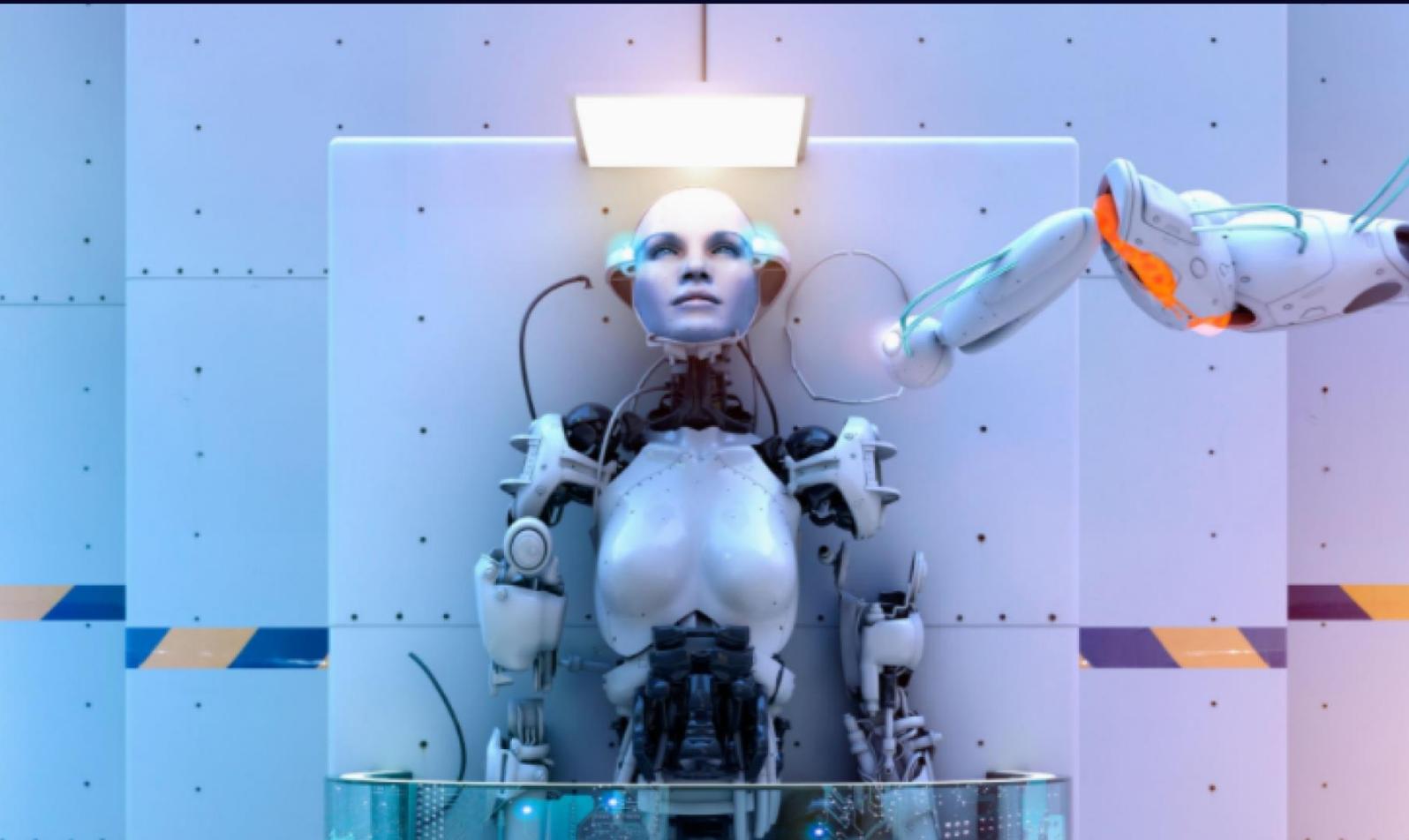




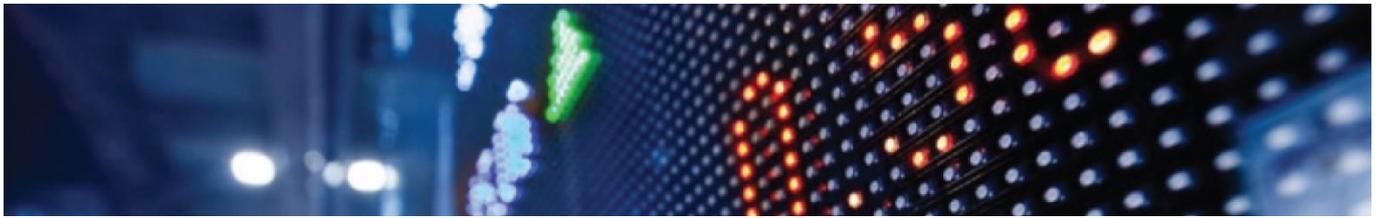
A GUIDE TOWARDS THE FACTORY OF THE FUTURE



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GND guide

gndpartners.com



Executive summary

Worldwide installed base of industrial operational robots will more than double until 2023 and reach 4.4 million units.¹ Robotic density in Asian markets such as South Korea and Singapore currently more than double the installed industrial robots in European market such as Germany and Italy². That shows a vast catch-up potential.

For many companies, the concept of operational excellence may have been an afterthought during growth. And it's no wonder, when the high-growth phase is focused on proving a concept or product while attracting more investors. Once these companies realise that they must focus on reliably generating revenues, they face challenges. The common ones include unwieldy management structures and processes, exorbitant operational expenses, heavy investments in R&D and product development, and a lack of agility to respond to changing market conditions. Being first to market has its benefits, but as more companies produce similar products competition can increase and erode margins. Without the organisational muscle in place to respond quickly to reduce costs and address the competition promptly, the advantage of being first in the market vanishes.

With GND your journey to full potential begins with a detailed, clear-eyed assessment of where you stand today. GND offers a *Manufacturer Self-Assessment tool*³ that provides a standardised approach and proprietary benchmarks that give you a qualitative and quantitative assessment of your starting point in the journey towards the factory of the future. Available as either a short (a few hours long) or comprehensive (2-3 weeks) assessment, our diagnostic assesses your current state in seven transformation areas including advanced manufacturing technologies, digital factory, eco-factory, end-to-end engineering, human-centred organisation, smart manufacturing, and value chains.

See where you're strong, where you lag, and what the savings potential can be when you improve specific elements of your performance and capability. We benchmark your position against today's most relevant KPIs, allowing you to visualize your current state, spot areas of opportunity and prioritise the actions that will vault you ahead of your competitors. We can help you take an unconstrained view of what's possible. Our approach is highly customised to your specific competitive situation, and augmented by a range of best-in-class tools. Some companies will target a complete transformation, while others will pursue discrete initiatives to achieve excellence in select operational areas. Below you will find four necessary stages towards the factory of the future.

¹ IFR and World Robotics Report data (2018) are used in the summary above (2018).

² 710 in South Korea and 658 in Singapore versus 322 in Germany and 190 in Italy robots per 10.000 manufacturing employees (2018).

³ <https://www.gndpartners.com/technology/Manufacturer-Self-Assessment>



Stage 1 – Vision and Objectives

On the basis of the Manufacturer Self-Assessment, your company will now start further refining the current situation in-defined transformation areas. Next, you will describe your vision of the Factory of the Future and describe objectives for each of the desired or necessary transformations. Our coaches will assist your company in developing the challenge description(s) more precisely, including the construction of specific, measurable, realistic and attainable objectives for each of the desired or necessary company breakthroughs.

Good vision statements have common components:

- It is written in the present, not future tense.
- It is summarised with a powerful phrase.
- It describes an outcome, the best outcome you can achieve.
- It helps build a picture, the same picture, in people's minds.
- It uses unequivocal language.
- It evokes emotion.

While contemplating a vision and objectives it is worth thinking about smarter value chains, servitisation, intelligent automation, and workforce as a value driver.

Although, the Factory of the Future is not only about digitisation it is important to be digital, automated, connected, have real-time and remote access and use internet-friendly tools.

Key points in setting vision and objectives

- Knowing what you want to achieve and why.
- Being specific with your objectives so you can measure progress.
- Setting realistic goals. Not over-inflating benefits or ignore that there may be challenges.
- Keeping customer satisfaction as a central part of your strategy.
- Including in your strategy definitions of success and how to measure progress.
- Prioritising and choosing goals so to achieve early wins to build support.



Stage 2 – Solutions to Meet Objectives

Once the objectives are known solutions can be identified. The second phase is about closely working together with the team at the company premises or using blended digital tools, like virtual reality and online conferences. The aim of these joint workshops always will be to make sure that the search for potential solutions is well-structured and as complete as possible. The GND coaches will provide support in the search for relevant solution options, including a provision of the needed resources, input from tech or solution suppliers and if relevant finding organisations that can help the company develop its solutions. This will be done, for instance, through brainstorming, the organization of efficient meetings, and implementing idea-harvesting techniques proposed and explained by the coach. The main role of the coach in this stage is to make sure that the search for potential solutions is well-structured and as complete as possible. For every identified solution also a timeline for implementation is being created during this phase.

Companies face many challenges in implementing advanced manufacturing technologies including poorly defined business plans, siloed data and no integration across business units, no digital talent to execute roadmaps, fears of increased cybersecurity risk, no coordination across business units.

Good solutions should lead in:

- Customer experience: from reactive, with customers choosing from preset offers to proactive and ultra-personalised offerings and delivery.
- Service delivery: from integrated, product-driven and static workflows to individualized, dynamic service assembly and delivery.
- Digital technology: from monolithic and highly complex IT infrastructure to flexible digital and data platforms on top of legacy stack.
- People and organisation: from large, pyramid-shaped organisations and “human factories” to “Rocket shaped” setup with a digital corporate center and a bionic front-end.
- Digital ecosystems: from limited collaboration with few strategic partners to decomposition of value chain and broad inclusion of partners.



Stage 3 – Cost-Benefit Analysis

This stage is about applying a scoring mechanism based on cost-benefit analysis to the list of identified solutions. Economic and technological factors will be assessed. This can be either done through a quick screening or through a detailed calculation. The mechanism however will always be company specific, and can include solution evaluation criteria. The Cost-Benefit Analysis is characterized by the fact that alongside financial returns, it simultaneously seeks to assess the most significant quantitative and qualitative aspects of the economic-social impact and to attribute monetary value to such aspects. To attribute monetary value to cost-benefit analysis, various methods, such as willingness-to-pay, WTP or long-run marginal cost (LRMC), are applied. The GND will support in assessing the identified solutions, making an appropriate selection and creating a timeline for implementation.

While finding and implementing the right technical solutions is very important a crucial select and develop the right human capital and market opportunities.

Key points in optimising team:

- Establishing a cross-functional team with representatives from every department. Making sure to have one definitive leader with decision-making authority.
- Clearly defining roles of team members and expectations. This can't be a low-priority project that gets intermittent commitment.
- Investing in team building and empowering internal personnel to conduct research and become experts of specific subjects or tasks, such as data analysis, configuration tools, or quality control systems.
- Involving sceptics as well as enthusiasts in your team structure. Differing perspectives can help bring a balanced panoramic view to the project.
- Turning to industry experts, consultants, and product vendors to assist with highly specialized areas. Not reinventing the wheel. Letting the outside resources bring their history and "lessons learned" to the table. Asking for case studies and references.

Key points in optimising market opportunities:

- Developing an in-depth understanding of your target market, including buyer profiles, buying triggers, and the buying decision process.
- Exploring new markets, regions, demographics, and vertical niches.
- In addition to considering expanding, also considering contracting—or specializing on a vertical industry or niche market to focus resources.
- Pursuing the opportunities where you can create product differentiation and offer unique value propositions.



Stage 4 – Financing and Implementation

Together with the company, the GND experts will write down what exactly is going to be executed at what timeframe by the employees, tech suppliers and other potential partners involved. Part of this implementation plan should always clearly state against which criteria the follow up to the plan will be measured the plan can include different types of suggested actions: Implementation actions (When a technology/solution is commercially available and requires solely engineering/customization in order to be introduced into production); Innovation projects (When research and development is necessary, but the outlook is deemed promising); R&D projects (Mainly aimed at developing breakthrough technologies/solutions when little is known about a technology/solution, but first reports come in positive). The GND advisors will identify and provide information on the relevant financial instruments that are available from both public and private sources. GND advisors assist in preparing well-defined financial plans taking into account related risks, their measurement and mitigation.

Successful companies often use a phased approach to deployment of major initiatives, such as becoming the factory of the future. A phased implementation approach provides you with early wins and chances to refine your strategies over time.

Implement, while controlling risk

- Starting with foundational concepts then building from there.
- Making sure to get the basics right before moving on to more advanced strategies. For example, when deploying a process to automate reaction to sensors, first making sure one can collect and contextualize the data—before beginning on automating response to the data.
- Starting with technologies that will be used across multiple applications. For example, business intelligence is used in nearly every application of a digital enterprise. Considering strong analytics and reporting tools as the prerequisites for moving on to more applications of data.
- Monitoring for quality and security issues. As with any new initiative, integrity of data, quality, and security must be considered. Involving experts to minimize risk.
- Measuring new revenue or gains versus investment to calculate a return. Remembering a return on investment (ROI) can be fewer tangible characteristics, such as customer loyalty, recognized leadership, or positioning as the expert company in the field.

Within the rapid change in the business environment, we will utilise our technology, and know-how to co-operate adaptively with our business partners in fields where our experience is not yet developed.



GND is a global network of Industry-focused capability providers that drive the transformation of companies around the Europe. Offering services ranging from experiential learning and capability building, to financial assistance and piloting new technologies the GND supports companies at every stage of their transformation journey.



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