The Future of Supply Chain Episode 9: The Role of Technology in the Future of Supply Chain with Dominik Metzger

Dominik: [00:00:00] My opinion is we will see that the paradigm of supplier vendor relationship has been absolutely disrupted and we will see that significantly change. We will see that collaboration in your ecosystem, visibility across the tiers of supply chain is what's gonna determine the next stage of efficiency. And I also believe that companies right now can define an intelligent path to achieve risk resilient.

Richard: Welcome to the Future of Supply Chain podcast from SAP. My name's Richard Howells and I'm the Vice President for Thought Leadership for SAP's ERP, Finance and Supply Chain Solutions. And I'm joined by my co-hosts Sin.

Sin: Hello my name is Sin To. I'm a marketer, blogger, and podcaster on the topic of supply chain here at SAP. Today we are joined by our guest Dominik Metzger, to discuss the role of technology in the future of supply chain. So, [00:01:00] welcome Dominik and thank you so much for joining us today. If you could take a moment to introduce yourself and give some insight into your role and what you do today?

Dominik: Absolutely. And Richard, Sin, first of all, thank you for having me. I'm delighted to be part of your podcast today. So I'm responsible at SAP for our supply chain products in engineering. So my team runs our product strategy and also develops and brings to market our latest supply chain innovations, which we will talk about today.

I'm home here in Munich and, yeah, excited to talk about what has changed because supply chains certainly have been in the limelights over the last couple of years.

Richard: Dominik, thanks for joining us here. You are the perfect person to have this conversation with because I'm sure you're speaking to lots of customers every year. So what are some of the challenges that companies are facing today from a supply chain perspective?

Dominik: Like I was already, [00:02:00] alluding to, I mean, supply chains have rarely ever been as much in the lime lights as in the past couple of years. Now, I don't want to bore our audience with things everyone already knows about the huge disruptions that we have seen through or caused through the pandemic.

That really has halted production in many, many industries and have significantly shifted what used to be demand driven supply chains for many industries towards really supply driven supply chains. Meaning what I can buy, what I can procure, basically determines what I can manufacture and hence can sell.

I want to talk a little bit more about how this has evolved since the pandemic and also looking forward what is going next. And here, I would say a huge aspect is certainly the domain of risk resilience where supply chains have traditionally been seen as cost centers, right?

And, and necessary evil to [00:03:00] get the products tool to the markets, to customers. And, uh, I think it is now understood that supply chains are so much more than that, that it is necessary to have a highly risk resilience supply chain. And, uh, let me extend on that word, risk resilience, I mean, there are now of course many actors, including governments, if we look at the US, the Inflation Reduction Act, for example, that are trying to help local economies to improve resiliency in their supply chains. Now I'm convinced that the answer to build resilience is not only found in nearshoring or reshoring, so basically bringing production back to the headquarters or back to the local facilities, but rather in, let me call it more intelligence, in more intelligent ways, how companies can become, for example, much more agile and really connect beyond the four walls of their own company with the network [00:04:00] of enterprises that they act in.

Sin: How are you seeing then companies address these challenges and what are the key processes and solutions that are helping companies today in your opinion?

Dominik: The biggest challenge many companies still have is that their supply chain domains are still acting in silos, right? So while, many companies that I work with, they are pretty good in the various domains, right? So if you look into logistics, they have, very good systems and processes in place to run logistical operations or if you look into the factory, into the shop floor, the same story or if you look into supply chain planning, if you look into procurement.

I think key is really to connect the various supply chain disciplines and then much more importantly to connect your company in a business network. So that is a strategy we have been driving very successfully at SAP with many customers that are already making use of these network effects. And to me it comes down to really three [00:05:00] key elements.

I mean, the first is: it is critical nowadays to gain visibility beyond one tier, right? Or one ecolon of your supply chain. So for many years it's been the norm, that you as a manufacturer, let's just say, you negotiate with your suppliers, with a bet, with a purpose, to have the best purchasing conditions, including cost, including quality, including lead times, and that's how suppliers were optimized.

What we are now seeing is it is much more critical to collaborate with your suppliers because even the most optimized supply chain has failed, right? When sourcing strategies were focused on pure economic, purchase condition optimization, if that makes sense. In other words, we believe it's not only about squeezing out the last dime from your supplier, but connecting you in the ecosystem. So let's talk about your supplier's supplier. So at tier two or at tier three in order to really [00:06:00] identify disruptions much, much earlier before they happen. So that's number one.

Number two: To then also be able to have that agility to react to these disruptions. For us, that means that, coming back to my initial point, the different silos of your supply chain really need to be integrated with each other. If we realize that you have a supply problem, it's not only a matter of procurement to perhaps find a new supplier, it's also a matter of transportation perhaps to accelerate a shipment. It might even be a matter of production to reprioritize your production schedule. So this synchronization, if you want, of the supply chain is key in our opinion.

And last but not least, we also believe, especially with, capabilities like intelligent manufacturing / industry 4.0. There is still a lot of potential in really increasing the productivity of manufacturing and operations processes. How you maintain the uptime of your assets, of your equipment, and [00:07:00] how automated you can really run the operations in the four walls of a plant of a factory.

Richard: It's really interesting. There's some great examples there, by the way. But it's important that you pointed out that even if you optimize the silos, if things don't go according to plan, that's when you have to be able to be risk resilient and have the agility to sense and respond to those changes. And also, you touched upon the point that no company runs alone. They rely on the

network of partners. So collaboration and synchronization across those partners are key. So that end-to-end supply chain becomes the thing that you have to manage, not the individual components of the supply chain.

But to be agile and to have the visibility to be risk resilient, we are obviously leveraging different technologies. I mean, we're doing research at the moment and AI came out as a top technology, but we're also seeing lots of investment in IoT and the start of investment in blockchain.[00:08:00] So what are the roles of these technologies? How are technologies being leveraged to be risk resilient and sustainable?

Dominik: Yeah. I actually wanna start with a, different angle to answering your question, Richard, which is the business element to it. So I feel in many customer conversations I'm having the biggest hurdle to take for companies is a paradigm shift in how they work within the ecosystem, especially in traditional industries where this supplier vendor relationship has been determined by, like I said, let's just squeeze out the best purchasing conditions, right? Let's just secure based on platform strategies, let's secure the cheapest purchasing materials for us at quality. That needs to change .

And so at SAP we have actually been co-launching two very significant industry initiatives to really address the business element of this, not at all the technology in the first place, but the business element with, for example Catena-X. We do that with [00:09:00] the automotive industry and yes, there is a lot of technology talk in Catena-X, but the fundamental paradigm shift we are driving with Catena is that the willingness to share data, which is absolutely instrumental in making this shift happen is accepted by all stakeholders, all the way from the big OEMs to tier-n smaller suppliers.

And we are replicating this for other industries like the machinery and components industry and many others in an initiative that we call Factory-X. So this is really what I believe, the most important pillar, purely from a business perspective .Now, but very valid point. Now, how can technology help?

Richard: Yeah. How do you make it happen?

Dominik: Exactly. So how can, and also, quite frankly, what is SAP's role? Because we are not a manufacturer of parts. So , how do we bring value to that?

So to me it really comes down to there are, let's say massive hurdles in a networked economy, to create trust of sharing [00:10:00] data. A lot of that

comes down to, I don't want to, accept that other companies just have a de facto visibility into all my transactional data, right? That is a no-go.

I don't want to just share quality data. I don't just want to share technology data about my manufacturing processes or capacities or whatsoever. So what technology does and what we are doing is to really help with building data security, building data serenity, and the aspect of a network economy where, entitlement of who is allowed to see what element of data for what purpose can be entirely managed programmatically.

So blockchain or in general, crypto, or encryption is certainly a big area that we are exploring here. But also other elements. We are working in these big, , let's say, programs with think tanks, how this entitlement of data can be done programmatically, where [00:11:00] basically no user needs to interfere, but it's all orchestrated by technology, how data can be shared in a very trusted environment.

So I think this is number one when it comes to a networked economy. But now obviously we still create a ton of data even within the four walls of the company. And what we have been focusing on a lot is to gain insights from this data. I mean, let's face it, we are, let's say leading ERP providers so we have a lot of business data at SAP. We understand everything around what are you procuring? What are you manufacturing? What are you selling? What are you transporting? What are your supply chain plans? And that's a powerful foundation of data.

What we have invested a lot into is to gain this macro insights if you want, especially when disruptions happen to understand the impact of external disruptions, right?

A container, a shipment being stuck in a port or simply a supplier failing. [00:12:00] What is the impact onto your business? So how can we make it very tangible based on insights to this business data and network data: my shipment being stuck, what production is affected, what customers are affected.

And then, and this for me closes the loop most important. How can we really take action? So for us, since there is not one recipe for resilience. We believe you need to be agile depending on what is disrupted that you can really integrate all the way into the level of execution. So very concrete, all the way down to when a purchaser has to create a new purchase order for a different supplier, when a production plan needs to be changed, and so on and so forth.

And that can, of course, be aided by machine learning or AI to come up with these proposals, to come up with this root cause analysis, with this impact assessment, and with proposals, how to resolve such disruptions. Since you mentioned IoT, for us the full focus of IoT is [00:13:00] to make IoT data relevant and accessible for the business process.

So we really focus on leveraging IoT data that is already generated by many, many of our customers, as part of the application and business processes. So, concrete example, I'm gathering a lot of IoT data during my manufacturing process about the quality of my product. So what our specialty is to really link this with your production order to ultimately find out, have I produced my products in quality? And if I have, let's say, half a year down the road a recall, I have of course this wealth of contextualized data at my fingertips to understand where did my process or where did a fault occur.

Richard: So , it's great to hear, especially somebody in charge of development, talking about leading with the business problem and then backing into the technologies that are required to solve that problem.

Because in many instances, we see companies identifying a new [00:14:00] technology and say, we need a proof of concepts with this technology, but not really have a business reason for doing it. So putting the business process first is critical, and the business challenge first is critical. And if risk resiliency has been the big business challenge of the last two or three years, I think it'll be joined by sustainability as a business challenge moving forward.

And supply chain is right in the middle of the sustainability challenges, both as a contributor to the problem, but also a huge area of opportunity. So how are you seeing companies address sustainability across the supply chain?

Dominik: Yeah. I mean, let's face it, we, we, as the supply chain community are one of the biggest net contributors other than of course, I mean with basically scope three emissions and, beyond of course what is emitted by utilities companies and energy providers and so on. So we are a big stakeholder on the table. And, what I am convinced in is we are making great progress. First of all, as a society and in the [00:15:00] understanding of large corporations taking accountability.

Now let's talk about this accountability. While I think there was a lot of focus in, first of all, creating transparency and reportability over the last couple of years, in other words, I want to know what are my emissions. I want to be able

to report on them, and that's a complex enough endeavor for many companies. I see now really the huge wave going in towards operationalizing sustainability.

The difference for me is very simply with a simple example, even if I have a, let's say, high focus on creating that transparency in my company, right? Even if I have plans in place how to reduce emissions. At the end, I believe it really comes down to the level of execution operations to make it happen.

So if I have the best control tower to understand my status quo, if I have the great initiatives, the real savings, the real reduction usually comes [00:16:00] from in everyday business operations to take more sustainable decisions. And that's one big pillar that we contribute to the sustainability strategy of SAP with supply chain.

I wanna give you two concrete examples. Let's talk transportation. So, of course, when managing fleets, when managing trucks and ocean, air freight, warehouses, this is where emissions are being generated. So what we have started to invest into is to have a dispatcher. So a person that takes purchasing decisions what carrier do I choose? What mode of transport do I choose? How do I manage my wealth of shipments to make them take the right decisions by embedding CO2 emissions into transportation planning? So when they run a transportation plan before they select carriers and modalities that they not only optimize based on lead time or cost. Or perhaps availability of freight capacity, of course, but also based on the CO2 emission that this plan will cause.

And if I [00:17:00] have clear guidance, so the, don't get me wrong, the control tower and the central sustainability functions are instrumental to create these boundaries or operating procedures, but the execution happens really in the business domains. So that's my example on transportation.

My second example falls into supply chain planning. So before I decide how much I need to procure to secure my customer demand so in my supply plans, before I generate purchase requisitions, before I generate production orders. If I could at that very intersection, not only optimize my supply plans by again, cost and by quality or, a customer reliabiliy or customer lead times and customer service limits. But again, based on the CO2 emissions or based on other sustainability KPIs, I can take very different decisions on where I buy, where I procure, how I procure my material for.

And the last example is when it comes to reduction of plastic. [00:18:00] This is a decision that is basically determined in the engineering department. When product teams, when product design teams create new products and the

packaging around it, they decide how much plastic goes not only into the product, but also the packaging. So also those are tools where we inter ,let's say act with the engineering and design tools. Tools at the source, so to speak, reduce consumption of plastic.

So in one sentence, focus for us is to really operationalize sustainability.

Richard: It's really interesting because, um, in both cases, whether we're talking risk resiliency or sustainability, and probably whatever the next business challenge is, it all comes back to having visibility. And the right information at your fingertips to make that call. Because if you can't monitor whether it's the risks or the events happening or the emissions that you are generating or the waste that you are producing, then you can't measure it [00:19:00] and you can't manage it.

So that real-time visibility becomes very critical for all business challenges moving forward, I believe.

Dominik: Yep. Couldn't agree more.

Sin: So one, one question because you mentioned, or you both mentioned sustainability. If I understand it correctly, is it something where you can say, or someone can say Industry 4.0 is leading also through sustainability in that way?

Dominik: Hmm.

Sin: If my english is now correct, In that way.

Dominik: Yes. No, I mean, very fair question. Let me drill maybe a little bit into Industry 4.0 and then, I'll come back to the very valid question. Can it help to achieve sustainability goals? So Industry 4.0 is a topic that's more than 10, 12 years old. So it's, far, far down the road from the hype cycle.

Now it hasn't lost its priority. It hasn't lost its power and it's still an, let's say a market [00:20:00] dynamic or a way of running your manufacturing operations that's underutilized. There are many other words for it. I mentioned this earlier, smart manufacturing, intelligent factories. And, uh, I'm even having analysts, ask me about what is gonna be Industry 5.0 and I don't like answering that question.

Because truly I believe right now what is lacking massively is to be able to scale principles of Industry 4.0 across the enterprise. So companies were extremely

strong in building Industry 4.0 capabilities. Let's make a concrete example. I want to be able to really automate my shop floor, and not only with the hardware that I use, the machines, the assets, the maybe warehouse robotics or automated guided vehicles that are shuttling materially around.

But I also want to integrate my shop floor into the world of IT. Why? Because I have highly [00:21:00] customized orders where I create very small lot sizes. Every product has different specifications from my customers. And having human interaction is highly ineffective, right? So I need to directly orchestrate human, or in this case, machine IT interaction to highly automate my processes.

But to my key point now to really roll this out at scale, meaning not just one factory or 10 factories, but a hundred factories, that is the point where most customers I work with are standing right now. They're either in the middle of scaling and rolling it out at the very beginning, but I've not met many customers that have yet really at scale these principles implemented.

And that is an area where we believe, especially coming back to the question about technology where cloud computing is an absolute game changer, simply because the domain of manufacturing operations is extremely physical based on your locations, right? You have a [00:22:00] factory that runs with certain boundary conditions of the labor that is needed, the production methods that are used, so you will never find two factories that look alike, not even in the most standardized business processes like automotive, for example.

But the power of cloud means that we can really accelerate these, what I call, this industrialization of rolling out industry 4.0 or smart manufacturing capabilities at an enterprise scale. Why is that? Because I simply am not bound any longer by these physical limits of having to go to each factory implement the software and tailor it. I can orchestrate this all from one central application if you want. I can gather talking back about data, all of the production and manufacturing and shop floor data to one single instance. So I get essentially intelligence across my heterogeneous world of manufacturing processes, and I can run AI and analytics on top.

Now, how does [00:23:00] that help with sustainability? Because industry 4.0 is also a lot about reduction of waste, waste in water, waste in scrap material, waste in energy. So absolutely, and we have actually a nice showcase with our customer Arpa Industriale, who is a winner of the SAP Innovation Award in their so-called Phoenix factory, they have not only implemented Industry 4.0 principles, but have done it with a purpose of waste reduction of their manufacturing of high-end surface materials.

So absolutely there's a correlation. And I believe with a further automation, there is also much, much more, let's say, leverage, how to improve, sustainability.

Richard: Just a follow on question from that, Dominik. You mentioned manufacturing going into the cloud and historically, manufacturers have been very, probably not the leaders in going to the cloud and uh, very concerned about the security of their data. So do you think, I personally think that if my banking information is [00:24:00] in the cloud, anything, everything is safe and secure in the cloud, but what are your thoughts around that?

What would you say to a manufacturer who's hesitant of putting their manufacturing solutions in the cloud.

Dominik: Yeah, I've, first of all, I fully agree with your assessment. This is probably the number one, number two question that I get from customers from two angles, security and availability.

But let's talk security first. I mean, obviously we are in a very, very, I always call it, we have reached, and this is a probably a European analogy, most of all, we have arrived in the Champions League of cloud computing because we are running mission critical processes out of a cloud.

Mission critical means even if we only have a five minutes downtime or an issue with our cloud, I have a standstill of physical processes. At the same time, it's highly precious data, right, of bill of materials, work instructions, quality information about my products, even things like product genealogy, which really show the whole[00:25:00] life cycle of or the as build structure of my manufactured goods.

Now, why do we believe that the cloud is the best place to achieve security? I mean, if we simply look at the power of security methods that have been introduced by the large hyperscalers. We suddenly see that there's so much more investment know how and state-of-the-art security standards that have been established where it's basically a core business for any hyperscaler, whether it's an SAP data center or one of our partners to protect this data.

So it has become mission critical to have highest security. And all of these companies have one thing in common, whether it's SAP or our partners, which is access to fantastic talent and some of the best in the world to achieve this level of security.

Now, if we talk about a small or mid-sized manufacturing company, which acts in a very local environment. [00:26:00] Access to the world's best security talent, which sits probably not around the corner, is extremely tough.

So what we are essentially making advantage of is the pooling of know how of resources and significant investment into cybersecurity by leveraging hyperscalers, by leveraging cloud computing. So we are taking away the responsibility from the individual, small, mid-sized, or even larger company, and we are pooling it with a high emphasis on security because it is survival critical.

So my theory, and there's obviously a lot of data, whether it's security certifications or other insights. There's a lot of data that suggests that even the most precious information is safer in a very resilient cloud environment than it is on a, let's say in the old on-premise world.

So I think many companies are seeing and believing that we have reached that level of maturity even for very [00:27:00] precious data.

Richard: Just one comment for the non-Europeans or for the North American audience, I would say that the Champions League is analogous to March Madness in college basketball.

Dominik: March Madness. Yes. I thought about the Super Bowl, which I recently watched. Um, but, uh,

Richard: Yeah, that would work as well.

Dominik: that, if that works. Similarly,

Sin: Dominik, you oversee a large development team at SAP. What are the top priorities for innovations? What kind priorities do you see and on your team?

Dominik: Yeah. I mean, for me, we talked at the beginning of the podcast a lot about these strategies, how we help companies really achieve this risk resiliency in their supply chains. And a lot of the innovations that we drive are really making use of state-of-the-art technologies like AI, machine learning, a networked economies or business networks and bringing this into the application.

So maybe let me give you two very concrete examples to make that a bit more tangible. We have a program running that we call synchronized [00:28:00] planning. Synchronized planning is doing three things for a company.

It is number one, connecting a supply chain planning application, which helps you to run sales and operations planning inventory optimization with the world of business networks. This is critical for two reasons. One, I want to understand any disruptions in my supply to then react on it, be agile and plan what this impact may mean to me as a company. But second, I also want to collaborate perhaps on my forecast, perhaps on my supply plans with my suppliers.

So number one. We are synchronizing the reality of your business network, of your ecosystem with your own supply chain plans.

Number two, with synchronized planning, we also then integrate into the execution layer. So like I mentioned earlier, we are synchronizing, we are integrating, let's say, your supply plan deeply into your production plans or into your transportation planning, because ultimately what you plan [00:29:00] to procure and manufacture is what you need to ship and produce in the end. And having those two domains really melt together, the world of planning and execution is critical.

And the third and last thing is we also bring synchronized planning together yet another domain with supply chain, which is the finance domain, financial planning, right?

So I not only want to be able to understand the impact of my supply all the way down to my shop floor or to my transportation, but also my CFO is asking me, well, will it cause in terms of our top line, bottom line expectations, my financial forecast. So synchronized planning is a integration into our business network to understand the reality of what's happening in the ecosystem in terms of disruptions, synchronizing, planning with execution all the way into financial planning.

You know, so that is an innovation which sums up in my mind very nicely how we can help to build this resiliency and this risk [00:30:00] resiliency into our customer supply chains.

Richard: Dominik. We're coming to the end of the session. I have one last question, but before I ask that question. Are there any questions that we should have asked that we've missed? Is there anything else you'd like to say to the audience?

Dominik: Uh, very good point. I mean, maybe one topic that is also, always recognized as a, I wanna call it a hype topic, is this whole notion of the digital threat. So maybe I can say a sentence or two around that. And I must be honest, I'm not the biggest fan of the term itself because I think there has been the digital twin, now there's a digital threat. But I'm a 100% believer into the concept that stands behind it, which is at the moment a big area of innovation for us at SAP.

Now, what is a digital threat? For us, what we have realized is many, many of our customers, especially when they're producing products or also in process industries, think recipe formulation, et cetera. They really require an [00:31:00] end-to-end, let's say threat through their product lifecycle from when a product is being created in an engineering department, how this is being handed over to the shop floor to be produced, right? So the handover to work instructions, manufacturing bill of materials, or routings.

But to then also be able to really store the as-built structure. So what have I created? What is the product all the way down to a serial number? And then even more importantly, how do I hand this over to operations, be that my customer, that buys an industrial asset from me and operates it. Or even if it's, let's say a byproduct that I'm selling. And then lastly, how can I service and operate these type of assets?

So these are the domains, when I spoke earlier about how important it is for our customers to bring their silos of the supply chain closer together. We are investing to basically help with technology to bridge the gap between those oftentimes silos of [00:32:00] engineering, manufacturing, operations, and service.

We call it the digital threat. Again, I'm not a fan of the word, but I think the concept behind it is so critical in order to help really orchestrate an efficient supply chain and to bridge these silos.

Richard: That's a great example of closing the loop. You've come right from the start of your conversation to the end of it, but also the digital thread can feed in if you've got information about how a product is performing at a customer site, you can feed that right back into the start of the process as well, back into the design process.

Dominik: Yep.

Richard: So the last question that we ask everybody, in a sentence or two, what is your opinion? What is the future of supply chain?

Dominik: My opinion is we will see that the paradigm of supplier vendor relationship has been absolutely disrupted and we will see that significantly change. We will see that collaboration in your [00:33:00] ecosystem, visibility across the tiers of supply chain is what's gonna determine the next stage of efficiency. And I also believe that companies right now can define an intelligent path to achieve risk resilient.

I don't wanna say, that there are unintelligent parts, but I do , believe that purely reassuring, purely, again, separating yourself from the tremendous opportunities we have created of globalization over the last 50 years, reversing this, right, is not the future of the supply chain.

The future of supply chain is to find intelligent ways to maneuver it. We talked about some of those agility business networks and so on. So I'm a big believer into an intelligent globalization.

Richard: Has ever supply chains are a balancing act. It's not all of one. It's balancing all of the different challenges. Well, I didn't expect anything less Dominik but thanks [00:34:00] for a great conversation.

Dominik: Thank you so much. Thank you for having me.

Richard: No problem. And, 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 Sin and I thank you for discussing the future of Supply Chain.