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Episode 86: SAP Industry 4.0 Centers and Cloud ERP Live in Action

Markus: Hi everyone, and welcome to our episode 86 where we will talk about how SAP S/4HANA Cloud, public edition can be experienced in our SAP Industry 4.0 Centers. To answer all your questions about our Industry 4.0 Centers and how our factory relates to Cloud ERP, I am happy to have Rakesh Gandhi, Vice President Digital Supply Chain and Industry 4.0 Centers on the show today. Hi Rakesh, how are you doing today?

Rakesh: I'm doing great, Markus and thanks for having me on your podcast.

Markus: You're very welcome and great to have you! And let's start right into the subject. The Industry 4.0 Center is built like an actual factory. So on our SAP website I see robots for component production and support the worker during manufacturing. I can also see that the exhibit has an entire production line and even driverless transport systems. The first question that came to my mind was: what was SAP strategy as a software vendor to build a factory in the Industry 4.0 Centers?

Rakesh: Thanks, Markus. This is a great question. As you know, SAP is a software company. So traditionally Industry 4.0 has been viewed as machine-to-machine automation, with the technology and innovation. Now we have an opportunity, customers have an opportunity to really collect that data that has been generated from all their operations across their supply chain and manufacturing as well. That's point number one. Point number two: SAP, we have been kind of, you know, working with our enterprise layer, with our Cloud ERP, especially supporting the manufacturing line of business, whether it's planning, make part of it, production quality and all those good stuff. And also we have capability that can connect down to the automation level, down to the machine level, right? And as a software vendor, that is a strategy to kind of make sure that we are able to connect the OT as an operational technology layer into our enterprise layer and leverage this data for making that day to day decisions in real time for our customers, whether it's for the shop floor operator, supervisor, plant manager or taking it and combining with the enterprise data in financials and really taking the decisions that are required for us to mitigate the disruptive nature of supply chain that we see and bring that risk resiliency within the business. And that is SAP strategy in nutshell. As a software vendor, when we talk about our Industry 4.0 strategy and Industry 4.0 Center and the factory that we have here really provides that real innovation as customers are looking to go through, you know, digital transformation for their end-to-end Supply Chain as well.

Markus: Thank you very much, Rakesh, to touch on the a little bit of the history and also our strategy at SAP. And let's imagine I'm a customer and I walk into the factory in the Industry 4.0 Centers. What else would my eye see that is not publicly available on our website, for example?

Rakesh: Absolutely. On the website, what you see is really the physical element of what's in our Industry 4.0 Center. If you visit our Industry 4.0 Center and really go through our sessions where we kind of show this end-to-end power of this end-to-end capability in a fully, you know, interoperable way down from the enterprise level to the machine connectivity. Customers realize how they can run their business operations live. A lot of customers have a vision that they want to run their business from one control center. That's the value that we kind of showcase to a customer. And we also showcase how our customers can really enable this from time to value perspective by building that digital thread of their business process. Coming from the factory to the enterprise layer and be able to run their business live with having those live analytics and intelligence built into that to be able to kind of give them the prognosis of what next, what is the next best action. These are the things which is what you can experience as a customer and see the outcomes that you can get to really digitally transform your business. I think that is something you will not see on the website, but it's implicit within our Industry 4.0 Center. I would really welcome anybody who are planning to go through your digital transformation journey across your end-to-end Supply Chain and also from the perspective of your enterprise software on the ERP side, leveraging all the new technology of Cloud Machine Learning, AI, Robotic Process Automation, definitely visit this and you will see this in action in reality.

Markus: Great, Rakesh, and also a good hint to my next question. Let's further imagine I own a business and maybe in the mid-market and I have manufacturing plants and my business is expanding, luckily, and maybe I expand in Europe, maybe I expand in Asia, maybe I expand also in the US and all of a sudden, I need a new ERP system and I'm deciding for that I want to have a Cloud ERP system. Luckily, I'm getting interested in SAP S/4HANA Cloud, public edition, and now I call you up, Rakesh. And now I tell you I'm interested in this new Cloud ERP system. I heard from SAP. It's not new, but maybe it's new to me. And now I would like to have a tour in the factory to experience the real deal with SAP. Would I then create really a production order and a system and then see what will happen to it? Or can I do hands-on to really experience the software and the processes in the factory?

Rakesh: I'll say why start from production order, right? What we do with our customers is that really have them imagine how their customer journey begins. We really give them hands-on ability to create sales order as if their customers would create and kind of, you know, send it to them from the web. So we start from a commerce website and then allow our customers to say, go create your orders and see how this order flows through as one data flow across all the systems. Especially for mid-market, this is very important because they want something from their deployment perspective. They want something to be happening really fast and then enable their business really fast. I mean, gone are the days of 12, 24 months of ERP implementation. They want it in a matter of a few months and not just the ERP, but the end-to-end business process that supports manufacturing as well. So coming back where customers can say, hey, I want to create an emergency order, they can also simulate and say, Hey, I want to create a personalized order and then see how my manufacturing reacts to the personalization that my customer has provided. And we show to our customer that once they create this order, including any personalization that their customers would ask for, how this personalization gets converted into a production order, they can even go through the planning process and see how the production planners can plan all these orders and any emergency orders that they may get, how they can reprioritize that. And we show the planning from the overall horizon in the sense starting from their demand planning, supply, network planning and coming down to the production planning, meaning the manufacturing planning and scheduling part of it, down to the day level where the manufacturing supervisor does the plan on the shop floor to make sure that, you know, any changes that are happening on the shop floor are synchronized back and forth, which means now the visibility is provided to the planners, including your procurement planners, production planners and down to the supervisor layer if there are any disruptions happening. Once this planning part, our customers kind of realize because this is the biggest pain point for our customers, they have a lot of paper-based processes. Many of these customers, right, especially in the mid-market, there are a lot of manual processes as they're maturing as an organization, as they're growing, they want more and more efficiency and productivity in their business. So this is one of the key capability that our customers really look for to eliminate the papers and also the papers on the shop floor. Now, once the planning part is done and the production order is handed over on the shop floor, they will now see the manufacturing execution part of it. Now here we cover both for our Discrete Industry customers and also for Process Industry customers, how they can, you know, go through the manufacturing process. So, for example, in our centers, we have hosted a lot of life science customers who are even pre-revenue. Or Some of the vaccine manufacturers who are really small pre-pandemic, and during the pandemic, their demand boosted, and they have become a billion plus dollar company now, right? So to support that growth, they have really adopted this, they saw this, they implemented it in a matter of months and really supplied vaccines around the globe. Likewise, you know, we have discrete manufacturers as well from the industrial manufacturing side who typically come in saying that SAP is a big company. How do I kind of reduce my complexity? I mean, our Cloud strategy with a Cloud ERP and our Cloud portfolio of Digital Manufacturing really shows them that quick time to value. So on the execution side, we really show them the connectivity with the machines. If they have a highly automated plant or if they have manual processes, how we can help them with their digital journey based on their maturity, right? Whether they are brownfield plants or a greenfield plant, we really help them visualize how they can go through that. Now, I mentioned earlier about single digital thread and end to end connectivity. We don't just stop at the production, we kind of take them towards the logistics as well and really show them how they can reduce the cost of their logistics and provide that visibility of manufacturing and logistics. And of course, in between, from the operations perspective, all the processes around maintenance and the visibility of all your maintenance process as it relates to manufacturing, all those handshakes are part of our showcase as well. So, this really makes it an end-to-end process from design to operate, let's call it right. So how they design their products or formulate their products, if they are process industry, how that is handed over to manufacturing, planning and its interaction with manufacturing from the perspective of maintenance processes, bringing that visibility together so that they have the highest uptime in the plants. So, these are the kind of values we really showcase to our customers. And while doing so, they can narrate their scenarios. This is where they can kind of try it out

as to how simple it is to use as well from the usability perspective so that even their shop floor operators can operate a lot of these applications in a very easy to consume way.

Markus: Awesome. I can really envision this hands-on experience. I just had an idea when you talked about it. If I would be a producing company and I would like it so much, I can see the scenarios, I can see the hands-on experience you just described perfectly. But now I want to see how my products are really produced in our factory. Are those scenarios also possible? Meaning can SAP simulate customers manufacturing processes and products in reality?

Rakesh: I'm glad you mentioned that. So, I'll give you an example. A customer who had a meat processing plant recently came and they said, hey, we have a very unique process around the meat. They do a kitting process of chickens that they cut, and they want to reduce the waste. And now, of course, we will not have those kind of set up here in our factory. But what we do is and then this is very unique, we create a placeholder, whether it's a discrete customer or a process industry customer. And we are kind of tied lots of high value use cases for our customers, which covers approximately 15 different industry segments. Meaning if I get a consumer product goods, whether it's food and beverage or meat like I mentioned, or I get a chemical customer or I get a drink manufacturer on the process side, on the discrete side, whether it's a machine component manufacturing or automotive or even high tech, we are able to show those high value, innovative use cases to our customers. The beauty of innovation is it is not really very, very industry specific, right? It's interchangeable. So take, for example, a innovation use cases of machine vision and how do you tie that non-conformances into your quality process? It's applicable whether it's a meat manufacturing, like I said, or it's a PCB manufacturer of a high-tech company and how you integrate those into your quality process. So we take this product that we manufacture as a placeholder and really kind of say, Hey, imagine that this configurable product is your car or this configurable product is your high tech product. In process industry case as well, we kind of say, imagine this being your kitting process for your meat, right? So we can really cover and to a certain extent, there is also an imagine process for our customers saying that, Hey, look, how can I adopt this innovation which has been shown with the real outcome, right? So outcome is what matters, eventually when we talk about digital transformation and that is what our customers really like when they go through our centers.

Markus: Sounds great and thank you for explaining the processes, the strategy and also the benefits and how that really works. I think I can really imagine that maybe we go now a little bit on the technical setup and what sensors are you using? How did you implement the integration parts between SAP S/4HANA Cloud, public edition and for example, the execution of the machines?

Rakesh: Absolutely. So we use lots of smart devices, call it sensors, call it smart devices, because we have the whole process that we kind of showcase starting from design, manufacture, even logistics part of it as well, and maintenance and operate. So we have machines that we have partnered with a lot of our partners, both on the process side and the discrete side, and it starts from the robots. It has on the logistics side, we even have our AGVs or AMRs, Automatic Mobile Robots, within our logistics process, we have from one of our partners Gepard, we have an ASRS, Automatic Storage and Retrieval System and lots of sensors are built into that. And also we have PLCs which control a lot of different elements of that ASRS, Automatic Storage and Retrieval System. In simple terms, that's an Automated Warehouse, which is operated through our S/4HANA, public cloud as well. We have even a smaller devices starting from just a barcode scanner, RFID readers. We have temperature sensors, density sensors, which are part of our process industry set up, which kind of monitors the ambient condition of when the products are manufactured as well. Now all this connectivity is enabled through our digital manufacturing layer, and that's also public cloud solution as an add on to S/4HANA, public cloud. And we have something called as plant connectivity. And we also, as part of our thought leadership and our leading approach, how we are trying to standardize that connectivity layer, leveraging OPC UA, we show to our customers how they can standardize that connectivity layer, irrespective of whether it is a single sensor or a complex machine or an automation systems, like PLCs or Scatters or even CNC machines, how they can have a bidirectional communication going from your execution system like our Digital Manufacturing Cloud, as you are executing the production orders, or when humans are operating the machines, how it can send the data and does the data collection as part of your process. So through that connectivity layer, we start collecting that data and it's tied with our enterprise processes coming from our S/4HANA Cloud and also our Digital Manufacturing Cloud layer as well. From the connectivity perspective, of

course, a technical setup is a little bit more extended. If you go on the logistics side, we have cloud robotics, I should have mentioned that as well, which is part of our warehouse management system within S/4HANA.

Markus: Maybe one more question. If I like the factory setup so much and I'm a customer or I see something in the factory that is very innovative and I would like to implement it in my factories, how long would that take? How long did it take you to set up all the factories or maybe one factory in the Industry 4.0 Centers?

Rakesh: We started, for example, here in Americas region, we have our factory in our headquarters in Philadelphia, in Newtown Square. We did this during the pandemic time. We really set it up within three months or under three months. That included the challenges at that time when everything was closed to get some of the workforce that were required for lifting and shifting the heavy equipment that was brought in and then put in inside the place. So there is a physical element of the work that was involved. But when it came to the software, it was pretty quick for us. We did it within like 6 to 8 weeks from connectivity, setting up all the use cases and configuring those. The benefit is that since everything is on the cloud, there is an element of repeatability as well. So we took over from our other centers like we had done something for Walldorf. It's the same system. So we took some of that configuration as a template and deployed it here in Newtown Square as well. And we did the same thing for Tokyo. Now, when we talk about the customer, when I'm talking about the time, it's about deployment of this whole software layer. Now, of course, depending on the plant, whether they are brownfield or greenfield, and excluding anything that requires a factory physical build or getting the machines and all, if you kind of exclude all that time. I've seen our customers go through the blueprint process to deployment in a highly automated way as fast as about 4 to 5 months as well. That involves designing the production lines and really doing that change management of the people, which is another big element when it comes to deployment. It's not just about technical deployment. So I've seen it done as early as 4 to 5 months, or the customers who are building, let's say, a brand new plant, including, you know, putting the new factory and doing going through the construction. I have seen one of our customers down south here in Carolinas. It took them almost about 12 to 13 months inclusive of all those capital investment that they put in to build a new plant. That's the kind of range I would say this could go through.

Markus: Let's say I went through the factory, I had a really good time, and now I'm ready to go with SAP, I'm convinced. Can I already decide after I went through the factory what to purchase or what kind of products I need to implement that?

Rakesh: Yes. So what we do when we have a customer come in now, of course there are showcases, experience is important. So that's the starting point where we kind of show them the power and the outcome that our customers can get with deploying SAP Industry 4.0 solution in their factory as it relates to them. And then as part of that innovation day that we go through with our customers, we also go through a brainstorming session in terms of how their digital roadmap looks like, based on their current challenges, pain points or their vision. What are the steps that they need to kind of go through? And then what all they need to deploy? The combination of this to really establishes what they need to kind of, you know, deploy and what they need to purchase from SAP to run their factory in a more modern way and really take it fast forward, which is relevant for next 30 years, and achieve that outcome of efficiency and so on that they desire. So yes, answer is yes, absolutely. I mean, with our offerings and innovation and the workshop that we do.

Markus: Did SAP involve business partners in the setup of the factory?

Rakesh: Yeah, I mean, ecosystem is a big thing when it comes to Industry 4.0. If you look at our setup, we have equipments that are provided by our partners that involves universal robots. We have back off, we have Gepard, we have equipments from Kronos, we have AGVs from one of our partners here in US, also at least in the US and Walldorf as a different maker from Gepard. So lots of business partners have come together and when we showcase this to a customer, we also talk about their real ecosystem in their factory. Sometimes our customers like what they see in terms of the kind of equipment that we have, and that becomes like a collaborative process even in the customer engagement later on with that business partner. So that's one category of partners, which are our equipment partners. We also have an ecosystem of our system integrators

who really help customers implement our solutions. So they are also part of our engagement during the workshops. And we have a lot of our digital supply chain partners and our partner managers manage that whole ecosystem in each of the geography and depending on customer choice, they are part of this engagement or they are get engaged later on after the visit as well. So absolutely, we have at least over two dozen of our equipment manufacturers who are part of this factory and our whole ecosystem who has that expertise across digital supply chain, worked together with us to drive the success for our customers.

Markus: Great collaboration, Rakesh, and very impressive. One more question I have for you. What's cooking for the future? What's the future of SAP Industry 4.0 Centers?

Rakesh: I would say very bright. You know, with the evolution of technology, we are already talking about Industry 5.0 and beyond. Then SAP is right there at the cusp of it. This is where I would say the innovation becomes real in Industry 4.0. So there is a continuous evolution around it. So to give you an example, with the evolution of SAP strategy in terms of accelerating in Cloud, that is our key focus along with our motto for our customers, which is very simple motto, how may we help bring the success? We kind of take this innovations and the technology evolution into Industry 4.0 sector and that continuously evolves as well. So I would say the horizon is limitless and I see the becoming that, so to say, first entity within SAP who tries out technology that SAP is bringing out the innovation that SAP is bringing out. And then we showcases to our customers in a real, tangible way.

Markus: Great to hear, Rakesh. I like your sentence, the horizon is limitless. I think this is a good point to stop this episode. Thank you so much for being on the show today. It was a real pleasure to listen to your insights.

Rakesh: Pleasure's all mine. Thank you, Markus.

Markus: I hope you liked this episode as much as I did. As always, feel free to drop us an email via insides4@sap.com and let us know which topics are of your interest. Tune in next time and be Inside SAP S/4HANA.

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