Modern Terminal Operating System: Digital Transformation of Ports, Inland and Rail Terminals

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About Solvo

30 years experience

24/7/365 support

5 offices worldwide

400+ projects

Who we are :

SOLVO is an international vendor of TOS, WMS and YMS solutions and systems integrator on the global markets.

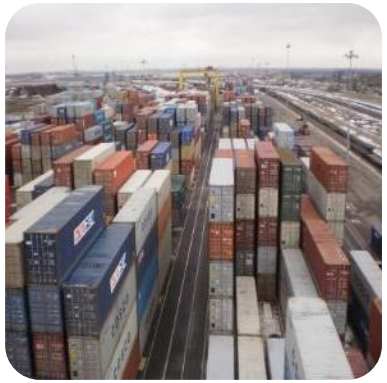
We are a leading provider of high-end supply chain solutions to help and optimize the logistics and all cargo handling.

Our approach :

Not just development and implementation. We have the largest expertise in automating storage logistics and are ready to work on a turnkey basis, taking risks. We are a leading firm in providing quality and value to our customer.

Certificates

Business core areas



Solutions for ports and terminals

A leading Terminal Operating System for ports and terminals. An ultimate set of solutions for managing just any type of cargo: container, break bulk, Ro-Ro, general cargo, etc., including extra solutions as the VBS, AGMS, VGM.

Solutions for managing yard

YMS helps to manage all the operations at the yards, including allocation and storage of different types of cargo, housekeeping, reefer and empty containers management, CFS management etc. Providing procurement of gate-entry/cargo pick-up permits for truck-drivers, trucks and cargo forwarders/transport companies.

Solutions for warehouse logistics

One of the leading software providers of SCE software. Solutions range from WMS to WCS, Yard, Billing, KPI and more for all verticals: production, retail and distribution, 3PL and pharmaceuticals.

Consultancy in logistics and system integration

Logistics and Management consultants, including specializations for Project Management, Optimization, Engineering, Design and Procurement.

As well as training, seminars, webinars and other educational events.

Modern ports are moving to Extended Supply Chain

- Moving to Global Supply Chain
- Global Information Environment Connecting All the Elements of the Supply Chain
- End to End visibility — to final customer

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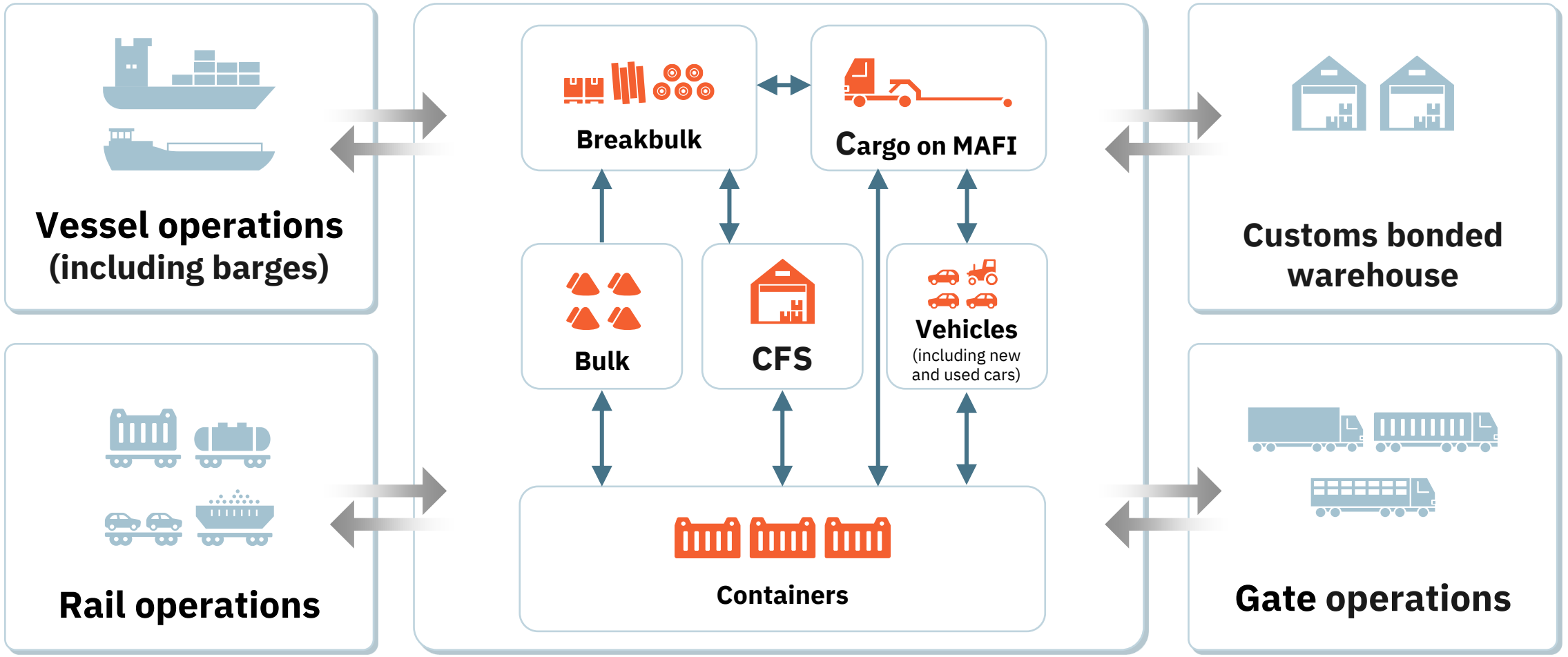
Modern TOS as a full Supply Chain solution and an integration platform

Support of complex technological chains

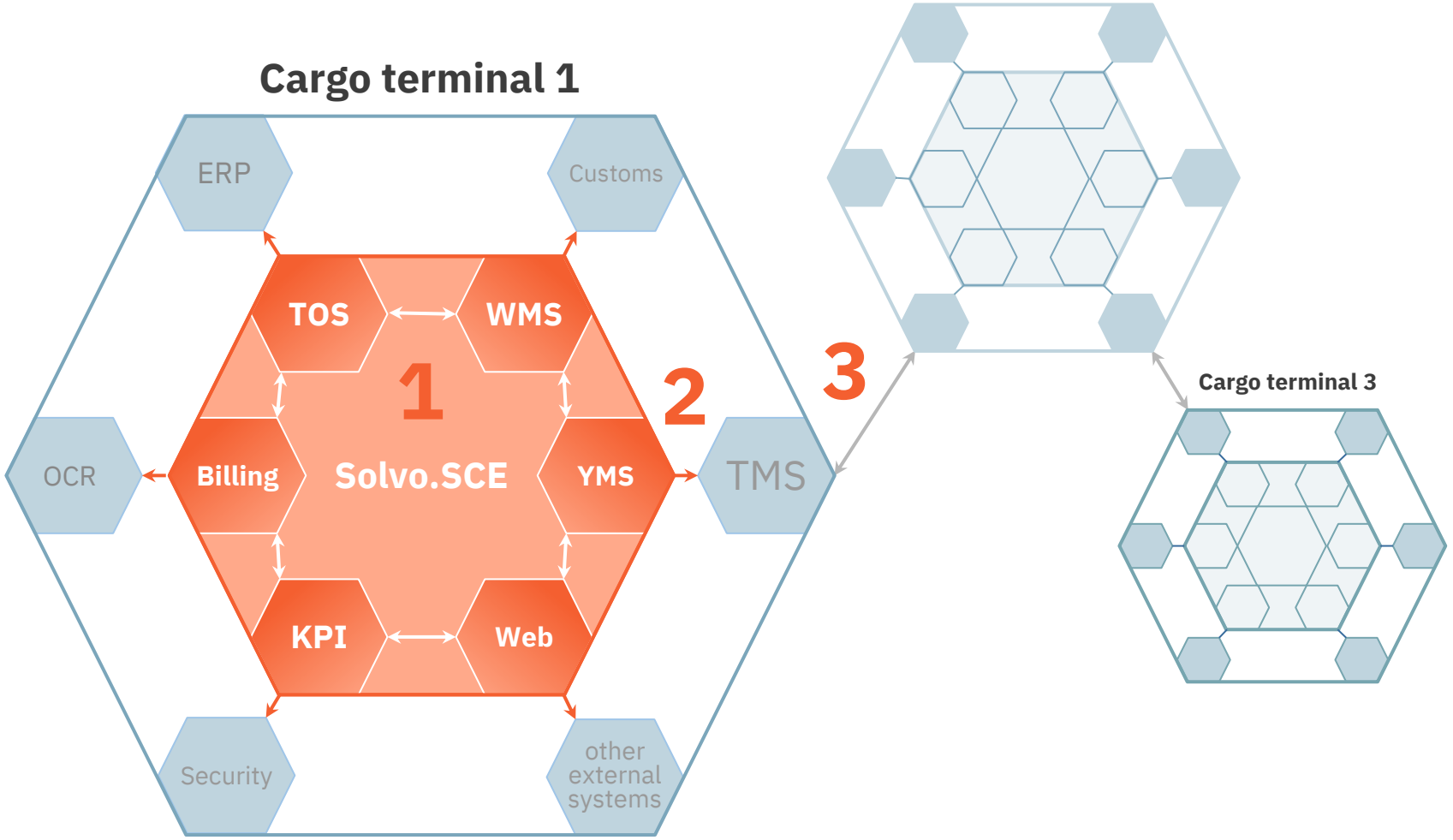


Solvo.TOS overview

Solvo.TOS

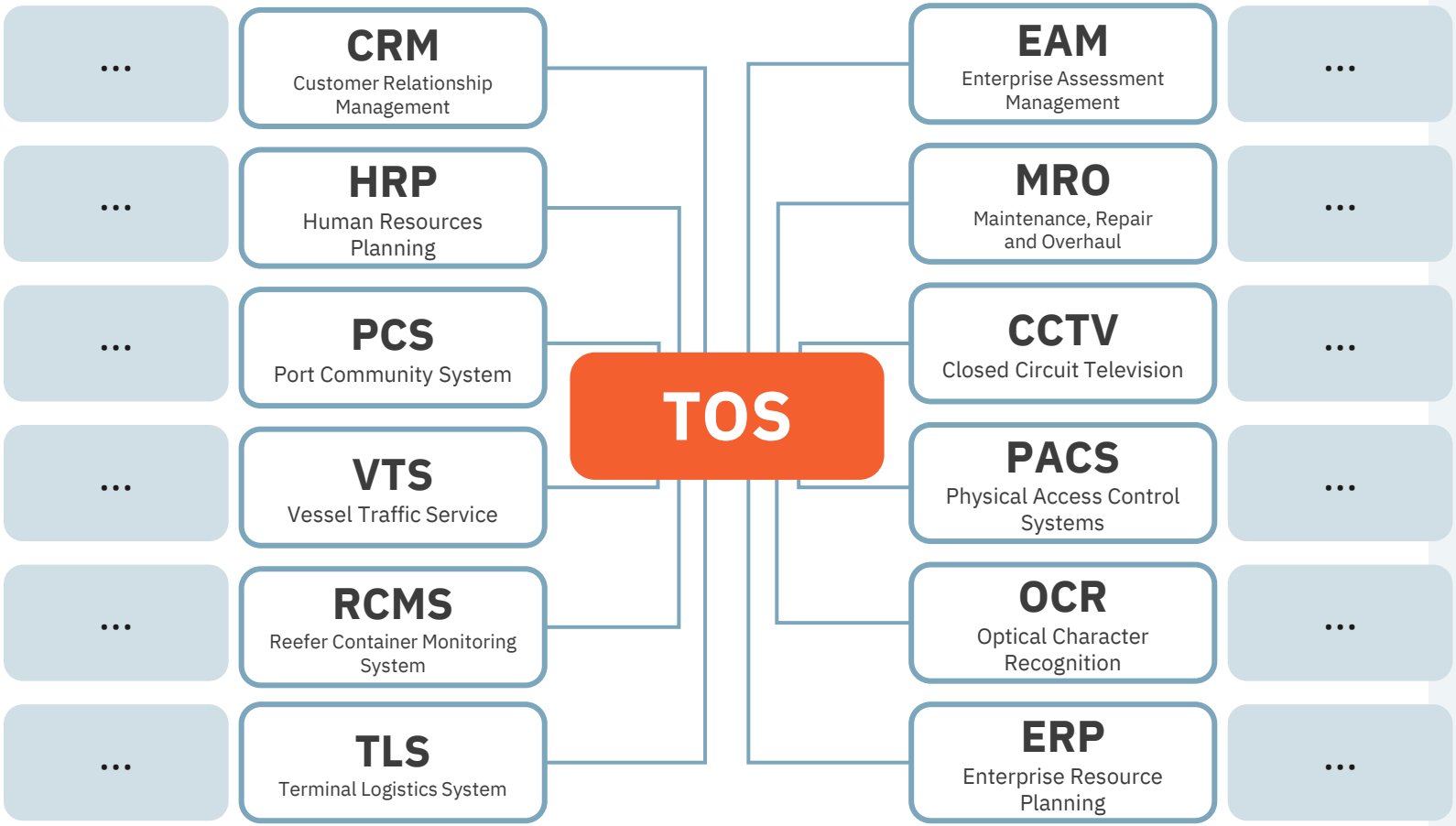
- Gate management
- Yard management
- Truck operations management
- Screening zone management
- CFS (stuffing/restuffing)
- Vessel planning
- Repair zone management
- OCR-systems (Gate, crane, rail)
- Empty container depot management
- Berth planning
- Rail operations management
- Remote control of automatic equipment
- Customs systems
- Data capture terminals
- CHE management
- EDI
- KPI
- Web
- Automatic reefer monitoring
- Global positioning systems (DGPS, RTK, GNSS, RTLS)
- External ERP systems
- Crane systems STS,RTG/RMG, RTLS/DGPS

System Integration Levels



1. **Solvo.SCE Platform** based solutions (integration between Solvo products).
2. **Integration** between Solvo solutions and external software.
3. **Integration** between different logistics facilities or participants of the Global Supply Chain

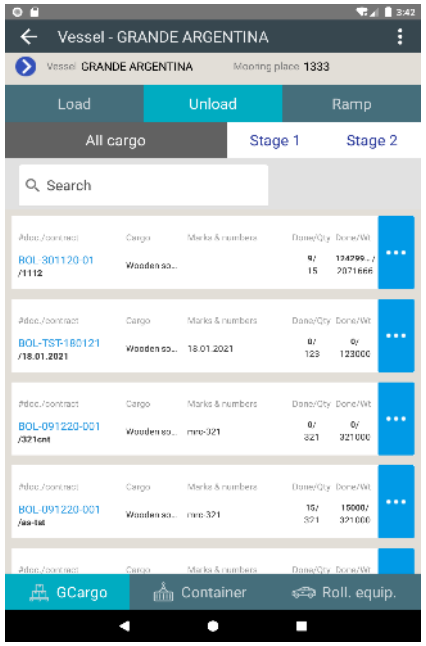
Solvo.TOS Integration Opportunities

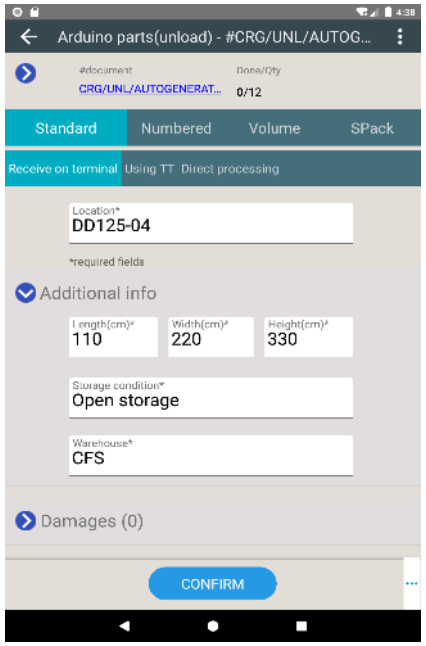


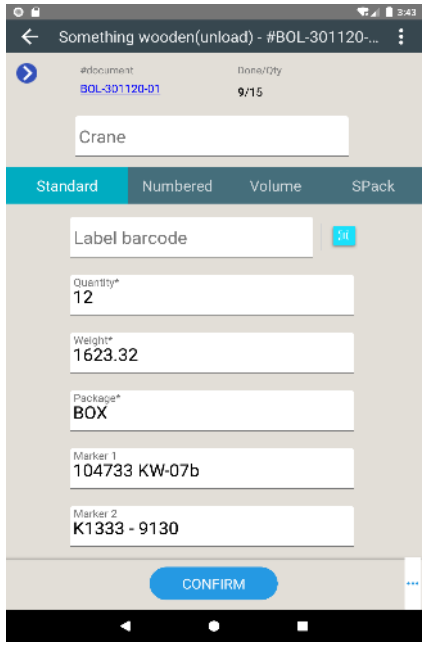
Solvo.API (Application Programming Interface) is divided into two modules: EDI (Electronic Data Interchange) for receiving and transformation data from external information systems and Notifier for preparing messages in the required format for external information systems when certain events occur.

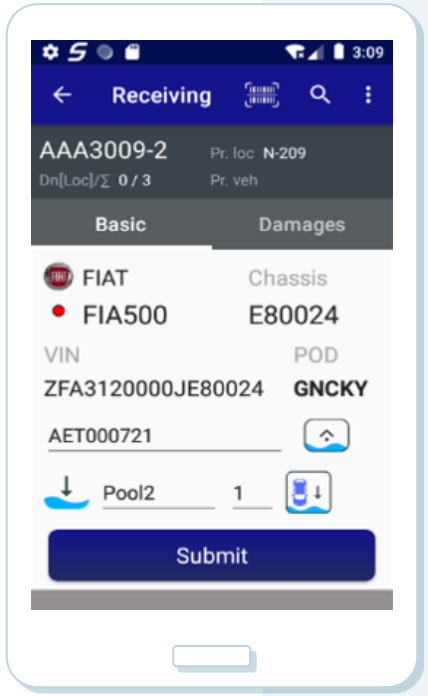
System receives a document with a message from the port system — integration platform — transfer it to the EDI module in various formats, which are then converted into the format required for the **Solvo.TOS** database. As a result, the user receives all this information online.

Cargo characteristics processed by Solvo.TOS









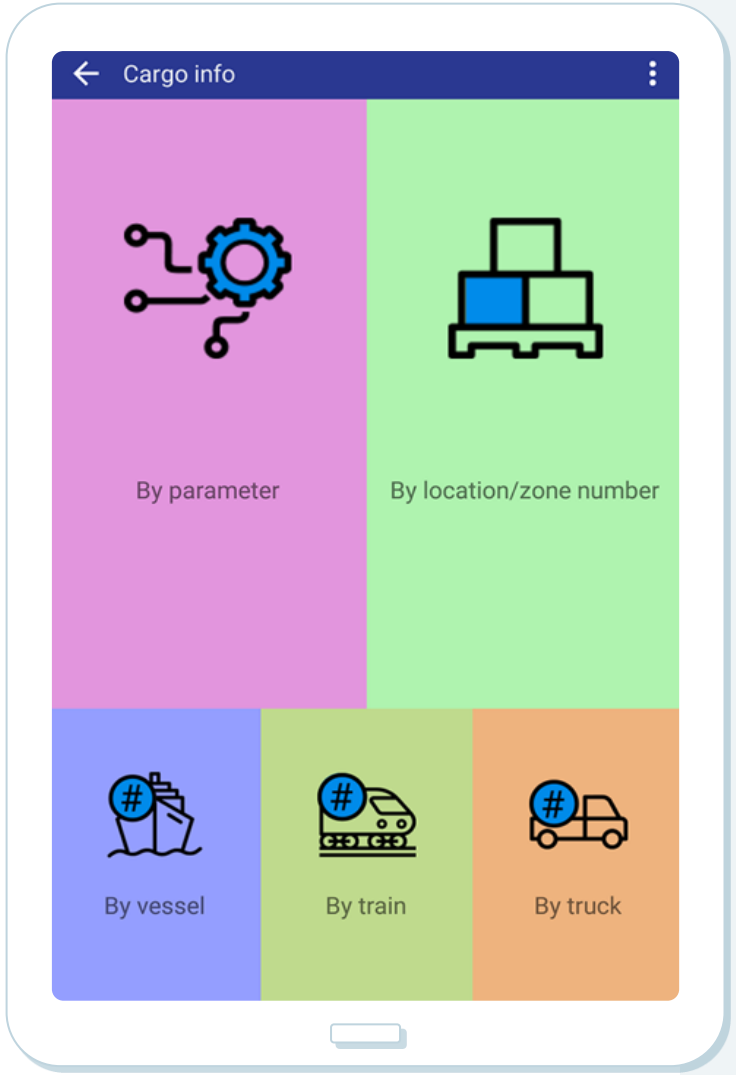
Among cargo characteristics processed by Solvo.TOS:

Package type, weight, quantity, dimensions (length, width, height), marking (label), markers.

For each cargo type the system can have specific characteristics, for example, cars:

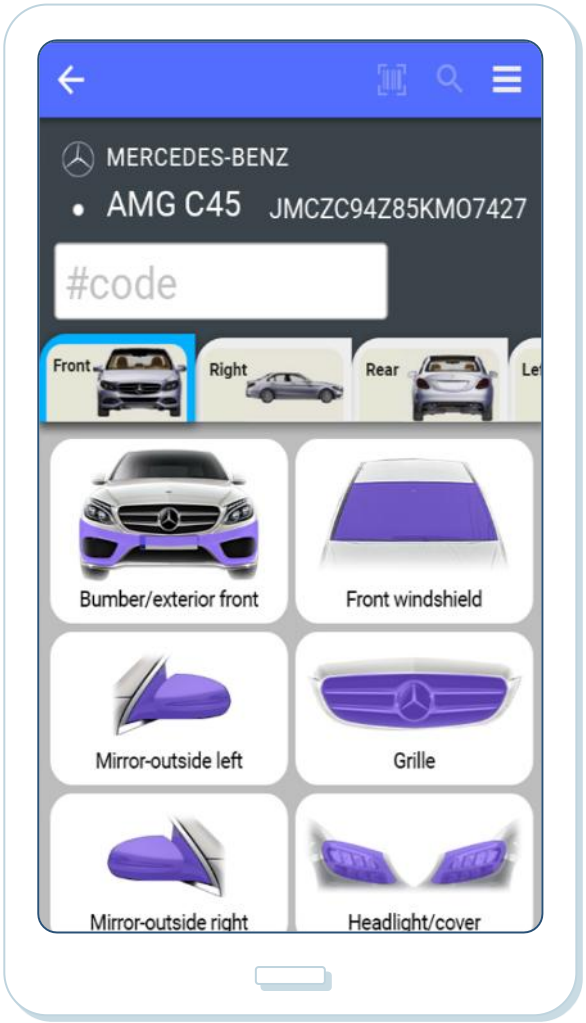
VIN number, color, mode, dimensions (length, width), weight, type.

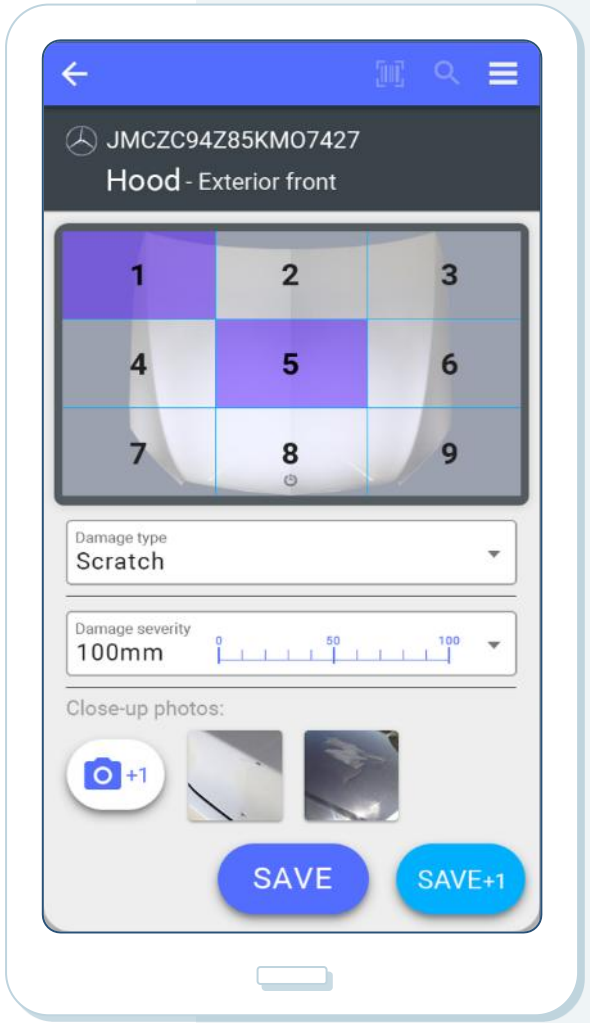
Interfaces for mobile devices



- Acceptance of different types of cargo from vessel, truck and rail
- Registration of truck visits, vessel calls, train visits
- Registration of different yard operations
- Photo-fixation of damages, choosing the type of damage from the list, adding comments
- Scanning features
- Registration of internal operations (Inspection, Repairs, Customs operations)

Survey Mobile application





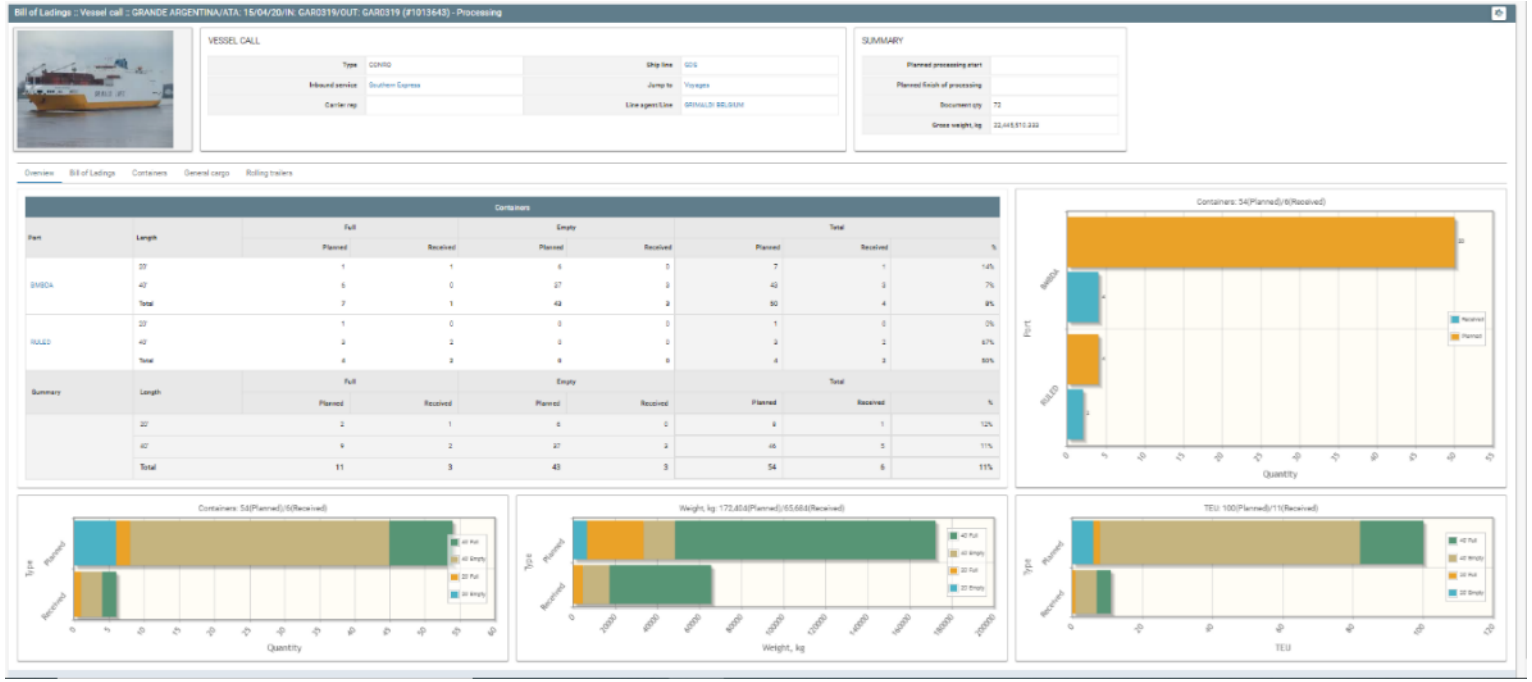
Log-in | Enter survey conditions | Choose surveying zone/ mode | Scan/ enter VIN | Enter survey | View history

The application is based on the AIAG international standard.

The application has flexible settings and according to the weather conditions of the surveyor: before starting the shift it is necessary to set such parameters as time of day, weather conditions and vehicle condition: soiled, clean, snow/ice covered.

The main screen is divided into 3 parts: in the left part we see the instructions for the surveyor, instructions can be created for individual types of vehicles, for different models of cars and for each brand of car.

Speeding up document flow processing

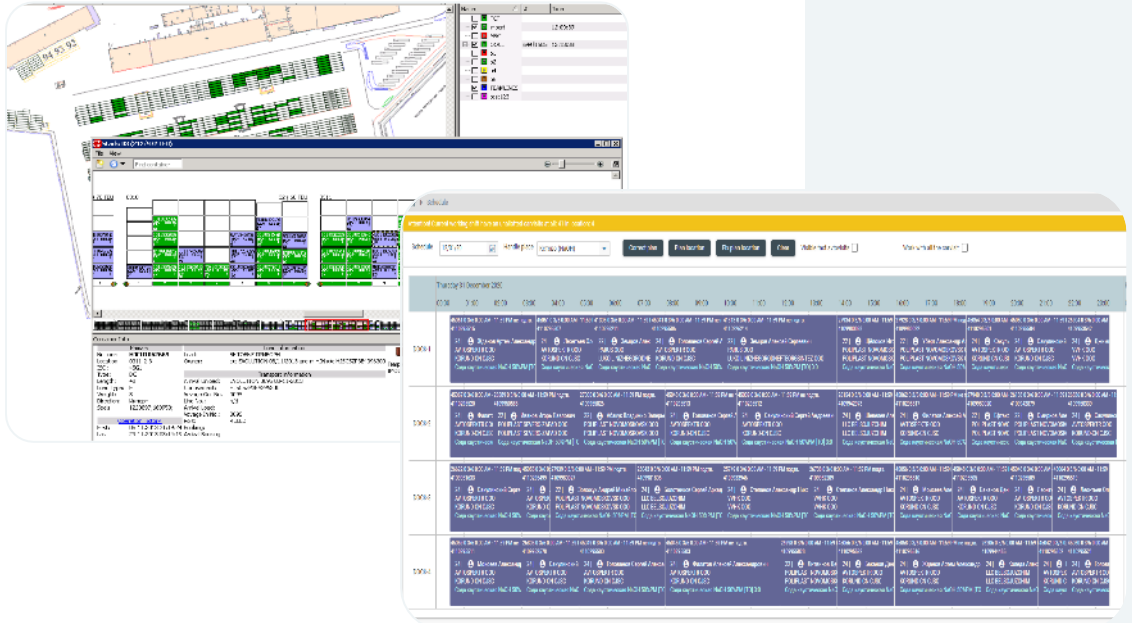


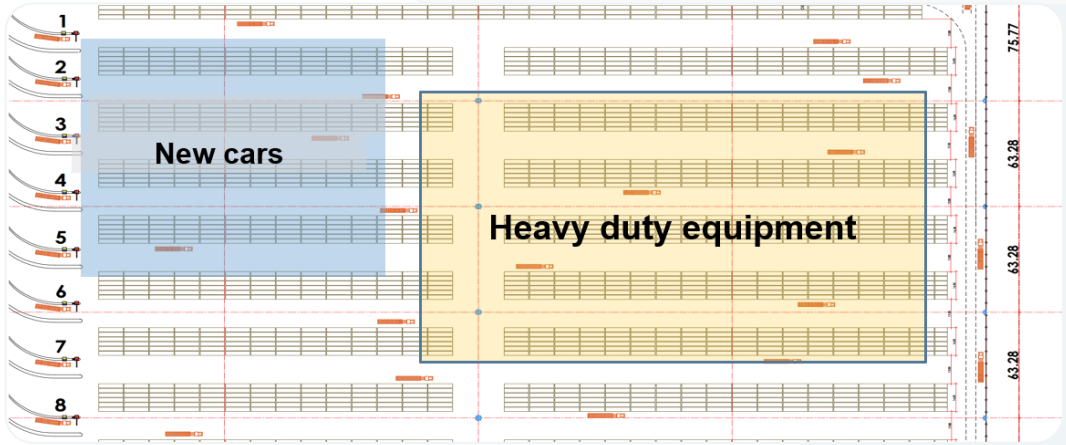
Information about the cargo is taken from documents uploaded in advance, such as bills of lading, bookings and service orders.

Further work on loading and unloading is based on the data obtained from these documents.

The system also allows to visualize statistical data and present them as graphs and charts.

Yard Management



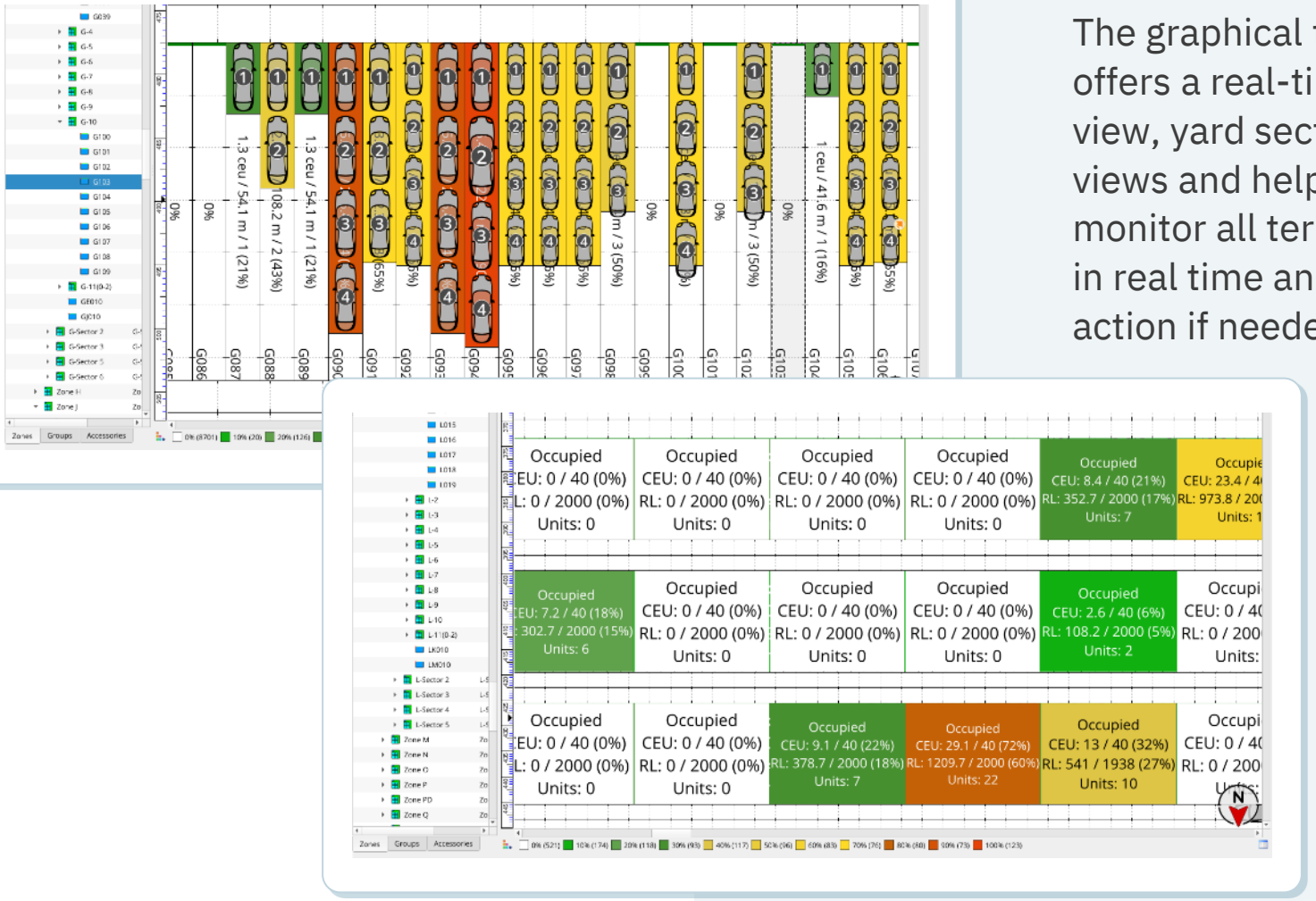


WTM: Graphic terminal layout viewer and editor is used to manage CHEs in the yard and plan routes. The port layout can be viewed and managed in real time allowing to establish a tree-like structure of terminal locations, groups and zone occupancy: Display, edit positions of terminal objects; Monitor the actual level of terminal occupancy in real time; Monitor CHEs and workers in real time; Plan loads and much more.

Dynamic stacking based on rules and strategies The core technology that the system uses to manage operations is automated work order generation based on predefined rules and strategies.

Dock scheduling The system also supports the automatic dock assignment function But before docks can be assigned, planning must be completed. For this purpose, Solvo has developed a graphical interface, visually user-friendly, with which the operator can conduct planning, using drag and drop, and simply move the icons with the booked timeslots, by that optimizing the work of the yard.

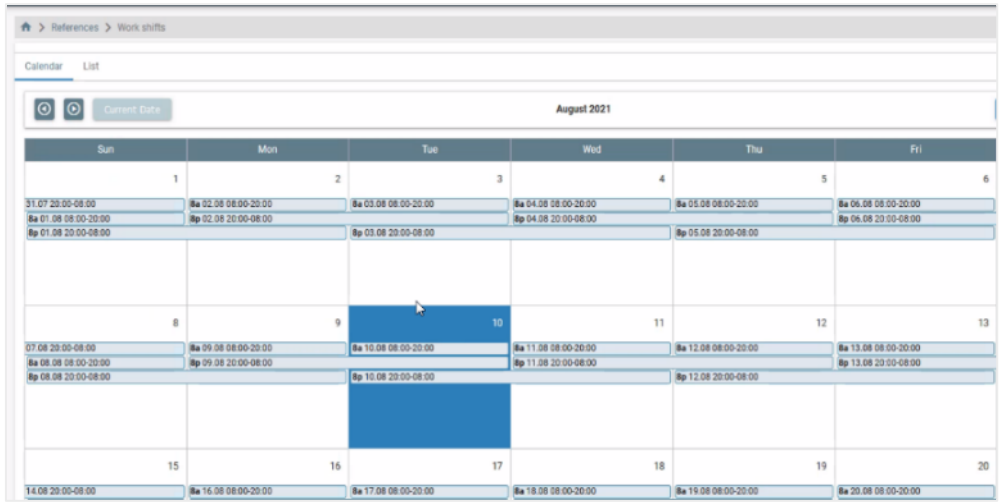
Realtime visibility — yard assets

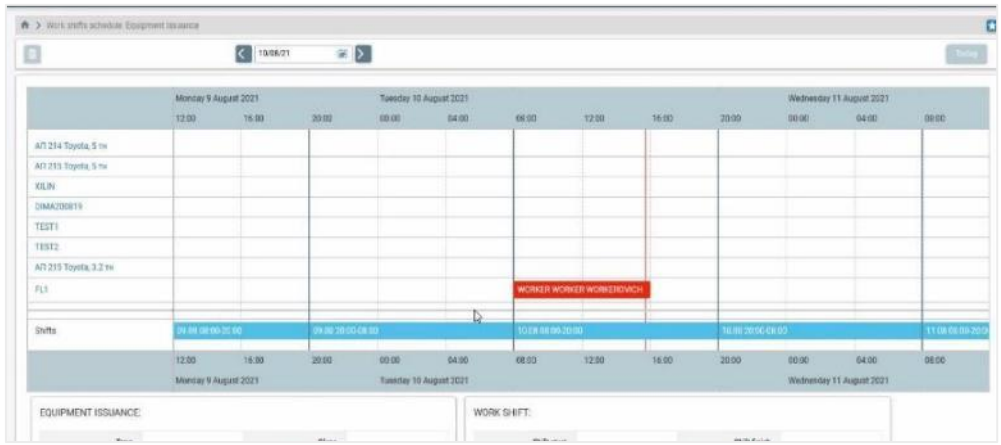


The graphical terminal layout offers a real-time bird's eye view, yard section and yard block views and helps dispatchers monitor all terminal operations in real time and take immediate action if needed.

This is especially effective whenever yard equipment units such as RTGs use GPS transmitters. In this case dispatchers can monitor all actions as they actually take place with no delay. The GUI is customizable with regard to displayed information and design

Personnel & Equipment productivity





The dispatcher plan in advance and then controls the execution of the work-orders, using an interactive terminal map and data received in real time from RDT mounted on vehicles or held by tallymen.

Thanks to aggregating data and reports on employee productivity—either individually or for groups— the system provides visibility where terminals are allocating their labor budgets and help them to optimize human assets.

Optimizing cargo operations in ports and railway terminals

TOS-guided tallyman's operation

- Guiding inspectors by TOS through step by step instructions to the tallyman's RDT.
- Tallyman confirmations of all actions using RDT.
- Tallyman's report of acceptance
  is generated along with the other docs automatically.

Repair-zone management

- TOS instructs: To place the container in a stack; Place the container in the repair zone;
- Forbid receiving of container.
- Exchange data with 3rd party software for repairs and technical inspection.

RMG/RTG optimization

- Automated task generation for loading/unloading for RMG operators;
- Real-time monitoring of cranes using interactive port map.
- Supports optimization algorithms for onboard crane system integration, DGPS-guided RMG operation, etc.

Rail planning and optimization

- Rail planning taking into account flatcar owner, destination station;
- Consider weight and IMO limitations, etc.; FIFO by waybill date, flatcar occupancy by weight.
- Provide block train management including train schedules generation and more.

Implementation efficiency

Client services

Enhanced customer-relationships
with online, real-time data access.

Increase in labor productivity by 20-30%
The number of situations when staff cannot find goods in the warehouse is reduced to almost zero

Complete traceability with operator
and CHE driver history logging

Operating costs

CHE optimization
with predefined routes and proven stacking strategies

The use of storage space is optimized
through the use of the right strategies for the placement of goods and the procedure of density and use of cells: the storage capacity is increased by 5 to 25%

Elimination of unproductive moves, bottlenecks and decrease
in empty runs and stowage errors

Logistics

Maximum space utilization,
increasing from 5 to 20% (depending on area type)

Optimized and pre-defined cargo stacking strategies to reduce reshuffles and costly moves

Locate any cargo
faster and with higher precision

The solution is here!

Maksim Deberdeev,
Chief Business Development Officer

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