

7 essentials to unlock the Industrial Metaverse:

Revolutionary automation
for the factories of the future

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This ePaper gives you all the information you need to be ready for the future when it comes to the hot topic for manufacturing: the Industrial Metaverse. We outline the major challenges of Industry 4.0 and illustrate why our technology, together with the associated direct data value creation, is considered a pioneering production and process automation solution. We also provide an outlook on the potential it opens up for the factories of the future.

Do you want to be part of the new digital era? Then join us on the journey into the Industrial Metaverse.



This ePaper at a glance

The Industrial Metaverse is emerging as the realization of the Metaverse's true potential, with companies already enjoying huge benefits and savings. Here at Ascon Systems, we are taking things even further, thanks to our global and truly unique solution that seamlessly connects the real and virtual worlds in a way previously unimaginable.

With no need for programming, our technology can be used to flexibly define and reconfigure operating and value creation processes that are then implemented in the real world at speeds of just a few milliseconds – whether for production plants, a factory process, intralogistics applications or industrial components themselves. What's more, our vendor-neutral software can be used in the cloud, on premise or as an edge solution.

Want to know more? Then read on and enjoy!

1. What you need to know about Industry 4.0

It's 2023, and everyone is talking about the rapid progress of digitalization in industrial production and control systems. Word is that the Industrial Metaverse is heralding in the new age of industrialization, where factories will soon autonomously control their operations, leaving us humans to focus on creative endeavors.

At Ascon Systems, however, our advice is to keep calm and take a deep breath. We've been in this business for a while and have long been leading the way when it comes to helping companies in the automotive, mechanical engineering, and aviation industries, and many other sectors, in navigating their digital transformation.

After all, the reality of industrial production shows that it will be a while before robots and interlinked, automated systems completely take over repetitive work processes. Our initial aim is that production should be able to reconfigure operations in real time using their smartphones.

When it comes to achieving rapid, digital continuity and adaptability, the present situation in process automation tends to be somewhat counterproductive.

The automation landscape in industrial production is currently dominated by PLCs – programmable logic controllers – which are based on industrial production experience from the last century. In the 1960s and 1970s, the top priority was to meet requirements such as creating robust production lines that reliably produced large quantities of high-quality products. The associated IT architecture gradually laid the foundation for today's industrial automation, because it was reliable and could reduce risks. That was a good thing – back then, at least.

Radical flexibility in today's shifting industrial landscape

Today's modern industrial production faces unprecedented challenges. Product requirements are becoming increasingly customized and batch sizes, the number of products in an order, are therefore also getting ever smaller. These days, it must be possible to produce small quantities in a fully automated process – something that requires flexibility and adaptability.

Planning and producing large quantities reliably in the same way over a period of many years is no longer the top priority. That's because the parameters for industrial production have shifted radically. Everything is changing – the market is transforming, supply chains are collapsing, new megatrends are emerging, it's impossible to get a hold of certain materials, resources are becoming

ever more expensive, new technologies are revolutionizing production, and new players are getting in on the action. Now and in the future, companies must be able to respond rapidly to changes and offer a wide range of product variants. Speed and flexibility determine who is successful – or even who survives into the next decade.

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3 figures we love

19 percent

The predicted growth of the global IoT market in 2023.

Source: Global IoT Enterprise Spending Dashboard, January 2023

78 bn euros

The economic potential of digital twins in the production industry by 2025.

Source: BITKOM 2022

120 Ascon Systems employees

working at 6 sites throughout Germany.

Alexander von Klein,
Chief Business Development Officer,
Ascon Systems



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The current IT structures are no longer aligned with the future challenges in industrial automation. Our groundbreaking technology offers an alternative that paves the way for future business success, setting us apart in the industry.



Metaverse vs. Industrial Metaverse

The hype surrounding the metaverse started when Mark Zuckerberg renamed Facebook as Meta in October 2021. It's little wonder that the idea of a virtual world in which we live, work and shop – and where our avatars meet and play games at magical, virtual locations – immediately captures our imagination.

In reality though, the B2C metaverse currently faces a number of hurdles. For one thing, nobody can agree on what it really is and what it can do. For another, it seems as though nobody really wants it (yet).

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Factories are transforming thanks to fewer barriers

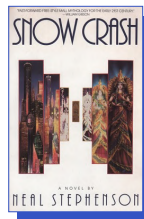
That's exactly where we come in. Our Ascon Systems Automation Platform eliminates obstacles in industrial production. We remove barriers on the shop floor and create continuity from software level – a smartphone or laptop, for instance – through to control level, at actuator or sensor level.

We boost production efficiency and reduce the consumption of resources. In short, we design the technology that makes adaptable factory mapping possible in the first place.

If you would like to gain even greater insights, take the next step into the metaverse with us – into the Industrial Metaverse.

FUN FACT

The term metaverse was coined in Neal Stephenson's 1992 science fiction novel "Snow Crash" as a portmanteau of "meta" and "universe". "Universe" refers to the entity of space, time, matter and energy, while the prefix "meta" means "beyond" in the sense of a higher level of the universe.



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Rise of the virtual digital twin factories

When it comes to the Industrial Metaverse, it's a whole different ball game. Whereas the general metaverse buzz is fading, digital connectivity in the Industrial Metaverse is really taking off. The reason for this is that businesses can enjoy huge benefits and savings potential right now by taking their first step into the Industrial Metaverse.

Numerous companies are already working on using digital twins to map machinery, transport systems, entire factories, and even people in the virtual world. The virtual and real worlds "interact" with one another.

The aim of mirroring real-life production processes is to speed up the process of resolving, identifying, analyzing and eliminating production chain issues. That even makes it possible to be proactive and spot complications before they manifest themselves.

Virtual collaboration can take place across numerous locations. Individuals, teams and entire companies located on different continents can work together on innovations in the digital space and test these in near real time. The overall outcome is to boost efficiency and quality, and to conserve resources.

That's precisely where we come in – with a solution that seamlessly connects the real and virtual worlds in a way previously unimaginable.



Good to know:

Industry 1.0 refers to the start of mass production using machinery, which began around 1800. Industry 2.0 corresponds to piecework and production line operations from about 1870 onward. Computer-based automation, which dates from around 1970, is known as Industry 3.0. Industry 4.0 is all about digitalization and connectivity – in other words, what we're seeing now.

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We see ourselves as a catalyst, merging two fundamental aspects of the Industrial Metaverse: mechanical engineering and production with digitalization. By doing so, we aim to enhance global competitiveness in the industrial landscape.

Jens Mueller,
CEO, Ascon Systems



2. Process automation for everybody!

The fact is, an ever-increasing degree of automation and digitalization will be required if the factories of the future are to be successful. That's not all, though. Given that most production processes are currently specified in code and any changes therefore involve programming, it's impossible to harness the full potential of digitalization. Changes implemented by means of reprogramming take time and money – and not just because it may be necessary to halt production.

FACT CHECK

According to calculations by the U.S.-based Korn Ferry Institute, there will be a global shortage of 4.3 million IT workers by 2030, resulting in production losses equivalent to 430 billion euros.

An even bigger challenge for companies is the skills shortage. The type of IT architecture that currently predominates in factories requires a large number of programmers, and they must adapt processes manually on site.

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Michael Gänslar,
Chief Software
Development Officer,
Ascon Systems



We are the glue between the various parts of the application. Our technology adapts flexibly to any environment – whether in the form of a highly scalable platform that we are currently implementing with big players in German industry or, in the future, a solution that can be installed directly.

The
standout
feature of our technology

With no need for programming, our software can be used to flexibly define and reconfigure operating and value creation processes that are then implemented in the real world at speeds of just a few milliseconds – whether for production plants, the factory process as a whole, intralogistics applications or industrial components themselves. Our vendor-neutral technology can be used in the cloud, on premises (locally) or as an edge solution (on a centralized or decentralized basis).

**Fast, flexible and efficient –
process automation for all!**

Our solution, which is currently unique on the global market, can meet all these challenges. The Ascon Systems Automation Platform is the logical next step into a new industrial era. Companies can use our technology to get fit for the future – with full flexibility and adaptability, and without any programming whatsoever.

**A successful strategy to
combat the skills shortage**

Our software enables the modeling of processes, eliminating the need for manual programming. We enable domain experts to independently get their processes up and running on an IT level. In the future, programming skills will no longer be required to create a process control system

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Deeper IT expertise will only be needed if data and information is taken over from external systems – when sharing ideas on network protocols or the syntactic structuring of information, for example. Specialist knowledge regarding the essentials for processes and value creation and about the changes that need to be initiated to optimize the workflow is naturally still vital, as is a certain amount of domain know-how.

In relentless pursuit of innovation, our dedicated teams have channeled their veteran IT expertise to develop and refine this groundbreaking technology. To put it succinctly, the more complex

the development stage, the simpler the desired outcome should be.

Modeling processes for real-time application

Another remarkable feature of our Automation Platform is its ability to directly model processes that can handle event processing in milliseconds. Processing in near real time is possible on a highly scalable basis – in short, with thousands of events per second.

Good to know: Real time

If one were to interpret the term “real time” literally, it would imply an immediate reaction. However, the concept of immediacy is flexible. The term “real time” characterizes the operation of information technology systems that consistently deliver results within a predetermined time frame, such as a fixed time grid. With our advanced technology, we achieve remarkable execution speeds in the single-digit millisecond range, approaching true real-time performance.

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Our innovative technology is unique on the market right now. Companies we are currently communicating or collaborating with have confirmed this.

Kilian Grefen,
CTO, Ascon Systems





Reading out secure data instantly in context

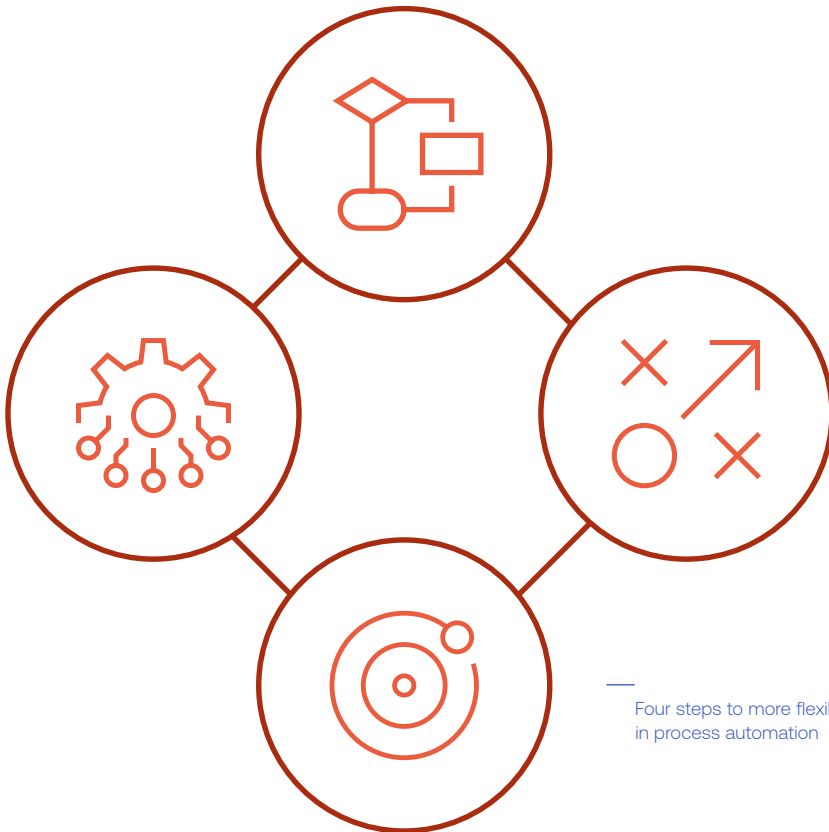
In the future, it will also be possible to save time when evaluating data. In most cases, data is collected and then stored sequentially in context in an intelligent data lake. The automated process that follows analyzes the information, derives measures and checks effectiveness.

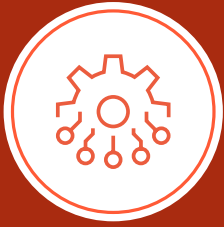
Data recorded by our system is available in context instantly, that is to say within milliseconds. Analyses can be performed within the process and measures carried out immediately. Instead of needing to “dispatch” the data via multiple stations or send it to the cloud, edge processing can be used. In addition to ensuring a high

level of data security, this spares companies from complex data management.

It goes without saying that we also supply data in a digital file. All data related to the flow logic is included – from the product to the process to the respective resource – whether portioned or in the form of bulk data. This information can then ultimately be used for maintenance, operations, new plans and change planning.

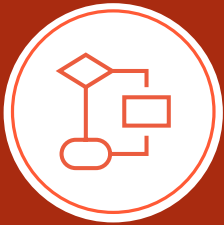
3. Action guide – the Ascon Systems Automation Platform





Model your connectivity!

Interfaces between IT and OT no longer need to be programmed. Use standardized connectors to link real processes to your logic model. Our technology enables you to expand and adapt your system flexibly and independently to meet constantly changing and future requirements.



Design your logic!

You no longer need to worry about programming factory or control sequences. Revolutionize your process by just modeling behavior, interactions, alternatives, and other potential states. You can reuse your models anytime and anywhere.



Optimize and change, anytime!

Our solution is designed in a way that enables you to adapt to the ever-changing needs of your business. Our approach helps planners and operators make optimizations and modifications at any time.



Run fast, anywhere!

We understand the crucial importance of rapid production control. Our high-performance communications are therefore tailored to the models you create – as an edge solution, in the cloud or in hybrid mode.

4.

Our centerpiece – the real digital twin

Despite the buzz surrounding the term “digital twin” in recent years, its actual relevance to future automation needs is often minimal.

As we see it, the digital twin isn’t simply a virtual depiction of a real-life system, and it certainly isn’t just another rendering of software. It plays a vital role at the heart of our innovative technology – technology that makes it possible to influence processes.

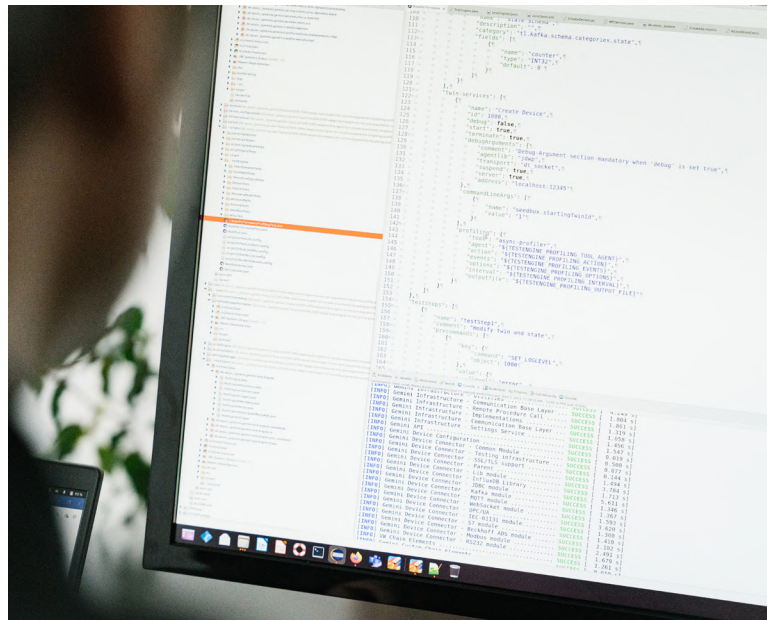
EXPLAINER

To put it bluntly, the virtual depiction of a real-life system is nothing more than a “mere” digital shadow. Years ago, we boldly redefined the concept of a digital twin. For us and our clients, a digital twin goes beyond mere virtual or 3D simulations; it demands the power to ignite reciprocal actions between both realms.

Our digital twin can influence actual ongoing production operations and do so without any programming. Our vision is for a planner to need nothing more than a tablet or PC to change the plant's processes for the better or, in other words, optimize its performance.

What's more, our digital twin ensures end-to-end mapping without any media breaks. Together with our Automation Platform, this turns the Industrial Metaverse into a significant productivity factor in the product development process – one that extends all the way through to actual factory monitoring and control, including the straightforward implementation of changes.

Real digital twins boldly emerge out of a factory's digital shadows, as they are no longer simply a virtual depiction of reality but can now directly manage the actual behavior of a factory.



Twin worlds

Our digital twins are true twins and not just simulations or “virtual shadows”. They can help to control a system. IT and OT are merging, for the first time, enabling consistent virtual planning from a virtual environment all the way through to real-life operation.

5. In a nutshell – the 5 business benefits

1. Harness your business know-how

You can overcome the skills shortage by leveraging our technology to transfer the existing know-how in your business. Planning and operations staff with no IT or OT expertise will now be able to define, test and, ultimately, implement changes at process control level and even plant level.

2. Realize savings throughout your operation

Our model- and service-oriented software strategy not only delivers huge savings on typical implementation costs, but also cuts infrastructure and operating costs. Our model-driven approach significantly reduces implementation and change costs. In addition, capturing all the data from the process to be controlled saves on process, maintenance, and product quality costs.

3. Boost resilience and agility with streamlined process control

Changes can be accomplished quickly, as variations in the process flow or the control logic are implemented and validated remotely instead of on site – whether by humans or by AI. What's more, you can keep an eye on the quality of your product every step of the way.

4. Leverage contextual data for enhanced operations

The Ascon Systems Automation Platform provides contextual data in near real time and can be used

directly in the process. This eliminates the need for data transfer to a cloud environment, making data governance far more straightforward. The data's added value can be leveraged immediately in context – including by AI, which can also learn from this.

5. Maximize success with a powerful partnership

We maintain the mentality of a start-up, meaning we are agile and can act fast in small teams. We adapt to your requirements and your pace, providing you support at every stage of your journey. Win-Win: Collaborating with us not only earns you a reputation as an exceptionally innovative company but also creates a winning alliance that propels your success.

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How are we driving digital transformation? By offering a pragmatic, graphical solution that enables companies to digitalize all their operating processes and subsequently combine these in any way they want, rather like Lego bricks.

Markus Knaup,
Chief Product Officer,
Ascon Systems





Photo: unsplash / Casey Homer

6. Fit for sustainability?

Our technology serves as a sustainability enabler, allowing industry to significantly improve the resource efficiency of planning and production operations. Staff can seamlessly perform tasks like reprogramming across multiple sites, eliminating the need for travel. By modeling products and processes, along with direct evaluation of data, businesses can keep a better eye on sustainability KPIs, such as carbon footprint, over the long term.

We're a big help to companies when it comes to collecting data and information relating to their use of resources. Our platform already supports the direct use of data in context, and the longer we collaborate with businesses in projects, the better and faster we can draw conclusions that we can then set out as sustainability standards for others.

In these times of climate change, the goal of achieving sustainable business practices is a big motivation for us to advance our technology.

Thomas Binnenböse,
Chief Customer
Success Officer,
Ascon Systems



7. What lies ahead – new potential for the future

For over three decades, our team of experts has worked closely with customers in the world of industrial production, gaining in-depth process expertise. Since the founding of Ascon Systems in 2017, it has been clear that the rapidly growing demand for new, agile solutions for industrial digitalization in conjunction with Industry 4.0 continues to grow.

We have relentlessly pursued our revolutionary technological approaches and have repeatedly received confirmation that we're on the right path. From start-up to an established high-tech company, we have more than 120 employees at six locations throughout Germany – Mainz, Stuttgart, Stade, Heilbronn, Munich and Berlin.

Our success can be measured by numerous accolades.
We were named EY Entrepreneur of the Year in
2020 and recognized by the analysts at Gartner in a
global selection of four "Cool Vendors 2018".





We are revolutionizing process automation. Being at our customers' side from the very start of their transformation journey enables them to create the necessary flexibility for their future business.

Thanks to our renowned investors, we can head into the future on a good, solid footing and develop innovative solutions that will make efficient planning and control easier for industry. Here's a small selection of the best of our recent ideas and projects for now and the near future:

Powering the international Omniverse

On March 1, 2023, we joined the NVIDIA Inception start-up program, which means the Ascon Systems Automation Platform can interact with Omniverse. It also gives us the opportunity to showcase our company on an international stage, and to work with leading industry experts and AI-powered organizations.

[Good to know](#)

Omniverse is a real-time graphics collaboration program developed by NVIDIA for applications involving visual effects and industrial simulations. The NVIDIA Omniverse™ makes it possible for individuals and teams to create user-defined 3D pipelines and simulate large virtual worlds faster than ever before.

Source: NVIDIA

Accelerating idea execution

We can already dramatically reduce the time it takes to turn an idea into a process in factories – by half in some projects. Our goal is for a planner to require just a few minutes to complete the commissioning process that normally takes a programmer two days.

Driving sustainable industry practices

The key to the future is providing industry with everything it needs to ensure sustainable business practices. Over and above the support we are already giving our customers when it comes to saving on resources, such as cutting the energy consumption of machine tools, we have also set ourselves the goal of making a company's carbon footprint an important KPI.

Advancing innovation with lighthouse customers

We're currently working on product solutions that can be used flexibly and adapt to various sectors. The focus here is on our Ascon Systems Automation Platform, which we're optimizing daily in collaboration with our customers, the big players in the automotive and mechanical engineering industries.

Your step into a flexible future!


Defeating the shortage of skilled workers, creating more flexibility and saving resources – these challenges, and several more, face the entire manufacturing industry worldwide. In our ePaper, we show how we can influence real production with our digital twin, and do so during ongoing operations. With our technology, including direct data value creation, we are doing pioneering work in manufacturing and process automation. Would you also like to fully exploit your potential? Then simply use us as a door opener to the Industrial Metaverse. Depending on your requirements, we have the right solution – step by step, at your pace.

We look forward to hearing from you:

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If you want to think things over for a while before getting in touch, you can always follow us on LinkedIn in the meantime:

 [ascon-systems-gmbh](#)