

Contemporary logistics IT solutions

Logistics as one of the key business processes for many organizations imposes a number of issues, many of which are tightly related to each other and connected with effective and efficient inventory management, transportation, tracking of goods movement and warehousing. Investments need to achieve success in this area are considered to be tremendous. Some IT solutions however can easily solve many problems and streamline complicated processes in this area.

Logistical challenges

One of the key area in our environment is the logistics; undermined and very seldom given a thought. Nowadays companies, even day-to-day sellers don't have a warehouse. They are relying on the wholesalers' storage and their delivery capabilities. For example, mid-sized supermarket in Helsinki receives over hundred deliveries per day. Every day. How to manage the flow of the goods? Goods have to be just-on-time, not earlier nor later. The main driver of course is the financial efficiency. What is the turnaround time of the inventory? How much cash is tied to the warehouse or company's shelves?

When you look at the enablers of this type of approach the issues are very challenging. Required investments to the business are quite high compared to the received payments for the one shipment. Obviously it is a question of long term investment which measurement is the payback time. Then comes another variable to the formula; you have a big fleet to do the deliveries.

The formula starts from the fact that the delivery fleet is expensive and big investment. The question is that how much the investment produces. It is very important that it is delivering a load all of the time, or at least the load delivering time has to be maximised. It is like one key factor for the budget airlines – that planes have to fly all the time and airport time has to be minimised. The numbers will be totally different if the question is about truck or train wagon. The numbers will come incredible big if you have thousands of wagons. You have to be aware where they are and that their usage is optimised. Big number of wagons requires also big amount of staff. They have to be managed as well. It is a big complicated formula which has to be solved. Formula's variables are also where your fleet is located, where they are going to and especially are they on time or delayed. The numbers will come more challenging when we are looking for input and output of the big factory, like brewery or paper mill. Risk factor is very high if you are not prepared. Planning has to be done properly. One small item to add to the formula is maintenance; hardware needs systematic maintenance in order to be reliable.

Rail Fleet Management System as an example

Let us consider an example of Stora Enso – integrated paper, packaging and forest products company, producing publication and fine paper, packaging board and wood products. Striving to gain a better visibility of its railroad car fleet, ensure timely shipments and reduce costs generated by delays and non-target usage of vehicles Stora Enso approached a railroad

informational agency to supply vehicle location data on a daily basis. Though satisfied with timeliness and correctness of the information, Stora Enso's logistics specialists considered it time consuming and inefficient to analyze the figures scattered across paper documents or .xls spreadsheets. The necessity of improved personnel productivity and speedy data analysis called for a new solution to store and manage the data effectively.

<p>Main aim of the system The system automates activities and business processes related to rolling stock management and surveillance, analysis of appearing critical situations and optimization of transportation process.</p>	
<p>Main functionality</p> <ol style="list-style-type: none"> 1. Rolling stock/railway cars/other transportation systems surveillance and monitoring on Railways (both state and companies own driveway). 2. Containers location monitoring. 3. Automation of cars layout/placement on the track 4. Critical situations control: <ol style="list-style-type: none"> a. Excess of car delivery time b. Car demurrage c. Car malfunctions d. Non relevant goods e. Approached repairing time for car f. Sending of car to the incorrect station 5. Calculation of analytical indicators: <ol style="list-style-type: none"> a. Number of shipments per period b. Number of repair days c. Turn round d. Average duration of cars in transit 6. Cash flow information for car shipment monitoring 7. Integration with corporate information systems and applications 8. Ability to connect with remote department systems 	<p>Advantages</p> <ul style="list-style-type: none"> - Increase operations efficiency and transportation process transparency - Provides high level of operability of cars location information processing and analysis - Decrease corporate expenses due to: <ul style="list-style-type: none"> o Provision of precise information about particular cars and containers o Reducing of time for search and monitoring of cars and containers o Reducing of financial expenses for getting information from data center o Providing of actual information and its analysis <p>References:</p> <ul style="list-style-type: none"> - Stora Enso - Nurminen Logistics - Heineken breweries - Baltika breweries

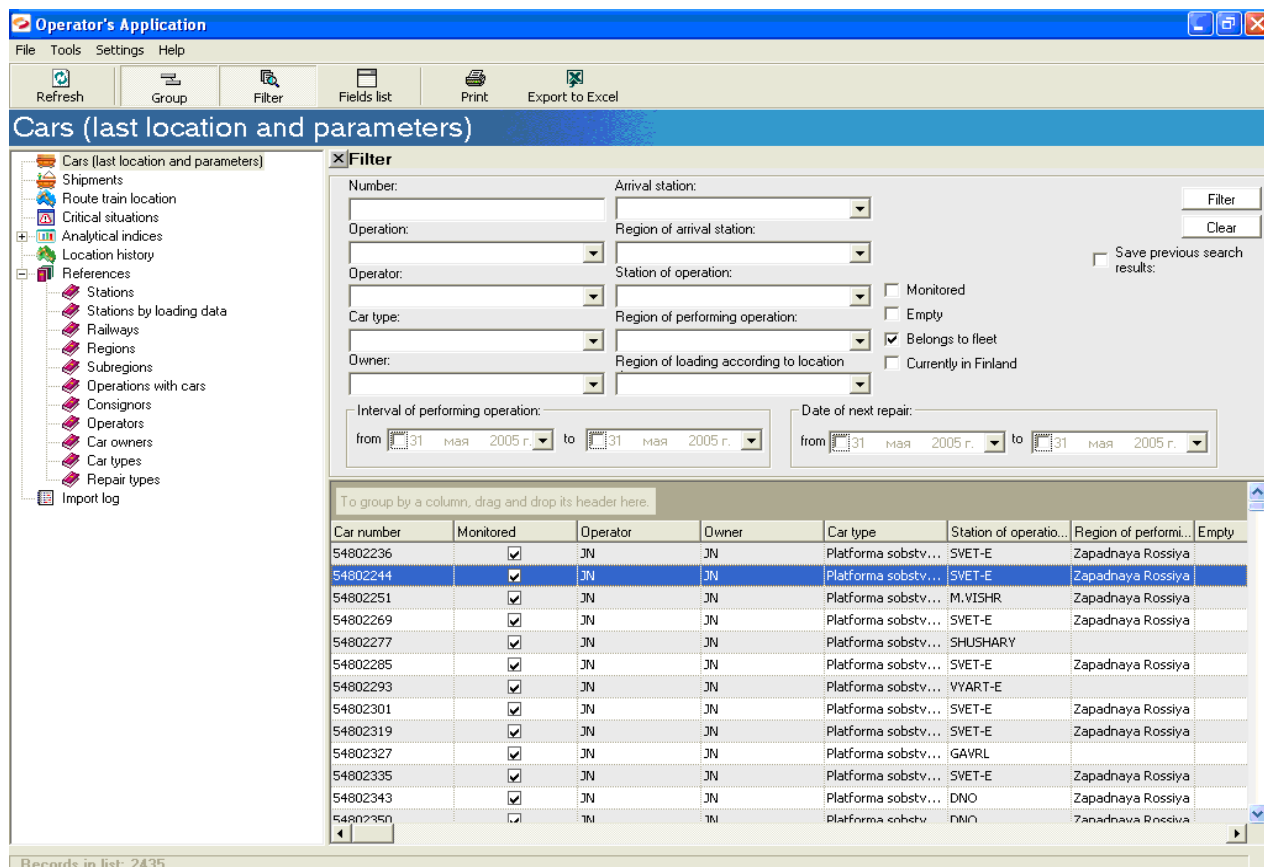
Table. Brief description of the system

Digital Designed developed a system that allows loading information on vehicle locations and their mechanic data provided by the railroad informational agency into a centralized storage. This eliminates the risk of data being lost and allows the company to maintain a consistent, reliable source of information for easy analysis and report building (see Table above for detailed description of the solution).

With the system, a logistics specialist can:

- Accurately pinpoint the current location of a rail road car, track its station-by-station movements (location history) and find out when the vehicle arrived on site.
- Quickly retrieve mechanic information for each vehicle and repairs performed up to date.
- Find out freight-related information — which goods are being carried by a vehicle, their weight, consignor etc.
- Work with sets of vehicles and separate cars. In the rail transportation world, it is often necessary to consider cars together as whole. The system provides the definition of a “Route train”, which is a combination of cars connected together to make up a train for particular service. The system allows retrieving information about all cars included in the train by entering the number of any of its cars.

The system also provides analysis capabilities — on a mouse click, the user can find out how many times the vehicle was loaded over a period of time, the number of days under repair, its turnover and average trip duration.



Picture: Car location and parameters view

Besides allowing its users to locate easily a railroad car, the system offers preventive measures to pro actively address potential delays, ensure route compliance and assist in lost vehicle recovery. If any of the below situations occur, the system generates an alarm:

- Vehicle is idle for a period above a permitted. This enables the company specialists to reduce delays.
- Vehicle sent to a station outside the designated route. This helps to ensure route compliance and reduce out-of-route miles.
- Vehicle loaded with goods not related to the company business. This ensures that the company fleet is utilized properly and helps identify the situations when a Stora Enso's car is used by a transportation service provider to serve another company, and efficiency is lost as a result.

The rail fleet management system not only tracks the company vehicles, but also provides Stora Enso with the means to take care of its fleet. The system allows keeping repair history, identify repair patterns and predict approaching repairs (Preventive Maintenance), thus eliminating the need for costly emergency repairs. It informs the user when vehicles need to be serviced — maintenance reminders are based on mileage and/or dates.

Business benefits of the IT solution

Consistent and accurate data leads to increased traceability

Utilization of the centralized data storage and unified access to data has resulted in improved vehicle tracking and traceability, and increased productivity at Stora Enso. Total control of the company's fleet daily operations maximized the availability of vehicles and ensured their proper use. The system also helped manage performance level of transportation service providers.

Easy retrieval of needed Information makes personnel more productive

The system's user-friendly interface allows Stora Enso employees to save significant amounts of time while searching for, viewing and analyzing data. Emergency alerts help the company to reduce delays as well as ensure route compliance and preventive maintenance.

Cost reduction allows of greater profits

Better information leads to higher profits through better fleet management. Keeping track of the fleet's movements helps keeping costs down and allows the company achieve higher level performance and productiveness.

Timely Deliveries improve Customer Service

Predictable, timely deliveries improve Stora Enso operations and customer service, thus making the company more competitive in today's operating environment.