Software and Digitalization

Added Value by Software

24th Edition

Software and Digitalization

VDMA

Added Value by Software

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vdma.org/software-digitalization

Creating spaces for digital solutions requires courage and trust

Wolfram Schäfer

Going digital has long been established. It is both a driver and an enabler for the future of mechanical and plant engineering. We are constantly challenged to understand, apply and use individual building blocks such as AI and IoT to create value.

This undertaking demands data. Being a sensitive asset, the Data Act of the European Union provides clear conditions to set standards and enhance trust in data handling. Initiatives like Manufacturing X are instrumental in establishing data spaces for digital sovereignty, enabling a reliable exchange of data between companies. This lays the groundwork for a transparent and value-driven data exchange among stakeholders.

The responsibility now rests with individuals who, with courage and determination, take the lead in addressing these challenges. It is essential for companies to transform into agile organizations. This goes beyond merely adopting agile methods; it is crucial to actively engage all stakeholders and cultivate a corresponding agile culture. Only through a participative and holistic approach can we create spaces to realize innovative solutions in the future.

Digitalization is not a choice – it is the future. Based on standards, we will collectively shape it and generate added value for machinery and plant engineering through digital solutions.

The VDMA Software and Digitalization provides a platform for its member companies. It promotes dialogue on current and future developments and supports its members in transitioning to their own solutions and applications. This industry guide provides an insight into the work of the association and the digitalization solutions and services of its members. Let us address this challenge collectively.

With kind regards,

Wolfram Schäfer

Board Member VDMA Software and Digitalization
Managing Director, iT Engineering Software Innovations GmbH

Latest technologies for the mechanical and plant engineering

Prof. Claus Oetter, Managing Director VDMA Software and Digitalization

Prof. Claus Oetter Source: VDMA

VDMA Software and Digitalization represents successful software manufacturers and the development departments of renowned engineering companies on the market. Our association has more than 550 member companies. VDMA Software and Digitalization thus offers a wealth of know-how that it puts to profitable use for all other VDMA member companies.

VDMA Software and Digitalization aims to bring the engineering sector together with software and digitalization technologies. The association's experts also support VDMA members with current trend topics as well as fundamental questions of modern software technology. When it comes to the digital transformation of processes, products and organisations, VDMA Software and Digitalization supports all VDMA member companies with a wide range of publications, events, trade-fair activities, studies and working groups. We address current topics and promote intensive knowledge exchange between IT companies and mechanical engineering. The following topics are currently the focus of the groups and events:

- Agile software development
- Blockchain
- Customer relationship management
- Cybersecurity
- Enterprise Resource Planning
- Industrial Metaverse
- Industrial security
- Information security
- Artificial intelligence
- Manufacturing Execution System
- Platform and data economics
- Product engineering
- Remote Services
- Simulation and visualization
- Technical documentation and information management
- Usability/User Experience
- Variant management
- Knowledge management

Pooling the engineering sector's IT and software know-how

For more than twenty-five years, VDMA Software and Digitalization has been the competence center for all IT and digitalization topics within VDMA. With our activities we form our cross-association platform for sharing information and experience in the entire mechanical and plant industry. Joint projects emerge in cooperation with other organization units of the VDMA.

We provide VDMA members with relevant information based on the concentrated know-how of our member companies and the accumulated experience of the association's experts. We give advice in selecting IT solutions, arrange contacts with providers or experienced users for bilateral sharing, offer support with a wealth of experience in change management and related processes or methods and provide individually compiled key IT figures from our sector related benchmarks and studies.

Honoring of young IT talents in machinery and equipment manufacturing

Since 2017, together with the Education Policy Department of the VDMA, we have been awarding the young talent prize “Digitalisierung im Maschinenbau” for the region of Germany, Austria and Switzerland every year. Around 80 different university locations and a corresponding number of companies have already taken part in the previous nomination phases.

With the award we want to recognize outstanding theses in the Bachelor and Master/Diplom categories by students from the fields of engineering and computer science. The final theses also show how outstanding innovative solutions and new approaches for digital transformation in mechanical and plant engineering and customer industries can be created through close cooperation between universities and industry.

We turn information into production factors

Digitalization today is relevant for all parts of a company. We offer efficient support for VDMA members during the processes, with the right strategy, the best method or process design and suitable software tools. We also support machinery and equipment manufacturing companies on the way to developing digital and data-driven business models and orientation in the new world of data rooms, data economy and Web 3.0 technologies. Use this brochure to find out about the range of topics covered by VDMA Software and Digitalization and its members.

More information about VDMA Software and Digitalization:
vdma.org/software-digitalization.

With best regards,

Prof. Claus Oetter

Managing Director
VDMA Software and Digitalization

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publication overview

digitalization topics in the industry podcast of the VDMA

Generative AI as a growth driver in mechanical and plant engineering

GAL Digital GmbH, Daniel Gal

nele.ai Azure OpenAI DALL E 2

Source: GAL Digital GmbH

In the context of digital transformation, generative AI, which is gaining popularity with tools such as ChatGPT, Copilot 365 and nele.ai, is proving to be a driver of innovation in mechanical engineering. With its ability to take design and production to new levels, it stands for increased efficiency and sustainable growth.

Application scenarios – Generative AI in use

The following scenarios are just examples. The possibilities are almost limitless.

- **Quality assurance:** Generative AI can now be used to visually inspect complex products and systems for defects.
- **Knowledge management:** AI can provide precise answers to employees' questions with the help of manuals and other sources within the company.
- **Service area:** Customer inquiries can be answered automatically to a large extent.
- **Creating reports:** Reports for various areas can be created automatically from the collected data.
- **Complex forecasts:** AI evaluates complex data to make reliable predictions about future events.

Economic potential: competitive advantages through generative AI

The implementation of generative AI can increase efficiency and therefore represents an economically relevant innovation. Mechanical engineers that use these technologies can gain significant competitive advantages: improved product quality, shorter time-to-market and cost reduction are just some of the many benefits. The flexibility that comes with generative AI also allows manufacturers to react quickly to market trends and offer customized solutions.

The future of mechanical engineering with generative AI

Generative AI is a cornerstone for future-oriented mechanical engineers. By expanding the creativity of human engineers and automating routine activities, it creates space for innovation. This makes it not only a tool for optimizing existing processes, but also a catalyst for growth and sustainable corporate success. The companies that adopt this technology early on and integrate it into their processes will be the pioneers of the next stage of industrial development and set the course for a leading position in international competition. In order to maintain the leading position „Made in Germany", now is the time for mechanical engineers to act and lead the digital revolution with the help of generative AI.

Digitalization in industry – quality management as a decisive factor

Cloudflight Germany GmbH, Jan Kasten

In the manufacturing industry, it is crucial to identify and rectify potential defects and quality deficiencies at an early stage in order to avoid margin losses. One example of quality defects in the metallurgical industry that can have a lasting negative impact on product properties is non-metallic inclusions (NME). Quality management systems (QMS) based on image classification models and a corresponding network architecture are able to detect these at an early stage and thus prevent the further processing of defective parts.

With a process-oriented QMS, companies can view processes holistically and across departments. In this way, systems running in parallel and redundancies can be avoided and overall efficiency increased. In addition, QMS can predict the maintenance requirements of machines and thus avoid breakdowns. The following approach has proven to be successful for the introduction and effective use of the QMS in the company.

For a successful introduction, processes must be redefined and automated. Isolated solutions are the enemy and must be dissolved. It is also important to make your own process landscape robust and dynamic. To this end, internal company processes are regularly reviewed and improved where necessary. Qualifications such as ISO certifications can be helpful here, as they require regular external review.

The conversion of processes also affects employees on the store floor. They should therefore be involved at an early stage and work simplifications as well as new roles and perspectives should be clearly communicated. A well-implemented QMS can also help to counteract a shortage of skilled workers and loss of knowledge and to acquire new skills by making information more easily accessible. The resulting clear structure also helps to attract new specialists.

Conclusion

Investing in a quality management system makes day-to-day work much easier and more efficient and also makes the company more attractive to existing and new skilled workers. Many companies fail to introduce it into their day-to-day work due to a lack of experience. Digitalization partners with the right expertise close this gap until successful implementation.

Digital quality management systems in practice lead to process reliability and transparency
Source: © Cloudflight Germany GmbH | hubergroup Deutschland GmbH

A monetisation canvas as a roadmap to a digital service portfolio

ACP Holding Digital AG, Christian Jandl

Entering the digital service business is a challenge, first and foremost the integration of digital technologies and novel revenue streams. After all, in contrast to traditional business models, such as the development of new plants, there is hardly any experience in building a data-based business on which managers could base their decisions. That is why the VDMA expert work group 'Platform economy' has addressed this issue by developing a 'monetisation canvas'.

The challenges of digital transformation

For years, the mechanical engineering industry focused on the production and sale of top-quality machinery. Throughout the entire industry, this business model has been thoroughly established and optimised, including the familiar revenue streams and technological innovations. However, nowadays the dynamics of the global market and the prospects of a future neo-ecology make it necessary to think outside the box and consider digital business models.

A framework for greater confidence in decision-making

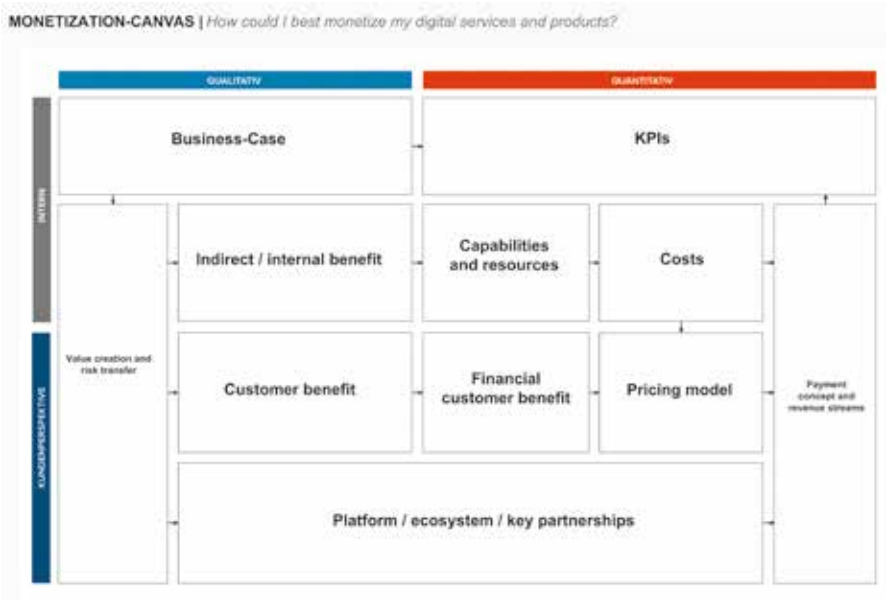
This development is based on the utilisation of digital technologies and data. This data is produced by every modern machine, every system and every process. The canvas provides answers to questions that concern many mechanical engineering companies:

- Is a service economy a suitable business model for us?
- Do we have the necessary expertise to develop data-based service products?
- What kind of expenses are we looking at?

The canvas provides a secure foundation on which to base these decisions. It gives managers clarity about their business goals, lets them recognise the opportunities provided by digital services and allows them to understand which skills are required for data monetisation.

Quick and resource-efficient first steps in using the canvas

To develop a digital service portfolio, it is necessary to understand the relationship of the market with the digital services and that of the digital service product with the company. That is why industry executives should acquire this know-how in order to make well-founded decisions that pave the way to a service economy. This is the only way to enter this new segment in an efficient, constructive way and achieve the desired results, including in the long term.



Source: ACP Holding Digital AG

For more information, visit:

Monetization canvas for more revenue success – VDMA

Blockchain: From colourful buzzword to real added value

Zühlke Engineering GmbH, Jennifer Balder



Source: Zühlke Engineering GmbH / Getty

When it comes to innovation and digital disruption, blockchain has increasingly become a buzzword in manufacturing in recent years. However, the question of the technology's specific added value often remains unanswered. What can companies do to realise its potential?

Blockchain is not an end solution in itself. So, the added value that blockchain technology can offer needs to be analysed very precisely and specific problems need to be mapped. The starting point for this analysis must always be a specific question to which blockchain offers a good answer. The mere application of the technology does not usually lead to independent use cases or products.

Rather, as an integral part of a system solution, it ensures increased protection against counterfeiting in the value chain, traceability across company boundaries, or clarity in the areas of data integrity without centralised server structures.

A profitable use case for blockchain involves, for example, the clear and tamper-proof documentation of existing production steps and sub-processes within different companies along the value chain. This enables the tracking of a product's CO_2 footprint, particularly in the context of ESG reporting.

Blockchain always shows its strengths when it comes to ensuring data integrity in the cross-company exchange of information. The technology is therefore a key driver for the creation of new ecosystems to deliver innovative solutions in manufacturing across company and industry boundaries together.

Important success factors:

- **Stakeholders in management** should support experts interested in the topic and promote their motivation for the technology.
- It is important to create concrete **use cases** in innovation and development teams. This promotes an understanding and acceptance within the company.
- The initial blockchain euphoria was often tempered by concerns about having to build solutions entirely in-house. Today, it is often possible and much easier to use **software as a service** with the appropriate technology. Depending on the use case, of course.
- **Cross-industry exchange** plays a key role, as technologies develop at a different speed across sectors. Through this exchange, players can learn and benefit from each other.

Understanding the Complexity of Supply Chains: How Each New Supplier Potentiates Risk

Prewave GmbH, Julian Meinke

Source: Prewave GmbH

The concept of holistic risk management is becoming significantly more important in industry, not only because of new legal requirements. Increasing conflicts and global events, such as the recent pandemic and logistical challenges in key regions, highlight the vulnerability of complex supply chains. Any disruption can have systemic effects that extend far beyond the origin. These challenges underscore why a holistic approach is essential for the future of business.

A key importance is given to mapping the supply chain. Understanding risks along this chain is crucial to proactively respond to potential disruptions. Each new supplier not only brings its own risks but also integrates the complex network of its own supply chain into the client‘s system. Capturing this complexity and the associated systemic risk is fundamental to robust risk management.

The top 3 aspects to consider are:

Detailed Supply Chain Mapping: Having precise knowledge of all actors in the supply chain and their risk potentials allows for early risk detection and mitigation.

Ongoing Risk Assessment: Continuous monitoring and evaluation of the supply chain create the opportunity to respond to changes and potential risks in a timely manner.

Transparent Communication and Cooperation: Collaboration with all participants of the supply chain promotes an understanding of shared risks and enables coordinated response strategies.

Holistic risk management is thus a central component for companies to meet legal requirements as well as to strengthen their resilience. By identifying and evaluating risks, companies can not only respond to current challenges but also strategically position themselves for future developments. This approach promotes agility to be successful in a dynamic and interconnected market environment. Solid risk management creates the foundation for a resilient and future-oriented business strategy.

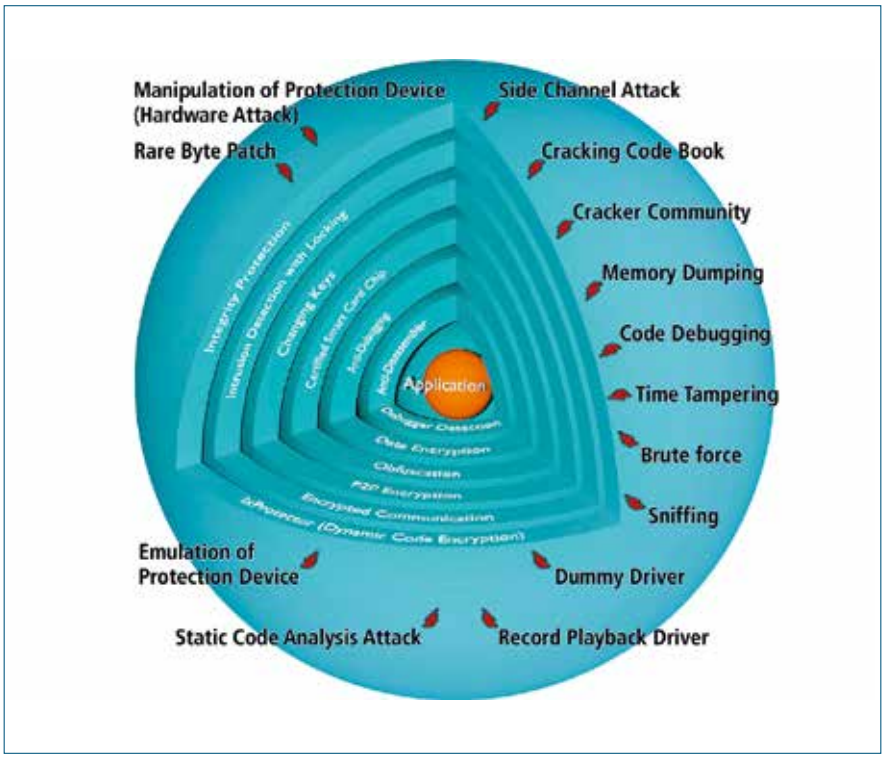
Navigating the Era of Cybersecurity: Challenges and Opportunities for Digitalized Industry

WIBU-SYSTEMS AG, Florian Schneider

In an industry heavily influenced by automation and connectivity, cybersecurity regulations are increasingly becoming a central issue. Understanding and adapting to these regulations is not just a matter of compliance but is rapidly evolving into a critical competitive edge.

Software Protection as a Key Strategy

The importance of software protection and licensing is continually growing in the context of digitalization. These strategies are essential not only for protecting intellectual property but also for enabling new business models. For example, a global sensor manufacturer has significantly reduced the variety of its sensors through its software licensing configuration. This reduction leads to optimized production, logistics, and increased efficiency.



Source: WIBU-SYSTEMS AG

Another facet of cybersecurity is the protection of software integrity. A well-known manufacturer of programmable logic controllers (PLCs) demonstrates this through the protection of its engineering tools from piracy. By doing so, the company not only secures its revenue but also ensures the reliability and safety of its products – a key component of many cybersecurity guidelines.

The increasing use of artificial intelligence in industry makes the protection of machine learning algorithms indispensable. These play a significant role in industrial vision products, where the algorithms and AI models often represent a core competency and are secured as vital intellectual property. This protection is a fundamental basis for innovation and market leadership.

For software and hardware developers, cybersecurity requires a constant engagement with the latest technologies and regulations. In product development, a proactive approach should be adopted that encompasses both the protection of intellectual property and compliance with international cybersecurity standards.

Conclusion

Integrating cybersecurity measures into product development is no longer an optional extra but a necessity for any company that wants to thrive in the digitalized industry. Through software protection, licensing, and security, companies can not only safeguard their products and services but also open up new markets and strengthen their competitive position.

How (Generative) AI is revolutionizing knowledge management

Empolis Information Management GmbH, Jannik Westram

Generative AI and large language models (LLMs) offer promising opportunities to automate and optimize knowledge generation processes in companies. However, they need to be combined with knowledge-based AI solutions, such as knowledge graphs, to ensure that the knowledge generated is correct and not just eloquent.

Knowledge graphs operate the way humans think. They bring all information together in one place, link it and map it. The combination of GenAI and Knowledge Graphs opens new, unprecedented opportunities for future knowledge management.

With the help of LLMs, companies generate knowledge articles and product descriptions in no time at all. LLMs find the required information, create summaries and deliver answers. Knowledge graphs ensure that the right information always appears in the right context. This combination is particularly useful for the automated creation of knowledge articles from notes, chat histories or emails. Existing knowledge is captured in a structured way at the touch of a button. This makes it easier to utilize knowledge management solutions and ensures a high level of acceptance.

Generative AI helps improve search and indexing functions of knowledge management systems and improve the organization of knowledge databases. By training AI models with large amounts of text, semantic relationships are recognized. By analyzing these relationships, GenAI provides a personalized user experience and always suggests content most relevant to users. This makes it easier to utilize knowledge management solutions and ensures a high level of acceptance.

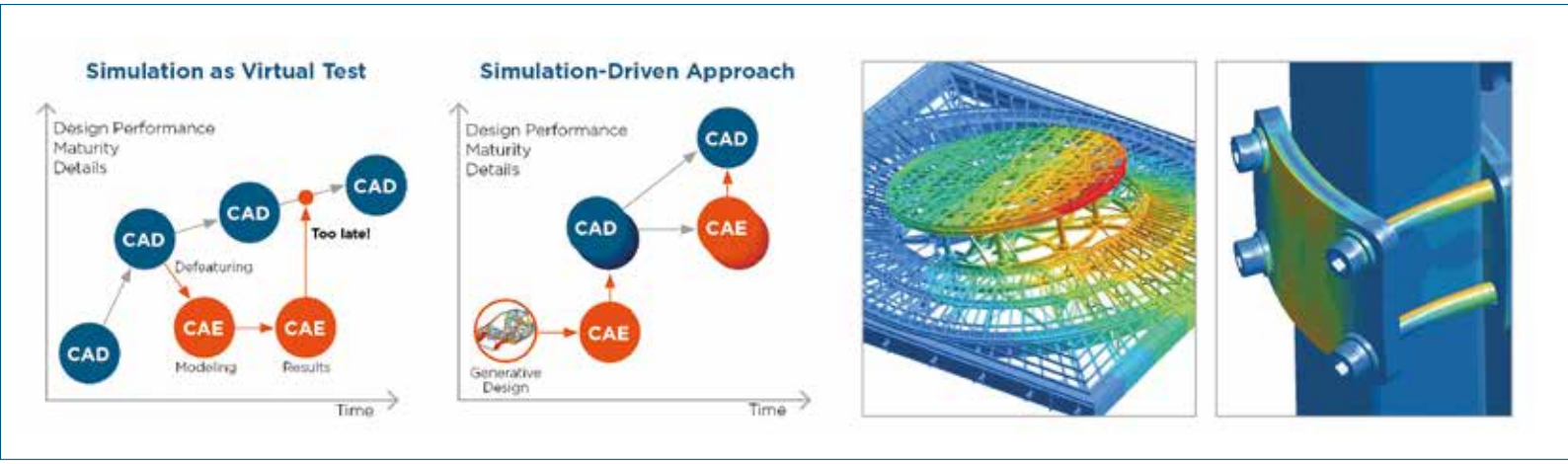
LLMs perform automated translations in real time. Obviously, this is a great advantage for multinational companies and organizations with global customers and partners. The automated translation function facilitates the exchange of knowledge across language barriers and promotes collaboration.

To ensure the quality of the generated content, avoid errors and achieve effective knowledge management, language models must be combined with knowledge graph technology.

Source: metamorworks by Getty Images

Simulation‘s Bottleneck: From CAD to the Behavioral Model

Altair Engineering GmbH, Mirko Bromberger



Source: Altair Engineering GmbH

Despite FEM software being commercially available for half a century, the key bottleneck in development is still the transformation of a CAD design into a simulation model. There are two main reasons for this: First, we need to simplify the geometry for the digital behavior model, which is the basis of a simulation. Second, the design must be “taught physics” so that it can become a behavioral model. This is time-consuming and therefore the simulation results consistently lag the design stage. This hinders simulation-driven design and is blocking new insights and innovations. To ensure the digital behavior model is as up to date as the latest design iteration, there is a lot to do: accelerate, automate, or even overcome modeling.

Accelerating model building:

Process-guided CAE environments with tailored industry-specific workflows accelerate model creation and evaluation. Efficient assembly management makes it easy to manage multiple variants and subsystems within the same model.

Automate model building:

Automated model creation and evaluation are too often only practiced in isolated cases and have not been established across the industry. The main challenge in automation is the documentation, management, and maintenance of the underlying scripts and programming. However, if one uses CAE environments that allow automation to be encapsulated, modularized, and standardized, the expert knowledge of individual employees can be preserved, the tasks involved can be managed by several people, and development can be accelerated.

Overcoming model building:

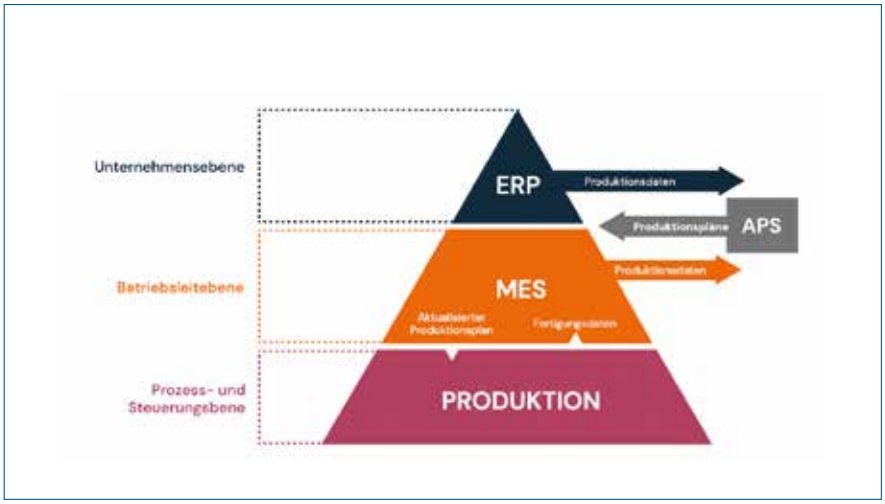
Designs for industrial machinery and plant engineering are often unique. Time for iteration loops is scarce. There is a key technology for structural analysis that works directly with the complete CAD assembly, delivering results in the shortest possible time. It is based on extensions to the theory of external approximations combined with adaptive multipath analysis and an extended fundamental FEA concept, which redefines the basic ideas of degrees of freedom.

This eliminates the most time-consuming and error-prone tasks in traditional simulation: geometry simplification, meshing, and accurate contact definition. And it enables analyses of complex parts and large assemblies which are not practical with conventional FEA.

Simulation-driven design can only succeed if the simulation is up to date with the latest design status. Let‘s go for it!

MES – The Key to Digitalization

gbo datacomp GmbH, Michael Möller



Source: gbo datacomp GmbH

MDA and PDA form the basis for industrialized digitalization. But what use is this data if it cannot also be utilized in ERP? A solution is provided by the Manufacturing Execution System (MES), which is much more than bridge technology.

Many production companies extract valuable up-to-date data on running times, stoppages, usage, etc. This is the first necessary step of digitalization, but it is no more than that. Since each machine manufacturer utilizes his own specific and thus incompatible controlling system, companies obtain merely heterogeneous data quantities. This variety minimizes the possibility of bringing data into reference to each other. The result: companies leave numerous potential chances for productivity increase idle. Unless they have MES under their command.

Individual Data Hub

All collected data converges in MES. There it is aggregated, compacted, analysed and visualized by means of KPIs. MES functions like a data hub, providing information on processing from the shop floor in real-time and location independently for each business sector from the machine operator to production and controlling, to servicing via the control centre up to management level.

Only this vertical and horizontal data integration provides companies with a complete overview of the entire value creation chain. Potentials for optimization can only be identified by this method. However, companies need not reproduce the entire value creation chain as a digital twin, as the modular structure of MES enables a successive introduction of an MES solution. This means companies can start digitzalization at their own pace and carry their automating forward individually.

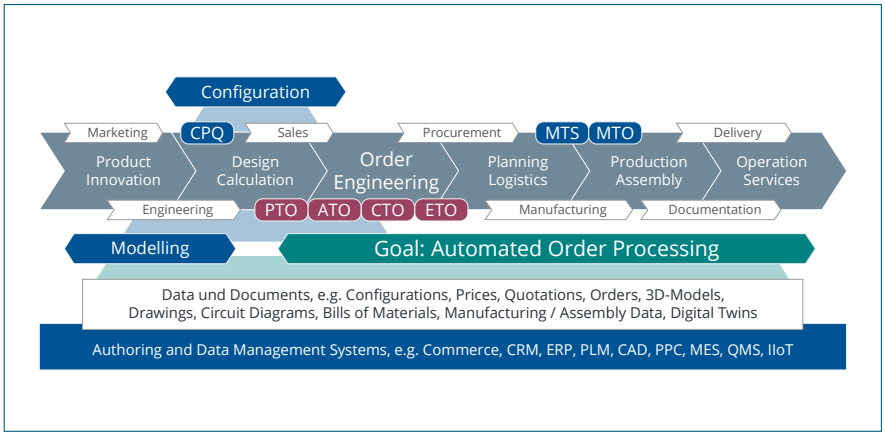
More Transparency

Manufacturing companies with a large product diversity or high in-house productivity will profit from the transparency provided by MES, with a maximum of flexibility enabling production according to individual customer requirements, the diversification of their portfolios or to optimizing individual processing steps, as MES provides traceability of individual process parts. Ultimately product quality increases and waste is avoided.

Machines and systems can be better utilized to full capacity with MES, stoppages are reduced and predictive maintenance becomes reality and resources can be saved or utilized more efficiently. Thus, when talking within the framework of Industry 4.0 about manufacturing up to batch size 1 and smart factory, these targets are only attainable with intelligent, modular MES solutions.

Customized Variants for B2B Markets

adesso manufacturing industry solutions GmbH, Andreas Liesche and Manuel Steinfels



Source: adesso manufacturing industry solutions GmbH

The greatest possible customization is gaining importance in B2B areas. Customers expect prices and delivery times on par with mass-produced products. Suppliers offer individual turnkey systems and solutions including software and services. Smart digital functions are being added to components, machines, and systems. It is important to master the ever-increasing complexity and variety.

Increasing complexity and variety of variants

Variant manufacturers face many challenges:

- **Guided selling:** Quickly and easily lead customers from requirements to optimal solutions
- **3D viewing:** Continuously visualize individually configured variants in photorealistic quality
- **Cross-/upselling:** Supplement products and complex systems with options and accessories
- **Time-to-market:** Quickly implement configuration models and easily keep them up-to-date
- **Integration:** Integrate guided selling and configuration solutions into leading IT systems

End-to-end processes from customer to customer

Configure-Price-Quote (CPQ) Standard Software supports the complexity levels of pick-, assemble- and configure-to-order at the customer touch point and enables modular-based and rule-compliant order processing. Requirements outside of predefined CPQ solution spaces force manual engineer-to-order and generate high costs and long delivery times.

End-to-end variant management requires the integration of many IT systems. Media breaks and bottlenecks in the processes must be overcome. Stepwise end-to-end digitalization is only successful with agile working methods and innovative modeling, execution, and analysis tools. Orchestration, middleware, and microservices enable the gradual automation of data creation, storage, and distribution.

Potentials through technology and innovation

Innovative technologies, e.g. generative AI, deep learning, knowledge graphs, automation workflow, process mining, low-code frameworks or spatial computing, have great potential for significant optimization in many application areas: digital experience, portfolio management, knowledge modeling, configuration lifecycle or test automation.

A major goal is the implementation of end-to-end value chains, i.e. from requirements survey and solution configuration through quotation, order, planning, engineering, production, commissioning, and services. There are open frameworks, flexible components, and scalable architectures for this. The realization of large project initiatives can only be successful in a partnership between industry, IT and software companies.

Machine learning – learning from experience

Guido Reimann

Carsten Rückriegel

Florian Klein

Artificial Intelligence has also gained high relevance in mechanical engineering. The increasing digitalisation in companies, countless integrated sensors, the intensive networking of machines, plants and IT systems, the use of cloud-based solutions, the significantly increased possibilities for storing and processing data, and thus also for analysing it, as well as the existing range of corresponding IT tools, have laid the foundation for this.

Artificial intelligence methods enable technical systems to do what was previously only reserved for natural creatures – learning from experience. Established IT tools on the market can help to analyse machine and process data, identify patterns and structures and find suitable algorithms based on this. Frameworks and platforms support broad application in everyday project work. This results in many new and interesting approaches, especiallly in mechanical engineering, as this technology can be useful not only on the product side but also on the process side.

Currently, the focus of application and development is often still on production and the development of product-related services. However, with the rapid technological development in the field of generative AI, other areas of application can now be explored more quickly.

Generative AI

Generative AI now also enables non-AI experts to make intensive use of the technological possibilities. For example, new texts, images, programme codes or videos can be generated independently. As long as it has “learnt” the relevant content, generative AI can save a lot of time and provide support with the relevant tasks.

Due to the wide range of possible applications, many companies are of the opinion that AI-based products or services will also have a strong influence on current business models and are increasingly becoming a key driver of innovation in mechanical engineering.

Competence network AI

VDMA members and other partners contribute their expertise to the VDMA Artificial Intelligence Competence Network, which also includes the VDMA Software and Digitalisation Expert Group on Machine Learning, in order to demonstrate the profitable use of AI to the mechanical and plant engineering industry. In addition to the development of information and exchange of experience, the focus is also on the transfer of knowledge on methods, possible applications and research approaches. With guidelines, decision-making aids and studies, VDMA members are supported in pursuing their own AI path.

Further information can be found at:
www.vdma.org/artificial-intelligence

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Lenze	www.lenze.com
Lenze Austria	www.lenze.com
logicline	www.logicline.de
M&M Software	www.mm-software.com
machineering	www.machineering.com
MAG IAS	www.ffg-ea.com
micropsi industries	www.micropsi-industries.com
Microsoft Deutschland	www.microsoft.com
mobile function	www.mobile-function.com
MODUS Consult	www.modusconsult.de
MPDV Mikrolab	www.mpdv.com/de
N+P Informationssysteme	www.nupis.de
neogramm	www.neogramm.de
OPTIMUM datamanagement solutions	www.optimum-gmbh.de
PIKON Deutschland	www.pikon.com
Point 8	www.point-8.de
Possehl Analytics	www.possehl-analytics.com
PREMAS Preventive Maintenance Service	www.premas.ch
proALPHA	www.proalpha.com
PSI Software	www.psi.de
PSI Automotive & Industry	www.psi-automotive-industry.de
PSI Technics	www.psi-technics.com
Rockwell Automation Solutions	www.rockwellautomation.com
Rockwell Automation	www.rockwellautomation.com
RTE Akustik + Prüftechnik	www.rte.de
Sandvik Tooling Deutschland	www.sandvik.coromant.com
SAP Deutschland	www.sap.com/germany
SECO Mind Germany	www.e-gits.com
SEITEC	www.seitec.info/de
SERVITIZE	www.servitize.de
Siemens Industry Software	www.sw.siemens.com
Simplifier	www.simplifier.io
SMS group	www.sms-group.com/expertise/digitalization
Software Factory	www.sf.com
SQL Projekt	www.sql-ag.de
Stryza	www.stryza.com
Sybit	www.sybit.de
Symestic	www.symestic.com/de-de
symmedia	www.symmedia.de
Synctive	www.synctive.io
Synostik	www.synostik.de
talpasolutions	www.talpasolutions.com
The MathWorks	www.mathworks.com
Transaction-Network	www.transaction-network.com
UMa Soft	www.uma-soft.ch
Voith	www.voith.com
J.M. Voith SE / VPH	www.voithpaper.com
WeAre	www.weare-rooms.com
Weidmüller GTI Software	www.weidmueller-gti-software.com

Solutions for Manufacturing / Quality Management / Customer Service

WENZEL Metrology	www.wenzel-group.com
WITTENSTEIN	www.wittenstein.de
XITASO	www.xitaso.com
Zühlke Engineering (Austria)	www.zuehlke.com/de/standorte/oesterreich

Solutions for Sales / Marketing

Accso - Accelerated Solutions	www.accso.de
ACP CUBIDO Digital Solutions	www.cubido.at
ACP Digital Business Solutions	www.acp-digital.com/business-solutions
ADITO Software	www.adito.de
Altair Engineering	www.altair.com
ams.Solution	www.ams-erp.com
Asseco Solutions	www.assecosolutions.com
audius	www.audius.de
avenit	www.avenit.de
BEUMER Maschinenfabrik	www.beumergroup.com
CaderaDesign	www.caderadesign.de
CANCOM Austria	www.cancom.at
CAS Software	www.cas.de
ClassiX Software	www.classix.de
colenio	www.colenio.de
Configit	www.configit.com
daenet	www.daenet.de
Dassault Systèmes	www.3ds.com
Empolis Information Management	www.service.express
encoway	www.encoway.de
eoda	www.eoda.de
esentri	www.esentri.com
GAL Digital	www.gal-digital.de
GFT Integrated Systems	www.gft.com/de/de/index
Google Germany	www.google.de
handz.on	www.on.de
HEGLA-HANIC	www.hegla-hanic.de
IBM Deutschland	www.ibm.de
JAWA Management Software	www.jawa.at
KUMAVISION	www.kumavision.com
logicline	www.logicline.de
machineering	www.machineering.com
Markt-Pilot	www.markt-pilot.de
Microsoft Deutschland	www.microsoft.com
mobile function	www.mobile-function.com
MODUS Consult	www.modusconsult.de
N+P Informationssysteme	www.nupis.de
ORISA Software	www.orisa.de
PIKON Deutschland	www.pikon.com
Plan Software	www.plansoft.de
Possehl Analytics	www.possehl-analytics.com
POWERCASE FORMULA CRM	www.formulacrm.de
PSI Software	www.psi.de
SAE Applications for Digitalization	www.sae-portal.de
SAP Deutschland	www.sap.com/germany
SERVITIZE	www.servitize.de
Simplifier	www.simplifier.io
Soley	www.soley.io
SQL Projekt	www.sql-ag.de
Sybit	www.sybit.de
Synctive	www.synctive.io
TEDATA	www.tedata.de
XITASO	www.xitaso.com
Zühlke Engineering (Austria)	www.zuehlke.com/de/standorte/oesterreich
Zühlke Engineering	www.zuehlke.com

Solutions for Purchasing / Supply Chain Management / Logistics

Accso - Accelerated Solutions	www.accso.de
ACP CUBIDO Digital Solutions	www.cubido.at
ACP Digital Business Solutions	www.acp-digital.com/business-solutions
alltrotec	www.alltrotec.de
Altair Engineering	www.altair.com
Aptean Germany	www.aptean.com
Asseco Solutions	www.assecosolutions.com
audius	www.audius.de
avenit	www.avenit.de
bridgefield	www.bridgefield.de
CaderaDesign	www.caderadesign.de
CANCOM Austria	www.cancom.at
ClassiX Software	www.classix.de
colenio	www.colenio.de
daenet	www.daenet.de
Dassault Systèmes	www.3ds.com
DataArt	www.dataart.com/de
datura manufacturing	www.swissdynamics.net
DiManEx	www.dimanex.com
Empolis Information Management	www.service.express
eoda	www.eoda.de
esentri	www.esentri.com
EURO-LOG	www.eurolog.com
EVO Informationssysteme	www.evo-solutions.com
GAL Digital	www.gal-digital.de
Google Germany	www.google.de
HEGLA-HANIC	www.hegla-hanic.de
INFORM	www.inform-software.de
Körber	www.koerber.com
Körber Digital	www.koerber-digital.com
logicline	www.logicline.de
machineering	www.machineering.com
Microsoft Deutschland	www.microsoft.com
mobile function	www.mobile-function.com
MODUS Consult	www.modusconsult.de
openpack	www.openpack.com
PARTSCLOUD	www.partscloud.com

Solutions for Purchasing / Supply Chain Management / Logistics

Possehl Analytics	www.possehl-analytics.com
PSI Software	www.psi.de
PSI Technics	www.psi-technics.com
Quanos Service Solutions	www.quanos-service-solutions.com
SAP Deutschland	www.sap.com/germany
Simplifier	www.simplifier.io
Soley	www.soley.io
SPARETECH	www.sparetech.io
SQL Projekt	www.sql-ag.de
Trebing & Himstedt	www.t-h.de
UMa Soft	www.uma-soft.ch
XITASO	www.xitaso.com
Zühlke Engineering (Austria)	www.zuehlke.com/de/standorte/oesterreich

Solutions for further Fields of Application

Accso - Accelerated Solutions	www.accso.de
ACP CUBIDO Digital Solutions	www.cubido.at
ACP Digital Business Solutions	www.acp-digital.com/business-solutions
ACP Digital Analytics	www.acp-digital.com/analytics
ADVES	www.adves.one
Aerzen Digital Systems	www.aerzendigital.com
All for One Group	www.all-for-one.com
Altair Engineering	www.altair.com
ams.Solution	www.ams-erp.com
Aptean Germany	www.aptean.com
ARC Solutions	www.arcsolutions.de
Asseco Solutions	www.assecosolutions.com
audius	www.audius.de
Autonoma Technologies	www.autonoma.cloud
avenit	www.avenit.de
BEUMER Maschinenfabrik	www.beumergroup.com
bridgefield	www.bridgefield.de
CaderaDesign	www.caderadesign.de
CANCOM Austria	www.cancom.at
CE-CON	www.ce-con.de
Centigrade	www.centigrade.de
ClassiX Software	www.classix.de
Cloudflight Germany	www.cloudflight.io
colenio	www.colenio.de
Configit	www.configit.com
COSMO CONSULT Group	www.cosmoconsult.com
COSMO CONSULT GmbH	www.cosmoconsult.com
daenet	www.daenet.de
Dassault Systèmes	www.3ds.com
DataArt	www.dataart.com/de
Empolis Information Management	www.service.express
eoda	www.eoda.de
EPLAN	www.eplan.de
esentri	www.esentri.com
Fischer Information Technology	www.fischer-information.com
GAL Digital	www.gal-digital.de
generic.de	www.generic.de
GFT Integrated Systems	www.gft.com/de/de/index
GFT Technologies	www.gft.com/de/de/index
Google Germany	www.google.de
IBM Deutschland	www.ibm.de
ICONICS Germany	www.iconics.com
INFORM	www.inform-software.de
Jungheinrich	www.jungheinrich.de
Kinexon Industries	www.kinexon-industries.com
KOCH Pac-Systeme	www.koch-pac-systeme.com
Körber	www.koerber.com
Körber Digital	www.koerber-digital.com
Lenze Austria	www.lenze.com
logicline	www.logicline.de
M&M Software	www.mm-software.com
machineering	www.machineering.com
MAG IAS	www.ffg-ea.com
Markt-Pilot	www.markt-pilot.de
micropsi industries	www.micropsi-industries.com
Microsoft Deutschland	www.microsoft.com
mobile function	www.mobile-function.com
mpunkt	www.mpunkt.com
NIVUS	www.nivus.de
openpack	www.openpack.com
PIKON Deutschland	www.pikon.com
Point 8	www.point-8.de
Possehl Analytics	www.possehl-analytics.com
PREMAS Preventive Maintenance Service	www.premas.ch
PSI Software	www.psi.de
PSI Automotive & Industry	www.psi-automotive-industry.de
PSI Technics	www.psi-technics.com
Rockwell Automation Solutions	www.rockwellautomation.com
SAE Applications for Digitalization	www.sae-portal.de
SAP Deutschland	www.sap.com/germany
SEITEC	www.seitec.info/de
SERVITIZE	www.servitize.de
Siemens Industry Software	www.sw.siemens.com
Simplifier	www.simplifier.io
SMS group	www.sms-group.com/expertise/digitalization
Soley	www.soley.io
SQL Projekt	www.sql-ag.de
talpasolutions	www.talpasolutions.com
TEDATA	www.tedata.de
The MathWorks	www.mathworks.com
UMa Soft	www.uma-soft.ch
J.M. Voith SE / VPH	www.voithpaper.com
WENZEL Metrology	www.wenzel-group.com
WITTENSTEIN	www.wittenstein.de
XITASO	www.xitaso.com
Zühlke Engineering (Austria)	www.zuehlke.com/de/standorte/oesterreich
Zühlke Engineering	www.zuehlke.com

Product independent Consulting

Accso - Accelerated Solutions	www.accso.de
ACP CUBIDO Digital Solutions	www.cubido.at
ACP Digital Analytics	www.acp-digital.com/analytics
adesso	www.adesso.de
Aerzen Digital Systems	www.aerzendigital.com
ARC Solutions	www.arcsolutions.de
ARNOLD IT Systems	www.arnold-it.com
avenit	www.avenit.de
bridgefield	www.bridgefield.de
CaderaDesign	www.caderadesign.de
CANCOM Austria	www.cancom.at
Centigrade	www.centigrade.de
ClassiX Software	www.classix.de
Cloudflight Germany	www.cloudflight.io
colenio	www.colenio.de
daenet	www.daenet.de
DataArt	www.dataart.com/de
Eisenwerk Würth	www.eisenwerk-wuerth.de
:em engineering methods	www.em.ag
encoway	www.encoway.de
eoda	www.eoda.de
EPLAN	www.eplan.de
ERNI (Deutschland)	www.betterask.erni
esentri	www.esentri.com
GAL Digital	www.gal-digital.de
GFT Integrated Systems	www.gft.com/de/de/index
GFT Technologies	www.gft.com/de/de/index
HEITEC	www.heitec.de
IBM Deutschland	www.ibm.de
INFORM	www.inform-software.de
iT Engineering Software Innovations	www.ite-si.de
ITQ	www.itq.de
Körber	www.koerber.com
Körber Digital	www.koerber-digital.com
Lachmann & Rink	www.lachmann-rink.de
Lenze	www.lenze.com
logicline	www.logicline.de
M&M Software	www.mm-software.com
MAG IAS	www.ffg-ea.com
Magic Software Enterprises	www.magicsoftware.com
ORBIS	www.orbis.de
PIKON Deutschland	www.pikon.com
Point 8	www.point-8.de
Possehl Analytics	www.possehl-analytics.com
PROSTEP	www.prostep.com
PSI Technics	www.psi-technics.com
SAE Applications for Digitalization	www.sae-portal.de
Salesfive	www.salesfive.com
SEITEC	www.seitec.info/de
Simplifier	www.simplifier.io
SMS group	www.sms-group.com/expertise/digitalization
Stackmeister	www.stackmeister.com/de
syscon	www.syscon-online.com
talpasolutions	www.talpasolutions.com
TEDATA	www.tedata.de
TTTech Industrial Automation	www.tttech.com
UNITY	www.unity.de
valantic Supply Chain Excellence	www.valantic.com
XITASO	www.xitaso.com
Zühlke Engineering (Austria)	www.zuehlke.com/de/standorte/oesterreich
Zühlke Engineering	www.zuehlke.com

Platform economy – digital and customer oriented

Christoph Herr

Platform economy refers to digital market access via the internet, with an additional channel for matching products and services to the customers. While the medium addressing the customer changes, the basic market mechanisms remain in force and in some cases are reinforced.

This refers particularly to the market presence itself, where success depends on focused customer orientation and a strict market economy approach. The following rules need to be heeded:

- The market offering must be geared solely to the needs of the customers. It takes an attractive range of products and services to acquire customers and ensure their loyalty to a platform, offering swift sustainable added value for the customer. So rather than asking "which attributes could my product have", the question must be "which attributes that my product has could be useful and attractive for my customers".

- Platform access must be as easy as possible for the customer. The platform presence therefore needs a professional design which is best achieved with the help of external experts. The range on offer should be coordinated in such a way as to provide the customer with swift, initial and sustainable added value consisting of free or low-cost elements; it attracts customers and ensures their loyalty. This initial portfolio then acts as the basis for higher quality elements that the customer is willing to pay for due to his positive experience with the platform.

- Another important fundamental aspect is to come across as being open and in line with the market. Here it is the customer view that counts. The customer will not be inclined to waste time on a whole number of different platforms in order to meet his daily requirements. Instead, he will use the service that best reflects his needs and requirements. In many cases, end users frequently don't have a single brand range of machinery but take what they need from various different manufacturers. In this context, the presence of an industry platform is expedient.

- The issue of security naturally plays a great role when it comes to platforms. A platform presence can always be designed to be secure in line with the current state of the art. The platform operators offer security packages with varying attributes.

In this context, VDMA also supports the activities of the International Data Space Association (IDSA) and GAIA-X, which accord an internationally accepted status to the European concept of data security, data sovereignty and data integrity.

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IoT-Platforms

IoT Infrastructure Provider / Middleware

247FactoryNet	www.247factorynet.com
3DQR	www.3dqr.de
Accso - Accelerated Solutions	www.accso.de
ACP CUBIDO Digital Solutions	www.cubido.at
ACP Holding Digital	www.acp.de/digital
ads-tec Industrial IT	www.ads-tec-iit.com
ADVES	www.adves.one
Aerzen Digital Systems	www.aerzendigital.com
AIT-Applied Information Technologies	www.aitgmbh.de
All for One Group	www.all-for-one.com
alltrotec	www.alltrotec.de
Altair Engineering	www.altair.com
ams.Solution	www.ams-erp.com
Aptean Germany	www.aptean.com
ARC Solutions	www.arcsolutions.de
audius	www.audius.de
Autonoma Technologies	www.autonoma.cloud
avenit	www.avenit.de
B&R Industrie-Elektronik	www.br-automation.com
Beckhoff Automation	www.beckhoff.com
BEUMER Maschinenfabrik	www.beumergroup.com
Bosch Rexroth	www.boschrexroth.com/de/de
CANCOM Austria	www.cancom.at
CE-CON	www.ce-con.de
Cloudflight Germany	www.cloudflight.io
COMAN Software	www.coman-software.com
compacer	www.compacer.com
COPA-DATA	www.copadata.de
COSMO CONSULT Group	www.cosmoconsult.com
COSMO CONSULT GmbH	www.cosmoconsult.com
Cybus	www.cybus.io
DKE Data	www.my-agrirouter.com
Docufy	www.docufy.de
Dürr	www.durr.com
elunic	www.elunic.com/de
eoda	www.eoda.de
FORCAM	www.forcam.com
GAL Digital	www.gal-digital.de
gbo datacomp	www.gbo-datacomp.de
generic.de	www.generic.de
GETT Gerätetechnik	www.gett.de
GFOS	www.gfos.com
GFT Integrated Systems	www.gft.com/de/de/index
GFT Technologies	www.gft.com/de/de/index
Google Germany	www.google.de
Grenzebach Digital	www.grenzebach.digital
HighConsulting	www.crsm.biz
HOMAG Group	www.homag.com
IBM Deutschland	www.ibm.de
IBODigital	www.ibodigital.com
incowia	www.incowia.com
INNEO Solutions	www.inneo.com
iT Engineering Software Innovations	www.ite-si.de
IXON B.V.	www.ixon.cloud/de
Jagenberg Digital Solutions	www.jagenberg-digital.com
Janz Tec	www.janztec.com
Kinexon Industries	www.kinexon-industries.com
KOCH Pac-Systeme	www.koch-pac-systeme.com
konzeptpark	www.konzeptpark.de
Lenze Austria	www.lenze.com
LiSEC Austria	www.lisec.com
logi.cals	www.logicals.com
logi.cals automation solution & services	www.logicals.com
logicline	www.logicline.de
machineering	www.machineering.com
Microsoft Deutschland	www.microsoft.com
MODUS Consult	www.modusconsult.de
neogramm	www.neogramm.de
NIVUS	www.nivus.de
OSB connagtive	www.osb-connagtive.com
Paze Industries	www.paze.industries
Peakboard	www.peakboard.com
POWERCASE FORMULA CRM	www.formulacrm.de
PREMAS Preventive Maintenance Service	www.premas.ch
PSI Technics	www.psi-technics.com
Rockwell Automation Solutions	www.rockwellautomation.com
Sandvik Tooling Deutschland	www.sandvik.coromant.com
SAP Deutschland	www.sap.com/germany
Schneider Electric	www.se.com/de/de
SECO Mind Germany	www.e-gits.com
secunet Security Networks	www.secunet.com
SEITEC	www.seitec.info/de
SERVITIZE	www.servitize.de
Simplifier	www.simplifier.io
SMS group	www.sms-group.com/expertise/digitalization
soffico	www.orchestra.soffico.de/soffico
Softing Industrial Automation	www.industrial.softing.com
Software Factory	www.sf.com
SQL Projekt	www.sql-ag.de
Stackmeister	www.stackmeister.com/de
Synctive	www.synctive.io
talpasolutions	www.talpasolutions.com
Thyssenkrupp Materials IoT	www.thyssenkrupp-materials-iot.com
Trebing & Himstedt	www.t-h.de
TTTech Industrial Automation	www.tttech.com
Uhlmann Pac-Systeme	www.uhlmann.de
UMa Soft	www.uma-soft.ch
Voith	www.voith.com
J.M. Voith SE / DSG	www.voith.com
J.M. Voith SE / VPH	www.voithpaper.com
Weidmüller GTI Software	www.weidmueller-gti-software.com
WITTENSTEIN	www.wittenstein.de
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Zühlke Engineering	www.zuehlke.com

IoT Platform Provider

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ads-tec Industrial IT	www.ads-tec-iit.com
ADVES	www.adves.one
Aerzen Digital Systems	www.aerzendigital.com
AIT-Applied Information Technologies	www.aitgmbh.de
alltrotec	www.alltrotec.de
Altair Engineering	www.altair.com
audius	www.audius.de
Autonoma Technologies	www.autonoma.cloud
avenit	www.avenit.de
BEUMER Maschinenfabrik	www.beumergroup.com
Bosch Rexroth	www.boschrexroth.com/de/de
bridgefield	www.bridgefield.de
CaderaDesign	www.caderadesign.de
CANCOM Austria	www.cancom.at
ClassiX Software	www.classix.de
colenio	www.colenio.de
COMAN Software	www.coman-software.com
compacer	www.compacer.com
COPA-DATA	www.copadata.de
COSMO CONSULT Group	www.cosmoconsult.com
COSMO CONSULT GmbH	www.cosmoconsult.com
daenet	www.daenet.de
Dassault Systèmes	www.3ds.com
DKE Data	www.my-agrirouter.com
ECHO PRM	www.echoprm.com
Eisenwerk Würth	www.eisenwerk-wuerth.de
elunic	www.elunic.com/de
Empolis Information Management	www.service.express
eoda	www.eoda.de
EURO-LOG	www.eurolog.com
Findustrial	www.findustrial.io
Fischer Information Technology	www.fischer-information.com
FORCAM	www.forcam.com
generic.de	www.generic.de
GFT Integrated Systems	www.gft.com/de/de/index
GFT Technologies	www.gft.com/de/de/index
Google Germany	www.google.de
Grenzebach Digital	www.grenzebach.digital
HALO-electronic	www.inteos.com
HighConsulting	www.crsm.biz
IBM Deutschland	www.ibm.de
ICONICS Germany	www.iconics.com
Industrie Informatik	www.industrieinformatik.com
inevvo solutions	www.inevvo-solutions.com
INNEO Solutions	www.inneo.com
IXON B.V.	www.ixon.cloud/de
Jagenberg Digital Solutions	www.jagenberg-digital.com
Janz Tec	www.janztec.com
Kinexon Industries	www.kinexon-industries.com
konzeptpark	www.konzeptpark.de
KRONES	www.krones.com
KUMAVISION	www.kumavision.com
Lenze	www.lenze.com
Lenze Austria	www.lenze.com
linx4	www.linxfour.com
logicline	www.logicline.de
machineering	www.machineering.com
Magic Software Enterprises	www.magicsoftware.com
Membrain	www.membrain-it.com
Microsoft Deutschland	www.microsoft.com
mobile function	www.mobile-function.com
MPDV Mikrolab	www.mpdv.com/de
N+P Informationssysteme	www.nupis.de
neogramm	www.neogramm.de
NewTec	www.newtec.de
NIVUS	www.nivus.de
oneIDentity+	www.one-identity-plus.com
openpack	www.openpack.com
OSB connagtive	www.osb-connagtive.com
Paze Industries	www.paze.industries
Possehl Analytics	www.possehl-analytics.com
POWERCASE FORMULA CRM	www.formulacrm.de
Reichhardt	www.reichhardt.com
Rockwell Automation Solutions	www.rockwellautomation.com
Sandvik Tooling Deutschland	www.sandvik.coromant.com
SAP Deutschland	www.sap.com/germany
Schneider Electric	www.se.com/de/de
secunet Security Networks	www.secunet.com
SEEBURGER Deutschland	www.seeburger.de
SEITEC	www.seitec.info/de
SERVITIZE	www.servitize.de
Siemens Industry Software	www.sw.siemens.com
Simplifier	www.simplifier.io
SMS group	www.sms-group.com/expertise/digitalization
soffico	www.orchestra.soffico.de/soffico
Software Factory	www.sf.com
Sybit	www.sybit.de
Symestic	www.symestic.com/de-de
Synctive	www.synctive.io
talpasolutions	www.talpasolutions.com
Thyssenkrupp Materials IoT	www.thyssenkrupp-materials-iot.com
Transaction-Network	www.transaction-network.com
TTTech Industrial Automation	www.tttech.com
Voith	www.voith.com
J.M. Voith SE / DSG	www.voith.com
J.M. Voith SE / VPH	www.voithpaper.com
XITASO	www.xitaso.com
Zühlke Engineering (Austria)	www.zuehlke.com/de/standorte/oesterreich

Agile software development

Florian Klein

Agility is based on working in short intervals, taking into account different group dynamic processes and thriving from the support of specialist, non-technical stakeholders. The goal of agile software development is to make the software development process leaner and more flexible than in conventional models. Agile software development is a counter movement to conventional software development, which is often regarded as heavyweight and bureaucratic. In essence, agile software development is all about feedback processes and cyclical, iterative procedures on all levels, in programming, in the team and with the management. Agility is worthwhile if a project is subject to many planning-relevant changes during its lifecycle.

Cohesion in the development team

Modern software development is a remarkably dynamic process based on human interaction. Being a service provider in software development means carrying out a project with a team at the customer's site. The team takes centre stage in agile software development, with a focus on close, interdisciplinary collaboration. Agile methods support sharing, there is no top-down hierarchy and the collaboration of all employees is expressly desired. This helps bind the team even closer together.

Competitive advantage and quality

The most important elements for the customer, i.e. the elements which achieve the highest business value, are always completed first. This allows large parts of the new software to be implemented in a productive manner long before the whole project is completed. This cyclical approach allows individual measurements to be implemented for the respective project, enabling each member of the development team to learn directly from their experiences and thus ensuring a realistic idea of the actual development speed.

Intensive communication with the customer: flexibility and shorter development times

Agile development processes are characterized by close and constant communication with the customer. This direct communication not only helps developers to better understand what software the users actually require, but the users will be more understanding should an estimation by the developers need to be corrected.

The VDMA "Agile Software Development and Agile Project Management" expert group focuses on collecting and evaluating experiences and best practices, and making them applicable for the engineering industry. The expert group's main focus is on management tasks.

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Smart devices and mobile apps

Florian Klein

Innovations in the information technology sector that crop up at ever shorter intervals prompt new developments in engineering that have a huge impact on products, production and the companies themselves. This trend is not new. Technology carriers, such as smart devices or wearables, are making their way from the consumer market to the industrial sector.

Analyzing the mobility potential

Many companies are faced with the question of which tasks and people within the company can be supported by mobile apps. Mobility serves to optimize business processes. The tasks can influence the company goals in many different ways. For example, the maintenance of a machine can be shortened, a wider range of employees can be involved in tasks, and tasks which were previously only carried out manually can be automated. Many companies already have numerous ideas for corresponding supporting tasks. However, these tasks should be systematically analyzed in order to make a sensible decision as to which apps should be developed.

Intuitive use

App technologies are focused on creating a positive user experience which results from the actual and expected use of an interactive system or service. Apps should therefore be intuitive, fun and easy to use in a way that motivates the user. The positive effects are obvious: fewer operating errors, quicker reactions thanks to clear information, as well as less downtime in production.

Pooling expert knowledge

Without the help of expert knowledge, it is virtually impossible to design interfaces with considerably higher user experience, even when using the most cutting-edge smart devices. The collaboration of many different experts is therefore essential in order to develop technically clean software that appeals to customers.

Particularly in the case of mobile apps and smart devices, companies need to muster courage to challenge established processes and to embrace new business models that will enable them to discover the real treasure hidden in these new technologies. VDMA Software and Digitalization offers a number of aids with a checklist for new business models with smart devices and mobile apps and provides its members with a network platform to facilitate sharing across the industry.

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Usability and user experience in the engineering industry

Florian Klein

Technology can be both easy and fun to use. This applies not just to devices on the consumer sector such as smartphones, tablets or smart watches etc. but also for industry. Many engineering companies have realized that functionality is not everything. The functionality actually has to reach the users.

Manufacturers are therefore increasingly focusing on “usability”. This refers to the goal of making the operation of interactive products intuitive and easy to understand and thus more efficient. And now producers are taking things to the next level: even the human machine interface (HMI) is supposed to be fun, motivate users and make them feel good. This is what is called user experience, which describes the positive experience that a user has when using the product.

VDMA Software and Digitalization supports its members with experts from amongst their own ranks when it comes to designing HMIs according to the state of the art. This includes services such as information events, conferences and seminars.

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Software Development (Consulting & individual Development)

Requirements Engineering

A+W Software	www.a-w.de
ACBIS	www.acbis.de
accelcon industrial engineering	www.accelcon.de
Accso - Accelerated Solutions	www.accso.de
ACP CUBIDO Digital Solutions	www.cubido.at
ACP Digital Business Solutions	www.acp-digital.com/business-solutions
ACP Holding Digital	www.acp.de/digital
adesso	www.adesso.de
ADITO Software	www.adito.de
AIT-Applied Information Technologies	www.aitgmbh.de
All for One Group	www.all-for-one.com
ARNOLD IT Systems	www.arnold-it.com
Asseco Solutions	www.assecosolutions.com
audius	www.audius.de
avenit	www.avenit.de
Balluff	www.balluff.com
BCT Technology	www.bct-technology.com
BEUMER Maschinenfabrik	www.beumergroup.com
bridgefield	www.bridgefield.de
CaderaDesign	www.caderadesign.de
CANCOM Austria	www.cancom.at
CATUNO	www.catuno.de
CE-CON	www.ce-con.de
Centigrade	www.centigrade.de
ClassiX Software	www.classix.de
Cloudflight Germany	www.cloudflight.io
colenio	www.colenio.de
Computer System Ilmenau	www.cs-ilmenau.de
CONTACT Software	www.contact-software.com
COSMO CONSULT Group	www.cosmoconsult.com
COSMO CONSULT GmbH	www.cosmoconsult.com
CSP	www.csp-sw.de
daenet	www.daenet.de
Dassault Systèmes	www.3ds.com
DataArt	www.dataart.com/de
EAS Engineering Automation Systems	www.eas-solutions.de
Eckelmann FCS	www.eckelmann.de
Eckelmann	www.eckelmann.de
eEvolution	www.eevolution.de
elunic	www.elunic.com/de
:em engineering methods	www.em.ag
eoda	www.eoda.de
EPLAN	www.eplan.de
ERGOSIGN	www.ergosign.de
ERNI (Deutschland)	www.betterask.erni
esco	www.esco-aachen.de
esentri	www.esentri.com
Fabasoft Approve	www.fabasoft.com/approve
FAUSER	www.fauser.ag
GAL Digital	www.gal-digital.de
gbo datacomp	www.gbo-datacomp.de
generic.de	www.generic.de
GFT Integrated Systems	www.gft.com/de/de/index
GFT Technologies	www.gft.com/de/de/index
HEGLA-HANIC	www.hegla-hanic.de
HEISAB	www.heisab.de
HEITEC	www.heitec.de
IBM Deutschland	www.ibm.de
IKOffice	www.ikoffice.de/cms
ILC	www.ilc-solutions.de
in-tech	www.in-tech.com
incowia	www.incowia.com
INFORM	www.inform-software.de
INNEO Solutions	www.inneo.com
iT Engineering Software Innovations	www.ite-si.de
IT Vision Technology	www.itvt.de
ITQ	www.itq.de
J&M Business Consulting	www.voith.com
Janz Tec	www.janztec.com
Jungheinrich	www.jungheinrich.de
JustRelate Planware	www.planware.com/de
Körber Digital	www.koerber-digital.com
Körber Pharma Software	www.koerber-pharma.com
KRONES	www.krones.com
Lachmann & Rink	www.lachmann-rink.de
Lenze	www.lenze.com
Lino	www.lino.de
LiSEC Austria	www.lisec.com
logi.cals	www.logicals.com
logi.cals automation solution & services	www.logicals.com
logicline	www.logicline.de
M&M Software	www.mm-software.com
machineering	www.machineering.com
Microsoft Deutschland	www.microsoft.com
mobile function	www.mobile-function.com
N+P Informationssysteme	www.nupis.de
neogramm	www.neogramm.de
NewTec	www.newtec.de
Opdenhoff Technologie	www.opdenhoff.com
ORISA Software	www.orisa.de
OSB connagtive	www.osb-connagtive.com
PIKON Deutschland	www.pikon.com
Plan Software	www.plansoft.de
Possehl Analytics	www.possehl-analytics.com
POWERCASE FORMULA CRM	www.formulacrm.de
PSI Software	www.psi.de
PSI Automotive & Industry	www.psi-automotive-industry.de
PSI Technics	www.psi-technics.com
Qualysoft	www.de.qualysoft.com
REINHOLZ Technologies	www.reinholz-technologies.com
S & P Computersysteme	www.sup-logistik.de
SAP Deutschland	www.sap.com/germany
Schubert & Salzer Data	www.schubert-salzer.com
SECO Mind Germany	www.e-gits.com
SEITEC	www.seitec.info/de
Siemens Industry Software	www.sw.siemens.com
Simplifier	www.simplifier.io
SMS group	www.sms-group.com/expertise/digitalization
Software Factory	www.sf.com
SQL Projekt	www.sql-ag.de
Stackmeister	www.stackmeister.com/de
Sybit	www.sybit.de
Synostik	www.synostik.de
Syntax Systems	www.syntax.com/fit
syscon	www.syscon-online.com
talpasolutions	www.talpasolutions.com
TECHNIA	www.technia.com
The MathWorks	www.mathworks.com

Requirements Engineering

Thyssenkrupp Materials IoT	www.thyssenkrupp-materials-iot.com
UID	www.uid.com
UNITY	www.unity.de
WTG innovation	www.vsf-experts.de
XITASO	www.xitaso.com
Zühlke Engineering (Austria)	www.zuehlke.com/de/standorte/oesterreich
Zühlke Engineering	www.zuehlke.com

Software Quality

A+W Software	www.a-w.de
ACBIS	www.acbis.de
Accso - Accelerated Solutions	www.accso.de
ACP CUBIDO Digital Solutions	www.cubido.at
ACP Digital Business Solutions	www.acp-digital.com/business-solutions
ACP Holding Digital	www.acp.de/digital
adesso	www.adesso.de
ADITO Software	www.adito.de
AIT-Applied Information Technologies	www.aitgmbh.de
ams.Solution	www.ams-erp.com
Asseco Solutions	www.assecosolutions.com
audius	www.audius.de
Balluff	www.balluff.com
BEUMER Maschinenfabrik	www.beumergroup.com
bridgefield	www.bridgefield.de
CaderaDesign	www.caderadesign.de
CANCOM Austria	www.cancom.at
CATUNO	www.catuno.de
CE-CON	www.ce-con.de
Centigrade	www.centigrade.de
ClassiX Software	www.classix.de
Cloudflight Germany	www.cloudflight.io
colenio	www.colenio.de
Computer System Ilmenau	www.cs-ilmenau.de
COSMO CONSULT Group	www.cosmoconsult.com
COSMO CONSULT GmbH	www.cosmoconsult.com
CSP	www.csp-sw.de
daenet	www.daenet.de
Dassault Systèmes	www.3ds.com
DataArt	www.dataart.com/de
DCC global	www.dcc-global.com
Eckelmann FCS	www.eckelmann.de
Eckelmann	www.eckelmann.de
elunic	www.elunic.com/de
:em engineering methods	www.em.ag
eoda	www.eoda.de
EPLAN	www.eplan.de
ERGOSIGN	www.ergosign.de
ERNI (Deutschland)	www.betterask.erni
esentri	www.esentri.com
evon	www.evon-automation.com
Fabasoft Approve	www.fabasoft.com/approve
GAL Digital	www.gal-digital.de
gbo datacomp	www.gbo-datacomp.de
generic.de	www.generic.de
GFT Integrated Systems	www.gft.com/de/de/index
GFT Technologies	www.gft.com/de/de/index
HEGLA-HANIC	www.hegla-hanic.de
HEISAB	www.heisab.de
HEITEC	www.heitec.de
IBM Deutschland	www.ibm.de
in-tech	www.in-tech.com
incowia	www.incowia.com
Industrie Informatik	www.industrieinformatik.com
INFORM	www.inform-software.de
ISG	www.isg-stuttgart.de
iT Engineering Software Innovations	www.ite-si.de
IT Vision Technology	www.itvt.de
ITQ	www.itq.de
J&M Business Consulting	www.voith.com
Janz Tec	www.janztec.com
Jungheinrich	www.jungheinrich.de
JustRelate Planware	www.planware.com/de
Kinexon Industries	www.kinexon-industries.com
konzeptpark	www.konzeptpark.de
Körber Digital	www.koerber-digital.com
Körber Pharma Software	www.koerber-pharma.com
Lachmann & Rink	www.lachmann-rink.de
Lenze	www.lenze.com
LiSEC Austria	www.lisec.com
logicline	www.logicline.de
M&M Software	www.mm-software.com
machineering	www.machineering.com
Microsoft Deutschland	www.microsoft.com
mobile function	www.mobile-function.com
mpunkt	www.mpunkt.com
N+P Informationssysteme	www.nupis.de
neogramm	www.neogramm.de
NewTec	www.newtec.de
Opdenhoff Technologie	www.opdenhoff.com
OSB connagtive	www.osb-connagtive.com
PIKON Deutschland	www.pikon.com
Possehl Analytics	www.possehl-analytics.com
PSI Software	www.psi.de
PSI Technics	www.psi-technics.com
Qualysoft	www.de.qualysoft.com
REINHOLZ Technologies	www.reinholz-technologies.com
SAP Deutschland	www.sap.com/germany
Schneider Electric Systems Germany	www.se.com/de/de
SECO Mind Germany	www.e-gits.com
SEITEC	www.seitec.info/de
Siemens Industry Software	www.sw.siemens.com
Simplifier	www.simplifier.io
SMS group	www.sms-group.com/expertise/digitalization
Software Factory	www.sf.com
SQL Projekt	www.sql-ag.de
Stackmeister	www.stackmeister.com/de
STAR Deutschland	www.star-group.net
Sybit	www.sybit.de
talpasolutions	www.talpasolutions.com
TECHNIA	www.technia.com
The MathWorks	www.mathworks.com

Software Quality

Thyssenkrupp Materials IoT	www.thyssenkrupp-materials-iot.com
TRUMPF	www.trumpf.com
UID	www.uid.com
UNITY	www.unity.de
WTG innovation	www.vsf-experts.de
XITASO	www.xitaso.com
Zühlke Engineering (Austria)	www.zuehlke.com/de/standorte/oesterreich
Zühlke Engineering	www.zuehlke.com

Usability / Human Machine Interface / User Experience

247FactoryNet	www.247factorynet.com
3D Interaction Technologies	www.3dit.de
3DQR	www.3dqr.de
A+W Software	www.a-w.de
ACBIS	www.acbis.de
accelcon industrial engineering	www.accelcon.de
Accso - Accelerated Solutions	www.accso.de
ACP CUBIDO Digital Solutions	www.cubido.at
ACP Digital Business Solutions	www.acp-digital.com/business-solutions
ACP Holding Digital	www.acp.de/digital
adesso	www.adesso.de
ADITO Software	www.adito.de
ADVES	www.adves.one
Aerzen Digital Systems	www.aerzendigital.com
AIT-Applied Information Technologies	www.aitgmbh.de
aku.automation	www.aku.eu
ARNOLD IT Systems	www.arnold-it.com
Asseco Solutions	www.assecosolutions.com
audius	www.audius.de
Autonoma Technologies	www.autonoma.cloud
avenit	www.avenit.de
B&R Industrie-Elektronik	www.br-automation.com
Balluff	www.balluff.com
BEUMER Maschinenfabrik	www.beumergroup.com
bridgefield	www.bridgefield.de
CaderaDesign	www.caderadesign.de
CANCOM Austria	www.cancom.at
CE-CON	www.ce-con.de
Centigrade	www.centigrade.de
ClassiX Software	www.classix.de
Cloudflight Germany	www.cloudflight.io
colenio	www.colenio.de
Computer System Ilmenau	www.cs-ilmenau.de
COSMO CONSULT Group	www.cosmoconsult.com
COSMO CONSULT GmbH	www.cosmoconsult.com
CSP	www.csp-sw.de
DataArt	www.dataart.com/de
DCC global	www.dcc-global.com
DELTA LOGIC	www.deltalogic.de
DIENES Apparatebau	www.dienes.net
DS Group	www.dokuschmiede.de
Eckelmann FCS	www.eckelmann.de
Eckelmann	www.eckelmann.de
elunic	www.elunic.com/de
eoda	www.eoda.de
EPLAN	www.eplan.de
ERGOSIGN	www.ergosign.de
ERNI (Deutschland)	www.betterask.erni
esco	www.esco-aachen.de
esentri	www.esentri.com
EURO-LOG	www.eurolog.com
evon	www.evon-automation.com
Fabasoft Approve	www.fabasoft.com/approve
FAUSER	www.fauser.ag
GAL Digital	www.gal-digital.de
generic.de	www.generic.de
GETT Gerätetechnik	www.gett.de
GFOS	www.gfos.com
GFT Integrated Systems	www.gft.com/de/de/index
GFT Technologies	www.gft.com/de/de/index
HALO-electronic	www.inteos.com
handz.on	www.on.de
HEGLA-HANIC	www.hegla-hanic.de
HEISAB	www.heisab.de
HEITEC	www.heitec.de
IBM Deutschland	www.ibm.de
ICONICS Germany	www.iconics.com
ILC	www.ilc-solutions.de
in-tech	www.in-tech.com
INFORM	www.inform-software.de
ISG	www.isg-stuttgart.de
iT Engineering Software Innovations	www.ite-si.de
IT Vision Technology	www.itvt.de
ITQ	www.itq.de
Janz Tec	www.janztec.com
Jungheinrich	www.jungheinrich.de
JustRelate Planware	www.planware.com/de
Kinexon Industries	www.kinexon-industries.com
KOCH Pac-Systeme	www.koch-pac-systeme.com
Körber Digital	www.koerber-digital.com
Körber Pharma Software	www.koerber-pharma.com
kothes	www.kothes.com
Lachmann & Rink	www.lachmann-rink.de
LASCO Umformtechnik	www.lasco.com
Lenze	www.lenze.com
Lenze Austria	www.lenze.com
Lino	www.lino.de
LiSEC Austria	www.lisec.com
logicline	www.logicline.de
M&M Software	www.mm-software.com
machineering	www.machineering.com
Microsoft Deutschland	www.microsoft.com
mobile function	www.mobile-function.com
mpunkt	www.mpunkt.com
N+P Informationssysteme	www.nupis.de
neogramm	www.neogramm.de
NewTec	www.newtec.de
Opdenhoff Technologie	www.opdenhoff.com
Optima packaging group	www.optima-packaging.com
ORBIS	www.orbis.de
ORISA Software	www.orisa.de

Usability / Human Machine Interface / User Experience

OSB connagtive	www.osb-connagtive.com
Peakboard	www.peakboard.com
PIKON Deutschland	www.pikon.com
Plan Software	www.plansoft.de
Point 8	www.point-8.de
Possehl Analytics	www.possehl-analytics.com
POWERCASE FORMULA CRM	www.formulacrm.de
proALPHA	www.proalpha.com
PSI Software	www.psi.de
PSI Automotive & Industry	www.psi-automotive-industry.de
PSI Technics	www.psi-technics.com
Qualysoft	www.de.qualysoft.com
Quanos Service Solutions	www.quanos-service-solutions.com
Reichhardt	www.reichhardt.com
REINHOLZ Technologies	www.reinholz-technologies.com
S & P Computersysteme	www.sup-logistik.de
SAP Deutschland	www.sap.com/germany
Schneider Electric Systems Germany	www.se.com/de/de
SEITEC	www.seitec.info/de
Simplifier	www.simplifier.io
SMS group	www.sms-group.com/expertise/digitalization
Software Factory	www.sf.com
Stackmeister	www.stackmeister.com/de
STAR Deutschland	www.star-group.net
Stryza	www.stryza.com
Sybit	www.sybit.de
talpasolutions	www.talpasolutions.com
TEDATA	www.tedata.de
Thyssenkrupp Materials IoT	www.thyssenkrupp-materials-iot.com
TRUMPF	www.trumpf.com
UID	www.uid.com
J.M. Voith SE / VPH	www.voithpaper.com
Weidmüller GTI Software	www.weidmueller-gti-software.com
WTG innovation	www.vsf-experts.de
XITASO	www.xitaso.com
Zühlke Engineering (Austria)	www.zuehlke.com/de/standorte/oesterreich
Zühlke Engineering	www.zuehlke.com

Agile Development Methods

247FactoryNet	www.247factorynet.com
A+W Software	www.a-w.de
abilis	www.abilis.de
ACBIS	www.acbis.de
accelcon industrial engineering	www.accelcon.de
Accso - Accelerated Solutions	www.accso.de
ACP CUBIDO Digital Solutions	www.cubido.at
ACP Digital Business Solutions	www.acp-digital.com/business-solutions
ACP Holding Digital	www.acp.de/digital
adesso	www.adesso.de
ADITO Software	www.adito.de
Aerzen Digital Systems	www.aerzendigital.com
AIT-Applied Information Technologies	www.aitgmbh.de
All for One Group	www.all-for-one.com
ams.Solution	www.ams-erp.com
Asseco Solutions	www.assecosolutions.com
audius	www.audius.de
avenit	www.avenit.de
Balluff	www.balluff.com
BCT Technology	www.bct-technology.com
BEUMER Maschinenfabrik	www.beumergroup.com
bridgefield	www.bridgefield.de
CaderaDesign	www.caderadesign.de
CANCOM Austria	www.cancom.at
CE-CON	www.ce-con.de
Centigrade	www.centigrade.de
cetecom advanced	www.cetecomadvanced.com
ClassiX Software	www.classix.de
Cloudflight Germany	www.cloudflight.io
colenio	www.colenio.de
COSMO CONSULT Group	www.cosmoconsult.com
COSMO CONSULT GmbH	www.cosmoconsult.com
CSP	www.csp-sw.de
daenet	www.daenet.de
Dassault Systèmes	www.3ds.com
DataArt	www.dataart.com/de
Eckelmann FCS	www.eckelmann.de
Eckelmann	www.eckelmann.de
eEvolution	www.eevolution.de
elunic	www.elunic.com/de
:em engineering methods	www.em.ag
eoda	www.eoda.de
EPLAN	www.eplan.de
ERGOSIGN	www.ergosign.de
ERNI (Deutschland)	www.betterask.erni
esentri	www.esentri.com
EURO-LOG	www.eurolog.com
evon	www.evon-automation.com
Fabasoft Approve	www.fabasoft.com/approve
Femto Engineering B.V.	www.femto.nl
GAL Digital	www.gal-digital.de
gbo datacomp	www.gbo-datacomp.de
generic.de	www.generic.de
GFT Integrated Systems	www.gft.com/de/de/index
GFT Technologies	www.gft.com/de/de/index
HALO-electronic	www.inteos.com
handz.on	www.on.de
HEGLA-HANIC	www.hegla-hanic.de
HEISAB	www.heisab.de
HEITEC	www.heitec.de
IBM Deutschland	www.ibm.de
ILC	www.ilc-solutions.de
in-tech	www.in-tech.com
incowia	www.incowia.com
INFORM	www.inform-software.de
INNEO Solutions	www.inneo.com
iT Engineering Software Innovations	www.ite-si.de
IT Vision Technology	www.itvt.de
ITQ	www.itq.de
Jagenberg Digital Solutions	www.jagenberg-digital.com
Janz Tec	www.janztec.com
Jungheinrich	www.jungheinrich.de
JustRelate Planware	www.planware.com/de

Agile Development Methods

konzeptpark	www.konzeptpark.de
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Körber Pharma Software	www.koerber-pharma.com
Lachmann & Rink	www.lachmann-rink.de
Lenze	www.lenze.com
Lenze Austria	www.lenze.com
LiSEC Austria	www.lisec.com
logi.cals	www.logicals.com
logi.cals automation solution & services	www.logicals.com
logicline	www.logicline.de
M&M Software	www.mm-software.com
Microsoft Deutschland	www.microsoft.com
mobile function	www.mobile-function.com
MODUS Consult	www.modusconsult.de
mpunkt	www.mpunkt.com
N+P Informationssysteme	www.nupis.de
neogramm	www.neogramm.de
NewTec	www.newtec.de
Optima packaging group	www.optima-packaging.com
ORISA Software	www.orisa.de
OSB connagtive	www.osb-connagtive.com
PIKON Deutschland	www.pikon.com
Plan Software	www.plansoft.de
Point 8	www.point-8.de
Possehl Analytics	www.possehl-analytics.com
POWERCASE FORMULA CRM	www.formulacrm.de
proALPHA	www.proalpha.com
PROSTEP	www.prostep.com
PSI Software	www.psi.de
PSI Automotive & Industry	www.psi-automotive-industry.de
PSI Technics	www.psi-technics.com
Qualysoft	www.de.qualysoft.com
Quanos Service Solutions	www.quanos-service-solutions.com
REINHOLZ Technologies	www.reinholz-technologies.com
SAP Deutschland	www.sap.com/germany
SECO Mind Germany	www.e-gits.com
SEITEC	www.seitec.info/de
Siemens Industry Software	www.sw.siemens.com
Simplifier	www.simplifier.io
SMS group	www.sms-group.com/expertise/digitalization
Software Factory	www.sf.com
SQL Projekt	www.sql-ag.de
Stackmeister	www.stackmeister.com/de
Stryza	www.stryza.com
Sybit	www.sybit.de
Synostik	www.synostik.de
talpasolutions	www.talpasolutions.com
The MathWorks	www.mathworks.com
Thyssenkrupp Materials IoT	www.thyssenkrupp-materials-iot.com
TopM Software	www.topm.de
TRUMPF	www.trumpf.com
UID	www.uid.com
UNITY	www.unity.de
valantic Supply Chain Excellence	www.valantic.com
WSW Software	www.wsw.de
WTG innovation	www.vsf-experts.de
XITASO	www.xitaso.com
Zühlke Engineering (Austria)	www.zuehlke.com/de/standorte/oesterreich
Zühlke Engineering	www.zuehlke.com

Customized Application Development

247FactoryNet	www.247factorynet.com
3D Interaction Technologies	www.3dit.de
A+W Software	www.a-w.de
abilis	www.abilis.de
ACBIS	www.acbis.de
accelcon industrial engineering	www.accelcon.de
Accso - Accelerated Solutions	www.accso.de
ACP CUBIDO Digital Solutions	www.cubido.at
ACP Digital Business Solutions	www.acp-digital.com/business-solutions
ACP Holding Digital	www.acp.de/digital
adesso	www.adesso.de
ADITO Software	www.adito.de
ADVES	www.adves.one
Aerzen Digital Systems	www.aerzendigital.com
AIT-Applied Information Technologies	www.aitgmbh.de
aku.automation	www.aku.eu
All for One Group	www.all-for-one.com
ams.Solution	www.ams-erp.com
ARC Solutions	www.arcsolutions.de
ARNOLD IT Systems	www.arnold-it.com
Asseco Solutions	www.assecosolutions.com
audius	www.audius.de
avenit	www.avenit.de
B&R Industrie-Elektronik	www.br-automation.com
Balluff	www.balluff.com
BEUMER Maschinenfabrik	www.beumergroup.com
Bosch Rexroth	www.boschrexroth.com/de/de
bridgefield	www.bridgefield.de
CaderaDesign	www.caderadesign.de
CADFEM Germany	www.cadfem.net/de/de
CANCOM Austria	www.cancom.at
CATUNO	www.catuno.de
CE-CON	www.ce-con.de
Centigrade	www.centigrade.de
ClassiX Software	www.classix.de
Cloudflight Germany	www.cloudflight.io
colenio	www.colenio.de
CSP	www.csp-sw.de
daenet	www.daenet.de
DataArt	www.dataart.com/de
DCC global	www.dcc-global.com
DELTA LOGIC	www.deltalogic.de
DIENES Apparatebau	www.dienes.net
DLP Engineers	www.dlp-engineers.de
Docufy	www.docufy.de
DS Group	www.dokuschmiede.de
DUALIS	www.dualis-it.de
eEvolution	www.eevolution.de
Eisenwerk Würth	www.eisenwerk-wuerth.de
Elabo	www.elabo.de
elunic	www.elunic.com/de

Customized Application Development

:em engineering methods	www.em.ag
entergon	www.entergon.de
eoda	www.eoda.de
EPLAN	www.eplan.de
ERGOSIGN	www.ergosign.de
ERNI (Deutschland)	www.betterask.erni
esco	www.esco-aachen.de
esentri	www.esentri.com
EURO-LOG	www.eurolog.com
evon	www.evon-automation.com
Fabasoft Approve	www.fabasoft.com/approve
FAUSER	www.fauser.ag
GAL Digital	www.gal-digital.de
gbo datacomp	www.gbo-datacomp.de
generic.de	www.generic.de
GETT Gerätetechnik	www.gett.de
GFT Integrated Systems	www.gft.com/de/de/index
GFT Technologies	www.gft.com/de/de/index
HALO-electronic	www.inteos.com
handz.on	www.on.de
HEGLA-HANIC	www.hegla-hanic.de
HEISAB	www.heisab.de
HEITEC	www.heitec.de
IBM Deutschland	www.ibm.de
ILC	www.ilc-solutions.de
in-tech	www.in-tech.com
incowia	www.incowia.com
Industrie Informatik	www.industrieinformatik.com
INFORM	www.inform-software.de
INNEO Solutions	www.inneo.com
IPKS	www.ipks.de
ISG	www.isg-stuttgart.de
iT Engineering Software Innovations	www.ite-si.de
IT Vision Technology	www.itvt.de
ITQ	www.itq.de
J&M Business Consulting	www.voith.com
Janz Tec	www.janztec.com
JAWA Management Software	www.jawa.at
JustRelate Planware	www.planware.com/de
KOCH Pac-Systeme	www.koch-pac-systeme.com
kommunikationsoptimierer.de	www.kommunikationsoptimierer.de
Körber Digital	www.koerber-digital.com
kothes	www.kothes.com
Lachmann & Rink	www.lachmann-rink.de
Lenze	www.lenze.com
Lenze Austria	www.lenze.com
Lino	www.lino.de
LiSEC Austria	www.lisec.com
logicline	www.logicline.de
M&M Software	www.mm-software.com
machineering	www.machineering.com
Magic Software Enterprises	www.magicsoftware.com
Microsoft Deutschland	www.microsoft.com
mobile function	www.mobile-function.com
MODUS Consult	www.modusconsult.de
mpunkt	www.mpunkt.com
neogramm	www.neogramm.de
NewTec	www.newtec.de
openpack	www.openpack.com
ORBIS	www.orbis.de
ORISA Software	www.orisa.de
OSB connagtive	www.osb-connagtive.com
PIKON Deutschland	www.pikon.com
Plan Software	www.plansoft.de
Point 8	www.point-8.de
Possehl Analytics	www.possehl-analytics.com
POWERCASE FORMULA CRM	www.formulacrm.de
proALPHA	www.proalpha.com
PROSTEP	www.prostep.com
PSI Software	www.psi.de
PSI Automotive & Industry	www.psi-automotive-industry.de
PSI Technics	www.psi-technics.com
Qualysoft	www.de.qualysoft.com
Quanos Service Solutions	www.quanos-service-solutions.com
Reichhardt	www.reichhardt.com
RTE Akustik + Prüftechnik	www.rte.de
Schubert & Salzer Data	www.schubert-salzer.com
SECO Mind Germany	www.e-gits.com
SEITEC	www.seitec.info/de
SERVITIZE	www.servitize.de
Simplifier	www.simplifier.io
SL innovativ	www.sl-i.de
SMS group	www.sms-group.com/expertise/digitalization
Software Factory	www.sf.com
SQL Projekt	www.sql-ag.de
Stackmeister	www.stackmeister.com/de
STAR Deutschland	www.star-group.net
Sybit	www.sybit.de
Synctive	www.synctive.io
Synostik	www.synostik.de
talpasolutions	www.talpasolutions.com
TEDATA	www.tedata.de
Thyssenkrupp Materials IoT	www.thyssenkrupp-materials-iot.com
TopM Software	www.topm.de
Transaction-Network	www.transaction-network.com
TRUMPF	www.trumpf.com
UID	www.uid.com
UMa Soft	www.uma-soft.ch
untersee Unternehmensberatung	www.untersee.com
valantic Supply Chain Excellence	www.valantic.com
WITTENSTEIN	www.wittenstein.de
WTG innovation	www.vsf-experts.de
XITASO	www.xitaso.com
Zimmer & Kreim	www.zk-system.com
Zühlke Engineering (Austria)	www.zuehlke.com/de/standorte/oesterreich
Zühlke Engineering	www.zuehlke.com

Industrial Security – security in the digital future

Maximilian Moser

Industrial security secures industrial communication and production systems so that industry can produce safely and reliably. The mechanical and plant engineering sector has various roles to play here. Firstly, as the operator of the systems, it focuses on digitalizing production processes. Secondly, as a manufacturer, it develops new machines, systems, services and business models for its customers as part of Industry 4.0. Thirdly, it is the purchaser of components and services, which it configures in plants and systems on a customer-specific basis and operates where necessary. This means that machine and plant manufacturers bear a great deal of responsibility when considering security requirements and developing, implementing and updating measures based on them.

Mechanical and plant engineering is faced with the challenge of having to guarantee integrity, availability and confidentiality throughout the entire product life cycle – from product development, provision and commissioning through to continuous operation. At the same time, machine manufacturers as operators must embed their existing, mostly self-sufficient and static production systems in agile communication structures. The machines and systems not created for this are often upgraded and converted under time pressure without also adapting the standardization and data security requirements necessary from a legal and technical perspective.

Knowledge building instead of actionism

The earlier companies integrate knowledge about possible threats, necessary measures and helpful sources of information into the product life cycle, the more sustainable and reliable the actual implementation measures will be. Guides on Industry 4.0 security, IEC 62443 and the VDMA's further training courses based on these offer members in-depth recommendations for action and implementation support for the integration of security in production, products and systems.

The VDMA supports its members with all questions and challenges relating to industrial security and offers the "Industrial Security" and "Information Security" working groups. In addition, the "NIS2" working group was set up in November 2023 specifically for SMEs. VDMA member companies can discuss industry-relevant content here.

In addition to compliance with upcoming regulations such as RED, CRA, NIS2 and the Machinery Directive, the participating companies are offered a platform to exchange information on current topics such as SBOM, vulnerability management and security in mechanical and plant engineering. The working groups also produce groundbreaking documents for the entire industry, including guidelines for supply chain risk management, specifications for suppliers of networked components and the risk assessment of operational technology.

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Industrial / IT-Security

OT Security: in Manufacturing / Production

@-yet	www.add-yet.de
@-yet Industrial IT Security	www.add-yet-iis.de
Abass	www.abass.de
ACP Holding Digital	www.acp.de/digital
adesso	www.adesso.de
ads-tec Industrial IT	www.ads-tec-iit.com
All for One Group	www.all-for-one.com
alltrotec	www.alltrotec.de
B&R Industrie-Elektronik	www.br-automation.com
Balluff	www.balluff.com
Beckhoff Automation	www.beckhoff.com
Bosch Rexroth	www.boschrexroth.com/de/de
bridgefield	www.bridgefield.de
CANCOM Austria	www.cancom.at
Cloudflight Germany	www.cloudflight.io
colenio	www.colenio.de
COPA-DATA	www.copadata.de
COSMO CONSULT Group	www.cosmoconsult.com
COSMO CONSULT GmbH	www.cosmoconsult.com
Cybus	www.cybus.io
data M Sheet Metal Solutions	www.datam.de
EVO Informationssysteme	www.evo-solutions.com
evon	www.evon-automation.com
genua	www.genua.de
GFOS	www.gfos.com
Google Germany	www.google.de
Grenzebach Digital	www.grenzebach.digital
HALO-electronic	www.inteos.com
HEGLA-HANIC	www.hegla-hanic.de
HEITEC	www.heitec.de
HighConsulting	www.crsm.biz
HiSolutions	www.hisolutions.com
IBM Deutschland	www.ibm.de
IT Vision Technology	www.itvt.de
Janz Tec	www.janztec.com
konzeptpark	www.konzeptpark.de
Körber	www.koerber.com
Körber Digital	www.koerber-digital.com
Körber Pharma Software	www.koerber-pharma.com
Lenze	www.lenze.com
Lenze Austria	www.lenze.com
LiSEC Austria	www.lisec.com
machineering	www.machineering.com
Microsoft Deutschland	www.microsoft.com
N+P Informationssysteme	www.nupis.de
ondeso	www.ondeso.com
ONEKEY	www.onekey.com
OSB connagtive	www.osb-connagtive.com
PHOENIX CONTACT Cyber Security	www.phoenixcontact.de
REINHOLZ Technologies	www.reinholz-technologies.com
Rockwell Automation Solutions	www.rockwellautomation.com
Rockwell Automation	www.rockwellautomation.com
secunet Security Networks	www.secunet.com
Securikett Ulrich & Horn	www.securikett.com
Siemens Industry Software	www.sw.siemens.com
Simplifier	www.simplifier.io
SMS group	www.sms-group.com/expertise/digitalization
Software Factory	www.sf.com
symmedia	www.symmedia.de
TECHNIA	www.technia.com
TRUMPF	www.trumpf.com
TTTech Industrial Automation	www.tttech.com
Voith	www.voith.com
J.M. Voith SE / DSG	www.voith.com
J.M. Voith SE / VPH	www.voithpaper.com
WITTENSTEIN	www.wittenstein.de
XITASO	www.xitaso.com
Zühlke Engineering	www.zuehlke.com

Product Security: in Products / digital Services

@-yet	www.add-yet.de
@-yet Industrial IT Security	www.add-yet-iis.de
ADITO Software	www.adito.de
ads-tec Industrial IT	www.ads-tec-iit.com
alltrotec	www.alltrotec.de
Autonoma Technologies	www.autonoma.cloud
BEUMER Maschinenfabrik	www.beumergroup.com
Bosch Rexroth	www.boschrexroth.com/de/de
bridgefield	www.bridgefield.de
CANCOM Austria	www.cancom.at
CE-CON	www.ce-con.de
Centigrade	www.centigrade.de
Cloudflight Germany	www.cloudflight.io
colenio	www.colenio.de
Dassault Systèmes	www.3ds.com
DataArt	www.dataart.com/de
GAL Digital	www.gal-digital.de
Gebauer	www.timeline-erp.de
GFOS	www.gfos.com
HiSolutions	www.hisolutions.com
IBM Deutschland	www.ibm.de
konzeptpark	www.konzeptpark.de
Körber Pharma Software	www.koerber-pharma.com
KRONES	www.krones.com
Lenze	www.lenze.com
Lenze Austria	www.lenze.com
M&M Software	www.mm-software.com
machineering	www.machineering.com
Microsoft Deutschland	www.microsoft.com
N+P Informationssysteme	www.nupis.de
ondeso	www.ondeso.com
ONEKEY	www.onekey.com
openpack	www.openpack.com
OSB connagtive	www.osb-connagtive.com
Rockwell Automation	www.rockwellautomation.com
Schneider Electric	www.se.com/de/de
secunet Security Networks	www.secunet.com
SMS group	www.sms-group.com/expertise/digitalization
TRUMPF	www.trumpf.com
J.M. Voith SE / VPH	www.voithpaper.com
WIBU-SYSTEMS	www.wibu.com
Zühlke Engineering (Austria)	www.zuehlke.com/de/standorte/oesterreich
Zühlke Engineering	www.zuehlke.com

IT/IS-Security – Solutions for Office and Businesses

@-yet	www.add-yet.de
@-yet Industrial IT Security	www.add-yet-iis.de
Abass	www.abass.de
abilis	www.abilis.de
ACP Digital Business Solutions	www.acp-digital.com/business-solutions
ACP Holding Digital	www.acp.de/digital
adesso	www.adesso.de
All for One Group	www.all-for-one.com
alltrotec	www.alltrotec.de
audius	www.audius.de
Bosch Rexroth	www.boschrexroth.com/de/de
CANCOM Austria	www.cancom.at
CE-CON	www.ce-con.de
colenio	www.colenio.de
eEvolution	www.eevolution.de
Gebauer	www.timeline-erp.de
genua	www.genua.de
GFOS	www.gfos.com
Google Germany	www.google.de
HighConsulting	www.crsm.biz
HiSolutions	www.hisolutions.com
IBM Deutschland	www.ibm.de
INNEO Solutions	www.inneo.com
ISAP	www.isap.de
IT Vision Technology	www.itvt.de
machineering	www.machineering.com
Microsoft Deutschland	www.microsoft.com
MODUS Consult	www.modusconsult.de
N+P Informationssysteme	www.nupis.de
PHOENIX CONTACT Cyber Security	www.phoenixcontact.de
Plan Software	www.plansoft.de
PROSTEP	www.prostep.com
secunet Security Networks	www.secunet.com
SL innovativ	www.sl-i.de
TTTech Industrial Automation	www.tttech.com
Voith	www.voith.com
J.M. Voith SE / DSG	www.voith.com
WITTENSTEIN	www.wittenstein.de
Zühlke Engineering (Austria)	www.zuehlke.com/de/standorte/oesterreich
Zühlke Engineering	www.zuehlke.com

Product independent Security Consulting

@-yet	www.add-yet.de
@-yet Industrial IT Security	www.add-yet-iis.de
Abass	www.abass.de
Accso - Accelerated Solutions	www.accso.de
ACP Holding Digital	www.acp.de/digital
adesso	www.adesso.de
All for One Group	www.all-for-one.com
ARC Solutions	www.arcsolutions.de
audius	www.audius.de
bridgefield	www.bridgefield.de
CANCOM Austria	www.cancom.at
Centigrade	www.centigrade.de
colenio	www.colenio.de
Computer System Ilmenau	www.cs-ilmenau.de
COSMO CONSULT Group	www.cosmoconsult.com
COSMO CONSULT GmbH	www.cosmoconsult.com
DataArt	www.dataart.com/de
EPLAN	www.eplan.de
ERNI (Deutschland)	www.betterask.erni
esentri	www.esentri.com
FAUSER	www.fauser.ag
GEA Brewery Systems	www.gea.com
Gebauer	www.timeline-erp.de
genua	www.genua.de
GFOS	www.gfos.com
GFT Technologies	www.gft.com/de/de/index
handz.on	www.on.de
HEITEC	www.heitec.de
HiSolutions	www.hisolutions.com
IBM Deutschland	www.ibm.de
incowia	www.incowia.com
ITQ	www.itq.de
Janz Tec	www.janztec.com
M&M Software	www.mm-software.com
NewTec	www.newtec.de
ondeso	www.ondeso.com
ONEKEY	www.onekey.com
OSB connagtive	www.osb-connagtive.com
PROSTEP	www.prostep.com
REINHOLZ Technologies	www.reinholz-technologies.com
secunet Security Networks	www.secunet.com
SL innovativ	www.sl-i.de
SMS group	www.sms-group.com/expertise/digitalization
Software Factory	www.sf.com
Stackmeister	www.stackmeister.com/de
Syntax Systems	www.syntax.com/fit
syscon	www.syscon-online.com
UNITY	www.unity.de
Voith	www.voith.com
J.M. Voith SE / DSG	www.voith.com
J.M. Voith SE / VPH	www.voithpaper.com
WTG innovation	www.vsf-experts.de
XITASO	www.xitaso.com
Zühlke Engineering (Austria)	www.zuehlke.com/de/standorte/oesterreich
Zühlke Engineering	www.zuehlke.com

Virtual and augmented reality

Thomas Riegler

The growing need for skilled qualified workers and the increasing requirements that are being made of technology are boosting the demand for technical support in the various departments of engineering firms.

This explains the huge increase in demand for augmented and virtual reality solutions where computers extend the perception of reality with visual transmission of information. Football broadcasts already use this approach, supplementing reality with a circle or line to show the distances involved in a free kick, for example.

Industrial applications use mobile devices such as tablets, smart phones and above all, so-called smart glasses. Smart glasses not only show virtual reality but are also equipped with a camera, microphone and headphones for interaction with other people. Teams can thus work together to solve difficult tasks even if not all the experts and necessary information are on the spot.

The current VDMA IT Report shows that virtual, augmented and mixed reality is meanwhile important for around 70 percent of the respondents. A fifth of the companies are already using corresponding solutions, with the trend constantly on the increase, being driven primarily by medium and larger companies. Up to now, the main applications for these solutions have been customer service, sales and development. Other possible uses include training, simulation, production and installation as well as logistics.

VDMA supports its members with questions and challenges on this topic and offers its members a broad network of experts.

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Virtual / Augmented / Mixed Reality

Solutions for Customer Service

3D Interaction Technologies	www.3dit.de
3DQR	www.3dqr.de
ACP Holding Digital	www.acp.de/digital
AIT-Applied Information Technologies	www.aitgmbh.de
All for One Group	www.all-for-one.com
ams.Solution	www.ams-erp.com
ARC Solutions	www.arcsolutions.de
ARNOLD IT Systems	www.arnold-it.com
audius	www.audius.de
Autonoma Technologies	www.autonoma.cloud
avenit	www.avenit.de
BCT Technology	www.bct-technology.com
BEUMER Maschinenfabrik	www.beumergroup.com
Blauhut & Partner	www.procos.de
bridgefield	www.bridgefield.de
CaderaDesign	www.caderadesign.de
CANCOM Austria	www.cancom.at
CAS Software	www.cas.de
CE-CON	www.ce-con.de
Centigrade	www.centigrade.de
CMC Engineers	www.cmc-engineers.de/de
colenio	www.colenio.de
COSMO CONSULT Group	www.cosmoconsult.com
COSMO CONSULT GmbH	www.cosmoconsult.com
Dassault Systèmes	www.3ds.com
DataArt	www.dataart.com/de
ECHO PRM	www.echoprm.com
Eckelmann FCS	www.eckelmann.de
Eckelmann	www.eckelmann.de
eEvolution	www.eevolution.de
Fischer Information Technology	www.fischer-information.com
GAL Digital	www.gal-digital.de
GEA Brewery Systems	www.gea.com
GFT Technologies	www.gft.com/de/de/index
Google Germany	www.google.de
HALO-electronic	www.inteos.com
IBM Deutschland	www.ibm.de
ICONICS Germany	www.iconics.com
IFS Deutschland	www.ifs.com/de
INNEO Solutions	www.inneo.com
ISG	www.isg-stuttgart.de
Jungheinrich	www.jungheinrich.de
KOCH Pac-Systeme	www.koch-pac-systeme.com
Körber	www.koerber.com
Körber Digital	www.koerber-digital.com
Körber Pharma Software	www.koerber-pharma.com
LASCO Umformtechnik	www.lasco.com
Lino	www.lino.de
machineering	www.machineering.com
MAG IAS	www.ffg-ea.com
Microsoft Deutschland	www.microsoft.com
mobile function	www.mobile-function.com
MODUS Consult	www.modusconsult.de
N+P Informationssysteme	www.nupis.de
oculavis	www.oculavis.de
Optima packaging group	www.optima-packaging.com
ORISA Software	www.orisa.de
PARTSCLOUD	www.partscloud.com
proALPHA	www.proalpha.com
Quanos Content Solutions	www.quanos-content-solutions.com
Remberg	www.remberg.de
Rockwell Automation Solutions	www.rockwellautomation.com
Rockwell Automation	www.rockwellautomation.com
Schneider Electric	www.se.com/de/de
Siemens Industry Software	www.sw.siemens.com
Simplifier	www.simplifier.io
SL innovativ	www.sl-i.de
SMS group	www.sms-group.com/expertise/digitalization
Software Factory	www.sf.com
Sybit	www.sybit.de
symmedia	www.symmedia.de
Synostik	www.synostik.de
TopM Software	www.topm.de
Transaction-Network	www.transaction-network.com
UID	www.uid.com
untersee Unternehmensberatung	www.untersee.com
Viewpointsystem	www.viewpointsystem.com
Voith	www.voith.com
J.M. Voith SE / DSG	www.voith.com
J.M. Voith SE / VPH	www.voithpaper.com
WeAre	www.weare-rooms.com
WSCAD	www.wscad.com
Zühlke Engineering (Austria)	www.zuehlke.com/de/standorte/oesterreich
Zuken E3	www.zuken.com

Solutions for Marketing and Sales

3D Interaction Technologies	www.3dit.de
3DQR	www.3dqr.de
ACBIS	www.acbis.de
ACP Holding Digital	www.acp.de/digital
AIT-Applied Information Technologies	www.aitgmbh.de
ams.Solution	www.ams-erp.com
ARC Solutions	www.arcsolutions.de
ARNOLD IT Systems	www.arnold-it.com
audius	www.audius.de
Autonoma Technologies	www.autonoma.cloud
avenit	www.avenit.de
BCT Technology	www.bct-technology.com
BEUMER Maschinenfabrik	www.beumergroup.com
bridgefield	www.bridgefield.de
CaderaDesign	www.caderadesign.de
CAS Software	www.cas.de
Centigrade	www.centigrade.de
CMC Engineers	www.cmc-engineers.de/de
colenio	www.colenio.de
Configit	www.configit.com
Dassault Systèmes	www.3ds.com
DataArt	www.dataart.com/de
DUALIS	www.dualis-it.de
ECHO PRM	www.echoprm.com
Eckelmann FCS	www.eckelmann.de
Eckelmann	www.eckelmann.de

Solutions for Marketing and Sales

encoway	www.encoway.de
FAUSER	www.fauser.ag
Fischer Information Technology	www.fischer-information.com
GAL Digital	www.gal-digital.de
GFT Technologies	www.gft.com/de/de/index
HALO-electronic	www.inteos.com
ICONICS Germany	www.iconics.com
INNEO Solutions	www.inneo.com
ISG	www.isg-stuttgart.de
LASCO Umformtechnik	www.lasco.com
Lenze Austria	www.lenze.com
Lino	www.lino.de
machineering	www.machineering.com
Microsoft Deutschland	www.microsoft.com
mobile function	www.mobile-function.com
N+P Informationssysteme	www.nupis.de
ORISA Software	www.orisa.de
Plan Software	www.plansoft.de
Qualysoft	www.de.qualysoft.com
SAE Applications for Digitalization	www.sae-portal.de
Schneider Electric	www.se.com/de/de
Siemens Industry Software	www.sw.siemens.com
Simplifier	www.simplifier.io
SL innovativ	www.sl-i.de
Software Factory	www.sf.com
TopM Software	www.topm.de
UID	www.uid.com
Viewpointsystem	www.viewpointsystem.com
WeAre	www.weare-rooms.com
Zühlke Engineering (Austria)	www.zuehlke.com/de/standorte/oesterreich

Solutions for Training / Education

3DQR	www.3dqr.de
Accso - Accelerated Solutions	www.accso.de
ACP Holding Digital	www.acp.de/digital
ARC Solutions	www.arcsolutions.de
audius	www.audius.de
Autonoma Technologies	www.autonoma.cloud
avenit	www.avenit.de
BEUMER Maschinenfabrik	www.beumergroup.com
bridgefield	www.bridgefield.de
CaderaDesign	www.caderadesign.de
colenio	www.colenio.de
Dassault Systèmes	www.3ds.com
ECHO PRM	www.echoprm.com
Fischer Information Technology	www.fischer-information.com
GFT Technologies	www.gft.com/de/de/index
INNEO Solutions	www.inneo.com
ISG	www.isg-stuttgart.de
KOCH Pac-Systeme	www.koch-pac-systeme.com
Körber	www.koerber.com
Körber Digital	www.koerber-digital.com
Körber Pharma Software	www.koerber-pharma.com
Lenze Austria	www.lenze.com
machineering	www.machineering.com
Microsoft Deutschland	www.microsoft.com
mobile function	www.mobile-function.com
N+P Informationssysteme	www.nupis.de
oculavis	www.oculavis.de
Schneider Electric	www.se.com/de/de
Siemens Industry Software	www.sw.siemens.com
Simplifier	www.simplifier.io
SL innovativ	www.sl-i.de
Software Factory	www.sf.com
Stryza	www.stryza.com
Synostik	www.synostik.de
UID	www.uid.com
J.M. Voith SE / VPH	www.voithpaper.com
Zühlke Engineering (Austria)	www.zuehlke.com/de/standorte/oesterreich

Solutions for further Fields of Application

3D Interaction Technologies	www.3dit.de
3DQR	www.3dqr.de
Accso - Accelerated Solutions	www.accso.de
ACP Holding Digital	www.acp.de/digital
AIT-Applied Information Technologies	www.aitgmbh.de
All for One Group	www.all-for-one.com
ARC Solutions	www.arcsolutions.de
ARNOLD IT Systems	www.arnold-it.com
audius	www.audius.de
avenit	www.avenit.de
BCT Technology	www.bct-technology.com
BEUMER Maschinenfabrik	www.beumergroup.com
bridgefield	www.bridgefield.de
CaderaDesign	www.caderadesign.de
CANCOM Austria	www.cancom.at
CAS Software	www.cas.de
CE-CON	www.ce-con.de
Centigrade	www.centigrade.de
Cloudflight Germany	www.cloudflight.io
CMC Engineers	www.cmc-engineers.de/de
colenio	www.colenio.de
Configit	www.configit.com
Dassault Systèmes	www.3ds.com
DataArt	www.dataart.com/de
ECHO PRM	www.echoprm.com
Eckelmann FCS	www.eckelmann.de
Eckelmann	www.eckelmann.de
FAUSER	www.fauser.ag
GEA Brewery Systems	www.gea.com
GFT Technologies	www.gft.com/de/de/index
Google Germany	www.google.de
IBM Deutschland	www.ibm.de

Solutions for further Fields of Application

ICONICS Germany	www.iconics.com
INNEO Solutions	www.inneo.com
ISG	www.isg-stuttgart.de
KOCH Pac-Systeme	www.koch-pac-systeme.com
Körber	www.koerber.com
Körber Digital	www.koerber-digital.com
LASCO Umformtechnik	www.lasco.com
Lenze Austria	www.lenze.com
Lino	www.lino.de
M&M Software	www.mm-software.com
machineering	www.machineering.com
Microsoft Deutschland	www.microsoft.com
mobile function	www.mobile-function.com
N+P Informationssysteme	www.nupis.de
oculavis	www.oculavis.de
openpack	www.openpack.com
Optima packaging group	www.optima-packaging.com
PARTSCLOUD	www.partscloud.com
Plan Software	www.plansoft.de
Rockwell Automation Solutions	www.rockwellautomation.com
Rockwell Automation	www.rockwellautomation.com
SAE Applications for Digitalization	www.sae-portal.de
Schneider Electric	www.se.com/de/de
schrempp edv	www.schrempp-edv.de
Siemens Industry Software	www.sw.siemens.com
Simplifier	www.simplifier.io
SL innovativ	www.sl-i.de
SMS group	www.sms-group.com/expertise/digitalization
Software Factory	www.sf.com
Stryza	www.stryza.com
Synostik	www.synostik.de
UID	www.uid.com
Viewpointsystem	www.viewpointsystem.com
Voith	www.voith.com
J.M. Voith SE / DSG	www.voith.com
WeAre	www.weare-rooms.com
XITASO	www.xitaso.com
Zühlke Engineering (Austria)	www.zuehlke.com/de/standorte/oesterreich

Product independent Consulting

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ACP Holding Digital	www.acp.de/digital
adesso	www.adesso.de
AIT-Applied Information Technologies	www.aitgmbh.de
alltrotec	www.alltrotec.de
ARNOLD IT Systems	www.arnold-it.com
audius	www.audius.de
bridgefield	www.bridgefield.de
CaderaDesign	www.caderadesign.de
Centigrade	www.centigrade.de
Cloudflight Germany	www.cloudflight.io
daenet	www.daenet.de
DataArt	www.dataart.com/de
DS Group	www.dokuschmiede.de
Dürr	www.durr.com
EPLAN	www.eplan.de
ERGOSIGN	www.ergosign.de
ERNI (Deutschland)	www.betterask.erni
FAUSER	www.fauser.ag
GFT Technologies	www.gft.com/de/de/index
HEITEC	www.heitec.de
IBM Deutschland	www.ibm.de
INNEO Solutions	www.inneo.com
ISG	www.isg-stuttgart.de
ITQ	www.itq.de
Lachmann & Rink	www.lachmann-rink.de
Lenze	www.lenze.com
Lino	www.lino.de
Qualysoft	www.de.qualysoft.com
SL innovativ	www.sl-i.de
SMS group	www.sms-group.com/expertise/digitalization
Software Factory	www.sf.com
syscon	www.syscon-online.com
Tebis Technische Informationssysteme	www.tebis.com
UID	www.uid.com
UNITY	www.unity.de
WeAre	www.weare-rooms.com
XITASO	www.xitaso.com
Zühlke Engineering (Austria)	www.zuehlke.com/de/standorte/oesterreich
Zühlke Engineering	www.zuehlke.com

Customer relationship management and service management

Thomas Riegler

In all change processes related to digitalization, the focus remains on the customer. This begins in sales and extends to the service department. Proper interaction with customers in all business areas makes a significant contribution to the success of a business. Systems which manage all customer activities are required to maintain and optimize existing customer relations.

CRM systems and service management systems map the individual processes involved here. For some time now, these systems have been increasingly merging into one – a sensible development, as information from sales is indispensable for the service department and vice versa.

All information about the customers and the installed basis is combined in one system, making data redundancy and discontinuities a thing of the past. Systematic design of all relations and interactions with existing and potential customers creates transparency, reduces reaction times and enhances customer loyalty. Other business units such as the development and design departments also benefit from these systems.

Machine connectivity is growing ever more in the age of digitalization. Employees are also connected with mobile devices such as smartphones, tablets or smart glasses.

For 20 years, the Remote Service user forum in VDMA has been analyzing solutions which provide services via telecommunication systems.

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Customer Relationship Management (CRM)

Part of ERP

abas Software	www.abas-erp.com
ACBIS	www.acbis.de
All for One Group	www.all-for-one.com
alltrotec	www.alltrotec.de
ams.Solution	www.ams-erp.com
Aptean Germany	www.aptean.com
Asseco Solutions	www.assecosolutions.com
ASSYST	www.assyst.de
AVISTA ERP Software	www.avista-erp.de
BEUMER Maschinenfabrik	www.beumergroup.com
Blauhut & Partner	www.procos.de
CATUNO	www.catuno.de
ClassiX Software	www.classix.de
COSMO CONSULT Group	www.cosmoconsult.com
COSMO CONSULT GmbH	www.cosmoconsult.com
CSS	www.css.de
datura manufacturing	www.swissdynamics.net
eEvolution	www.eevolution.de
ERGOSIGN	www.ergosign.de
EVO Informationssysteme	www.evo-solutions.com
FAUSER	www.fauser.ag
Gebauer	www.timeline-erp.de
HALO-electronic	www.inteos.com
HEISAB	www.heisab.de
IFS Deutschland	www.ifs.com/de
IKOffice	www.ikoffice.de/cms
Isah	www.isah.com
KRONES	www.krones.com
KUMAVISION	www.kumavision.com
Microsoft Deutschland	www.microsoft.com
mobile function	www.mobile-function.com
MODUS Consult	www.modusconsult.de
N+P Informationssysteme	www.nupis.de
oculavis	www.oculavis.de
Opdenhoff Technologie	www.opdenhoff.com
ORBIS	www.orbis.de
proALPHA	www.proalpha.com
SAP Deutschland	www.sap.com/germany
schrempp edv	www.schrempp-edv.de
Synctive	www.synctive.io
Syntax Systems	www.syntax.com/fit
TopM Software	www.topm.de
UniPPS business solutions	www.unipps.de
untersee Unternehmensberatung	www.untersee.com

Stand-alone CRM / Customer Service Solution

247FactoryNet	www.247factorynet.com
ACBIS	www.acbis.de
ADITO Software	www.adito.de
All for One Group	www.all-for-one.com
ams.Solution	www.ams-erp.com
audius	www.audius.de
CANCOM Austria	www.cancom.at
CAS Software	www.cas.de
ClassiX Software	www.classix.de
COSMO CONSULT Group	www.cosmoconsult.com
COSMO CONSULT GmbH	www.cosmoconsult.com
CSS	www.css.de
DataArt	www.dataart.com/de
ECHO PRM	www.echoprm.com
EVO Informationssysteme	www.evo-solutions.com
IFS Deutschland	www.ifs.com/de
INNOSOFT	www.innosoft.de
INTENSIO Software und Consulting	www.intensio.de
IT Vision Technology	www.itvt.de
itmX	www.itmx.de
KUMAVISION	www.kumavision.com
linx4	www.linxfour.com
Microsoft Deutschland	www.microsoft.com
mobile function	www.mobile-function.com
MODUS Consult	www.modusconsult.de
oculavis	www.oculavis.de
ORBIS	www.orbis.de
ORISA Software	www.orisa.de
PiSA sales	www.justrelate.com/de
POWERCASE FORMULA CRM	www.formulacrm.de
PSI Software	www.psi.de
PSI Automotive & Industry	www.psi-automotive-industry.de
Remberg	www.remberg.de
Revalize	www.sofon.com
Salesfive	www.salesfive.com
SAP Deutschland	www.sap.com/germany
Schubert & Salzer Data	www.schubert-salzer.com
Simplifier	www.simplifier.io
Sybit	www.sybit.de
Synctive	www.synctive.io
untersee Unternehmensberatung	www.untersee.com
valantic Supply Chain Excellence	www.valantic.com

Remote Service Solution Provider

247FactoryNet	www.247factorynet.com
All for One Group	www.all-for-one.com
ams.Solution	www.ams-erp.com
audius	www.audius.de
Autonoma Technologies	www.autonoma.cloud
BEUMER Maschinenfabrik	www.beumergroup.com
CANCOM Austria	www.cancom.at
CAS Software	www.cas.de
ClassiX Software	www.classix.de
COSMO CONSULT Group	www.cosmoconsult.com
COSMO CONSULT GmbH	www.cosmoconsult.com
Docufy	www.docufy.de
Empolis Information Management	www.service.express
GEA Brewery Systems	www.gea.com
Google Germany	www.google.de
HighConsulting	www.crsm.biz
IFS Deutschland	www.ifs.com/de
Isah	www.isah.com
itmX	www.itmx.de
KDT	www.kundendienst-trainer.de
KOCH Pac-Systeme	www.koch-pac-systeme.com
Körber	www.koerber.com
Körber Digital	www.koerber-digital.com
LiSEC Austria	www.lisec.com
Microsoft Deutschland	www.microsoft.com
mobile function	www.mobile-function.com
MODUS Consult	www.modusconsult.de
oculavis	www.oculavis.de
ORBIS	www.orbis.de
SERVITIZE	www.servitize.de
Simplifier	www.simplifier.io
Sybit	www.sybit.de
symmedia	www.symmedia.de
Synctive	www.synctive.io
TRUMPF	www.trumpf.com
Uhlmann Pac-Systeme	www.uhlmann.de

Product independent Consulting

Abass	www.abass.de
ACBIS	www.acbis.de
accelcon industrial engineering	www.accelcon.de
adesso	www.adesso.de
Centigrade	www.centigrade.de
DataArt	www.dataart.com/de
EPLAN	www.eplan.de
ERNI (Deutschland)	www.betterask.erni
esentri	www.esentri.com
FAUSER	www.fauser.ag
HEITEC	www.heitec.de
KDT	www.kundendienst-trainer.de
Magic Software Enterprises	www.magicsoftware.com
MQ result consulting	www.mqresult.de
Opdenhoff Technologie	www.opdenhoff.com
ORBIS	www.orbis.de
POWERCASE FORMULA CRM	www.formulacrm.de
Qualysoft	www.de.qualysoft.com
Revalize	www.sofon.com
Salesfive	www.salesfive.com
SERVITIZE	www.servitize.de
syscon	www.syscon-online.com
TROVARIT	www.trovarit.com
UNITY	www.unity.de
valantic Supply Chain Excellence	www.valantic.com
Zühlke Engineering (Austria)	www.zuehlke.com/de/standorte/oesterreich
Zühlke Engineering	www.zuehlke.com

Digital spare parts catalogues in industry

Thomas Riegler

Spare parts continue to be the most important driver of turnover in the industry´s service sector. Digital spare parts catalogues are increasingly used in an effort to provide customers, service technicians and business partners with quick support and optimum order processing. This gives the user access to complex information about spare parts and services.

In addition, companies that introduce digital spare parts catalogues often pursue the following objectives:

- Reducing process costs
- Avoiding incorrect purchase orders
- Accelerating the compilation of product catalogues
- Improving availability
- Enhancing customer loyalty
- Increasing sales

Numerous advantages on the web

The Internet offers a wide range of options for implementation and support. Exploded-view drawings for example make it easier to identify parts, while customer-specific prices can be obtained from the ERP system online. Information on bills of materials can be made available and order processing can be automated up to delivery and invoicing by linking the digital spare parts catalogue to other data sources.

Up-to-date data and documents relevant for service, maintenance, repair and spare parts sale can be efficiently provided in real-time, location-independent and around the clock. Companies also benefit from significantly easier updating of relevant data and are able to provide a wider variety of languages, which is a substantial prerequisite given the high percentage of exports in the industry. It takes the catalogue user no more than a few clicks to find the necessary information or to order spare parts. This significantly optimizes the provision of information and parts to the service staff: being equipped with the right parts, tools and infor-mation not only reduces the costs for deploying service staff but also shortens the response times in customer service. This results in significantly higher machine availability and customer satisfaction.

In this context, VDMA offers its members regular events for sharing their experiences.

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Webshop / Digital Spare Parts Catalogue / E-Commerce

Part of ERP, CRM ...

A+W Software	www.a-w.de
All for One Group	www.all-for-one.com
Aptean Germany	www.aptean.com
ARC Solutions	www.arcsolutions.de
ASSYST	www.assyst.de
AVISTA ERP Software	www.avista-erp.de
BCT Technology	www.bct-technology.com
CATUNO	www.catuno.de
ClassiX Software	www.classix.de
COSMO CONSULT Group	www.cosmoconsult.com
COSMO CONSULT GmbH	www.cosmoconsult.com
DMG MORI Digital	www.de.dmgmori.com
eEvolution	www.eevolution.de
Empolis Information Management	www.service.express
GS1 Germany	www.gs1-germany.de
HEISAB	www.heisab.de
IFS Deutschland	www.ifs.com/de
Isah	www.isah.com
IT Vision Technology	www.itvt.de
itmX	www.itmx.de
Markt-Pilot	www.markt-pilot.de
Microsoft Deutschland	www.microsoft.com
mobile function	www.mobile-function.com
N+P Informationssysteme	www.nupis.de
ORBIS	www.orbis.de
Possehl Online Solutions	www.possehl-online.com
POWERCASE FORMULA CRM	www.formulacrm.de
proALPHA	www.proalpha.com
SAP Deutschland	www.sap.com/germany
SETEX Schermuly	www.setex-germany.com
TRUMPF	www.trumpf.com
UniPPS business solutions	www.unipps.de
untersee Unternehmensberatung	www.untersee.com
valantic Supply Chain Excellence	www.valantic.com

Stand-alone Webshop / Digital Spare Parts Catalogue / E-Commerce

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avenit	www.avenit.de
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CIMSOURCE	www.cimsource.com
ClassiX Software	www.classix.de
Cloudflight Germany	www.cloudflight.io
colenio	www.colenio.de
daenet	www.daenet.de
Dassault Systèmes	www.3ds.com
DataArt	www.dataart.com/de
DiManEx	www.dimanex.com
eEvolution	www.eevolution.de
encoway	www.encoway.de
ERGOSIGN	www.ergosign.de
EURO-LOG	www.eurolog.com
GAL Digital	www.gal-digital.de
GEA Brewery Systems	www.gea.com
Google Germany	www.google.de
HOMAG Group	www.homag.com
IBM Deutschland	www.ibm.de
ISG	www.isg-stuttgart.de
itmX	www.itmx.de
kommunikationsoptimierer.de	www.kommunikationsoptimierer.de
Körber	www.koerber.com
Körber Digital	www.koerber-digital.com
KRONES	www.krones.com
KUMAVISION	www.kumavision.com
Lino	www.lino.de
linx4	www.linxfour.com
M&M Software	www.mm-software.com
MAG IAS	www.ffg-ea.com
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mobile function	www.mobile-function.com
MODUS Consult	www.modusconsult.de
mpunkt	www.mpunkt.com
neogramm	www.neogramm.de
Noxum	www.noxum.com
Plan Software	www.plansoft.de
Possehl Online Solutions	www.possehl-online.com
proALPHA	www.proalpha.com
Quanos Service Solutions	www.quanos-service-solutions.com
SAE Applications for Digitalization	www.sae-portal.de
SEEBURGER Deutschland	www.seeburger.de
Siemens Industry Software	www.sw.siemens.com
Simplifier	www.simplifier.io
SL innovativ	www.sl-i.de
SMS group	www.sms-group.com/expertise/digitalization
SPARETECH	www.sparetech.io
STAR Deutschland	www.star-group.net
Sybit	www.sybit.de
Transaction-Network	www.transaction-network.com
valantic Supply Chain Excellence	www.valantic.com
Voith	www.voith.com
J.M. Voith SE / DSG	www.voith.com
J.M. Voith SE / VPH	www.voithpaper.com
WTG innovation	www.vsf-experts.de

Product independent Consulting

adesso	www.adesso.de
alltrotec	www.alltrotec.de
avenit	www.avenit.de
bridgefield	www.bridgefield.de
CANCOM Austria	www.cancom.at
Cloudflight Germany	www.cloudflight.io
daenet	www.daenet.de
DataArt	www.dataart.com/de
DS Group	www.dokuschmiede.de
encoway	www.encoway.de
EPLAN	www.eplan.de
ERGOSIGN	www.ergosign.de
ERNI (Deutschland)	www.betterask.erni
FAUSER	www.fauser.ag
GAL Digital	www.gal-digital.de
HEGLA-HANIC	www.hegla-hanic.de
IBM Deutschland	www.ibm.de
Lenze	www.lenze.com
Markt-Pilot	www.markt-pilot.de
mpunkt	www.mpunkt.com
MQ result consulting	www.mqresult.de
neogramm	www.neogramm.de
Possehl Online Solutions	www.possehl-online.com
POWERCASE FORMULA CRM	www.formulacrm.de
Qualysoft	www.de.qualysoft.com
Salesfive	www.salesfive.com
schrempp edv	www.schrempp-edv.de
SERVITIZE	www.servitize.de
SL innovativ	www.sl-i.de
Stackmeister	www.stackmeister.com/de
symmedia	www.symmedia.de
Syntax Systems	www.syntax.com/fit
syscon	www.syscon-online.com
TROVARIT	www.trovarit.com
UNITY	www.unity.de
valantic Supply Chain Excellence	www.valantic.com
WTG innovation	www.vsf-experts.de
Zühlke Engineering (Austria)	www.zuehlke.com/de/standorte/oesterreich
Zühlke Engineering	www.zuehlke.com

Successful industry marketing – challenges and special features

Stephanie Schubert

On the fiercely competitive and highly globalized B2B market, companies have to stand their ground against the competition and firmly establish themselves. Various studies indicate that more than 89 percent of B2B buyers already use the internet for research. Today it is more challenging than ever before for companies to maintain their market position, precisely because of strong competition and the ease with which to compare companies on the Internet. In our "Marketing for Software Companies" working group, you can learn by sharing with other VDMA members how to make your company unique through strategic industry marketing.

Strategically managed marketing is indispensable for companies to get established in the B2B sector. Here many industrial companies rely on traditional, familiar communication channels. Increasing globalization not only opens up new markets and customers, but also creates new competitors that a company must contend with. An industrial company that enjoys a strong, individual position has a unique impact on potential buyers. The role of industry marketing is to make the customer benefit quite clear to the market in general.

This means that the B2B sector must increasingly operate in the digital space. As digitalization progresses and develops, it offers marketing managers a variety of possibilities, including specific provision of information and implementing data-driven marketing. Companies have various online marketing tools, including the company website as a showcase for the business. The website should bring together all important information, from the range of products on offer through to the corporate identity. Additionally, providing a means of contact is essential. Besides, social media marketing is today more important than ever before. Social networks have developed into important communication portals. The platforms most frequently used by medium-sized companies in Germany to achieve their own marketing targets are Facebook together with LinkedIn, Twitter and YouTube. Each of this channel is suitable for different target groups and different content.

VDMA Software and Digitalization supports its members in choosing the right channels for their own corporate objectives. Regular exchange and interaction with other companies offers scope for sharing best practices with other VDMA members.

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Enterprise Resource Planning – advice on selection and introduction

Christoph Herr

VDMA has been supporting its members when it comes to enterprise resource planning (ERP) for more than three decades. During this time, numerous tools have been developed that provide effective assistance when searching for the right ERP solution. These tools are available to VDMA members at no cost.

Software map

Frequently it is not easy to get an overview of the software landscape that has grown in companies over the years. The VDMA software map can help here by giving a simple visual overview of the status quo and future infrastructure of the software.

Standard process description

The basis for selecting the right ERP for a company is based on having an in-depth knowledge of the company's business processes in order to stipulate the corresponding requirements for a supportive IT solution. It's not a case of abiding strictly to the standard presented by an ERP solution. Rather, what counts is ensuring that the strengths of a company can clearly be brought out in the value-added process. The VDMA method for process description makes it possible to describe the core processes of value creation within the company in a structured and comprehensive manner.

ERP reference list

References of successful ERP projects are the most important decision-making criterion when selecting an ERP system. This is why the VDMA provides its members with a sector-oriented ERP reference list. Each reference includes information about the provider, product, user companies and the number of system users. This information enables companies that are looking for a new solution to make a targeted preselection based on the experiences that other companies have had with the product.

A new ERP system won't work much better than the old one if it is fed with poor master data. It is therefore advisable to proceed with a master data project before implementing a new ERP. As a rule, expert support is necessary over a longer period of time during the selection and introduction of ERP. For this reason, the VDMA Software and Digitalization offers its members support on this topic.

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Enterprise Resource Planning (ERP)

ERP-Solution

A+W Software	www.a-w.de
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abilis	www.abilis.de
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ACP Holding Digital	www.acp.de/digital
All for One Group	www.all-for-one.com
alltrotec	www.alltrotec.de
ams.Solution	www.ams-erp.com
Aptean Germany	www.aptean.com
Asseco Solutions	www.assecosolutions.com
audius	www.audius.de
AVISTA ERP Software	www.avista-erp.de
BEUMER Maschinenfabrik	www.beumergroup.com
Blauhut & Partner	www.procos.de
CADCABEL	www.cadcabel.com
CATUNO	www.catuno.de
ClassiX Software	www.classix.de
COSMO CONSULT Group	www.cosmoconsult.com
COSMO CONSULT GmbH	www.cosmoconsult.com
CSS	www.css.de
datura manufacturing	www.swissdynamics.net
DPS Software	www.dps-software.de
eEvolution	www.eevolution.de
EVO Informationssysteme	www.evo-solutions.com
FAUSER	www.fauser.ag
Gebauer	www.timeline-erp.de
GFT Integrated Systems	www.gft.com/de/de/index
HALO-electronic	www.inteos.com
HEGLA-HANIC	www.hegla-hanic.de
HEISAB	www.heisab.de
IFS Deutschland	www.ifs.com/de
IKOffice	www.ikoffice.de/cms
ILC	www.ilc-solutions.de
Isah	www.isah.com
KRONES	www.krones.com
KUMAVISION	www.kumavision.com
LiSEC Austria	www.lisec.com
Microsoft Deutschland	www.microsoft.com
mobile function	www.mobile-function.com
MODUS Consult	www.modusconsult.de
N+P Informationssysteme	www.nupis.de
Opdenhoff Technologie	www.opdenhoff.com
ORBIS	www.orbis.de
PIKON Deutschland	www.pikon.com
Plan Software	www.plansoft.de
proALPHA	www.proalpha.com
PSI Software	www.psi.de
PSI Automotive & Industry	www.psi-automotive-industry.de
SAP Deutschland	www.sap.com/germany
Schneider Electric	www.se.com/de/de
schrempp edv	www.schrempp-edv.de
Schubert & Salzer Data	www.schubert-salzer.com
SL innovativ	www.sl-i.de
Synctive	www.synctive.io
Syntax Systems	www.syntax.com/fit
TopM Software	www.topm.de
UniPPS business solutions	www.unipps.de
untersee Unternehmensberatung	www.untersee.com

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ams.Solution	www.ams-erp.com
ARC Solutions	www.arcsolutions.de
audius	www.audius.de
bridgefield	www.bridgefield.de
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Centigrade	www.centigrade.de
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DataArt	www.dataart.com/de
ecosio	www.ecosio.com
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esentri	www.esentri.com
GFT Integrated Systems	www.gft.com/de/de/index
HEGLA-HANIC	www.hegla-hanic.de
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ILC	www.ilc-solutions.de
Janz Tec	www.janztec.com
Magic Software Enterprises	www.magicsoftware.com
MQ result consulting	www.mqresult.de
Opdenhoff Technologie	www.opdenhoff.com
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SL innovativ	www.sl-i.de
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syscon	www.syscon-online.com
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Techniciency Consulting	www.techniciency.de
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TTTech Industrial Automation	www.tttech.com
UNITY	www.unity.de
valantic Supply Chain Excellence	www.valantic.com
Zühlke Engineering	www.zuehlke.com

Smart Data – Turning data into gold

Thomas Riegler

The buzzword big data refers to more than just large quantities of data. But big data is too complex, too short-lived or its structure too weak to evaluate it with conventional data processing methods. In fact, data users have to filter the data and process it intelligently. Only then is big data turned into valuable smart data. Companies can use this data, for example, to optimize logistics and production processes. When they know how to make use of the potential offered by large quantities of data and how to translate big data into smart data, companies are then able to develop new business models.

Digitalization in production facilities means that companies interconnect their machines, logistics systems and products. They do this to reduce costs, become more competitive and shorten their lead times. Companies are looking to identify and prevent disruptions and production losses at an early point in the process by analyzing the data collected by sensors and control systems. Smart data analysis lets companies identify optimization potential in production as well as in marketing, engineering and service. The challenge of translating big data into smart data lies in evaluating the steadily growing flood of data and turning it into intelligent information, so that companies can proceed with beneficial and profitable evaluations.

Image transformation

It's not difficult to imagine a time when the engineering sector sells the production capacity of its plants rather than the machines themselves. This idea is based on a pay-per-use business model. It is crucial for manufacturers to collect and evaluate all plant data in order to react promptly to failures or downtimes. This is the only way to ensure optimum, efficient operation of machines at different sites. The data paves the way for mechanical and plant engineering companies to tap innovative and successful business fields through the use of analytical processes.

Prioritizing data security

But companies must always focus on data security. The more devices and plants that are connected, the more important the topic of security becomes. Hackers may steal important production data or upload malware, thus causing production downtimes and machine failure. Investments in smart data are often quite expensive, and the return on investment is not always measurable. However, companies in the engineering sector do not want to invest just so that they can merely go with the flow: the investment also needs to be worthwhile.

VDMA supports its members in the face of these challenges with network events, publications and advice.

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Business Intelligence (BI) / Big Data Analytics

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ADITO Software	www.adito.de
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Aptean Germany	www.aptean.com
Asseco Solutions	www.assecosolutions.com
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audius	www.audius.de
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BCT Technology	www.bct-technology.com
Blauhut & Partner	www.procos.de
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CE-CON	www.ce-con.de
CIMSOURCE	www.cimsource.com
ClassiX Software	www.classix.de
Configit	www.configit.com
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COSMO CONSULT GmbH	www.cosmoconsult.com
CSS	www.css.de
datura manufacturing	www.swissdynamics.net
Docufy	www.docufy.de
DPS Software	www.dps-software.de
eEvolution	www.eevolution.de
Empolis Information Management	www.service.express
eoda	www.eoda.de
EPLAN	www.eplan.de
EVO Informationssysteme	www.evo-solutions.com
FAUSER	www.fauser.ag
Gebauer	www.timeline-erp.de
HALO-electronic	www.inteos.com
HEGLA-HANIC	www.hegla-hanic.de
HEISAB	www.heisab.de
HEITEC	www.heitec.de
IFS Deutschland	www.ifs.com/de
IKOffice	www.ikoffice.de/cms
ILC	www.ilc-solutions.de
Isah	www.isah.com
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iTAC Software	www.itacsoftware.com/de
itmX	www.itmx.de
Jungheinrich	www.jungheinrich.de
Körber Pharma Software	www.koerber-pharma.com
KRONES	www.krones.com
KUMAVISION	www.kumavision.com
Membrain	www.membrain-it.com
Microsoft Deutschland	www.microsoft.com
mobile function	www.mobile-function.com
MODUS Consult	www.modusconsult.de
N+P Informationssysteme	www.nupis.de
ORBIS	www.orbis.de
PIKON Deutschland	www.pikon.com
POWERCASE FORMULA CRM	www.formulacrm.de
proALPHA	www.proalpha.com
PSI Software	www.psi.de
SAP Deutschland	www.sap.com/germany
schrempp edv	www.schrempp-edv.de
SETEX Schermuly	www.setex-germany.com
Sybit	www.sybit.de
Syntax Systems	www.syntax.com/fit
UniPPS business solutions	www.unipps.de
untersee Unternehmensberatung	www.untersee.com
WSW Software	www.wsw.de

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ACP CUBIDO Digital Solutions	www.cubido.at
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All for One Group	www.all-for-one.com
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Altair Engineering	www.altair.com
ams.Solution	www.ams-erp.com
ARNOLD IT Systems	www.arnold-it.com
Asseco Solutions	www.assecosolutions.com
audius	www.audius.de
Autonoma Technologies	www.autonoma.cloud
avenit	www.avenit.de
AZO	www.azo.com
becos	www.becos.de
BEUMER Maschinenfabrik	www.beumergroup.com
CANCOM Austria	www.cancom.at
ClassiX Software	www.classix.de
colenio	www.colenio.de
COSMO CONSULT Group	www.cosmoconsult.com
COSMO CONSULT GmbH	www.cosmoconsult.com
CSP	www.csp-sw.de
CSS	www.css.de
Dassault Systèmes	www.3ds.com
DataArt	www.dataart.com/de
DiManEx	www.dimanex.com
DMG MORI Digital	www.de.dmgmori.com
Dürr	www.durr.com
ECHO PRM	www.echoprm.com
Eckelmann FCS	www.eckelmann.de
Eckelmann	www.eckelmann.de
Empolis Information Management	www.service.express
encoway	www.encoway.de
eoda	www.eoda.de
esentri	www.esentri.com
evon	www.evon-automation.com
FAUSER	www.fauser.ag
Fischer Information Technology	www.fischer-information.com
GFOS	www.gfos.com
Google Germany	www.google.de
GTT	www.gtt-online.de
HALO-electronic	www.inteos.com
humanIT Software	www.humanit.de
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ICONICS Germany	www.iconics.com
Industrie Informatik	www.industrieinformatik.com
INFORM	www.inform-software.de
INNOSOFT	www.innosoft.de
INTENSIO Software und Consulting	www.intensio.de
itmX	www.itmx.de

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KUMAVISION	www.kumavision.com
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LiSEC Austria	www.lisec.com
Markt-Pilot	www.markt-pilot.de
Membrain	www.membrain-it.com
Microsoft Deutschland	www.microsoft.com
mobile function	www.mobile-function.com
MODUS Consult	www.modusconsult.de
neogramm	www.neogramm.de
PIKON Deutschland	www.pikon.com
Point 8	www.point-8.de
PSI Software	www.psi.de
PSI Automotive & Industry	www.psi-automotive-industry.de
PSI Technics	www.psi-technics.com
Rockwell Automation Solutions	www.rockwellautomation.com
SAP Deutschland	www.sap.com/germany
Schneider Electric Systems Germany	www.se.com/de/de
SMS group	www.sms-group.com/expertise/digitalization
Soley	www.soley.io
SQL Projekt	www.sql-ag.de
Synostik	www.synostik.de
syscon	www.syscon-online.com
talpasolutions	www.talpasolutions.com
WSW Software	www.wsw.de

Stand-alone Big Data Analytics Solution

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Altair Engineering	www.altair.com
ams.Solution	www.ams-erp.com
Autonoma Technologies	www.autonoma.cloud
AZO	www.azo.com
Balluff	www.balluff.com
Beckhoff Automation	www.beckhoff.com
BEUMER Maschinenfabrik	www.beumergroup.com
CANCOM Austria	www.cancom.at
Cloudflight Germany	www.cloudflight.io
colenio	www.colenio.de
COMAN Software	www.coman-software.com
compacer	www.compacer.com
COSMO CONSULT Group	www.cosmoconsult.com
COSMO CONSULT GmbH	www.cosmoconsult.com
CSP	www.csp-sw.de
DataArt	www.dataart.com/de
Dürr	www.durr.com
Eckelmann FCS	www.eckelmann.de
Eckelmann	www.eckelmann.de
Empolis Information Management	www.service.express
eoda	www.eoda.de
EPLAN	www.eplan.de
esentri	www.esentri.com
Fischer Information Technology	www.fischer-information.com
Google Germany	www.google.de
IBM Deutschland	www.ibm.de
ICONICS Germany	www.iconics.com
IFS Deutschland	www.ifs.com/de
Industrie Informatik	www.industrieinformatik.com
INNEO Solutions	www.inneo.com
iTAC Software	www.itacsoftware.com/de
KOCH Pac-Systeme	www.koch-pac-systeme.com
linx4	www.linxfour.com
MAG IAS	www.ffg-ea.com
Membrain	www.membrain-it.com
Microsoft Deutschland	www.microsoft.com
MODUS Consult	www.modusconsult.de
mpunkt	www.mpunkt.com
Odego	www.odego.de
openpack	www.openpack.com
PIKON Deutschland	www.pikon.com
Point 8	www.point-8.de
Possehl Analytics	www.possehl-analytics.com
PSI Software	www.psi.de
Rockwell Automation Solutions	www.rockwellautomation.com
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Voith	www.voith.com
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WITTENSTEIN	www.wittenstein.de
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Zühlke Engineering (Austria)	www.zuehlke.com/de/standorte/oesterreich

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Accso - Accelerated Solutions	www.accso.de
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AZO	www.azo.com
bridgefield	www.bridgefield.de
CANCOM Austria	www.cancom.at
Centigrade	www.centigrade.de
Cloudflight Germany	www.cloudflight.io
CSP	www.csp-sw.de
DataArt	www.dataart.com/de
encoway	www.encoway.de
eoda	www.eoda.de
EPLAN	www.eplan.de
ERNI (Deutschland)	www.betterask.erni
esentri	www.esentri.com
GFT Technologies	www.gft.com/de/de/index
HEGLA-HANIC	www.hegla-hanic.de
HEITEC	www.heitec.de
IBM Deutschland	www.ibm.de
INNEO Solutions	www.inneo.com
J&M Business Consulting	www.voith.com
Janz Tec	www.janztec.com
Körber	www.koerber.com
Körber Digital	www.koerber-digital.com
Lachmann & Rink	www.lachmann-rink.de
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mpunkt	www.mpunkt.com
MQ result consulting	www.mqresult.de
neogramm	www.neogramm.de
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PIKON Deutschland	www.pikon.com
Point 8	www.point-8.de
Possehl Analytics	www.possehl-analytics.com
POWERCASE FORMULA CRM	www.formulacrm.de
PROSTEP	www.prostep.com
PROXIA Software	www.proxia.com
PSI Technics	www.psi-technics.com
Qualysoft	www.de.qualysoft.com
Salesfive	www.salesfive.com
SMS group	www.sms-group.com/expertise/digitalization
Stackmeister	www.stackmeister.com/de
syscon	www.syscon-online.com
talpasolutions	www.talpasolutions.com
Tebis Technische Informationssysteme	www.tebis.com
TROVARIT	www.trovarit.com
UNITY	www.unity.de
valantic Supply Chain Excellence	www.valantic.com
WSW Software	www.wsw.de
XITASO	www.xitaso.com
Zühlke Engineering (Austria)	www.zuehlke.com/de/standorte/oesterreich
Zühlke Engineering	www.zuehlke.com

Manufacturing Execution Systems – optimized production control

Jan Doberstein

Fiercer competition on the international stage demands continuous optimization of the value creation processes. MES solutions are important tools in this context for implementing operational Industry 4.0 scenarios.

Going over and beyond IT-based planning tools (ERP, APS), MES solutions offer the possibility of monitoring and controlling the production processes in a company, using connectivity down to the sensor level for direct communication between the production level and the control level. MES is the data hub that saves, analyzes and interprets process data from production and assembly. In operative terms, warnings are displayed and optimized solution scenarios offered or automated processes triggered. This creates efficient connection between the planning systems and the production level for overall transparency and process control. In particular, MES supports the following corporate processes:

- Production planning and control
- Operating resources management
- Materials management
- HR management
- Data acquisition
- Performance analysis
- Quality management
- Information management
- Order management
- Energy management

VDMA has been working on the topic of MES solutions for well over a decade and provides support, consultation and network events for companies that are planning to implement such a system.

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Manufacturing Execution System (MES) / Production Control Centre / Production Data Acquisition (PDA) / Machine Data Acquisition (MDA)

Part of ERP

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Asseco Solutions	www.assecosolutions.com
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N+P Informationssysteme	www.nupis.de
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proALPHA	www.proalpha.com
PSI Software	www.psi.de
PSI Automotive & Industry	www.psi-automotive-industry.de
SAP Deutschland	www.sap.com/germany
schrempp edv	www.schrempp-edv.de
Schubert & Salzer Data	www.schubert-salzer.com

Part of ERP

Syntax Systems	www.syntax.com/fit
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TopM Software	www.topm.de
Trebing & Himstedt	www.t-h.de
TRUMPF	www.trumpf.com
UniPPS business solutions	www.unipps.de
untersee Unternehmensberatung	www.untersee.com
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avenit	www.avenit.de
AZO	www.azo.com
becos	www.becos.de
Carl Zeiss MES Solutions	www.guardus-mes.de
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datura manufacturing	www.swissdynamics.net
DiManEx	www.dimanex.com
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Eckelmann FCS	www.eckelmann.de
Eckelmann	www.eckelmann.de
EPLAN	www.eplan.de
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FAUSER	www.fauser.ag
FORCAM	www.forcam.com
gbo datacomp	www.gbo-datacomp.de
GEA Brewery Systems	www.gea.com
GFOS	www.gfos.com
Grenzebach Digital	www.grenzebach.digital
GTT	www.gtt-online.de
HALO-electronic	www.inteos.com
HEGLA-HANIC	www.hegla-hanic.de
HOMAG	www.homag.com
HOMAG Group	www.homag.com
IBODigital	www.ibodigital.com
ICONICS Germany	www.iconics.com
IKOffice	www.ikoffice.de/cms
Industrie Informatik	www.industrieinformatik.com
INFORM	www.inform-software.de
INNEO Solutions	www.inneo.com
iTAC Software	www.itacsoftware.com/de
Jagenberg Digital Solutions	www.jagenberg-digital.com
Körber	www.koerber.com
Körber Digital	www.koerber-digital.com
Körber Pharma Software	www.koerber-pharma.com
KRONES	www.krones.com
LF CONSULT	www.lfconsult.de
linx4	www.linxfour.com
LiSEC Austria	www.lisec.com
Magic Software Enterprises	www.magicsoftware.com
Miprotek	www.miprotek.de
mobile function	www.mobile-function.com
MODUS Consult	www.modusconsult.de
MPDV Mikrolab	www.mpdv.com/de
N+P Informationssysteme	www.nupis.de
Opdenhoff Technologie	www.opdenhoff.com
ORBIS	www.orbis.de
OSB connagtive	www.osb-connagtive.com
proALPHA	www.proalpha.com
ProLeiT	www.proleit.de
PROXIA Software	www.proxia.com
PSI Software	www.psi.de
PSI Automotive & Industry	www.psi-automotive-industry.de
PSI Technics	www.psi-technics.com
Rockwell Automation Solutions	www.rockwellautomation.com
Rockwell Automation	www.rockwellautomation.com
RTE Akustik + Prüftechnik	www.rte.de
SAP Deutschland	www.sap.com/germany
Schneider Electric	www.se.com/de/de
Sedo Treepoint	www.sedo-treepoint.com
SEITEC	www.seitec.info/de
SETEX Schermuly	www.setex-germany.com
Siemens Industry Software	www.sw.siemens.com
SMS group	www.sms-group.com/expertise/digitalization
Software Factory	www.sf.com
Symestic	www.symestic.com/de-de
Syntax Systems	www.syntax.com/fit
talpasolutions	www.talpasolutions.com
Tebis Technische Informationssysteme	www.tebis.com
Thyssenkrupp Materials IoT	www.thyssenkrupp-materials-iot.com
Trebing & Himstedt	www.t-h.de
TRUMPF	www.trumpf.com
UMa Soft	www.uma-soft.ch
untersee Unternehmensberatung	www.untersee.com
valantic Supply Chain Excellence	www.valantic.com
WSW Software	www.wsw.de
Zühlke Engineering (Austria)	www.zuehlke.com/de/standorte/oesterreich

Stand-alone PDA / MDA Software

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Aerzen Digital Systems	www.aerzendigital.com
All for One Group	www.all-for-one.com
alltrotec	www.alltrotec.de
ams.Solution	www.ams-erp.com
Aptean Germany	www.aptean.com
Autonoma Technologies	www.autonoma.cloud
avenit	www.avenit.de
AZO	www.azo.com
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Eckelmann FCS	www.eckelmann.de
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Eisenwerk Würth	www.eisenwerk-wuerth.de
EVO Informationssysteme	www.evo-solutions.com
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Industrie Informatik	www.industrieinformatik.com
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Körber Digital	www.koerber-digital.com
KRONES	www.krones.com
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LiSEC Austria	www.lisec.com
Magic Software Enterprises	www.magicsoftware.com
mobile function	www.mobile-function.com
MODUS Consult	www.modusconsult.de
MPDV Mikrolab	www.mpdv.com/de
neogramm	www.neogramm.de
Opdenhoff Technologie	www.opdenhoff.com
Optima packaging group	www.optima-packaging.com
OPTIMUM datamanagement solutions	www.optimum-gmbh.de
ORBIS	www.orbis.de
Peakboard	www.peakboard.com
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PROXIA Software	www.proxia.com
PSI Software	www.psi.de
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Creating general conditions for the future

Kai Kalusa

Whether Germany as an industrial nation can make digitalization and Industry 4.0 its business model depends not only on the companies. Important general conditions must be created together with politics, science, associations and society. To this end, the VDMA Software and Digitalization also is available for its members in Berlin.

Current developments show that digitalization is becoming more significant politically. Both the German Federal Government and the European Union (EU) have recognised the importance of issues such as digital sovereignty, artificial intelligence and block chain and have developed political strategies to address them. The VDMA Software and Digitalization is active in the central networks for national and international activities related to digitalization. Together with other stakeholders from industry, associations and science, it is committed to representing the position of its members, to developing recommendations on content and to promoting international networking.

Political interests are pursued in close coordination between the colleagues in Frankfurt, the capital city office in Berlin and the European Office in Brussels. The VDMA Software and Digitalization sees itself as a driving force, which, in conjunction with its members, has a high level of expertise in digital issues. This gives the association a leading role, which is demonstrated by its representation in committees such as the Plattforum Industrie 4.0 and the workstreams of Gaia-X.

Several strategically important topics are currently in the political debate that will be trend-setting for industry in Germany. These include, in particular, a digital strategy under which different digital topics will be brought together. The VDMA Software and Digitalization supports its members in getting involved in the political debate, it bundles common positions and finds the right channels into politics. We are happy to be available for exchange in this sense, please contact us.

VDMA Offers

- The VDMA Software and Digitalization represents the interests of its members in federal and EU digital policy from its Berlin office
- The „Brief Positions“ and press releases of the VDMA Software and Digitalization offer compact statements on current issues
- The position papers of the VDMA Software and Digitalization provide detailed approaches to solutions and policy recommendations
- The VDMA Software and Digitalization represents the interests of its members in various committees of economy, politics and science, among others in the platform Industry 4.0 as well as in the workstreams for Gaia-X.

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Blockchain technology has the potential to change business models sustainably

Kai Kalusa

Blockchain technology is ideally qualified to address challenges in numerous application scenarios. In the industrial environment, this includes in particular networked Industry 4.0, which has the potential to replace central platforms and establish automated, cross-organizational, and trustworthy workflows.

Industry 4.0 means the complete digitalization and automation of production processes. A prerequisite for this is that there is trust within the network in a clearly traceable handling of delivery, production and financial transactions. Possible use cases include, for example, to automated order processing between machines and the logging of data and rights.

In this way, blockchain creates trust between the actors, as it is able to transparently document and prove measured values, material qualities, product properties, etc. for all authorized parties. This means that blockchain can also be used to detect and rectify possible errors in good time.

By using blockchain, the entire production process can be traced and, for example, high repair costs in after-sales service can be avoided. The data is always available in a decentralized manner in the blockchain and can be continuously shared and reconciled with each other. Furthermore, the technology also has the potential to change business models in the future. For example, payment transactions can be automated using blockchain technology and pay-per-use models can thus be digitized to the end. In this way, usage-based billing for the use of machines will be possible in the future without any paperwork and personnel costs.

Support from VDMA

Companies often still have a lack of concrete knowledge and starting points in practice for the development and implementation of blockchain use cases. The VDMA supports its members by offering digital formats in which companies are provided with, among other things, evaluation criteria for when a blockchain implementation may be worthwhile. Furthermore, VDMA promotes the exchange of use cases that can serve as an impetus for a broader blockchain deployment.

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Variant management

Thomas Riegler

The major challenges facing Germany's engineering industry include globalization, increasingly dynamic markets and individual customer wishes. Those who want to succeed on the global market need to meet market demands with products that are characterized by competitive prices and technology.

The changing market situation and the transformation of corporate structures over the last decade has forced companies to bolster their innovative strength. The new buzzword is customer-orientation, which means that product variants are now tailored to the customers' specific needs. The increasingly complex product structures go hand in hand with a rise in costs, making it more and more difficult for companies to manage complexity.

For this reason, managing product diversity and product costs has become one of the most important tasks for engineering companies. Measures for reducing and managing product and process complexity are summarized under the term "variant management". Both companies with serial production and those making customer-specific, unique products, such as those needed in plant engineering, face the challenge of introducing an effective variant management system. More often, the former are required to provide systematic product variants on the market, while plant engineering companies need to reduce the costs caused by modular product concepts.

VDMA supports know-how transfer to variant management for its member companies with numerous central and regional events. Our expertise is at your disposal if you have any questions.

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Variant Management

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Syntax Systems	www.syntax.com/fit
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WTG innovation	www.vsf-experts.de
Your Expert Cluster	www.yourexpertcluster.de
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Driving digitalization in logistics

Florian Klein

In recent years, new developments and products focusing on digitalization and Industrie 4.0 have been launched on the market. However, in terms of practical engineering applications, these developments and products are not yet widely used. This situation becomes apparent in current logistics processes. How can this be changed?

Digitalization of the logistics processes must be adapted step by step. Industrie 4.0 will not work without corresponding improvements in logistics processes that support internal production and serve as the direct external link to the customer. The development of efficient value chains within the company serves to standardize processes, making these independent of other influencing factors such as time or persons. Standardization is thus a central cornerstone for the digitalization of company-related processes.

Demand for “smart logistics”

Trends such as personalized, individual products with batch size 1 demand new solutions in intralogistics. Traditional storage and logistics concepts no longer offer sufficient capacity to cope with the complex, swiftly changing product diversity. The skills shortage makes the situation even more challenging. There is a demand for scalable, autonomous, flexible systems so that the flow of materials can be optimized and also automated with logistics robots.

Great significance of data quality

When the logistics process is freed from all inefficient elements, the next step is to select the suitable digital tool and connect it to the other processes. But this does not mean that logistics employees always need “smart assistants” such as smartphones or tablets. Handheld scanners, for example, have the same effect when it comes to collecting data promptly in a first step so it can be transferred to existing IT systems. Additional equipment such as scales or 3D scanners can also significantly increase data quality in the process, for example by comparing actual values such as weight, dimensions, temperature, etc. with the target values in the system and adapting these values, or by recording status information. The preparation of automated processes, in which the product becomes the key player and controls the entire logistics process, requires high-quality data, transparency and standardization.

VDMA supports and informs its members with questions about logistics by organizing events. Here, members have an opportunity for sharing experience and insights as well as discussing current trends and developments.

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Rockwell Automation	www.rockwellautomation.com
SAP Deutschland	www.sap.com/germany
Securikett Ulrich & Horn	www.securikett.com
Siemens Industry Software	www.sw.siemens.com
SMS group	www.sms-group.com/expertise/digitalization
Software Factory	www.sf.com
Soley	www.soley.io
Trebing & Himstedt	www.t-h.de
TRUMPF	www.trumpf.com
valantic Supply Chain Excellence	www.valantic.com

Product independent Consulting

accelcon industrial engineering	www.accelcon.de
Accso - Accelerated Solutions	www.accso.de
ACP Holding Digital	www.acp.de/digital
adesso	www.adesso.de
audius	www.audius.de
AZO	www.azo.com
bridgefield	www.bridgefield.de
CANCOM Austria	www.cancom.at
Cloudflight Germany	www.cloudflight.io
daenet	www.daenet.de
DataArt	www.dataart.com/de
Dürr	www.durr.com
EPLAN	www.eplan.de
ERNI (Deutschland)	www.betterask.erni
FAUSER	www.fauser.ag
GEA Brewery Systems	www.gea.com
HEGLA-HANIC	www.hegla-hanic.de
HEITEC	www.heitec.de
IBM Deutschland	www.ibm.de
IPKS	www.ipks.de
Janz Tec	www.janztec.com
Körber	www.koerber.com
Körber Digital	www.koerber-digital.com
Lachmann & Rink	www.lachmann-rink.de
Magic Software Enterprises	www.magicsoftware.com
MQ result consulting	www.mqresult.de
neogramm	www.neogramm.de
ORBIS	www.orbis.de
Perfect Production	www.perfect-production.de
PIKON Deutschland	www.pikon.com
PROSTEP	www.prostep.com
PROXIA Software	www.proxia.com
S & P Computersysteme	www.sup-logistik.de
SMS group	www.sms-group.com/expertise/digitalization
Software Factory	www.sf.com
Stackmeister	www.stackmeister.com/de
syscon	www.syscon-online.com
Tebis Technische Informationssysteme	www.tebis.com
TROVARIT	www.trovarit.com
TRUMPF	www.trumpf.com
UNITY	www.unity.de
valantic Supply Chain Excellence	www.valantic.com
Zühlke Engineering	www.zuehlke.com

Traceability in the value creation network

Florian Klein

The digitalization of products and processes in the engineering sector has added considerable significance to traceability. Combinations with product protection technologies facilitate clear identification and also authenticity verification. In the value creation network, this generates the degree of trust that is crucial for Industry 4.0 so that new business models can be established, offering customized and product-related added-value services.

In order to achieve the required level of traceability, it is necessary to leave "identifiable traces" that remain visible to all process participants for an adequate amount of time. The type of marking used on products or packaging and the duration for which this information is available depends on the individual application and the general conditions. The wide-scale use of consistent marking proves beneficial not only in logistics processes, but also in other areas of the company, such as in production, quality management or in service.

Global databases as networking partners

Cross-company databases also provide a quick and easy option for supplying relevant information to other participants in the value creation network, such as customers, suppliers or service providers. This allows for quicker data sharing and, ideally, global use of this data, independent of the in-house IT infrastructure. For small and medium-sized companies, the latter aspect is of particular importance when it comes to implementing a global traceability solution. It simplifies the incoming goods process for products, significantly improves process efficiency and provides customers with transparent shipment tracking in real time. For serialized products, such as safety-related components, the resulting clear identification also paves the way for additional, customized added-value services. Ideally, clear product labelling is based on globally valid, established standards.

Additional solution modules are necessary to ensure that data and products are not tampered with, and to prevent counterfeit products from infiltrating the value creation or distribution network. Various options (physical, chemical, digital etc.) are available for product authentication.

VDMA organizes various events that look into the whole traceability issue, thus ensuring the availability of comprehensive information with plenty of scope for productive sharing.

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Traceability

Product Component of ERP, MES ...

A+W Software	www.a-w.de
ACP Digital Business Solutions	www.acp-digital.com/business-solutions
ADITO Software	www.adito.de
All for One Group	www.all-for-one.com
alltrotec	www.alltrotec.de
ams.Solution	www.ams-erp.com
Aptean Germany	www.aptean.com
Asseco Solutions	www.assecosolutions.com
AZO	www.azo.com
BCT Technology	www.bct-technology.com
COSMO CONSULT GmbH	www.cosmoconsult.com
datura manufacturing	www.swissdynamics.net
Dürr	www.durr.com
EVO Informationssysteme	www.evo-solutions.com
FAUSER	www.fauser.ag
gbo datacomp	www.gbo-datacomp.de
GEA Brewery Systems	www.gea.com
Gebauer	www.timeline-erp.de
GFOS	www.gfos.com
Grenzebach Digital	www.grenzebach.digital
GS1 Germany	www.gs1-germany.de
HALO-electronic	www.inteos.com
HEGLA-HANIC	www.hegla-hanic.de
HEISAB	www.heisab.de
HEITEC	www.heitec.de
IBODigital	www.ibodigital.com
IFS Deutschland	www.ifs.com/de
IKOffice	www.ikoffice.de/cms
Industrie Informatik	www.industrieinformatik.com
Isah	www.isah.com
iTAC Software	www.itacsoftware.com/de
Kinexon Industries	www.kinexon-industries.com
Körber Pharma Software	www.koerber-pharma.com
KRONES	www.krones.com
KUMAVISION	www.kumavision.com
LiSEC Austria	www.lisec.com
Membrain	www.membrain-it.com
mobile function	www.mobile-function.com
MODUS Consult	www.modusconsult.de
MPDV Mikrolab	www.mpdv.com/de
N+P Informationssysteme	www.nupis.de
ORBIS	www.orbis.de
PIKON Deutschland	www.pikon.com
proALPHA	www.proalpha.com
PSI Software	www.psi.de
PSI Automotive & Industry	www.psi-automotive-industry.de
SAP Deutschland	www.sap.com/germany
schrempp edv	www.schrempp-edv.de
Sedo Treepoint	www.sedo-treepoint.com
SEITEC	www.seitec.info/de
SETEX Schermuly	www.setex-germany.com
Software Factory	www.sf.com
Thyssenkrupp Materials IoT	www.thyssenkrupp-materials-iot.com
Trebing & Himstedt	www.t-h.de
Uhlmann Pac-Systeme	www.uhlmann.de
UniPPS business solutions	www.unipps.de
untersee Unternehmensberatung	www.untersee.com
WSW Software	www.wsw.de
Zuken E3	www.zuken.com

Stand-alone Traceability Solution

247FactoryNet	www.247factorynet.com
A+W Software	www.a-w.de
All for One Group	www.all-for-one.com
avenit	www.avenit.de
AZO	www.azo.com
Balluff	www.balluff.com
BEUMER Maschinenfabrik	www.beumergroup.com
BITZER Wiegetechnik	www.bitzer-waage.de
bridgefield	www.bridgefield.de
CANCOM Austria	www.cancom.at
Cloudflight Germany	www.cloudflight.io
COMAN Software	www.coman-software.com
compacer	www.compacer.com
COPA-DATA	www.copadata.de
CSP	www.csp-sw.de
daenet	www.daenet.de
Dassault Systèmes	www.3ds.com
DataArt	www.dataart.com/de
datura manufacturing	www.swissdynamics.net
Docufy	www.docufy.de
Dürr	www.durr.com
Elabo	www.elabo.de
:em engineering methods	www.em.ag
EURO-LOG	www.eurolog.com
EVO Informationssysteme	www.evo-solutions.com
evon	www.evon-automation.com
FORCAM	www.forcam.com
gbo datacomp	www.gbo-datacomp.de
GEA Brewery Systems	www.gea.com
GFOS	www.gfos.com
Google Germany	www.google.de
GS1 Germany	www.gs1-germany.de
HEGLA-HANIC	www.hegla-hanic.de
HOMAG Group	www.homag.com
IBM Deutschland	www.ibm.de
ICONICS Germany	www.iconics.com
IKOffice	www.ikoffice.de/cms
inevvo solutions	www.inevvo-solutions.com
iT Engineering Software Innovations	www.ite-si.de
Jagenberg Digital Solutions	www.jagenberg-digital.com
Kinexon Industries	www.kinexon-industries.com
KOCH Pac-Systeme	www.koch-pac-systeme.com
Körber	www.koerber.com
Körber Digital	www.koerber-digital.com
Körber Pharma Software	www.koerber-pharma.com
KRONES	www.krones.com
linx4	www.linxfour.com
Microsoft Deutschland	www.microsoft.com
mobile function	www.mobile-function.com
neogramm	www.neogramm.de
oneIDentity+	www.one-identity-plus.com
OPTIMUM datamanagement solutions	www.optimum-gmbh.de

Stand-alone Traceability Solution

Perschmann Calibration	www.perschmann-calibration.de
ProLeiT	www.proleit.de
PROSTEP	www.prostep.com
PROXIA Software	www.proxia.com
PSI Technics	www.psi-technics.com
Rockwell Automation Solutions	www.rockwellautomation.com
Rockwell Automation	www.rockwellautomation.com
SAP Deutschland	www.sap.com/germany
Schneider Electric	www.se.com/de/de
SEITEC	www.seitec.info/de
Siemens Industry Software	www.sw.siemens.com
Simplifier	www.simplifier.io
SMS group	www.sms-group.com/expertise/digitalization
Software Factory	www.sf.com
SQL Projekt	www.sql-ag.de
Symestic	www.symestic.com/de-de
Thyssenkrupp Materials IoT	www.thyssenkrupp-materials-iot.com
TRUMPF	www.trumpf.com
Uhlmann Pac-Systeme	www.uhlmann.de
WSW Software	www.wsw.de
Zuken E3	www.zuken.com

Product independent Consulting

accelcon industrial engineering	www.accelcon.de
Accso - Accelerated Solutions	www.accso.de
adesso	www.adesso.de
ams.Solution	www.ams-erp.com
avenit	www.avenit.de
CANCOM Austria	www.cancom.at
Centigrade	www.centigrade.de
Cloudflight Germany	www.cloudflight.io
CSP	www.csp-sw.de
daenet	www.daenet.de
DataArt	www.dataart.com/de
Dürr	www.durr.com
:em engineering methods	www.em.ag
EPLAN	www.eplan.de
ERNI (Deutschland)	www.betterask.erni
FAUSER	www.fauser.ag
GFT Technologies	www.gft.com/de/de/index
HEGLA-HANIC	www.hegla-hanic.de
HEITEC	www.heitec.de
IBM Deutschland	www.ibm.de
inevvo solutions	www.inevvo-solutions.com
iT Engineering Software Innovations	www.ite-si.de
J&M Business Consulting	www.voith.com
Janz Tec	www.janztec.com
Körber	www.koerber.com
Körber Digital	www.koerber-digital.com
Lenze	www.lenze.com
MQ result consulting	www.mqresult.de
neogramm	www.neogramm.de
oneIDentity+	www.one-identity-plus.com
Perfect Production	www.perfect-production.de
PIKON Deutschland	www.pikon.com
PROSTEP	www.prostep.com
SEITEC	www.seitec.info/de
SMS group	www.sms-group.com/expertise/digitalization
Software Factory	www.sf.com
Stackmeister	www.stackmeister.com/de
syscon	www.syscon-online.com
Uhlmann Pac-Systeme	www.uhlmann.de
UNITY	www.unity.de
valantic Supply Chain Excellence	www.valantic.com
WTG innovation	www.vsf-experts.de
Zühlke Engineering (Austria)	www.zuehlke.com/de/standorte/oesterreich
Zühlke Engineering	www.zuehlke.com

Technical product documentation

Jan Doberstein

Technical product documentation is an asset for the value chain and enhances acceptance of the products supplied. Editorial systems are an integral part of the overall process from product development to product delivery.

Expectations made of product documentation have grown significantly in recent years. Multimedia content is embedded and provided so that users can quickly familiarize themselves with the product. This is indispensable in light of the increasing product complexity and the growing range of machine features. In addition to textual descriptions, machine operators are also helped by videos, animations, interactive graphics and apps, along with augmented and virtual reality applications.

Mechanical engineering companies have come to master these challenges with ease by using Computer System Ilmenaus for documentation creation. The results speak for themselves:

- Reduced costs for documentation creation
- Shorter production time for the documents
- Enhanced quality thanks to the repeated use of modules
- Added value through use in various areas such as service, internal and external training, support of sales

Product documentation goes through further development as part of cross-departmental information and project management, with information being added at every stage of the product development process. The document management system records, manages, stores, and versions all types of information generated during this process and makes it available in its original form. It assists employees in their daily work. The benefits are tangible in terms of quality, while also resulting in quantitative advantages thanks to material cost savings and increased cash discount income through reduced lead time.

VDMA has published guidelines on both these topics. The guidelines show how to implement such systems, how to use them for your goals and how to integrate them with other IT systems in the company.

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Technical Product Documentation

Part of ERP

A+W Software	www.a-w.de
abas Software	www.abas-erp.com
ACBIS	www.acbis.de
ACP Digital Business Solutions	www.acp-digital.com/business-solutions
All for One Group	www.all-for-one.com
ams.Solution	www.ams-erp.com
Asseco Solutions	www.assecosolutions.com
ASSYST	www.assyst.de
BCT Technology	www.bct-technology.com
BEUMER Maschinenfabrik	www.beumergroup.com
CATUNO	www.catuno.de
ClassiX Software	www.classix.de
COSMO CONSULT Group	www.cosmoconsult.com
COSMO CONSULT GmbH	www.cosmoconsult.com
datura manufacturing	www.swissdynamics.net
DSC Software	www.dscsag.com
Empolis Information Management	www.service.express
EPLAN	www.eplan.de
FAUSER	www.fauser.ag
Fischer Information Technology	www.fischer-information.com
Gebauer	www.timeline-erp.de
GS1 Germany	www.gs1-germany.de
HEGLA-HANIC	www.hegla-hanic.de
HEISAB	www.heisab.de
IKOffice	www.ikoffice.de/cms
ILC	www.ilc-solutions.de
kothes	www.kothes.com
Microsoft Deutschland	www.microsoft.com
oculavis	www.oculavis.de
ORBIS	www.orbis.de
PIKON Deutschland	www.pikon.com
proALPHA	www.proalpha.com
PSI Software	www.psi.de
PSI Automotive & Industry	www.psi-automotive-industry.de
schrempp edv	www.schrempp-edv.de
SL innovativ	www.sl-i.de
Syntax Systems	www.syntax.com/fit
UniPPS business solutions	www.unipps.de
Zuken E3	www.zuken.com

Stand-alone Software for Product Documentation / CMS

3D Interaction Technologies	www.3dit.de
ACBIS	www.acbis.de
ADITO Software	www.adito.de
alltrotec	www.alltrotec.de
ARC Solutions	www.arcsolutions.de
avenit	www.avenit.de
BEUMER Maschinenfabrik	www.beumergroup.com
b_digital	www.skemdit.com
CANCOM Austria	www.cancom.at
CE-CON	www.ce-con.de
COMAN Software	www.coman-software.com
CSP	www.csp-sw.de
daenet	www.daenet.de
Dassault Systèmes	www.3ds.com
DataArt	www.dataart.com/de
Docufy	www.docufy.de
DS Group	www.dokuschmiede.de
ECHO PRM	www.echoprm.com
Elabo	www.elabo.de
Empolis Information Management	www.service.express
EPLAN	www.eplan.de
Fabasoft Approve	www.fabasoft.com/approve
Fischer Information Technology	www.fischer-information.com
gds	www.gds.eu
HALO-electronic	www.inteos.com
ILC	www.ilc-solutions.de
INNEO Solutions	www.inneo.com
kothes	www.kothes.com
Lino	www.lino.de
linx4	www.linxfour.com
MODUS Consult	www.modusconsult.de
N+P Informationssysteme	www.nupis.de
oculavis	www.oculavis.de
Operations1 / cioplenu	www.operations1.com/de
OPTIMUM datamanagement solutions	www.optimum-gmbh.de
Perschmann Calibration	www.perschmann-calibration.de
Qualysoft	www.de.qualysoft.com
Quanos Content Solutions	www.quanos-content-solutions.com
Securikett Ulrich & Horn	www.securikett.com
Siemens Industry Software	www.sw.siemens.com
SL innovativ	www.sl-i.de
STAR Deutschland	www.star-group.net
Stryza	www.stryza.com
Sybit	www.sybit.de
Synostik	www.synostik.de
Transaction-Network	www.transaction-network.com
untersee Unternehmensberatung	www.untersee.com
J.M. Voith SE / VPH	www.voithpaper.com
Zuken E3	www.zuken.com

Stand-alone Software for Translation Management

Autonoma Technologies	www.autonoma.cloud
avenit	www.avenit.de
BEUMER Maschinenfabrik	www.beumergroup.com
DCC global	www.dcc-global.com
Docufy	www.docufy.de
DS Group	www.dokuschmiede.de
EAS Engineering Automation Systems	www.eas-solutions.de
Empolis Information Management	www.service.express
EPLAN	www.eplan.de
Fischer Information Technology	www.fischer-information.com
gds	www.gds.eu
kothes	www.kothes.com
linx4	www.linxfour.com
Quanos Content Solutions	www.quanos-content-solutions.com
SL innovativ	www.sl-i.de
STAR Deutschland	www.star-group.net
Sybit	www.sybit.de

Product independent Consulting

Abass	www.abass.de
Accso - Accelerated Solutions	www.accso.de
ACP CUBIDO Digital Solutions	www.cubido.at
adesso	www.adesso.de
ARNOLD IT Systems	www.arnold-it.com
avenit	www.avenit.de
bridgefield	www.bridgefield.de
CANCOM Austria	www.cancom.at
Cloudflight Germany	www.cloudflight.io
Computer System Ilmenau	www.cs-ilmenau.de
daenet	www.daenet.de
DataArt	www.dataart.com/de
DCC global	www.dcc-global.com
DS Group	www.dokuschmiede.de
EPLAN	www.eplan.de
ERGOSIGN	www.ergosign.de
ERNI (Deutschland)	www.betterask.erni
FAUSER	www.fauser.ag
GAL Digital	www.gal-digital.de
GFT Technologies	www.gft.com/de/de/index
HEGLA-HANIC	www.hegla-hanic.de
ILC	www.ilc-solutions.de
ITQ	www.itq.de
KDT	www.kundendienst-trainer.de
kothes	www.kothes.com
MQ result consulting	www.mqresult.de
NewTec	www.newtec.de
PIKON Deutschland	www.pikon.com
POWERCASE FORMULA CRM	www.formulacrm.de
Qualysoft	www.de.qualysoft.com
SL innovativ	www.sl-i.de
syscon	www.syscon-online.com
Techniciency Consulting	www.techniciency.de
tecteam	www.tecteam.de
UNITY	www.unity.de
Your Expert Cluster	www.yourexpertcluster.de
ZINDEL	www.zindel.de
Zühlke Engineering	www.zuehlke.com

Document Management System (DMS) / Enterprise Content Management (ECM)

Part of ERP, CRM ...

A+W Software	www.a-w.de
abas Software	www.abas-erp.com
ACBIS	www.acbis.de
ACP Digital Business Solutions	www.acp-digital.com/business-solutions
ADITO Software	www.adito.de
All for One Group	www.all-for-one.com
alltrotec	www.alltrotec.de
ams.Solution	www.ams-erp.com
Aptean Germany	www.aptean.com
Asseco Solutions	www.assecosolutions.com
ASSYST	www.assyst.de
audius	www.audius.de
AVISTA ERP Software	www.avista-erp.de
BCT Technology	www.bct-technology.com
BEUMER Maschinenfabrik	www.beumergroup.com
CAS Software	www.cas.de
CATUNO	www.catuno.de
ClassiX Software	www.classix.de
COSMO CONSULT Group	www.cosmoconsult.com
COSMO CONSULT GmbH	www.cosmoconsult.com
CSS	www.css.de
DSC Software	www.dscsag.com
eEvolution	www.eevolution.de
Empolis Information Management	www.service.express
EVO Informationssysteme	www.evo-solutions.com
Gebauer	www.timeline-erp.de
GS1 Germany	www.gs1-germany.de
HEGLA-HANIC	www.hegla-hanic.de
HEISAB	www.heisab.de
HEITEC	www.heitec.de
IFS Deutschland	www.ifs.com/de
IKOffice	www.ikoffice.de/cms
ILC	www.ilc-solutions.de
Isah	www.isah.com
IT Vision Technology	www.itvt.de
KRONES	www.krones.com
KUMAVISION	www.kumavision.com
Microsoft Deutschland	www.microsoft.com
mobile function	www.mobile-function.com
MODUS Consult	www.modusconsult.de
N+P Informationssysteme	www.nupis.de
oculavis	www.oculavis.de
ORISA Software	www.orisa.de
POWERCASE FORMULA CRM	www.formulacrm.de
proALPHA	www.proalpha.com
PSI Software	www.psi.de
PSI Automotive & Industry	www.psi-automotive-industry.de
Qualysoft	www.de.qualysoft.com
Remberg	www.remberg.de
SAP Deutschland	www.sap.com/germany
schrempp edv	www.schrempp-edv.de
Schubert & Salzer Data	www.schubert-salzer.com
SETEX Schermuly	www.setex-germany.com
Sybit	www.sybit.de
Syntax Systems	www.syntax.com/fit
TopM Software	www.topm.de
Zuken E3	www.zuken.com

Stand-alone Document Management / ECM

ACBIS	www.acbis.de
ACP Digital Business Solutions	www.acp-digital.com/business-solutions
ACP Holding Digital	www.acp.de/digital
alltrotec	www.alltrotec.de
ams.Solution	www.ams-erp.com
ARC Solutions	www.arcsolutions.de
Asseco Solutions	www.assecosolutions.com
audius	www.audius.de
avenit	www.avenit.de
BEUMER Maschinenfabrik	www.beumergroup.com
Blauhut & Partner	www.procos.de
CANCOM Austria	www.cancom.at
CE-CON	www.ce-con.de
Cloudflight Germany	www.cloudflight.io
COMAN Software	www.coman-software.com
CONTACT Software	www.contact-software.com
COSMO CONSULT Group	www.cosmoconsult.com
COSMO CONSULT GmbH	www.cosmoconsult.com
CSP	www.csp-sw.de
CSS	www.css.de
Dassault Systèmes	www.3ds.com
DataArt	www.dataart.com/de
datura manufacturing	www.swissdynamics.net
DiManEx	www.dimanex.com
DMG MORI Digital	www.de.dmgmori.com
EAS Engineering Automation Systems	www.eas-solutions.de
ECHO PRM	www.echoprm.com
eEvolution	www.eevolution.de
:em engineering methods	www.em.ag
EVO Informationssysteme	www.evo-solutions.com
Fabasoft Approve	www.fabasoft.com/approve
Fischer Information Technology	www.fischer-information.com
FORCAM	www.forcam.com
GAL Digital	www.gal-digital.de
Google Germany	www.google.de
IBM Deutschland	www.ibm.de
ILC	www.ilc-solutions.de
INGTechnik	www.ingtechnik.de
INNEO Solutions	www.inneo.com
INNOSOFT	www.innosoft.de
INTENSIO Software und Consulting	www.intensio.de
ISAP	www.isap.de
KUMAVISION	www.kumavision.com
linx4	www.linxfour.com
mobile function	www.mobile-function.com
MODUS Consult	www.modusconsult.de
mpunkt	www.mpunkt.com
Noxum	www.noxum.com
oculavis	www.oculavis.de
Operations1 / cioplenu	www.operations1.com/de
PROCAD	www.procad.de
PSI Software	www.psi.de
Qualysoft	www.de.qualysoft.com

Stand-alone Document Management / ECM

Quanos Service Solutions	www.quanos-service-solutions.com
Schubert & Salzer Data	www.schubert-salzer.com
Siemens Industry Software	www.sw.siemens.com
SL innovativ	www.sl-i.de
Stryza	www.stryza.com
Tebis Technische Informationssysteme	www.tebis.com
UniPPS business solutions	www.unipps.de
untersee Unternehmensberatung	www.untersee.com
Voith	www.voith.com
J.M. Voith SE / VPH	www.voithpaper.com
Zuken E3	www.zuken.com

Product independent Consulting

Abass	www.abass.de
ACBIS	www.acbis.de
accelcon industrial engineering	www.accelcon.de
Accso - Accelerated Solutions	www.accso.de
ACP Holding Digital	www.acp.de/digital
adesso	www.adesso.de
audius	www.audius.de
avenit	www.avenit.de
CANCOM Austria	www.cancom.at
Centigrade	www.centigrade.de
daenet	www.daenet.de
DataArt	www.dataart.com/de
DS Group	www.dokuschmiede.de
:em engineering methods	www.em.ag
EPLAN	www.eplan.de
ERNI (Deutschland)	www.betterask.erni
esentri	www.esentri.com
FAUSER	www.fauser.ag
GFT Technologies	www.gft.com/de/de/index
HEITEC	www.heitec.de
IBM Deutschland	www.ibm.de
ILC	www.ilc-solutions.de
INGTechnik	www.ingtechnik.de
INNEO Solutions	www.inneo.com
J&M Business Consulting	www.voith.com
Körber	www.koerber.com
Körber Digital	www.koerber-digital.com
kothes	www.kothes.com
Lenze	www.lenze.com
Magic Software Enterprises	www.magicsoftware.com
MQ result consulting	www.mqresult.de
ORBIS	www.orbis.de
POWERCASE FORMULA CRM	www.formulacrm.de
Qualysoft	www.de.qualysoft.com
SL innovativ	www.sl-i.de
syscon	www.syscon-online.com
Tebis Technische Informationssysteme	www.tebis.com
TROVARIT	www.trovarit.com
UNITY	www.unity.de
Your Expert Cluster	www.yourexpertcluster.de
Zühlke Engineering	www.zuehlke.com

Simulation within the product development process

Jan Doberstein

Engineering firms are increasingly using simulation tools to improve and accelerate the product development process. In doing so, they pay particular attention to increasing quality, reducing costs and enhancing customer satisfaction.

Digital simulation in all its various shapes and sizes is becoming an integral part of the entire product development process. It is used in virtually all phases of the product life cycle. Based on the relevant technologies such as the finite element method in construction, collision testing in process engineering, process simulation in production, visualization in virtual commissioning processes, and AR and VR applications in service, simulation contributes significantly to making production more efficient and sustainable.

VDMA has founded the "Simulation and Visualization in the Product Life Cycle" working group to support this development. The aim of the working group is to motivate small and medium-sized companies to use these technologies. Beginning in the early stages of product development – still in a digital format – findings can be included directly in the development, thus increasing product and production quality and reducing the development time.

The VDMA publication "Simulation and visualization in the product life cycle" contains use cases showing the benefit of digital simulation tools. Here companies from different sectors describe the benefits they have generated using these systems, and the savings and improvements they have achieved. The publication highlights the fact that all companies need to address the use of such technologies to satisfy customer demands and reach the respective markets on time, while not losing sight of costs and quality.

The members of the "Simulation and visualization in the product life cycle" working group have set out to cover and address all relevant aspects and facets relating to simulation. Besides expert know-how and publications, VDMA also offers regular webinars.

VDMA contact

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Product Lifecycle Management / Product Engineering

Mechanical CAD

A+W Software	www.a-w.de
All for One Group	www.all-for-one.com
alltrotec	www.alltrotec.de
Altair Engineering	www.altair.com
ams.Solution	www.ams-erp.com
ARC Solutions	www.arcsolutions.de
ARNOLD IT Systems	www.arnold-it.com
BCT Technology	www.bct-technology.com
BEUMER Maschinenfabrik	www.beumergroup.com
CADCABEL	www.cadcabel.com
Dassault Systèmes	www.3ds.com
data M Sheet Metal Solutions	www.datam.de
DLP Engineers	www.dlp-engineers.de
Docufy	www.docufy.de
DPS Software	www.dps-software.de
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:em engineering methods	www.em.ag
Femto Engineering B.V.	www.femto.nl
INNEO Solutions	www.inneo.com
ISAP	www.isap.de
J&M Business Consulting	www.voith.com
Lino	www.lino.de
machineering	www.machineering.com
N+P Informationssysteme	www.nupis.de
Siemens Industry Software	www.sw.siemens.com
SL innovativ	www.sl-i.de
Tebis Technische Informationssysteme	www.tebis.com
TECHNIA	www.technia.com
TRIC	www.tric.de
TRUMPF	www.trumpf.com

Electrical CAD

ADVES	www.adves.one
alltrotec	www.alltrotec.de
Altair Engineering	www.altair.com
ams.Solution	www.ams-erp.com
ARC Solutions	www.arcsolutions.de
ARNOLD IT Systems	www.arnold-it.com
AUCOTEC	www.aucotec.com
BEUMER Maschinenfabrik	www.beumergroup.com
CADCABEL	www.cadcabel.com
Dassault Systèmes	www.3ds.com
DPS Software	www.dps-software.de
DSC Software	www.dscsag.com
EPLAN	www.eplan.de
Femto Engineering B.V.	www.femto.nl
ILC	www.ilc-solutions.de
INNEO Solutions	www.inneo.com
logi.cals	www.logicals.com
logi.cals automation solution & services	www.logicals.com
machineering	www.machineering.com
N+P Informationssysteme	www.nupis.de
Schneider Electric	www.se.com/de/de
Siemens Industry Software	www.sw.siemens.com
SL innovativ	www.sl-i.de
TECHNIA	www.technia.com
TRUMPF	www.trumpf.com
WeAre	www.weare-rooms.com
WSCAD	www.wscad.com
Zuken E3	www.zuken.com

Computer Aided Manufacturing (CAM)

A+W Software	www.a-w.de
alltrotec	www.alltrotec.de
ams.Solution	www.ams-erp.com
ARC Solutions	www.arcsolutions.de
ARNOLD IT Systems	www.arnold-it.com
BCT Technology	www.bct-technology.com
BEUMER Maschinenfabrik	www.beumergroup.com
Dassault Systèmes	www.3ds.com
data M Sheet Metal Solutions	www.datam.de
DIENES Apparatebau	www.dienes.net
Docufy	www.docufy.de
DPS Software	www.dps-software.de
DSC Software	www.dscsag.com
Eckelmann FCS	www.eckelmann.de
Eckelmann	www.eckelmann.de
esco	www.esco-aachen.de
Femto Engineering B.V.	www.femto.nl
GFT Integrated Systems	www.gft.com/de/de/index
IFS Deutschland	www.ifs.com/de
INNEO Solutions	www.inneo.com
Lino	www.lino.de
machineering	www.machineering.com
N+P Informationssysteme	www.nupis.de
OPEN MIND Technologies	www.openmind-tech.com
Sandvik Tooling Deutschland	www.sandvik.coromant.com
Schneider Electric	www.se.com/de/de
Siemens Industry Software	www.sw.siemens.com
SMS group	www.sms-group.com/expertise/digitalization
Tebis Technische Informationssysteme	www.tebis.com
TECHNIA	www.technia.com
TRUMPF	www.trumpf.com
Zuken E3	www.zuken.com

Simulation Solution

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alltrotec	www.alltrotec.de
Altair Engineering	www.altair.com
ARC Solutions	www.arcsolutions.de
ARNOLD IT Systems	www.arnold-it.com
ASSYST	www.assyst.de
B&R Industrie-Elektronik	www.br-automation.com
BCT Technology	www.bct-technology.com
BEUMER Maschinenfabrik	www.beumergroup.com
CADFEM Germany	www.cadfem.net/de/de
Cloudflight Germany	www.cloudflight.io
CMC Engineers	www.cmc-engineers.de/de
Dassault Systèmes	www.3ds.com
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DPS Software	www.dps-software.de
DUALIS	www.dualis-it.de
Dürr	www.durr.com
Eckelmann FCS	www.eckelmann.de
Eckelmann	www.eckelmann.de
:em engineering methods	www.em.ag
esco	www.esco-aachen.de
evon	www.evon-automation.com
Femto Engineering B.V.	www.femto.nl
GFT Integrated Systems	www.gft.com/de/de/index
Google Germany	www.google.de
INNEO Solutions	www.inneo.com
ISG	www.isg-stuttgart.de
iT Engineering Software Innovations	www.ite-si.de
Lenze Austria	www.lenze.com
Lino	www.lino.de
machineering	www.machineering.com
N+P Informationssysteme	www.nupis.de
Odego	www.odego.de
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Siemens Industry Software	www.sw.siemens.com
SIMERICS	www.simerics.de
SMS group	www.sms-group.com/expertise/digitalization
STAR Deutschland	www.star-group.net
Tebis Technische Informationssysteme	www.tebis.com
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The MathWorks	www.mathworks.com
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alltrotec	www.alltrotec.de
Altair Engineering	www.altair.com
ams.Solution	www.ams-erp.com
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BCT Technology	www.bct-technology.com
BEUMER Maschinenfabrik	www.beumergroup.com
CANCOM Austria	www.cancom.at
CE-CON	www.ce-con.de
Cloudflight Germany	www.cloudflight.io
compacer	www.compacer.com
CONTACT Software	www.contact-software.com
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DMG MORI Digital	www.de.dmgmori.com
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ECHO PRM	www.echoprm.com
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evon	www.evon-automation.com
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FAUSER	www.fauser.ag
Fischer Information Technology	www.fischer-information.com
GAL Digital	www.gal-digital.de
Gebauer	www.timeline-erp.de
GFT Integrated Systems	www.gft.com/de/de/index
HEGLA-HANIC	www.hegla-hanic.de
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ILC	www.ilc-solutions.de
INNEO Solutions	www.inneo.com
ISAP	www.isap.de
J&M Business Consulting	www.voith.com
Körber Pharma Software	www.koerber-pharma.com
Lenze Austria	www.lenze.com
Lino	www.lino.de
machineering	www.machineering.com
Microsoft Deutschland	www.microsoft.com
mobile function	www.mobile-function.com
mpunkt	www.mpunkt.com
N+P Informationssysteme	www.nupis.de
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ORISA Software	www.orisa.de
proALPHA	www.proalpha.com
PROCAD	www.procad.de
PROSTEP	www.prostep.com
PSI Software	www.psi.de
Quanos Content Solutions	www.quanos-content-solutions.com

Product Data Management (PDM)

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SAP Deutschland	www.sap.com/germany
Schneider Electric Systems Germany	www.se.com/de/de
schrempp edv	www.schrempp-edv.de
Siemens Industry Software	www.sw.siemens.com
SL innovativ	www.sl-i.de
Soley	www.soley.io
SPARETECH	www.sparetech.io
STAR Deutschland	www.star-group.net
Sybit	www.sybit.de
Syntax Systems	www.syntax.com/fit
Tebis Technische Informationssysteme	www.tebis.com
TECHNIA	www.technia.com
Transaction-Network	www.transaction-network.com
WTG innovation	www.vsf-experts.de
Your Expert Cluster	www.yourexpertcluster.de

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Accso - Accelerated Solutions	www.accso.de
ACP CUBIDO Digital Solutions	www.cubido.at
adesso	www.adesso.de
ARNOLD IT Systems	www.arnold-it.com
AZO	www.azo.com
CANCOM Austria	www.cancom.at
Centigrade	www.centigrade.de
Cloudflight Germany	www.cloudflight.io
DataArt	www.dataart.com/de
DLP Engineers	www.dlp-engineers.de
DSC Software	www.dscsag.com
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FAUSER	www.fauser.ag
Femto Engineering B.V.	www.femto.nl
GFT Integrated Systems	www.gft.com/de/de/index
ILC	www.ilc-solutions.de
ISG	www.isg-stuttgart.de
iT Engineering Software Innovations	www.ite-si.de
ITQ	www.itq.de
J&M Business Consulting	www.voith.com
M&M Software	www.mm-software.com
MAG IAS	www.ffg-ea.com
MQ result consulting	www.mqresult.de
N+P Informationssysteme	www.nupis.de
Odego	www.odego.de
PROSTEP	www.prostep.com
REINHOLZ Technologies	www.reinholz-technologies.com
SEEBURGER Deutschland	www.seeburger.de
SERVITIZE	www.servitize.de
Simplifier	www.simplifier.io
syscon	www.syscon-online.com
Tebis Technische Informationssysteme	www.tebis.com
Techniciency Consulting	www.techniciency.de
TROVARIT	www.trovarit.com
UNITY	www.unity.de
valantic Supply Chain Excellence	www.valantic.com
WTG innovation	www.vsf-experts.de
Your Expert Cluster	www.yourexpertcluster.de
Zühlke Engineering (Austria)	www.zuehlke.com/de/standorte/oesterreich
Zühlke Engineering	www.zuehlke.com

Project Management (PM)

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abas Software	www.abas-erp.com
abilis	www.abilis.de
ACP Digital Business Solutions	www.acp-digital.com/business-solutions
ADITO Software	www.adito.de
All for One Group	www.all-for-one.com
alltrotec	www.alltrotec.de
ams.Solution	www.ams-erp.com
Aptean Germany	www.aptean.com
ARC Solutions	www.arcsolutions.de
Asseco Solutions	www.assecosolutions.com
ASSYST	www.assyst.de
audius	www.audius.de
AVISTA ERP Software	www.avista-erp.de
BCT Technology	www.bct-technology.com
BEUMER Maschinenfabrik	www.beumergroup.com
Blauhut & Partner	www.procos.de
CAS Software	www.cas.de
CATUNO	www.catuno.de
CE-CON	www.ce-con.de
ClassiX Software	www.classix.de
COSMO CONSULT Group	www.cosmoconsult.com
COSMO CONSULT GmbH	www.cosmoconsult.com
CSS	www.css.de
datura manufacturing	www.swissdynamics.net
DPS Software	www.dps-software.de
eEvolution	www.eevolution.de
FAUSER	www.fauser.ag
Gebauer	www.timeline-erp.de
HEISAB	www.heisab.de
HEITEC	www.heitec.de
IFS Deutschland	www.ifs.com/de
IKOffice	www.ikoffice.de/cms
ILC	www.ilc-solutions.de
Isah	www.isah.com
IT Vision Technology	www.itvt.de
itmX	www.itmx.de
KRONES	www.krones.com
KUMAVISION	www.kumavision.com
linx4	www.linxfour.com
LiSEC Austria	www.lisec.com
machineering	www.machineering.com
Membrain	www.membrain-it.com
Microsoft Deutschland	www.microsoft.com
mobile function	www.mobile-function.com
N+P Informationssysteme	www.nupis.de
Opdenhoff Technologie	www.opdenhoff.com
ORBIS	www.orbis.de
PIKON Deutschland	www.pikon.com
POWERCASE FORMULA CRM	www.formulacrm.de
proALPHA	www.proalpha.com
PROCAD	www.procad.de
PSI Software	www.psi.de
PSI Automotive & Industry	www.psi-automotive-industry.de
Qualysoft	www.de.qualysoft.com
SAP Deutschland	www.sap.com/germany
schrempp edv	www.schrempp-edv.de
STAR Deutschland	www.star-group.net
Sybit	www.sybit.de
Syntax Systems	www.syntax.com/fit
TopM Software	www.topm.de
UniPPS business solutions	www.unipps.de
untersee Unternehmensberatung	www.untersee.com
Zuken E3	www.zuken.com

Stand-alone Project Management Software

ams.Solution	www.ams-erp.com
audius	www.audius.de
BEUMER Maschinenfabrik	www.beumergroup.com
cetecom advanced	www.cetecomadvanced.com
COMAN Software	www.coman-software.com
CONTACT Software	www.contact-software.com
CSS	www.css.de
daenet	www.daenet.de
Dassault Systèmes	www.3ds.com
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EAS Engineering Automation Systems	www.eas-solutions.de
EPLAN	www.eplan.de
Fabasoft Approve	www.fabasoft.com/approve
GFT Integrated Systems	www.gft.com/de/de/index
GFT Technologies	www.gft.com/de/de/index
HEISAB	www.heisab.de
ILC	www.ilc-solutions.de
INFORM	www.inform-software.de
INNEO Solutions	www.inneo.com
INNOSOFT	www.innosoft.de
Itdesign	www.itdesign.de
JAWA Management Software	www.jawa.at
LF CONSULT	www.lfconsult.de
machineering	www.machineering.com
Membrain	www.membrain-it.com
Microsoft Deutschland	www.microsoft.com
mobile function	www.mobile-function.com
MODUS Consult	www.modusconsult.de
mpunkt	www.mpunkt.com
PIKON Deutschland	www.pikon.com
PSI Software	www.psi.de
PSI Technics	www.psi-technics.com
Siemens Industry Software	www.sw.siemens.com
Simplifier	www.simplifier.io
Sybit	www.sybit.de
Synostik	www.synostik.de
Techniciency Consulting	www.techniciency.de
untersee Unternehmensberatung	www.untersee.com
valantic Supply Chain Excellence	www.valantic.com
WTG innovation	www.vsf-experts.de
Zuken E3	www.zuken.com

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Accso - Accelerated Solutions	www.accso.de
adesso	www.adesso.de
ams.Solution	www.ams-erp.com
audius	www.audius.de
bridgefield	www.bridgefield.de
Centigrade	www.centigrade.de
Cloudflight Germany	www.cloudflight.io
CSP	www.csp-sw.de
DataArt	www.dataart.com/de
Dürr	www.durr.com
:em engineering methods	www.em.ag
EPLAN	www.eplan.de
ERNI (Deutschland)	www.betterask.erni
esentri	www.esentri.com
FAUSER	www.fauser.ag
GFT Integrated Systems	www.gft.com/de/de/index
GFT Technologies	www.gft.com/de/de/index
HEITEC	www.heitec.de
IBM Deutschland	www.ibm.de
ILC	www.ilc-solutions.de
iT Engineering Software Innovations	www.ite-si.de
ITQ	www.itq.de
J&M Business Consulting	www.voith.com
M&M Software	www.mm-software.com
MQ result consulting	www.mqresult.de
NewTec	www.newtec.de
Opdenhoff Technologie	www.opdenhoff.com
ORBIS	www.orbis.de
PIKON Deutschland	www.pikon.com
POWERCASE FORMULA CRM	www.formulacrm.de
PROSTEP	www.prostep.com
Qualysoft	www.de.qualysoft.com
SERVITIZE	www.servitize.de
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Stackmeister	www.stackmeister.com/de
syscon	www.syscon-online.com
Tebis Technische Informationssysteme	www.tebis.com
Techniciency Consulting	www.techniciency.de
TROVARIT	www.trovarit.com
UNITY	www.unity.de
valantic Supply Chain Excellence	www.valantic.com
WTG innovation	www.vsf-experts.de
Your Expert Cluster	www.yourexpertcluster.de
Zühlke Engineering (Austria)	www.zuehlke.com/de/standorte/oesterreich
Zühlke Engineering	www.zuehlke.com

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ACP Holding Digital	www.acp.de/digital
ADITO Software	www.adito.de
alltrotec	www.alltrotec.de
ams.Solution	www.ams-erp.com
ARC Solutions	www.arcsolutions.de
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Asseco Solutions	www.assecosolutions.com
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bridgefield	www.bridgefield.de
BridgingIT	www.bridging-it.de
ClassiX Software	www.classix.de
Cloudflight Germany	www.cloudflight.io
DiManEx	www.dimanex.com
ecosio	www.ecosio.com
esentri	www.esentri.com
Femto Engineering B.V.	www.femto.nl
Findustrial	www.findustrial.io
GAL Digital	www.gal-digital.de
gds	www.gds.eu
GEA Brewery Systems	www.gea.com
GS1 Germany	www.gs1-germany.de
handz.on	www.on.de
HEITEC	www.heitec.de
itmX	www.itmx.de
Janz Tec	www.janztec.com
JAWA Management Software	www.jawa.at
Körber	www.koerber.com
Körber Digital	www.koerber-digital.com
Krehl & Partner Unternehmensberatung	www.krehl.com
Lino	www.lino.de
linx4	www.linxfour.com
logi.cals	www.logicals.com
logi.cals automation solution & services	www.logicals.com
Magic Software Enterprises	www.magicsoftware.com
Microsoft Deutschland	www.microsoft.com
mobile function	www.mobile-function.com
MODUS Consult	www.modusconsult.de
PARTSCLOUD	www.partscloud.com
PIKON Deutschland	www.pikon.com
Point 8	www.point-8.de
proCtec	www.proctec.de
PSI Software	www.psi.de
REINHOLZ Technologies	www.reinholz-technologies.com
S & P Computersysteme	www.sup-logistik.de
SAE Applications for Digitalization	www.sae-portal.de
SAP Deutschland	www.sap.com/germany
SEEBURGER Deutschland	www.seeburger.de
SERVITIZE	www.servitize.de
Simplifier	www.simplifier.io
SQL Projekt	www.sql-ag.de
Stackmeister	www.stackmeister.com/de
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Syslog	www.syslog.de
UMa Soft	www.uma-soft.ch
Vollmer & Scheffczyk	www.v-und-s.de
WTG innovation	www.vsf-experts.de
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aku.automation	www.aku.eu
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bridgefield	www.bridgefield.de
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CSP	www.csp-sw.de
Cubicure	www.cubicure.com
Dassault Systèmes	www.3ds.com
DELTA LOGIC	www.deltalogic.de
Dematic	www.dematic.com
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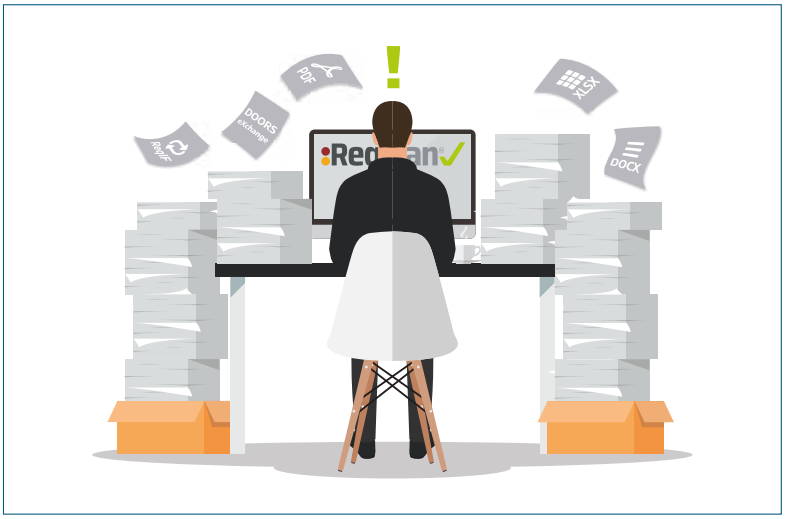
Company Profiles

Company Profiles

Traditional manual review and commenting of requirements specifications is time-consuming and error-prone. Requirements professionals and project managers often spend hours analyzing and evaluating requirements. ReqMan solves this problem by using artificial intelligence to automate the process and free up resources for other tasks.



Source: :em engineering methods

AI-powered Specification Evaluation – Faster. Better. Fully Automated.

ReqMan provides an easy-to-use and powerful requirements management platform. Instead of relying on manual review and time-consuming analysis, ReqMan uses AI algorithms to efficiently pre-evaluate requirements specifications. ReqMan recognizes requirements with the same meaning and automatically suggests a score based on previous scores. As an expert, you can then decide whether to accept it. AI recognizes existing knowledge about requirements and their answers across project boundaries. Advanced AI algorithms are the key. These are trained to recognize patterns and similarities in specifications and provide appropriate responses.

ReqMan has an intuitive user interface. Users can upload their specifications and have them automatically broken down into requirements by an AI in no time. The results are then evaluated and clearly presented by another AI. This allows entire evaluation teams to quickly and collaboratively build on the results and confirm or adjust them.

By fully automating the evaluation of specifications, ReqMan helps to dramatically shorten bidding processes, minimize errors, and sustainably improve quality.

ReqMan is right for you if you

- want to use AI to save valuable time and improve quality and motivation.
- need to classify and evaluate requirements collaboratively in teams and have all requirements documents available in one place.
- want to use access to annotations/comments across projects to perform evaluations based on existing knowledge.

Take a look for yourself and contact us.

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Shaping change and tapping new potential has been our business and our passion for over 40 years – with groundbreaking solutions and intelligent process consulting as well as the extensive industry knowledge and best practice experience of our team. The proven, all-round package from Abas combines comprehensive ERP functions with the high level of flexibility that's essential to implementing your unique business processes.

Source: Abas

High-fit ERP software for midmarket manufacturers

Powerful functions and highly customizable

The Abas ERP solution already offers a very wide range of functions in the standard release and supports you in all core areas of your company. From purchasing and sales, production, warehouse and service to finance, controlling and management, our ERP software combines high functionality and a user-friendly interface in an impressive overall package. This provides the best possible support in overcoming challenges in the areas of production and scheduling, and increases consistency, transparency and efficiency throughout your entire company. At the same time, extensive standardization establishes important process guardrails, which ensure a high level of security and stability of the processes. Abas offers the combination of broad SME experience from international projects, an exceptionally agile ERP system, as well as an internationally uniform and proven implementation strategy developed to ensure the quick success of your ERP project.

Our central USPs – high adaptability with simultaneous release compatibility – are valued by our customers and confirmed by the market in numerous surveys. It proves that we live up to our most important claim: We provide security. Especially in the dynamic digitalization environment.

Your reliable ERP partner: Today and in the future

We take customer proximity literally: Together with our international branches and partners, we can provide consulting, implementation, and process advice worldwide – a significant advantage for midmarket manufacturers who are expanding into new markets. Abas grows with you and is always nearby.

Since 2019, Abas has been part of the Forterro Group, an association of European software companies that provide ERP systems for SMEs around the world. With our shared resources and synergies, we are in a strong position to meet the challenges of the future. Around 4,000 companies, with 120,000 users, from midmarket, manufacturing-related industries trust in Abas.

ABAS

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Develop More Innovative Products in Less Time with Altair's Simulation and AI Solutions

Easily accessible technology

Digital twins at work – get faster insights into digital and physical behavior with Altair

Digitalization of Product and Process Development

Would you like to accelerate the digitalization of your product development and become more innovative? As a leading global technology company with more than 3,000 engineers, programmers, and data scientists, Altair provides market-leading solutions and services in computer-aided engineering (CAE), artificial intelligence (AI), and high-performance computing (HPC).

At Altair, we're committed to helping our customers innovate, grow, and achieve their goals through next-generation computational science technology.

The Path Towards a Simulation- and Data-Driven Company

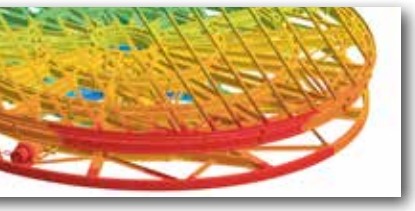
It's often difficult for engineering companies to implement complex simulation and data analysis methods throughout the company.

Providing innovative calculation methods, an easy-to-use GUI, and know-how transfer, we help companies democratize simulation and data analytics and make it accessible and understandable to other domain experts and newcomers, thus reducing the need for physical prototyping.

Altair Speaks Both Languages: Engineering and AI

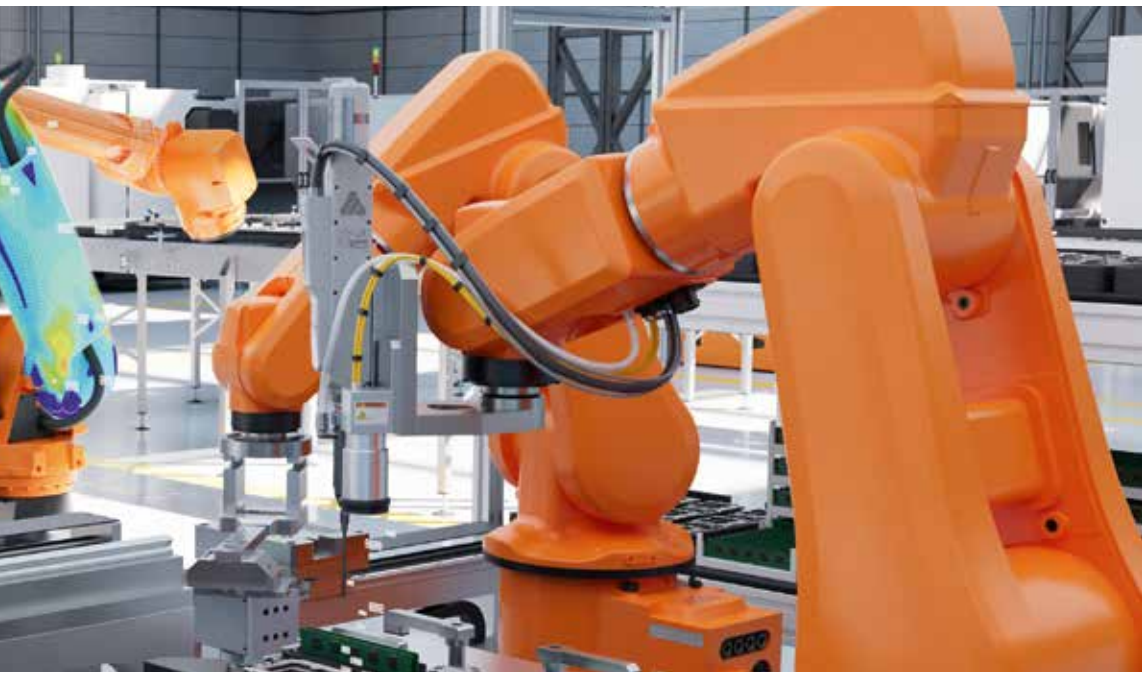
Altair has evolved into the most comprehensive provider of data analytics and AI solutions by speaking both languages: engineering and AI.

Altair's no-code AI solutions give experts from all disciplines application-based access to intuitive, powerful machine learning and AI.



Simulate large structures in minutes

Powerful no-code AI for all engineers



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Sources: Altair, SBS Bühnentechnik GmbH, Altair/Gorodenkoff/Shutterstock

In joint workshops, we support our customers in the development of successful AI applications and provide interdisciplinary coaching on their way to becoming a data-driven company.

Full Service CAE: Future-Proof with Altair's Unique Portfolio

Global trends such as digitalization, electrification, and increasing international competition require a willingness to invest in building expertise in new areas.

With over 150 software solutions, Altair offers the broadest range of simulation, data, AI, and HPC solutions to cover the needs of organizations both now and in the world of tomorrow.

Fields of innovation:

- Structural simulation
- Multiphysics simulation
- System simulation
- Structural and multidisciplinary optimization
- Digital twin
- Machine learning and AI
- High-performance computing

ALTAIR

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Consulting and software company ams.Solution AG, a member of the ams.Group, specialises in the project management requirements of make-to-order, assemble-to-order and variant manufacturers. Based on the branch-oriented business software ams.erp lean and dynamic company processes are implemented along the entire value chain.

Source: ams.Solution

The ERP specialist for efficient project management

ams.erp forms the central data hub for all company processes. The software offers a wide range of application modules that can be combined to suit the needs of your specific company. Users thus obtain sleek ERP solutions that allow them to fully realise the strengths of their business. ams.erp synchronises all information in real time, allowing everyone involved in the project to work with a single set of data. And cross-order evaluations allow project manufacturers to reliably gauge the performance of their company at all times. The flexible business software thus increases the planning security, profitability and competitiveness of companies. The resulting process reliability is the key to ensuring the commercial success of your company.

Control complex project transactions safely

ams's know how impresses companies in the sectors of machinery, plant and apparatus engineering; packaging engineering; tool and mould construction; steel, metal, timber and industrial construction; shipbuilding and the maritime industry; shopfitting and interior fitting; special-purpose vehicle construction; and contract manufacturing. Our portfolio includes consulting, training and service as well as a comprehensive management consultancy. And with a large team of consultants, software developers and support representatives at locations in Germany, Austria and Switzerland, ams is never far from its customers. How successfully ams has been working for over 35 years is proven by a large number of awards.

Benefits for the customer

- Multi-project planning
- End-to-end order referencing
- Consistent separation of order BOM and master BOM
- Items with/without item number
- Management of external production including material staging
- Preliminary, simultaneous and final costing – all online
- Semi-finished product evaluation by order
- Sub final invoice

Solutions

ERP, CRM, Project management, PLM/CAE/CAM, Machine data connection, PZE/BDE, Personnel scheduling, Control center, After sales service, Finance, HR, Intercompany, EDI, Export, Collaboration, Business apps

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Source: b_digital

Edit PDF electrical schematics directly with skemdit

The software Skemdit by b_digital optimizes the digital editing of circuit diagrams. As these are often used as production documents in control cabinet construction, on construction sites, or in maintenance cases, particular emphasis has been placed on optimal touchscreen operation and user-friendliness. Continuous further development, based on customer feedback, makes skemdit an indispensable tool for the electrical industry.

In the electrical industry, circuit diagrams are subjected to a constant ping-pong game between design and control cabinet construction. Handwritten changes and scanned plans are still the order of the day. To digitize these challenges, skemdit was developed. The PDF circuit diagram represents the lowest common denominator among all E-CAD systems, enabling skemdit to be a universal application.

Skemdit supports the user in all daily tasks. Self-organization is supported by a smart hook function on the respective line, which, compared to a pen, increases transparency, particularly in critical industries such as the pharmaceutical sector, leading to a qualitative improvement in documentation.

Furthermore, redline changes can be quickly and cleanly drawn inton the PDF circuit diagram thanks to the library or copy & paste applications. Illegible changes are thus a thing of the past. Thanks to the documentation of these changes, design departments, for example, no longer have to search through the plan for changes. These changes can be called up at the click of a button, and in case of questions, it is immediately clear who to contact.

But Skemdit also supports all accompanying tasks. Different revision levels can be compared with each other using the file comparison function. The multi-user mode allows multiple electricians to edit a PDF circuit diagram at the same time. Different plan versions are finally a thing of the past.

skemdit

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The value of requirements lies not only in their management, but above all in their seamless integration into the product development process. In the face of market pressure, it is crucial for mechanical engineering companies to implement innovations quickly. The development of applications and embedded systems requires flexible adaptations to constantly changing requirements. However, shorter release intervals and global markets entail new risks.

Source: Freepik

Precisely setting the course for success: requirements management in mechanical engineering

In regulated industries, such as mechanical engineering, manufacturers must keep an eye on numerous regulatory documents. The resulting requirements must not only be implemented, but also proven to be compliant (e. g., functional safety according to IEC 61508)

Requirements management plays a central role here, as it creates the basis for the efficient development and implementation of machines and systems. This process includes the systematic recording, analysis, documentation, and management of all requirements – from customers and internal standards to legal requirements.

The precise definition of requirements is crucial to meet customer needs. Requirements serve as a guide for technical specification and as a benchmark for progress. They enable verification of the development process and act as a common language between different disciplines, promoting a shared understanding and ensuring conformity with defined standards.

Effective implementation not only increases customer satisfaction, but also lays the foundation for the successful and timely realization of complex projects.

An Application Lifecycle Management (ALM) system that covers requirements management and the entire operational process of product development enables efficient cross-departmental collaboration in a single, document-centered system.

Siemens partner BCT Technology AG is an expert in solutions for CAD and PDM/PLM/ALM as well as mechatronics and the integration of enterprise applications. With its many years of experience, the company supports its customers on their path to digital transformation.

Learn more about requirements management.

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Offers that impress your customers

Customer-specific products, systems and plants require comprehensible and convincing offers. Companies that impress with outstanding user experience in the quotation process and offer the individual product quickly and accurately achieve clear competitive advantages.

If you digitalise your sales with camos CPQ 365, you highlight your customer's enthusiasm. Products are configured to suit customer requirements (configure), prices are reliably calculated (price) and personalised quotations are created (quote). camos CPQ 365 masters both simple and highly complex configuration scenarios. The camos software was developed to achieve a high level of efficiency where other CPQ solutions reach their limits due to the large number of rules, dependencies or positions in the quote.

Multichannel sales

camos CPQ 365 provides optimum support for sales staff at the customer's site, but also in virtual sales discussions without personal customer contact (remote selling). In addition, it enables online product configuration via the company website right through to check-out in the online shop.

An overview of the benefits of camos CPQ 365:

- **Modelling without programming knowledge:** Product and object knowledge is built up quickly and clearly, even for complex products.
- **Inspire with quotes:** The quotation process convinces with optimal user experience, a 3D visualisation of the configured products and quotation documents in the corporate design.
- **Increase turnover and profit:** Rule-based workflows replace approvals. The sales cycle is significantly shortened. Efficiency in the sales process, optimal pricing as well as cross- & up-selling increase turnover and profit.

camos CPQ software integrates seamlessly into CRM and ERP systems and enables process-safe end-to-end automation. It can be operated in the cloud, on-premise and also on mobile devices online and offline. Among camos' satisfied customers are: ABB, Kone, Haver & Boecker, HOMAG, KSB, Liebherr, MAN, Siemens, TROX and VOITH.

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Operations1 – For a successful, connected future

Source: KraussMaffei Technologies

Digitalization is increasingly reaching frontline employees in mechanical and plant engineering. Under the buzzword „Connected Work“, they too should benefit from full digital connectivity with their working environment. However, digital tools are still competing with mountains of paper in many companies - errors and inefficient, costly media disruptions are the order of the day. This is compounded by high cost pressure, an ever-increasing shortage of skilled workers and a lack of process transparency. Operations1 offers a comprehensive solution with its Connected Worker Platform.

Connected work refers to the organizational, procedural and technological connection of operational, „desk-less“ employees. Typically, this refers to user-centric digitalization for employees in production, logistics or other production-related processes. A connected worker platform is the technological solution for realizing this connectivity. The difference to typical software applications is that employees are embedded in a comprehensive digital system.

Operations1 is the ideal Connected Worker Platform for mechanical and plant engineering, allowing employee-managed production processes to be digitized end-to-end in the system landscape. This ensures more efficient processes that free up additional resources in times of a shortage of skilled workers. Thanks to the software‘s ease of use, new employees can also be trained more quickly. „The Operations1 software is so easy to understand that it can be used by employees within 10 minutes of training,“ confirms Walter Wittmann, Head of Assembly Line at Krones. Document management also reduces the workload and makes verification management more transparent. Furthermore, the Connected Worker Platform can be directly connected to existing systems, such as an ERP/MES, with little effort and variant-specific orders are no problem.

Leading manufacturers from the mechanical and plant engineering sector, such as Trumpf, KraussMaffei Technologies, Robert Bürkle, Krones and ThyssenKrupp, are already working successfully with Operations1 and, thanks to its enormous scalability, the SaaS software is already being used in more than 15 countries worldwide in a wide range of maintenance, production, assembly, quality, training and auditing processes. At KraussMaffei Technologies, for example, Operations1 has freed commissioning staff from paper-based processes and made their value-adding activities on the machine more efficient. As a result, 67% of the documentation workload at the Hanover plant has been reduced.

Connecting and supporting operational employees will remain a major field of activity in the future. Companies that want to future-proof their processes are in the right place with Operations1. More at **www.operations1.com**.

operations1

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Keeping pace with industry innovations

When industry leaders, researchers, and digital tech innovators come together, you can expect great things. Just look at how the Internet of Things is on the brink of a revolutionary new phase.

Networked household appliances in smart homes are becoming a staple of our day-to-day lives We should keep in mind, though, that the Internet of Things that underpins all this has long been a fixture in industrial environments. As is so often the case, it was the large companies, refineries, international plant manufacturers and highly automated producers that blazed the trail. However, progress is swift these days and it is no longer just the „big players“ who are benefiting from the enormous potential of the IoT boom.

When the digital transformation experts at COSMO CONSULT delved into the subject, their primary objective was to realise the enormous savings potential in the maintenance and servicing of large systems. The „Smart Industry Park“ is the fruit of this effort, a complete package of automation and data-exchange technologies for manufacturing known in Germany as “Industry 4.0“. It was developed in collaboration with the Fraunhofer Institute for Integrated Circuits and combines mobile and cloud-based software solutions with state-of-the-art IoT and AI technologies to significantly reduce maintenance costs and downtimes.

Discovering simplicity

But that was just the beginning. The actual objective was to facilitate easy access to IoT technologies for all companies. The idea behind this is the digital vision of the future, which Microsoft CEO Satya Nadella has summed up in the phrase „democratising transformation“. For companies, this means giving everyone the opportunity to participate and use the latest digital technologies to realise the potential of their particular talent.

Above all, it is about removing the barriers to the use of these technologies, both in terms of economic costs and the complexity of the solutions. The key to this is cloud-based platforms that enable companies of all sizes to utilise advanced, mobile, intelligent technologies. The result is solutions that bring the simplicity of smart home applications to complex industrial applications.

High-tech for everyone

A good example of this is the LOCTITE® Pulse product range from Henkel Adhesive Technologies, one of the world‘s leading manufacturers of adhesives, sealants and functional coatings. A new type of sensor technology is used that is embedded directly in seals and literally monitors the pulse of critical industrial installations.

The central element of this approach is cloud integration. It was developed in cooperation between COSMO CONSULT and Fraunhofer IIS and incorporates AI-supported evaluation and assistance systems. There are easy-to-use apps that present information and recommendations for action clearly. These apps can be used on any end device. This is exactly what industry innovation is all about: high-tech, easy to handle, without technological hurdles, and available to all companies.

Source: Adobe Stock

Mechanical engineers are currently facing fierce competition at both national and global level. In this environment, the ability to make time-critical business decisions and respond with agility to customer demands is key. Dassault Systèmes is supporting companies through many years of expertise and suitable solutions.

Source: iStock.com/sompong_tom

Driving the Future of Industrial Equipment

Source: Monty Rakusen/ Getty Imagestom

Flexibility and innovative spirit: These core skills are critical for mechanical engineers, both now and in the future, to meet the demands of the market. As an innovative partner, Dassault Systèmes helps them keep up to speed, accelerate the digital transformation, and pave the way toward disruptive product development and manufacturing.

Innovative for more than 40 years

More than 300,000 customers from over 150 countries around the world rely on the products supplied by Europe's second-largest software provider, which has been in business since 1981. More than 22,000 employees are providing solutions for mastering current and future challenges. Dassault Systèmes is thus driving forward new design and manufacturing processes together with companies from industrial equipment, transportation & mobility, aerospace, and many other industries.

Right from the start, Dassault Systèmes has been a pioneer of new technologies that have been shown to blaze the way for the whole industry: Whether it was the first 3D digital mock-up or 3D product lifecycle management (PLM) – thanks to Dassault Systèmes, companies have been able to benefit from efficient design and simulation solutions and make their ideas become reality. Dassault Systèmes also shaped the platform idea at an early stage: For more than ten years now, its 3DEXPERIENCE platform has enabled the real world to be simulated in the virtual world, networked added value to be realized, and innovations to be developed efficiently. And since 2020, Dassault Systèmes has been going one step further with the virtual twin of the human body. The aim is to harmonize product, nature, and life in order to create a holistic approach for businesses of the future.

Dassault Systèmes' longstanding experience and solutions, combined with the desire of the mechanical engineers to embrace change, lay the ideal foundations for cultivating new areas of business – from offering new services and using real-time data for machine maintenance through to ensuring functional, cost-efficient supply chains. With Dassault Systèmes, the challenges of the future can be mastered together.

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Source: DCC global

Software localization – We make short work of complex processes!

DCC global is a special kind of engineering service provider. For 25 years, we have been a reliable partner to the mechanical and plant engineering industry. When it comes to the technical implementation of foreign languages in your projects, we are the localization experts – for all software applications and all languages.

What can we do that others can't?

We offer excellent processes, advantageous tools, and maximum performance for both small and large special-purpose and series machine manufacturers, plant manufacturers and engineering firms. You will receive your control systems, visualizations and CAD programs expertly translated, implemented and quality assured. Our process with the quality-assuring HMI acceptance test is unique. We solve all typical localization problems for HMI interface texts. We guarantee that the programs can be loaded directly onto your system and put into operation without any rework.

What can we do for you?

As your strategic partner, we help you to work more efficiently and save costs sustainably with software localization. We fulfil your customers' individual translation requirements with high quality and reliability. You order – we deliver: short processes, clear responsibilities and simple interfaces help you to smoothly process your orders with guaranteed deadlines and cost reliability.

You are going to benefit – guaranteed!

- Implement future-oriented and reliable solutions for the localization of your engineering software today. We will support you in this – with a wealth of experience from working with software providers, above all Siemens with TIA and WinCC.
- Discover untapped savings potential in your order processing and back office with our help. We localize the software – you simply save on money, processes, human resources capacity and effort in the end. Your customers will be satisfied.

Our references – simply convincing

Siemens has been recommending us for more than 20 years. Personal recommendations are available on request. You tell us what you need ... and we ensure optimized and short processes!

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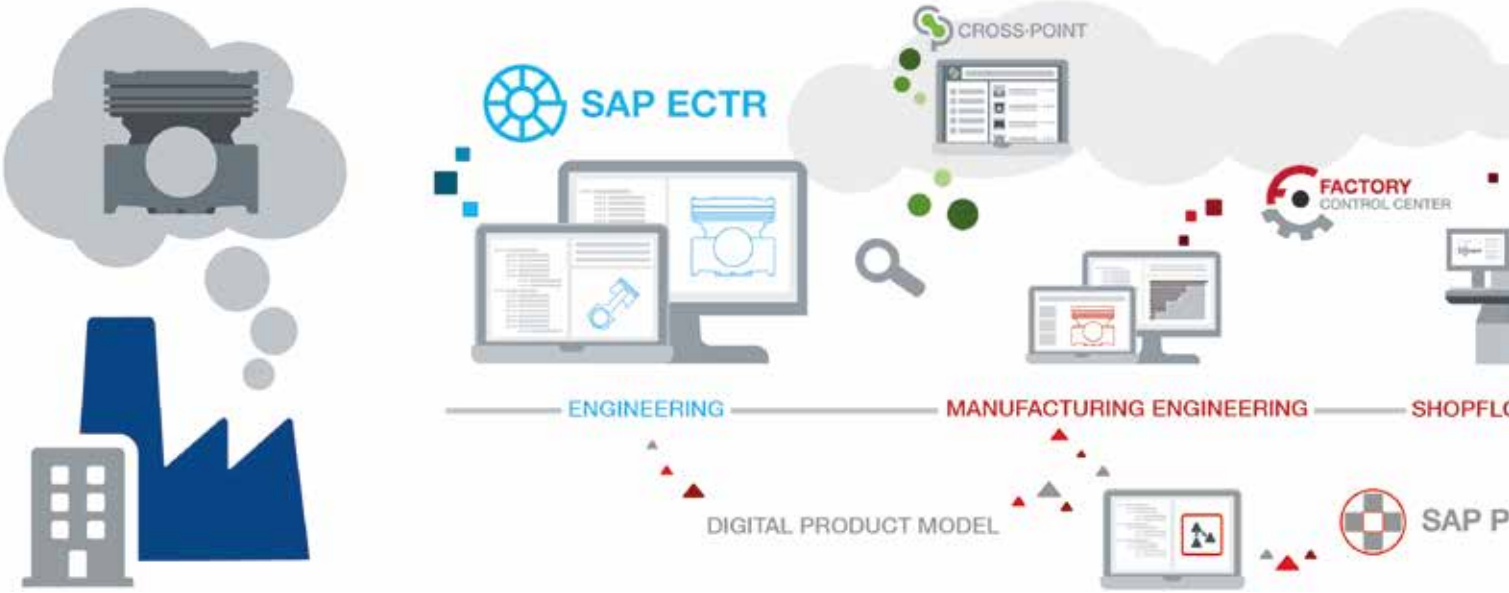
Your Companion for Integrative PLM

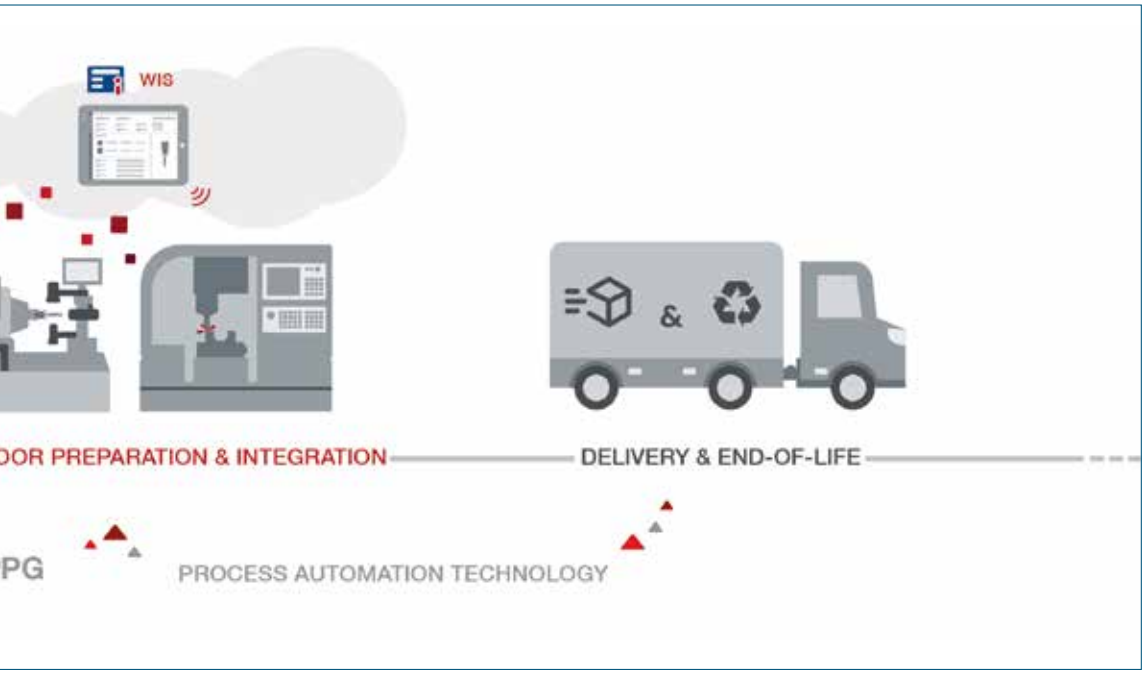


At DSC Software AG, we are passionate about bringing people, processes, and systems together. Our hearts beat for your product data. Get inspired by our fascination with integration. Committed to innovation, empathy, and partnership, we accompany you in the concrete implementation of your digitalization strategy: with SAP as the central, digital data basis for your business processes, enhanced with tailor-made best-practice solutions. With DSC as an SAP Platinum Partner, you will have an experienced and fantastically connected companion by your side. Our team combines more than 1,000 years of PLM know-how directed to one single goal: creating the best possible solution to your individual challenges. We help you convert your brilliant ideas into smart products even more quickly and keep being ready for the future.

Our approach: Integrative PLM
Integrative PLM means interconnecting all information and processes of a product across the entire product lifecycle: from the first product idea through product development and manufacturing to end of life.

Our contribution is to generate product-relevant information in SAP, to interconnect it, and make it available for follow-on processes. On-premise, in the cloud, or as a hybrid solution.

SAP applications and technologies provide the ideal foundation for building the entire value chain from a central data basis. We enhance these with tailor-made best-practice solutions.



Source: DSC Software

Engineering

Our core expertise: the integration of leading authoring tools in SAP PLM. Whether MCAD, ECAD, Adobe, software, or MS Office: With SAP Engineering Control Center | SAP ECTR, all leading authoring systems can be integrated in SAP PLM and linked to the business data. Based on this, engineering processes are supported optimally and downstream processes are directly integrated.

Manufacturing

Factory Control Center | FCTR complements the SAP-assisted product development process with CAM integration, complete tool data management in SAP, and detailed planning of tools and operating resources, connected to shop floor systems.

With the Worker Information System | WIS designed for mobile use, FCTR provides all relevant information from the SAP system for workers in an easy and intuitive way.

Automation for end-to-end processes

With SAP Product and Process Governance by BDF | SAP PPG , you can build and manage a digital product model. This way, you always keep track of all product-related data in your sales order process. Especially in industrial machinery, plant engineering, and with highly variable products.

Easy access to SAP data

The web application CROSS·POINT allows users a fast, easy, and mobile access to and use of SAP documents and materials – even without any previous SAP know-how.

DSC
Fascination with Integration

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From collecting and processing information to distribution, dissemination and feedback function in the application: intelligent information is the lubricant of the digital world. We have created solutions to tap into the potential of company-wide information and deliver it to specific users – across the entire product lifecycle, from design to maintenance.

Managing Information with DOCUFY

Big Data at the Design Stage

Increasing cost efficiency combined with growing product diversity and high quality demands require constant analysis of the production process. The foundation stone is laid in the design department. A small error can cause massive costs or lead to a production stop. With DOCUFY CAx Analytics, Siemens NX users can analyze their inventory data, reduce costs and exploit data quality potential. The DOCUFY CAx Quality Manager ensures stable data quality for new CAD designs.

Safety Compliance for Machines

Machine manufacturers are obliged to prove CE conformity in the event of damage. The verification documents created with the special software for risk assessment DOCUFY Machine Safety guarantee maximum safety and can avert existential company risks in the event of damage. Working with the software reduces the risk of liability, as every risk assessment can be created in accordance with EN ISO 12100.

Technical Documentation for Today and Tomorrow

Standardized products produced in large quantities are becoming rarer. Customers can choose from a comprehensive range of functions to configure individual products. Saving the associated information in individual documents is becoming unthinkable. The traditional document has reached its limits. We need flexible, self-contained information units that can be created independently and combined as needed. COSIMA is the intelligent XML component content management system for professional technical documentation: fully developed, ready-to-go and adapted to customer needs at any time.

The Right Information at the Right Time in the Right Place

Manufacturers and their customers should be able to find and use all manner of content for each specific piece of equipment at any time and in any place – either as a printed document, on a smartphone, through an augmented reality application or directly on the machine. With DOCUFY TopicPilot, the information, content and expertise search engine, users always have exactly the right information they need. At the right time and in the right language. Online or offline.

DOCUFY®

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With LEEGOO BUILDER from EAS you get a flexibly adaptable CPQ standard software including product configuration (Configure), price and cost calculation (Price), document generation (Quote) and other modules. The software can be used both on desktops and on the web.

We make complex things simple
LEEGOO BUILDER – The CPQ system for investment goods

Keeping the overview...
LEEGOO BUILDER creates transparency and traceability throughout the proposal process as well as the integration with CRM, ERP and CAD.

Efficiency and quality
Fast and simple creation of error-free, extensive proposals in a coherent workflow. This not only increases your efficiency in sales, but also the customer satisfaction.

Experience and methodology
LEEGOO BUILDER is currently in use in more than 70 companies around the world. You too can benefit from the vast experience EAS has gathered in the field of CPQ solutions.

Product configuration “Do it yourself”
Your product configurators are created by your technical experts themselves. Creating product configurators is easy to learn and requires no programming skills. The result is a faster, more secure proposal preparation.

Proposal calculation
Proposal calculation includes cost and price calculation. The generation of a calculation sheet showing profit and contribution margins provides an important result for the internal evaluation.

Document generation
LEEGOO BUILDER offers a high-performance document generator for the creation of result documents. Dual-language proposals, e. g. English and Chinese side by side can also be generated.

Multi-device capable
Proposal processing is possible both with the Microsoft desktop user interface and on any end devices such as tablets and mobile devices in a browser.

Our satisfied customers include Bühler AG, Doppelmayr Seilbahnen GmbH, SMS group GmbH, Beumer Group GmbH & Co. KG, Starrag GmbH and more than 65 other companies focussing on mechanical and plant engineering.

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(Generative) AI for industrial utilization

Generative AI and large language models (LLMs) offer substantial opportunities, but will not solve all problems on their own: In order to manage risks, such as the output of incorrect information, LLMs must be combined with knowledge-based artificial intelligence (e. g., knowledge graphs).

Empolis has a successful track record in implementing these technologies in customer service solutions. By combining GenAI and the patented knowledge graph technology, our solutions create intelligent knowledge models that provide reliable information from the systems and generate optimal human-machine communication.

Knowledge graphs are a form of knowledge-based artificial intelligence that work the way we humans think. They bring together all product information in one place – the „single source of truth" – linked and mapped. They form the logical framework and source of knowledge for customer service, for example. Technicians and end customers can deduce affected parts, components, and devices from error codes. This allows service technicians to solve problems faster, with the appropriate repairs or replacement with the right spare part.

Generative AI makes it quick and easy to create service content particularly suitable for supplementing curated knowledge and can improve the customer experience. Linguistic capabilities of the underlying LLMs facilitate and personalize each interaction with customers, employees, and partners. But it can also reduce the outflow of expert knowledge. Chat histories, tickets, and

Source: Getty Images

service calls, which contain answers to relevant customer service questions, can automatically be recorded and evaluated.

With support of Generative AI's linguistic skills, new knowledge articles are generated at the touch of a button and expert knowledge is sustainably secured within the organization.

Empolis has over 30 years of experience in the development of these AI processes and their use for customer service.

The combination of statistical AI methods (e. g., machine learning, neural networks, LLMs) and knowledge-based AI (e. g., knowledge graphs, semantic search, natural language understanding, decision trees), creates completely new use cases in many industrial areas and is a real productivity booster. The combination of knowledge graphs and large language models generates more intelligent products and offers better decision support. In addition, mixed reality use cases for training, education and even direct product applications, with remote support, can be intelligently designed.

In an industrial context, this is particularly important for knowledge workers in technical sales, customer service, R&D and company-wide knowledge management.

EMPOLIS

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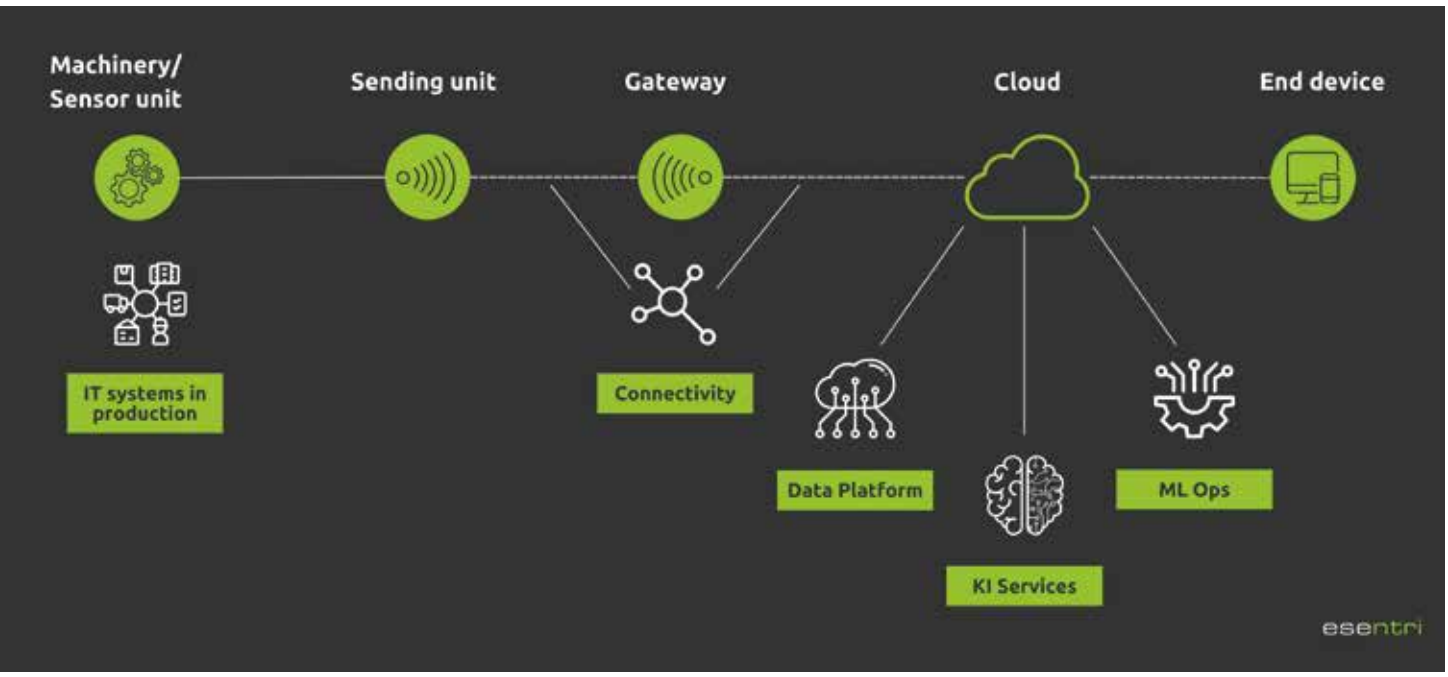
How to create new business models through data



The global manufacturing industry is undergoing a transformation: from the production of only physical goods to the additional provision of data-based products and services. We show why a mindshift is needed to generate added value with AI-based services.

The digital transformation is generating an increasing amount of data along the value chain: simulation data in development, sensor data in production and many more. Companies gain insights by using data which is a strategic success factor. A shift in the way of thinking away from simply selling machines and towards providing additional benefits for end customers is needed. The use of data science and AI services creates a process for transforming sensor information into digital products.

Why are digital products needed in the manufacturing industry?

Digital services can prevent machine failures and reduce downtimes. The added value of digital products can be monetized and create additional revenue. Numerous companies have started to equip their products with sensor technology and build data pipelines in order to offer digital services such as predictive maintenance or anomaly detection in the long term.

What happens next?

Those who are able to create reliable predictive maintenance services for their machines are also able to market the product in a subscription model or according to consumption. In particular for capital-intensive machines this leads to lower barriers to entry, continuous income, additional service business and increased customer loyalty.

How to create a digital product

As the diagram shows product development can be divided into the following milestones:

Connectivity

We shift your IoT data securely into the cloud and ensure reliable communication between IoT devices.

Source: esentri

Data platform
A data platform enables the seamless integration and consolidation of data from various sources and acts as a robust base for AI services. We ensure a secure, reliable, maintainable and high-quality database.

AI services
Gaining knowledge from data along the production process is a strategic success factor. We bring intelligence to your data and build AI services such as predictive maintenance or demand prediction.

ML Ops
We ensure standards and encapsulation from experimentation to operation so that your AI services run robustly and remain maintainable.

A holistic approach to data strategy

The requirements for a successful project go beyond pure technology: successful change begins with the right mindset. If you try to solve today's problems with yesterday's solutions, you cannot expect successful results. The transformation towards becoming a full service provider requires a mindshift. We think holistically and keep an eye on the big picture in order to develop a sustainable data strategy.

esentri

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How to make your B2B sales faster and more visual

Digital purchasing options are gaining ground in B2B. CPQ solutions (Configure, Price, Quote) and product configurators guide sales, customers and partners to the right products. With encoway CPQ, users can find the customised solution from your varied product portfolio quickly, visually and error-free. Our CPQ software can be integrated into your web shop, a dealer portal or used as a sales solution on a tablet or notebook.

Quotations are appropriately priced with encoway CPQ and created at the touch of a button. This speeds up sales processes, increases customer confidence and the success rate in sales.

Guided selling makes finding the right product even easier and more user orientated. We use relevant questions to guide your customers to the solution in an advisory capacity. This significantly reduces training costs for new employees, dealers or other sales partners.

3D visualisation with encoway CPQ inspires, brings products to life and conveys complex technical relationships in an easy and understandable way. With our visual configuration, the right variant is even created directly in 3D space. Various export formats speed up subsequent processes for manufacturers and customers.

For the best possible process support, encoway CPQ is integrated into IT infrastructures such as Microsoft Dynamics 365, Salesforce or SAP ERP. Our software reduces the need for manual activities and product expertise many times over – leading to greater independence in the event of staff shortages.

encoway is a full-service provider for all aspects of CPQ, product configuration and variant management. encoway combines over 20 years of experience and extensive industry knowledge with outstanding consulting expertise. The following customers already benefit from our solutions: Bosch Rexroth, KHS, Hager Group, Hornbach, Phoenix Contact and many more.

Scan the code and get an insight into exciting reference examples.

encoway standard for variety

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Source: EURO-LOG

Real-time visibility for secure supply chains

You need to integrate your manufacturing network into secure inbound and outbound supply chains, optimise the flow of goods and materials, secure availability in real-time, reduce costs and CO2 in collaboration with partners? You can instantly implement all of this with platform-based SCM solutions from EUROLOG.

Direct connection to the supply chain

Procurement and supplier platforms are directly connected to the transport and container management system via the EUROLOG platform.
A bonus for any ERP system!

Automation of logistic processes

The orchestration of intermodal transport is ensured via a data platform across all partners. Data matching and AI guarantee a high data quality. Deviations from scheduled target runs are highlighted, and alternative modes of transports, routes and service providers suggested. This helps reduce the workload for employees while securing the supply chains.

Reducing costs and CO_2

EUROLOG systems support the optimisation of load building and of container stocks across business units. This ensures that cargo space is utilised in a more efficient way, while also reducing CO_2 emissions.

Integration into the future of logistics

Modern supply chains cannot be managed in separate data silos. EUROLOG integrates your ERP system into a collaborative value chain, opening up significant benefits for all business areas. Pragmatic planning, quick implementation, economical execution. Solutions that are trusted by global players such as Bosch, Still, Viessmann and well-known OEMs.

EUROLOG
INTEGRATED SUPPLY CHAINS

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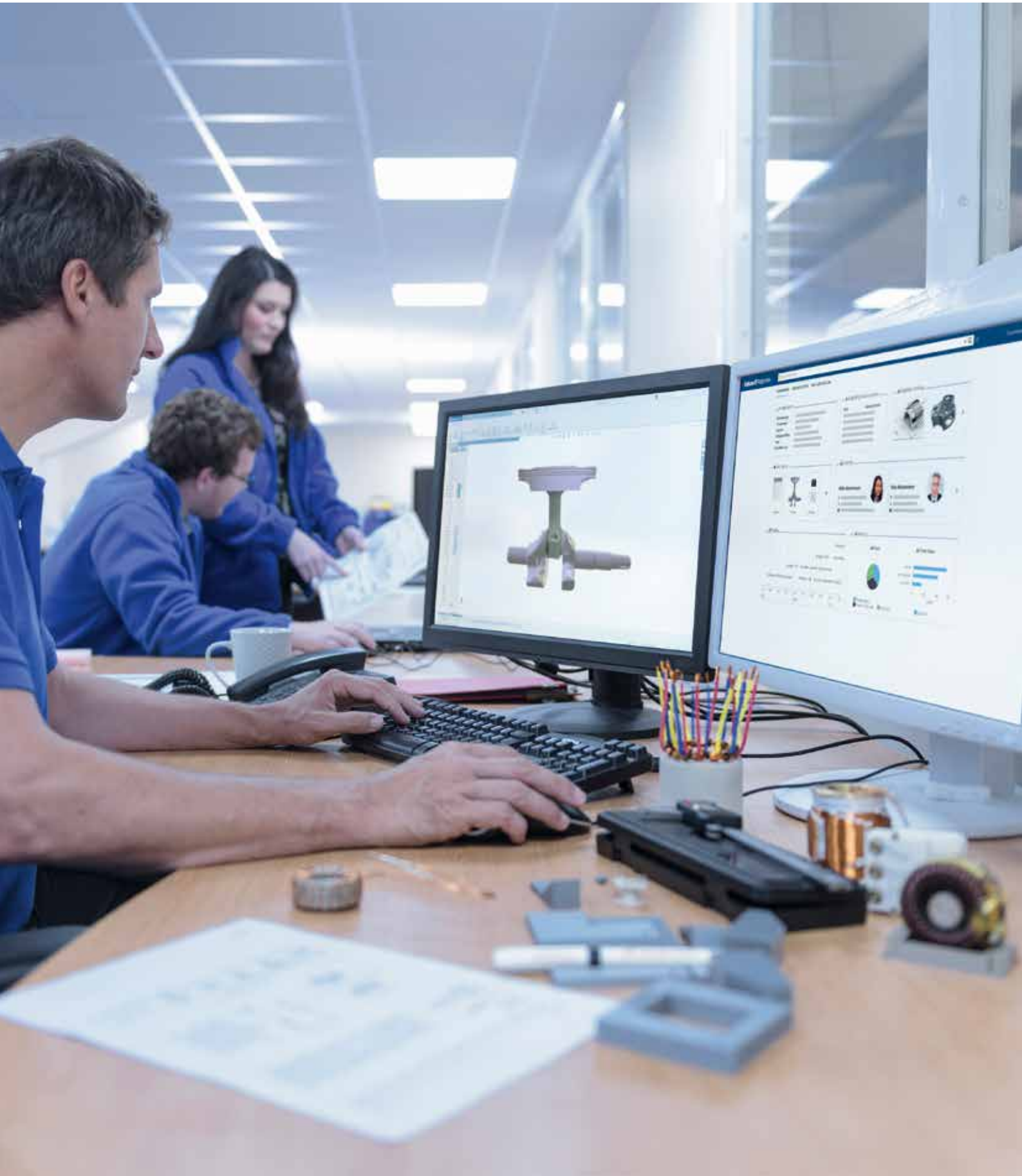
Managing technical data and documents along the supply chain using AI



The cloud-based standard product Fabasoft Approve serves the management of technical data and documents in an industrial environment. It makes it possible to network suppliers and customers in a shared data environment and seamlessly integrates AI from Mindbreeze, a leading international provider of applied artificial intelligence and knowledge management. The provision and processing of information is thus considerably simplified. Automated checking and approval processes reduce manual effort enormously and boost efficiency and traceability.

Existing IT systems such as SAP can be quickly integrated and thus allow order data to be used. Data storage takes place exclusively in Germany, Austria and Switzerland and requires compliance with the highest security standards, which are verified by internationally recognized certifications. Approve combines an integrated, comprehensive document management system with easily customizable business processes and is also available on mobile devices worldwide.

Technical documentation

Manage technical documentation in a shared working environment and integrate suppliers and customers directly into the processes.

- Rapid creation of an overall structured technical documentation based on standards such as DITA
- Automated testing, approval and release processes that include all parties involved
- Efficient mass upload with automatic adaptation of document names to company-specific specifications and assignment to order items
- Clearly arranged status displays and deadline management
- Simple evaluation of comprehensive quality indicators such as delivery reliability

Transmittal management

Comprehensible and transparent exchange of data and business correspondence for successful large-scale projects.

- Process-controlled document exchange
- Personal task lists for project team members
- Automated approval and release processes
- Digital signature for seamless workflows

Quality management

Cross-plant computer-aided quality system (CAQ system) for digital quality processes in compliance with method frameworks such as FMEA, 8D, APQP, NCR or CAPA.

- Automated generation of individual test plans
- Structured recording of defects using checklists with mobile devices
- Workflow-supported allocation of the necessary measures pursuant to the 8D problem-solving method
- Cross-plant collection of “lessons learned” in a “single source of truth” for automated analysis using AI to improve quality

Arrange a free consultation now to learn more!

Source: Monty Rakusen DigitalVision/ Getty Images

Fabasoft Approve

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From the idea to the finished software product

Develop the right thing right with generic.de

More than half of German software projects fail

According to a recent study by Userlane and PwC, less than 50 % of the CIOs surveyed are currently achieving the desired ROI from their software projects. When you consider that such a project costs German companies an average of 1.9 million euros, the figures are even more alarming. The reasons for failure are many and varied, but two main factors stand out:

- On the one hand, there are still massive budget and planning problems. Developing solutions, whether custom off-the-shelf or custom software, simply takes too much time and money.
- On the other hand, there is a lack of user acceptance or digital adoption. Users, whether they are employees or customers, find it difficult to use the software. In the worst cases, they do not accept the solution at all.

Rethinking software development

To address the issues of user acceptance as well as time and cost issues, we have rethought our development process for software products. Our goal is to build the right thing right for our customers.

„The right thing“ means a software product that is a perfect fit for the company and its future users. And „develop right“ describes our approach to sustainable and efficient software development with clean code.

Developing the right thing: software with high user acceptance

To build the right thing, we first help our customers find the right idea. We then work out the initial requirements – from a technical, business and user perspective. We use this knowledge to develop a solution concept and an implementation plan. However, the requirements for the product must also be continuously validated, tested and extended during the actual development process. This is why we develop using the dual track method: While one work package is being programmed, the next package is being designed in parallel. This is the only way to ensure that a product is developed that later functions perfectly, reflects the business case and is accepted by users.

Developing the right way: maximum flexibility thanks to clean code

Because the requirements for the software product are under constant scrutiny, they can change all the time. As the product is already being programmed in parallel, there is of course a risk that costs and schedules will get out of hand. The source code must be able to keep up with these changes – the code must be able to be changed efficiently. We ensure this with Clean Code Development, a software development methodology that aims to produce flexible, changeable code – over the entire product lifetime.

By combining dual track and clean code, we develop software products that fit the company perfectly – sustainably and to the highest quality.

generic de
the clean code company

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In 1962, the Gebauer GmbH in Solingen laid the foundation for today's TimeLine Business Solutions Group. Even back then, there was a desire to provide companies with the best possible office equipment to make their work easier and more efficient. In 1992, the company switched their approach and became a provider for business software solutions. Offering innovative and customizable ERP solutions with a price-performance ratio tailored to medium-sized industrial companies still drives the TimeLine Group and its product portfolio today.

Source: TimeLine ERP

Over 30 years of experience in the ERP market

Today, the TimeLine Group comprises a total of 15 companies and a number of partners with locations in Germany, Switzerland, the Netherlands, Poland, Bulgaria, Romania, Slovakia, Luxembourg and India. With around 180 employees supporting over 1,100 customers and more than 22,000 installations, the TimeLine Business Solutions Group is one of the last independent, medium-sized ERP providers in the German and European market.

With over 30 years of experience in the ERP industry and the continuous development of our ERP system close to the customer, the TimeLine Group is one of the most innovative, modern and versatile ERP providers for medium-sized manufacturing companies today.

High-end technologies and functions for SMEs

Due to our 30-year-experience, we are very familiar with the problems and requirements of medium-sized manufacturing companies. Our goal is to significantly accelerate the processes of all departments and make them more efficient. To achieve this, TimeLine ERP offers probably the most comprehensive range of essential functions in one system – what many systems only realize via interfaces is fully integrated in TimeLine: ERP + DMS + EDI + Planning (APS) + Project Management + Production and Machine Data Capturing + Labor Time Recording + QM + PDM (CAD) + Financial Accounting and -Controlling + CRM

TimeLine is therefore the universal platform for all those who want to manage their processes with one system.

Multiple awarded

The unique combination of ERP platform and integrated development system creates the possibility to close functional gaps with minimal effort. Combined with SME-oriented consulting during implementation regularly leads to optimum acceptance of the solution and high customer satisfaction. TimeLine ERP has already won the „ERP system of the year" award nine times.

TimeLine ERP is the ideal solution for managing all production processes of make-to-order manufacturers, project- or series manufacturers.

TimeLine® Business Solutions Group

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Source: iStock

Holistic Resource Optimization for your Business

If you want to achieve great things tomorrow, you need to lay the foundations today to ensure productivity, efficiency, sustainability and competitiveness in the future! Because in times of change, a successful economy needs innovative and flexible solutions that effectively help to improve processes, the use of resources and overall corporate planning. Providing customized IT solutions for Workforce Management, Smart Manufacturing, Access Control and Cloud & IT Infrastructures, the GFOS Group is an ideal partner and pioneer for New Work, Smart Factory and holistic resource optimization.

For over 35 years, the IT specialists at GFOS have been designing and developing software that supports day-to-day business to make processes more sustainable and measurably more effective. A powerful Manufacturing Execution System supports companies in the manufacturing industry in sustainably increasing productivity and efficiency – while at the same time optimizing the use of resources.

Together with our customers, we are shaping the industrial working world of tomorrow and continuously developing products and services – our customers can rely on us! We also work with equally innovative partners to offer the right hardware from a single source or to enable the integration of artificial intelligence. Only good and close cooperation and the will to innovate lead to high-quality IT solutions and thus to an increase in effectiveness and efficiency.

GFOS represents not only products and services, but also our deeply rooted values. We strive for excellence and innovation in everything we do. Our value proposition to customers, employees and partners is based on integrity, quality and sustainability. We pride ourselves on being a brand that embodies trust and reliability, always striving to exceed expectations.

The family-run GFOS Group is one of the market leaders for professional software concepts in the areas of Workforce Management, Smart Manufacturing, Access Control and Cloud & IT Infrastructures. Companies of all sizes and in all industries around the world successfully use our IT solutions – you too can become part of the GFOS Family.

GFOS

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Holistic Optimization and Transparency Thanks to Intelligent Planning Along the Entire Value Chain

As a machine and plant manufacturer, you know the challenges you face: A lot of pressure on deadlines and high lead times, and recurring, changing bottlenecks. With FELIOS, our intelligent solution for production planning, we at INFORM have made it our mission to tackle these challenges together with you. Thanks to over 30 years of experience and expertise in the industry, we know what really matters, and support you in optimizing your processes along the value chain.

Together with our long-time and renowned users, we are constantly developing FELIOS, for you to keep the pace with changing market requirements. Based on the standard software, the system is individually adapted and tailored towards your needs and requirements. This way, we ensure that you have the ideal tool to achieve your goals.

Our software is a holistic approach that also plans your production cross-departmental with the best possible overall result. The decision-intelligent algorithms support you in reducing your manual planning effort and complexity drastically, while increasing the transparency, customer satisfaction, and efficiency of your production.

Source: ©industrieblick / Adobe Stock

As an add-on to the existing ERP system, FELIOS automatically plans thousands of production orders with numerous operations, using only the capacities and limited resources actually available to you. The goal always is maximum timeliness, through optimal scheduling. As a result, you not only achieve safety and reliability, but will also plan your production realistically, sensibly and clearly.

Added value through by using FELIOS

- Increased timeliness
- Short delivery times
- Maximum production efficiency
- Transparency in the entire supply chain
- Planning and scheduling reliability

Our FELIOS software family includes various solutions, that – in synergy – form a comprehensive overall system for production planning. The core of this is our APS system, which answers the important decision-making question of when which production steps can realistically be scheduled with which resources and parts to be procured. In addition, the actual data of all production processes can be recorded and analyzed with the help of integrated operating and machine data acquisition. Functions for shift and employee scheduling as well as project and assembly planning round off the system. This ensures full transparency from purchasing through production to assembly, facilitating the flow of information across departments. Everyone involved always has the same, up-to-date data and information at their fingertips, and can react flexibly and early-on to any disruptions or changes.

Find out more at www.felios.de.

FELIOS
BY INFORM

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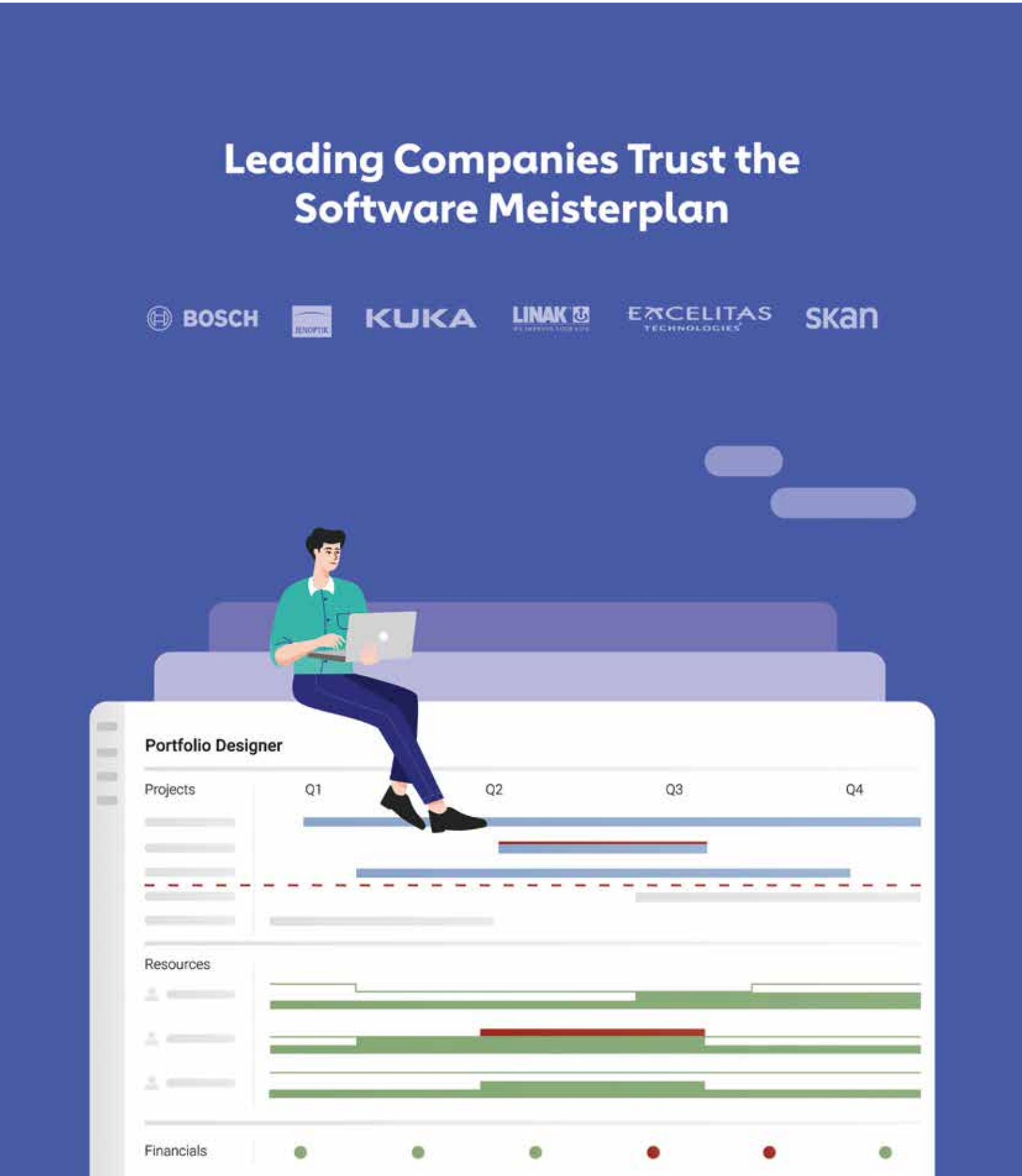
Delivering on time despite a shortage of skilled workers? Only one thing can help: Master your cross-project resource planning!



What is a realistic delivery date for this project? Who does what when? How do we plan spontaneously? Leading companies worldwide such as Bosch, Siemens Gamesa, Excelitas, and others answer these questions with Meisterplan. Whether in customer projects, product development, internal IT, or business transformation – the solution lies in cross-project resource planning.

Gain an overview of your portfolio and simulate scenarios in real-time

With Meisterplan, finally gain an overview of all your projects, their priorities, interdependencies, and your employee capacities in a combined view.

"With Meisterplan, we always deliver customer projects and products on time. For us as a 100 % customer-driven company – and also for our customers – this is a real factor for success."
Claus Spruch, Excelitas Technologies Corp.

You'll immediately see when you can schedule new projects, identify bottlenecks, and conveniently adjust your planning with drag and drop. Witness the impact of every change in real time, enabling not just fast but truly realistic planning.

Realistically plan employee assignments

The order is in, materials are ordered, and the machines are ready. But what about your skilled workforce? The availability of your employee resources is a key factor in the success of your projects.

With Meisterplan, you'll know who is available when, so you can select the best people for the job. Easily recognize bottlenecks using the histogram view and quickly find ways to resolve them. This way, you make commitments to customers based on realistic capacities, regardless of whether multiple teams collaborate, and regardless of whether they are organized in an agile, traditional, or hybrid manner.

Ensure alignment in planning: across teams, projects, and tools

Every company faces the same problem: important data is often not maintained, or it's scattered across various project management tools and spreadsheets within teams.

With Meisterplan, integrate essential data from all these sources in one place. Thanks to various views for portfolio coordinators, project managers, resource managers, executives, and employees, you can involve all key stakeholders. Everyone works with the same data and stays updated on the current plan.

Rely on over 20 years of experience

The experts at Meisterplan have been advising companies worldwide in mechanical engineering and plant construction for over 20 years. We help you master your cross-project resource planning – absolutely secure thanks to ISO 27001 and TISAX certification and tailored to your use case: from OEM solutions to wind parks.

Source: Meisterplan

You don't use a CRM software yet? Or your current one doesn't provide you with all the information you need? Enough of that!

itmX offers you full 360° vision on your customers and projects: from initial contact to after sales and even further! It's easy: as intuitive to use as MS Office custom-fit: functions tailored to your needs 100 % integrated: seamlessly embedded into your SAP.

Source: itmX

The best CRM based on SAP for the mechanical and plant engineering industry

Unique user experience in all processes

The itmX crm suite unifies all your business processes and completely maps the individual customer journey of your clients. From the first contact in marketing to contact maintenance and opportunity follow-up in sales to the execution of services and spare parts orders, all processes can be displayed transparently and clearly. Due to the complete integration into your SAP and the Microsoft world, you benefit from:

- Holistic 360° view of your customers, whether on leads, sales projects, complaints, invoices or the financial status from your SAP ERP.
- Unique and customizable user experience for all users
- Seamless integration or connection of third-party solutions, such as CPQ

Add momentum to your lead-to-after-sales process, delight your customers with personalized customer experiences, and deliver an outstanding customer service.

The best of both worlds – SAP and Microsoft

Thanks to the hybrid cloud architecture, you keep your data on-premise in your SAP system and can simultaneously access the application in the cloud via Microsoft Azure components. You also benefit from optimized and automated processes that provide added value for all users using existing M365 tools and the itmX crm suite.

Success stories from over 20 years of CRM expertise in mechanical engineering

Every customer is unique and has very individual requirements for the CRM system – especially regarding holistic and integrated processes. Convince yourself of our expertise and learn more about the project experiences of our customers in mechanical and plant engineering – one of our core industries.
Find out how itmX can also help you take your customer experience to the next level.

"The tipping point was the complete SAP integration of itmX CRM, as this was the basic requirement for us to introduce a CRM system – without interfaces!"
Markus Wendlinger, BRÜCKNER Maschinenbau GmbH & Co. KG

Brückners Success Story:

Your path to efficient processes:

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Internet www.itmx.de

Fast deployment, easy scalability, automatic updates, short time-to-value and dozens of industry-specific processes: KUMAVISION combines the advantages of proven ERP industry software for manufacturing with the benefits of the modern Software-as-a-Service (SaaS) operator model.

Source: Adobe / Getty©Morsa Images

KUMAVISION factory365: Industry Software for Manufacturing

KUMAVISION factory365 is the modern SaaS solution for project, contract and series manufacturers. KUMAVISION has expanded the standard ERP software Microsoft Dynamics 365 Business Central to include a lot of industry-specific functions and best practice processes. Companies benefit from real added value for their business and a short time-to-value: with this concept, costly customisations are no longer necessary. The SaaS solution can be flexibly expanded with apps from the Microsoft AppSource and individual extensions. In addition, the numerous business applications of the Microsoft Dynamics 365 technology platform can be easily integrated. As KUMAVISION takes care of the operation, further development, updates and maintenance, SaaS customers benefit from shorter innovation cycles, sustainable relief for their own IT department and ultimately lower overall costs. All users always work with the latest ERP version, making complex update projects a thing of the past. This gives companies maximum flexibility to compete successfully in dynamic markets.

Fast implementation with SmartStart

Today, machine and plant manufacturers must be agile and adaptable. Only those who are able to react quickly to changing conditions will remain competitive. Lengthy ERP implementation projects are not compatible with the required agility. KUMAVISION has therefore developed SmartStart packages that simplify and accelerate the changeover to the SaaS solution factory365 with numerous templates. The software is preconfigured to suit the user, so companies can get up and running quickly. Service packages with a clearly defined scope of services and transparent prices make the project implementation easy to calculate.

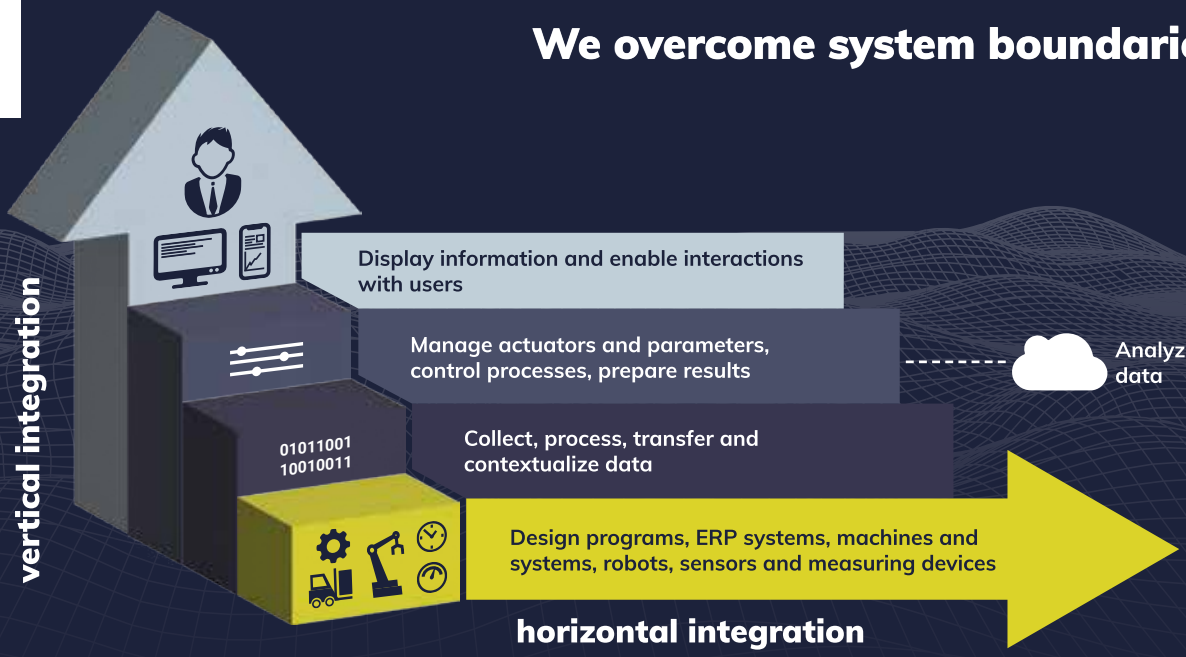
Maximum future security

ERP, CRM, business intelligence, DMS, power apps, cloud services for IoT, AI and much more: KUMAVISION is one of the world's largest partners for Microsoft Dynamics 365 and enables its customers to achieve sustainable success by making the best possible use of the entire Microsoft technology platform.

Partner for Smart Industrial Solutions

LACHMANN & RINK | PARTNER FOR SMART INDUSTRIAL SOLUTIONS

We overcome system boundaries



Individual Requirements need Individual Solutions

Predictive Analytics
Embedded Systems
AI
Hybrid Cloud-Edge Platforms
IT / OT
Cyber Resilience Act
Secure Data Rooms
Inter-operability
European Data Act

Partner for Smart Industrial Solutions

OPC FOUNDATION MEMBER

Source: Lachmann & Rink

Lachmann & Rink GmbH (L&R) specializes in the development of individual smart software solutions and processes. 40 years of development expertise contribute to being the decisive sparring partner for the technological inquiries of technology and global market leaders.

As the largest consulting and development center for industrial software in South Westphalia, Lachmann & Rink guides its customers through their entire development cycle to project success. In addition to software development, the family-owned company also offers consulting services. In workshop modules, customers and consultants work together on specific challenges such as ideation, structured requirements and usability engineering, software architecture and technology selection, software development, implementation, testing and commissioning.

Mastering the tech stack

The L&R development team of more than 100 people is proficient in a wide range of programming languages, development environments and frameworks. This supports L&R's forward-thinking approach to trends and future topics, ranging from apps, cloud, data science, embedded systems, Industrial Internet of Things (IIoT), Artificial Intelligence (AI) to the Digital Twin and beyond.

L&R also offers pioneering software solutions for condition monitoring and the collection of Production Data Acquisition (PDA) and Machine Data Acquisition (MDA). By tracking Overall Equipment Effectiveness (OEE), L&R ensures transparency and enables well-founded decisions to increase production.

Another key focus of L&R's services is vertical integration to ensure smooth data transfer and seamless integration of all operationally relevant information from the sensor level to control stations, ERP or MES systems and central cloud solutions. L&R's maintenance management also enables preventive measures to minimize unforeseen failures and maximize plant availability. This provides customers with comprehensive real-time control over their production processes.

The „Industrial Linux" from L&R, which creates a software-based level of abstraction, is new and should be emphasized. This empowers application developers to access the peripherals via defined interfaces and drivers without having to worry about the exact configuration of individual hardware components.

Tangible investment security

The development process at L&R is agile and iterative. Each development cycle produces an executable result, which is refined and extended in the next cycle until a minimum viable product (MVP) is created. This enables a steep learning curve, uncovers weaknesses and minimizes risks, investment costs and time-to-market. According to L&R's practical experience, such an MVP only generates around 10 % of the development costs of a marketable variant.

With PiT® – Produzieren im Takt LF Consult specializes in optimizing production for single item and small batch series manufacturers. Using the cycle-oriented planning approach, capacity planning becomes feasible and efficient.

Remain on schedule and transparent in real-time with 3Liter-PPS®

In this age of control centers, companies try to get a grip on delivery dates and lead times by increasingly detailed planning – which fails in view of ever-growing disturbance variables. Lack of transparency, unrealistic deadlines as well as huge expenditure are frequent characteristics of planning disorders.

3Liter-PPS® – The brilliantly simple planning tool

This is exactly where the LF Consult production system PiT® – Produzieren im Takt comes into play. 3Liter-PPS® is the only software that incorporates the approach of cycle-oriented planning. In a higher-level planning fixed deadlines are specified based on cycles. Within these cycles, teams can independently plan the sequence of their orders and respond to disruptions in their own responsibility. The timely and transparent provision of information from planning to the shopfloor and vice versa is the basic requirement for an agile and efficient organization.

With 3Liter-PPS® you always have the right information in the right place.

3Liter-PPS® enables capacity-validated planning in real-time, guaranteeing an overview of the value chain at any time. Whether detailed information on an order, the retrieval of material, the management of work sequences or order picking and transport, 3Liter-PPS® enables employees to connect to receive the information mandatory for timely processing. Key performance indicators give an overview of where deviations occur. The digital shop floor management immediately shows the measures necessary to achieve the defined goals. Incidents and tasks can be created and tracked in the form of tickets. Everyone has access to the latest information. There is only one central communication platform, promoting the acceptance and motivation of the employees.

Many renowned companies have already successfully implemented cycle-planning with 3Liter-PPS®, thereby reducing their order lead times by up to 50 % and stocks by up to 30 % while increasing adherence to delivery dates to more than 98 %.

LF CONSULT
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LiSEC – all.in.one:solutions

LiSEC is a globally acting group of companies that has been offering innovative individual and complete solutions in the field of flat glass processing and refining for more than 60 years. The service portfolio includes machines, automation solutions, software and services.

LiSEC software products are based on 30 years of practical experience in the flat glass industry. This wealth of experience enables us to combine sophisticated operating concepts for networked multinational groups of companies with advanced and deeply integrated production control solutions. At the same time, we also make this knowledge available in compact solutions for small and medium-sized companies.

LiSEC software solutions are tailored to the specific requirements of flat glass processing and finishing and offer intelligent solutions for more efficiency, flexibility and transparency in our customers' business and production processes.

The product range includes:

- **Software for business management**
  Order and warehouse management
- **Software for production management**
  Production control and optimisation
  HMI, line control
- **Software for shop floor management**
  Machine control
  Sensors and actuators
- **Automated production solutions**

LiSEC solutions are always one step ahead of the growing requirements of the glass industry thanks to their proximity to the customer.

LiSEC Software Development, based in Austria, has a software development department in Dubai, which was founded back in the 1990s. Both work closely together with the machine development department and today offer customised software packages for every task through to integrated complete solutions for the entire production process.

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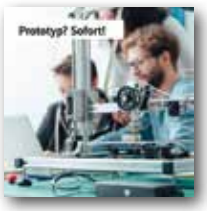
The Business-IT-Experte in the Manufacturing Industry

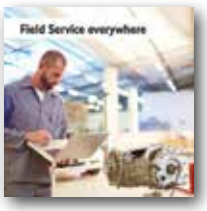
Innovative industry solutions make a difference.
MODUS Consult is the certified top partner of Microsoft Business Solutions in Germany. As an industry expert, we combine our comprehensive know-how of different manufacturing types in our IT industry solutions: Our customers engineer or make to order, produce variants, synchronized or in batches. And often in mixed ways. As an industry expert, we have solutions in mechanical and plant engineering, that have won Microsoft awards for 25 years.

We rely on the most innovative platform for medium-sized businesses: Microsoft Dynamics 365. We live IT, services and industrial applications in a well-thought-out and process-oriented way.

The next level of your business IT
We listen, understand and design the next level of your business with you. Turn individual systems for ERP, ECM, and BI into a comprehensive platform! With our innovative hybrid approach, we protect your investments and drive the automation of your administrative processes and the digitization of your value creation processes.

Machine maintenance with Microsoft Teams and the Remote Assistant
Perform machine and other maintenance easily digitally from any location with Microsoft Teams and the Remote Assistant. All you need is a smartphone, tablet, or HoloLens. Enable your customers to get service support from their home office and save travel costs and time. Start now! The implementation of Remote services happens within 48h.





New service level for your customers

An optimal production process with flexibility and holistic business software makes machine and plant manufacturers fast and high quality. With machine service, you experience a new service level for your customers. The fully integrated ERP software for machine and plant engineering is a high performer in interaction with CAD, PowerApps and Office 365.

Some features at a glance:

- CAD & PDM integration
- Construction-accompanying manufacturing
- Project-oriented manufacturing (one-off production)
- Long-run planning
- Graphical production planning and simulation
- Traffic light controlled online schedule and cost control
- Variant management
- Maximum bills of material and make-to-stock production
- Down payment accounting according to valid tax law
- Bonus, commission, and tipster management
- Service integration
- HTML text editor for use in documents
- Project and item costing
- Remote Assist machine service

Your right IT partner

MODUS Consult is your consultant, sparring partner and process companion: from better integration of office files and optimized data preparation to next level business IT. Today in hybrid operation, tomorrow in the cloud.

MODUS CONSULT

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M&M Software is an international software and digitalization partner. We accompany companies in the digital transformation of their organizations, products and business models. We identify potentials, generate ideas, derive strategies and develop tailor-made software solutions for the digital world.

Source: M&M Software

We are Software and Digitalization Partners.

- We focus on the ideas, challenges and goals of our customers from a wide range of industries. We take responsibility for that.
- The success of every customer project is the result of teamwork. We listen, develop and evolve.
- Together with our customers, we shape the right product/project idea. Modern, sustainable and future-oriented.

We turn visions for a digital world into reality.

M&M Software offers more than 35 years of experience and state-of-the-art technical know-how. Our almost 300 highly motivated employees at four locations across the globe are the main success factor of our projects.

Together we drive the digital future.

The M&M service range:

Strategy
Before technical implementation, we create a sustainable and stable strategy.

Technical Realization
We develop high quality software products. Integration into our customers' organizations and their target markets is done professionally.

Delivery & Marketing
Market success begins with delivery. We analyze user behavior and identify opportunities for improvement.

Operation
With foresight, we ensure the necessary security and compliance with future (including regulatory) requirements. We ensure long-term successful operation.

We structure and organize.
Focused on the success of our customers.
Sustainable and future oriented.
Experience us as a provider of impulses and ideas, as a risk minimizer, as a doer and realizer.

Experience M&M Software as a full range software partner.

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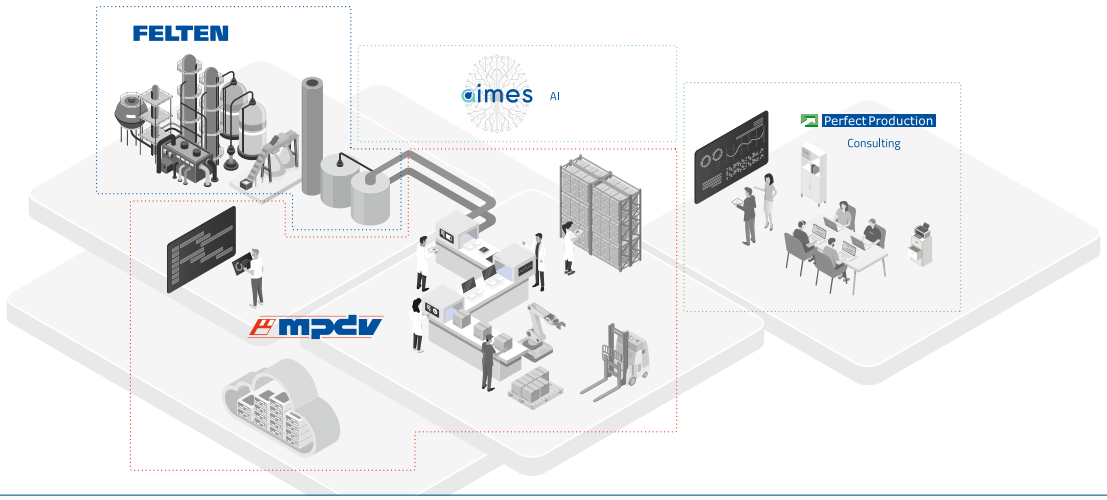

MPDV Group – We create Smart Factories

The MPDV Group is the market leader for IT solutions in manufacturing and supports companies of all sizes and industries on their way to the Smart Factory. To this end, MPDV develops and offers innovative software collecting and analyzing data along the entire value chain in real time.

Companies can use the resulting digital image to streamline all production processes, thus increase efficiency, and stay competitive. By using artificial intelligence (AI), the value of the data can be fully exploited. Many of the MPDV applications also promote sustainability in manufacturing.

Today, MPDV products are used in more than 1,750 companies worldwide and are operated by over 1,100,000 people every day. The employees of MPDV can draw on more than 45 years of project experience in the manufacturing environment. The MPDV Group is made up of the following companies: MPDV Mikrolab GmbH and subsidiaries, AIMES GmbH, FELTEN GmbH, Perfect Production GmbH.

Perfect planning: APS FEDRA

With the Advanced Planning and Scheduling System (APS) FEDRA, you can easily, dynamically, realistically, and adaptively plan simple operations or complex order scenarios integrating even workforce requirements. If required, AI can support you in detailed scheduling.

Transparent production: MES HYDRA X

The Manufacturing Execution System (MES) HYDRA X helps companies monitor, control, and optimize their production continuously. They can keep an eye on all resources and design their manufacturing processes to be as efficient as possible. The MES also integrates support processes such as intralogistics or operator guidance in complex assembly processes.

Combining applications: Integration Platform MIP

As manufacturing companies require a wide range of IT applications, MPDV's open platform concept provided by the Manufacturing Integration Platform (MIP) offers the opportunity to combine any manufacturing applications of different providers as needed.

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Digital twins are no longer a trend technology. Instead, they are seen as a milestone on the road to digitalisation. With the N+P platform, various objects – be it machines and systems or factories – can be transferred from the real world to the virtual world of digital twins. Data from various basic software systems (CAD, ERP, MES, CAFM, PLM) flow together on the N+P platform, right through to the digital factory model. Enriched with real-time data, visualisations of relevant parameters are created in conjunction with the 3D model or on user-specific dashboards.

Source: N+P Informationssysteme

The N+P platform transfers digital twins into reality

In mechanical and plant engineering, manufacturers are often confronted with the fact that when the product is delivered to the customer, no information about the condition of the machine remains in the company during operation. This is problematic in service cases, for example, as an assessment can only be made through laborious and time-consuming fault analyses, which occasionally lead to incorrect diagnoses. But even if unexpected malfunctions occur during production and, in the worst-case scenario, the systems come to a standstill – resulting in high costs for customers due to production downtime – system manufacturers need to provide rapid support. This goes hand in hand with timely spare parts orders from the customer, which are often placed too late and parts can therefore not be delivered on time. In addition, there is a lack of transparency as to whether the machine is really being operated correctly and whether its functionality is impaired due to ignorance.

In addition to monitoring systems during customer use, digital twins are also suitable for optimising your own shop floor or digital factory.

The N+P platform makes machines and technical building equipment smart and guarantees a 360° view of objects and relevant processes at all times. Among other things, current statuses, behaviours and availabilities can be displayed transparently and meaningfully. The N+P platform thus becomes the central source of information about the digitalised assets and provides the basis for subsequent processes (e. g. maintenance, fault recording, spare parts ordering). All available data is therefore centrally accessible and can be called up at any time and from anywhere.

Your partner for digitalisation in the SME sector

N+P Informationssysteme connects IT systems along the entire value chain and, with over 30 years of project experience and IT expertise in manufacturing and construction, is the ideal digitalisation expert. As a 100 % family-owned company without investors, we are a reliable partner for medium-sized companies.

INFORMATIONSSYSTEME

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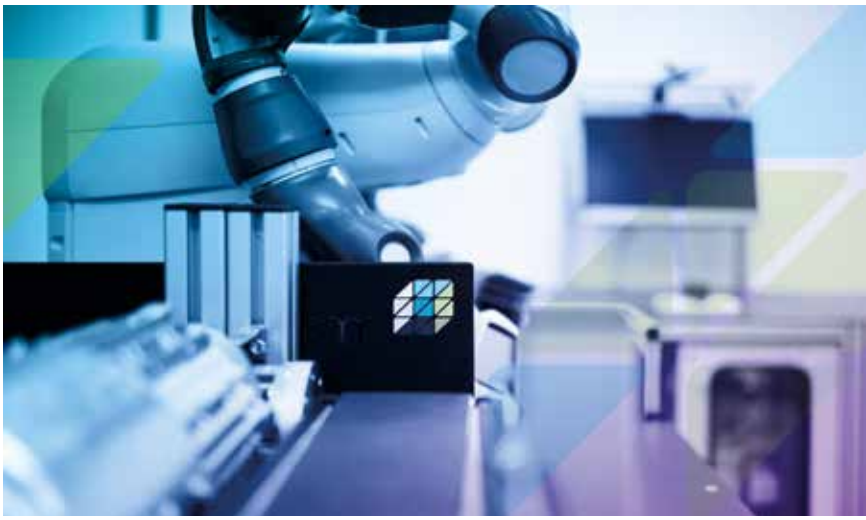
Detect production errors in time, optimise your manufacturing processes and exploit the full potential of your machines – discover neogramm's software solutions and become an Industry 4.0 pioneer. With our customised digital applications for industrial manufacturing and mechanical engineering, neogramm helps you to connect your machines and products, to record and analyse process data correctly and to realise potential savings through automation and digitalisation.



Source: neogramm

Utilise the full potential of your machines – connect your software and shop floor with neogramm

automationKit – the IIoT modular system for machine manufacturing

Do you want to profitably expand your IIoT applications or are you looking for a new IIoT system architecture? With our modular, expandable automationKit, we offer you the perfect basis for integrating individual and customised IIoT solutions into your digital shop floor management. With our seamless integration into existing software (such as SCADA, ERP, MES, BDE, MDE, CAQ, PLM, SCM, LIM, etc.) and a wide range of interfaces to databases and end devices, neogramm offers you a solution that is both flexible and scalable. All data within the production process is recorded and clearly visualised. Use the automationKit to connect your systems and employees effectively and to obtain a customised view of your data.

Automated quality management with visionKit

Detecting erros before they occur is one of the main goals of good quality assurance. Our visionKit combines the best of machine vision, AI and the experience of your employees.

The visionKit combines machine vision, artificial intelligence (AI), and human expertise to help you improve your inspection processes, manage existing AOI in a centralised data network, and integrate different areas and disciplines of your production process into a single view. Save valuable resources and put the experience of your staff to work where it is really needed.

neogramm stands for a new kind of Programming. With almost 15 years of experience, we have more than just know-how - we are experts in the fields of machine learning, industrial IoT and machine vision. Whether industrial companies or machine manufacturers in the SME sector: we design customised software solutions. Over 1,000 realised projects stand for our industry expertise.

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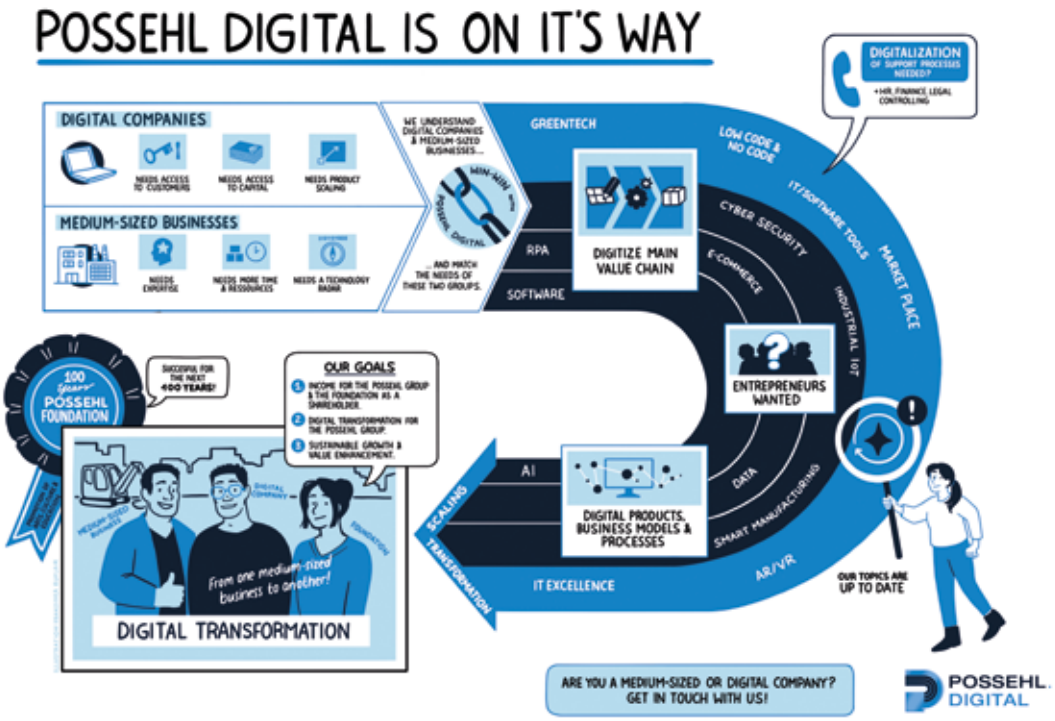
Possehl Digital –
Digital transformation – From the mid-market, for the mid-market



We support targeted digital transformation through our investments along the main value chain as well as key support processes in the industrial mid-market sector.

Under the motto "From the mid-market, for the mid-market," Possehl Digital supports established industrial companies in their digital transformation efforts through its investments. In doing so, we specifically offer digital solutions along the main value chain as well as important support processes in the industrial mid-market.

Why "from the mid-market, for the mid-market"? The Possehl Group, which is 175 years old, includes over 200 medium-sized, independently operating companies, primarily in machinery construction such as Hako, Harburg-Freudenberger, Hänsel Processing, BOWE, manroland Goss and many others.

Possehl Digital, as the newest business division, offers modular solutions for the mid-market through its eight digital companies, tailored specifically to your needs in collaboration. Learn more about the business divisions of the Possehl Group and Possehl Digital at **www.possehl.de/geschaeftsbereiche** and **www.possehl.digital**

Feel free to contact us!

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The companies that Possehl Digital is invested in strategically support the industrial mid-market in their digital transformation efforts!

Possehl Online Solutions offers B2B eCommerce solutions for digital sales in machinery and plant engineering. The tailor-made functionalities are specifically designed for the industrial mid-market.

Possehl Analytics helps medium-sized companies to develop profitable data-driven business models or to save costs based on data analysis.

cluetec specifically supports clients in the custom development of web applications and apps. Additionally, their services include digital audit solutions used in quality management.

DataSpark brings AI to the industrial mid-market. AI is utilized where office work is repetitive and tiresome, whether it's document verification in the financial sector or the application of language models like ChatGPT.

Bitnamic offers digital maintenance solutions with Bitnamic CONNECT, including remote service, augmented reality, service documentation and training.

Possehl Secure provides individual IT and cybersecurity solutions to tackle complex IT challenges. Their offerings include consulting, implementation and operation of security architectures.

Mono, established in Croatia, is among the most successful software development companies in the region. With a team of over 160 experts, Mono provides comprehensive services at all stages of software production.

Simplifier has developed its own low-code platform for the efficient digitization of business processes. The platform enables the easy creation of business and IoT applications without extensive programming.

Please feel free to contact us!
www.possehl.digital

POSSEHL. DIGITAL

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Successful CO_2 management with solutions from proALPHA

Source:
www.istockphoto.com

Climate protection and sustainability are key concerns even for mechanical and plant engineering. Politicians, customers and partners are already calling for dedicated sustainability reporting on ecological footprints – whether that of the company or the product. From the 2024 financial year, even some medium-sized businesses will be subject to the Corporate Sustainability Reporting Directive (CSRD), including carbon accounting. Using powerful enterprise resource planning (ERP) technology in combination with a carbon accounting solution, even medium-sized manufacturing companies can comply with the requirements.

The most important foundation for successful CO_2 management and tracking is a comprehensive and transparent data basis spanning all relevant operating processes. This is essential in order to gain a complete view of all business-critical processes and their environmental impact – from accounting, development and sales to purchasing, production and service. The basis for this is a powerful ERP solution, such as the ERP+ platform from proALPHA, which acts as a reliable source and central hub for all company data.

Monitoring and tracking emissions using advanced ERP technology

A study by the Institute for Industrial Management (FIR) at RWTH Aachen University has shown that simply combining the ERP system with a manufacturing execution system (MES) and machine and operating data collection gives companies access to roughly 70% of the data necessary for Greenhouse Gas Protocol reporting. Almost all of the scope 1 data (direct emissions) can be collected in this way. Nevertheless, companies need additional energy and CO_2 management tools, especially when it comes to quantifying and decreasing fugitive emissions and emissions from processing. Solutions from ENIT are ideal for this and can be found in the proALPHA universe.

proALPHA – the ERP+ expert

For around three decades, proALPHA has been the digital sparring partner for medium-sized businesses. For customers in the manufacturing industry, wholesale and other sectors, the powerful ERP core and add-on solutions from proALPHA and its partners form the digital backbone of their entire value chain, ensuring intelligent interconnection and efficient control of all business-critical systems and core processes.

In increasingly competitive markets, the optimal integration of up and downstream processes is a crucial factor, and the software solutions of proALPHA support customers in precisely the areas that are of central relevance to their business. From data analysis and artificial intelligence to procurement, financial performance management, security, and quality, energy, production or time management, the digital solution platform from proALPHA gives medium-sized businesses the competitive edge they need to master the constant process of transformation.

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Internet www.proalpha.com/en/

The standard solution CREALIS® made by ORISA Software GmbH offers a holistic approach to product configuration, pricing and quotation creation for the sale of machines and systems, including integration into CRM and ERP processes. Approval processes in the CREALIS® CPQ involve experts from all departments in the complex configuration and quotation process and improve efficiency and acceptance among all parties involved.

CREALIS® CPQ combines Business Processes and Product Configuration

With CREALIS® CPQ, extensive configuration and quotation processes can be easily mapped, regardless of how complex the company structure and product diversity are. The central role is played by the multi-level configuration of products and the determination of individual product variants. Supporting aspects such as guided selling, favourites, standard variants and visualizations in 3D/AR/VR accompany the configuration. Central management structures with corresponding authorization levels result in a target-oriented overall solution.

Company products often have a strong design component and operate in the ETO (Engineer-To-Order) category. All departments such as construction, price calculation, product management, controlling and sales perform their tasks for the correct creation of quotations in CREALIS® CPQ. The system connects simulations, integrates components from external suppliers and transfers data to CAD and CIM systems. Questions regarding calculation and pricing in an international environment, unclear application scenarios or delivery dependencies are handled by those responsible in CREALIS® CPQ. The process from a potential customer's inquiry to the correct quotation is assessed and completed centrally in CREALIS® CPQ by all departments involved.

The ORISA Software GmbH has been a leading software and consulting provider for manufacturers of complex products in the areas of product configuration, CPQ and knowledge management for over 30 years. Well-known companies from the mechanical and plant engineering, medical technology, tool engineering and logistics sectors have digitized and sustainably optimized their entire sales process with product configurators from ORISA.

ORISA
INNOVATION BY CONFIGURATION

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Source: Adobe Stock © Industrieblick

How mechanical engineering companies work today

What makes a successful company in mechanical and plant engineering? In an industry where material costs are very high, changes are the norm, and smart teams adapt processes every day, one thing is crucial: software that is precisely tailored to these requirements and continuously evolves.

Every employee in your company is a genius in their field. For each application, the respective specialists have tools to develop and optimize their ideas, but often these tools are not interconnected.

The critical point arises when it comes to harmonizing everything. This requires software that connects people, data, and processes across applications, teams, and departments. Beyond Excel and with a clear authorization structure.

Even if the processes are not yet precisely defined, SIVAS.ERP supports you with our industry-specific processes.

We at schrempp understand the working methods of mechanical and plant engineers because we have been dealing with it for over 40 years. Because every day, we work together with our customers in the mechanical and plant engineering industry to scrutinize and optimize processes.

This involves not only the core processes in design, work planning, and material management but also a transparent allocation, processing, and presentation of company figures. Would you be able to generate a comprehensive project evaluation on the spot without preparation? With SIVAS.ERP, you can: presented clearly and in real-time.

As a central system in your IT landscape, SIVAS.ERP integrates external applications as needed – whether CAD programs, web shops, warehouse management systems, or time tracking tools. The user is unaware of these background processes. SIVAS users work with an intuitive interface on different devices, including mobile where it makes sense. On premise or in the cloud? We can do both and combine the advantages of all deployment models according to how our customers prefer to work.

schrempp

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Internet www.schrempp-edv.de

We help companies accelerate their digital transformation and to achieve better results

Smart manufacturing is the gateway to digital transformation. Smart devices open new windows of visibility into processes. Data and analytics enable better and faster decision making. Through data, technology, and domain expertise we achieve results together with our customers to transform manufacturing. The Connected Enterprise makes all this possible. It converges plant-level and enterprise networks and securely connects people, processes, and technologies; therefore, our customers go from data rich to data intelligent.

Outcome-focused transformation

New insights that are revealed through better data access can help industrial companies reduce bottlenecks, implement demand-based decisions, and improve maintenance. Greater digitization can help reduce downtime and improve profitability. Rockwell Automation helps manufacturers and industrial operators capitalize on the promise of a connected world – in the form of a more agile response to changing conditions: optimize production, empower workers, build resilience, drive sustainability, and accelerate digital transformation. Rockwell Automation simplifies digital transformation and accelerates innovation across the industrial enterprise with unified access to data and seamless integration between the key capabilities' customers need to realize their strategic and organizational priorities.

Bringing The Connected Enterprise® to life

Smart manufacturing helps companies unlock the value of digital transformation at scale. Nobody is better positioned to bring information technology (IT) and plant floor technology (OT) together. Rockwell Automation has partnered with leading IT companies for joint solution development, integrated solutions and services as a whole ecosystem approach. Together, we help bring The Connected Enterprise to life for our customers by accelerating industrial transformation with a trusted, integrated ecosystem of experts to improve productivity and agility in our rapidly changing environment.

Source: Rockwell Automation

The Rockwell Automation Difference

Proven, Trusted Partner
- 120+ years of industrial experience
- Deep vertical expertise
- Large-scale manufacturer

Full Stack Solution
- Control, automation, MES, IIoT and cloud
- Partnerships including PTC & Microsoft
- Consulting and system integration

Advanced OT/IT Integration
- Automated asset discovery
- OT data model sharing
- Integrated analytics

Future-proof Architecture
- Rapid integration of specialized capabilities
- Flexibility for future evolution
- No compromising lock-in

Thousands of Companies Worldwide Trust Rockwell Automation

Rockwell Automation, Inc. (USA) is a global leader in industrial automation and digital transformation. Rockwell Automation employs approximately 29,000 problem solvers dedicated to our customers in more than 100 countries. Rockwell Automation products, services and solutions are trusted by the world's top companies of the main industries.

In Germany, Rockwell Automation is represented by experienced professionals at five sales and service offices, with headquarters located in Düsseldorf.

Rockwell Automation

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Your full-service partner for transformation and CRM projects

There has been a positive trend in the area of customer relationship management for many years now: More and more industrial companies are recognising how important it is to optimise their customer relationships. Nevertheless, in our projects we repeatedly realise how challenging a seamless customer experience and cross-branch and cross-departmental communication can be.

This is where we come in with our industry and Salesforce expertise from over 1,200 projects. Whether sales, marketing or service – together we develop digital solutions that strengthen your customer relationships and sustainably increase your turnover.

Together we will shape your digital future – with your customers at the centre!

As the world's leading CRM software, Salesforce offers you comprehensive functions as a cloud-based platform that are specially tailored to the needs of companies in the mechanical and plant engineering sector. It covers order processing as well as inventory, supplier and complaint management and thus takes a holistic view of the relationship with your customers and partners.

salesforce PARTNER

authorized cloud reseller salesforce

MuleSoft Partner

Your contact person

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Customer success

Scan the QR code and find out how Truma has fully digitalised and automated its service process!

About Salesfive

The Salesfive Group is one of the leading digitalisation consultancies in the Salesforce ecosystem, with core competencies in strategy, implementation, integration and the design of customer experience in mechanical and plant engineering. With a team of 320 employees in Germany, Austria and Switzerland, Salesfive pursues the vision of securing the competitive advantage of companies in the DACH region through digital solutions. From 9 locations, the company supports more than 850 customers – from medium-sized companies to large corporations.

Our range of services includes:

- Technology and strategy consulting
- Implementation of digital platforms
- Process and data integration (e. g. ERP)
- System maintenance and operation
- Project management
- Employee education and training

Source: SEITEC

SEITEC GmbH – Full-service provider for digital transformation

A successful digital transformation starts with high-quality data. These data are often hidden in technical systems or plants and can only be tapped into with the right expertise. Solutions for analytics and artificial intelligence only gain their added value through the targeted processing of high-resolution and consistent time series, which, enriched with process and domain knowledge, become the basis for an effective application.

With digital services and software products as well as 25 years of experience in process and production automation, SEITEC closes the gap between automation and digitalization in industry. An interdisciplinary competence team of specialists in electrical engineering, automation technology and information technology develops holistic digitalization solutions for manufacturing companies as well as for mechanical and plant engineering.

From connectivity to artificial intelligence

The digitalization landscape in companies is complex and individual. That‘s why SEITEC‘s range of services covers a broad spectrum of software and IT services. From architecture solutions for edge and cloud computing, the creation of connectivity and interoperability in company-wide IT/OT systems, intelligent KPI and MES dashboard applications to data-driven process optimization with AI models – the SEITEC specialists are familiar with a wide range of tasks and software developments in the Industry 4.0 environment.

Quality and innovation in finding solutions

We see our complete offering as a full-service provider for digitalization and automation as the key to success for our customers. Advice on digital business models, individual product developments or the hosting of software solutions complement a comprehensive offering that is implemented in-house and benefits from the independence of an engineering service provider. On this basis, we guarantee high quality and innovation in our solutions.

seitec

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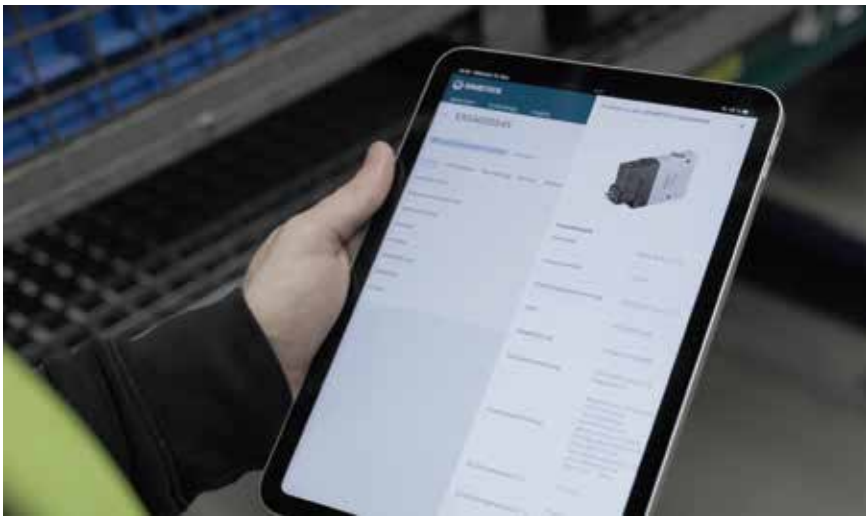
Sparetech's software solution supports maintenance managers, purchasers and planners in manufacturing companies to automate MRO processes. This creates transparency and efficiency while sustainably reducing inventories, costs and CO_2 emissions.



Source: Sparetech

Sparetech: Data cleansing and inventory optimization – all in one solution

Customers such as Porsche, Nestlé, Yanfeng and BOSCH utilize Sparetech to digitize their spare parts inventories, identify actual demand, and source the right parts within and outside their network with precision and ease. Sparetech's advanced matching algorithms and extensive database of original manufacturer data are designed to identify data inconsistencies, duplicates and obsolete materials in the company's material master. Once identified, this data is then continuously enriched, harmonized and alternative sourcing options are displayed, simplifying the decision-making process.

Data Cleansing

Optimized spare parts data management starts with clean master data. Cleansing data, and especially identifying and removing duplicates from the master data, can be a tedious process.

Sparetech identifies duplicates at the touch of a button. With this information, the removal of duplicates and the definition of leading material numbers can be started.

Data Enrichment

Missing information is directly added on the basis of 100 % correct manufacturer data with a material change request. Regardless of whether missing or incorrect information can be found in the product name, product description, EAN, article number, type code, or other fields – Sparetech's enrichment suggestions help to increase data quality.

Obsolescence Management

By providing information about manufacturers' discontinued products and available successor parts and suppliers, Sparetech enables manufacturing companies to intelligently optimize their spare parts inventory. With product obsolescence information, costly purchases of discontinued parts can easily be avoided. Maintenance teams can be sure that they already have the right spare parts in stock in the event of a machine failure.

Discover how Sparetech can help you digitize and manage your spare parts inventory more efficiently – just scan the QR code!

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A Game-Changer “for Machines”.

Andreas Thal,
Managing Director

The symmedia Secure Service Hub: Market-oriented Innovation for more Efficiency

Transformation, digitization, competition: Our time of change sets challenges to the manufacturing and machining sector. Efficiency, flexibility, and security are the buzzwords of an industry facing crisis after crisis. A highly promising solution is given by symmedia: The company based in Bielefeld and founded 1997 is one of Germany’s top players in Industry 4.0. With their new Secure Service Hub (SSH), symmedia are launching a revolutionary platform that enables next level collaboration between machine manufacturers and operators – aiming to sustainably optimize service processes around plants and machines. “The SSH is a game-changer – for manufacturers, for operators and for all machines.” says symmedia CEO Andreas Thal. Let’s take a closer look...

The “Anytime, Anywhere” Revolution

The Secure Service Hub (SSH) is a web-based service platform that provides operators and manufacturers with comprehensive digital access to their entire machinery – even via mobile devices, completely independent of their location. While machine manufacturers can provide service level agreements through SSH, operators may use the platform as a portal to the manufacturer, optimizing the availability of their machines. Thus, SSH enables a new form of digital collaboration opening new horizons:

- **Next Level Asset & Service Case Management:** The SSH can be tailored to the requirements of a company, regardless of age or complexity of its machine fleet, enabling widespread digital service in no time.
- **Real-time Monitoring:** The SSH allows real-time monitoring of machines and equipment, enabling early problem detection and avoiding downtime.
- **Remote Maintenance:** With the SSH, service technicians can securely access and diagnose machines remotely. This not only saves time but also reduces travel cost and supports efficient problem-solving.
- **Data Ownership:** The SSH offers comprehensive features for each tenant on the platform,

Source: symmedia

with the collaboration options (service, technical support, and analysis) particularly in demand, while strictly adhering to data sovereignty for each tenant!

That said, symmedia emphasizes high security standards: "As a cloud-based solution, our SSH complies with eBanking standards in terms of both convenience and maximum security!" says symmedia CTO Marius Burger, adding that symmedia is IEC 62443 certified.

Limitless Efficiency

Proof of success can be found among manufacturers who already run the SSH successfully for their customers, such as tech companies Kurtz Ersa or GF Machining Solutions. In both cases, SSH serves as a customized and user-friendly service management platform for all assets, contributing to optimizing production processes, minimizing downtime, and significantly saving costs and CO_2. Andreas Thal draws a conclusion: "SSH helps you achieve maximum efficiency – and efficiency is the best reaction to the demands of digital transformation and a strong response to short-term crises."

Digitalization plays a more and more important role in the production of tomorrow. It is the key for sustainable efficiency increase and therefore a central factor for success in an always more dynamic global competitive environment.
For 30 years, customers from different industries all over the world have been trusting the Shopfloor Software of STIWA.

Interconnecting the shopfloor: from the sensor to the cloud.

Shopfloor Software for the production of tomorrow

With the combination of automation, production and software that is unique on the market, we know about the problems of our customers. Our solutions aim to minimize machine run-up time, enhance cycle times, reduce rejects, and consequently, significantly boost Overall Equipment Effectiveness (OEE).

Central Cockpit

STIWA Shopfloor Control is a modular, flexible, and readily updatable control station. Serving as the central cockpit for machines, it allows for the independent visualization and control of machines, irrespective of manufacturers or controls. Through a uniform and user-friendly interface, machine operators can seamlessly access functions ranging from order management to process control and type management directly at the control station.

Smart Control Engineering

Standardized and field-tested solutions facilitate communication between various machine parts, as well as manage workpiece carrier logistics and rework processes across multiple manufacturers. The intelligent control engineering at STIWA enables the cost-effective implementation of diverse and intricate scenarios.

Optimization Shopfloor

Our solutions are centered around optimizing the Shopfloor. Robust analysis capabilities ensure transparent production throughout the entire life cycle of machines. Optimization potential emerges right from the start-up phase, utilizing machine, operation, and quality data collected during this period as a foundation for enhancing performance, availability, and quality. These measures unveil issues and correlations in “Live Operation.” Over 250 pre-configured dashboards cater to all user groups, guiding them from top-level KPIs to specific details. The STIWA Shopfloor Software facilitates a continuous, location-independent, and sustainable boost in productivity.

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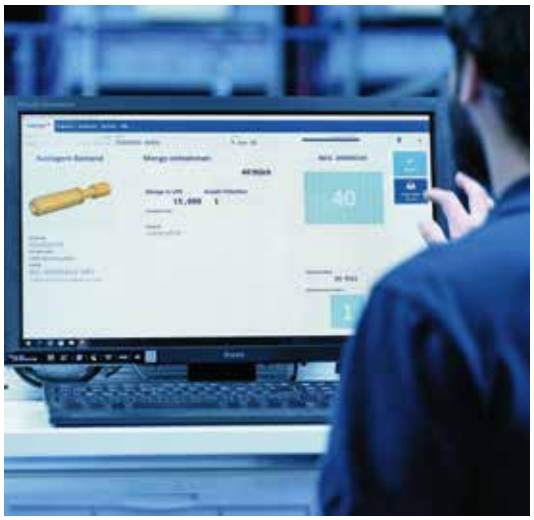

Solutions for warehouse management and integrated material flows

viastore SOFTWARE is an international provider of software for warehouse management as well as integrated automated material flows in logistics and industrial production.

- **Consulting:**
  Software consulting, process consulting
- **Product:**
  Development of the standard software product viadat for warehouse management and material flow control/visualization
- **Service:**
  Implementation, project management, customer-specific adaptations, training, integration of subsystems
- **Hardware:**
  Order picking systems, IT system landscape and infrastructure, network, hardware
- **Support:**
  Hotline, system support, process improvement

The portfolio of viastore SOFTWARE includes the standard software product viadat, which can manage and control small warehouses with low turnover rates just as reliably as distribution centers and high-performance logistics systems with several hundred thousand order lines a day. viadat is intuitive to use, ergonomic, and has multi-warehouse capability. The software package can be implemented very quickly due to pre-configuration, is fully scalable in function and performance and highly effectual with over 2,500 standard logistics functions – which viastore extends and adjusts according to customer needs. The WMS therefore offers an integrated solution for networked material flows along the value chain: from the connection to ERP systems from various manufacturers via standardized interfaces, to the control of automated equipment such as conveyor systems, automated storage/retrieval systems, robots or packaging machines. It enables users to achieve lead time reductions, higher efficiency and process security as well as reduced inventories and the highest level of order picking quality.

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With commercial and industrial organizations and systems growing more and more connected, IT security and the safety of our data has become a paramount concern everywhere. Artificial intelligence has finally made the leap into even critical applications, like quality assurance for industrial vision applications or medical technology – small wonder that people are beginning to worry about ways to protect AIs against attacks.

Artificial intelligence in the crosshairs

A malfunctioning or manipulated AI application can have serious consequences for life and limb when it is used in critical areas. If an automated quality assurance system for electronic components does not do its job properly because it was trained poorly or, indeed, sabotaged, it can mean that the finished products do not fulfill their security standards. Protecting AI applications against manipulation is essential, but it is an uphill struggle given the nature of the threat, as AIs and machine learning leave many inroads for would-be attackers. An attacker could meddle with training data, where even the tiniest changes, such as altering the color of individual pixels, can have a major effect. Certain manipulated properties might feed through into the trained model that no human observer would ever spot. In a similar vein, an attacker could tamper with the pre-processing of the training data, the training parameters, or even the finished trained model to cause mistakes further down the line or make the system deliver incorrect classification output. The entire machine learning lifecycle has to be protected, from the original training data to the finished algorithms.

But the problem does not stop with protecting the AI from manipulation. The intellectual property contained in it must also be protected, as the training data could e.g. reveal the inner workings of a component. Even the AI application itself or its underlying data about the relevance of specific training parameters might represent intellectual property in this respect.

WIBU-SYSTEMS AG offers software protection solutions that can guard AI applications against manipulation and IP theft, while also enabling novel business models based on smart licensing. Combined with other IT security measures, the entire machine learning lifecycle can be safe and secure for the responsible use of artificial intelligence.

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