AUTOMOTIVE INDUSTRY 4.0

YOUR PERFECT PRODUCTION FLOW WITH OUR SOFTWARE SOLUTIONS

The future begins tomorrow. And the challenges it will pose for car manufacturers are already becoming apparent. Climate change, e-mobility, sustainability and flexible production halls are just part of what you ought to have on the agenda in your strategic planning.

You can use your version of the smart factory not only to remain competitive in terms of innovative pressure and profitability, but also to take the emerging changes in the market into account right from the start. Our software solutions provide you with support for your supply chain, quality management and even the shop floor.
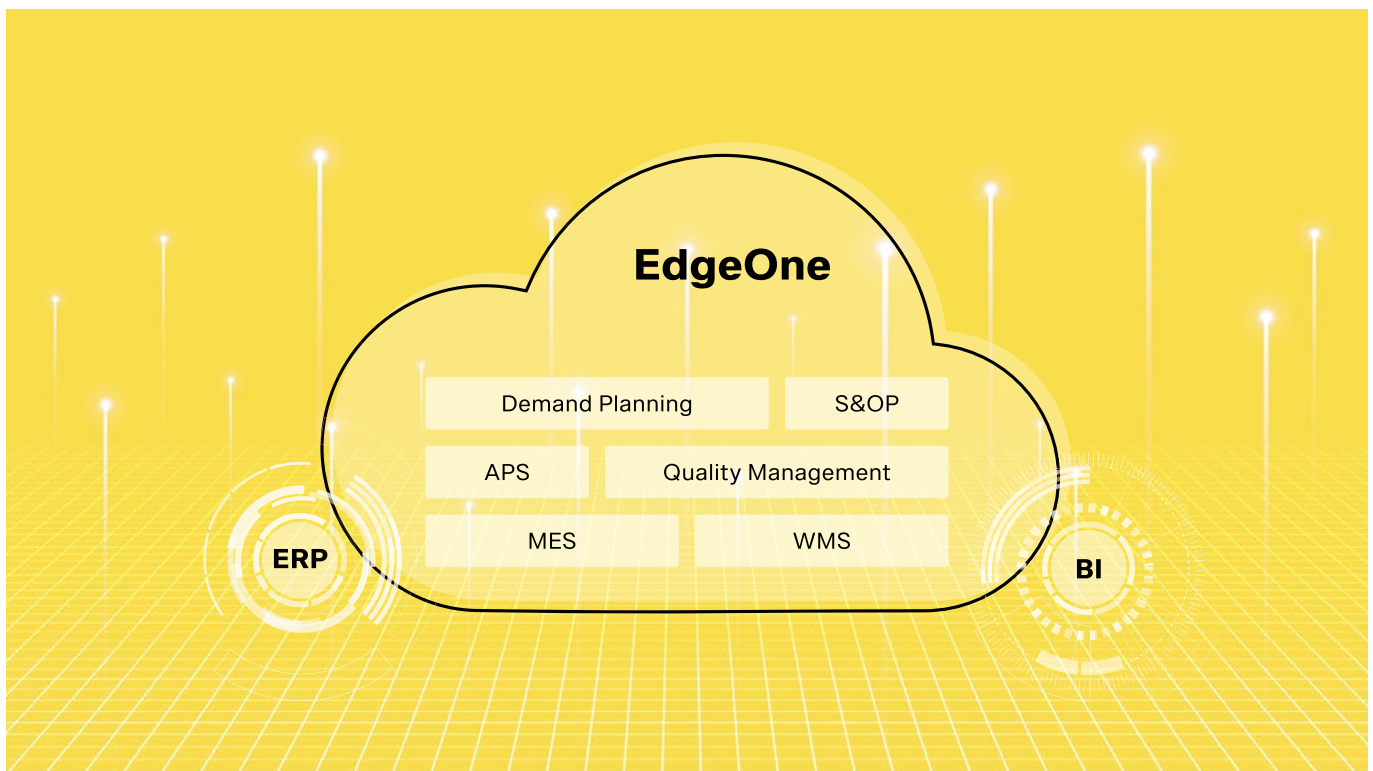
EdgeOne: everything in perfect flow, from sales planning to the production line

Sales planning, long-term planning, distribution planning, ERP, production planning, MES and LIMS are classic applications that provide support for all aspects of production and on-time delivery to various functional silos. Integrating these processes with each other generates individually digitalised complex IT landscapes that are costly to operate.

EdgeOne is an integrated platform based on a micro-service architecture. It offers the possibility to integrate Germanedge solutions as well as third party applications. The domain model is based on ISA95 and is ready for Industry 4.0.

EdgeOne is delivered in a scalable, customizable structure and is cloud agnostic – based on Docker Swarm and, in the future, Kubernetes. We support all operating concepts: Whether SaaS, renting from the cloud or operating it yourself, on premises or a hybrid concept – you can start using EdgeOne as soon as a cloud connection is available. Thanks to its microservice-based architecture and continuous deployment, EdgeOne enables fail-safe operation while ensuring that applications are always up-to-date.

Thanks to our developed design system and additionally developed elements, EdgeOne is also visually the ideal platform for shop floor applications. By integrating the unified production workplace (UPW) into EdgeOne, a central user interface in the form of a web portal is created as an entry point to the various Germanedge and third-party solutions.

The advantages of EdgeOne at a glance

- Cloud agnostic
- Available as SaaS, on premises or as hybrid concept
- Microservice-based
- Continuous deployment

- Event-based communication
- Single sign-on
- Event sourcing
- Special "Inspire" design system

End-to-end transparency with our MES solution Legato Sapient

Our MES solution Legato Sapient connects all production-relevant systems for uninterrupted data exchange. This results in uninterrupted transparency in real time, reduces downtimes and losses and thus increases your OEE.

Our MES solution Legato Sapient at a glance:

→ Use of the user frontend via standard web browsers thanks to the HTML5 architecture

→ No need to install additional client software

→ Location-independent use, thanks to the use of mobile devices

→ Numerous standard functions included with every installation: evaluation, visualisation, reporting, data acquisition in real time, target values, switching commands, key figures and action management

→ Various additional function modules depending on individual needs

Functional modules that are particularly relevant to automotive production: track & trace, HMI (Human Machine Interface) and TPM.

Track & Trace: avoid recalls

Recalls represent the worst-case scenario for every company, resulting not only in enormous costs but also in damage to the company's image. A tracking & tracing system is vital in component production, body shops and paint shops on account of the legal requirements for product liability and product safety. Many production companies, however, only use tracking & tracing in a rudimentary way; harnessing its full potential is only possible when combined with MDC and PDA.

The MES solution Legato Sapient enables:

→ Seamless tracking & tracing of products complete with all product-relevant data throughout the entire manufacturing process

→ Creation of a seamless representation of the production – a digital twin

→ High data quality thanks to online data connection combined with real-time monitoring of the actual situation – enabling a product to be traced at any time

→ Complete documentation of which components have been installed in a product

→ Data exchange across system boundaries (shop floor, MES, ERP) by means of vertical data integration

TPM: use your production facilities more efficiently!

Using Excel or paper-based coordination and documentation of maintenance activities is neither efficient nor reliable. The TÜV requirements for documentation and archiving can be met in this way, but only with an extraordinary amount of time and effort and a certain susceptibility to errors.

Legato Sapient enables:

→ Digitalisation of maintenance processes and necessary transparency

→ Efficient performance of maintenance activities, thanks to maintenance plans and the maintenance orders automatically generated from them

→ TÜV-compliant documentation and archiving of maintenance activities

→ Clear definition of responsibilities and maintenance intervals

→ Automatic due date calculation based on both time and value based on the prescribed, maintenance-relevant criteria, such as operating hours or stroke counters

HMI: connect your shop floor with the control level

Heterogeneous system landscapes have the disadvantage that there can be considerable differences in the available information. The traditional separation between the control system level (MES) and the HMI is common practice, similar to the classic automation pyramid. The only remedy against a loss of information is to create duplicate visualisations and similar, which in turn involves considerable additional work.

Legato Sapient with the web-based HMI module:

→ closes the gap between control level and HMI

→ ensures a seamless flow of information with no losses as a single point of truth

→ significantly reduces the costs for terminal hardware and middleware – common computer hardware with a web browser is sufficient

Reliable supply chain planning with our software solutions for supply chain management and APS

Complex structures, a multitude of different parameters, and rapidly changing production logistics conditions are shaping the day-to-day production activities. Paired with industry-specific challenges, this factor makes end-to-end supply chain planning essential for automotive suppliers. Our software solutions make this possible – from sales forecasting to procurement planning and detailed planning.

ORSOFT Enterprise Workbench

The ORSOFT Enterprise Workbench helps companies to better forecast future sales volumes while simultaneously checking which raw material quantities, safety stocks and transports are needed throughout the supply chain in order to produce at optimal cost. Forecasting and demand planning with volatile demand curves are made significantly more accurate with the help of artificial intelligence and machine learning.

Expected added value through the use of our software:

→ Improvement of forecast accuracy by 5–20%

→ Reduction of transport costs to distribution centres and to the customer by 5-10%

→ Reduction of capital commitment through a decrease of safety stock by 2-5%

→ Reduction of costly extra shifts by 20-50%.

→ Reduction of raw material costs by 2-5%

→ Improvement of the efficiency of operational planning and IT support by 20-80%

→ Rise in customer commitments by 2-5% on the desired date

The solution is based on the production logistics model of SAP ERP and SAP S/4HANA. The capacity check is not based on coarse volume-time requirements, but on scheduling, taking into account relationships, shifts and other restrictions. This involves interactive, simulation-based planning processes which replace the previous batch-oriented processes, and rough planning becomes a seamless extension of detailed planning, with additional capacity reserves freed up for important customers.

ORSOFT Manufacturing Workbench

The ORSOFT Manufacturing Workbench follows the principles of advanced planning and scheduling and offers interactive material and resource simultaneous planning with the possibility to create planning scenarios and collaboratively select the desired scenario based on key figures. Additional industry enhancements such as the ability to integrate maintenance orders into the plan, to plan production resources/tools as an additional dimension or to map furnace operations for work steps that are to be processed simultaneously, allow the production process to be mapped digitally in accordance with the digital twin principle.

Expected added value through the use of our software:

→ Reduction of capital commitment through a decrease of safety stock by 3-10%

→ Reduction of setup times by 10-50%

→ Improvement of the efficiency of operational planning and IT support by 20-80%

→ Improvement of OTIF by 5-10%

Based on SAP ERP or SAP S/4HANA data, the software provides an immediate overview of capacity utilization, material flows, delay situations and material key figures – even across different locations.

ORSOFT LabScheduling

ORSOFT LabScheduling enables integrated laboratory planning on the basis of production planning in ERP up to the evaluations from the LIMS. At the process level, capacity analysis, capacity planning and detailed planning are supported. This allows for precise capacity forecasts and the early detection of capacity bottlenecks in the laboratories.

Expected added value through the use of our software:

→ Improvement of OTIF by 3–8%

→ Improvement of the efficiency of the testing staff by 10–30%

→ Improvement of laboratory throughput y 5–15%

In conjunction with detailed planning, real-time data processing allows flexible reactions to changing business events and agile detailed planning of the laboratories. This leads to a high level of planning transparency. Quality inspectors and supply chain management can then track the entire business process across the long, medium and short-term planning horizons.

Additional functions enable the prioritization of tests in relation to the requirements of the production, procurement and sales departments. It is also possible to assign inspection lots to employees in order to take different employee qualifications into account.

Holistic quality management with our QDA software solution

A holistic quality management system provides the automotive industry with the support it needs to increase customer satisfaction while complying with business rules, standards and requirements. Consistent application of a quality management solution helps to avoid cost-intensive recall actions and supports you in collecting and processing even very large amounts of data.

Our QDA solution for your quality management supports you:

→   in attaining the high quality standards of the automotive industry

→   in complying with various industry standards (such as: DIN EN ISO 9001:2015, IATF 16949:2016 or the AIAG)

→   in creating transparency

Our software solution for your Quality Management 4.0 at a glance:

→   Modular construction

→   A single infrastructure, regardless of the number of modules used

→   Rapid integration with other systems thanks to integrated software architecture such as PLM, CMM, ERP, MES systems or REST API

→   Support for multiple languages thanks to Unicode

→   Database-driven, compatible with MSSQL, Oracle or PostgreSQL and ready for CITRIX and AMAZON WORKSPACE

Through the use of a variety of modules, we provide you with a scalable digital quality management system that is tailored to your needs.

Integrated advanced product quality planning

By identifying defects early and converting them into product improvements, you shift the course of business from a significant cost factor and ongoing problems to your next competitive advantage.

The integrated quality planning solution from QDA:

→ facilitates the use of quality synergies in APQP, Process Flow Diagram, Failure Mode and Effects Analysis (FMEA), Process Control Plan and Production Parts Approval Process (PPAP)

→ ensures a logical and consistent approach to your product development activities

→ enables you to reuse common product and process information

→ eliminates the need to manually create new copies from scratch

→ automatically updates all related documents for the part family

Supplier management

Secure the quality of your end product by integrating, evaluating and refining your suppliers. The quality of the supplier parts is decisive in determining the quality of the end product.

Supplier management from QDA:

→ supports supplier integration by means of electronic data exchange

→ enables the creation of target agreements with your suppliers

→ reduces the number of incoming goods inspections

→ documents information such as the punctuality of deliveries and the number of defective parts in the supplier evaluation

→ produces a variety of reports, for example on flexibility or the response time to enquiries

→ manages supplier certificates

Shell database system

In response to individual customer requirements, the number of variants of the same model series has grown steadily in recent years. This results in higher demands for master data maintenance.
QDA supports the handling and maintenance of the dramatically increased volume of data – as well as graphical support to facilitate the increasingly difficult discussions on ever more complex parts in an international environment.

Ultrasonic testing (USonic)

QDA USonic combines the various assembly and inspection technologies that allow you to visualise and analyse process data associated with quality data on the shop floor. This enables a precise root cause analysis in a single central system, independent of any of the decentralised sources.

Data acquisition (SPC)

Statistical process control (SPC) is an effective method for process evaluation. SPC includes the tools machine capability analysis, process capability analysis and online process monitoring via quality control charts. This enables production to be carried out with controlled and capable processes and supports compliance with quality standards – even across factories and country borders. QDA SPC, used in conjunction with other QDA modules, guides the user through the optimal process of defect detection and prevention in a closed loop.

Colour Management

Not all colours are created equal. The same colour can look different on different materials, components and from different suppliers. In order to prevent this, it is important to measure and evaluate colour metrics.

QDA helps you to provide the measurement data and to evaluate it in relation to the component, the supplier and the process. This means that you can be sure that the targets are met throughout the entire process.

Laboratory Information Management System (LIMS)

LIMS assists laboratory operations with administrative and coordinative tasks of sample processing as well as with regard to the collection and evaluation of determined analytical data.

With QDA LIMS you can:

→ integrate all types of analytical laboratories, both chemical and physical.

→ map your destructive and non-destructive tests as accompanying monitoring of production.

→ plan the quality to be measured, as well as resources within the laboratory thanks to integrated resource management and sample management.

→ transfer information back to your ERP or warehouse management system thanks to the integration with your ERP or PLM system.

→ draw up sampling plans, and document sample receipt and sample registration.

→ determine the sample distribution and sample processing.

→ record result data, calculate results and limit tests, and release test results

BI evaluations

It is no longer sufficient to look only at quality data in order to achieve an even more comprehensive and holistic ongoing improvement process in production. Only when taken in combination with the process data can the true optimisation focal points be analysed and visually displayed.

QDA BI evaluations offer:

→ standardised and centralised evaluations across all QDA domains

→ increased transparency and the depiction of interrelationships

→ faster reactivity and thus reduction in waste

Non-conformance management

The standards relevant to the automotive industry (DIN EN ISO 9001:2015, IATF 16949:2016 or the AIAG) stipulate that complaints must be processed according to the 8D procedure, among others.

QDA's non-conformance management:

→ offers support in the creation and processing of 8D reports

→ makes it possible to carry out an even better root cause analysis by adding additional data from the ERP to the complaints created in QDA

→ immediately generates the corresponding measures in the system, including tracking

→ can identify preventive measures for error prevention, including a corresponding monitoring function

Do you have specific questions about how to take your automotive production to the next level?

Get in touch →

Germanedge is a leading provider of Manufacturing Operation Management (MOM) software that brings Industry 4.0 into the perfect flow. Together with its five product providers (GEFASOFT, New Solutions, Objective International, ORSOFT and QDA SOLUTIONS) the brand offers a complete solution portfolio for the manufacturing industry: international, cross-plant, maximum efficiency.