United
Innovations

Survey of Tools for
Industrial IT

Release 1 / 2023

Foreword

A new war has just broken out in Israel. Many companies have responded immediately with rescue and aid measures for their employees. Irrespective of the concern for the people directly affected, the question arises as to the direction in which these global political changes will develop. Is the new conflict related to the war between Russia and Ukraine? Are other conflicts looming, for example in Taiwan and Korea? Will there be a division of the world into different power blocs and trade zones again?

Some of the consequences for the global interaction of business enterprises are already evident. After the start of the Ukraine war, a large number of trade restrictions were introduced that not only affect Russia directly, but have also impacted business with China. Furthermore, it is noticeable that partners from friendly countries are prioritized in tenders. In particular, possession of or easy access to important mineral resources will be of high value and will be used in part as leverage. Independence will become the new magic word instead of widely ramified supply chains and unrestricted globalization. The promise of a common improvement in prosperity through global cooperation was obviously not strong enough to prevent the conflicts.

Further trouble threatens from a completely different direction: Climate change will almost certainly lead to more population movements. Whether this can be brought under control in the medium term by higher walls, more deportations or armed force is doubtful. After all, we are currently still in the initial phase of this problem. Here, too, warlike conflicts should be expected.

People in countries without sufficiently good living conditions will not simply resign themselves to their situation.

The question of possible development scenarios is certainly likely to be at the center of the strategy departments of globally operating companies. In which countries can one operate production facilities in the long term, with which partners should one engage in supply chains, what might an effective advance warning system look like, what do evasion strategies look like, which markets will grow or slow down? All this has to be solved reasonably under high pressure and with an uncertain future.

These are truly not easy tasks. As United Innovations, we naturally recognize that a close exchange is of great benefit, especially when it comes to solving these issues. After all, an overarching view of all the strategies that come into play can be very enlightening and help to better achieve the goals together. So, talk to each other, don't lose sight of the big picture and also have a bit of luck with your decisions!

Dr. Gerd Große
Head of United Innovations
Chairman of the Board of
GFFT e.V. & Managing Director
of GFFT Technologies GmbH

Contents

Calendar

28/02/2024
16:00-18:30

Symposium on the Future of Logistics - Supply Chain Management (online/german language)

The Logistics Symposium, with a focus on Supply Chain Management, features high-profile panels addressing current challenges and discussing upcoming innovation themes. Among the experts joining us, Dr. Kai Schaal, VP of Customer Order Fulfillment at OBI E-Commerce GmbH, will share insights. As part of the German Startup Cup, we'll showcase three emerging market tool providers, with one finalist chosen for the in-person finals via a survey. Info & Registration

12/03/2024
16:00-18:30

Symposium on the Future of Production - Smart Factory (online/german language)

The Symposium on the Future of Production - Smart Factory presents an exploration of the next era in manufacturing. Esteemed panels, featuring industry leaders, will delve into the latest trends and innovations shaping the future of production. Our event will showcase cutting-edge technologies and solutions from emerging companies in the German Startup Cup. Info & Registration

17/04/2024
16:00-18:30

Symposium on the Future of Logistics - Intralogistics (online/german language)

The Symposium on the Future of Logistics - Intralogistics offers a deep dive into the evolving world of intralogistics, a critical aspect of modern supply chain management. Esteemed panels featuring industry experts will explore the latest trends and innovations shaping the future of intralogistics. This event provides a platform for emerging companies to showcase their state-of-the-art solutions in the German Startup Cup. Info & Registration

If you are interested in participating in a workshop or event, please send us an email to info@gfft-ev.de. You will then receive th dial-in data.

All events and further information can also be found at www.industry-innovations.eu/

14/05/2024
16:00-18:30

Symposium on the Future of Sustainable Production (online/german language)

The Symposium on the Future of Production - Sustainable Production is your gateway to the future of environmentally-conscious manufacturing. Distinguished panels featuring industry experts will delve into the latest trends and innovations that are shaping sustainable production practices. This event provides a platform for emerging companies to showcase their eco-friendly solutions in the German Startup Cup. Info & Registration

06/11/2024

Symposium and German Startup Cup Final at BASF Coatings in Münster (presence/german language)

The Symposium and Final of the German Startup Cup in the categories of Sustainable Production and Logistics at BASF Coatings in Münster will feature stands from startups, research centers, and industry-leading companies. The event includes engaging panel discussions and an exclusive factory tour. Additionally, the event will showcase the pitches from emerging companies. The winners of the German Startup Cup in both categories, Production and Logistics, will be announced. Don't miss this opportunity to gain valuable insights into the future of these industries. We look forward to welcoming you at BASF Coatings in Münster. Info & Registration

United Innovations
- The innovation network -

United Innovations (UI), a subsidiary of GFFT e.V., is an innovation network with the goal of enhancing the innovation capacity of Germany and Europe.

Our comprehensive platform boasts an extensive network and a diverse range of offerings, including the techL© technology database, surveys, awards for evaluating new technical solutions, startups, and scientific prototypes, as well as hosting various events and supporting proofs of concepts and launch projects.

Join Our Network at UI

Our focus extends across a wide range of topics positively impacted by IT, including manufacturing, logistics, business processes, and cybersecurity. Our services encourage know-ledge sharing, incremental improvements, proactive development of new solutions, and talent recruitment. Embrace the power of collaboration and be a part of our innovation network.

Contact

info@gfft-ev.de
+49 6101 95498-10

Social Media

www.linkedin.com/company/gfft-ev/

www.youtube.com/GFFTeV

Imprint

GFFT Innovationsförderung GmbH
Dr. Gerd Große
Niddastraße 6
61118 Bad Vilbel

Web

www.united-innovations.eu

Print

Flyeralarm GmbH

Review German Startup Cup 22/23

This year's Symposium for Logistics and Production took place on September 27, 2023 at BASF Coatings in Münster and offered an inspiring platform for leading minds from the logistics, production and startup industries. The focus of the symposium was the awarding of the German Startup Cup in the categories logistics and production. The symposium was opened by Dr. Gerd Große (GFFT/United Innovations), as well as Victor Kaupe and Dr. Harald Borgholte (BASF Coatings GmbH). They provided inspiring insights into the forthcoming program items, which were then followed by Victor Kaupe in his keynote address "Chemistry as a driver of Germany as a business location". Nikolaos Kofidis (adesso SE) moderated an exciting discussion on the topic of "Smart Production as a Unique Selling Point for Germany as a Business Location".

The symposium also offered a wide range of program items, including discussions on "Digitization and Networking as the Key to Highly Dynamic Smart Supply Chains" and practical insights into measures to increase sustainability in industry.

Smart Logistics

This year's German Startup Cup in the Smart Logistics category was claimed by Felix Dossmann from Grünfuchs GmbH. His impressive pitch, emphasizing sustainable and efficient last-mile logistics, won over both the expert jury and the industry audience. Finalists Quantics.io and GenLots also made notable contributions, securing the second and third places, respectively. The expert jury, comprising Andre Kaeber (myleo / dsc), Marc Gittler (Deutsche Post und DHL), Johannes H. Schirmer (BLG LOGISTICS GROUP AG & Co. KG), and Alexander Ebbrecht (DATA LIGHTHOUSE), rigorously assessed the startups' technologies and business models.

Production 4.0

Congratulations to Janik Seitzer of SUSTAYN for winning the German Startup Cup in the Production 4.0 category. Janik Seitzer's compelling pitch not only impressed the expert jury but also actively engaged and raised sustainability awareness among the industry audience. Finalists Yvonne Therese Mertens from ONIQ and Patrick Theobald from Peakboard also delivered outstanding performances, securing the second and third places. The expert jury, including Verena Timmer (ZNU – Centre for Sustainable Leadership), Martin Prinz (coac GmbH), Armin Pühringer (SAP Deutschland SE & Co. KG), and Markus Stefan Sauer (Miebach Consulting Group), commended the innovation and posed insightful questions to the finalists.

The winners of the German Startup Cup in the categories Smart Logistics and Production 4.0 (from left): Victor Kaupe (BASF), Felix Dossmann (Grünfuchs), Janik Seitzer (SUSTAYN) and Dr. Gerd Große (GFFT/United Innovations).

© BASF Coatings GmbH

Calling all innovators -
New Season of Startup Cup Award!

Get ready for an exciting new season of the Startup Cup! We extend a warm invitation to aspiring startups to embark on this thrilling journey.

Two captivating symposia will carefully select startup finalists for the grand finale. Exciting panel discussions on logistics, production and sustainability topics await your participation. Don't miss the opportunity to present your technology to the world!

Apply now - German Startup Cup:
www.united-innovations.eu/deutscher-startup-pokal-saison-2023-24/

Click here to watch our best-of film from the 2023 finals

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Solution strategies for your individual progress

The overall progress in enterprises is not a random occurence, but often happens in many enterprises at the same time.

It seems that companies move in a channel depending on the same external influences such as newly identified threats, new technologies, regulatory requirements or the introduction of standards.

The more similar the companies are, e.g., two mid-sized manufacturing companies, the greater the commonalities and the higher the potential savings that can be achieved through collaboration.

It is easy to see that implementation time, cost and quality all benefit equally from a joint approach.

In the next few articles, we will look at solutions for the production and industrial sectors.

Investment security through modular plant construction - The solution for "Small Capital Projects"?

In an era characterised by complexity, companies in a wide range of industries need to find ways to simplify their processes and increase plant efficiency. Does modular plant construction offer a promising solution, as it increases investment security and reduces costs? **An article by COPA-DATA GmbH**
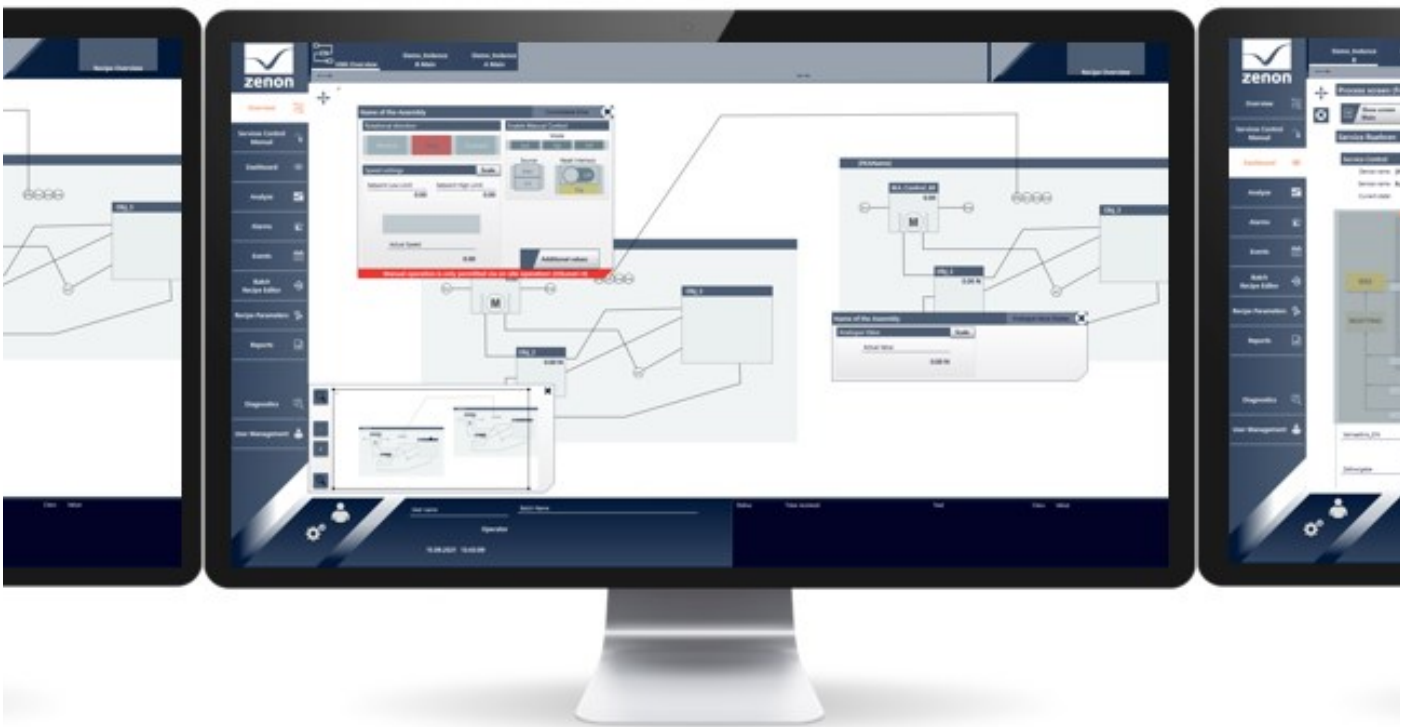
Small Capital Projects, or SCPs, are essential for companies in the industry, striving to expand or improve existing facilities. However, these projects place high demands on cost-efficient engineering due to their limited budgeting, resources and the increasing demand for individual solutions.

Our modular plant engineering and modular automation offers a solution for this very challenge. The zenon software platform supports innovative companies worldwide in their simple, secure and independent industrial automation. As a industrial software, zenon contributes to the digital transformation and fusion of OT and IT.

By adopting standardised modularisation strategies, companies can streamline the development process and increase the efficiency of plants, leading to improved productivity and cost savings. Modularisation involves dividing a project into smaller, manageable modules that can be developed and tested independently. Logically inter-

connected, the individual modules can be recombined again and again. The result is a high-performance solution for a agile production across all industries.

This way, companies can reduce development time and costs, increase quality and reliability and improve their ability to react agilely to changing customer requirements and market trends.

With zenon, various (or several)options of modularity are available:

- Modularity at project level via multi-project management.

- Modularity within a project via Smart Objects

- Modularity via the cross-industry and cross-manufacturer standard "MTP" (Module Type Package)

- Modularity via Distributed Control System (DCS)

All of these options offer a high degree of flexibility and simple commissioning of the various modules with the aspect of increasing investment security. The efficient control and monitoring of the respective system modules, including safety standards and regulations, can be ensured.

"Plug and play" becomes "plug and produce" in factory automation and process engineering.

Modularisation in plant engineering offers significant advantages over a monolithic approach:

❯ Production costs can be reduced by 40%*.

❯ It achieves up to 50%* faster time-to-market.

❯ And it offers the greatest possible flexibility.

Sophisticated to its logical conclusion, modularisation can revolutionise the manufacturing industry and make it competitive for the future.

Falk Plonus
Senior Technical
Consultant
COPA-DATA GmbH

Detailed information in the techL profile:
COPA-DATA

Improving productivity and sustainability with the Cognizant Asset Performance Excellence Smart Manufacturing Accelerator

Manufacturers are faced with ever growing complex challenges and conditions created by COVID-19 stressed supply chains around the world. As a result, manufacturers globally are seeking creative solutions to boost their production output. But how do today's businesses achieve resilient operations? With smart IoT solutions that accelerate the transformation to Industry 4.0 and the combination of expertise with digital and Industry 4.0 technologies to optimize operations across the enterprise. **An article by Cognizant**

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In today's business landscape, efficiency and sustainability are critical to long-term success. To stay competitive, businesses must strive for continuous improvement in productivity, asset performance, quality, and sustainability. These require significant investments in time, resources, and expertise. The Cognizant® Asset Performance Excellence (APEx) Smart Manufacturing Accelerator offers a solution that can help businesses improve their operations efficiently.

Its goal is to act as an accelerator towards having ready industry-specific use cases/solutions and a strong foundational services layer towards helping cut down overall deployment time for customers from concept to Go Live. These industry-specific use cases form the foundational components of a digital twin of either the system, process, or asset. Further, since it adheres to industry standards like ISA 88/95, ISO 15926, ISO 22400, and OPC UA, among others, the solution easily integrates into the existing architecture of both OT and IT systems.

Improving productivity

Higher productivity leads to higher margins. One of the most significant advantages of APEx is its ability to improve productivity by helping streamline operations, improve throughput, improve product quality, and remove bottlenecks. It achieves this by incorporating predefined use cases, covering ready KPI library, production & asset monitoring, edge-based analytics, and data-led machine setting optimization.

Improving asset performance

APEx helps in improving asset performance by providing visibility in asset availability, asset issues, and downtimes. This helps businesses take decisions fast, improve asset utilization, and reduce maintenance costs. It achieves this using Cognizant and partner-created AI/ML asset models, available visualization controls with intuitive drill-downs, and built-in key workflows for alerts and notifications.

Improving quality

By automating quality inspection and improving accuracy, APEx helps businesses reduce costs and waste. Pre-built asset and information models and edge analytics models enable businesses to achieve better quality standards with ease. It also enables a seamless remote management capability of the edge devices and models, which helps in running the operations more efficiently and easily scaling up operations across plants.

Improving sustainability

APEx enables businesses to reduce their environmental footprint by reducing emissions, water footprint, and waste. This is achieved by helping bring all manufacturing-related data across the systems (both manufacturing plant systems and IT systems) contributing to GHG emissions and enabling visibility towards reduction.

Cost-Effectiveness

Compared to a grounds-up build solution, APEx enables the build and roll-out of the solution at a 30% lower cost and 50% less time, compared to a custom build. This is made possible by incorporating extensible microservices and pre-built models.

Partnerships

APEx also benefits from close partnerships with major partners like AWS, Azure, GCP, AVEVA, Cisco, etc. Also, several niche technology partners have specialized solutions around analytical models for different assets and processes. Partner validation, Joint marketing campaigns, co-investment-led feature development, new service launches, and listing on the marketplace are just some of the benefits of these partnerships.

Conclusion

The Cognizant® Asset Performance Excellence Accelerator is a powerful solution that offers businesses a range of benefits, including improved productivity, asset performance, quality, and sustainability. With its cost-effectiveness, extensible microservices, and information models; APEx enables businesses to improve their operations in a fraction of the time and cost of a custom build. With APEx, businesses can stay competitive in today's ever-changing business landscape.

Set up a briefing session to learn how Cognizant can partner with you to build a Smart Manufacturing operation.

Sharath Prasad
AVP & Head,
Smart Manufacturing Practice
Cognizant Technology Solutions

Detailed information in the techL profile:
Cognizant Technology Solutions

Innovative strength in the regulated environment of pharmaceutical production: strategies for solving the problem of skills shortage

Bayer AG uses Peerox GmbH's MADDOX software to overcome challenges in pharmaceutical production. The use of MADDOX increases efficiency, shortens training time and addresses the skills shortage - an example of the power of technology and people working together.

An article by Andre Schult, Matthias Markus and Saskia Engler

The strict quality assurance requirements in pharmaceutical production are constantly increasing the technical complexity of production and packaging processes. At the same time, companies in the industry suffer from a lack of skilled workers, long training periods and high fluctuation. One solution strategy is to use innovative technologies to train new employees.

At the Leverkusen site, Bayer AG has created a special center for training employees and testing innovative technologies. This includes, for example, the use of Virtual Reality (VR) for training on machines outside the GxP area, as well as Augmented Reality (AR) for maintenance and adjustment of machines. A total of twelve different technologies are currently being investigated and their use in pharmaceutical production validated.

One of the major challenges was to support inexperienced employees in eliminating production problems. Although various knowledge management systems had already been implemented, the care and administration of the database often fell short of expectations.

In 2019, the problem was solved with the MADDOX software from Peerox GmbH: After the pilot phase, MADDOX was successfully implemented in production operations. Unlike conventional knowledge management systems, MADDOX has developed a revolutionary approach to solving missing database administration and is much more than just another knowledge database.

Based on research conducted by the Fraunhofer Institute for Process Engineering and Packaging IVV in Dresden, it was recognized that the core problem is not always a lack of motivation for database administration. Rather, in the event of a production disruption, it is a matter of using the right keywords in the search. Despite a high-quality database, imprecise search queries can reduce effectiveness due to synonyms and language barriers. This makes it difficult to use, reduces added value, and decreases the frequency of use, which in turn lowers motivation to administer.

MADDOX, on the other hand, uses an automatic search algorithm based on machine learning. This algorithm analyzes process data from the machines by examining information on the production disruption for similarities to past disruptions via a data interface. It then suggests suitable knowledge database entries fully automatically and without the need for employees to actively search for their own keywords. Through user feedback, the algorithm learns in which situations it should suggest the right entries.

However, the development and introduction of such software did not only entail technical challenges. User fears and motivation were also a
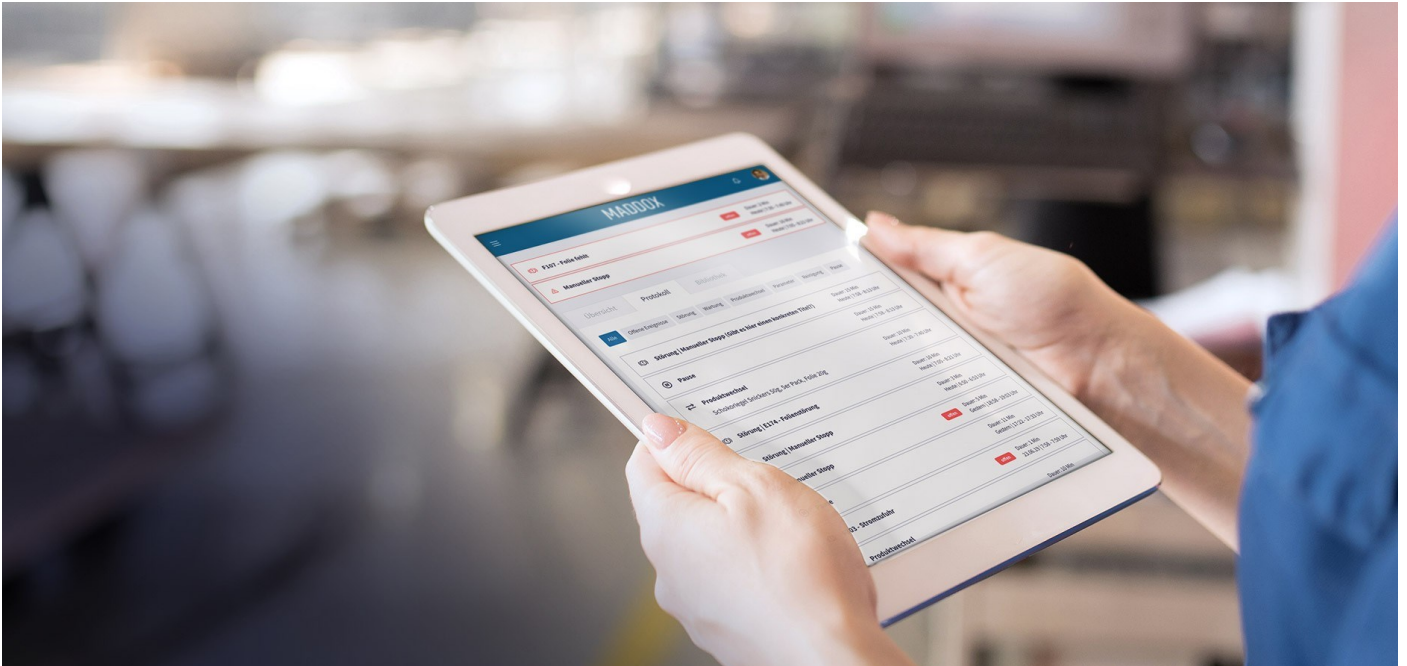
major hurdle. Many employees feared that the software could endanger their jobs. For this reason, Peerox worked for six years with psychologists from the Technical University of Dresden to research what drives and motivates production employees, but also what fears could be avoided. The result of this research was software that revolutionizes knowledge management in production.

MADDOX significantly increases production efficiency by drastically reducing the onboarding time of new employees. They are empowered to act independently without having to rely on experienced colleagues.

Peerox offers new customers a self-sufficient Testkit for rent and introduces the software in a 10-week process on a selected machine to be able to test the added value of MADDOX in their own company with little effort and cost. This test period allows to verify the added value of the software and evaluate its integration into the IT ecosystem.

MADDOX' success story demonstrates how innovation and digital solutions are overcoming challenges in pharmaceutical manufacturing and addressing the skills shortage. The integration of technology and human knowledge can sustainably increase efficiency and quality.

Andre Schult
CEO & Founder
Peerox GmbH

Matthias Markus
Plant Technical Manager
Bayer AG

Saskia Engler
Sales & Marketing
Peerox GmbH

Detailed information in the techL profile:
Peerox GmbH

© photo Andre Schult by Timm Ziegenthaler I Matthias Markus I Saskia Engler

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State of research

In this chapter, we delve into the latest findings from the world of science within the realm of production and sustainability. In this issue, we present an impressive selection of articles that shed light on these pivotal subjects.

First up, we feature "Digitalization for Resilient Supply Chains" by Nicolas Bunde from the Ifo Institute Munich. This article explores the transformative power of digitalization in enhancing the resilience of supply chains, a topic of increasing relevance in our ever-evolving business landscape.

Additionally, we present "Sustainability as an Opportunity for Manufacturing Companies" by Maike Dilly and Verena Timmer from ZNU – Centre for Sustainable Leadership.

This piece delves into the role of sustainability as a strategic opportunity for manufacturing firms, offering fresh perspectives and insights for businesses looking to embrace eco-conscious practices.

Together, these articles paint a vivid picture of the cutting-edge research and ideas that are shaping the future of production and sustainability, providing valuable knowledge for businesses and individuals keen to make a positive impact on our world.

Digitalization for resilient supply chains

Covid, supply shortages and the war in Ukraine have shaken global supply chains. How did the industry respond to the shocks and what measures will make supply chains more resilient in the future?

An article by Nicolas Bunde

© Fotolia / Kalyakan
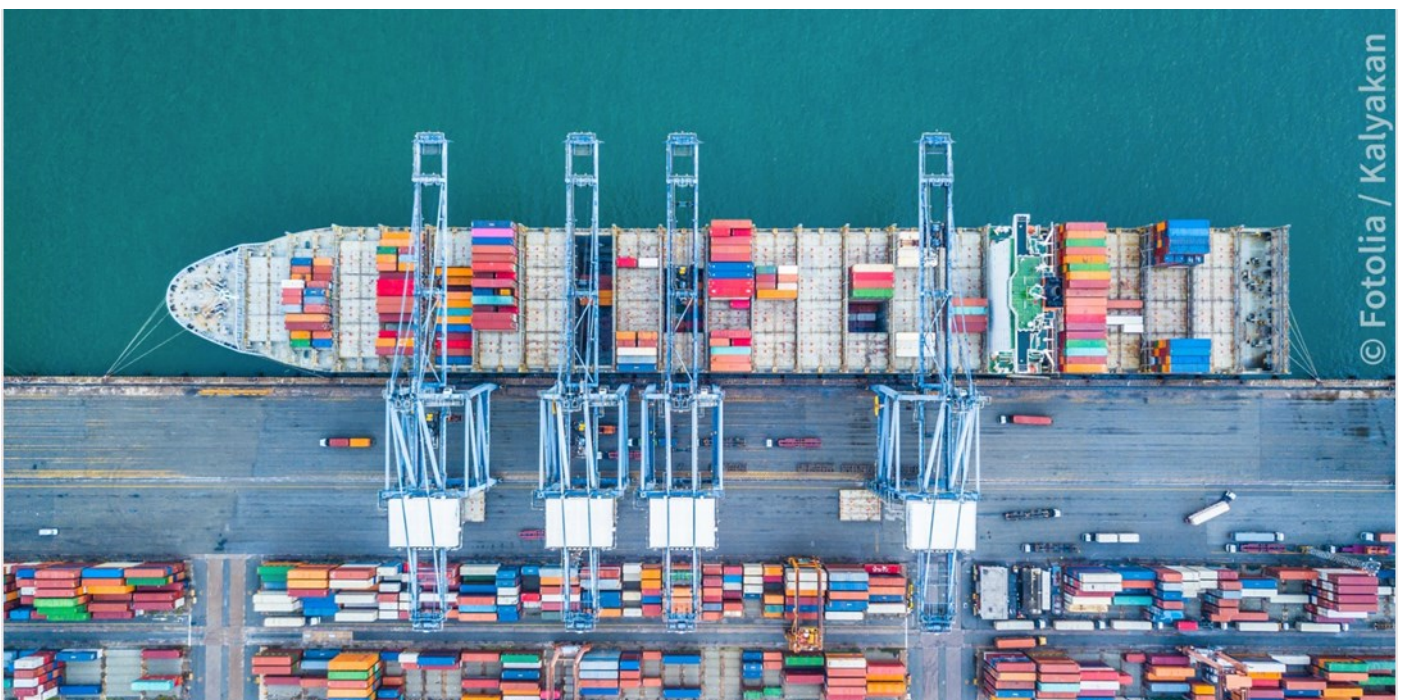
The rapid economic recovery following the pandemic caught many companies around the world unprepared. As a result unprecedented supply bottlenecks occured across industries. In 2022, the supply chains initially showed signs of easing. However, the war in Ukraine and renewed lockdowns in China again led to distortions.

It has been shown that even small changes in demand at the end of the supply chain can lead to exponential fluctuations in demand from upstream suppliers. The results are shortages or oversupply. The effect is caused by demand patterns that are difficult to predict and a lack of information flow within the supply chain.

Asked about the measures already taken in connection with supply disruptions, companies in the manufacturing sector mentioned increased stockholding most frequently, at 68 %. Diversification of procurement (65 %) and better monitoring of the supply chain (55 %) were also mentioned very often. The insourcing of production steps, on the other hand, was only of secondary importance.

However, warehousing is not an efficient solution in the long term, as stockpiling does not prevent the complete failure of individual components and also ties up capital. Relocating production back to Germany or Europe also does not seem to

be an effective solution. Although certain political risks or problems on the transport routes can be avoided in this way, this is countered by higher factor costs and, not least, the shortage of skilled workers. Alexandra Flach et al. have used the ifo trade model to simulate the effects of a broad dismantling of global supply chains for Germany. According to this, a broadly promoted nationalization of supply chains by the state would lead to a decline in German GDP of almost 10 % and thus considerably reduce prosperity.

In view of the Russian war and the tensions between China and the West, the political risks within the supply chain have come to the fore. In particular, the great dependence on China both as a supplier of critical raw materials and as a sales market for German products is now viewed with suspicion by politicians. On the corporate side, a rethink also seems to be taking place. According to surveys by ifo, 45 % of companies in the manufacturing sector were planning to reduce their imports from China in February 2022. The main reasons were the avoidance of dependencies (79 %) and increased freight costs (66 %). Companies planning to reduce their purchases of Chinese inputs indicated that they would purchase more from other European and non-European countries in return, which indicates a China+1 strategy (Bauer and Flach 2022). The EU should provide political support for these diversification efforts by promoting the conclusion of trade agreements with additional economic regions.

In the event of supply chain disruptions, precise knowledge of supplier relationships and an undisturbed flow of information are essential to prevent failures in the first place.

A cornerstone for this is the consistent digitization of the supply chain. One of the biggest challenges here is different data standards and a lack of interfaces within and between companies. Initial approaches to this already exist. The Catena-X platform launched by the automotive industry is striving for networking along the automotive value chain. With the common interface standard umati the VDMA aims to facilitate communication between machines and enable integration into IT ecosystems.

AI and blockchain technology also play a role in modern supply chains. They enable automated adjustments in real time and increase transparency and traceability. However, these technologies are not yet widespread. According to surveys conducted by ifo in June 2023, the use of AI in the industrial sector, for example, is being discussed by almost 40 % of companies, while usage is only around 17 %.

In addition to greater resilience in times of crisis, the consistent digitization of the supply chain can also open up new business models, such as predictive maintenance or pay-per-use, which makes it all the more useful.

Nicolas Bunde
ifo Institute Munich

❯ Flach et al. 2021 International value chains
❯ Bauer and Flach 2022 Globalization as a scapegoat?
❯ Schaller et al. 2023 AI opportunity or danger
❯ Bauer and Flach 2022 How dependent is Germany on China
❯ Bunde 2023 Ways to increase resilience in global supply chains

Sustainability as an opportunity for manufacturing companies

An article by Maike Dilly and Verena Timmer

Sustainability is a frequently discussed topic and has become an integral part of our everyday lives. This is also reflected in the requirements placed on companies. The business world is increasingly obligated to make a contribution and report on sustainability metrics. Can companies benefit from these increasing sustainability requirements or is it just additional bureaucratic effort?

Originally known from forestry as an economic approach aimed at enabling the continuous utilization of resources, the concept of sustainability was embraced by politics in the 20th century. In 1987, the Brundtland Commission defined sustainable development as development that seeks to meet the needs of both present and future generations equally[1]. This understanding is considered a fundamental basis of the sustainability discourse. Today, sustainability is often understood as the interplay of three dimensions: ecology, social, and economic, and it is becoming increasingly urgent in the context of exceeding planetary boundaries (rising CO_2 concentrations, declining biodiversity, etc.)[2].

Increasing demands on sustainability efforts by companies

In light of the mentioned developments, companies, as institutions embedded in society, bear a significant responsibility towards their environment. Companies that operate sustainably demonstrate responsible behavior towards nature and society, both at the corporate level and throughout their value chains. They not only prevent negative impacts of their business activities but also generate positive social and environmental benefits. This requires, among other things, an open dialogue with various stakeholders whose demands must be considered for long-term corporate sustainability.

Not only are consumers' expectations of companies and sustainable products or services rising, but there is also increasing political pressure on businesses through comprehensive EU regulations such as the EU Green Deal, the Lieferkettensorgfaltspflichtengesetz (LkSG), and the Corporate Sustainability Reporting Directive (CSRD). These regulations will require approximately 49,000 companies in the EU to report on various sustainability topics by 2026. Overall, stakeholders are increasingly demanding transparency and sincere sustainability efforts from companies.

Furthermore, companies must not only meet various demands but also deal with other incidents in their environment, such as increasing extreme weather events or political crises like the conflict in Ukraine. In order to proactively identify risks and opportunities, companies need to regularly assess both the impacts of their activities on their environment and the influences from the environment on their business operations.

In practice, companies face various obstacles when it comes to implementing greater sustainability. These include, for example, a lack of knowledge about necessary measures, reluctance to change existing processes, short-term increased costs, or limited time capacities in daily operations to address the issue. Additionally, the relatively rare willingness of both trade partners and end consumers to bear possible additional costs is perceived as a hurdle[3]. Despite these challenges, manufacturers, particularly those focused

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[1] Hauff, V. (1987): Unsere gemeinsame Zukunft, der Bericht der Weltkommission für Umwelt und Entwicklung. Greven: Eggenkamp.

[2] Richardson et al. (2023): Earth beyond six of nine planetary boundaries. Science Advances, Vol 9, Issue 37.

[3] Kölle, Axel; Timmer, Verena; Dilly, Maike; Rosanowski, Laura & Geßner, Christian (2021): Nachhaltigkeit in der FMCG-Branche 2021, ZNU - Zentrum für Nachhaltige Unternehmensführung & Lebensmittel Zeitung., p. 37-39.

on Fast Moving Consumer Goods (FMCG), report that they prioritize environmentally friendly packaging, sustainable innovations, resource-efficient production methods, and the use of sustainably sourced raw materials in their production[4].

Sustainability as an Engine of Innovation

Furthermore, the results of an FMCG industry survey show that companies benefit from the integration of sustainability in various ways, even beyond political regulations and stakeholder demands. Sustainability is increasingly perceived as a driver of innovation, both in terms of products and company processes (see Figure 1). To address current and future challenges, such as the climate crisis, rising market demands, and the shortage of skilled workers, novel approaches, products, and sometimes even entire business models are required. Sustainability provides an opportunity to consciously reflect on existing processes and derive improvement potentials that are innovative and more sustainable.
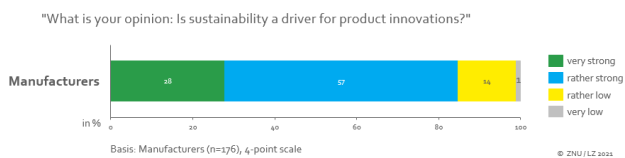

Figure 1: Responses to the question 'What is your opinion: Is sustainability a driver for product innovations?' (Source: ZNU / LZ 2021)

Innovations in production can take various forms and often contribute to sustainability initiatives. For instance, when innovative approaches or machinery are used to conserve or target resources such as energy, water, and materials more efficiently, reduce waste and packaging, and prevent emissions. Innovations can provide not only ecological benefits but also improve the working environment for employees. For example, by enhancing workplace safety, creating jobs tailored to people's needs, taking on dangerous and monotonous tasks, and deploying individuals more meaningfully in line with their abilities. This can

have a positive impact not only on the physical health of employees but also lead to increased satisfaction and motivation. This is just one example of how considering sustainability aspects can enhance the overall attractiveness of employers, thereby improving the recruitment of new employees, as well as the retention and development of existing ones[5]. Furthermore, the diverse areas within the context of sustainability (ecological, social, and economic) also lead to increased interdepartmental collaboration among employees within companies, creating linkages between various areas (see Figure 2).
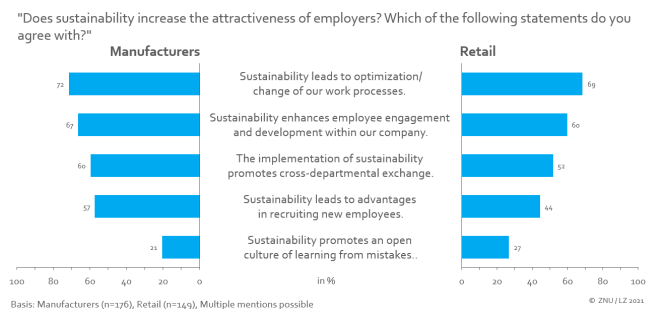

Figure 2: Responses to the question 'Does sustainability increase the attractiveness of employers? Which of the following statements do you agree with?' (Source: ZNU / LZ 2021)

In order to manage sustainability in production, companies must first gather and categorize key performance indicators (KPIs) in various areas of operation. With this quantitative foundation, processes can be evaluated, and potential improvements identified, leading to the implementation of measures. To measure the success of these measures, KPIs must be continuously collected and compared.

Integrating sustainability comprehensively within the company

To fully benefit from the implementation of sustainability, a company should not view production in isolation from other organizational areas but rather embed sustainability holistically within the company context. A holistic sustainability management system, such as the *ZNU Standard – driving sustainable change*, can be helpful in this re-

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[4] Kölle et al. (2021), p. 26.

[5] Kölle et al. (2021), p. 25.

gard. An essential part of the Sustainable Economy process is early identification, where companies identify their key stakeholders and regularly review their key issues. Additionally, sustainability should be integrated into the company's strategy, with specific goals and actions set for different business areas, including production. Sustainability should also be anchored in the strategic direction and top management level and should be an integral part of the company's culture, as sustainability is a team effort.

Success in sustainability requires collective effort

To capitalize on sustainability potential, a willingness to change within the company is necessary. This requires engaging and empowering all employees. Alongside effective internal communication, external sustainability communication is also a requirement of the *ZNU Standard – driving sustainable change*. This involves involving key actors along the value chains and conveying the company's sustainability activities to other interested stakeholders. As sustainability becomes an increasingly important factor in the search for employers, sustainability and its communication can play a crucial role in attracting skilled professionals.

Despite the extensive EU regulations and reporting requirements that companies face, which may initially be perceived as additional and burdensome documentation, the diverse opportunities of sustainable business should also be recognized.

When sustainability is practiced within companies and systematically advanced through a sustainability management system, it becomes a driver for innovation, resilience, and the crisis resilience of companies. Successful sustainability management helps companies reflect on and optimize their processes and identify changes and risks in the business environment early on, allowing them to respond in a timely manner.

Maike Dilly
Project manager
ZNU – Centre for
Sustainable Leadership

Verena Timmer
Head of Research
ZNU – Centre for
Sustainable Leadership

Detailed information in the techL profile:
ZNU – Centre for Sustainable Leadership

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New technologies

Generally speaking, startups are a good measure of the innovative strength of the respective region. The more successful startups are founded, the more dynamic and competitive the innovation location is. Dynamic economic areas tend to attract more highly qualified entrepreneurs and employees, increasing the region's prosperity.

In the subject areas surrounding enterprise IT, startups also strengthen the competitive power of companies.

A high level of dynamism means that potential can be exploited more quickly with new solutions. It would be a great advantage for the local economic area to have its own strong software startup scene.

This not only requires funding from the state and venture capitalists but also strong utilization of the solutions developed here among the many companies.

On the following page, the startup and winner of the German Startup Cup 22/23, **SUSTAYN**, in the category of sustainable production, will introduce itself. Additionally, you will find insights into the benefits and usage of the logistics platform, **Explortal-Logistics**.

All information about the

German Startup Cup

www.united-innovations.eu/deutscher-startup-pokal

SUSTAYN

About the company

Sustayn GmbH offers the solution for more sustainability in companies. Since its founding in 2021 by CEO and founder Janik Seitzer, Sustayn and its 15 employees have been supporting well-known companies in their sustainability transformation. The involvement of employees plays a particularly important role in this process.

In addition to the sustainability platform, Sustayn offers workshops, webinars and consulting services on sustainability topics. The libraries integrated into the platform offer companies suitable measures, projects, events and campaigns. With these numerous solution proposals, they receive the necessary tools to make their company fit for the future and to inspire their employees for the topic. The experienced team of experts accompanies them step by step towards a sustainable company.

Technology

The SUSTAYN platform is operated as software as a service with a cloud infrastructure in a German data centre. No IT infrastructure needs to be set up at the customer's premises. The mobile app is easily downloadable for all employees in the iOS App Store and Android Play Store. This enables the fast and secure use of SUSTAYN.

We use React Native for the mobile app. This allows us to develop an app that is both fast and beautiful to use. SUSTAYN can also be integrated into Microsoft Teams and SharePoint and is therefore easily accessible for employees in their daily work.

Benefit for the user

With our platform, we save our customers time-consuming research and show them potential savings that contribute to sustainability goals. For this purpose, we provide companies with libraries of sustainable actions, measures, events and benefits that make the company more sustainable from within. This gives a company the opportunity to drive forward the sustainable transformation as quickly as possible.

In addition, we impart the necessary knowledge to employees so that they can understand the sustainable transformation, question their own behaviour, adapt it and ultimately change it. We empower them to integrate the learned contents, measures and actions into their (professional) everyday life and to actually live these changes.

Our media mix deals with the variety of topics related to the overall theme of sustainability in the categories of social, ecological and economic sustainability. This includes topics such as consumption, recycling, energy, mobility, nutrition, diversity or sustainable finance and many more. It starts with easy-to-understand content that illustrates the relevance of the topic. The content mix consists of videos, infographics, quizzes and news articles. It is designed to arouse the interest of the users and to inspire them.

In addition, quizzes can be played and challenges can be carried out. The app's internal currency SUSTAYNs can be collected wherever knowledge can be gained or sustainable behaviour can be rewarded. NFC-chips are used here, which can be scanned with the smartphone. For example, they can be placed in the stairwell (stairs instead of lift) or the bicycle stand (bicycle instead of car).

The collected SUSTAYNs can then be used for personal rewards or for co-determination, depending on the desired use. By redeeming the SUSTAYNs, employees thus show how the company can organically shape itself to fit the corporate culture for the future. The company thus implements the appropriate companies and saves time and money.

Janik Seitzer
CEO
Sustayn GmbH

Detailed information in the techL profile:
Sustayn GmbH

Explortal-Logistics

An Article by Prof. Dr. Diethardt Freye

Introduction: In 2008, the author transitioned back to academia after nearly 15 years in the industry. While teaching, it became evident that there was a lack of comprehensive, structured, and content-verified resources for logistics students and practitioners seeking knowledge beyond the standard curriculum. This observation led to the idea of creating a logistics knowledge portal, offering both students and logistics professionals a research-oriented gateway to the world of logistics knowledge. The current status of this endeavor can be accessed at https://www.explortal-logistics.net.

The Explortal-Logistics Platform:

Explortal-Logistics provides readers with access to a wide range of logistics-related knowledge and information through various editorially curated services.

Key Services:

Press Releases: One of the core services involves the editorial selection of press releases from national and international ministries, subordinate authorities, universities, research institutes, companies, associations, and networks with relevance to logistics, supply chain management, transportation, and mobility. This service allows readers to gain a daily, consolidated overview of important logistics-related announcements.

Knowledge 1 - Tables & Overviews: This section offers comprehensive logistics-focused knowledge in the form of tables and overviews. Examples include an abbreviation directory, a list of logistics-related indices, and an overview of logistics nodes.

Knowledge 2 - Publications: This section acts as a repository for references to written works related to logistics, such as online logistics glossaries or lists of logistics journals.

Logisticians: Here, readers can find information about logistics programs, research and transfer institutions, awards in logistics, and a list of logistics interest groups.

Job Market: This section lists logistics-related job opportunities.

Events: Provides information about logistics-related events and conferences.

Netguide: A structured collection of websites with content relevant to research-oriented logisticians.

Organizational Profiles: A developing section intended to help readers quickly and easily find relevant information about logistics companies.

User Benefits: Explortal-Logistics offers several advantages to its users, providing significant time-saving benefits in today's fast-paced world:

Centralized Information: Users can access a diverse range of editorially curated external references all in one place.

Structured Knowledge: The portal offers structured access to sought-after information, facilitating quick access to desired data.

Continuous Learning: Readers can continuously expand their logistics knowledge and advance their logistics expertise independently.

A Trusted Resource: The goal is to become a recognized resource for both academic and practical logistics knowledge.

Explortal-Logistics is committed to serving as a valuable resource for the logistics community, providing a one-stop platform for both learning and staying up-to-date with the latest developments in the field.

Prof. Dr. Diethardt Freye
Founder and Manager
Explortal-Logistics
A Project of iPLUSm

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Survey of technologies

At regular intervals, we ask the experts for building blocks that they currently need. By far, the most frequent response is the desire for tool research for a specific topic. Our team has therefore been expanded to include young students, for whom tool research is a good additional element of their education. In this chapter, you will find a collection of technologies that we think deserve your interest.

Only a short outline of the product is presented. The attached link leads directly to the product datasheet in our techL-database, where more detailed information and contact persons can be found.

All innovations be found in the technology database

techL

www.techl.eu

ConcR

At ConcR, our mission is to lead the way in advancing sustainable practices within the construction industry. We are dedicated to providing accurate and validated measurements from concrete structures. By leveraging our innovative sensor technology and advanced data analytics, we aim to mitigate the environmental impact of concrete production and contribute to global climate change mitigation efforts.

 [techL profile](#)

Cybus

Cybus software solutions are designed specifically for industrial manufacturing and its complex challenges. With the high-performance and scalable Factory Data Hub, Cybus brings open collaboration between manufacturing and its IT. Cybus empowers factories to gain long-term independence from manufacturers and vendors.

 [techL profile](#)

divvoice GmbH

We integrate voice assistance technology into business products and business applications to take your business to the next level. With extensive experience in hardware and cloud-based software, we offer expert advice and support to help you develop and optimize your voice-assisted solutions. Working with you, we'll create a customized success plan and ensure your product is reliable, effective, and market-leading. We help you realize the full potential of our voice assistance technology.

 [techL profile](#)

drag and bot GmbH

At drag and bot we work daily on making the programming of industrial robots as simple and intuitive as possible. In this way we support our customers in the flexible and cost-efficient automation of their processes.

 [techL profile](#)

emocean GmbH

indigo is a distributed, networked realtime capable industrial edge and IIoT platform enabling Smart Factories and Devices as well as services like Edge AI based on the paradigms of Industry 4.0. Unlike widespread messaging platforms for IoT applications, indigo combines horizontal and vertical integration. Every node can share information and status messages with others. Mobile devices can be directly integrated for remote control and maintenance purposes. Cloud services are bidirectionally connected on demand. indigo provides true real-time communication between connected systems throughout the entire shop floor.

techL profile

Energy Robotics GmbH

Our mission at Energy Robotics is to relieve humans from dangerous, repetitive and undesirable tasks through autonomous robotic inspection. Our teams of expert roboticists and passionate developers are striving to improve the Energy Robotics software platform to boost operational efficiency and workplace safety in industrial environments. Energy Robotics provides an end-to-end solution for autonomous inspections in capital-intensive industries such as oil & gas, chemical, power and utilities. Our hardware-agnostic software platform enables asset owners to easily manage a fleet of robots and drones for autonomous inspection.

techL profile

i-flow GmbH

Clean data in factories. Quick & easy. Bridging the gap between factory systems and industry 4.0 technologies has never been easier. With i-flow you can model, map and prepare data from all your factory assets for use in any system.

techL profile

iLARIZ GmbH

iLARIZ, based in Stuttgart, is a start-up with a Swabian-international team of innovation-oriented experts in forming technology. We focus on the process reliability of forming processes and the reduction of scrap costs in forming production. All our expertise is incorporated into our fully automated systems for digitalized monitoring through to active control of forming processes. In addition, we offer our know-how as part of our engineering services for all production areas.

techL profile

Iuna AI

IUNA AI Systems GmbH is a company founded in 2020 and located in Heilbronn, Germany. We develop Deep Learning based image processing software and camera systems to automate manual inspection as well as quality assurance in industrial manufacturing.

We want to take automation in industrial manufacturing to the next level in the field of visual inspection and quality assurance. In doing so, we help companies work more efficiently and sustainably increase the quality of their end products.

 techL profile

Makula

Empowering OEMs,machine suppliers & distributors to win in the Aftermarket!

Real revenue lies ahead of Machine Sales in the equipment manufacturing industry. After-sales services carry 80% of the profits. Makula manages it all.

 techL profile

Mimetik

The path towards highly efficient, fully connected factories goes through empowering the workers who are enabling the smooth operations at each step. While decades of work have gone into creating digital twins of factories, it's time to integrate the intelligence and agility of workers to complete the picture. Mimetik's IoT sensor digitizes manual work steps with zero infrastructure costs and without cameras, ensuring high privacy standards for easy adoption. By creating a digital twin of your best workers, you can optimize and automate the work environment, assist workers throughout the day, and improve efficiency.

 techL profile

Peakboard GmbH

Peakboard is a low-code platform for the simple and intelligent digitization of manufacturing and logistics. Users create individual applications with the hardware and software solution to optimize their industrial processes and thus ensure more operational excellence in the company. The company of the same name, Peakboard, was founded in 2016 and is based in Stuttgart.

 techL profile

Peeriot AG

We are a German deep-tech start-up that combines Peer-to-Peer and IoT with the goal to simplify data exchange between devices. We help enterprises to manage the integration and the data flood of their devices easily by providing them a software for decentral IoT communication, which enables self-organized devices and knowledge networks.

techL profile

Pelico

Pelico's operations management system connects factory teams to manage unplanned bottlenecks and deliver products on time, at cost. It empowers operational teams to continuously monitor bottlenecks, anticipate issues, and act fast with AI-assisted recommendations, simulations and cross-team collaboration.

techL profile

Phantasma Labs GmbH

At Phantasma, our purpose is making human work with today's AI solutions more smart and efficient. By building market-leading, industry-grade reinforcement learning-based models we enable AI-driven automation in enterprises without the need for big data. Our smart factory product line is an AI solution for manufacturing companies, that can suggest real-time optimal decisions for different areas of production planning.

techL profile

PipePredict GmbH

PipePredict transforms water suppliers into smart water networks – we use machine learning algorithms to continuously localize leaks in waterpipes using data from already existing network sensors. Our predictive maintenance tool allows to monitor the pipes' status in real time as well as predicting bursts and thus enables water plants to cut their repairing costs dramatically and optimize their repairing schedule.

techL profile

scitis.io GmbH

scitis.io is a young company with a big vision. We combine the expertise and clout of several medium-sized companies and are the one-stop store for our customers when it comes to digitization.

We offer a manufacturer-independent Industry 4.0 platform for industry, plant and machine tool manufacturing. Our goal is to give our customers the opportunity to offer their own IIoT solution for their plants. The focus is always on generating process knowledge and product optimization.

 techL profile

Synsor.ai UG

Munich-based AI Start-up, building a "predictive quality" AI for the manufacturing industry. Our main goal is to enable the real-time analysis of both image- and machine-data on a singular platform. This allows the detection of even the earliest warning signs, and through that the prediction of defects and process issues.

 techL profile

Weeve

Weeve is a high-tech IoT startup that empowers businesses to generate value from their connected assets through data-driven services. Our platform provides an intuitive way to create and customize data pipelines and processes with a simple drag-and-drop method. We provide a library of pre-built modules for common use cases, such as predictive maintenance, pay-per-use, or machine learning. At the same time, the architecture provides the flexibility to customize and create new modules for your specific business domain. making and create new revenue streams.

 techL profile