A PRECISION OPERATING
SYSTEM FOR INLAND
INTERMODAL
TERMINALS

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SOLVO
The smarter alternative

SOLVO.TOS
INLAND

CONTENS

ABOUT SOLVO

Founded in 1995, SOLVO Ltd. is one of the leading providers of high-end TOS solutions for marine and inland terminals, warehouses, supply chain execution systems for stevedoring companies, logistics operators, distributors, manufacturers, pharmaceuticals and many more.

Quick facts:

160+ TOS and WMS deployment projects

80% market share in Russia and CIS countries

50% of all export containers in Russia processed by Solvo.TOS

5 special configurations: marine container, intermodal, Break-Bulk, Ro-Ro, Multi-purpose

140 employees

4 offices worldwide

50+ partners globally

ISO 9001:2008 compliant

Solvo. TOS

A family of multi-faceted and cost-effective terminal operating systems for any kind of terminal

- Solvo.TOS.Container
- Solvo.TOS.Cargo
- Solvo.TOS.Ro-Ro
- Solvo.TOS.Inland

5 reasons to deploy Solvo.TOS

- Tested and endorsed by some of the the largest terminal operators
- Specialized time-tested configurations for any type of terminal, port or warehouse
- Out-of-the-box price. Tailor-made solution.
- Special affordable solutions for small terminals and ports.
- Wide variety of available add-ons and integration options

KPI	EDI	WEB	AIDC (RDT, OCR, DGPS, RTLS and more)	Labor management	Billing	Invoicing

Solvo. WMS

Solvo's extensive WMS expertise already helps more than a hundrend large and medium companies.

SECTOR-SPECIFIC WMS SOLUTIONS:

- Pharmacy
- Production
- Distribution
- 3PL
- Multi-use Warehouses
- Cargo Terminals

PARTNER PRODUCTS

Supply chain management JDA Solutions	Commodity flow scheduling	Demand forecasting	Automatic reefer monitoring	Business intelligence	Automatic identification and data collection	Automatic positioning systems integration

OUR ACTIVITIES:

1995

Software development

Implementation

HW supply

Systems integration

Consulting

Technical support

1 A number of in-house teams of highly skilled system architects, software developers and testers.

2 Unique approach to deployment. For example, at no extra charge we take care of all team members and not just super-users. And we certainly do fine-tuning - at no extra cost either.

3 Supply, installation and support of RDTs and any other required hardware

4 Solvo.TOS can be integrated with all major ERPs like SAP, Microsoft Dynamics and many other 3rd party software and hardware products

5 Our consultants and analysts will help re-organize or simplify business and technology processes at you terminal to increase efficiency

6 Multi-level 24/7/365 tech support is something we are also proud of. We make sure no ticket remains usolved. We also offer 1 year tech support at no charge. All subscribers get all new releases free of charge.

19
19 YEARS IN OPERATION

CUSTOMERS

Solvo's comprehensive terminal management solutions are already helping some of the largest terminals in different regions of the World.

Inland terminals

Multi-cargo facilities

General cargo

Marine container terminals

Ro-Ro terminals

SOLVO HAS BEEN CHOSEN BY:

Among our happy customers making usy SOLVO.TOS are multinational groups and holdings such as UCL Holding B.V., Global Ports Investments PLC, NKK (the National Container Company) etc.

Solvo's extensive expertise in warehouse automation earned the company a huge acclaim among such multinationals as Pepsico, Gillette, Mars, Proctor and Gamble, Vitek and many more.

"The introduction of Solvo system allowed our company to achieve high-quality optimization of workflow management. The software is capable of solving a wide variety of tasks, from electronic documentation circulation to vessel processing to in-terminal container movement control".

John Scourtis,
General Director
Vostochnaya Stevedoring Company LLC

Some of the biggest sites where Solvo.TOS manages all types of equipment, import/export and transhipment operations

First Container Terminal
St. Petersburg, Russia

Aktau International Commercial Sea-Port
Aktau, Kazakhstan

Modul
St. Petersburg,
Russia

160+
successful projects

FCT
FIRST CONTAINER TERMINAL

First Container Terminal
St. Petersburg, Russia

ULCT
UST-LUCA CONTAINER TERMINAL

Ust-Luga Container Terminal
Ust-Luga, Russia

ULCT
UST-LUCA CONTAINER TERMINAL

Ilyichevsk Container Terminal
Ilyichevsk, Ukraine

LT
LOGISTIKA-TERMINAL

Logistica-Terminal
St. Petersburg, Russia

NCSP

Novorossiysk Commercial Sea Port
Novorossiysk, Russia

NLE

Novoroslesexport
Novorossiysk, Russia

CONTAINER TERMINAL SAINT-PETERSBURG

Container Terminal
St. Petersburg
St. Petersburg, Russia

BCK

Baltic Stevedoring Company
Baltiysk, Russia

VICS

Vostochny Stevedoring Company
Nakhodka, Russia

AKTAU PORT
GATES TO THE WORLD

Aktau International Commercial Sea-Port
Aktau, Kazakhstan

TK

Muuga Container Terminal
Tallinn, Estonia

RIGA CONTAINER TERMINAL

Riga Container Terminal
Riga, Latvia

UST•LUGA
COMMERCIAL SEA PORT

Ust-Luga Commercial Sea Port
Ust-Luga, Russia

MODUL

Modul
St. Petersburg, Russia

ПОРТ

Brooklyn-Kiev Port Company
Odessa, Ukraine

tis
www.tis.ua

Transinvestservice
Odessa, Ukraine

Korsakov Commercial Sea Port
Korsakov, Russia

PINPOINT IT SOLUTION FOR INLAND INTERMODAL

SOLVO.TOS.CONTAINER is a smart and multi-faceted container terminal management system that helps you get the maximum ROI and boost the terminal efficiency enabling real-time management of all major processes such as rail and road transport management, yard operations, empty container handling, intermodal handling equipment management and so on.
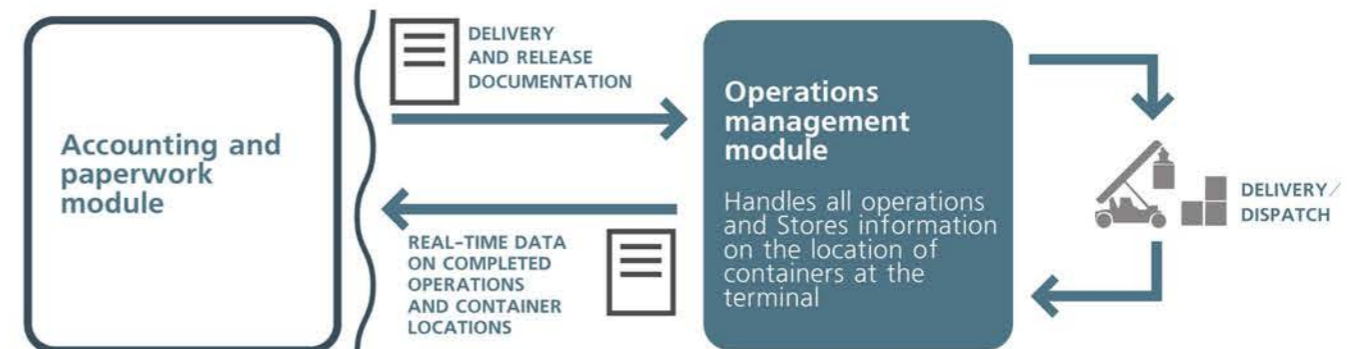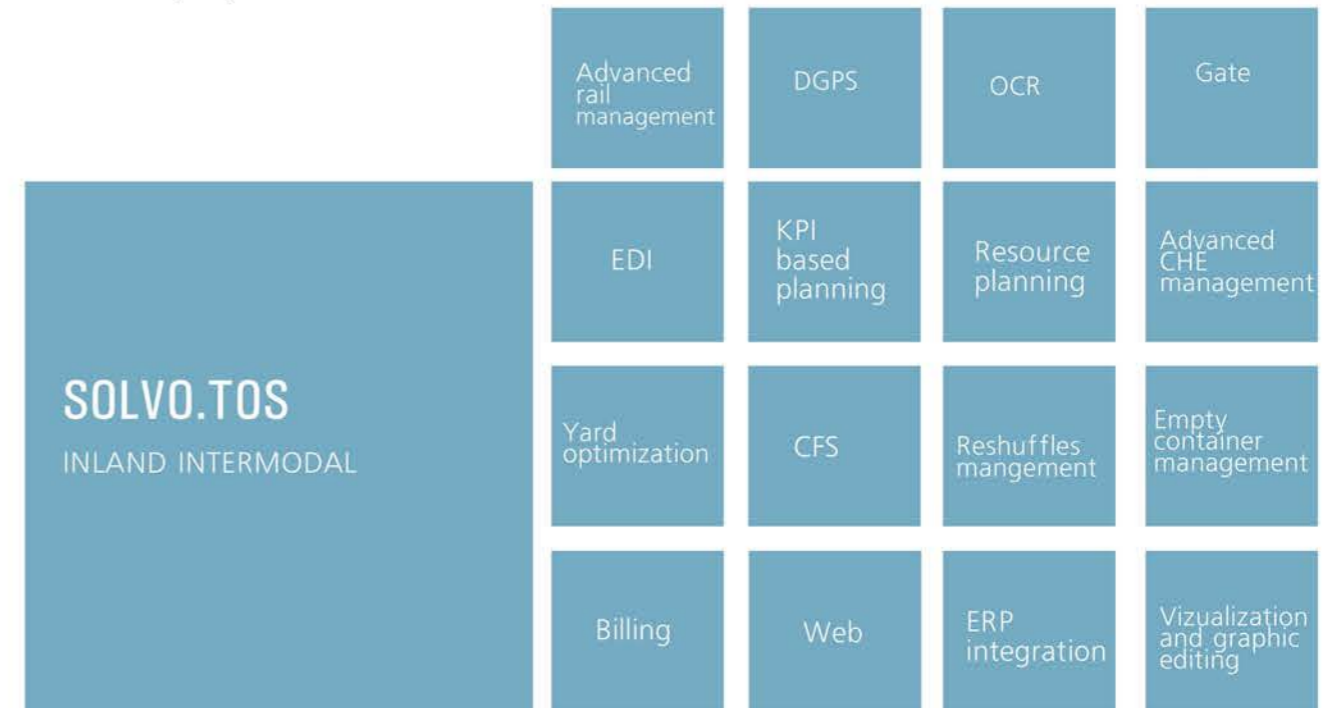
TARGET USERS

Inland container terminals of all sizes

MAIN FEATURES

- Terminal operations planning
- Road and rail transport processing, including multivariable train planning
- Empty container management
- Loading-unloading operations management (incl. reachstacker and RTG-crane management)
- Topology editor
- Data exchange with external systems
- Business activity management (billing)
- WEB-portal
- EDI
- Reefer mechanic process automation
- Customs screening,
- Container stuffing/unstuffing
- Integration with the Solvo.WMS warehouse management system
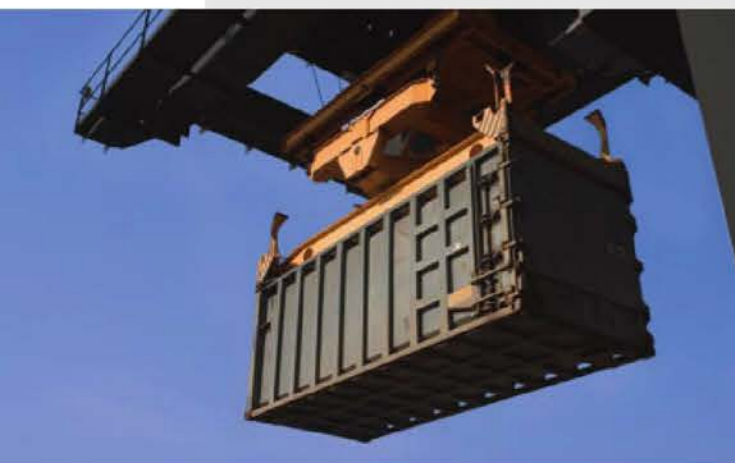
SYSTEM OBJECTIVES

1. Significant reduction in load processing times;
2. Automation of planning operations at intermodal terminal (road, rail, warehouse, empty containers);
3. Minimum number of rehandles during storage;
4. Minimized frequency of errors during container processing
5. Less time expended on processing transport vehicles;
6. Automatic record-keeping of services provided to terminal clients;
7. Just-in-time information regarding load availability and movement for port managers and third-party users

SOLVO.TOS INLAND INTERMODAL	Advanced rail management	DGPS	OCR	Gate
	EDI	KPI based planning	Resource planning	Advanced CHE management
	Yard optimization	CFS	Reshuffles mangement	Empty container management
	Billing	Web	ERP integration	Vizualization and graphic editing

ERP **ACCOUNTS** **GENERAL CARGO TRACKING** **CONTRACTORS**

Accounting and paperwork module

DELIVERY AND RELEASE DOCUMENTATION

Operations management module

Handles all operations and Stores information on the location of containers at the terminal

REAL-TIME DATA ON COMPLETED OPERATIONS AND CONTAINER LOCATIONS

DELIVERY / DISPATCH

IMPLEMENTATION EFFICIENCY

"The deployment of Solvo.TOS allowed us to minimize our costs and down-time at the Terminal and increase profitability. Our plans include further implementation of this system to other areas, which will be improved through this automation process"

Tymoshenko, S. O.,
Executive Director of "Modul",
inland intermodal terminal,
Saint Petersburg

CLIENT SERVICES

- Accelerated transport (truck, rail) processing at the terminal using preliminary data and time-slotting

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

- Improved control with direct commands to vehicle-mounted radio data terminals

- Complete traceability with operator and CHE driver history logging

- Superior service quality for freight owners with up-to-date container information

OPERATING COSTS

- CHE optimization with predefined routes and proven stacking strategies

- Rational equipment/labor utilization

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

- Conservation of fuel and energy, reducing mainte-nance costs and increasing equipment lifespan

LOGISTICS

- Streamlined and optimized mechanical processes involved in cargo flow at the terminal

- Complete control over cargo flow

- Maximum space utiliza-tion, increasing from 5 to 20% (depending on area type)

- Locate containers faster and with higher precision

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

PERSONNEL MANAGEMENT

- Identify potential problem spots before they affect productivity

- Eliminate work clashes and unproductive tasks

- Reduced workload and higher performance due to smart labor distribution

- Increased personnel produc-tivity (by 15–25% on aver-age)

REPORTS AND DOCUMENT MANAGEMENT

- Facilitated data exchange between parties involved in cargo handling operations

- Online access and automatic report delivery

- Reduced frequency of commercial rejection

- Quickly create custom or template-based reports

- Reduced paperwork

- Single-point access, unified information space

15-25%

INCREASE IN WORKFORCE PRODUCTIVITY

TIME-COST EFFICIENCY
PIN-POINT CONTAINER TRACKING

RELEVANT/UP-TO-DATE
CONTAINER INFORMATION

YARD PLANNING AND OPTIMIZATION

«Solvo completely eliminated the need to search for containers on paper since all containers registered by the tallyman are automatically entered into the system along with all accompanying data i.e. container type, length, seal numbers, and any container damage, if it exists.

The amount of rehandles was significantly reduced. Solvo.TOS takes advantage of pre-defined, rational stowage rules and strategies to allocate containers after they are discharged from the vessel or train as well as after screening operations.»

CONTAINER
TERMINAL
SAINT-PETERSBURG

A.Serov, senior dispatcher,
CTSP

Yard stowage planning – automatic/manual modes

The system can automatically plan optimal positioning of containers throughout the yard using predefined rules and strategies that take into account multiple sets of parameters such as current equipment location, container type, priority decking and many more. The system allows configuring specific sets of rules and strategies for import/export containers, transshipment and empty depot.

The optimization helps avoid traffic congestion, reduce empty runs, unproductive container moves and facilitate locating a specific container.
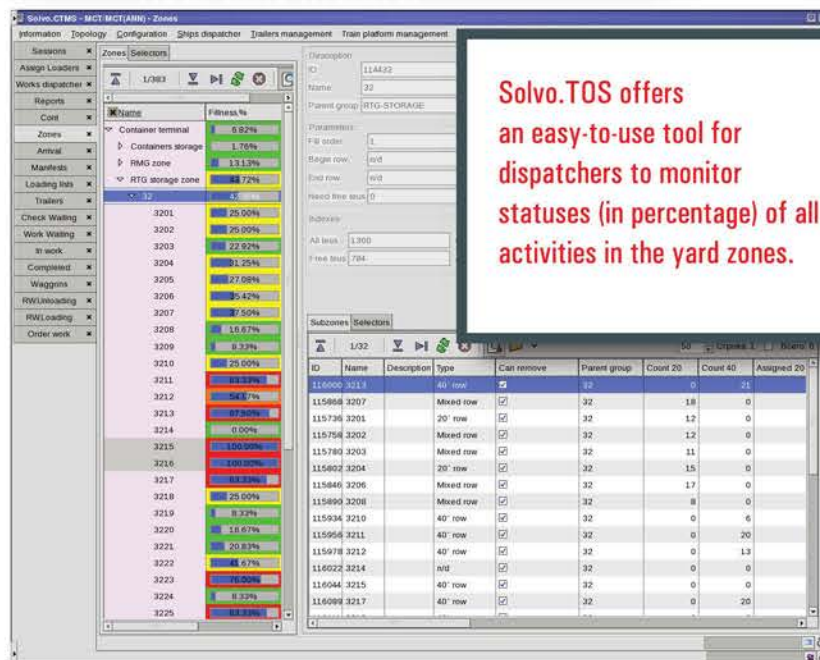
Solvo.TOS offers an easy-to-use tool for dispatchers to monitor statuses (in percentage) of all activities in the yard zones.

Real-time monitor

If for some reason the system is unable to automatically assign a yard position to an incoming container, the yard dispatcher can take over and plan the container anyway by using the flexible manual planning function. This gives him full control over what happens on the yard at any time.

Graphic topology planner and real-time view

The graphical terminal representation offers a real-time bird's eye view of the terminal and helps dispatchers monitor all terminal operations in real time and take immediate action if needed.

The illustrative graphic editor enables planners:

- Configure the multi-level topology including zones, set new occupancy parameters, create, manipulate or update yard areas and objects and execute planning related actions directly from the graphical terminal view on the spot and with minimum cargo handlings.

- Analyze current situation and configure stowage rules and strategies to optimize terminal activities

The dispatcher can drill down to see detailed real-time info on specific zones, containers or equipment with just one mouse click. This is especially effective whenever yard equipment units such as RTGs and RMGs or straddles use GPS transmitters. In this case dispatchers can monitor all actions as they actually take place with no delay./

The GUI is fully customizable with regard to displayed information and design.

YARD PLANNING AND OPTIMIZATION

IMDG management

Using rules and strategies automatically manages yard stowage with respect to IMDG cargo.

E.g. controls the distance between IMDG cargo when stowing containers in accordance with allowed distances and IMO codes.

Empty container management

• Effectively interact with holders regarding the issuing of empty containers

• Minimize expenses on empty container operations

• Automatically optimize operations in empty contaner zone taking into account various parameters such as storage period, rehandles, etc (FIFO/LIFO)

• Keep track of all operations in real time

CFS and additional yard operations

CFS

• Effectively automate all operations involving stuffing, unstuffing, and restuffing containers and rolling equipment at the terminal.

• Mange other operations such as container cleaning, generator connection, removal of hatch covers etc.

• Manage returns

• Container inspection

Screening

• Efficiently manage operations related to customs and client screening of loads at the terminal

Customs relations

Expedite customs clearance Manage all related workflow (e.g DO1, DO2 handling, xml formatting for compliance)

Weighing

Thanks to the supported integration with weighing equipment one can:

• Automatically receive weighing information from the scales

• Reduce expenses for moving the dispatcher to/from the scales

• Eliminate the possibility of error when entering the weight in the System

Reefer storage zone management
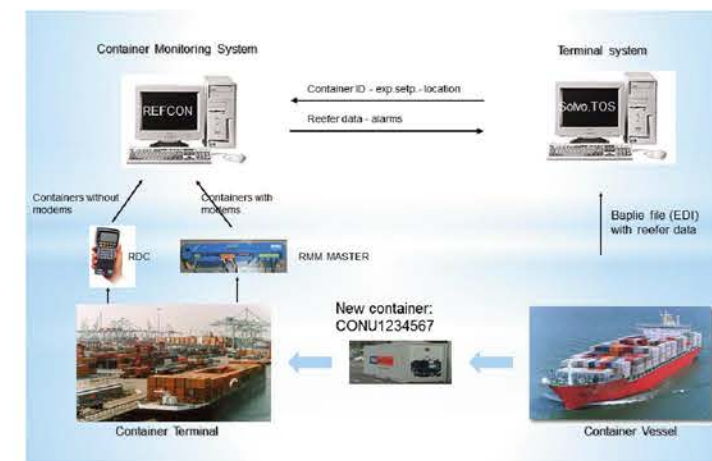
Integration with automated ref-monitoring systems such as EMERSON Refcon

• Organize automatic job issuing sequence for processing reefers while taking into account the job sequence and the need to quickly connect the container to a plug

• Prevent failure to comply with the temperature requirements by notifying the dispatcher about a container that is close to exceeding the appropriate temperature range

• Localize reefer problems (damage) and organize jobs to notify holders and resolve problems

• Receiving results of reefer status monitoring and performed operations

• View real time information about statuses of reefer containers sent from the automatic reefer monitoring system
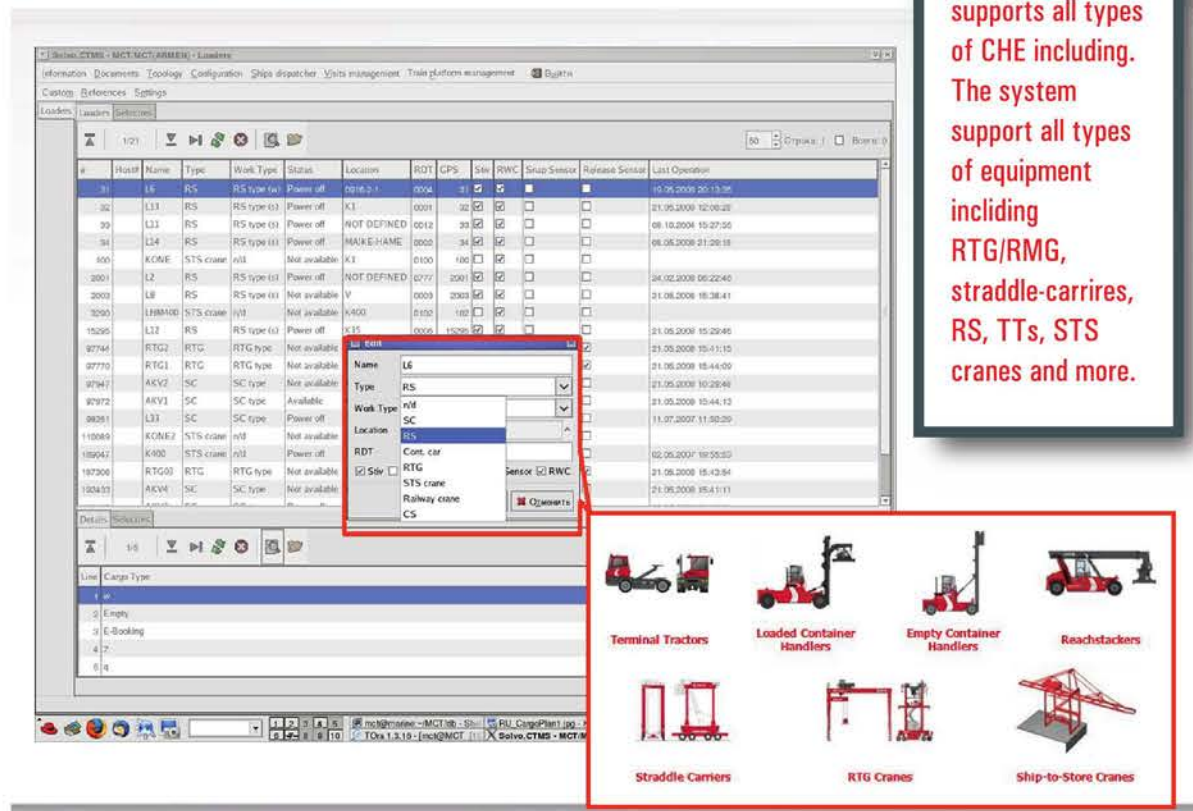
EQUIPMENT CONTROL

KEY FEATURES

- Full support of all known types of equipment used at the terminal
- Automated job assignment to CHE via RDTs
- Automated job assignment to tallymen/receiving inspectors/dockers via RDTs
- Equipment positioning (including GPS/RTLS integration)
- Onboard crane systems integration
- Patent-pending STS-crane operator's mount RDT-based management tool
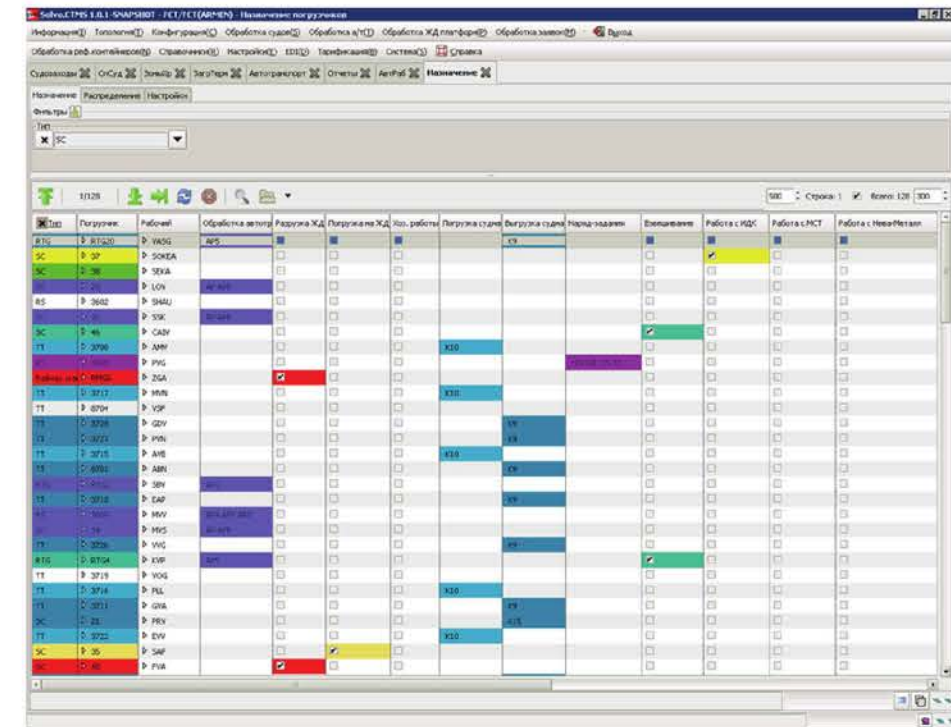
Types of equipment

The system supports all types of CHE including. The system support all types of equipment incliding RTG/RMG, straddle-carrires, RS, TTs, STS cranes and more.

Automated job assignment to CHE via RDTs

Allows efficient on-the-fly equipment control (issue and monitor jobs) in real time. Specially designed light-weight and unbelievably easy-to-use RDT GUI allows operators to handle jobs real fast and avoid errors.

## Automated job assignment to tallymen/receiving inspectors/dockers via RDTs

Allows keeping a real time record of transport vehicle arrival/departure as well as discharging, receiving, picking, and shipping of loads at any location.
Among other things is used to describe load damages (defects) via the RDT interface, issue instructions for stowage operations or equipment moves, etc.

EQUIPMENT CONTROL

Integration with on-board crane systems (Kalmar smart Path, Konecranes C-Pics, Liebherr)

SOLVO.CTMS integrates with vehicle-born positioning systems via RS-232.
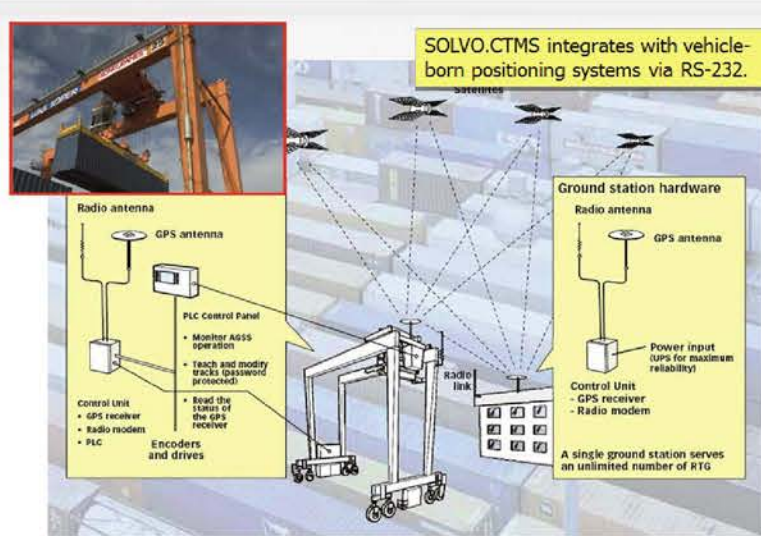
Integrates the global positioning system (GPS) with the system's receivers that are either portable or mounted on the handling equipment and utility vehicles as well as integrate with grab sensor devices or on-board load positioning systems.

• Determe the coordinates and the location where the load was taken or stowed when the load was grabbed or released by the CHE
• Receive the status of load gripping mechanisms and equipment coordinates from on-board systems: Kalmar Smart Rail, Kalmar Smart Path and Konecranes C-Pics
• and more

Integration with the Konecranes Autostop system

Allows semi-automatic RTG/RMG management of Konecranes-produced cranes.

• Automatically create jobs to move cranes to the given stack location
• Receive confirmation from the Konecranes Autostop system about the transfer of the crane and spreader to the assigned position

Equipment positioning

angle:46,33
x=1669, y=4
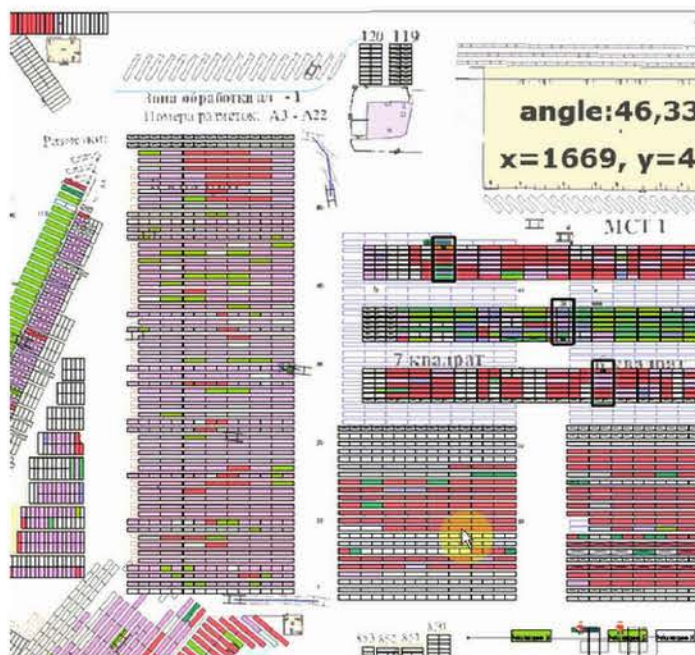
Allows the use of GPS receivers, RTLS systemsfor real-time monitoring of all operations. Thanks to this feature dispatchers for example, using a graphic representation of the yard can see all the equipment moves just as they are happening. One can even trace equipment routes using a schematic tracking feature.

## Graphical user interface for crane operators' workstations (STS, RTG, RMG, etc)

A special GUI for quay crane operators. Installed on the mounted radio terminals inside the STS cabin. The operator can easily receive and confirm completion of jobs for loading/discharging containers in real-time — all done with a slide of a finger using a touch-screen functionality.

RAIL OPERATIONS AND PLANNING

Rail-load planning
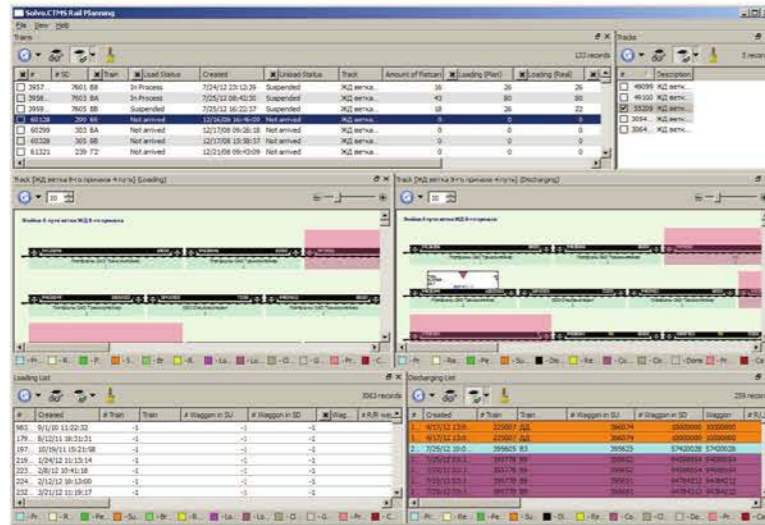
Thanks to the specially designed GUI the system helps planners and dispatchers manage all operations with inbound and outbound freight rolling stock

- Visual display of rail car loading/unloading schematics
- Advanced rail planning in automated and manual modes
- Container loading/unloading management
- Platform configuration selector
- Outbound/inbound trains registration

Rail load processing

Efficiency

· Increased import/export planner effectiveness for rail cars
· Reduced time required to process paperwork during rail car arrival/departure
· Less time-consuming load receiving process by tallyman (acceptance-delivery inspector)
· Real-time monitoring of railcars at the terminal
· Reduced railcar list creation time as they are arriving/departing from the terminal (due to integration w/ OCR)

· Registration of train blocks with specification of required parameters for each rail car
· Registration of rail car departure
· Grouping of railcars into a block, performing operations with each rail car, train block or with the whole train
· Monthly import/export railway transport planning
· Work-order management for shipping loads via rail
· Rail waybills management
· Registration of loads by the tallyman (receiving inspector) with the option to select a rail car or flatcar based on cargo characteristics
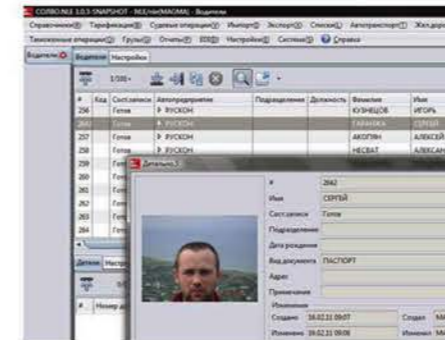· Integration with OCR technology
...and many more

GATE MANAGEMENT

Truck scheduling and gate access automation

Gate management

The gate operations module significantly eases truck visit registration and related paperwork allowing to get rid of the long lines of vehicles outside the gate and at the same time to increase gate security.
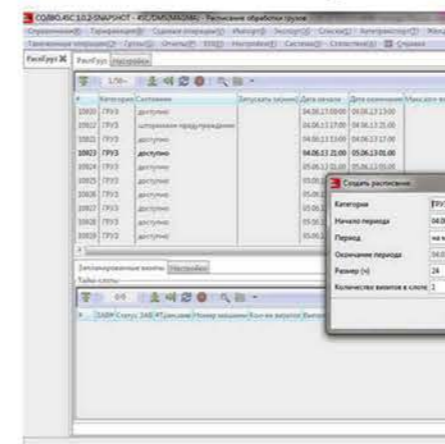
Gate access control

Automate the process of issuing permits to truck drivers.

- Register new entry permits for truck drivers and vehicles specifying the validity period.

- Control formalization of visit requests and visits directly for only accredited drivers and vehicles.

- Full E-signature support preventing theft and errors

Truck scheduling

Each time slot is determined by the maximum number of transport vehicles (by category), which can be processed during the time assigned.
Solvo also can offer special self-service kiosks with specialized GUI allowing truck-drivers to register their visits on the spot and subsequent automatic queuing of drivers in accordance with the optimal yard strategies.

Web access

The remote access allows to grant remote access to the System via the Internet (or local terminal network) for viewing reference information about terminal operations.
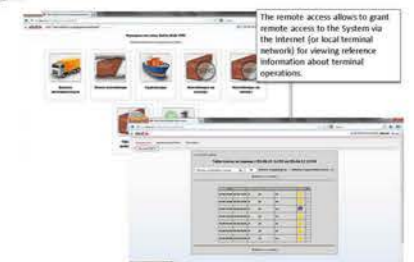
OCR and AAC integration
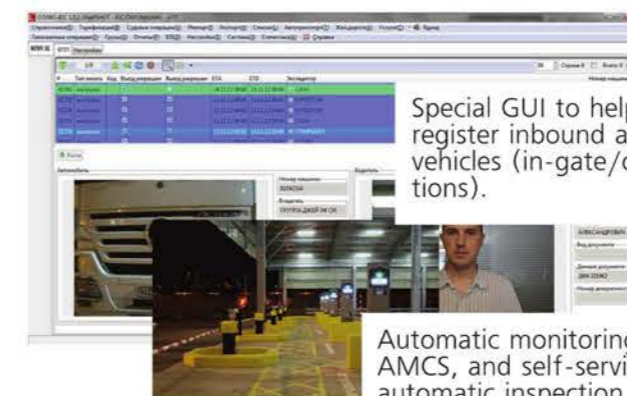
Special GUI to help monitor and register inbound and outbound vehicles (in-gate/out-gate operations).
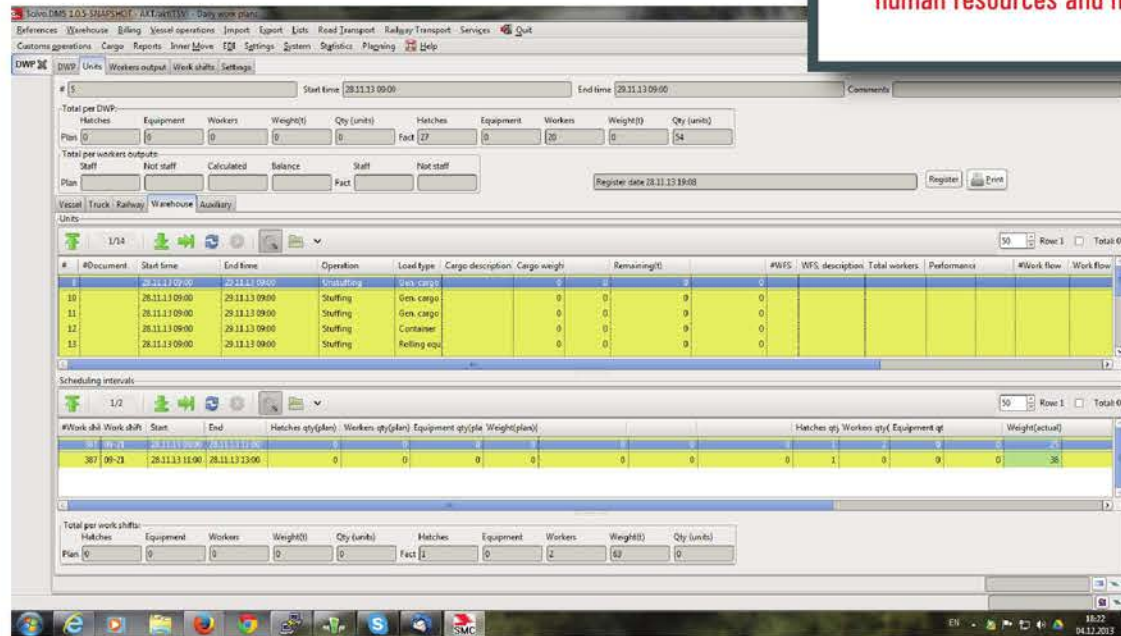
Automatic monitoring using OCR, AMCS, and self-service kiosks for automatic inspection and management of vehicles at the gate.
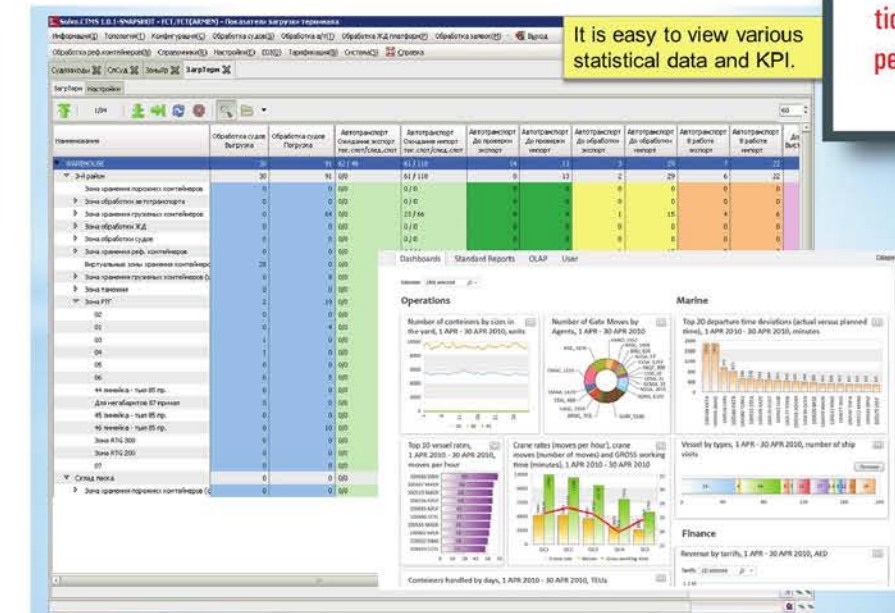
LABOR MANAGEMENT

Resource planning

The resource planning module is used to plan operations performed at the terminal as well as for allocating necessary human resources and machinery.

Main Features

• Create unified daily work plans (DWP) distributing jobs by type: vessel, road, rail, warehouse and accompanying jobs
• Creating operation flow-charts with established standard resource quantity and target capacity
• Operative planning of operations at the warehouse, specifically, adding scheduled operations to the DWP based on flow-charts with the ability to edit schedule work parameters
• DWP job distribution by terminal work shift
• Track work progress for a selected DWP
• Automatically assign open jobs at the terminal to a created DWP
• Automatically bind works performed independently to a corresponding DWP
• Create terminal requirement reports for resources and machinery for a specific DWP as well as for separate work shift.

Efficiency

• Effective planning of terminal operations as well as simplified shift transfer process between terminal dispatchers

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KPI DASHBOARDS

Key metrics, reporting and analytics

The terminal performance indicator module gives the user the opportunity to monitor the performance at all terminal work areas in real time and receive detailed JIT information about active equipment and personnel.

It is easy to view various statistical data and KPI.

Main Features

•Supports more than 60 key performance indicators to be used a as benchmark
•Supports both operational level and external level indicators• Notification system for alerting users about inefficiencies and problem spots at the terminal by activity and operation type.
• On-the-fly assignment of strategic priority during operations.
•The productivity of various operations and equipment performance is displayed in real time
•The drill-down functionality allows the user to get detailed information about each individual operation in the detail monitor

Efficiency

• Access to online information regarding the performance of all terminal operations.
• Highly detailed data when monitoring :
    • Vessels undergoing loading/unloading and occupied technical equipment;
    • Docks and all active operators;
    • Workers registered in the system.

WEB

Web access for terminal customers and other parties

Solvo.Web Functions

Reset all filters and sortings for tables

Truck Visit

Container Details

Vessel Visit

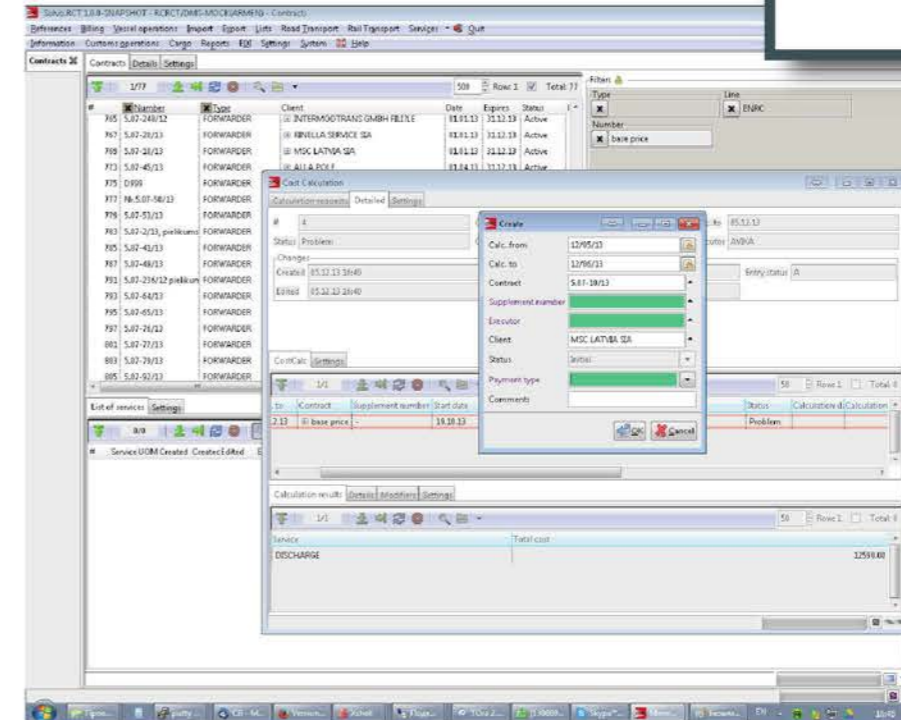Containers for Export

Containers for Import

Power Of Attorney

Account Management

Providing a web portal to shipping lines, forwarders, etc to schedule containers, trucks; view inventory, invoices, reports and other information makes the interaction process much easier, more transparent and cost-effective for all the parties involved.

Key Features

• Receive real-time (status) information regarding requests and stock via the internet, simply using a web-browser

Efficiency Benefits

•Increased speed of data interchange
•Reduced workload for warehouse operators
•Maximized data transfer security

Advantages

• Access for clients/suppliers to real-time information regarding their loads, orders and other info
• Web-request feature
• Formalization of receiving/shipping documents via the internet
• E-signature technology reduces paperwork and maximizes security during load handling operations

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BILLING

Accurate calculation of charges for terminal services

Helps improve billing accuracy and service, capture accurate charges on a client-by-client basis and increase profit margins.

Key Features

•Can be web-based
•Seamless integration with ERPs

Advantages

•Custom configurations for each individual client
•Creation of custom pricing plans
•Ability to perform required calculations using a system of ratios depending on SKU properties, storage zones, contract terms, etc.

Efficiency Benefits

Helps to ensure maximum revenue and minimal billing cycle time by enabling activity-based billing of each client according to their distinct attributes.
Appropriate charges are automatically generated for storage of goods and any other services

INTEGRATION WITH EXTERNAL SYSTEMS AND EDI

SYSTEMS INTEGRATION
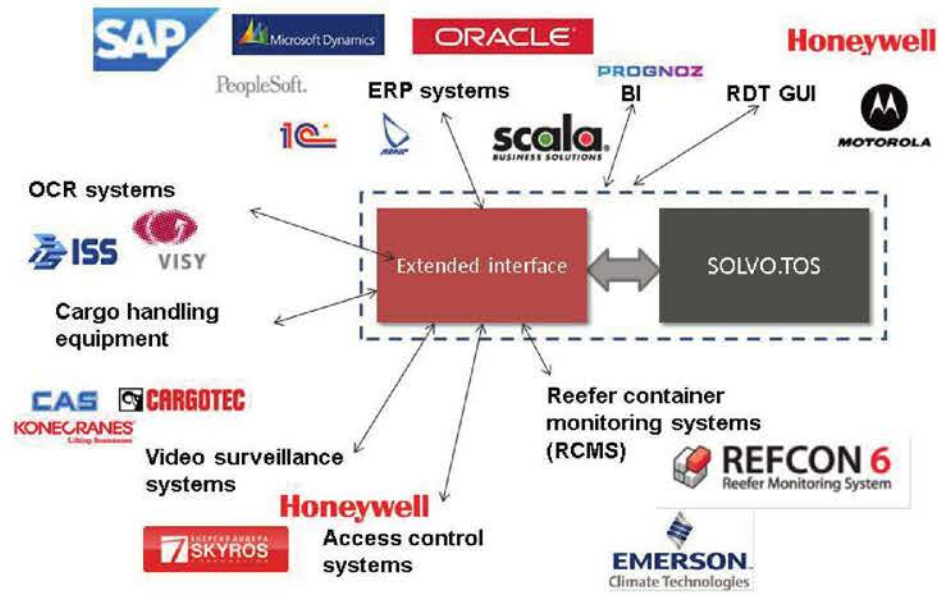
## EDI (Electronic data interchange)

The EDI (Electronic data interchange) module allows easy communication between a terminal and its contract partners (most importantly shipping lines and forwarders).

The module transforms data sent from contract partners into mutually approved file formats and saves them in the management system's database.

Features:
· Create service messages (APERAK) with information about the results (status) of EDI message processing
· Create and edit initial codes used for transforming EDIT messages by the user
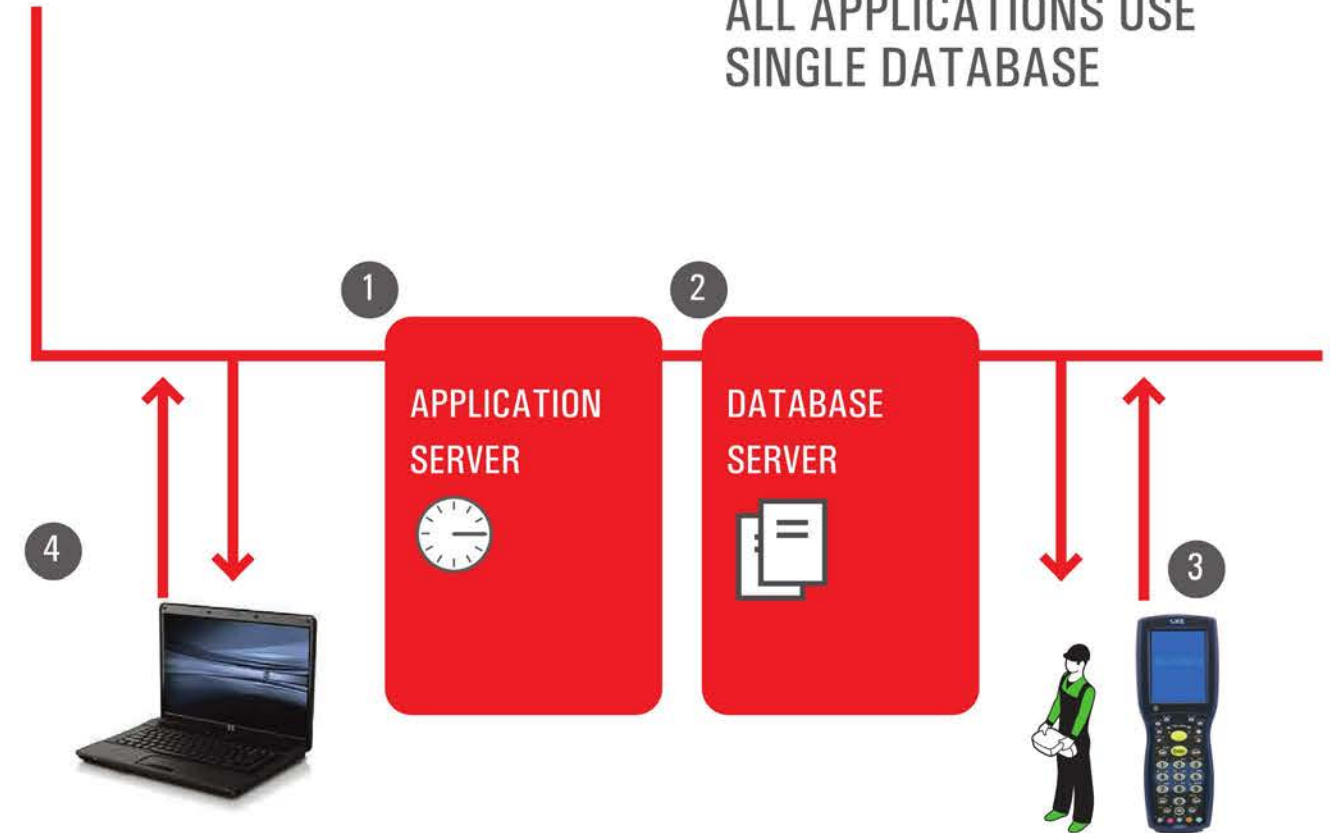· View EDI messages and monitor their transfer status

All popular messages are supported including: BAPLIE, COARRI, CODECO, COPARN, COPRAR, COREOR, CUSCAR, MOVINS, IFTMBF
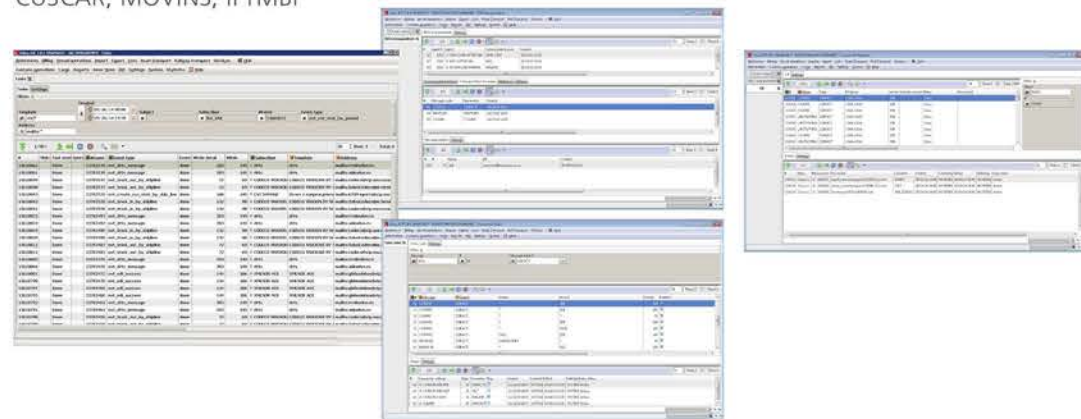
SYSTEM ARCHITECTURE

A UNIVERSAL, EASY-TO-CONFIGURE AND SCALABLE SYSTEM

ALL APPLICATIONS USE SINGLE DATABASE

1 APPLICATION SERVER
The scheduling system (scheduler) responsible for in-line event processing, optimization of container transfer work and assigning tasks to terminal employees (delivery agents, container car drivers, dispatchers) is located on the application server.

2 DATABASE SERVER
The DBMS, where information needed for system work is stored, is located on the database server.

4 PC client UI and GUI
Thin client, user-friendly GUI, multitasking, easy-to-configure and operate, regular technical documentation updates in sync with system updates

3 USER-FRIENDLY RDT GUI
Friendly graphic interface tailored for different handheld and mounted devices. Data entry by hand is minimized, features incorrect data entry warnings.

5 WEB CLIENT
Browser based client allows granting controlled access to 3-rd parties: shipping lines, forwarders, port authorities