



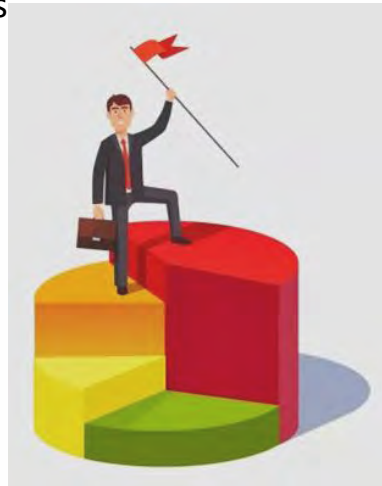
# Efficient Automated Management Of Any Cargo Handling Operations And E-Billing for the African Ports Based on Integrated SOLVO IT-Solutions

*Giovanni Migliaccio,  
Vice President Sales & Marketing, Solvo Europe B.V.*

## Who we are:

**SOLVO** is an international leading 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.

**Ready for new challenges.** We take on the most complex and specific projects that are beyond the power of others.

**Work for result.** Any project that we carry out, we bring to the end.



**27 years experience**



**24/7/365 support**

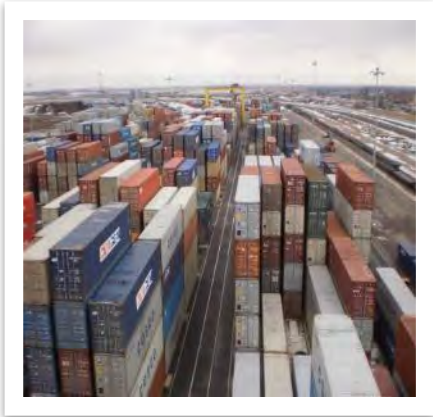


**5 offices worldwide**



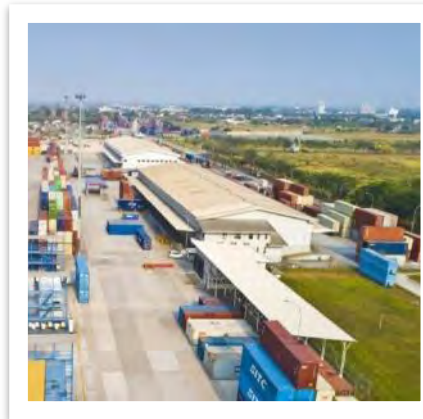
**400+ projects**





## 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.



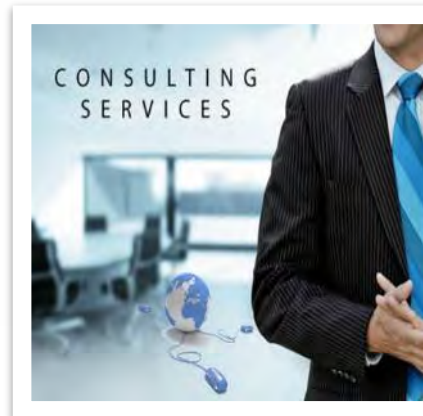
## Solutions for managing yard

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.

**400+**  
projects





**Moving to Global Supply Chain**

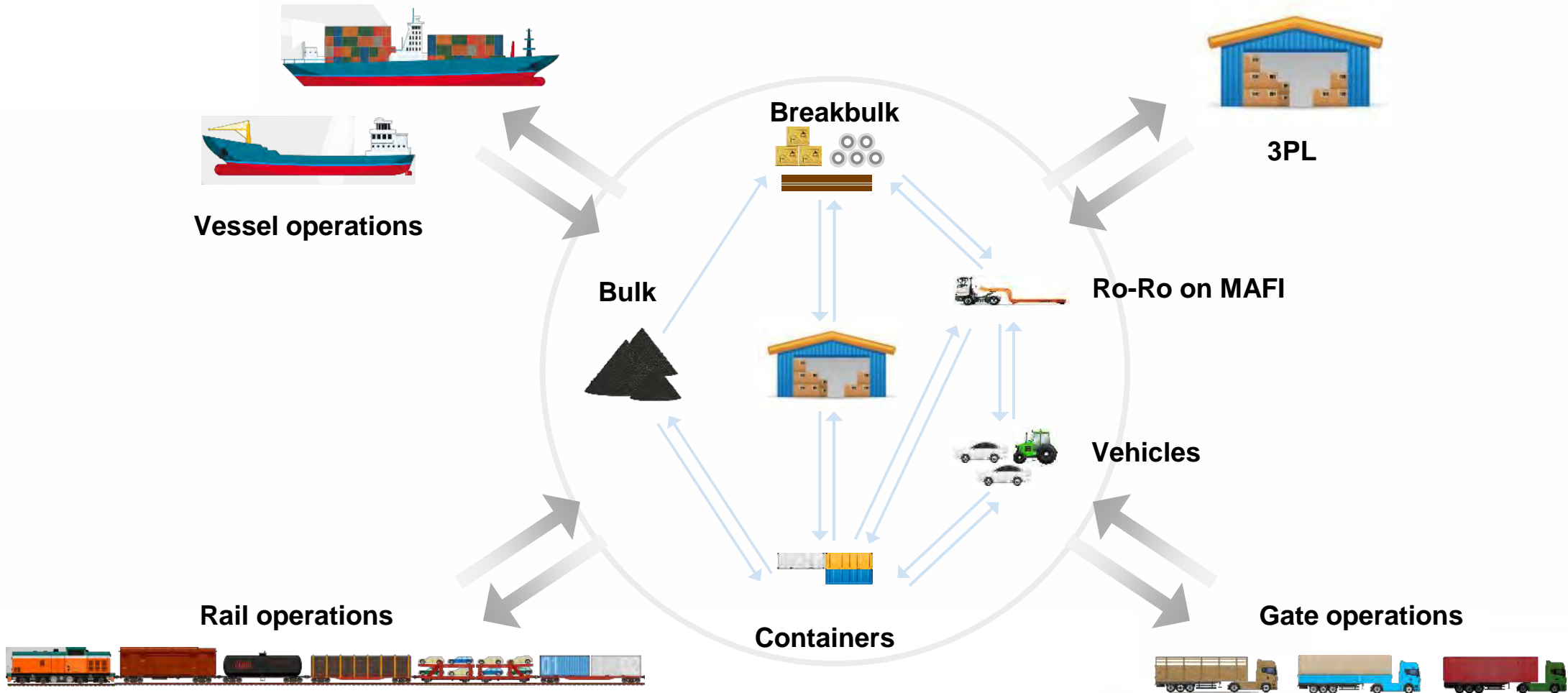
**Global Information Environment Connecting All the Elements of the Supply Chain**

**End to End visibility - to final customer**



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







- ① The different document format leads to problems with information exchange between various stakeholders in the supply chain;
- ① Poor planning cause delaying with the cargo delivery time and confusions due to lack of required information;
- ① Inability to track the status and current location along the extended Supply Chain ;
- ① Manual planning of personnel and equipment operations not feasible due to the increase of task and works, impacting into the processing time significantly.



## Solvo.TOS for Marine and Inland container terminals

**Containers**



## Solvo.TOS.Cargo for Multipurpose terminals

**Break Bulk and Ro-Ro,  
mixed cargo**



- *Ro-Ro*
- *Break Bulk, Bulk (fertilizers, grain, pellets);*
- *Goods packed in bags and boxes (sugar);*
- *Construction materials;*
- *Sawn material, round timber;*
- *Metals (ferrous and non-ferrous);*
- *Food, including perishable food;*
- *Paper (rolls, pallets) and pulp;*
- *Metal waste, machines;*
- *Warehouse inventory*

## Solvo.TOS platform

**KPI Module**

**VBS Module**

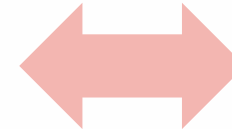
**GOS Module**

**The system** is creating for every cargo type dedicated business rules, with precise definition of what can be done with them, by whom and when.

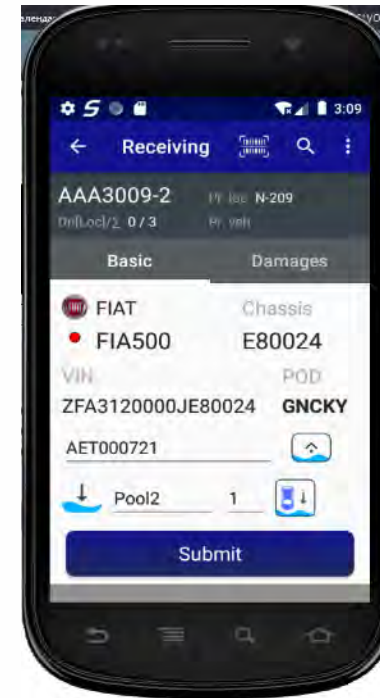
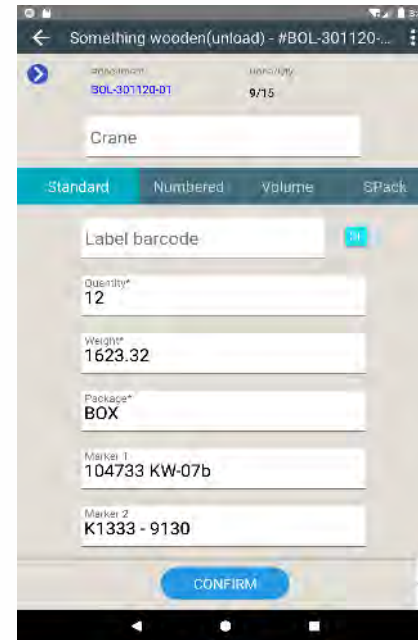
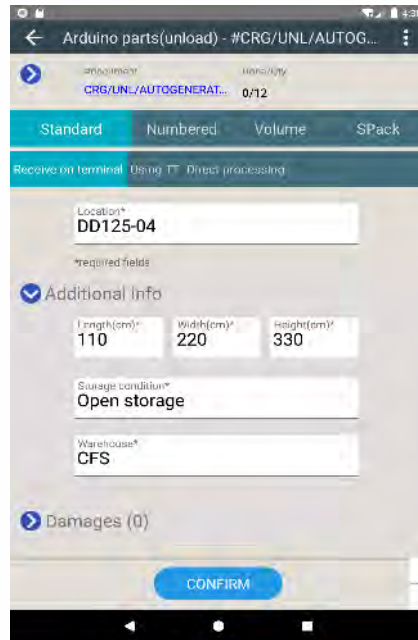
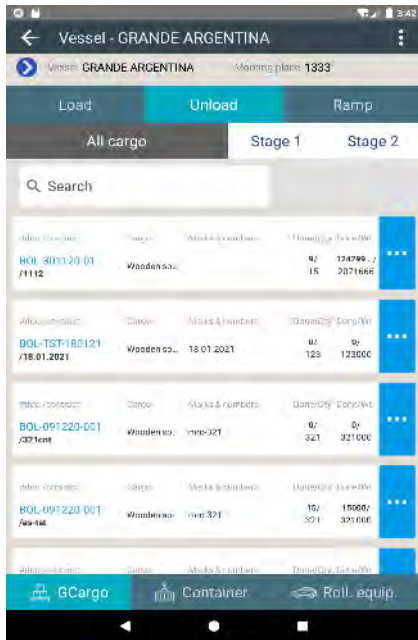
**Solvo.Yard**

**Palletized and piece loads**

**Solvo.WMS**  
warehouse management





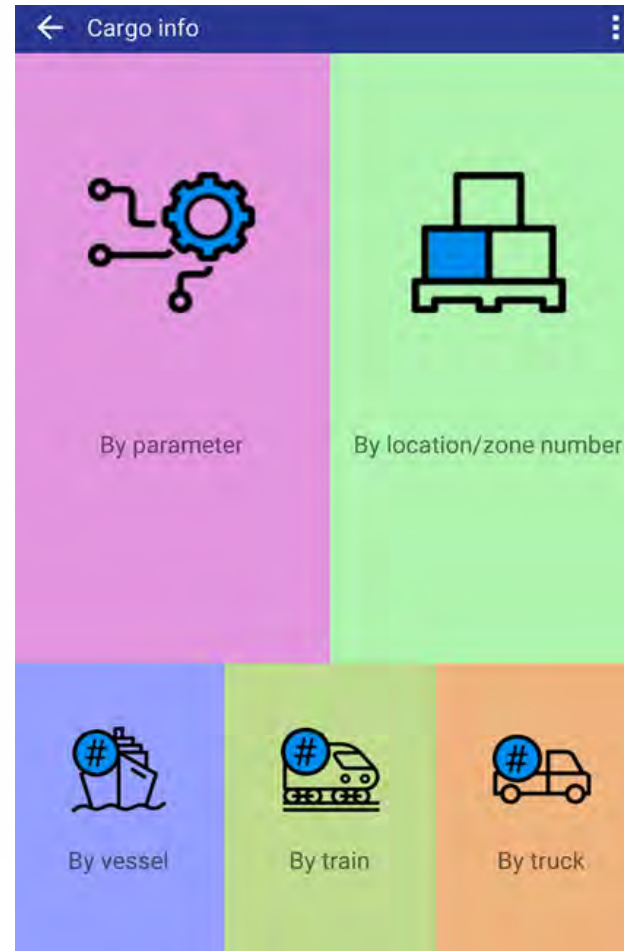


**Among cargo characteristics processed by Solvo.TOS:**

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.



- 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).



# Single ecosystem to manage all types of cargo



Solvo.TOS helps to integrate several terminals into a single ecosystem, ensuring their interaction in a single information space.

This can be several facilities that are remote from each other: for example, the main marine terminal and additional dry container terminals. And it can also be interaction in a single information space between the port and counterparties, logistics companies, and customers.

An example of implementing such ecosystem is **Sogester**, which has several terminals in Angola. With this whole user-friendly ecosystem, employees can connect to any of the systems online from different offices, and all data will be automatically synchronized. In fact, this is exactly what is expected for an automation system: it should be flexible and work in conjunction with other individual software solutions as a single entity.



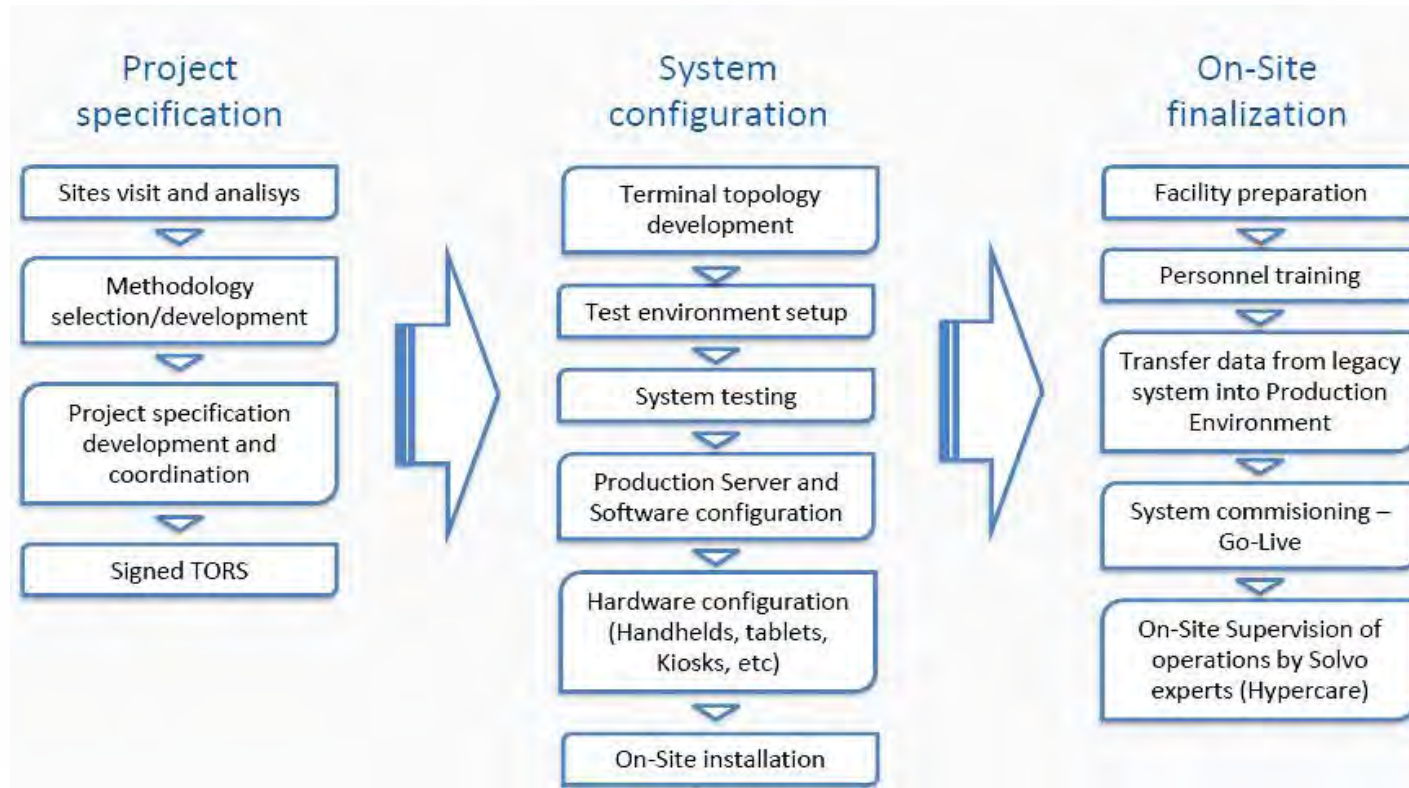


Sogester currently operates two coastal terminals in Luanda and Namibe and two inland terminals, Panguila and Viana.

Solvo.TOS manages all operations at these terminals through system modules that have been installed, as :

- Vessel management module;
- Yard management module;
- Railways management module;
- Gate management module;
- EDI;
- KPI;
- Resource planning and management module;
- Equipment control module.
- Billing





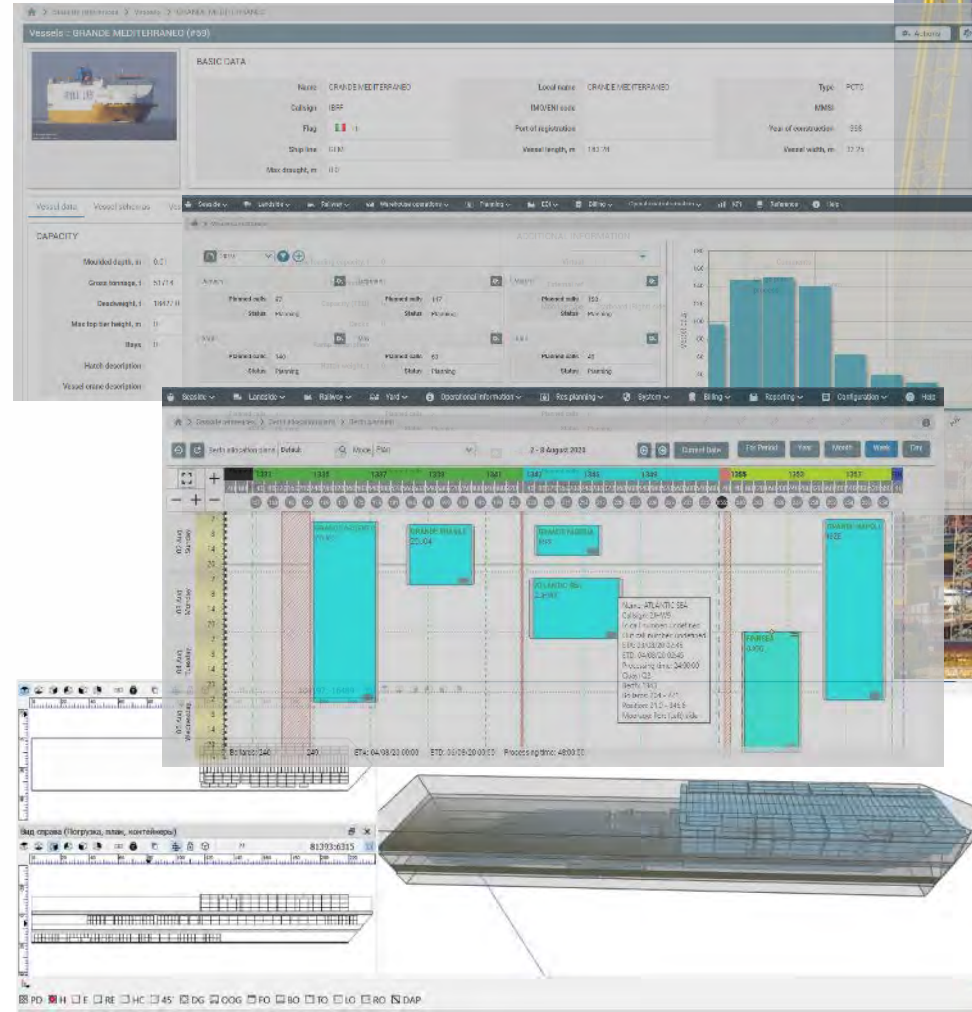
## Implementation process

Implementation process is fully supported by a professional SOLVO team which came on site in Angola together with back office support team. Specially for Sogester - SOLVO organized Portuguese speaking training for end-user. As a pilot it was decided to start with Namibe terminal automation. Implementation of operational part was successfully completed by the end of December 2019.



**Vessel operations management** starts with vessel calls registration, including detailed information about the technical specifications and unique vessel structure. The information is added just once, during 1st vessel call and used for the future visits.

The system has a wide range of options for planning vessel arrivals. With the help of tools such as the Cargo Planner and the Universal Vessel Planner it is possible to plan the loading and unloading of containers in the required order, taking into account the container characteristics and specifications. Once at the terminal, the container is recorded in the system and all of its further movements are registered in the system.





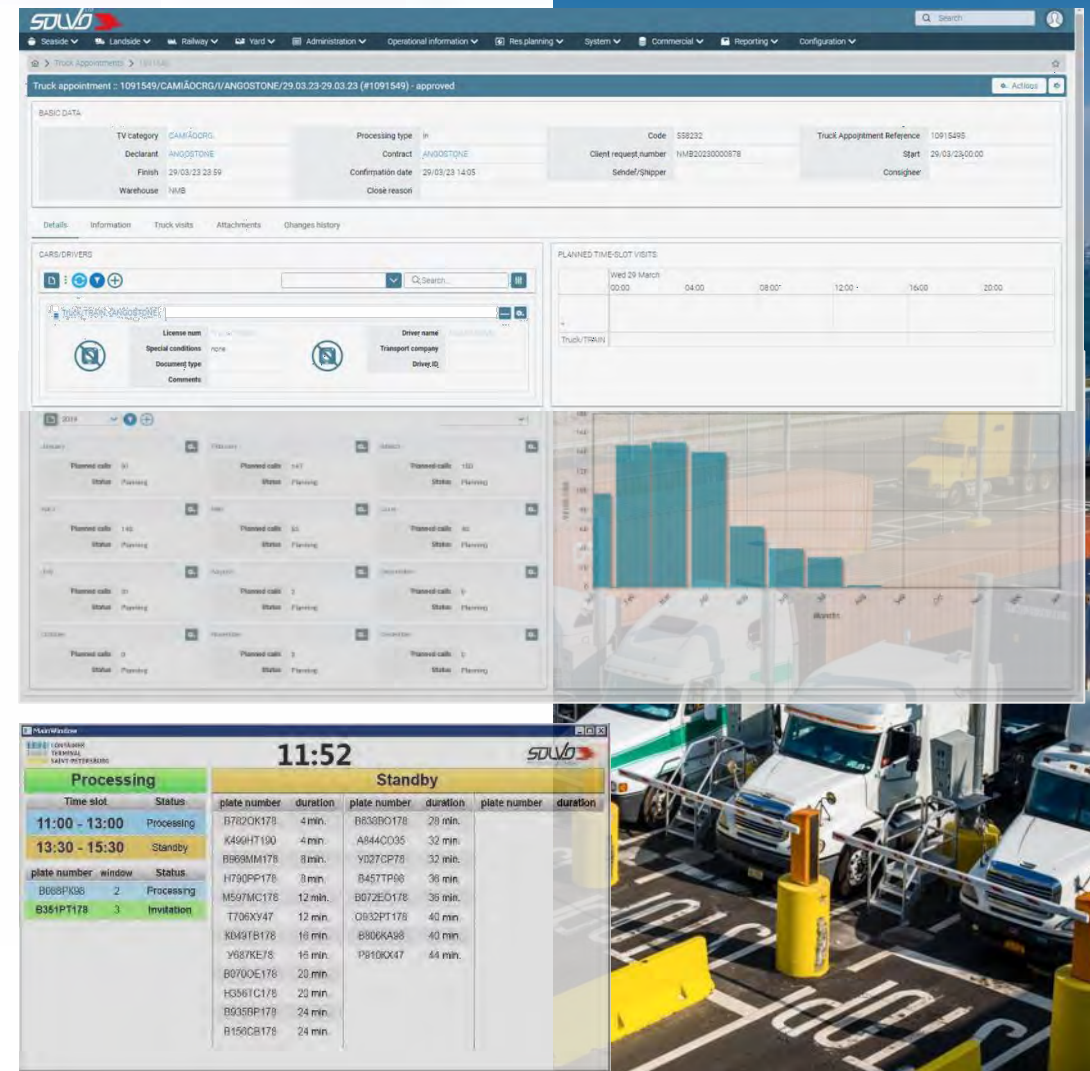
Solvo.TOS creates TA using time slotting technology, means that it is possible to choose convenient date and time for transport vehicle and get a guarantee that truck will be processed within a chosen time window.

It allows to plan, manage and monitor the progress of cargo loading / unloading based also on ETA / ETD

Truck appointment is created by forwarders or other external users through the Web portal using time slotting technology.

Allows to avoid long queues at the terminal gate.

Always possible to check the visit status.



The screenshot displays the Solvo.TOS web portal interface. At the top, there is a navigation menu with options like 'Seaside', 'Landside', 'Railway', 'Yard', 'Administration', 'Operational information', 'Res. planning', 'System', 'Commercial', 'Reporting', and 'Configuration'. The main content area shows details for a specific truck appointment: 'Truck appointment: 1091549/CAMIÁOCRG/I/ANGOSTONE/29.03.23 29.03.23 (#1091549) - approved'. Below this, there are sections for 'BASIC DATA', 'CARD DRIVERS', 'PLANNED TIME-SLOT VISITS', and a 'Processing' table.

**BASIC DATA:**

TV category: CAMIÁOCRG	Processing type: In	Code: 559232	Truck Appointment Reference: 1091549
Declarant: ANGOSTONE	Contract: ANGOSTONE	Client request number: N/A820220000978	Start: 29-03-23 00:00
Finish: 29-03-23 23:59	Confirmation date: 29-03-23 14:05	Sender/shipper:	Consigner:
Warehouse: YMB	Close reason:		

**PLANNED TIME-SLOT VISITS:**

Time Slot	Truck/Train
Wed 29 March 00:00 - 04:00	
04:00 - 08:00	
08:00 - 12:00	
12:00 - 16:00	
16:00 - 20:00	

**Processing Schedule Table:**

Time slot	Status	plate number	duration	plate number	duration	plate number	duration
11:00 - 13:00	Processing	B702CK178	4 min.	B833BO178	29 min.		
13:30 - 15:30	Standby	K469HT190	4 min.	A844CO35	32 min.		
		B869MM178	8 min.	Y027CP78	32 min.		
		H790PP176	8 min.	B457TP90	36 min.		
		M507MC176	12 min.	B072EO178	36 min.		
		T706XY47	12 min.	OB32PT178	40 min.		
		K049TB178	16 min.	B806KA88	40 min.		
		Y687KE78	15 min.	P810GX47	44 min.		
		B0700E176	20 min.				
		H3061C178	23 min.				
		B035DP178	24 min.				
		B150CB178	24 min.				

ASNT loads > ANT ANT02

ASN load #: ANT ANT02 (#36) - Received

**BASIC DATA**

Load status	Available	Receiving date	19/04/21 12:22	Name	ANT ANT02	#shipment cargo detail	362
#transport cargo detail	2121642	Destination place					

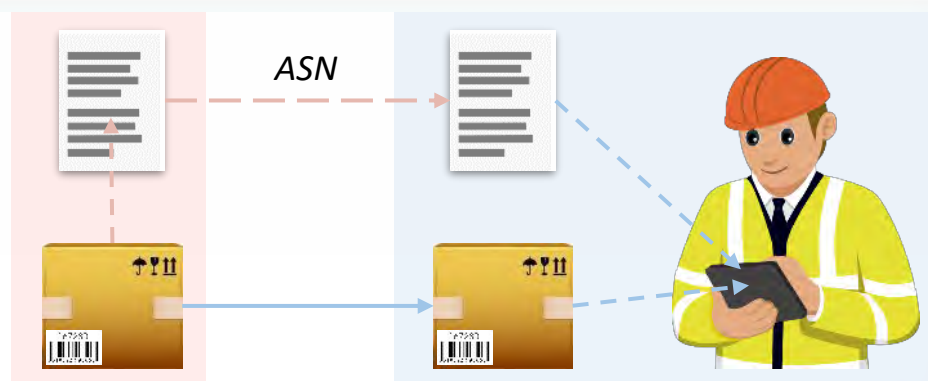
**CARGO**

Commodity	Wooden something	Cargo group syncid		Production date		Expiration date	
Groupage	<input type="checkbox"/>	Lot/Marker1	marker1	Marker2	marker2	Contract	contract (marker3)
Direction	Export	Dimensions	-	Client label	ANT02	Serial Shipping Container Code	
Serial No		Comments	comment	Identifier	undefined		

**DIMENSIONS**

Package	BOTTLE	Package syncid		Quantity	1	Super pack	
Super pack syncid		SPack qty		Cargo weight, kg	100.0	Pack weight, kg	100.0
Volume, m <sup>3</sup>	0.0	Volume (gross), m <sup>3</sup>	0.0	Length, cm	11.0	Width, cm	22.0
Height, cm	33.0						

Solvo.TOS allows to accept cargo based on advance shipping notice (ASN), notification of pending deliveries, similar to a packing list. The ASN enables the sender to describe the contents and configuration of a shipment in various levels of detail. Warehouse Office staff fills in ASN data from Delivery Note confirm CMR, after that cargo can be accepted.

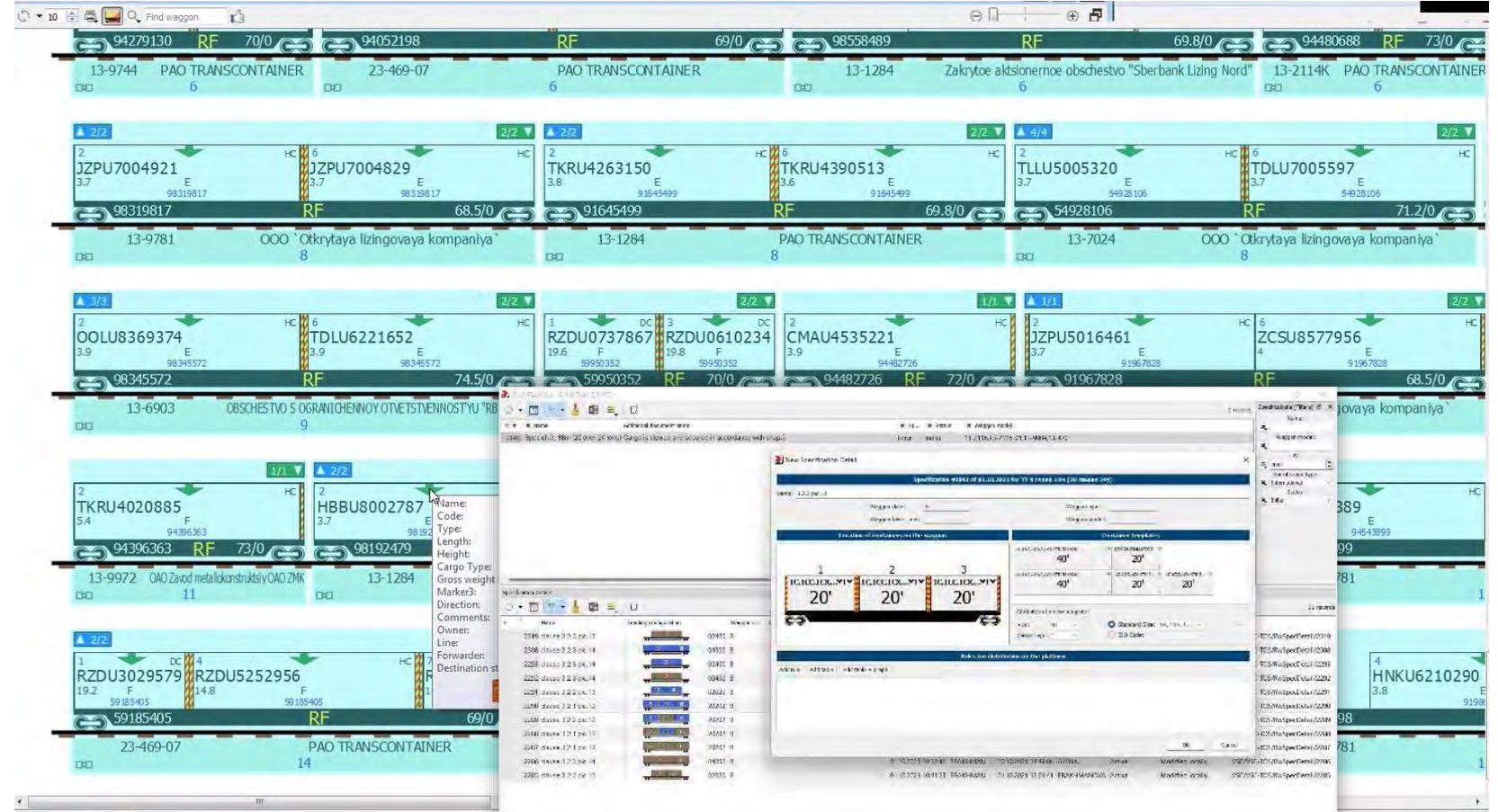




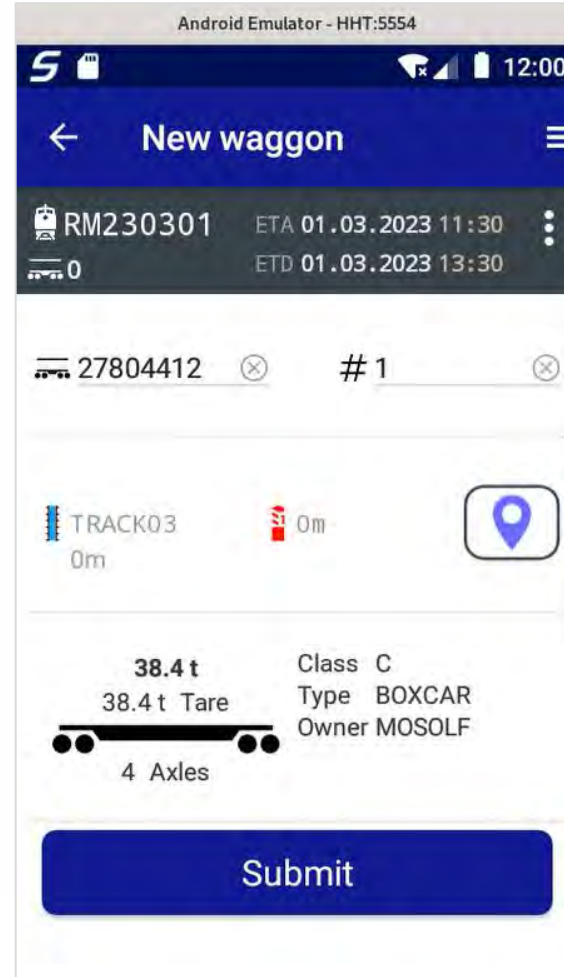
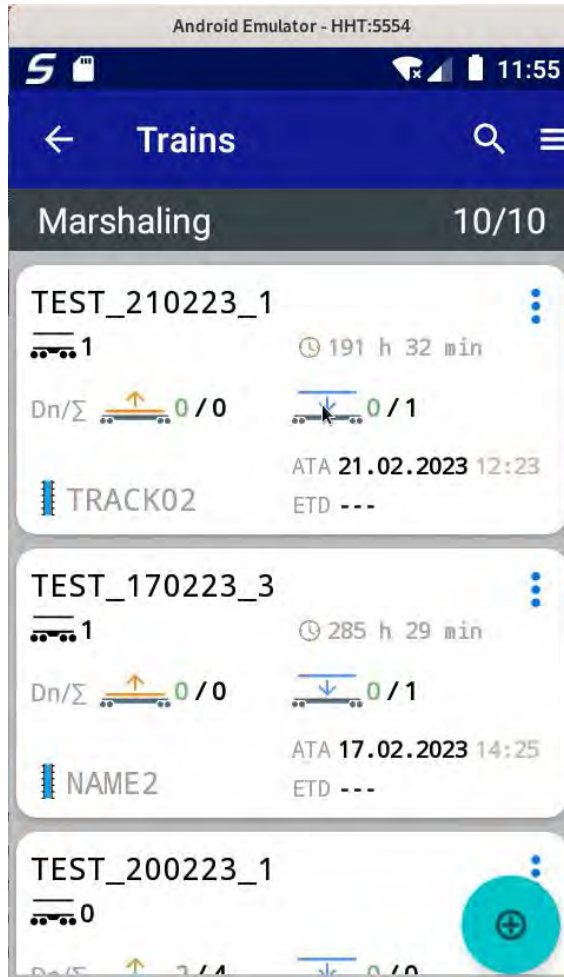
## Solvo.TOS enables to automate:

- Planning of rail car staging.
- Registration of rail consignment notes.
- Registration of rail car arrival/departure.
- Loading/discharging planning.
- Train and cargo inspection.
- Train loading and unloading.

- ✓ Automatic planning of rail car staging increases personnel productivity.
- ✓ Reduced number of errors when creating rail car plan.







A screen for the tallyman to describe arriving wagons in a special Android application.

The tallyman checks the data, confirms the arrival of the wagon and confirms that the Ro-Ro cargo can be loaded.

In the upper right corner you can see the wagon's number; when you describe the next wagon, the number will automatically change in the order of the sequence.

## Train Arrival / Departure

Registration of the train at the terminal can be performed using an OCR system where the numbers of flatcars and container are read in order.

- Automated registration and arrival/departure of the train to/from the terminal;
- Automatic fill-in and data management;
- Photo records of flatcar and container statuses.

- ✓ Reduced time needed to describe damages, register and describe the train;
- ✓ Increased work safety;
- ✓ Reduced risk of container loss.

## OCR Support:

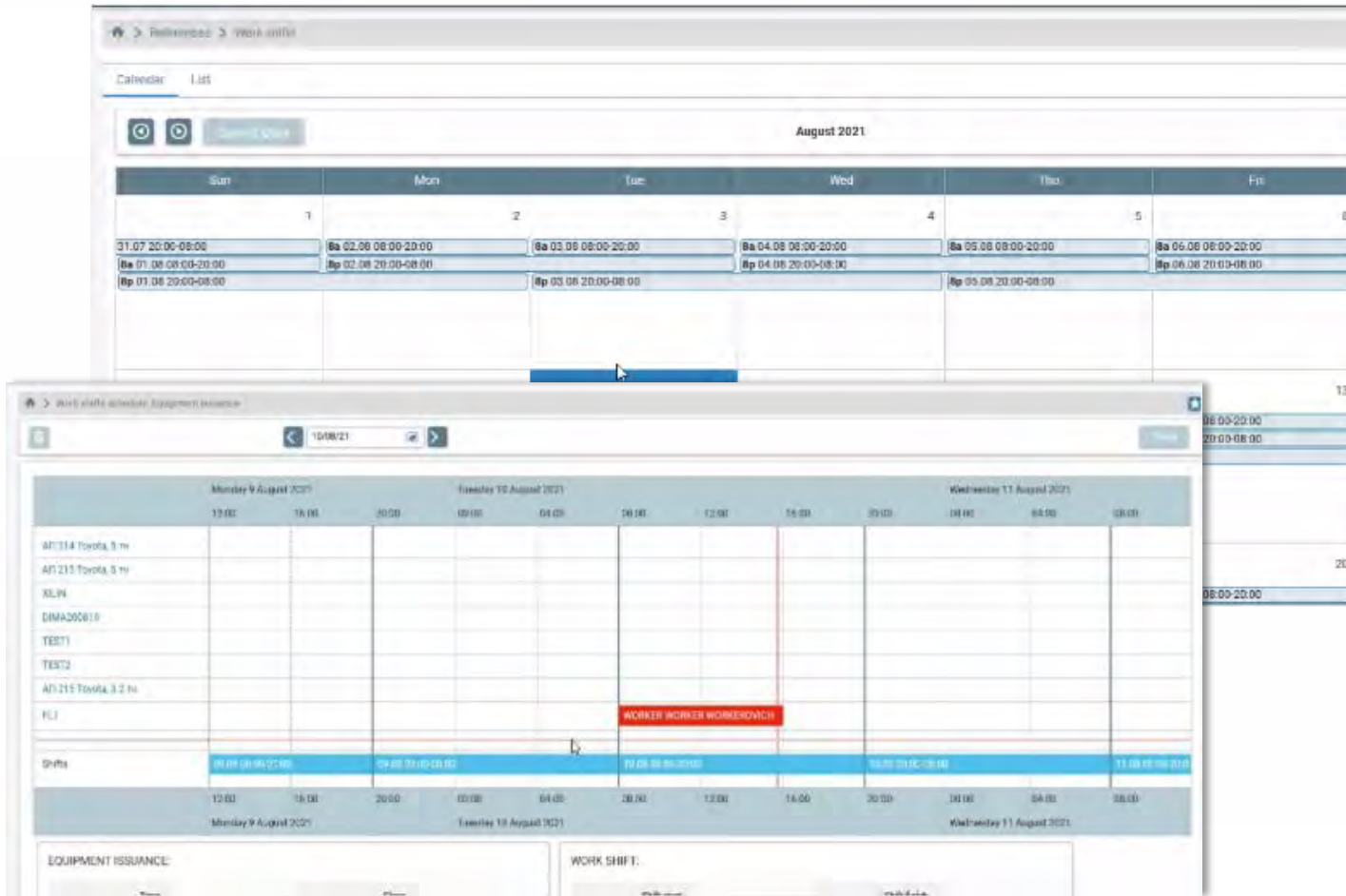
- Container number and ISO code;
- Non ISO containing numbers (US);
- Railcar and chassis numbers;
- (Optional) IMDG and seal presence;
- Door direction.

## Specifications:

- Pictures of container left, right and top side;
- Optional pictures of container door;
- Support for double stack containers and double track trains;
- Detect location of container on train.



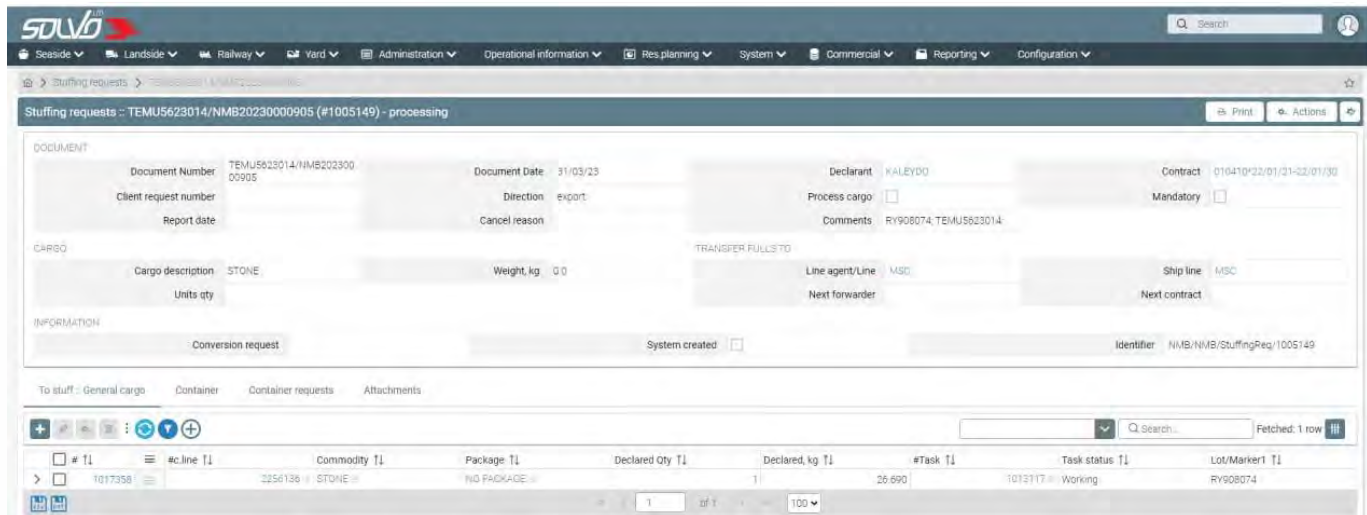




Thanks to aggregating data and reports on employee productivity—either individually or for groups— the system provides visibility where terminals are allocating their labor budgets and help them to optimize human assets.

The typical scenario is that the daily shift plan is calculated in advance and created ad hoc reports at the end of each shift, including information by: job function, operator and equipment, tasks and time of day. Each work order is analyzing the throughput and productivity rates by associating these values.





At Sogester terminals, one of the main types of cargo is granite blocks, which are brought here by rail from the Lubango region. Next, the blocks are stuffed into empty containers, which arrive by truck at the terminal area via two checkpoints, and are sent to Europe and Far East by sea.

The difficulty is that the containers may "crack" under the weight of the granite when they are stuffed and loaded. This requires accuracy and precision in the handling of the granite.

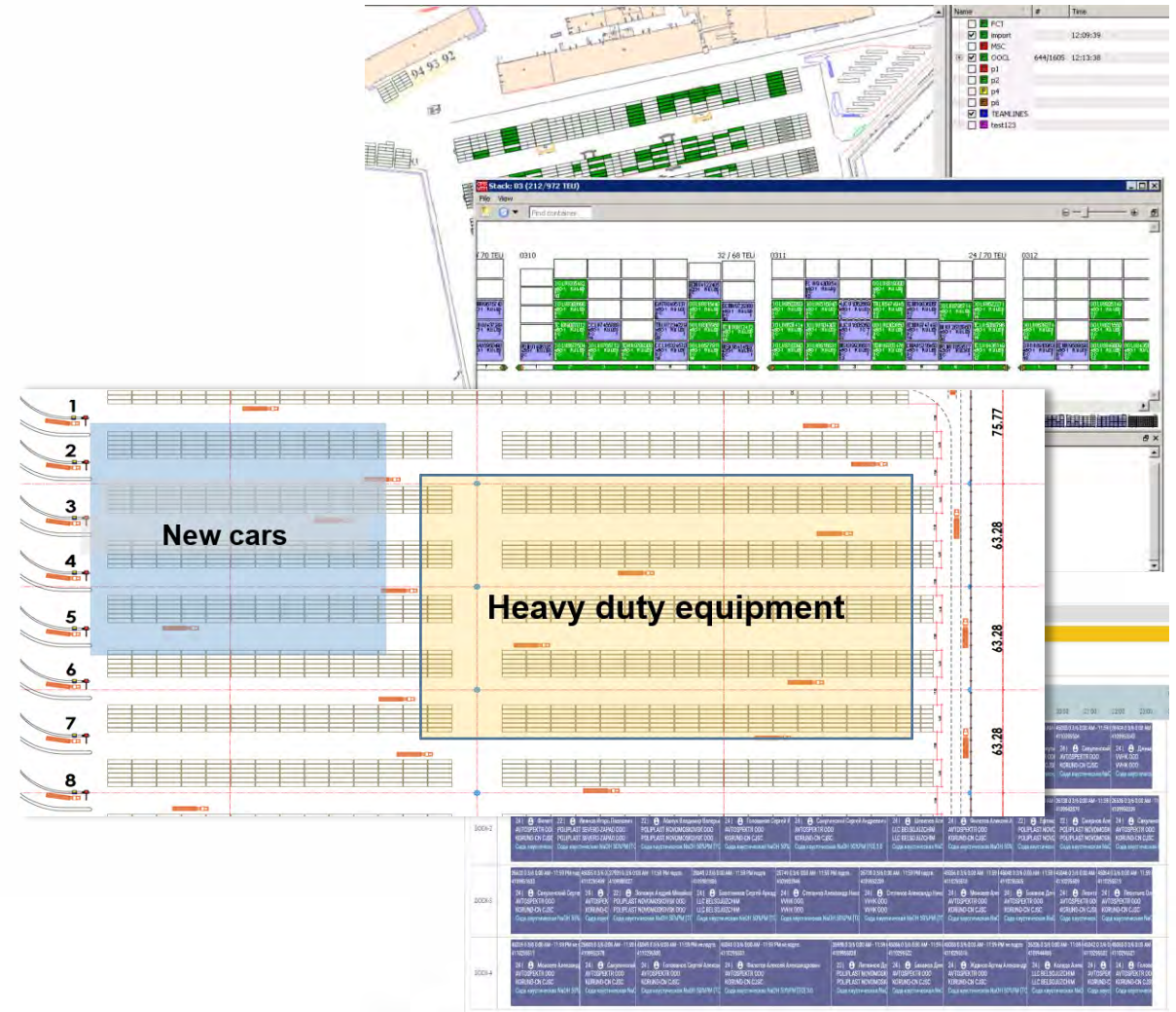
The CFS module is responsible for the automation of container stuffing/unstuffing processes, container inspections and repairs; as an additional functionality, the system is equipped with an empty container depot management tool, regulating the setting of rules for the automated issuing/receiving of empty containers at the terminal and other tasks.



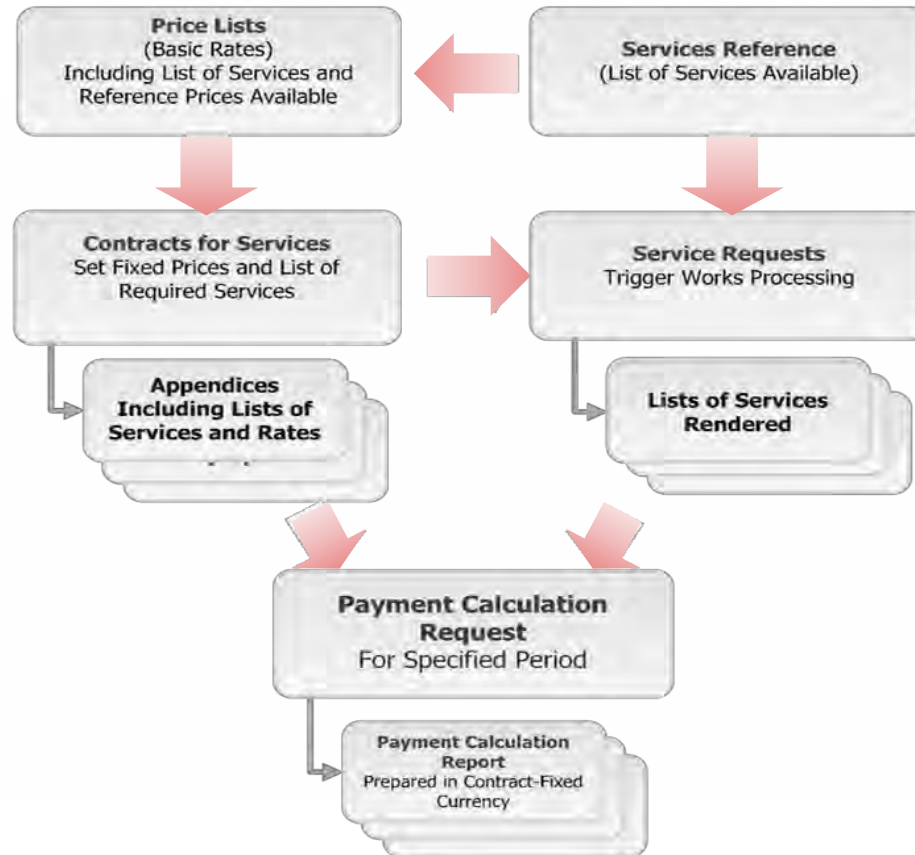
**WTM:** Graphic terminal layout viewer and editor is used to manage CHEs in the yard and plan routes. The port layout can be viewed and managed in real time allowing to establish a tree-like structure of terminal locations, groups and zone occupancy: Display, edit positions of terminal objects; Monitor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







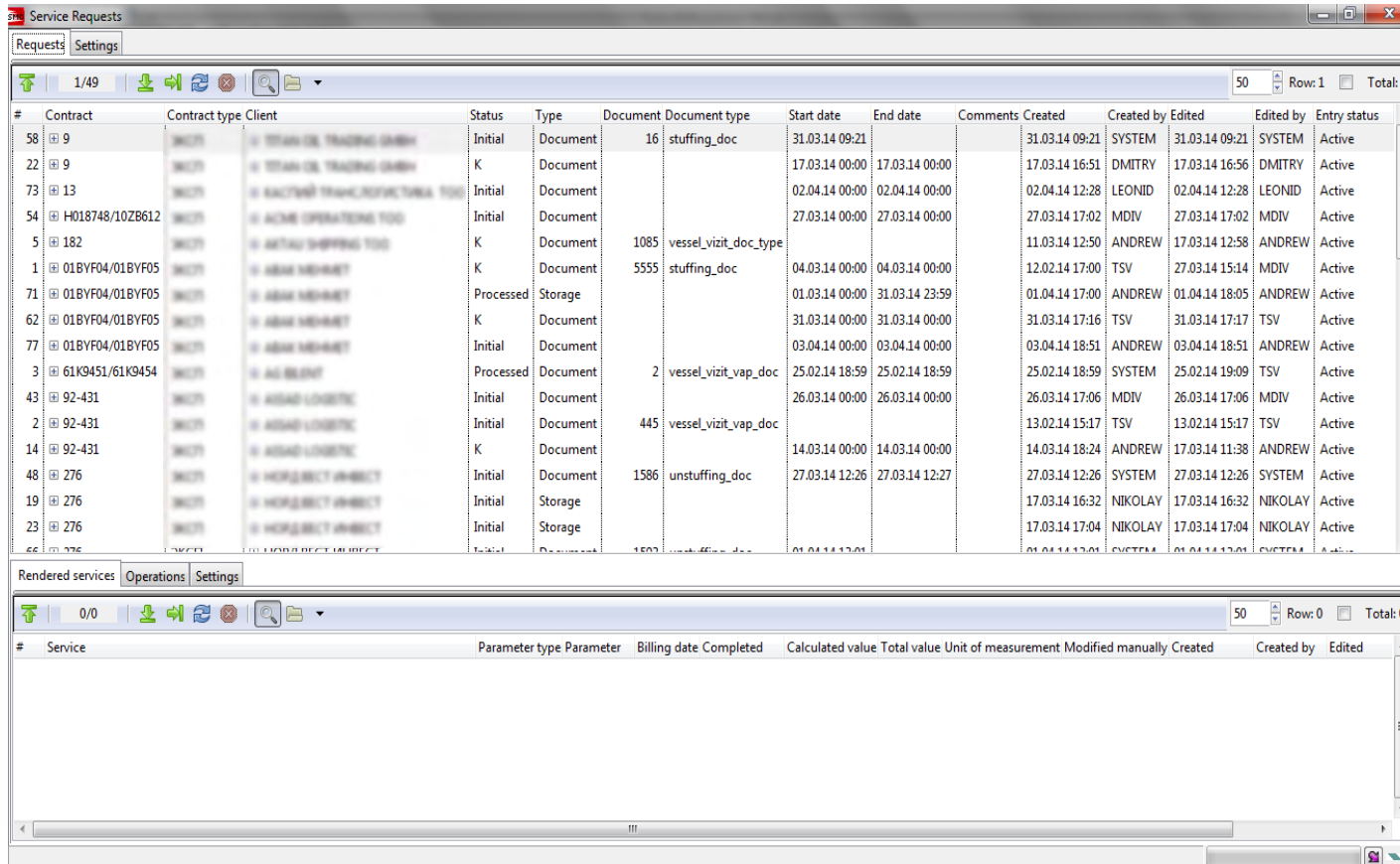
As part of the Sogester Angola project, a comprehensive and multifunctional Solvo.Billing module has been developed.

The module takes into account local legislation and integrates with third-party systems.

Solvo.Billing receives information from the TOS on the simple operations performed per item for the period such as storage, stripping, inspection, etc.

Then the Billing module calculates the fees for these services based on set rates.

The final fee can then be sent via a special gateway to the ERP's financial system in the form of a report as an Excel, Word, paper copy, and others formats.



#	Contract	Contract type	Client	Status	Type	Document	Document type	Start date	End date	Comments	Created	Created by	Edited	Edited by	Entry status
58	9		TEKAS CO. TRADING GmbH	Initial	Document	16	stuffing_doc	31.03.14 09:21			31.03.14 09:21	SYSTEM	31.03.14 09:21	SYSTEM	Active
22	9		TEKAS CO. TRADING GmbH	K	Document			17.03.14 00:00	17.03.14 00:00		17.03.14 16:51	DMITRY	17.03.14 16:56	DMITRY	Active
73	13		BACTAR TRADING COMPANY TOO	Initial	Document			02.04.14 00:00	02.04.14 00:00		02.04.14 12:28	LEONID	02.04.14 12:28	LEONID	Active
54	H018748/10ZB612		ACME OPERATIONS TOO	Initial	Document			27.03.14 00:00	27.03.14 00:00		27.03.14 17:02	MDIV	27.03.14 17:02	MDIV	Active
5	182		ANTAU SHIPPING TOO	K	Document	1085	vessel_vizit_doc_type				11.03.14 12:50	ANDREW	17.03.14 12:58	ANDREW	Active
1	01BYF04/01BYF05		ABBA MENNET	K	Document	5555	stuffing_doc	04.03.14 00:00	04.03.14 00:00		12.02.14 17:00	TSV	27.03.14 15:14	MDIV	Active
71	01BYF04/01BYF05		ABBA MENNET	Processed	Storage			01.03.14 00:00	31.03.14 23:59		01.04.14 17:00	ANDREW	01.04.14 18:05	ANDREW	Active
62	01BYF04/01BYF05		ABBA MENNET	K	Document			31.03.14 00:00	31.03.14 00:00		31.03.14 17:16	TSV	31.03.14 17:17	TSV	Active
77	01BYF04/01BYF05		ABBA MENNET	Initial	Document			03.04.14 00:00	03.04.14 00:00		03.04.14 18:51	ANDREW	03.04.14 18:51	ANDREW	Active
3	61K9451/61K9454		AG BENT	Processed	Document	2	vessel_vizit_vap_doc	25.02.14 18:59	25.02.14 18:59		25.02.14 18:59	SYSTEM	25.02.14 19:09	TSV	Active
43	92-431		AGAD LOGISTIC	Initial	Document			26.03.14 00:00	26.03.14 00:00		26.03.14 17:06	MDIV	26.03.14 17:06	MDIV	Active
2	92-431		AGAD LOGISTIC	Initial	Document	445	vessel_vizit_vap_doc				13.02.14 15:17	TSV	13.02.14 15:17	TSV	Active
14	92-431		AGAD LOGISTIC	K	Document			14.03.14 00:00	14.03.14 00:00		14.03.14 18:24	ANDREW	17.03.14 11:38	ANDREW	Active
48	276		HERSBECK IMBECT	Initial	Document	1586	unstuffing_doc	27.03.14 12:26	27.03.14 12:27		27.03.14 12:26	SYSTEM	27.03.14 12:26	SYSTEM	Active
19	276		HERSBECK IMBECT	Initial	Storage						17.03.14 16:32	NIKOLAY	17.03.14 16:32	NIKOLAY	Active
23	276		HERSBECK IMBECT	Initial	Storage						17.03.14 17:04	NIKOLAY	17.03.14 17:04	NIKOLAY	Active
66	276		HERSBECK IMBECT	Initial	Storage	1503	unstuffing_doc	01.04.14 13:01			01.04.14 13:01	SYSTEM	01.04.14 13:01	SYSTEM	Active

The Billing module enable storage of electronic (scanned) copies of contract related documents, with the option of printing. The program makes it possible to scan documents including multiple pages, import images from graphic files, view and print images.

Solvo. Billing processes the following documents:

**Contract** – agreement between the Customer and Executor to provide logistics services.

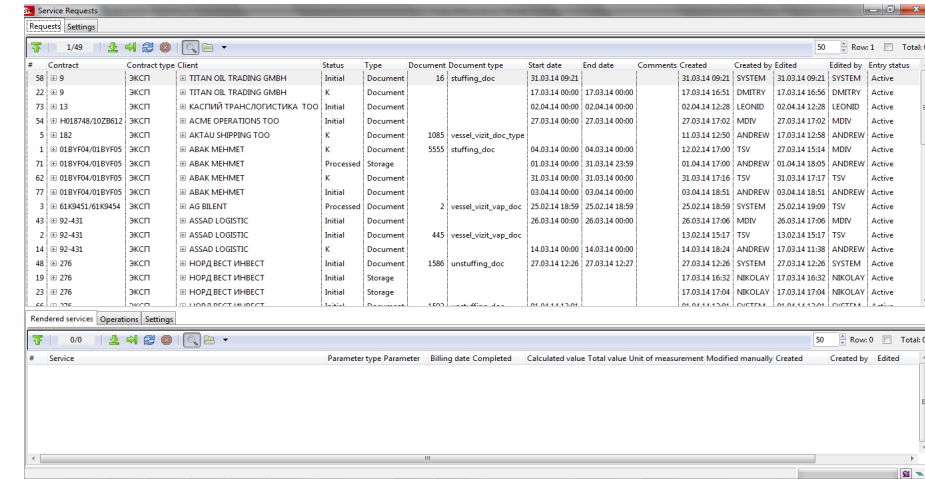
**Contract appendix** – list of services provided based on the contract. The system indicates the start and end dates for the operations, current status and a list of services along with their rates.

The Billing module makes it possible to maintain contracts established between several parties. It includes a list of Customers and Executors.

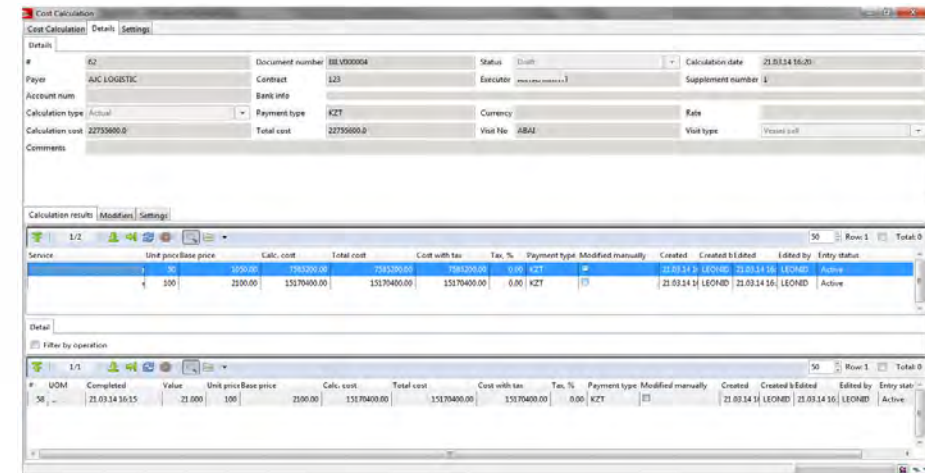
The user has the ability to expand the services reference list. Special rules make it possible to set up almost any type of service based on the set of operations used at the container terminal.



- ✓ A standalone system. Integrates with TOS and any ERP.
- ✓ Ergonomic and simple desktop and web interface.
- ✓ Charging and calculating the cost of services according to any algorithms.
- ✓ Full transparency of calculations, the ability to quickly see the basis for the applied indicators of calculation.
- ✓ Handling of various types of cargo: container, tare piece, bulk cargo.
- ✓ Flexible configuration of document packages sent to clients.
- ✓ Accounting for mutual payments with clients using post and prepayments.
- ✓ Privat Account of the client with the maintenance of reporting, filing requests for services.
- ✓ Ability to suspend services to the client in case of critical debts.



#	Contract	Contract type	Client	Status	Type	Document	Document type	Start date	End date	Comments	Created	Edited	Entry status
58	9	ЭКСП	TITAN OIL TRADING OMBH	Initial	Document	16	stuffing_doc	31.03.14 09:21	17.03.14 00:00		31.03.14 09:21	SYSTEM	Active
22	9	ЭКСП	TITAN OIL TRADING OMBH	K	Document			17.03.14 16:51	17.03.14 16:51		17.03.14 16:51	DMITRY	Active
73	13	ЭКСП	КАСПИЙ ТРАНСЛОГИСТИКА TOO	Initial	Document			02.04.14 00:00	02.04.14 00:00		02.04.14 12:28	LEONID	Active
54	H018748/1028612	ЭКСП	ACME OPERATIONS TOO	Initial	Document			27.03.14 17:02	27.03.14 17:02		27.03.14 17:02	MDV	Active
5	182	ЭКСП	AKTAU SHIPPING TOO	K	Document	1085	vessel_visit_doc_type	04.03.14 00:00	04.03.14 00:00		11.03.14 12:50	ANDREW	Active
1	01BYU04/01BYU05	ЭКСП	ABAK MEHMET	K	Document	5555	stuffing_doc	12.02.14 17:00	27.03.14 15:54		12.02.14 17:00	TSV	Active
62	01BYU04/01BYU05	ЭКСП	ABAK MEHMET	Processed	Storage			01.03.14 00:00	31.03.14 23:59		01.04.14 17:00	ANDREW	Active
77	01BYU04/01BYU05	ЭКСП	ABAK MEHMET	K	Document			31.03.14 00:00	31.03.14 00:00		31.03.14 17:16	TSV	Active
3	01K8451/01K8454	ЭКСП	AG BELFIT	Initial	Document			03.04.14 00:00	03.04.14 00:00		03.04.14 18:51	ANDREW	Active
43	92-431	ЭКСП	ASSAD LOGISTIC	Processed	Document	2	vessel_visit_vap_doc	25.02.14 18:59	25.02.14 18:59		25.02.14 18:59	SYSTEM	Active
14	92-431	ЭКСП	ASSAD LOGISTIC	Initial	Document	445	vessel_visit_vap_doc	26.02.14 00:00	26.03.14 00:00		26.02.14 17:06	MDV	Active
2	92-431	ЭКСП	ASSAD LOGISTIC	Initial	Document			13.02.14 15:17	13.02.14 15:17		13.02.14 15:17	TSV	Active
48	276	ЭКСП	НОРД ВЕСТ ИНВЕСТ	K	Document			14.03.14 00:00	14.03.14 00:00		14.03.14 18:24	ANDREW	Active
19	276	ЭКСП	НОРД ВЕСТ ИНВЕСТ	Initial	Document	1586	unstuffing_doc	27.03.14 12:26	27.03.14 12:27		27.03.14 12:26	SYSTEM	Active
23	276	ЭКСП	НОРД ВЕСТ ИНВЕСТ	Initial	Storage			17.03.14 16:32	17.03.14 16:32		17.03.14 17:04	NIKOLAY	Active



#	Service	Unit price/Base price	Calc. cost	Total cost	Cost with tax	Tax, %	Payment type	Modified manually	Created	Created & Edited	Edited by	Entry status
1	100	2200.00	15179400.00	15179400.00	15179400.00	0.00	KZT		21.03.14 11:00	21.03.14 16:16	LEONID	Active

- ★ Increase cargo handling efficiency & terminal throughput;
- ★ Increase personnel & equipment productivity;
- ★ Improve transparency of technological and commercial processes;
- ★ Increase in load handling speed in the storage zone;
- ★ Reduction in re-handles (non-productive container moves);
- ★ Eliminating human factor;
- ★ Improving health and safety ops;
- ★ Finding efficiencies in processes and logistics;
- ★ Improving margins;
- ★ Reducing operating costs.





# Thank you for your attention!

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