The Industrialist

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Dominik Wee,
Corporate Vice President
Manufacturing and Mobility, Microsoft

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Microsoft: Manufacturing reinvention in the era of GenAI

Each month, we speak to a different industry leader about their approach to innovation and the emerging trends impacting the industrial sector. For this edition, we talked with Microsoft's Corporate Vice President, Manufacturing and Mobility, Dominik Wee, about the rapid adoption and value of generative AI in the manufacturing sector. Dominik sheds light on why he sees GenAI as a truly transformational technology, and some of the "no regret" use cases that he believes every manufacturing company should consider now. Furthermore, he addresses the challenges that often come with a diverse factory footprint, and shares valuable insights on successful cloud migration and GenAI deployment strategies for industrial companies.

The state of play in manufacturing & GenAI use cases

Tackling cloud migration across a diverse factory footprint

GenAI deployment strategies for industrial companies

What to expect at Hannover Messe 2024

In conversation with Microsoft's CVP, Manufacturing and Mobility, Dominik Wee

Dominik Wee,
Corporate Vice President
Manufacturing and
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What one word describes you best?

I'd pick '**curious**'. I enjoy understanding how things work, which is why I chose a career in manufacturing and mobility. Being curious is especially exciting right now, with so many things happening around us.

Could you tell us about your career journey and your current role as Corporate Vice President Manufacturing and Mobility at Microsoft?

I've been a consultant for a considerable time, I started my career at McKinsey where I became a senior partner. My focus has always been around manufacturing and mobility; I began my professional journey working on the manufacturing shop floor, in industrial engineering with semiconductors. That work was incredibly fascinating and also fulfilled my curiosity, allowing me to delve into the intricacies of how things operate, as semiconductors are indeed quite complex things. After that, I joined Google Cloud, where I was responsible for Google Cloud´s global business with companies in the automotive, manufacturing and energy sectors. In September 2022, I joined Microsoft as the Corporate Vice President for Manufacturing and Mobility, where I oversee our business operations in these industry sectors. Manufacturing encompasses basically

everything that gets made, while mobility encompasses everything that takes people from point A to point B. This is an interesting and heterogeneous mix of industries, which is something I find very exciting.

In the light of the current challenges and developments, what is your view on the future of manufacturing? What are some of the trends or perhaps surprising factors that you see?

The past six to twelve months has been an incredibly interesting period. A lot has happened in the grand scheme of things, which I believe has caught many of us by surprise—in particular the rapid diffusion of generative AI technology.

ChatGPT's public launch in November 2022—which is not that long ago—was exciting, but I don't think anybody would have expected how fast it would take the world by storm. What I find increasingly astonishing is the pace at which this technology is adding tangible value. We have experienced numerous new technologies in the past following the Gartner Hype Cycle, and not all of them have yielded the same level of value to end users as perhaps initially imagined. This is what makes generative AI particularly intriguing—even in the early cycle phases, we are already witnessing real value being generated. Let me highlight a couple of examples. In the automotive industry, Mercedes, as early as June 2023, made ChatGPT available in a vehicle to nearly a million customers in the US. Volkswagen then followed suit, announcing at CES that they are implementing a similar system in almost all their production vehicles. The car is a highly complex environment and introducing innovations within it is typically challenging due to the long product development cycle, which can span several years. However, since all of this is happening on the backend, it can be seamlessly integrated into vehicles almost immediately. The **scale of this adoption** is amazing, with millions of people across these two brands benefiting from this technology. The fact that gen AI is being used in the car is equally impressive, considering a vehicle

is a difficult application to implement new technologies. Moreover, these two combined with the **pace of innovation** is astounding: to witness this happening just a few months after the public introduction of ChatGPT—the speed at which a new technology reaches its end users and creates value—is unusual.

Let me give you another example. We are collaborating with an industrial company specializing in heavy capital goods. Within just three months, this large and conservative company deployed the technology to thousands of their employees, allowing them to use it as a data science tool, leveraging natural language. These are the types of examples that we would not have witnessed with other technologies. It is the speed of adoption and the breadth of use cases that demonstrate generative AI is truly a foundational technology. This is what sets it apart from the previous era of AI. I'm sure you have a lot of experience implementing AI in industrial environments before generative AI came along. In the past, it was highly specialized—we would develop a machine learning model for quality control on one specific component, and once it was operational, then try to apply it to another component, requiring thousands of additional images to retrain the model. So, the effort required to transition from one use case to another, even if they were closely related, was substantial. The level of specialization required and the cost to expand even to adjacent use cases were major barriers to scalability. What is truly unique about generative AI is that it empowers us to accomplish a wide range of tasks with minimal incremental effort.

Are there specific use cases for GenAI in manufacturing that you see already gaining widespread adoption? And are there some "no regret" use cases that every manufacturing company should consider now?

Across various sectors, one of the most universal applications of generative AI lies in language-related tasks, particularly in **customer sales and service**. If you have a call center, that is the obvious case to start with. Additionally, in the industrial B2B context, there's adjacent potential in assisting customers in the pre-sales stages where product complexity or diversity may pose challenges. If a manufacturing company produces a wide range of highly specialized products, and have for example 10,000 different types of screws, their customers might struggle to identify the exact screw they need, leading to an application sales problem. For such a case, building a digital advisor is ideal. Moreover, many industrial companies serve customers through both direct and indirect channels. Generative AI can help strengthen their digital selling capabilities, allowing companies to sell directly to more customers and thereby improve margins and customer experiences. Also, on after sales: many of our customers produce elevators, ATMs, products that get installed somewhere and require a massive field force making sure those are operational 24/7. That is a major piece of their P&L. With generative AI—and its capabilities that come as built-in to a natural language interface—companies can significantly improve the quality and productivity of their after sales service. This can be achieved by making their entire knowledge base accessible in natural language from the stage where a customer is reporting an issue to the point when a field technician is repairing the product. This capability is especially valuable for global enterprises with extensive field forces operating across diverse linguistic and geographical contexts.

The second cluster where we're seeing significant demand is around **innovation and product development**. There are increasing competitive pressures in many sectors to reduce development time and accelerate speed of innovation due to new competitors that are operating with greater agility. Moreover, products across various categories are becoming more complex with many of them having software incorporated. While it enhances the features of a product and potentially creates new revenue streams, it also prolongs the product development cycle rather than shortening it. As a result, we have numerous customers looking for answers to the question of "how can I reduce my development time?" I believe that generative AI offers an entire set of new solutions to address this challenge. The most obvious one —if you have a somewhat significant software development operations ongoing—is our longest-standing generative AI product, GitHub Copilot. That has proven to be highly effective in increasing developer productivity by up to around 50% for the customers that use it at scale. What we are seeing now is that our customers are exploring how to extend the power of GitHub Copilot to their entire development cycle, from requirements management to regulatory compliance.

The third cluster is at the shop floor where generative AI can be used for gaining a better understanding of **shop floor operations.** Drawing from my own experience from the start of my career, often the simple issues in manufacturing operations have already been solved. But what really sets apart the great from good, is the ability to identify the root causes of problems; understanding why something went wrong and how to prevent it from happening again. Uncovering these insights requires sifting through vast amounts of data. Generative AI basically enables every individual on the shop floor to use data science like an expert. And to me, it basically levels up the capability to an unusual level. I think this is now the main innovation we are seeing on the shop floor.

Lastly, many of our customers have very complex supply chains. They have made progress in addressing supply chain visibility to a certain degree. Now, the next horizon in their journey is consolidating diverse data sources. This mirrors the approach I described in the context of the manufacturing shop floor. The question is: Can we develop a natural language interface to enhance interactions with supply chain data?
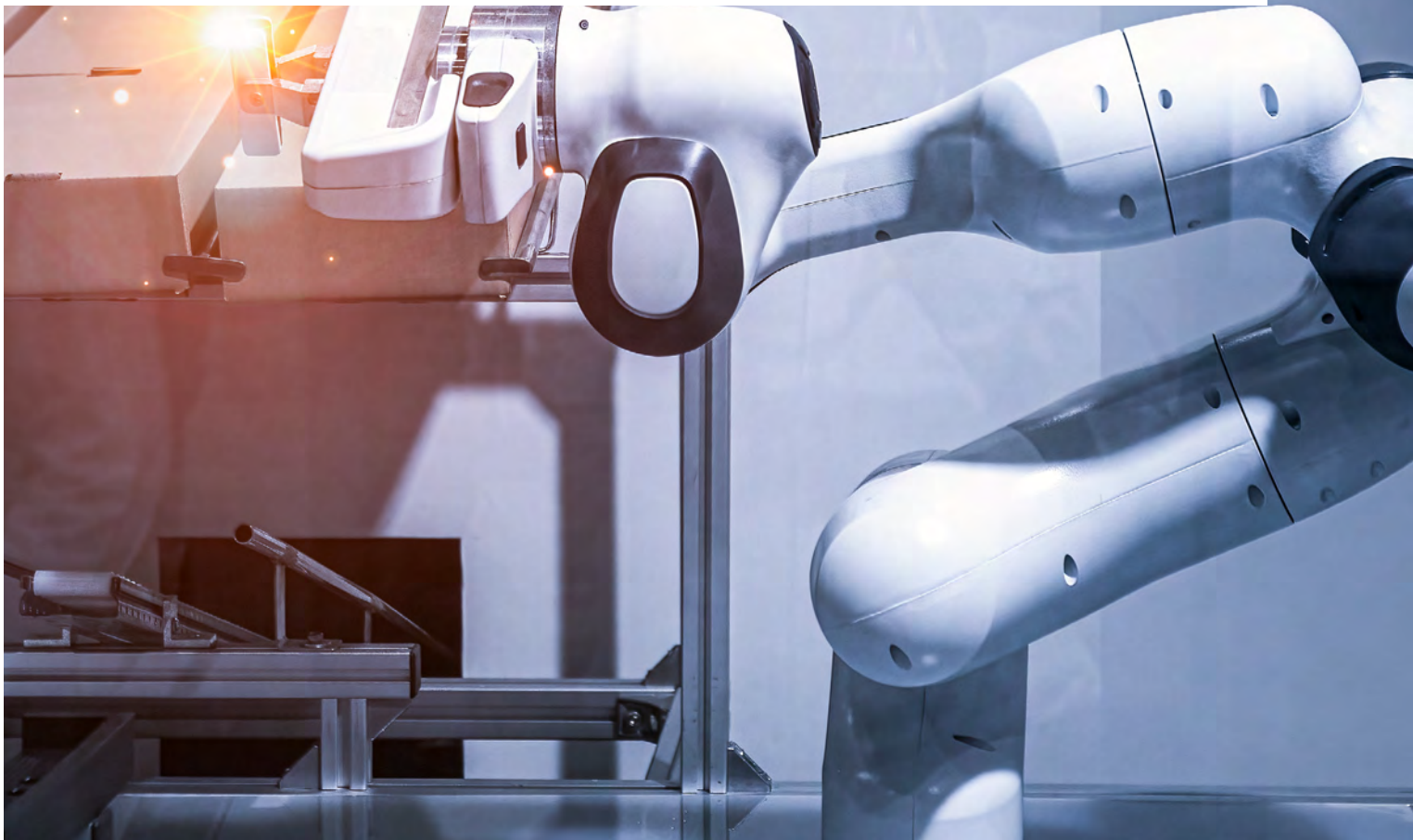
Many industrial companies have, for a number of reasons, moved only limited parts of their machine and shop floor data into the cloud. How does this impact their ability to deploy GenAI and how do you see your clients addressing this challenge?

First and foremost, I want to emphasize that we believe in the future of multi-cloud and hybrid-cloud solutions—a computing environment that combines an on-premises datacenter (also called a private cloud) with a public cloud, allowing data and applications to be shared between them—as the approach for utilizing technology. Imposing a strict either/or ideology is unrealistic in the context of most brownfield environments today. Having said that, there are intrinsic reasons why data cannot always be moved to the cloud, such as data residency, latency, as well as sometimes limitations in the maturity and capabilities of cloud technologies. In this space we have made significant progress, also on the security side. What's crucial is to distinguish between these factors and explore the possibilities.

Certainly, data needs to be in the cloud for being able to reap the benefits of cloud-based technologies such as generative AI. But again, hybrid cloud is the reality we are working with. Organizations often have a large variety of geographically dispersed sites, each with their own equipment and device types, people, and processes—all typically generating large volumes of data that need to be processed and analyzed, either at the edge, in the cloud or some combination of both. Our recent major update to our IoT technology stack, Azure IoT Operations, addresses exactly that by extending all cloud capabilities to the edge. This approach provides our clients with a unified technology foundation to accelerate the digital transformation of their physical operations, ensuring the seamless management across environments. There's a lot of innovation and ways of making things easier over time.
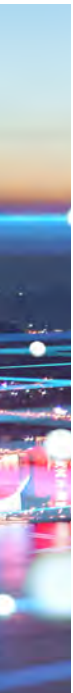
Especially large industrial companies have a diverse factory footprint that does not have a consistent technology stack across the board, but rather a factory-by-factory setting. What is your view on how to efficiently scale a use case in such an environment?

That's certainly a problem we encounter almost every time. We rarely have a customer with a greenfield environment. But sometimes we do have the privilege of supporting a customer in building a new, large manufacturing facility from scratch, but in most cases, we face a highly heterogeneous footprint.

Another factor we often observe is the decentralized governance. Many manufacturing companies have opted to grant significant power to individual factories, which is beneficial but also makes it harder to drive innovation in a centralized way. It's a common problem that we are constantly dealing with. Apart from the approach I mentioned earlier, we are also

collaborating with two partners, Sight Machine and Cognite, who more or less made this their entire mission. They focus on consolidating data from the fragmented and diverse shop floor environment, enabling factory personnel to gain valuable insights from it. Connectivity is usually a smaller part of the issue, while the larger part lies in making sense of the available data. Depending on your specific circumstances, both of these companies are well-equipped to help you derive more value from your data.

What is your advice to industrial companies that are early in their GenAI journey and now aim to adopt and successfully leverage the benefits of this technology?

This is a great question. Very often, the bottleneck to technology adoption is not the technology itself. It's about how you support your people within your organization to embrace it.

The first success pattern we observe among our customers on this journey is to **formalize GenAI within the operating model**, either within existing structures and roles or by establishing dedicated entities. Let me give you an example. We have a close relationship with [Schneider Electric](#), both as a customer and a partner. A few years ago, they appointed a Chief AI Officer whose mission is to drive the diffusion of technology and centralize competence and decision-making. This strategic move has significantly helped them drive AI momentum.

Another interesting thing I've observed recently is the **initial patterns of GenAI adoption** emerging between our customers. People coming from a business perspective tend to start by asking, "What is the best use case?" This aligns with the typical approach of technology adoption; prioritizing use cases, allocating resources accordingly, and focusing on the most promising use cases. However, there are customers who have taken a completely different approach and have made remarkable progress. Their strategy is more like, "I don't know or care about the specific use cases. We

just make the technology available to as many people as possible, and they will figure it out. I have hired smart people, so let them do their job." This approach has proven to be highly successful for numerous customers. The way I make sense of this, is that the technology itself is so easy to use that it is less like the AI of the past, but more like Excel. Nobody ever asked, "What's the killer use case for Excel?" It was simply given to people, and they found ways to utilize it, showing up in unexpected ways and making peoples' lives easier. So, GenAI is also AI, but from a value creation perspective, it works differently from the way AI used to work.

Hannover Messe is coming up in April and Microsoft will have a big presence there. What will be your focus area for the event, and what trends do you expect to see at the fair?

I anticipate that AI will continue to be a significant topic of discussion.

Hannover Messe is of immense importance to us. It is the most crucial event of the year, and I am very much looking forward to it. Our teams have basically been running since last year to ensure we are fully prepared for it. It is truly an amazing event where you can see what is state-of-the-art, and engage with customers and partners.

What Microsoft has consistently done and that will undoubtedly be prominent also at the upcoming Hannover Messe, is our strong alliance with partners. When you visit the Microsoft booth, you can expect to see a lot of the great work from our partners, including Accenture. This is how Microsoft operates—through partners to deliver value to our customers.

In closing

Generative AI is one of the most significant changes since the industrial revolution. Unlike other major innovations where the technology was a relatively stable "product" when business started adopting it, the evolution of GenAI and LLMs happens almost simultaneously with adoption. Industrial companies can´t afford to wait. Leaders need to start now with recognizing AI/GenAI not only as a technology, but as a strategic driver for business success and enabler of a resilient and adaptive organization in the face of the industry´s major shifts. And not to forget the impact on their own products.

How can industrial companies unlock the future in the era of generative AI?

Generative AI, especially in 2023, has witnessed an explosion in growth, kicking-off a new era of creativity and innovation. Because adoption and evolution of the technology will take place in parallel, generative AI will be continually disruptive. That means industrial companies need to think about the hypothetical market conditions in the long run—the "Industrial Vision 2040" as we refer to it—and develop long-term strategies, including GenAI as a crucial element, that prepare them for different future scenarios along key questions like: what intelligence, data & AI belongs in my products?; is it better to localize or globalize critical supply chains?; how quickly will AI/GenAI revolutionize our business and what impact will it have on our operating model?; what partners must we have to access the data, technology & capabilities we need?; what does becoming truly sustainable really mean and what role does tech play in this context?; how do we attract and retain talent, all while creating a new set of human work tasks (many of them of higher value) due to the introduction of generative AI?

Indeed, redesigning work and roles to create the most effective mix of human, automated, augmented, and emerging tasks in the context of a company´s specific business will be key. To unlock the full potential of generative AI, industrial workers will need to perform new and unprecedented tasks that put a premium on distinctively human tasks. We believe that this can give industrial organizations a leg up on less imaginative competitors. In our latest Accenture research we´re bringing data to the reality we see also in the industrial sector—companies that take a people-centric approach in deploying their generative AI strategy could create $10.3 trillion in economic value.

The insights shared by Microsoft´s Dominik Wee in this edition of the Industrialist underpin that the GenAI revolution is different than anything that's come before it. Anyone can use it to automate or augment basic tasks, but GenAI is already showing much broader potential to reinvent processes across the entire industrial value chain. Take, for example, the AI coding assistants such as GitHub's Copilot, that are transforming software development with advanced autocomplete functions and innovative debugging tools to enhance coding efficiency and creativity. Or Siemens´ Industrial Copilot, developed together with Microsoft, that aims to improve human-machine collaboration in manufacturing.

This innovation will continue, and we expect to see more improvements to these tools and others launch in this space. The speed of development will continue to be breathtaking. Just imagine what will be possible when generative AI and advanced robotics merge—an area that is also seeing significant strides especially in the context of "dark factories". This fusion might lead to completely autonomous machines, capable of not just collecting data but analyzing and acting upon it in real time.

Whatever future scenario will unfold, we're definitely at the start of an incredibly exciting era that will fundamentally transform the industrial and manufacturing industry as we know it. At the upcoming "Hannover Messe" in April, you can get a glimpse into this future. I´m looking forward to meeting many of you on-site.

Best regards,

Thomas Rinn
Senior Managing Director,
Global Industrial Lead, Accenture

About The Industrialist

The Industrialist is our monthly digital publication that puts game-changing perspectives in the spotlight. It combines thought-provoking content and insights, to keep you on top of what's new in the industrial industry.

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