David: Welcome to the Microsoft Industry Experiences Team Podcast. I'm your host David Starr, and in this series you will hear from leaders across various industries discussing the impact of digital disruption and innovation, sharing how they've used Azure to transform their business. You can find our team online at aka.ms/indxp, or on Twitter at Industry XP.

For a very special set of episodes. We've partnered with Vince [Menzione 00:00:40], to highlight the thought leadership of our team's principal program managers, who are doing great things within their specific industries. And now your host for this episode, Vince Menzione.

Vince: In this special series of the podcast, I sit down with leaders from Microsoft that are helping important sectors of industry to transform and thrive through the use of this innovative cloud technology. In this episode, my guest is Diego [Tamburini 00:01:08], manufacturing industry lead for the newly created Industry Experiences Team. In this episode, Diego and I discussed his extensive industry background, the transformation going on in manufacturing, Microsoft and Azure's commitment to this segment, why customers and partners should invest here, and why manufacturing is cool again. There are links in the show notes to learn more about the information Diego and I discuss here, as well as how to reach him directly. This episode of the podcast is sponsored by Microsoft, and the Industry Experiences Team. Thank you for listening and I hope you enjoy this episode.

Diego, welcome to the podcast.

Diego: Thank you, Vince. It's a pleasure to be here, and thank you for the opportunity to be in it, and to your listeners too for taking the time to listen to it.

Vince: Well, thank you for taking the time. You're the principal industry lead for Azure Manufacturing, and you focus in on that industry segment as part of this newly formed Microsoft C+E Industry team under Paul [Maier 00:00:02:17]. I'm excited to hear from you about the organization's role and focus, Microsoft and Azure's commitment to manufacturing, and how this amazing transformation is impacting the industry, and why this all matters to customers and partners. So thank you for joining.

Diego: Thank you.

Vince: So you're the principal industry lead for manufacturing. Can you explain to our listeners in simple terms, your role in the organization, your mission and that of the team?

Diego: Sure, Vince. So I'm basically an advocate for the manufacturing industry within the Azure Engineering Team. The mission of our team is to help Azure to be the platform of choice for the development of industry solutions and manufacturing, in my case. So we do this through scale in each of these. We are blasting in two directions. From inside out, meaning from Microsoft to the industry, we develop content to help senior technical decision makers solve real world industry problems with cloud solutions, using the right mix of industry and technical speak. And we also engage with industry

influencers to help amplify this message, and then from the outside in, we provide feedback to our product team on the specific challenges and opportunities from the industry, to inform the product's roadmap and prioritization of features and capabilities.

Vince: So you're reaching out to customers, you're reaching out to the industry and then you're providing that feedback loop back to the organization on how product features and fit need to be assessed and worked into the next revision of the technology.

Diego: Correct. And we do that from the vantage point that we are not tied to a specific product within Microsoft. We take an industry view, so we don't have specific allegiances to a specific product or service. So again, we advocate for the industry, and it could be anything from specific technical capabilities, gaps in our platform, etc, to pricing, to awareness to perception. It's a mix. It's a blend of all that.

Vince: So why is Microsoft investing in manufacturing at this time? Why is it so important to Microsoft?

Diego: So first let me clarify that Microsoft's focus on manufacturing is not new at all. Manufacturing has been a priority industry at Microsoft for several years, and there are many people across Microsoft who focus on and care about manufacturing besides in our team. But what was missing was an industry team within the cloud engineering team whose mission was to engage with industry, to understand how to make our cloud the platform of choice for that industry. So that requires a mix of advocacy, industry engagement, subject matter expertise of course, content creations, strategic engagements and technical depth. So the Microsoft lab commitment to manufacturing is stronger than ever.

           In fact, our role in the development of manufacturing solutions is more important. A few years ago, we were just the providers of general purpose software plumbing, things like storage and security, and messaging and collaboration. Now our cloud services have value added functionality, that is more directly interest into manufacturing. Things like IoT, and machine learning, and stream analytics, and HPC, high performance computing. So I find that now, Microsoft has a more direct seat at the table when it comes to manufacturing, as opposed to just a general purpose software development. And specifically in IoT, Microsoft recently announced in April of this year that we will invest $5,000,000,000 in IoT over the next four years. This investment will be in research and development on IoT and IoT Edge, and also to enable specific customers and partners to develop IoT solutions.

Vince: It's certainly exciting times and we're going to dive in on that technology in a bit here. But first I wanted to talk a little bit more about your background, and I've read a bit about your background. This is not your first time at Microsoft, so can you tell our listeners why you came back, and joined the team and a little bit about your journey [crosstalk 00:07:06], I know you're laughing here, but it hasn't been the first time, right?

Diego: This is actually my third time at Microsoft, which I've been in and out of Microsoft, always in the manufacturing industry, which actually highlights the fact that I was very

excited about my new team and it's mission. I joined the team because I thought it was a great opportunity to make a positive impact on the industry I'm passionate about. So I wouldn't have come back unless stay closely related to manufacturing. So I think that specifically, why in the actual team, I think that the cloud has a growing role in the industry where it can actually deliver value beyond, what I mentioned, the software plumbing I just mentioned. I'm also personally interested in exploring the role of machine learning and AI in manufacturing, and then helping partners and customers advance the industry with applications of this technologies.

Vince: What was the best piece of advice that you received when you came back to Microsoft?

Diego: So we were a brand new team, so basically we were operating like a startup within a big company. So the advice I got was to reach out to other teams to clarify our mission, to clearly articulate it, and to find ways to add value to other teams and collaborate with other teams. So as I mentioned we are not the only ones in the company who focus on the industry, so we have to be clear about our unique value proposition. So Microsoft and our culture is very big on collaboration, and having a growth mentality. So that made things much easier as a new team, but there is always the people questioning or asking, hey I focus on manufacturing, what are you doing? So it was mainly a matter of clearly articulating our mission, and being open, and reaching out to other teams for collaboration.

Vince: So I've been astonished in my talks and interviews about this pace of change and transformation we've all been seeing right now. Right? So in the last, I think even the last 18 months or so it's been rapidly accelerating, and manufacturing is just, it's no exception, right? So can you tell our listeners what you've been seeing happening, and how is the business evolving and transforming in manufacturing?

Diego: So basically that manufacturing is cool again. That's probably the biggest change I've seen in the last few years in the industry, but more specifically, it's around how manufacturing is embracing digital technologies so you can see it throughout the whole life cycle in manufacturing, from in design, that is digital prototyping and simulation, is pretty much mainstream, in production with IoT and automation and digital manufacturing, notably additive manufacturing, 3D printing. And in services, connected services, things like remote troubleshooting, the use of virtual reality, and augmented reality and services, predictive maintenance.

So the technologies that are involved in manufacturing are much more exciting and cutting edge. And specifically machine learning and AI are starting to go mainstream in manufacturing, and this is in large part thanks to the greater availability of data and compute power. So we're starting to see real and exciting applications of machine learning and AI in manufacturing, such as predictive maintenance, optimization, quality assurance, generative design, etc. So I will say generally speaking that the biggest change in manufacturing is the way the industry is embracing the digital transformation, and using digital technologies in the entire life cycle.

Vince: So manufacturing is cool again. So I'm going to peel back, you've talked about several different use case scenarios. Can you peel back a little bit more about a few of these?

Diego: Sure. So that one of the things is that, I mean obviously many of these scenarios are being enabled because of digital technologies, and I would say that the core of it is the availability of data, the fact that we are connecting more and more the products and the machines in the factory floor through through the Internet of things, the IoT. So I mean, machines have been connected for many years, that's not new, but now the data that they are generating is getting used to extract insights.

And that's not only for the machines in the factory floor, it's for the products when they're being used by your customers. Say if you are the manufacturer of a pump, now increasingly this product side of getting connected and sending telemetry and data that is being used for things, like I mentioned, predictive maintenance, meaning that using machine learning, you can predict with a certain level of confidence that this machine is going to fail in the next 24 hours, so when you have that inside ahead of time, you can proactively handle maintenance, as opposed to having to shut down the whole plant or something because the machine broke unexpectedly.

So things like that and machine learning also, because of the availability of data and the compute power that is in the cloud, you can do things like anomaly detection or pattern recognition, so that that can enable manufacturers to do things like look, extracting inside of how their products are being used by their customers exactly. So are my assumptions correct? Are customers using some of the features of the product more than others? Is it failing when a particular set of conditions is happening? That insight, the industry just didn't have it. I mean everything was manual. Everything was more based on gut feeling rather than data driven.

Vince: Yeah. Good. I actually, I think about the airplane engine example, right? So you normally knew that after a certain number of hours, it needed to have some type of checkup or repair done on it, but now you can look at a population of airplane engines that were produced by a particular manufacturer at a particular time, and see that population as well, and see what the failure rates are there and how again, that predictive analysis works that you talk about here, because it's all in the cloud.

Diego: Exactly. I mean again, the whole thing of machine learning and the associated things like predictive analytics, the whole reason they are going mainstream is because it's almost like a perfect storm of technologies emerging, right? It is that the algorithms themselves are getting better, but it's also the availability of data, right? Machine learning depends on huge amounts of data. And then training a machine learning algorithm requires a lot of computational power. So that's in the cloud. So the cloud, better algorithms, more data, is what's helping machine learning. People say, okay, this I can really apply this in my factory, as opposed to being just some research project in a research lab.

Vince: So we've talked a little bit about IoT, but this seems to be an area that's really exploding over the last year or two. Can you peel back a little bit more on the IoT application areas, and why Microsoft is uniquely positioned in IoT?

Diego: Sure. So I IoT like I mentioned, is really about collecting data. That is at the gist of what the IoT is enabling. Now you have data about how the production line is going, what's happening in each machine. And then you also have data about how the products are

being used by your customers, and you also have data how your products are moving along the supply chain, right? So that the IoT by itself, and the revolution it's causing, and the excitement is that wow, now I have data, I have visibility of what's going on. And so that excitement kind of now it's been replaced by heck, now what do I do with all this data, right? And the answer is analytics of course, big data analytics, [inaudible 00:15:59] of data, and of course, machine learning is basically prime technology to okay, let's do analytics on the data.

So it's all that. The reason IoT is so important and it's causing so much excitement again, is because it fits the company with very valuable data, that can give you insights into, am I doing things the most optimal way? Am I wasting time, energy during my factory operations? Is the supply chain inefficient? Like I mentioned before, are my customers using the product the way I expected or in new ways? So without data, these things just don't surface. And then machine learning and AI also give you some insight into highlighting the things that you don't know. I mean sometimes, you can ask questions to the data, you can interrogate the data, but sometimes you don't even know what you need to ask. So machine learning technologies, like pattern recognition and anomaly detection and things like that, basically tell you what is that you didn't know in the first time. So gaining completely new insights.

Vince: Yeah, that makes sense. Because you've got so much data coming from all these IoT devices and sensors, right? How could you make sense of all of the petabytes of data that are coming your way, right? You need intelligence, machine learning and AI to do that.

Diego: Right. And discovers what you didn't know in the first place. So you weren't even asking questions about that. I mean, for example, it could identify, challenge assumptions about your customer segmentation that you probably were assuming that there were three types of customers, and then the actual usage of data tells you that there are actually only two or something. So patterns, machine learning is very good at detecting patterns of course, highlighting anomalies, and those are the things that usually escape our awareness, right? So bringing that kind of insight is very valuable. So I think that the IoT and the data that it generates allows you to look at data, ask questions about the data from the past, okay, why did this happen? And questions about the present, what is happening right now? And questions about the future, what is likely to happen? And all of this is powered by data, and this data right now is in large part coming from the IoT, which really means coming from sensors in your products and devices and assets.

Vince: So let's talk about blockchain for a moment here, because this also ties into the conversation of data, right? Trust the data. And you referenced blockchain in a recent article, and I'm fascinated with this use case. Can you take our listeners through that?

Diego: Sure. So blockchain, obviously the industry is still grappling to understand first of all, what blockchain is and second, what are the possible applications, and third, what are the best applications, right? Just because you can use blockchain for something doesn't mean that you should. So as you and your listeners may know, blockchain, the first [inaudible 00:19:28] application for blockchain was in cryptocurrency. And the main characteristics of blockchain that made it successful for cryptocurrency, which was

secure, shared distributed ledger may make it interesting for some manufacturing scenarios. So many people are looking, whenever you have a share, some transactions that are shared, and and you don't have a unique trust and you need security, blockchain may make sense.

So manufacturing, the first obvious one that comes to everybody's mind when it comes to blockchain in manufacturing is supply chain, right? How to use blockchain for supply collaboration, component tracking, anti-counterfeiting is also a very interesting application, monitoring of the product and how it goes through the supply chain to ensure things like compliance and certifications, and then the data. So as in management supply chain, so people are also looking for supply blockchain applications in engineering. Like some are looking at blockchain for BLM, pro-life cycle management, and tracking of parts. And for example, the replacement parts for the car, I'm making sure that ensures kind of guarantee that provenance and track the supply chain from from the product, the source of the product materials, all the way through through the dealer to your car.

There are also some supply chain scenarios where they actually combine IoT and blockchain. So for example, you may have a requirement that, say a package that needs to be kept at a certain temperature, from the shipping company all the way to the customer. And so people are putting sensors in the package, basically temperature sensors in this case, and at different stages of the supply chain it's registering. Okay, my temperature. Say for example, that the contract says that the temperature of the package cannot be above 25 degrees celsius, and the carrier, and the container, and the port in the ship, then in the warehouse, it records the temperature and at some point the temperature goes above 25 degrees.

So the contract is blocked, and the shipment doesn't meet the agreement. So our refund for the damage part needs to be executed. So all that capturing and enforcement of these contractual obligations can be captured in what is called a smart contract in the blockchain. That is constantly checking for certain conditions to happen, and if they happen, like in this case the temperature of the package went above 25 degrees, it enforces another transaction like a refund.

Vince: So I think what I heard is you call the providence at a station I believe, and that is, firstly, it was knowing that the product itself was valid, that it was in fact the true part if you will. And the second was that you talked about environmental monitoring, I believe, which you said that if something had to be tracked or had to be shipped at a certain temperature, and it went over that temperature, the product would no longer be good, or valid, that it would break the contract. And so the third piece of it is not only you're tracking the supply chain and the movement of the product from point A to point B, but you're also saying that if any of the variables are broken, if any of those things are not valid, you can break or dispute the contract, and that's part of blockchain.

Diego: And the reason that's an interesting case, where blockchain has the potential of being a good technologies because again, there are multiple parties. You don't necessarily have trust established, because there are multiple companies. It's distribute, it crosses the boundaries of multiple companies. So blockchain may be a reasonable technology for

that application. So again, it looks like supply chain and asset tracking, probably the first applications of blockchains that will about commercially available. And then the other one, where like I mentioned that it's gathering some interest, is how to kind of certify that this spare part that is going into your machine or vehicle is legitimate. So to verify the authenticity of a part, and that is not counterfeit or that it is certified. So that's interesting because it's crossing the digital and the physical worlds.

I mean, now you have a physical part in your hand and somehow, either by scanning it or having some type of chip in the device that allows you to scan it and check it against the blockchain, and certify yes, this part is legitimate, and it went through all these stages in this product life cycle, and you can use it with confidence.

Vince: It's fascinating. It's exciting. As you said, it's cool again. So what, if I'm a customer looking to engage, why should I consider Azure first and foremost?

Diego: So I mean, one reason is of course the sheer technical capabilities on IoT, machine learning, analytics, messaging, storage. We have arguably the best capabilities on these specific things, but other reasons that first of all, our commitment to industry, and an extensive experience delivering solutions for the enterprise, well before the cloud was around, like I mentioned, our investments in AI and IoT are unparalleled. We have several competitive differentiators. I mean, one is that Azure has over 70 compliance certifications and more than any cloud provider.

So these include certifications that are particularly important to manufacturing such as [inaudible 00:26:05], and of course GPDR. We were leading in helping our customers comply with GPDR last week. It was the day that it went into effect [crosstalk 00:00:26:17]. Yes. And the other reason is that the number of regions actually has more regions than any cloud provider, if it's 50 as [inaudible 00:26:30] count all over the world, six of which are supporting the US government and the US Department of Defense. And this is important because it allows customers to offer their applications closer to the users, not only to reduce latency, but also to address data sovereignty concerns, regulations around where the data lives. Another one is of course that Microsoft is extremely serious about security and data privacy. We have a long experience running online services and enterprise systems.

So we've developed over the years security measures and privacy policies that are industry leading. So we have several layers of security, from measures to protect our customers, digital machines and applications through the network, the infrastructure and the physical facilities that host our data center. Finally, as to the question of why consider Azure, this is not well known, even if we've been doing it for several years already. Azure has an extensive support for open source languages and tools. And this is important because it allows more developers and IT staff to use the languages and tools they're more familiar and comfortable with. So I mean, contribution to open source is very important to Microsoft, and we have a Linux implementations, we support Python, and we are very open source. And oddly enough this is not widely perceived in the developer community. So those are the main reasons why consider Azure.

Vince: No, it's great. And you mentioned something earlier with regards to ITAR and data sovereignty. I wasn't thinking about manufacturing for the defense industry. That's a big impact area, right?

Diego: Correct. I mean sometimes, absolutely. I mean being a DOD contractor is not easy, and there is a big portion of the small and medium manufacturers that are DOD contractors, and are grappling just to meet the data and certification requirements. So actually these small or medium customers find that it's easier to satisfy these requirements going to a cloud vendor such as Microsoft, rather than trying to comply with their own IT resources, which may be small.

Vince: Yeah, absolutely. Microsoft has a ton of capabilities in that area.

Diego: Right.

Vince: So let's talk a little bit about partners. What is the opportunity for partners to engage with you in this segment?

Diego: Yeah, the reason partners engage with Microsoft is mainly to tap into our marketing and sales machine. It's mainly because the joined go to market, and they joined sales opportunities. So we rely very heavily on partners of course, to address specific verticals or specific geographies. And I should also kind of unpack the meaning of partners for us. Partners for us, we subdivide them into ISV, independent software vendors who develop software for leading systems integrators who probably implement technologies, to help their customers implement a given technology. They may or may not be vendor agnostic, meaning that they probably are developing applications for their customers that, using our competitor's technologies for example. So in those cases we have to enable them to be savvy and to be knowledgeable about our technologies, and how to best implement them. And the third type of partner is the startups.

                We have an increased focus on startups and making sure to enable them, and of course the needs of startups are very different from like established bonafide ISVs. Startups are thirsty for customers, are thirsty for funding, and they don't have much time to play around with technologies. So basically back to your question of why partnering with Microsoft and what's the value, it's the promotion, it's the cost selling, it's join go to market, and tapping into our huge customer base. So we may have a customer already, an established customer in manufacturing, I don't know. They're using our virtual machines in our cloud for some workload, and they're asking about, do you have anything around manufacturing execution systems or IoT? So that's where we bring our partners into the play and net cost selling motions.

Vince: It's fascinating. We know we've interviewed some people from that organization as well, and I think there's a great opportunity for some of the ISVs and SIs that aren't engaged in manufacturing to get engaged with you in this segment, because it sounds like it, like I said, it's cool again, and there's a lot of great use case scenarios and emerging opportunities for partners to engage.

Diego: Yes, and what's interesting, and this was a big change that I noticed when I came back is that now manufacturing, so it used to be where only manufacturing ISVs will have interest in Microsoft. I need to develop a solution and I want storage from sequel side of it, and I want to develop it so it runs in Windows servers. So we were just basically a generic platform provider for them. But more and more I'm not dissing customers, industrial customers in manufacturing directly engaging with Microsoft, because of the manufacturing capabilities we have in Azure. So we are now much more closer to the industry. So by virtue of that we can identify opportunities for our partners and bring them into the discussion with our customers.

Vince: That's fantastic. So how are you going to measure success in this new fiscal year, 2019?

Diego: So that is of course the financial metrics of our company is being measured on Wall Street, and things like cloud service, revenue, revenue growth, et cetera. So for the details on that, I would recommend going to our investor relations side. I don't want to get into trouble, how to phrase that-

Vince: But what about for you and the team?

Diego: Exactly, so for our team, success to us looks like mainly three things. One is that we help actually deliver the best cloud platform for manufacturing. So Azure is recognized as the best platform to build manufacturing solutions, because it services address manufacturing specific requirements better than any other cloud. And as we saw, the number of manufacturing solutions built on Azure increases significantly. So that's number one around around Azure itself, that the technical capabilities of our platform. The second one is about awareness and perceptions.

You could have the best technical capabilities, but if people don't know about you, or if they know about you, they don't like you, you're not going to go too far. So in that area, success looks like Azure is the first option that comes to mind when someone wants to develop a solution for manufacturing. Even costumers prefer or even demand that solutions from ISVs be built on Azure, because they recognize it's advantages. And the third one, area of success is about content. If we are successful there, the developers of manufacturing solutions love Azure, because we provide a wealth of industry specific, quality, engaging, and easily discoverable content that really accelerates the development. So again, the three areas are about the technical capabilities of Azure for the industry. Second is awareness and perceptions, and third is about the quality of content we deliver.

Vince: So if I'm a customer or a partner, and I want to learn more about Microsoft's core value here in manufacturing, how can our listeners learn more? What links would you take them to?

Diego: I would probably start with our manufacturing site, all our manufacturing site on our enterprise.microsoft.com. I created a vanity link for your listeners to go there more easily. Just aka.ms/vm, for Vince Menzion, slash Azure one. So again, aka.ms/vm/azure1. So that's our manufacturing site. It's mainly for business decision

makers. So the language is mainly business, manufacturing business. Then the next level down from that is for manufacturing specifically, so I know that site that speaks to the industry from the point of view of our cloud platform. That's more a mix of business decision maker and technical decision maker, and the link for that is aka.ms/vm/Azure2. And lastly, the more granular one that it actually documents for how to do things for manufacturing on Azure, is specifically targeted to technical decision makers, is that same thing, but Azure three, aka.ms/vm/Azure3.

Vince: So Azure one, Azure two, and Azure three.

Diego: Correct.

Vince: And we're going to provide links, hyperlinks in the show notes for our listeners so they can readily access that. I appreciate that, Diego. Thank you for the vanity link. And for our listeners that want to learn more about engaging with you specifically, what's the best way for them to reach you?

Diego: So we're big on social media, and on social and online communities, and probably the best way to engage with the team is via our Twitter tag, which is art industry xp, again, it's at industry xp, xp for experiences, or specifically for manufacturing via my Twitter tag, which is @DiegoTamburini.

Vince: Okay. We're going to provide that in the show notes as well. Diego, so thank you so much. I appreciate you making time from your compressed schedule. I know how busy you and the team have been. It's been amazing to see all of the links and meetings and briefings that you've all been doing, and trade shows and the like. So I really appreciate you taking the time today for our listeners.

Diego: No thank you, Vince, for the platform and to be in your podcast. And I would say to your listeners, please engage with us, ask us questions, tell us what you want in a cloud platform for manufacturing, what you don't like. We really follow social media closely, and we're all about engaging communities online, and engaging with the industry. So we listen very closely to what people tell us over social media. So with that again, thank you to your listeners for their time. I hope that they found it informative and again, engage with us, reach out to us and connect.

Vince: Thank you again, Diego, and manufacturing is cool.

Diego: It is, yeah.

Vince: Thank you.

David: Thank you for joining us for this episode of the Microsoft Industry Experiences Team Podcast, the show that explores how industry experts are transforming businesses with Azure. visit our team at aka.ms/indxp, and don't forget to join us for our next episode.