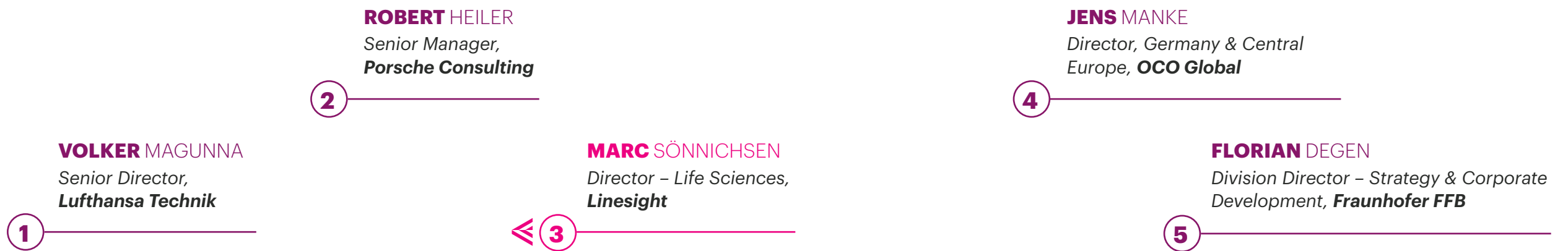


BUILDING FOR TRANSFORMATION:

Delivering major manufacturing projects in dynamic times

A round table discussion hosted by Linesight and Metroplan
12 February 2025 in Hamburg

The Participants





MARC SÖNNICHSEN



Discussion Summary

Fierce global competition, rising costs and dynamic technological and geopolitical changes are putting German industry under severe pressure. Those who want to secure their competitiveness in the long term have to take bold action now and develop forward-looking strategies. The good news is that in the midst of these challenges lies a transformative opportunity. Investments in modern production facilities for future-oriented technologies such as semiconductors, batteries, pharmaceuticals and aerospace are reshaping the future of the manufacturing sector in Germany.

To leverage this opportunity developers need to ask themselves: What needs to be prioritised in order to successfully implement these technologically advanced large-scale projects in the current dynamic environment, and under tight deadlines? What factors can help safely manage complexity, agility and speed in the construction of manufacturing facilities?

Linesight and Metroplan sought answers to this question at a round-table discussion on 12 February 2025 in Hamburg together with business and research experts.

The participants pointed out the enormous challenges that have to be overcome when investing in complex manufacturing facilities in Germany and across Europe. In addition to uncertain economic and political conditions, high costs and energy prices, these include the shortage of skilled workers and a lack of speed in implementation. In addition, the high complexity of the transformation, along with rapid technological changes must be handled properly, thus ensuring the necessary agility and adaptability of the delivered facility.

The experts called for a reflection on one's own strengths and the courage to be pragmatic, and also emphasized the opportunities that lie in data-focused project management and technologies such as Building Information Modelling (BIM) for factory planning and implementation.

They also provided practical insights for the trade-off between control and flexibility, how to deal with changes and the potential efficiencies of modular construction in an industrial context.

Key Takeaways



Embracing challenges with confidence and vision

Bureaucratic hurdles, high energy costs and a shortage of skilled workers are putting a strain on the economy. But the panel of experts is solution-oriented and optimistic. With innovative construction and production methods, close cooperation with partners and authorities and a focus on complexity management, projects in Germany can be successful even despite these challenges. In addition, a new regional industrial mission statement, new ways of thinking and entrepreneurial approaches are needed to shape the future.

Complexity as a strategic management task

The multifaceted nature of industrial projects requires active complexity management. The ability to systematically record and control relevant influencing factors is crucial to success. Instruments such as Project Controls enable data-based decisions and create the necessary transparency to ensure the ability to act in dynamic project environments.

Collaboration creates project success

Companies that concentrate on their core competencies, who constructively cooperate with external experts increase their efficiency and planning security. Early involvement of partners, clear distribution of roles and mutual trust are key success factors.

Factory planning as an integrated process

Future-proofed production facilities are not created by chance – they are the result of precise planning, clear target definitions and early risk assessment. Digital tools such as BIM enable integrative modelling and enable transparency across all project phases. Those who act with foresight and purposefully plan for adaptability create the basis for economical and resilient factories.



Germany as an Industrial Location is Under Pressure

Germany, as an industrialised nation is losing international competitiveness. But what is driving this change? What factors are weighing on decision makers minds? The panel reviewed the challenges as well as possible approaches that could generate cautious optimism.

Germany needs a major new industrial mission statement in order to compete internationally.



JENS MANKE

As an industrial location, Germany is under pressure. In the current IMD World Competitiveness Ranking, Germany slipped two places to 24th place (out of 67) in 2024, behind ten other European countries. In 2022, the Federal Republic of Germany was still in 15th place, and in 2014 it was in 6th place. Germany is becoming increasingly unattractive as a location for companies looking to invest. In addition, there are worrying trade policy signals from the USA – our most important trading partner.


Major challenges for the economy are currently arising from Germany's energy policy and the uncertain economic situation. In addition, the German bureaucracy is considered cumbersome. This often has a negative impact on the speed of implementation of construction projects. Other problems lie in wage costs and the already noticeable shortage of skilled workers, which will worsen when the baby boomer generation retires, which is expected to drive labour costs further up.

Nevertheless, the panel of experts remains optimistic and calls for a change of perspective. "We have wonderful engineers in Germany, I am 100% convinced of that," emphasizes **Daniel Goos** from Liebherr Group. "What we need now is a new mindset: breaking up old thought patterns and finding new clever solutions to our current problems." These innovative solutions include, for example, modular construction, as it significantly reduces the working hours required for fitters on construction sites. To do this, the industry must agree on common standards, as they already exist in residential construction. **Stefan**

Zöller from Mercury Engineering & Building Services GmbH states, "We have to make sure that we shift as many working hours as possible away from the construction site in order to minimize uncertainties. Off-site manufacturing makes projects easier to plan."


In the discussion, the experts continued to emphasise the importance of subsidies and support from local authorities as an important factor in site selection. They want a clear industrial policy strategy to reposition Germany as an attractive production location in a globalized world, such as **Jens Manke** of OCO Global emphasizes: "Germany needs a major new industrial mission statement in order to compete internationally. Germany contributes five percent of economic output globally, with only one percent of the population. If we want to maintain this industrial base, we need a clear, long-term plan."

The biggest challenges at the moment are Germany's energy policy and stability for our major projects. We have to bring stability back into the economy so that the investments we need are made.



STEFAN ZÖLLER

The main question is: How can Germany's industry become as competitive as possible again? It is about mastering new technologies and empowering the companies that make bold investments in these areas in the best way possible



ROBERT HEILER

Collaboration as a Key to Project Success

Today, large-scale industrial projects require more than technical know-how, they require strategic cooperation. What are the key considerations and when should decision-makers on-board partners.

A project needs clear guardrails right from the start. With our Project Contract, we define scope, goals and also no-gos – so that everyone involved knows where they stand. This creates commitment and gives the project manager the framework to be able to act efficiently and focused later on.



DANIEL GOOS

The experts agree, successful construction projects today are created when companies closely collaborate. Those who focus on cooperation at an early stage and define clear responsibilities can implement projects faster, more economically and with greater planning security. The key is to contribute one's own strengths in a targeted manner – and to rely on strong, reliable partners for other tasks.

“We know where our expertise lies. We need to stick to what we can do,” emphasizes **Volker Magunna** of Lufthansa Technik. “For what we can't do, we bring in professionals – that saves costs and speeds up delivery.” Especially for international projects, it is important to rely on experienced, locally networked partners, says **Uwe Becker** from Sartorius “Someone who speaks the local language and also understands our corporate culture can save a company a lot of money – and also ensures that you can sleep better.”

This form of cooperation works even better if it begins early and is based on mutual trust, the key phrase here is early contractor engagement. This allows projects to benefit from the experience of construction companies and suppliers. “We try to familiarize ourselves with the requirements of the planned facility as early as possible,” explains **Matthias Göke**. “In this way, relevant structural framework conditions can be incorporated in the concept phase. In our experience, this saves rescheduling later and can accelerate approvals.

Stefan Zöller from Mercury also underlines the importance of early cooperation along the entire construction supply chain: “Tight,

complex schedules can create frictional losses. It is imperative to collaborate fairly at an early stage. This is the only way to create a reliable partnership on an equal footing.”

At the same time, a new mindset is needed in many companies. In areas such as battery production, countries such as China are leading. “We have to admit that we have to catch up technologically in some areas,” says **Robert Heiler** from Porsche Consulting. “The former status as the ‘master craftsman’ no longer applies. We now have to act with the attitude of an apprentice – open to new learning, as well as willing to trust and involve external expertise.”

In a complex project world, it becomes clear that the best results are achieved when companies do what they do best, and rely on strong partners for the rest. The panel underlines that cooperation is a prerequisite for sustainable project success.

We are well aware of our own expertise. We need to stick to what we can do. What we can't do, we bring in professionals - that saves cost and speeds up delivery.



VOLKER MAGUNNA

A neutral, experienced consultant with a bird's eye view can make a decisive contribution to the success of the project – especially in the case of international projects. They understand both sides and help to avoid costly mistakes. Ultimately, this not only saves budget, but also ensures greater security and clarity throughout the entire course of the project.



UWE BECKER

Making Complexity Manageable

Transformative industrial projects bring technological, regulatory and strategic challenges. However, complexity is not an insurmountable obstacle – it can be controlled and reduced in a targeted manner. The key lies in the right focus, and clever methodologies such as project controls that ensure transparency and the ability to act, at the right time.

Complexity is not a new phenomenon in industrial construction – but it is becoming increasingly multifaceted. In innovative fields such as battery or semiconductor manufacturing, high demand arises where there is product maturity, technological adaptability and process stability. “If you want to compete in these markets today, you have to get a lot done in a short time,” explains **Robert Heiler** of Porsche Consulting.

Instead of seeing complexity as a barrier, the aim is to make it manageable. And this can be achieved with the right attitude, suitable structures and a focus on the essentials. **Stefan Zöller** of Mercury Engineering summarises, “Good planning is undoubtedly valuable. But sometimes I wish for more pragmatism: Not every problem has to be solved immediately down to the last detail – some things can also be clarified selectively, while construction can continue decoupled from it.”

Heiler also calls for more operational creativity in this context: “Often a problem is not a result of poor planning, but on a lack of flexibility. Instead of getting lost in the analysis, we should ask ourselves more often: How can I solve this today – and still continue with my plan tomorrow?” **Florian Degen** from Fraunhofer FFB adds “Especially in dynamic industries, it is crucial to find the right balance between detailed planning and flexibility. If you plan too rigidly, you lose room for manoeuvre. If you think practically, you can react more quickly to changes and avoid losing time.”

For **Daniel Goos** from Liebherr it is also important to question the status quo. “We have

to get out of thinking ‘We’ve always done it this way’. Future-proof factories are created through solution-oriented action – through courage, speed of implementation and investment in what will be relevant tomorrow.”

In addition to attitude and pragmatism, tools and methods are needed to reduce complexity. Project controls can make a significant contribution here: “Large projects consist of many individual building blocks, whether they are technological, human or, of course, economic in nature,” says **Dr. Marc Sönnichsen** from Linesight. “Project controls creates a common data foundation of these ‘blocks’, that allows decisions to be based on facts rather than gut feeling. In this way, risks can be managed and costs can be kept under control.” The experts emphasize that it is crucial to always have the overall picture of a project in mind. **Heiler** emphasizes here: “Ramp-up is not just a task for production and engineering. It affects HR, finance, purchasing – the whole organization has to work together to ensure that large-scale industrial projects get off to a successful start.”

Uwe Becker from Sartorius adds that the design of daily workflows can also be included in complexity management. “Intelligent designs and the use of digital databases, which experts can use in their decision-making, simplify various work steps in the project.”

Complexity is therefore not an insurmountable obstacle, but a question of the right approach. Those who focus, keep an eye on current developments and rely on resilient control instruments will be able to successfully

implement even the most demanding projects.

More planning leads to better results. However for dynamic technologies with constantly changing framework conditions, such as battery cell production, a ‘sweet spot’ must be found to get to implementation and not get lost in endless changes.



FLORIAN DEGEN

Successful cost and timeline management is not a product of chance. Clear processes, transparency based on complete data and digital tools for consistent project management are needed. Then even complex construction projects remain manageable in every phase.



MARC SÖNNICHSEN

In transformative projects, different requirements come together at the same time: processes have to work, products mature in parallel with a running production – and new technological developments need to be integrated. This requires forward-looking planning and clever integrated management.



ROBERT HEILER

The Role of Factory Design in Large Manufacturing Projects

Successful factory planning does not happen by chance. If you want to build future-proofed production facilities and reduce risks during implementation, you have to set the right course, right from the concept phase. An essential part of this process is Building Information Modelling (BIM). As an integrative planning tool, BIM enables end-to-end digital modelling. The future adaptability of a facility must also be considered from the outset and ensured at every stage.

The requirements of a modern manufacturing facility are derived from the specific characteristics of its products, processes, and operational workflows. To ensure that the resulting structure fulfils its intended functions, these requirements must be meticulously and accurately captured. It is therefore important to define the basic factory requirements at an early planning stage: What functions should the production facility represent? What technical and spatial conditions result from the production processes? "Clearly defining objectives is the be-all and end-all of effective project management," says **Florian Degen** from Fraunhofer FFB.

The defined requirements must be translated into a structural environment that is optimally adapted to the production requirements. Factory planning forms the interface between the product, process and building worlds and plays a key role in determining the success of the project. "Efficient planning incorporates all trades, as early as possible, which makes a significant contribution to an overall smooth implementation," emphasizes **Matthias Göke** from Metroplan. Factory planning goes through various phases – from concept and detailed planning to implementation. It must also be possible to react to unforeseeable changes, in terms of adaptability, in every project phase.

An integral part of this forward-looking approach is sound risk management. "It is important to precisely identify the critical points in the project – whether in the plant, the building infrastructure or supply chains," explains **Robert Heiler** from Porsche Consulting. Only if the potential bottlenecks are identified and prioritized early on, can schedule delays and cost risks be mitigated.

Digital planning tools such as Building Information Modelling (BIM) play a key role in this process. They enable end-to-end, digital modelling and create a common database for all parties involved. This allows complex production processes

to be mapped precisely, requirements to be checked at an early stage and construction and production planning to be closely interlinked. "Central data sources create a 'one source of truth' that ensures transparency and accessibility and lets all stakeholders speak the same language," emphasizes **Göke** on the advantages of BIM.

The technologies behind the planning instruments are developing rapidly. "Today, with the help of laser scanners or drones, we can precisely record the construction progress and compare it with the planning model," explains **Dr. Marc Sönnichsen** of Linesight. "Digital twins also help," adds **Uwe Becker** from Sartorius. Models in 4D to 7D not only enable spatial visualizations, but also integrate time, costs and operational data – a decisive step towards integrated, predictive planning and control.

Successful factory planning is an interdisciplinary tour de force. It requires forward-looking thinking, integrative tools and a common understanding of goals, risks and room for manoeuvre.

The challenge in factory planning: How do we get the requirements from the early planning phase clearly captured and communicated? Digital planning methods such as BIM enable us to map the complex interface between the process, the factory planning requirement and the construction in the best possible way.



MATTHIAS GÖKE

Factories must be adaptable. This means that the construction project remains flexible in all phases. For example, by expanding the building more slowly than originally planned, if necessary. Or, if the market changes, I must have the option of being able to use the building differently. So adaptability is a big topic.



UWE BECKER

Shaping the Transformation



As Moderator **Andreas Zeus** from Linesight summarized the most important findings of the discussion:

Through goal-oriented cooperation, pragmatic solution based approaches, as well as innovative methods and tools, factory projects can succeed despite the challenges. Ultimately this can deliver transformative outcomes for companies and industries.

In the eyes of the participants, it is particularly important to reflect on one's own strengths and to work together with experts in a spirit of trust and partnership.

In addition, taking a practical approach to increasing project complexity is crucial, which must be countered with systematic control and data-driven decision-making. The use of technology, such as BIM, can be an important enabler and accelerator in this regard. It is up to the industry leaders to establish and implement new ways of thinking.



About **Linesight**

Linesight is a multinational construction consultancy firm with over 50 years' experience, providing cost and project management services, project controls, schedule, risk and procurement services to a multitude of sectors including High-Tech Industrial, Life Sciences, Data Centres, Commercial Real Estate, Residential, Hospitality, Healthcare and Retail. Linesight's specialist project teams, each with specific skills and experience, provide faster project delivery, greater cost efficiency and maximum value for money for their clients.

About **Metroplan**

Metroplan provides holistic solutions across the entire life cycle of production sites. On the way into the future, Metroplan supports clients from various industries in the planning, realization and optimization of factories and production systems. By consistently combining the perspectives of processes and building design, Metroplan develops future-oriented production sites including success drivers like digitalization, automatization and sustainability.