International Car Operators (ICO) is one of Europe’s most important stevedoring companies for roll-on roll-off cargo, offering vessel and terminal handling services, vehicle processing centers, port agency, customs clearance and forwarding. ICO is a subsidiary of Nippon Yusen Kaisha (NYK Line), one of the world’s leading transportation companies. In 2013, ICO handled a total volume of 1.7 million cars and high and heavy units at its specialized roll-on roll-off terminals in Zeebrugge and Antwerp. All major RoRo shipping lines and OEMs are served.
Long delivery times occur because automobile manufacturers have optimized their new car distribution processes much less than their production and supplier logistics processes. Although manufacturers produce a car just-in-time within a matter of hours, the car is then left for several days at a storage area or in a transshipment terminal waiting to be transported by train, ship or truck.

To save millions of euros and make customers satisfied by delivering their cars faster, manufacturers need a comprehensive software system that covers new car logistics, from strategic planning through to the day-to-day business of all planning and controlling processes. Beyond the standard software functions, the system needs intelligent optimization procedures that deliver each car to its future owner quick and cheap as possible.

**OPTIMIZATION – FROM STRATEGY THROUGH TO INDIVIDUAL TRANSPORTATION**

Ideally the supply chain manager should have a single software system to optimize and improve the processes and calculate the various decision variants. New car distribution tasks can be covered completely by a range of components:

- Strategic network planning and optimization
- Daily, weekly and monthly operational planning
- Transport optimization on a daily basis
- Real-time tracking and visualization on a single car basis
- Optimization of the allocation of parking spaces at the storage areas
- Calculation of the estimated date of delivery

Strategic network planning and optimization provides information based on historical and forecast data. These data are used as the basis for designing the distribution network with its car terminals and transportation resources. Intelligent optimization techniques and workflow processes are able to calculate the required resources and capacities needed to distribute the forecast volume of cars to the dealers with minimum average delivery times and costs.

The optimized daily, weekly and monthly planning is able to connect strategy and operational processes. Using the real-time data from the distribution system, strategic decisions can be reviewed and optimized and alternatives can be simulated and selected based on best looking key performance indicators (KPI). Transportation optimization on a daily basis enables a car to makes its way through the distribution network quick and cheap with an efficient use of resources. Intelligent optimization procedures automatically coordinate the loading onto trucks and trains in such a way...
Optimization Potential in the Automotive Industry

Over the past few years, automobile manufacturers have gone to great lengths to successfully optimize their production processes. Today, they can theoretically deliver a car in 20 days. In practice, however, a customer is more likely to have to wait 40 days to receive his new car. Why is this? The optimized production process consigns the finished vehicles to a non-optimized distribution chain. Manufacturers have recognized this and are now starting to optimize their finished vehicle logistics. Optimizing the yards through the implementation of intelligent decision-making software is an important step in this direction. Considering that each day a vehicle spends in the supply chain costs around 10 euros, it is also a worthwhile step.

That the limited transport capacities are better utilized and the length of time a car spends in the distribution network is as short as possible. The incoming and outgoing traffic is managed at the storage areas and in the transshipment terminals in such a way that the length of time the car spends there and the amount of work is minimized. The scheduling decisions involving an almost infinite number of parameters to be taken into account are so complex that a logistics controller soon reaches his limits when working with Excel tables. This is why optimization procedures capable of analyzing extremely large volumes of data in real time always find better transport routes for a car than even experienced logistics coordinators. Logistics costs can be reduced by 10–20% through intelligent optimization.

Based on the daily optimization, reliable conclusions can be drawn early on about the estimated delivery date of the car at the dealer. In turn, the dealer can inform his customer immediately about a short and realistic delivery date.

To manage the entire new car distribution process efficiently and to answer detailed questions, for instance about the current location of a car, the software needs to offer real-time tracking for each individual car as well as visualization. The visualization should zoom seamlessly down to the last detail: From the logistics system overview, to the situation at the huge storage areas, to the location of an individual car.

BUSINESS GOALS WITH ECONOMIC BENEFITS

The goals that can be achieved with such a software system do not just satisfy business interests. Besides reducing costs and delivery times, as well as providing early and reliable indications of delivery times, the systems also reduce the CO₂ footprints of automobile manufacturers. Automobile manufacturers in particular are being called upon to constantly reduce these. Thus, by optimizing transportation, approximately 10% more cars can be loaded and the average number of kilometers traveled can also be reduced by 10%, which also means 10% fewer CO₂ emissions.