



AUTOMOTIVE INDUSTRY 4.0 DIGITAL SUPPLY MANAGEMENT: HOW TO CONTINUE TO DELIVER IN DISRUP-TIVE TIMES!

Digital Supply Twin: why OEMs and tier 1 suppliers are no longer able to survive without intelligent supply planning

Commodity crisis: supply management in times of disruption

Capacity planning 4.0: avoid unnecessary costs through strategic forward planning

Supply chain management in the smart factory: lead the way with our software for SCM and APS



DIGITAL SUPPLY TWIN: WHY OEMS AND TIER 1 SUPPLIERS ARE NO LONGER ABLE TO SURVIVE WITHOUT INTELLIGENT SUPPLY PLANNING

The only thing certain is that nothing is certain. And even that isn't certain. The current world economic situation is again demonstrating how much truth there is behind this quote. Not just the corona pandemic, but also the shortages of raw materials, are prime examples of how quickly the world can change.

Pressure to innovate despite times of crisis

The automotive industry continues to impress with its incredibly high speed of innovation. New features, new models, new design – better, faster, further. The race is on to identify what it is the customer wants before they even have a clue that it exists. The industry is under increasing pressure from customers, competitors and politicians, who are taking a particularly hard look at the automotive sector in light of climate change. That alone would be challenge enough. But the global economic situation is also severely impacting the automotive industry.

At the very latest, it became apparent with the chip crisis: even the largest OEMs and tier 1 suppliers can't escape the brunt of crises.



OEMs and suppliers grow closer together

Supply chains in automotive manufacturing companies are characterised by their incredible complexity and ever-increasing interdependencies. This in turn leads to a greater need for communication between OEMs and suppliers. Ideally, this communication would take place in near real time and not being passed from one person to another to its destination. Here it is also the case: transparency and speed are everything.

Compared to other industries, the level of automation at OEMs is already very high. EDI has long been the standard form of communication between OEMs and suppliers. In practice, this is often where the first bottleneck occurs: OEMs expect the desired call-offs to be delivered on time and in the correct quantity, and expect an order confirmation immediately, while suppliers often require an excessive amount of time to check whether the necessary capacities and stocks are available for the order. If it is realised too late that the relevant capacities are not available, in most cases the only way to react is with cost-intensive extra shifts.

Market volatility and shortages of raw materials are driving OEMs and suppliers to work closely together here. When it comes to digitising their production, the OEMs have already done the leg work: entering customer orders, bundling them, determining a longer-term production sequence and sending them via EDI is standard technology.

However, in order for suppliers to be able to quickly make reliable statements about which deliveries are possible and when, suppliers need appropriate software solutions, as the classic ERP systems cannot cope with this task. It is also clear that this problem is exacerbated by the bullwhip effect in tier 2 and tier 3 suppliers.



The digital twin has become an established method for making production more efficient by creating an image of the current production process. The concept of the digital twin in the classical sense focuses on the representation of the shop floor with reference to the present and the past. The digital supply chain twin, on the other hand, is focused on the image of the supply chain and is future-oriented. The digital supply chain twin receives information on the status in near real time based on the information from the ERP system. This makes it possible, for example, to make an algorithm-based statement about whether and when an order can be produced and delivered in the case of new customer enquiries. The IT consulting firm Gartner sees hyperautomation as one of the most important technological trends of the next decade. Data on stock levels, capacities and material availability, among other things, are taken into account to this end. By integrating data in this way, enormous gains can be made in terms of speed and reliability when answering customer enquiries.

In many manufacturing environments, however, shop floor execution and supply planning do not operate in an integrated way. That means, for example, that while the digital supply chain twin assumes a unit count of 100, only 80 units were produced. Although this is mapped in the digital twin, it is not transferred to the digital supply chain twin, resulting in an incorrect simulation. It is therefore essential to link the digital twin to the digital supply chain twin. This is the only way for the systems to indicate which adjustments need to be made in order to change a result such as delivery time or number of units in a certain direction.







COMMODITY CRISIS: SUPPLY MANAGE-MENT IN TIMES OF DISRUPTION

Supply bottlenecks are crippling large parts of the automotive industry – this didn't just start yesterday, and it will continue for the foreseeable future. The Boston Consulting Group (BCG), for example, estimates that all car manufacturers worldwide will be able to produce between four and six million fewer vehicles than planned this year because of the chip shortage.

But how can a supply bottleneck hit the automotive industry, which is actually so progressive, with such force? This is because supply bottlenecks as such are not an unprecedented phenomenon.

The dose makes the poison

When you start looking for the cause of the production problems, it quickly becomes clear that various problems are coming together at the same time. Alongside the reduced availability of raw materials, there was an initially positive development: The automotive industry, shaken by Corona, recovered faster than expected. Since this revival first took place in Asia, the raw material suppliers from the USA and Saudi Arabia directed their raw material flows precisely there – and thus past Europe. The lack of availability was also accompanied by price increases. And then the issue of logistics comes into play – because there is also a lack of transport containers and sea freight capacities.

Planning in a chaotic environment

In this kind of situation, good advice is expensive and medium-term planning is almost impossible. Unforeseeable events like these cannot be prevented. What can be changed, however, is the level of agility in planning: Communication skills and transparency improve responsiveness. Uncertainty leads to delays, and intelligent planning software is able to use a variety of information to show possibilities for cushioning fluctuations and bottlenecks. Only then can resilience in the supply chain during the operational period be guaranteed.

This doesn't change the chaotic market conditions, but it does at least structure the individual processes despite the chaos. In times like these, the most important thing is to avoid acting mindlessly – and software-supported supply planning helps suppliers to maintain a clear overview.





CAPACITY PLANNING 4.0: AVOID UNNECESSARY COSTS THROUGH STRATEGIC FORWARD PLANNING

Transparency with regard to capacity requirements is a prerequisite for efficient production and the ability to act.

Medium-term forward planning covering a period of about four to twelve months is used by OEMs as a kind of forecast of how many cars will be built. This is used as the basis for the corresponding part requests to the suppliers in order to ensure a certain stock level. Short-term planning is based on fluctuating markets and customer needs – something that has kept the industry on its toes in recent months.

3 times 10 is not always 30

One might assume that handling 30 pallets takes three times as long as handling 10, but in reality this is not the case at all. Sometimes, depending on which parameters are taken into account during planning and what reality has to offer – e.g. faulty labelling – planning can quickly become obsolete.

A lack of data collection then results in these factors not being taken into account. Neither in forward planning nor in subsequent planning. The result is that at some point reality catches up with you, at which point good advice really does come at a price. In order to prevent such incidents, overcapacities are often deliberately kept in production facilities or overtime hours are worked. This can compensate for minor fluctuations – but comes with additional costs.

No chance in a crisis

In the event of a crisis, however, the picture can change so quickly that production companies no longer know where they stand. Whether it's supply bottlenecks due to a lack of a raw materials or a sudden fluctuation in demand, the impact on different capacity planning factors can vary greatly. If you don't have access to tools that help you to quickly identify possible adjustments, you will end up with dissatisfied customers.

New methods for better capacity planning

There are already software solutions available today that support supply chain management in planning with the help of intelligent algorithms. For the algorithm to be able to draw useful conclusions, a solid database is required, however.

Good data collection provides a means of constantly monitoring the current situation and comparing it with the target value. Should there be deviations, the system helps find the causes and identify optimisation options. The more integrated the data collection, the more efficient it becomes, not only in terms of planning, but also in terms of communication between departments or even beyond the boundaries of one's own company.



SUPPLY CHAIN MANAGEMENT IN THE SMART FACTORY: YOU CAN LEAD THE WAY WITH OUR SOFTWARE FOR SCM AND APS

Complex structures, a multitude of different parameters, and rapidly changing production logistics conditions are shaping the day-to-day production activities of automotive suppliers. Paired with industry-specific challenges such as optimal use of production resources, high dependence on available personnel, and customers ordering at increasingly short notice, 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. Thanks to our many years of experience with automotive suppliers, we are able to find the optimal solution for your future supply chain management, including responsive and cost-effective production.

Our products are all fully integrated into SAP ERP and S/4HANA and provide optimal support for or complement your existing processes. Our modular product portfolio allows us to address the SCM issues that currently appear to be the most promising.

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 costs. Forecasting and demand planning with volatile demand curves are made significantly more accurate with the help of artificial intelligence and machine learning. Sales & operations planning makes it possible to tactically and operationally simulate which staff capacities will be needed in the long term for the forecast figures.

A long-term overview of the necessary raw materials also makes it possible to respond tactically to price fluctuations for raw materials and to avoid high stock levels.

Anticipated added value through the use of our software:

- ightarrow 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%
- \rightarrow Reduction of costly extra shifts by 20–50%.
- ightarrow 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



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 of creating 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, plan production resources/tools as an additional dimension or map furnace campaigns for work steps that are to be processed simultaneously, allow the production process to be mapped digitally in accordance with the digital twin principle.

The ORSOFT Manufacturing Workbench supports manual processes (in Gantt chart as well as daily charts) as well as automated planning. All partial solutions are not only used as APS systems or control stations, Existing SAP processes can also be reused; for example, online ATP and CTP checks can be called up directly from SAP transactions at the touch of a button.

Expected added value through the use of our software:

- → Reduction of capital commitment through a decrease of safety stock by 3–10%
- \rightarrow Reduction of setup times by 10–50
- → Improvement of the efficiency of operational planning and IT support by 20-80%
- \rightarrow Improvement of OTIF by 5–10%



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 permits precise capacity forecasts and the early detection of capacity bottlenecks in the laboratories.

In conjunction with detailed planning, real-time data processing allows flexible reactions to changing business events and agile detailed planning of the laboratories. In turn, quality inspectors and supply chain management can 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.

Expected added value through the use of our software:

- \rightarrow Improvement of OTIF by 3–8%
- → Improvement of the efficiency of the testing staff by 10–30%
- \rightarrow Improvement of laboratory throughput y 5–15%





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ORSOFT is part of the Germanedge Group.

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