Daniel Newman: Hi, Ralf. Welcome to the Six Five Summit. It’s so great to have you here.

Ralf Wagner: Thanks, Daniel. Thanks for having me. I’m excited to participate as well. Thank you.

Daniel Newman: That was great. Last year we had a Tony Hemmelgarn from Siemens and it’s just always nice to be gaining different perspectives from different executives within the organization, and so much has happened in the last year. So I think there’s going to be a lot to talk about today.

Ralf Wagner: Absolutely, and I’m looking forward to sharing some of the insights which we gained specifically in the last year, talking about Industrial IOT and the Neutral session.

Daniel Newman: There has been a lot going on and, front and center... last year, the pandemic, it drew a lot of attention, but there’s been a lot going on with Data and Supply Chain Manufacturing, Emerging Industries, Smart Grids, and Smart Cities, and just all things where IOT data is really going to kind of change the world, and we’re going to dig into all of that. But I guess I’d love to start off by talking a little bit of the big picture, getting a little bit from you on what Siemens is seeing, indulge me a little bit, what are some of the focal points right now for Siemens, with IIOT and the business, what’s been on your mind over the last 12 months?

Ralf Wagner: So what’s really interesting, specifically looking at the situation we had over the last few months with COVID drawing so much intention, the topic of Digitalization from many companies has become somehow front and center specifically the way it was Digitalization Technology, which was taking advantage of being remote connected to something else and therefore IOT, and specifically for us naturally, IIOT had gotten way more attention than we initially would have expected in that last 12 months, looking at the overall situation. So there was quite some dynamic which was created around.

Daniel Newman: Well, you have to imagine right now, as companies are trying to figure out how to navigate the post pandemic world, how to make their Supply Chains more resilient, how to manufacture and meet demand that the Data is the answer. Companies that are embracing a Data First Approach are overwhelmingly outperforming the market. There are more tools, more solutions being positioned to customers than ever before, but finding the right solution is tricky. And what’s really interesting about Siemens and your businesses. You guys have deep, deep and long historic roots in the Industry side and Technology, but not necessarily Traditional IT Technology, you’re seeing IT/OT convergence. And by the way, we’ve been writing research about this for years talking about it for years, but it is really coming to life. And so, as looking at what you’re doing, it seems I’m seeing this coming together of cloud with some of the solutions you’re building and MindSphere, you’re working more and more towards this intelligent edge, you’re bringing this, IT/OT, convergence together.
Talk about the decision that you guys made because you've made a decision to really have this Hybrid Cloud SAS approach to basically being able to manage the fact that not everything can be done in the cloud, but not everything's going to be done at the edge. And so finding that balance, talk a little bit about that.

Ralph Wagner:

So that is actually quite attorney, which we went through in the last few years. When we started the IOT journey, basically in 2016, with the introduction of MindSphere, we had basically a Cloud-First approach defined for us back then, because if we said, "Let's make a bold move," and IOT is about connecting remotely to devices and things in our case, Industrial things. And therefore, Cloud has a tremendous advantage to actually leverage these kinds of technologies to completely new business cases, which can be addressed compared to before. But the more we got into the attorney and the more Data we started to collect from Industrial Devices and build solutions on top of that, it became evident that not everything has to be transmitted through the Cloud because it actually... in some cases, this creates some costs, which you want to avoid because every used cases has the same value.

So therefore you say, "That is Data. Maybe I want to keep locally. And I want to actually transact locally or analyze locally and only the results of that analytics get to the Cloud for more longer term, across side comparison, these kinds of used cases." So we said, "Okay, no, there isn't that edge thing, which was surely, but slowly also on the horizon that is in the Industrial Environment, even more important because it not only have that Data interest in additional costs, but also the... for example, High-Frequency Data from Preparation, which is a quite heavy used case in the Industrial space." You want to analyze this on premise, because you don't want to have 20 KiloHertz sampling rates stream from a Model, which might fail in three months from now, or we want to end up stream that into the cloud all the time.

So these are used cases where we then work together with our automation colleagues, where we said, "Hey, can we do something about it to make this more fitting the used cases?" And then when we started on the ex-trainee and said, "Okay, let's have that Hybrid Approach. Let's decide where the use case, where the value is, where the application and the Data resides and make this Interoperable, and so that we have an Integrated Control Automation, Edge and Cloud Architecture for our customer that they can pick and choose what's best for the use case or provide. We provide solutions that optimally leverage these three layers basically."

Daniel Newman:

And so this, all the markets speak about Hybrid turned out to be true. I remember when I first heard about Siemens and MindSphere and what you were doing, I was thinking when you had a more pure Cloud Approach, I'm like, that's going to be hard. I'm like, I appreciated what you were trying to do because so much of the Industrial was living as a hard Physical Separated Network that wasn't really integrated with IT, it... but some of the hardened Edge Hardware Requirements were really spot on because of the complexities of the environment, because you weren't necessarily... you needed to secure them
from other parts of the Network to make sure these machines were running safe and weren't... didn't become threat services for hackers. So there were reasons by the way, then you had latency issues and all of these different things coming together.

So it's like really bold, Ralf you're like, we're going to the Cloud because that's... people are going to the club. But I think the story is really if I could say, and you'll probably hear this throughout our whole summit. Hybrid is the thing. We've all come down and said, "It's not going to be one or the other prime is not going away anytime soon," but we will certainly take advantage of the fact that for certain parts of applications and workloads and Data, we don't need to analyze it with no latency. We can send it off to the Cloud, let analytics do their thing, make assessments, business decisions. And then with certain parts of the same system, we're going to need that no latency, real-time information to keep our factories running our Grids, our Cities, and all of these things with no latency. So it's really interesting to see in the end, people that started in the Cloud ended up moving more and more back to prem people that were pure prem have realized they've had to move to the Cloud. But then you guys landed exactly where the market needed you to be.

Ralph Wagner: And if then that was exactly the case, customers and the market actually guided us to being in exactly that direction. Because as you said, IT/OT were... we were reading and writing about this instance many, many years, but actually now it feels that the Technology and also the affordability that comes with that technology is actually there to provide that. So when we first connected Industrial Assets with, with IOT on MindSphere, we brought a gateway into the shop floor. So they're kind of Industrial PC secured, harden and easy to connect, but it was only a gateway, and the customers was asking them that there is an Industrial PC setting, that's only pumping some Data to the Cloud, why can't I have applications being run on that, and pre-process that Data? It was a natural dialogue, which led to this development.

Daniel Newman: Absolutely, and of course, everybody's got to monitor those expense, as Data becomes more and more exponential. It's not free to move Data from edge to Cloud and back Egress Fees, as all those things are... all have to be considerations. And in the end, businesses are out to make profits, they're trying to invest in Technology that makes them more successful, more profitable. And as Data Volumes grow and grow and grow, some things can move to the Cloud, some things don't have to, and not all that Data needs to be moving. So that's another thing everybody's keeping in mind. Speaking of the, IT/OT the Cloud, that convergence, I happened to catch Tony Hexagon, who I mentioned earlier was with us last year on the IBM Think Keynote. And so I've been noticing the Company Siemens, you guys have been really focused too, on this Ecosystem with some of these IT companies.

And it seems the two Companies are going to work really closely together, but, wondered what the approach is overall, as Siemens, as you're working towards this more Public-Private Hybrid experience, you have to be connecting to more
and more of these different Cloud providers. You have to be building meaningful material partnerships because, essentially a lot of these customers have... they've already chosen where workloads are being placed and it's got nothing to do with their manufacturing or their Edge Cloud for Industrial. So, what's the strategy there?

Ralf Wagner: So from my perspective, and I think we have been working in this direction from the beginning, not only in Cloud, but also in the Automation world, it's about building an Ecosystem because it's not one company, one supplier that can provide everything and all that solves the customer problems and serve their needs. So the Ecosystem and the openness, which is from my perspective to prerequisite, for building an Ecosystem, they need to have an open Technologies SPECK to let others participate in your Technology, to provide additional value where they can build their business they opt to. So in the meantime, we have more than 500 partners around IOT and MindSphere from Connectivity Partners, Consulting Partners, which actually help our customers on the transformation story on Application and Solution Development, but also Infrastructure. And I think you mentioned IBM, and this was now our last additional or most current addition to the Infrastructure Partnerships.

So we started with AWS with Azure and we Alibaba where MindSphere is available on all the three major Hyperscalers in the world, that to give the customer their choice, because exactly as you said, "Customers usually have made their decision on which Hyperscaler they want to work with." And there's tones of Data from all our IT systems already sitting there and IOT adding to that, even from the amount of Data, a significant part of this, it comes then from the Assets and Data has gravity, so customers want to have their solution and apps run on where the Data is and not the other way round to also avoid the Data increase and increase in there. And therefore we work with all the Hyperscalers, but there has been a set of customers and also a set of regions in the world.

They said, "We want to have that technology, that IOT technology, but we want to have on premise." So there might be legal reasons in Aerospace and Defense. There's regional reasons if you look at the New Middle East, for example. And so we, looked at who could be partnered there to have the underlying Infrastructure, which we use from the Hyperscaler being harmonized and, and managed in a highly professional way. And we decided on OpenShift from Red Hat and IBM is the service provider for that to be the foundation for MindSphere, if it's being run and executed on a Local Data Center from a possible...

Daniel Newman: OpenShift certainly gives a lot of flexibility and doesn't limit the future of moving things to Cloud, if and when Compliance and Regulatory becomes more friendly, we know there are certain industries that have extraordinary, difficult Regulation and Compliance, and PREM has tended to be a solution for that, and probably will continue to be for some time, at least some parts of the workload, some parts of the data in order to keep things safe and with the rise of Cybersecurity Events and Ransomware, I think we're going to continue to see that. Not that big
on PREM fixes all that, but it certainly gives an opportunity to manage certain parts and maintain control, which is really what it comes down to is... who gets blamed when something goes wrong?

So you guys certainly have addressed, like you said, "All the Hyperscalers or most of the Hyperscalers out there," you've built a number of different partner systems, quite an Ecosystem, which I think is going to continually be more and more important for this IT/OT Partnership. One thing I did want to ask you about is, Siemens MindSphere, the whole business tends to be known, and because it's Industrial tends to be known for Manufacturing, but Manufacturing, isn't the only place that you're playing, there are other Industrial Verticals that Siemens is involved in and you're taking this Technology to scale out. Can you talk a little bit about some other places where Siemens in your Digital Industry Software are utilizing this Technology?

Ralph Wagner: Absolutely. And exactly, as I said, I think we're specifically strong in the Manufacturing Process and Discrete Environment because there's where MindStream, was born in 2016 and within the Siemens Organization. But back then, when we gained the attraction and get more on Market Adoption, our colleagues left and right within Siemens, so building Technologies, Humans, Energy, Siemens Mobility, with the trainers and train Infrastructure, and also the Digital Grid and Infrastructure Colleagues, they looked over the fence and said, "What are you guys here in Industry doing?" Because we connect to things out there in our Verticals as well, and we started to collaborate with them.

So today we can say that we have them in our MindSphere in the other Verticals, like Smart Cities, like the Connected Infrastructure, like Managing Digital Grids with quite some of the solutions and used cases which has been developed on top of MindSphere by those colleagues, because they have the domain know how in those Verticals whereby it was born in Digital Industries, we have the domain to know how the Automotive, for Beverage, from Manufacturing Industries, where we can add the value and solutions on top of that as well, and build the Department Ecosystem specifically around that, because Partner Ecosystem in building Technologies looks different, has different players.

They colleagues work with them day in and day out. And so everybody's then focusing on the same Technology Stack, leveraging this, so you don't need to reinvent the wheel in the same Company, but justifies that additional on top, invest then with their solutions and applications for their Verticals and customers.

Daniel Newman: So what are the things I take away from that is, you've built a Solution Stack that can be modified that this Partner Ecosystem that you have built, can come and say, "Foundationally speaking, this is the data we can access. This is the type of architecture that we can build." And while MindSphere was naturally built for the Factory Floor, the Automotive, Manufacturing Plants, and some of these True Industrial Hats and Edges, someone says, "Why can't we use this for building technologies? Or, why can't we use this for, Smart Government or City
Type Applications?" Because the way the data is filtered in and accumulated the way it connects to the cloud, the way that can then be turned into insights, you become an edge platform in a lot of ways for different industries and they take their expertise. Basically, they modify what you've built to make it work for their specific outpatient. It sounds like a number of different spaces have done this. And I think that Ecosystem probably played a big part in it.

Ralf Wagner: Absolutely. And maybe a pretty visible example of praying all of these different used cases together is something like Export 2020, which is in Dubai and now 2021 we know for obvious reasons. Because there, we have used cases from Water Irrigation, from Lightning Management, from Crowd Management, linking this to Public Transportation, linking the Events to, to everything. It's like a small City with everything, and every aspect that you can think of is covered with applications, and basically IOT is kind of a building between all these kinds of Apps and usd cases and the Data and the Assets, which are physically then on the expo site.

Daniel Newman: No, it's great example. So to kind of pull things together here, you, as an Organization, talk to so many Companies, like we said, "Many in the Manufacturing Space, but Siemens as a huge business is very diversified," and I'd love to know what are some of the key considerations right now that from customer conversations, what advice are you giving customers about where to make their biggest investments, what's driving growth, efficiency, yield? We like to say that in the Semiconductor Space, but in across Tech with all of the Supply Chain issues right now in Automotive, of course is highly impacted by the semiconductor shortages. But in the end, these Technologies are being invested in because Companies want to produce more products. They want to deliver faster services. They want to offer a better experience to Constituents in their Cities. They want an Event to go, and you were just suggesting the expo to go to... to be more successful, all these different things. What are the things you're talking to customers about right now to make sure that they're getting the biggest return and driving the most growth from these Investments?

Ralph Wagner: So it's basically in two or, two areas where the Investment is going, either the Technology like IOT and Edge is helping customers to gain productivity or increase quality, meaning more or less in their operations and operations doesn't need to necessarily be being a Manufacturing, could be a Wind Park with the Right Infrastructure. So optimizing the efficiency of Operations as is one thing, the other area is actually Identify Additional Fields of Growth, Digital Services, and Selling Applications, differentiating their products with something on top, which that didn't deliver before, like maybe availability guarantees, which they can charge for or everything as a service, Asset as a service is now also gaining quite some momentum that they differentiate, not only with what they sell is a product or a service, but it's something on top of it. In the changing the Business Model.

They say, we are moving from CapEx to OPEX because is also something which we here since a long time, but it actually starts to happen now. And some
Industrial Companies have also used maybe a little bit COVID time to reflect on all of this, what it means for their Companies to go in this direction, to identify new fields of Growth with Digitalization and Software Applications leveraging to IT/OT convenience. So these are the two areas which Companies look into to actually get something out of that New Technology.

Daniel Newman:

What I love about what you said there, Ralf, is that we've had the pivot and this Industry doesn’t move the Industrial side of OT. Doesn't move as fast in a lot of cases, as some of the Cloud Scale stuff that we hear about. Having said that though, Enterprise IT, doesn't move as fast as that either. So it's not only OT, that's not moving, but we heard for so many years about making sure that the machine that you would know when a pump was about to go out, and this is what IOT or IIOT was. We're going to put a sensor on the pump on the Manufacturing line, and we're going to make sure that we have some advanced warning. And by the way, that's still an important thing. Being able to tell early, before a machine fails and be able to order a part, have it available, be ready to install.

That's the good stuff, but what you just said, and I want to reiterate this for the audience that I think is, there's been a pivot and the pivot now is much analytics saying your CRM System or in an ERP System might be utilized to figure out how do we deliver a better customer experience? How do we manage pricing and elasticity? How do we handle Supply and Demand for the customer at the end? You're starting to be able to go to these companies and say, "We can use these systems to help you proactively develop new products. We can help use the data in these systems to meet unexpected demand on a short notice, because we have the ability to understand Capacity Planning, better with Data." And again, then you take your Systems at the edge for the IOT, and then you combine it with, through some of these Partnerships, with that IT Traditional ERP Data, the Systems of Record that we know, and you start putting it together and then the insights get better.

Ralph Wagner:

Absolutely. And this goes in two faults. So using real Operational Data and feeding that back into a Model of your Operations, many Companies, when they design a Wind Park or when they design a Manufacturing Line, they do this digitally and they simulate that before. But then that Simulation Model sits there before somebody touches it again.

If you use, reuse it and feed the real Data out of the Operations, while running via IOT, in those Models, you have way more exact ways to simulate and use these Models even to predict and to forecast. So there is multiple uses out of these Digital Twins, which we usually refer to, which have not been leveraged to that extent at all in the past. So there's way more to get out of the Digital Twin than just to copy something or make a Digital Design and then have it in the real world. But closing that loop you see is more immobile, we are a... Siemens have certainly part of partially even pioneer, that kind of concept. But now we see this really being adopted by the market way more broadly, and they see that close
loop benefit. That is amazing. That will be the next S curve in productivity. I'm pretty convinced.

Daniel Newman: Absolutely. Well, that's what you should be focusing on. And at this point, I'll let you get back to focusing on that. Ralf Wagner, thank you so much for spending a little time here at the Six Five Summit, it was great to get your insights, great to hear the state of IOT, what Siemens is looking at, where it's heading and what if you were in this space and this is something you're doing... what you should be thinking about as well. So, Ralf, thanks for joining me today.

Ralf Wagner: Good Daniel and I wish you a very successful Summit for the rest of the week. Thank you.