

Podcast Episode 124: The Future of Supply Chain: The Rise of AI Agents: Transforming Supply Chains for Sustainability and Efficiency

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Richard: My name's Richard Howells, and this is The Future of Supply Chain, a podcast where we discuss hot topics, best practices, and the latest innovations in today's global business. And I'm joined by my wonderful co-host Sin.

Sin: Thank you, Richard. And hello everybody. My name is Sin To and in today's episode we are taking a look [00:01:00] at what's shaping the next generation of supply chains inspired by the latest white papers from the World Economic Forum, "Frontier Technologies and Industrial Operations: The Rise of AI agents" and "From Shock to Strategy".

The World Economic Forum known for its global insights into technology and industry outlines a major shift from traditional automation to near autonomous self-optimizing systems powered by AI agents. But what does that mean for supply chains, for people, and for the technologies we rely on. To explore this, we are joined by Benedikt Gieger, a SAP colleague, and a fellow at the World Economic Forum.

Benedikt, it's so great to have you with us today. So, you are with SAP and also a fellow at the World Economic Forum. What exactly does your role at SAP and as a fellow at the World Economic Forum involve? And what are you currently working on at the intersection of industry and supply chains?

[00:02:00]

Benedikt Gieger: Yeah, thanks for having me, and it's so great to be here. My role is I'm a fellow at the World Economic Forum, more exactly a project fellow and, I'm working on a one year's appointment from SAP and supporting the centre of Advanced Manufacturing and Supply Chains at WEF, especially the next frontier for operations initiative.

Our mission is driving that responsible industry transformation by uniting all the global manufacturing and supply chain ecosystem to share best practices but also spark innovation and scale impact. And this is oftentimes but not always done in reports in World Economic Forum agenda blogs. It's more or less blog posts on the website and during events, mostly global events with many other companies and organizations.

For a better understanding. I think it's necessary to explain a little bit how the WEF is structured, organized, and how we are [00:03:00] working.

And the WEF is structured in different centres. So there are many centres. One where I'm working on is the Centre for Advanced Manufacturing and Supply Chains, but there's also the Centre for AI Excellence, a Centre for Cybersecurity or for example, different other topics like health and healthcare and many, many more.

And every centre has basically different initiatives where they are focusing on and one initiative is that Next Frontier of Operations where I'm working on. And in our centre is, for example, also the Global Lighthouse Network. It is a very common or popular initiative of the World Economic Forum where SAP is also slightly in. Every initiative has one community and it's a community of companies, of people from academia and also sometimes from government.

And those people or the entire community is meeting roundabout two times per year or even [00:04:00] more. It depends a little bit on the initiative and working on that impactful projects or, initiatives. And they're typically C-suite executive or senior executives, but also asset professors and, people from governance.

My responsibility as a fellow is to consolidate what the entire initiative is doing, what the community extends what the community brings forward, and bring in also the SAP thought leadership and also to provide a platform to the entire community and the space to engage and also exchange best practices.

Sin: Wow. This is a lot what you're doing and very interesting. But coming back to the two highly relevant World Economic Forum white papers that I

mentioned at the beginning. One is from Shock to Strategy, where we also had a very [00:05:00] great blog written by Richard our other host here today.

And the other one where you are also have been involved was the Rise of AI agents in industrial operations. So, can you maybe briefly explain what these papers are about and how they're connected?

Benedikt Gieger: Yes, absolutely. So, the paper from Shock to Strategy, it's about the next 10 or rather 30 years of global value chains, and, how we can move from reacting to crisis, like geopolitical shocks or also the climate change to proactively shaping the resilient and technology enabled, but also sustainable supply chains.

And on the other hand, the report called the Rise of AI agents zooms in. And on the one hand we have the most powerful enablers of that transformation. So, there are the AI agents, who is the report focusing on, and these are software and robotic system that can observe, [00:06:00] plan, and act autonomously.

And in manufacturing it's oftentimes within production and logistics environments. And at WEF, we differentiate between virtual and embodied AI agents. Out there, there are many definitions of AI agents, and it's currently heavily discussed everywhere. And, just for clarification, and it's also named in that report, there are virtual AI agents that are software-based agents that operate entirely in the digital environment and enable the digital applications to autonomously achieve defined goals.

The embodied AI agents, they are integrated into physical systems such as robots, for example, and that interact with the physical environment.

So for SAP, the most topic we are focusing on is mainly the virtual AI agents and the connection between those papers, I think it's more or less clear. So, the AI agents and, uh, in general, the frontier technologies are one of the [00:07:00] eight driving forces for the future proofing supply chains that the report from Shock to Strategy is calling for.

So to sum it up, one paper lays the vision. So, it's from Shock to Strategy, and the other paper provides the technology blueprint and the deep dive.

Richard: I love the way that they dovetail with each other and get the big vision, the big challenge, the big opportunities, and then delve into the how with the agent AI discussion. I want to talk a little bit first about the shock to strategy

paper, where the World Economic Forum says uncertainty is the new normal, which we have all been living for the last four or five years since the pandemic.

And it doesn't seem to be changing anytime soon so how can companies prepare for the future that's shaped by geopolitical instability, climate disruptions, and the rapid technology shifts that we're seeing? What advice has been given by the WEF [00:08:00] there?

Benedikt Gieger: Yeah, it's a very tough world, I think outside. So, we live with many challenges. So, we have the climate disruption topic, we have cybersecurity threats, we have the regulatory fragmentation, we have many, many others, tariffs, you name it. And the WEF identifies 8 driving forces shaping this future.

One is, global relations and trades. So, the rise of regionalization or re-globalization is also word that it's oftentimes named. We have protectionism and also a kind of tariff unpredictability. Then we have on the other side the regulatory complexity. So fragmented and fast evolving compliance landscapes with many discussions. For example, currently with the EU AI Act. Then we see change in consumer expectations. So, the people would like to have faster delivery, circular products, and more transparency, especially in the newer generation like I am. [00:09:00] So we would like to have faster and better quality.

Richard: The older generations like me would like that as well.

Benedikt Gieger: Yeah, so the digital natives, or the generation said, I think they are more like, okay, the world that we know or we grew up with is more, okay, we can go to Amazon or we can go to Netflix, and then we consume everything that came to our mind, and that's very fast. And I think 30 years back it would not be possible because then you need to go to the movie shop and need to buy a movie. So yes, you are changing consumer expectations.

Then we have also the climate disruption topics or physical risks, emissions, scrutiny and sustainability pressure. And then, I named it a couple of minutes ago, the technology evolution.

So, we have many frontier technologies outside from AI agents to quantum computing or biotechnology. [00:10:00] And, it's necessary to adopt those in our processes and also the entire companies. And then to mostly connected with that bullet is also the cybersecurity one. So, the rising threats with limited organizational readiness, so many companies outside struggle with especially

that topic because the return of invest in that topic. It is not that clear, and it cost much money, but in the end hopefully everything is smooth and you do not see anything. And that's sometimes also difficult to explain why companies should invest more money in cybersecurity, but it's one of the most critical ones.

And then we have workforce and skills. So, the skill mismatches, the geographic gaps we see, and also the upskilling urgency. We see this also with labour shortages, especially in the manufacturing area. So last week I read the study that [00:11:00] by 2030, 2.1 million people are missing in the manufacturing industry. Our jobs are not fulfilled. And here we see, we need to upskill, bring more people in, but also need the technology to fill that gap.

And yes, last but not least, the social equity. So, addressing the digital divide and ensuring inclusive transformation that everybody is in the boat. So we see that the traditional model, I think of the global optimized efficiency first supply chain is no longer possible in today's world.

So, we need a way to prepare and what's the best way to prepare? First of all, I think it's necessary to understand how the entire system is working. So, it's clear that we do not need the task level improvements or efficiencies that we need to unlock. We need a [00:12:00] more systematic approach, so we need to see the entire system.

And there's a famous book from Harvard Business Review also. It's called "power and prediction" and those books more or less, also bring up this approach or this, uh, way of thinking to say, okay, we need to go away from that task level, company level thinking and need to have a look at the entire system. So we have the entire supply chains and those supply chains we need to transform as an entire system.

So, for better understanding. In the first industrial revolution, for example you had steam engines, and you had one steam engine for an entire production site. And with every industrial revolution, you had more improvements and more or less systematic or system-wide improvements. So, you also have, for example, the electric engine [00:13:00] close to the machines so that it's more flexible and you don't need to build the production sites close to rivers and so on. So, every industrial revolution is characterized by a system level change.

And we see this also currently in, the age of AI or in that intelligent age, that we need a system level change. And the companies need to go away from that. Okay. We have here one improvement in one specific area to a more, okay we

would like to bring AI in the entire processes in our company and transform the entire processes and then transforming those processes.

I think you have a company-wide transformation, but when thinking now on all their challenges, I think we've seen not only one transformation we see at least three. So, we have the AI digital transformation, we have the sustainability transformation, [00:14:00] and we also have that transformation towards more resilience.

And those three together, they all have the same character. So, they all need system solutions that we can solve or that we can overcome those challenges. And the idea that also I outlined together with a colleague in a World Economic Forum blog post is to see those three transformations as a triple transformation because in all of those three transformations, you need to change the processes.

And when you do those transformations in silos so that for example, chiefs sustainability officer is responsible for the sustainability transformation. And you have the CIO that is responsible for the digital transformation, and they do not talk with each other. You have that one guy is coming and changing the processes that it fits well to AI, but then the sustainability guys come afterwards and say, we need to change it that is towards more sustainability. But when [00:15:00] they talk, you only need to change that processes once. And then, you save much money, you have much higher return of invest, and you need to communicate also to your workforce only one transformation story. And not that you need to transform the company every year or every half year and do another transformation. And that's a good thing.

And also, something that WEF sees in that " From Shock to Strategy" paper, that especially the integrated sustainability, the technology adoption and also that end-to-end collaboration are the key success factors for future ready value chains.

Richard: I want to talk a little bit about some of those things you just mentioned because you talked about the technology evolution and adoption and a common theme in both of the papers is around building resilience by leveraging technologies or building resilience through technologies.

And many companies have doubled in [00:16:00] automation, whether it's a production line, whether it's robots in the warehouse assisting the workforce. But what does it take to move towards what you call the little earlier, near autonomous business? This self-regulating supply chain powered by virtual and embodied AI agents. What recommendations did the research come up with?

Benedikt Gieger: So, it's a key shift. So, automation is rule-based, so it's predictable. But AI agents as outlined a couple of minutes ago but also in that Rise of AI agents reports they can observe, plan, and act in real time. So, think of virtual AI agents optimizing production schedules or embodied AI agents that can physically adjust factory operations dynamically.

So, to get there, companies need to do three things. So, we need modern IT architecture to enable a secure real time data access because without good data infrastructure, you will never achieve the [00:17:00] full value of AI because the data is key, or the data is, what oil was in the 1970s, is data in 2020.

And you need that really good data infrastructure in your company to achieve that value at the end. You need clear use case driven pilots not just experiments or some first proof of concept. You need a real mindset to change something in the company. So, the willingness to change needs to be everywhere, including the top-level support. So, and it's, one of the most common things. So when the executive board or, the board of trustees is not, working on that change, I think it's very hard to bring that change in the company.

And last but not least, also, you need a strong human machine interface. I think that's one of the most critical points so that human can evolve from operators to orchestrators so many [00:18:00] people outside think, okay, AI will kill my job. No, AI will change your job, but it'll not kill your job.

So, I think it's something where we need to shift our minds and say, okay, the humans in the entire processes, they are more focusing on the real values. So the outlines, for example, in the production side or something where creativity or something else is needed, that AI basically cannot do in such a good way like human can do.

And also from that side, I think the human are more when they are in the loop, they always need to be in the loop, but they are more the orchestrators and the creative mind behind that processes and need to question all the things, what AI is doing, what AI is saying. And it's really, really necessary to have that humans in the loop. So, it will not kill the jobs. It'll change the jobs. [00:19:00] So more from the production side or shop floor into offices.

Sin: But normally humans are a little bit afraid of new of right. Actually, they're a little bit afraid of going out of their comfort zone.

But now with the change of technology and with the rise of AI agents, that reminds me a little bit to when the internet came up years before, and people got

scared about what, what will happen to my job when we have the internet, we can do this and this.

Will they change and will they replace me? This like the same question that we have right now and the role of humans is or the workforce will change with the rise of AI agents. So, what's your view actually on this emerging role of AI enabled orchestrator in the supply chain? And how can organizations effectively prepare their workforce for this shift, for this new transformation? And then to take off [00:20:00] the fear of being replaced by AI or by the new technology.

Benedikt Gieger: Yeah, so I really love the term AI enabled orchestrator because it reflects the human evolution from that task doer to that strategic decision maker I already described. So, the white paper give great real world examples like a global real manufacturer, where technicians now guide AI systems and focus on the root causes rather than just fixing parameters.

And to prepare for the swift, I think organizations need to invest in that reskilling and upskilling capabilities and also develop a clear and harmonized communication strategy. Because without a clear communication strategy, it's very tough to explain the why that change is need to the employees and also to investors and outside to the customers.

And you need to involve the workers and the entire employees of your company very [00:21:00] early in their transformation efforts because only when they understand it and when they feel valued and have a part on the table, I think they will also be advocates of that change and that transformation. And then everything goes more smooth than when you do it more top down and need to force your employees doing something, change something.

Yeah and last but not least, you need to embed collaborative intelligence where human creativity meets that machine precision. And I think the transformation nowadays, it's not just or the change outside, it's not just the tech change where we read it every day or where many newspapers outside always say technology change.

It's more a cultural one that needs to be communicated also very clearly and consistently so, and you need to communicate that from the boardroom or board offices to the shop floor, and everybody needs to be involved. [00:22:00] And then communication in general can seen as a transformation infrastructure. So when the communication is good, it'll also be a smooth transformation or the transformation will go much easier, than the other way around.

I also wrote a blog post about the role of communication in the transformation topic together with a communication expert. He's called Markus Kirchschrager. And, we lay that out and say, okay, what are needed in companies to have that clear communication strategy and how communication can transform transformations towards a more change enabling system or change enabling thing, you know.

Richard: We'll make sure to include a link to that blog and any other blogs that you think would be interesting in our show notes.

You mentioned the importance of data for AI a little earlier, and we've talked about this a lot on the podcast series of [00:23:00] AI's no good if the data isn't good because you just get the wrong answer quicker.

But how critical is accessing that unified production and supply chain data for AI agent success? And what does a modern IT /OT architecture need to look like to make sure you've got the right data.

Benedikt Gieger: I think you have nailed it. Data is fuel or the oil, like I explained but uh, it's not just about more data, it's about the right, timely and secure data. So in many organizations, the data is there but it's not used in a good way or it's stored in many different Excel sheets, data silos.

And the main task or the main topic companies need to focus on before implementing AI or anything on any frontier technology is that the data is in a really good manner so that you can use it, that you have the right data in the right place, that the [00:24:00] data is secure because of all the data protection things and so on. And that the AI agents rely on that constant observation to make decisions. And without that real time visibility they are flying behind. And it's not or that the AI agents cannot work in a really good way that it brings value to the company. So it's really necessary to have that right, timely and secure data.

So, to sum it up, the modern IT/ OT architecture needs of course break down the data silos between ERP system, MES, logistics system, finance system, every system manufacturers have. They need to have a clear data and AI first strategy implemented.

And you also need to prioritize the thing, that I also named before this, the cybersecurity. So especially as the attack surface grow with digitization, it's really necessary to have a really robust [00:25:00] cybersecurity strategy in place. And only then you can enable autonomous AI drone system at scale.

Richard: More and more we hear the concept of proof of value versus proof of concept with technologies. And this has been in a recent past when we talk about the internet of things and more specifically blockchain. We get into situations where we have a technology looking for us a problem to solve rather than the other way round.

So as we shift to the proof of value, what does this shift mean for AI initiatives in supply chain in particular, and how can companies measure real value from their investment in AI?

Benedikt Gieger: So exactly. So, we moved past the hype cycle and companies aren't impressed by AI pilots anymore. So, they want real business impact and clear return of invest. And the rise of AI agents paper urges a value first approach to scaling AI. And [00:26:00] that means tying AI use cases directly to business KPIs, like inventory reduction on time delivery or also energy efficiency is also a topic, you can name here.

Then you need to use the AI agent driven automation to measure cost savings or throughput gains. And last but not least, also, you need that continuous learning and adjusting based on feedback loops. So AI isn't a typical set and forget topic, so you always need to continuously improve adjusted things.

So yes, proof of value is a new currency. And when you think about, okay, why do the companies need that? So, AI is a very expensive technology and companies need so much money. And also in the industry, I think you can say that there is much money also from investors. And those investors would like to see real business value that they can say, okay, there are many, many improvements. You see it on the share prices for all the tech [00:27:00] companies. So, the improvements need to be there.

And there's also, the topic or in the most industry that especially the small and midsize enterprises, they have the challenge to stay aligned or to stay on top of that AI developments because they typically do not have that money to always invest more and more and more. And so, there are also a complete new finance approach is needed in the industry to also help that smaller and mid-size enterprises, especially in Europe to stay on top because that's the backbone of the company and also the tech companies need to have an eye on it and need to have a look. Okay? How we can also support the small and mid-size enterprises.

So also, at WEF, I think, we discuss this very often and, I was also in touch with people from high value manufacturing catapult in the UK. And they developed a completely new model. [00:28:00] So a new finance approach. It's called the

programmatic finance approach to help those companies to stay on top and to get the money. So, they take for example uh, entire supply chain. So that from the mines to the OEMs. And then, they build some sets of companies that are more or less in the same maturity model.

And then they say, okay, they take those companies, and they have a look what's needed to transform their companies towards more AI or more digital sustainability transformation. And then they have a look for investors outside and also, for subsidies from the government to transform their companies together or the set of companies together that the real value it takes place when you transform that entire value chain.

So when they successfully transform that, [00:29:00] they can also easily work together. And when the companies themselves transform by their own, it's more difficult to find money and to also orchestrate and align with others in the supply chain so that they bring their companies together and transfer them as one system.

And that's also something I think especially the governance need to focus on because you need to have an eye on that small and midsize enterprises as said they are the backbone of our economy, and we need also to help them to transform in our digital intelligent age.

Richard: Benedikt, we're coming to the end of the podcast, and we have one question that we ask all of our guests and with the research that's being done at the World Economic Forum, I know in the Shock to Strategy paper, for example they give a 10-year, 20-year in outlook. And 30-year outlook to basically the question I'm about to ask you.

So I'm sure you have a great answer for this one. So, let's finish with that.
[00:30:00] What do you think is the future of supply chain?

Benedikt Gieger: So, I think it's a great closing question and, if we get this right, and it's a big if the supply chain of 2050 I think, will be highly regionalized, but globally coordinated through intelligent data sharing systems and also ecosystems and it will be powered by AI agents running potentially on quantum computers at that time.

And those AI agents can handle everything from forecasting to physical logistics and, we see the deeply aligned with planet positive goals, circularity zero emissions, fair labour things so that the supply chains are really

sustainable. And yes, humans will play a strategic, ethical and also a creative role in the end.

And the supply chains won't just move goods. They will create shared value. And, uh, that's the North Star. Also, the WEF [00:31:00] ambitions, and I am, personally really committed to that goal and help to realize that end state.

Richard: That's a wonderful answer. Thank you very much and thanks for a great conversation. It's been really interesting.

Benedikt Gieger: Thank you so much for having me.

Richard: Yeah, we'll make sure to include links to both those research papers and any blogs that Benedikt has been involved in, in our show notes. Please mark us as a favourite. You can get regular updates and information about future episodes, but until next time, from Benedikt Sin and I thank you for discussing the future of Supply Chain.