SYNCROTESS

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Synchronizing Transportation Optimizing Materials Flow

SYNCROTESS – The Transport Control System
for Intelligent Plant Logistics

INFORM

Synchronizing Logistics and Production

Optimal production processes require an equally optimal internal material flow. The premise for the best possible in-plant logistics processes is efficient planning and control of the available resources with an intelligent transport control system.

THE CHALLENGE OF INTERNAL LOGISTICS

For internal logistics, complex production processes mean making more and more different individual parts available for production on time in the right quantity and sequence. Production and logistics processes must be optimally coordinated to ensure, that production is supplied punctually and cost-effectively with the right material in the right quantity and quality at the right time.

INTELLIGENT SOFTWARE FOR EFFICIENT PROCESSES

The intelligent transport control system SYNCROTESS ensures a perfect link-up between production processes and the supply of materials. In this way companies can synchronize the flow of materials with production demands. Real time scheduling allows for transparent transportation control where schedulers can respond rapidly and appropriately to unplanned events.

ADVANTAGE TRANSPORT CONTROL SYSTEM

Companies are producing more and more product variants. As a result, countless individual components have to be ready and on time for the production line. However, the forklift control systems often used for this purpose are not capable of guaranteeing continuous production supply. They are too static and only allow a manual, error-prone and on-call disposition. The result is no visibility since no-one knows the whereabouts of the material at any given moment. It is impossible to respond rapidly to unforeseen events. This leads to unprofitable buffer stocks and trucks operating with underused capacity. So what businesses need is a transport management system capable of turning a logistics concept into reality.
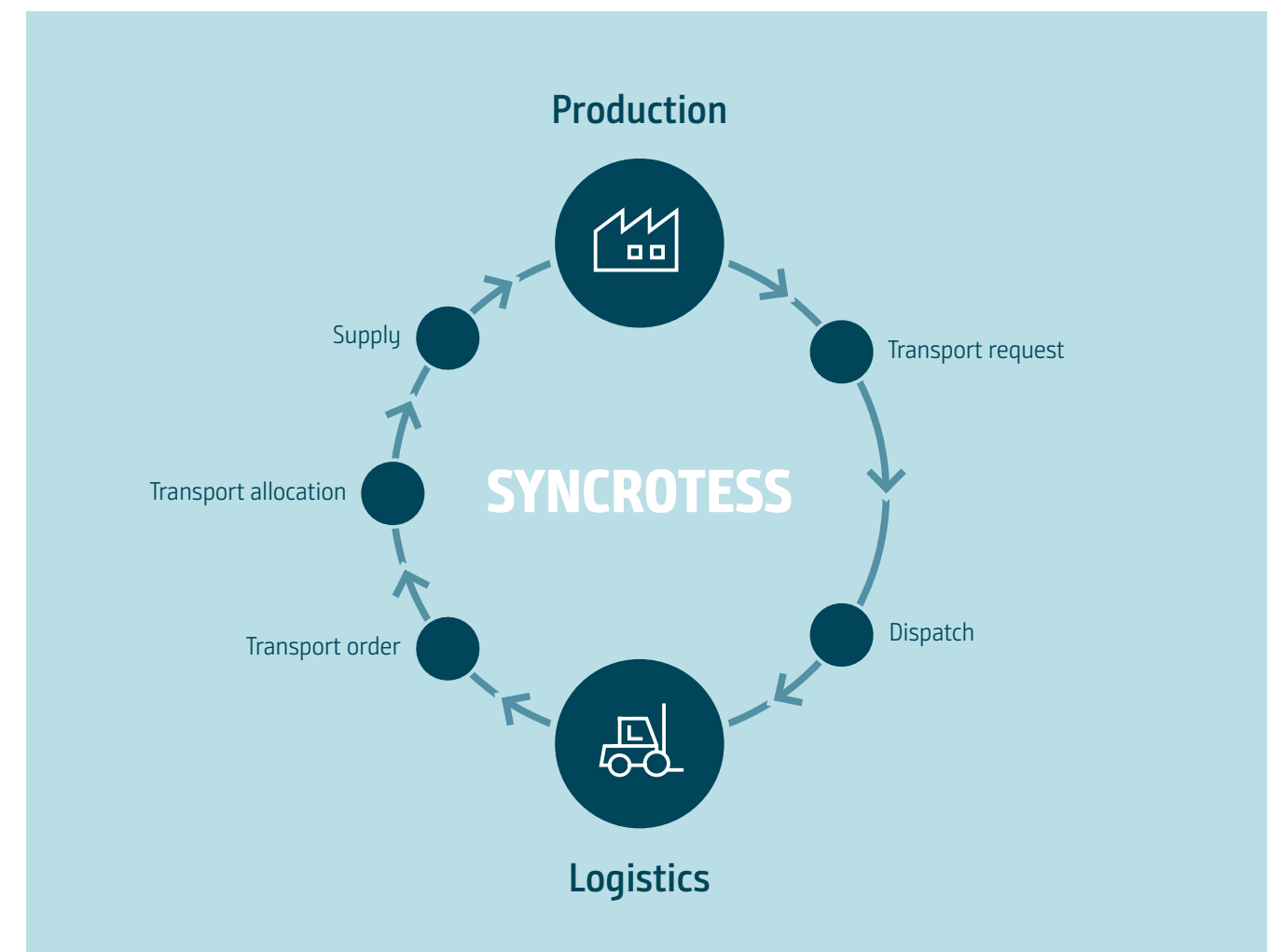
Modern Material Flow Management with SYNCROTESS

The intelligent transport control system SYNCROTESS links the management of material flows to the demands of production control. All the factory logistics can be planned efficiently and transparently alongside the current production processes. In this way, businesses can ensure a consistently prompt and reliable materials supply.

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The most Important Benefits of SYNCROTESS:

- Reduce the costs of in-house logistics by up to 30 %
- Complete transparency over the whole transportation situation
- Continuous and reliable production supply
- Effective exploitation of transportation resources
- Meaningful evaluations and KPIs

Production — Transport request — Dispatch — Logistics — Transport order — Transport allocation — Supply (SYNCROTESS)

Transparent Scheduling Achieving Planning Security

With SYNCROTESS, companies always have the entire plant logistics in view. The system features optimization algorithms that allow the intelligent allocation of transport orders taking into account the overall situation – with the aim of carrying out all transports cost-effectively and with high adherence to delivery dates.

Transparent Supply Chain

SYNCROTESS optimizes the visibility of the whole supply chain from the receipt of goods right through the production process to goods dispatch.

MATERIAL FLOW WITH INTELLIGENT SOFTWARE
Internal plant logistics have to come up with answers to three crucial questions:
> What sort of material is it and where is it?
> When will whichever type of material be required for production?
> How does it arrive on time at the production point?

As a comprehensive and flexible software solution for internal transport control, SYNCROTESS answers these questions at any time and ensures planning reliability. The intelligent transport control system supports the implementation of a synchronous material flow concept tailored to production.

FULLY INTEGRATED TRANSPORTATION SCHEDULING
Based on the planned production quantities and the resulting transport volume, SYNCROTESS continuously optimizes transport disposition. For this purpose, the software is integrated into the existing IT by an interface so that it receives the necessary data. In addition, the relevant operating areas are connected and initiate transport orders. From this the system automatically generates specific orders, organizes incoming and outgoing deliveries, manages loading spaces and initiates the loading and unloading processes. The system automatically generates individual orders from this and allocates them to the appropriate resource using smartphones and/or tablets (LTE/WIFI). In doing so, it considers criteria such as order priorities, distances, deadlines, the availability of transport equipment and loading points, as well as break times, idle times, travel times and opening hours. In this way industrial companies can synchronize all their logistics processes with their ongoing production.

ADVANTAGE REAL TIME DISPOSITION – RESILIENT AGAINST DISRUPTIONS
The optimization algorithms of SYNCROTESS enable a quick reaction to every change in the transport situation. When unforeseen events arise, the system can recalculate the order situation simultaneously for all the trucks within seconds and suggest new decisions to the dispatchers. The schedulers can either accept these or override them at their own discretion.
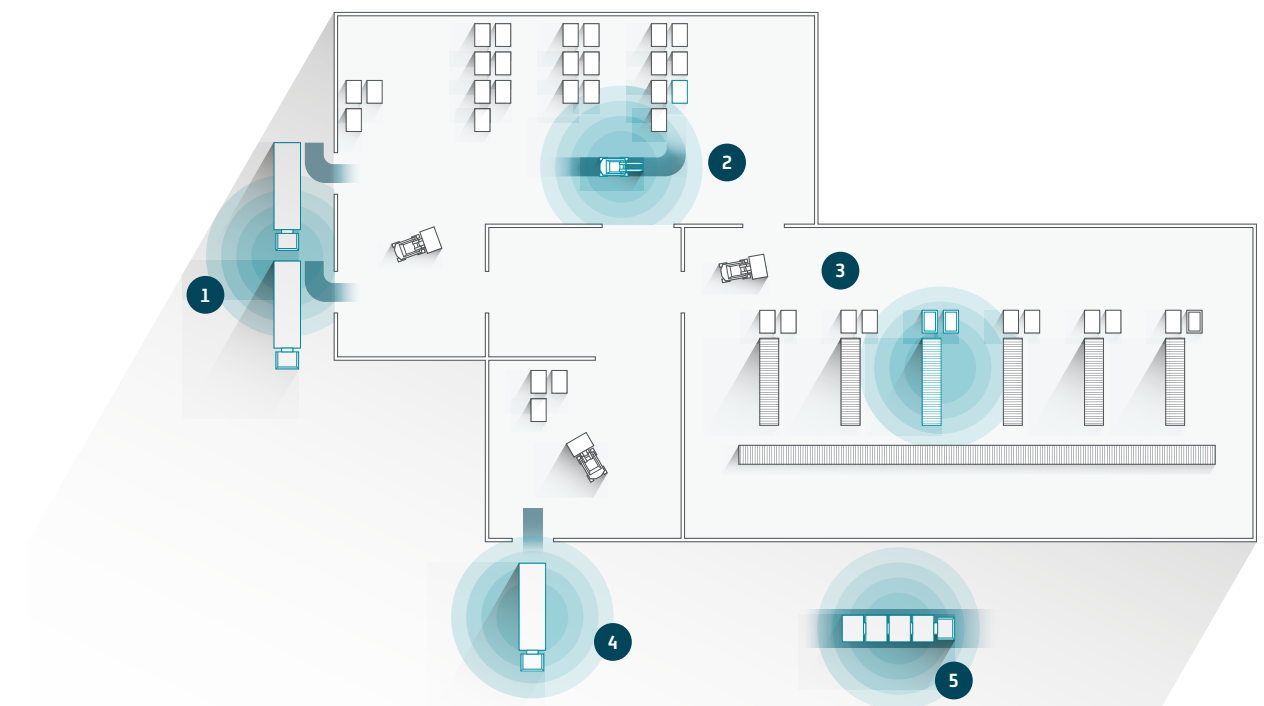
Advantages of Transportation Planning with SYNCROTESS:
- Increased productivity
- Better adherence to delivery dates
- Reduced throughput times
- Higher fleet utilization
- Less effort for disposition

1 Receipt of goods: After goods receipt of the delivered material has been booked, SYNCROTESS receives corresponding placement orders from the WMS and allocates them to suitable resources in an optimized way.

2 Warehouse: SYNCROTESS tracks the material to each loading bay and storage area. Based on material requirements from production, SYNCROTESS generates the necessary transport orders for production supply.

3 Production supplies: SYNCROTESS assigns the transport orders to suitable resources via radio data transmission, taking into account their status, the current order list, priorities and loading capacities.

4 Dispatch: SYNCROTESS ensures punctual loading. Transport orders for empties loads are also considered.

5 Route trains: SYNCROTESS can flexibly adapt route train schedules and routes to the changing conditions in production.

Entire Logistics at a Glance

SYNCROTESS features specialized optimization algorithms that enable the intelligent allocation of transport orders accounting for the entire situation. The system can be individually adapted to the needs and size of each company and offers a comprehensive range of functionalities.

REAL TIME MANAGEMENT

SYNCROTESS summarizes all relevant information for the planning, control and monitoring of resources and transfer orders. From this information, the transportation control system creates the optimal pairing between orders and resources. The system immediately includes newly created orders in the overall planning and calculates a suitable follow-up order or suitable order combinations for each active and available resource in the system within seconds. SYNCROTESS also looks into the future, to calculate which orders can be logically combined and recommends a sequence of suitable follow-up orders per resource.

MATERIALS TRACKING

Production companies increasingly want to base their materials flow on the production processes. SYNCROTESS implements an internal logistics concept in which production demands and transportation scheduling interlinks. In this way companies benefit from predictable and effective supply chain processes and gain round the clock transparency over: the goods in transit, information about the last material unloading location, current process status at any given time.

MULTI-STAGE CONCEPT

SYNCROTESS recognizes based on its stored data whether several transport steps are required to complete an order. This is the case for instance when transportation movements are required across the whole factory floor/site or involve lifts and conveyor belts or rack storage and retrieval using transfer stations. The system automatically breaks down the overall transportation order into part orders. The resulting transportation chains are then automatically allocated to the appropriate resources.

MANAGING TRAILERS AND CONTAINERS

SYNCROTESS can also schedule passive transport aids such as trailers, containers and frames and manage their status and position. All units are uniquely identified. The system only assigns the appropriate resources and trailers to the orders. The software offers trailer depot management, automatic generation of unloading and distribution orders and automatic requests for empty trailers.

CONTROL FOR ROUTE TRAINS

SYNCROTESS allows companies to implement different route train concepts. Besides route trains with fixed timetables, the system also optimizes those with flexible driving routes and times. In addition, dynamic route train concepts are also possible. Depending on the type of route train plan, the software takes different criteria in to account such as delivery time and requirements at the installation location, available transport resources, planned production volumes, number of loading and unloading bays. Possible deviations in the execution of flexible and dynamic route trains from the established plan, e.g. due to load delay or changing production needs, are dynamically captured by the system in real time and immediately considered.

MATERIAL HANDLING EQUIPMENT

SYNCROTESS can manage the status and position of material handling equipment such as forklift trucks, forklift accessories, pallet trucks and other units. During the allocation process the system takes into account the qualifications of the employee involved. In cases where a specialized piece of equipment is required for particular task/s or transport orders, SYNCROTESS automatically assigns them only to those employees with the corresponding qualifications which allows them to use the equipment necessary. Set-up and changeover times can be reduced considerably.

KPI AND ANALYTICS

For the analysis of operating processes controlled by SYNCROTESS, the system provides qualified daily and monthly statistics to monitor the performance of the transport department, to quickly recognize changes in the order profile and to call up current data for general logistics planning at any time. In addition, order data, error messages and dispatcher interventions are automatically documented. An online KPI cockpit provides a dashboard with key figures on the current situation such as transports according to status, time of day or completion duration.

INFORM as an Expert for Logistics

References
Extract

SYNCHRONIZE INSTEAD OF ORGANIZE

With our software, we were one of the first companies to implement the idea of synchronizing logistics processes. Today, in more than 100 applications across all industries, our systems optimize logistics processes. Over time, standard interfaces for all common technologies (XML, SOAP, MQS, etc.) and IT systems (e.g. SAP, VDA standard messages, etc.) have been developed and implemented. SYNCROTESS guarantees the optimized scheduling of internal resources such as forklifts, tractors and transport equipment. As a supplement, SYNCROSUPPLY plans, controls and tracks truck material deliveries in the inbound area as well as deliveries in the shipping area. The software coordinates these with the loading point capacities available in the plant and the current requirements of the production or the customers. This enables our customers to simultaneously view the current situation in its entirety and react immediately to any short-term changes with the help of real-time optimization.

SYNCROTESS AS PAY-PER-USE MODEL

Companies with smaller transport fleets can use SYNCROTESS without the effort of an IT project and benefit from the performance features of an intelligent transport control system. Further information: **syncrotess@inform-software.com**
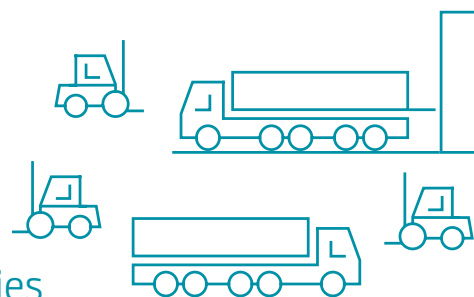
FOCUS:
IMPROVING TRANSPORT PLANNING WITH MACHINE LEARNING

The use of Machine Learning (ML) raises intralogistics processes to a level where they can meet the requirements of increasingly dynamic production environments. ML enables a system to automatically collect data and calculate realistic default values. As the algorithms learn through experience, their forecasts and data bases become more and more precise, enabling optimized control. The savings potential is particularly high when ML is used intelligently. SYNCROTESS combines Machine Learning and Operations Research to learn the dynamic input variables for the optimization models. This further improves the result of the optimization. In many fields of application, this offers optimisation possibilities that go far beyond the pure automation of decision making.

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INFORM optimizes daily:

- More than 300,000 internal transports
- More than 1,000 controlled forklifts/trucks
- Over 24,000 truck arrivals at industrial companies

WACKER · ACTEGA · BÖHLER · LogServ
BOSCH · MAN · LIEBHERR · BUTTING
schunk · HEIDELBERG · Henkel · MTU Aero Engines · MEYER WERFT PAPENBURG 1795
HERMLE besser fräsen · FUCHS · mtu · DILLINGER HÜTTE
AUDI · CLAAS · KUEHNE+NAGEL · SALZGITTER FLACHSTAHL Ein Unternehmen der Salzgitter Gruppe
SIEGWERK · thyssenkrupp · ACHENBACH BUSCHHÜTTEN · saarstahl
sgl carbon · Mercedes-Benz Group · SIEMENS

Why **INFORM?**

Long before terms such as "artificial intelligence" and "machine learning" were on everyone's lips, INFORM was already developing intelligent algorithms for its software products. To this day, these algorithms complement classic IT systems by analyzing large amounts of data in a matter of seconds, calculating numerous decision variants, and suggesting the best possible solution to the user for implementation.
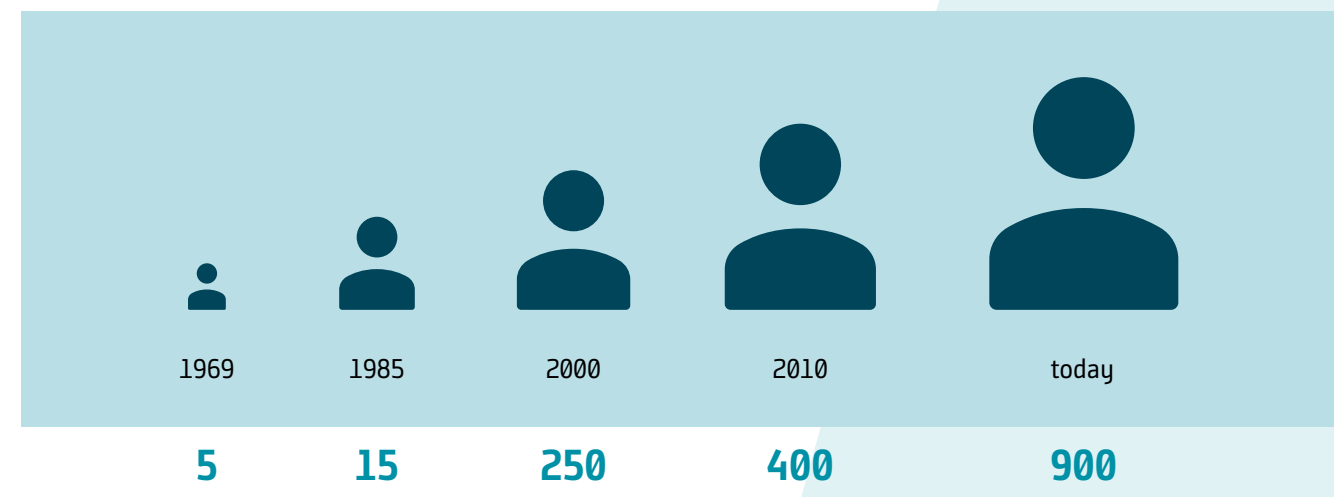
INFORM develops software for the optimization of business processes using Digital Decision Making based on Artificial Intelligence and Operations Research. The company supplements classic IT systems and increases the profitability and resilience of many companies. While data management software only provides information, INFORM systems can analyze large amounts of data in a matter of seconds, calculate numerous decision variants, and suggest the best possible solution to the user for implementation. Today, more than 900 software engineers, data analysts, and consultants support more than 1,000 customers worldwide in manufacturing, trade, airports, ports, logistics, banks, and insurance companies. Processes, including sales planning, production planning, personnel deployment, logistics and transport, inventories, supply chain management, as well as fraud prevention in insurance, and payment transactions are optimized.
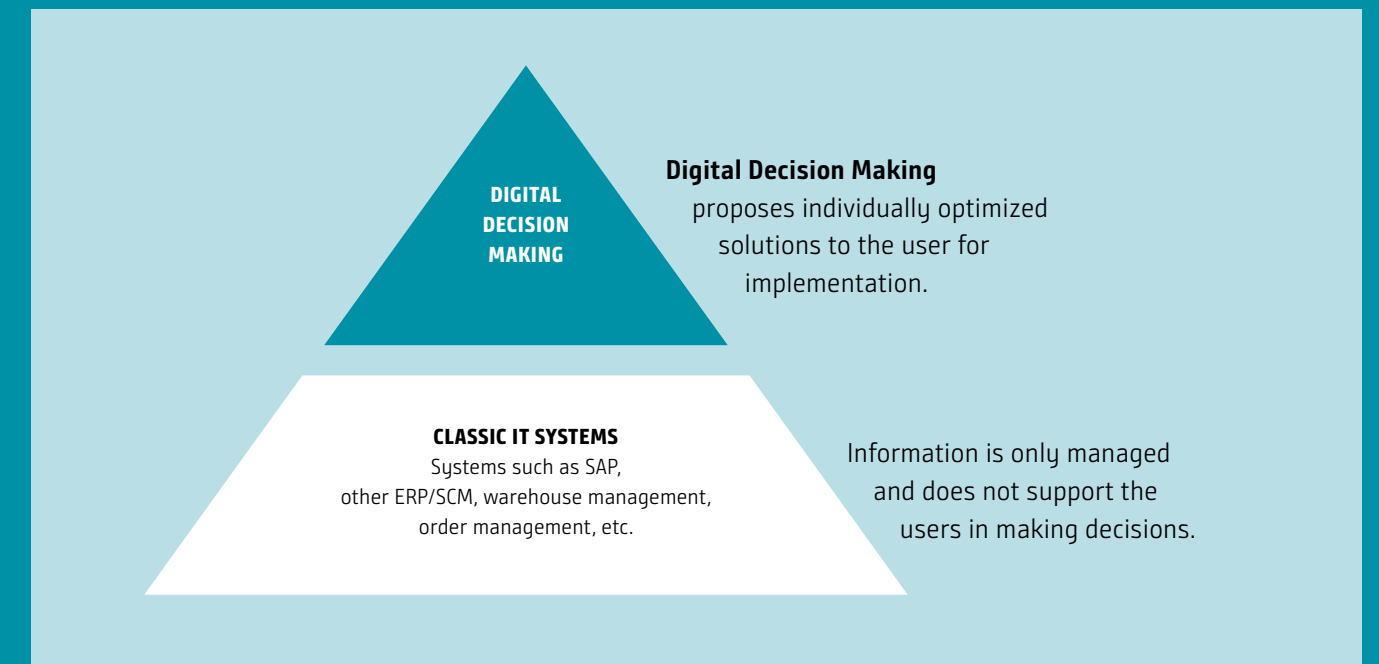
Staff Development

1969	1985	2000	2010	today
5	**15**	**250**	**400**	**900**

DIGITAL DECISION MAKING

Digital Decision Making
proposes individually optimized solutions to the user for implementation.

CLASSIC IT SYSTEMS
Systems such as SAP, other ERP/SCM, warehouse management, order management, etc.

Information is only managed and does not support the users in making decisions.

INFORM supplements your existing ERP systems with mathematical algorithms based on Operations Research.
With our optimization software, you act:

PROJECTS IN MEDIUM-SIZED COMPANIES AND CORPORATIONS – WORLDWIDE
Every day, our systems manage tens of thousands of employees at airports, move millions of new vehicles from plant to dealer on schedule, ensure punctual delivery of food to supermarkets and restaurants, and monitor over 250 million fund transfers for fraud prevention in payment transactions. Our employees are experts in their specific fields because, in order to optimize operational workflows through software, we need to understand them. Ultimately, our customers expect time and cost savings in highly-complex, decision-making situations – in a container port, where a container has to be moved every three seconds, for example, or in plant construction, where a machine is assembled in 30,000 processes using 5,000 parts, all which must arrive in the assembly hall in the correct sequence at the right time.

Intelligently

With a high planning quality appropriate to the complexity!

Quickly

With short computing times and fast adaptability of the algorithms!

Interactively

In collaboration with people who keep control at all times!