equipment across global operations?

Shaun: This is a critical topic, obviously. So cloud platforms are breaking down silos across product lifecycle, right? Design teams can now collaborate globally on a single digital thread, right? So think about product innovation, a product introduction where you conceptualize a product and now you are handing it over to the manufacturing plant to go ahead and build that out for you.

So manufacturing teams can then take that and see how design changes impact production in near real time. [00:07:00] Maintenance teams can now shift from being more of that reactive to predictive models using realtime data, and in some cases also predictive analytics. So what's most powerful is that decisions are no longer local or anecdotal, right? They are driven truly based on global, while still respecting local plant realities.

Richard: That's a great summary. And moving from reactive to predictive I think is a huge step forward, especially when we're talking about a real time environment, but that needs technologies. How are you seeing. The emerging technologies such as AI, which was the hottest topic that we talked about on every podcast last year. So topic like AI. You mentioned the digital thread or digital twins. And industry 4.0 is still a key enabler. And also edge computing, which you touched on a little [00:08:00] earlier. So how are all of these technologies being embedded into cloud-based manufacturing strategies?

Shaun: It's very important, right? These are all very relevant capabilities now that are becoming real for manufacturers through a hybrid cloud plus edge architecture. So think about local controllers, right? PLCs, MES systems these are still handled on a real time execution on the shop floor, but platforms like SAP Digital Manufacturing are becoming that global layer.

Think of standardizing data, orchestration workflows, and enabling analytics across plants. So as a COO, if you want to say, Hey, how are my key KPIs across multiple plants? You can now get that information through platforms like digital manufacturing on the cloud. [00:09:00] Digital twins live in the cloud. AI models are trained centrally and insights are pushed back to the edge where the actual action happens, right?

So think about it as intelligence is centralized and the execution still remains local, and that balance in my mind is critical to success.

Richard: That becomes really important when you've got multiple plants and you are the chief operating officer, for example, because everyone needs to make decisions. The people running a particular piece of equipment need to make decisions. The plant managers need to make decisions. Supervisors need to make decisions and also at a strategic level making decisions across manufacturing environments and manufacturing facilities. But they all have to be made on that same decision,

Shaun: Absolutely.

Richard: they all have to leverage that data and trust that data. And you mentioned cybersecurity a little [00:10:00] earlier. What are the biggest cybersecurity and data governance challenges manufacturers face when moving critical operations to the cloud? And should they be concerned anymore about cybersecurity or it's not that they shouldn't be concerned about cybersecurity, but do you think that security's as good now in the cloud as it would be in an on-premise environment?

Shaun: They're both real concerns, but the good news is on cybersecurity, the biggest challenge is getting alignment between IT and OT security models, right? Manufacturers need consistent identity. Access and zero trust controls across enterprise systems and planned environments. Cloud doesn't remove the risk, but it enforces much stronger discipline and visibility.

And think of the big Amazons and the Googles of the world that can continue to provide consistent state-of-the-art cybersecurity tools to [00:11:00] obviously always monitor your systems. On the data governance side, the complexity truly comes from decades of legacy systems and third party applications created, creating a fragmented data landscape, right?

AI is increasingly critical here. Helping classify data. Detect anomalies, enforce policies, and also maintain data quality and lineage across systems at scale. So both are relevant concerns but have been addressed in the latest cloud environment.

Richard: We've talked a lot about moving to the cloud. We've talked about new technologies, we've talked about edge computing, and that all means change and people are usually afraid of change. And we're even with a cloud manufacturing

we can't ignore the people in the loop because they are still the [00:12:00] probably the most important thing.

So how should organizations approach workforce? Upskilling and change management and how should they leverage technologies that disrupt traditional manufacturing models, but also how do we attract and retain people in this environment?

Shaun: That's a great question, Richard, and honestly, every manufacturer is dealing with this situation. So think of a lot of people that work on the shop floor, that have been around for the past 30, 40 years. A lot of that. Tribal knowledge. Technology is the easy part, right? When I'm having conversations with VPs of manufacturing and operations and chief Operating officers, I always say technology is the easy part, right?

People are the hard part. So manufacturers need to invest in upscaling across roles, right? I'm sitting here with operators and engineers on the shop floor. Some of [00:13:00] them are. Extremely capable, right? You give them a system and they can pick it up and start working with it versus others not as much, right?

So it is just as important to focus on change management, helping teams understand why change matters and how it improves safety, efficiency, and decision making. At the end of the day, we have to answer the question, what is it? And there for me, right? So every shop floor operator that I work with, when we start having a conversation about technology, the first question they ask, okay, how is it gonna help me?

That's the question we need to answer. And the goal isn't to replace people, it is to augment human expertise with better tools and insights.

Richard: I think that's a critical comment as well. Technology it may replace some jobs, but it's not, the goal isn't to replace everybody. It's to [00:14:00] automate the mundane, the repetitive and I honestly believe, to empower people to be more value added within an environment.

Would you agree with that?

Shaun: Absolutely. Absolutely. That is the key thing, right? How do we make their lives, their jobs easier with the help of technology?

Richard: Because I, I think that adds to the second part of my question about how do you retain people as well. If they see that they're, they've got better tools to do their jobs, they get more for job fulfillment outta doing their jobs, they're more likely to stay with a company, which in the younger generation is a challenge.

Shaun: It is a big challenge, as we all know, especially on the shelf floor. And to your point, that technology helps to create that stickiness which would potentially lead to retention o over other things.

Richard: So you deal with lots of different companies in lots of different industries and probably lots of different regions of the world. What would you say to a company sitting [00:15:00] on premise solution at the moment, and what guidance would you give them if they're looking to embark on a cloud journey?

Shaun: I typically like to summarize this in five key areas, Richard. So I always tell companies, start with a hybrid model, right? Cloud intelligence with local execution. We don't want to. Rip and replace everything on the S shelf floor, right? You wanna centralize and your intelligence capabilities, but still keep some of that decision making at the local level.

The second point would be standardized data models early, right? It's easier said than done specifically for manufacturing and quality, right? These are the two key areas where we continue to see issues with data, and obviously that has to be attacked early. Leverage the cloud to scale and innovate, right?

Don't [00:16:00] just do a lift and shift of your legacy system, or don't just leave it as a, Hey, we did A POC. Great, right? Truly use that to scale and innovate. Number four, I would say is align IT and OT cybersecurity strategies before migrating. In a lot of cases we've had conversations with either the IT team or the OT team and we've started an initiative only to be stopped halfway because there's no alignment.

So that is gonna be critical to address upfront. And then last, but not the least, back to your last question. Invest in organizational readiness and change management. At the end of the day, it is the people that would make the project successful. The adoption is gonna be the key thing, so invest in that area. Cloud transformation honestly is as much about mindset as it is about technology.

Richard: Absolutely. That's [00:17:00] some great guidance there, some great steps to take. So let's assume that the companies that you are working with are

taking your advice and we move ahead five to 10 years into the future. And you are sitting in the same plant that you are sitting in today. That plant, what might that factory of the future look like in a fully cloud enabled manufacturing world?

Shaun: I would say it is one that is highly connected, mostly autonomous. Deeply data driven, right? Factories will still be physical. We talk about robots, we talk about AI and other capabilities, AGVs. And other things, but really the decision making is what's gonna be, digital factories will be physical, but the decision making will be digital. AI will be optimizing schedules, quality and energy usage in real time. Humans will be focusing [00:18:00] more on oversight, innovation, and continuous improvement. The factory truly becomes a part of global intelligent manufacturing network, not just an isolated side.

Richard: That's a great vision. And hopefully there are companies that are well on their way to that reality at the moment. So Shaun, you've given some great advice today. And I'm really interested, you've been working with SAP and IBM and SAP have had a very long standing partnership, but how can that partnership help when it comes to cloud manufacturing?

Shaun: I would say that, IBM and SAP over the years have truly partnered to create state-of-the-art capabilities value propositions, accelerators and the ability to adopt these softwares and the technologies. IBM and SAP partnership together can help. Companies that are considering to move to the cloud, provide that point of view, [00:19:00] give you access to, hey, this is what truly success means and help you through that journey. So we would absolutely be willing to partner with companies that would like some advice from IBM and SAP.

Richard: Perfect. That's a great summary. My final question, which is the same question I ask all of my guests, and I want you to step out of the factory now. In a sentence or two, what's the future of supply chains ?

Shaun: That's a great question. I see the future of supply chain as one that is intelligent, adaptive and connected. End-to-end with special emphasis on being connected end-to-end, where planning, manufacturing, and execution operate on a single data backbone and respond to disruptions in a real time. So as a COO, as a CFO of a company, you should be able to make real time decisions.

Richard: That's a great summary and I [00:20:00] couldn't agree more with your thought process there. Shaun, thanks for a great conversation. This has been really interesting.

Shaun: I really appreciate it and thanks for having me, Richard.

Richard: No problem. And thanks everyone for listening. Please mark us as a favorite and you can get regular updates and information about future episodes. But until next time, from Shaun and I, thanks for discussing the future of Supply Chain.