Circle Group

Multipurpose Terminal Operating Systems

20 Aprile 2021

Agenda

- TOS - Definition
- TOS – Main Modules
- TOS – Added Value Modules
- TOS – Federative Services

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Terminal Operating System

The terminal operating system (TOS) is the primary instrument of record-keeping, planning, control, and monitoring for the modern marine and inland terminal.

The TOS serves, and is served by, labour, planners, supervisors, managers, liners, truckers, railroads, visitors, regulators, and analysts.

The TOS will have profound impacts on both the tactical performance and strategic viability of the terminal, its customers, and its operator.

TOS Target

PORT INTERMODAL TERMINAL

Intermodality:

- Maritime transport
- Road Transport
- Rail Tranport

INLAND INTERMODAL TERMINAL

Intermodality:

- Road Transport
- Rail Transport
- Barge transport

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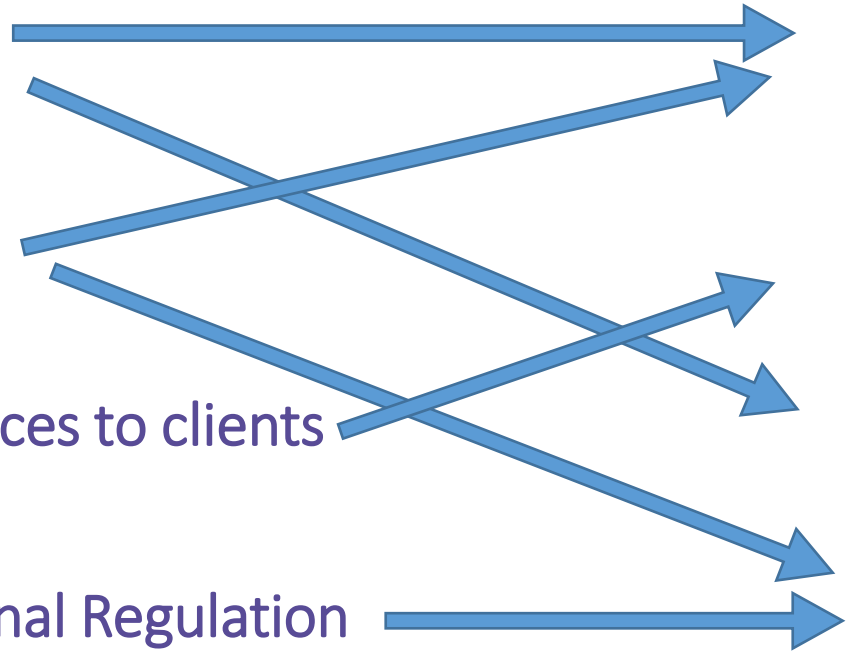
TOS - Features and Scope

Reduce Manual errors

Manage Quality Procedure

Providing Value added services to clients

Compliance with International Regulation (Customs, IMO, ISPS, SOLAS, etc.)



Improve performance

Competitiveness on the market

Reduce cost and Increase Revenues

Safety & Security

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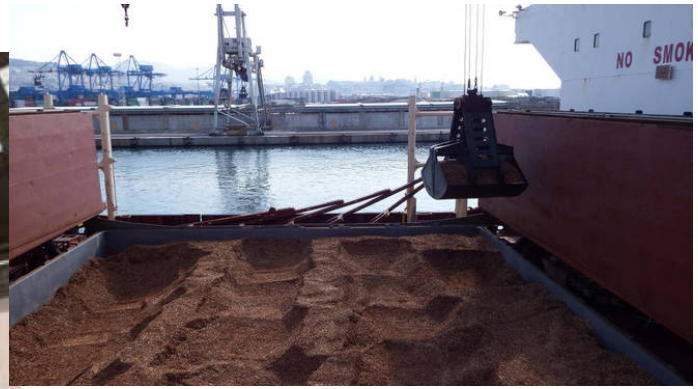
TOS Multipurpose – which cargo traffic?

Container

Vehicles

Ro-Ro

General & Bulk Cargo



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TOS Multipurpose – which cargo traffic? Impacts

- INTEROPERABILITY STANDARD (EDIFACT, EDIGES, etc.)
- Easy Cargo / ITU identification
- Possible automation (OCR)

- NOT INTEROPERABILITY STANDARD (EDIFACT, EDIGES, etc.)
- NOT Easy Cargo / ITU identification
- NOT EASY Possible automation (OCR)

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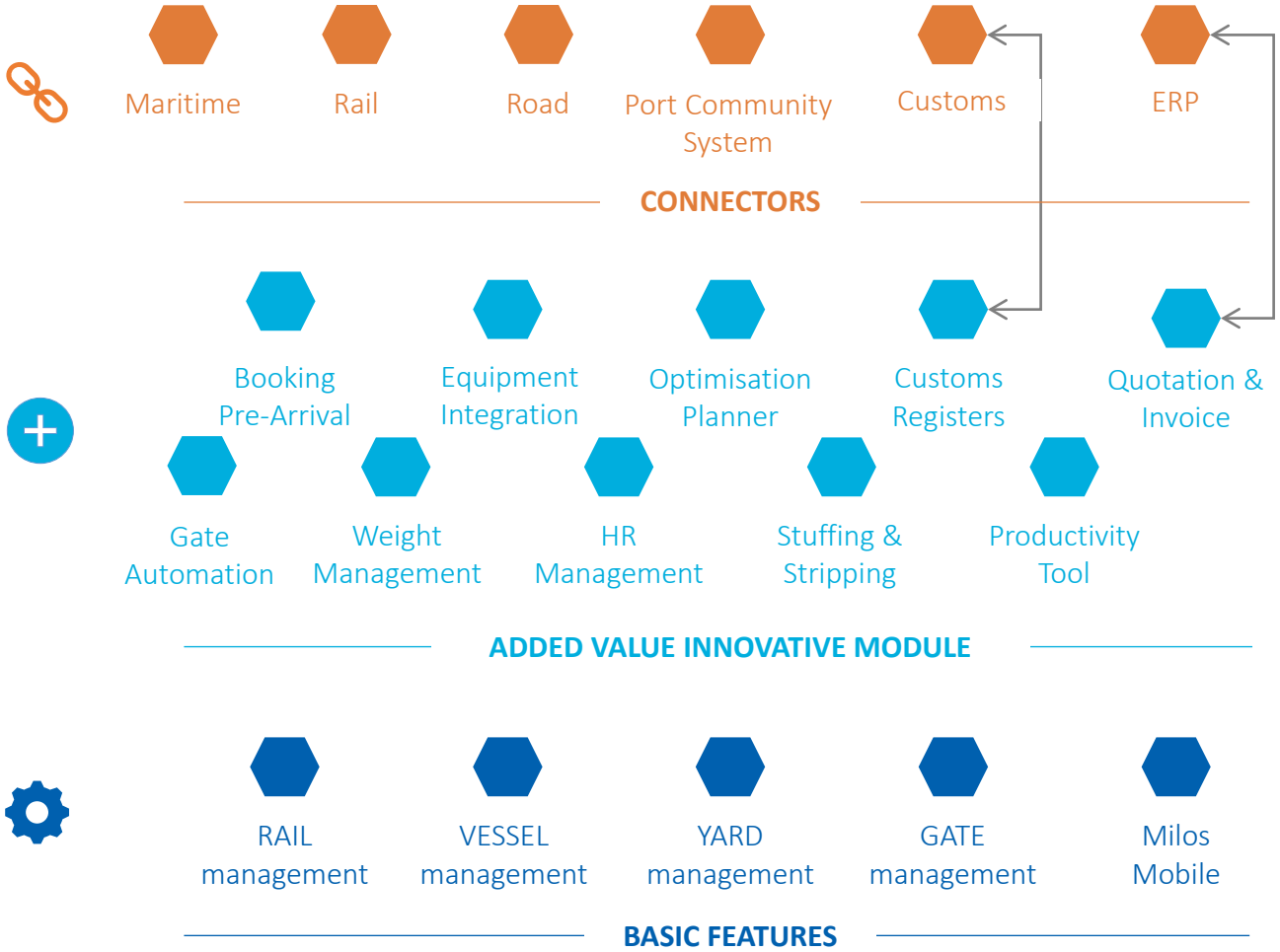
TOS - Solution and interconnected systems



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Yard Management

Configure terminal and yard areas for:

- Type of Cargo;
- Dangerous goods;
- Client;
- Service;
- Final destination;
- Vessel / Train.

Check real – time Yard Areas and Warehouses Inventory

Check real – time Yard Areas and Warehouses Capacity in order to plan optimal allocation

Prioritize, categorize, and schedule work activities, create ‘To Do’ tasks on containers and cargo.

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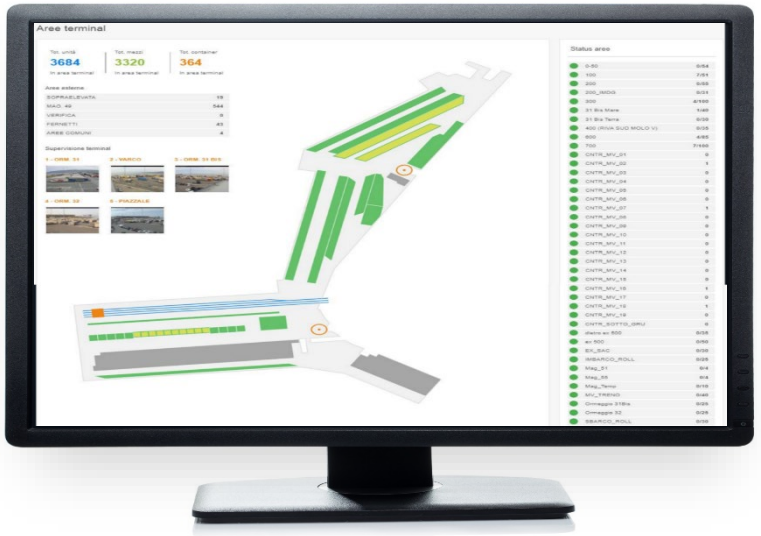
Vessel Management
Berth Planning

The berth planning is a graphical allocation system, allowing a real-time view of the berths.

Once the arrival schedules are created a graphical view enable to create a schedule.



Based on load and discharge information the system will be able to predict the berthing or track position based on driving distance of the handling equipment and stocking areas.

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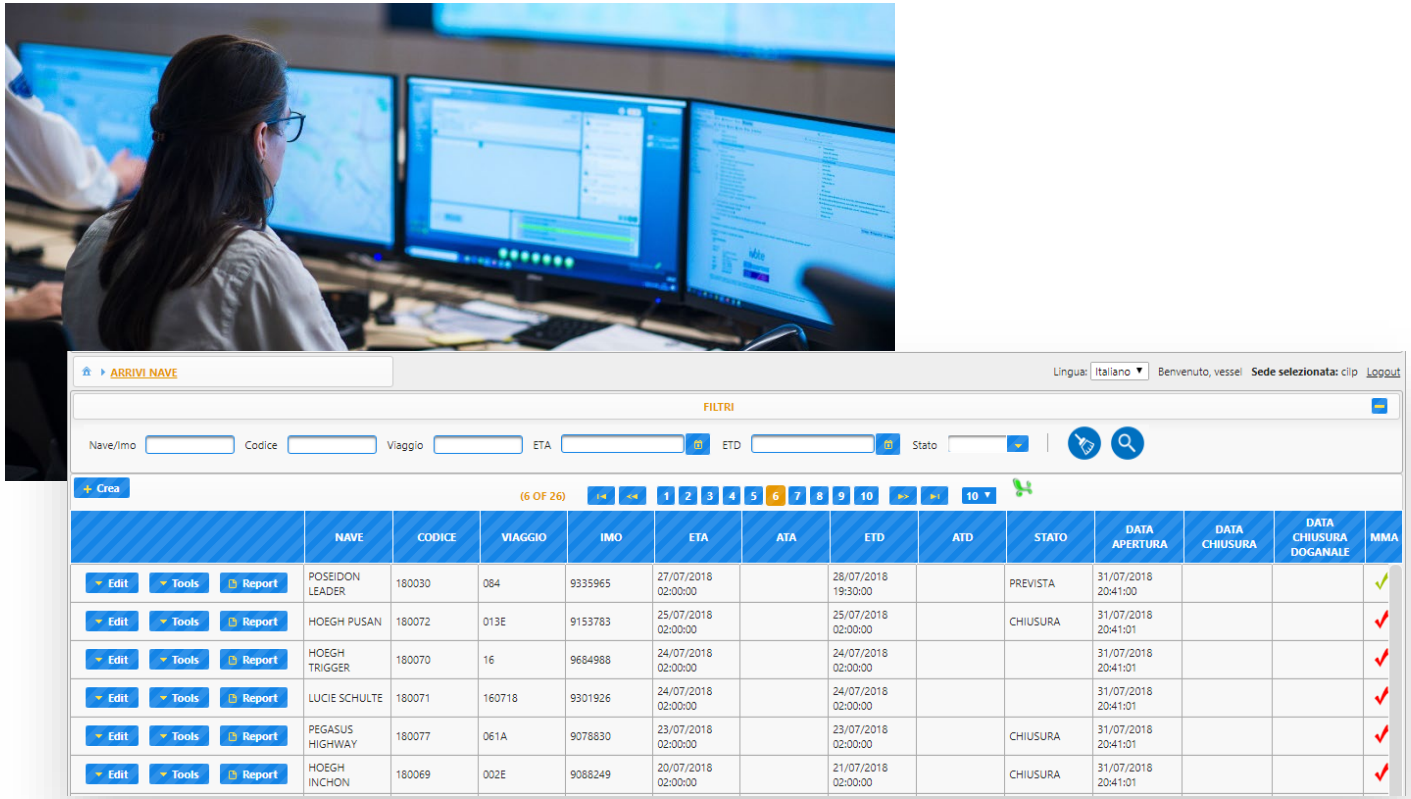
Vessel Management

Vessel Planning



Vessel Planning allows to manage and monitor the real time status of vessel arrivals.

Vessel Planning is able to receive booking relating terminal operations both by web thanks to restricted access and directly from shipping lines through dedicated connectors (Shipping Line Connector).

Vessel Planning allows to perform Loading and discharging plan

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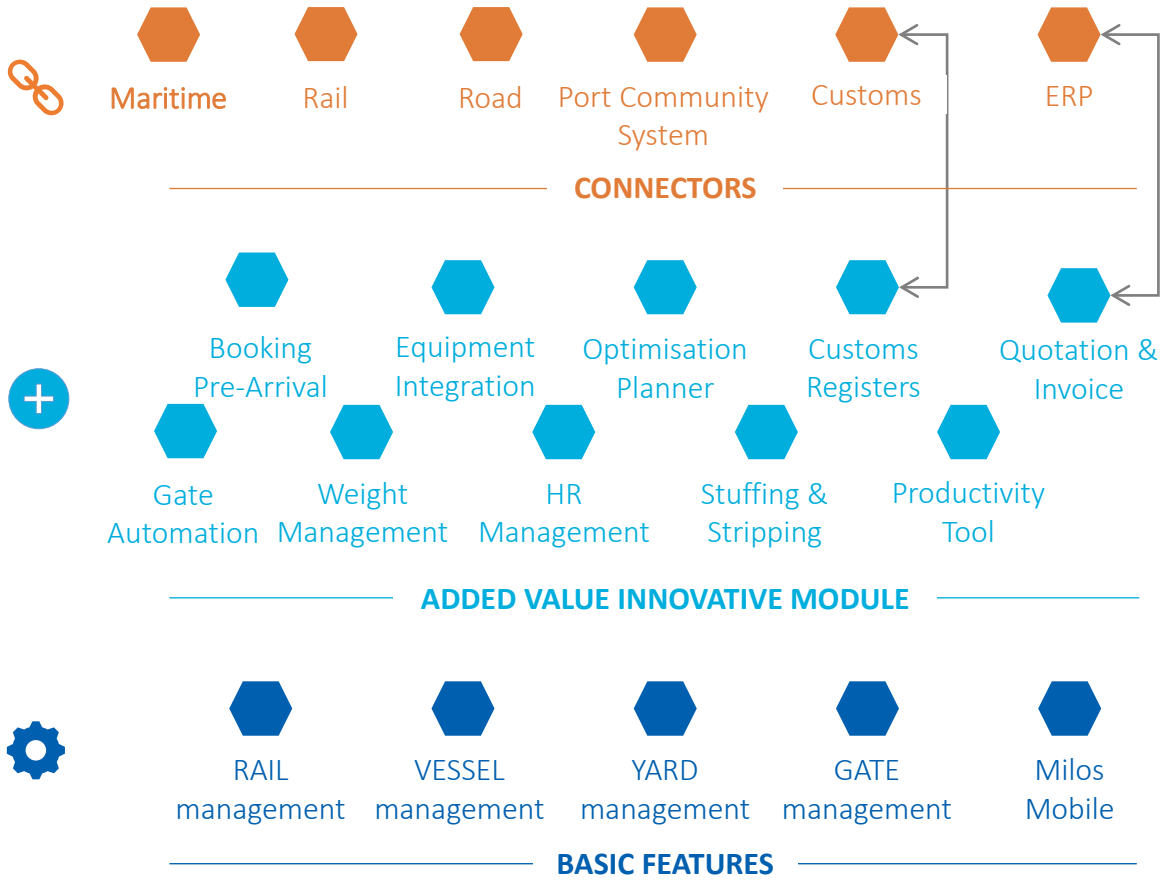
Vessel Management - Interconnected Systems



Maritime Transport

- Shipping Agencies
- Shipping Companies
- Port Authorities

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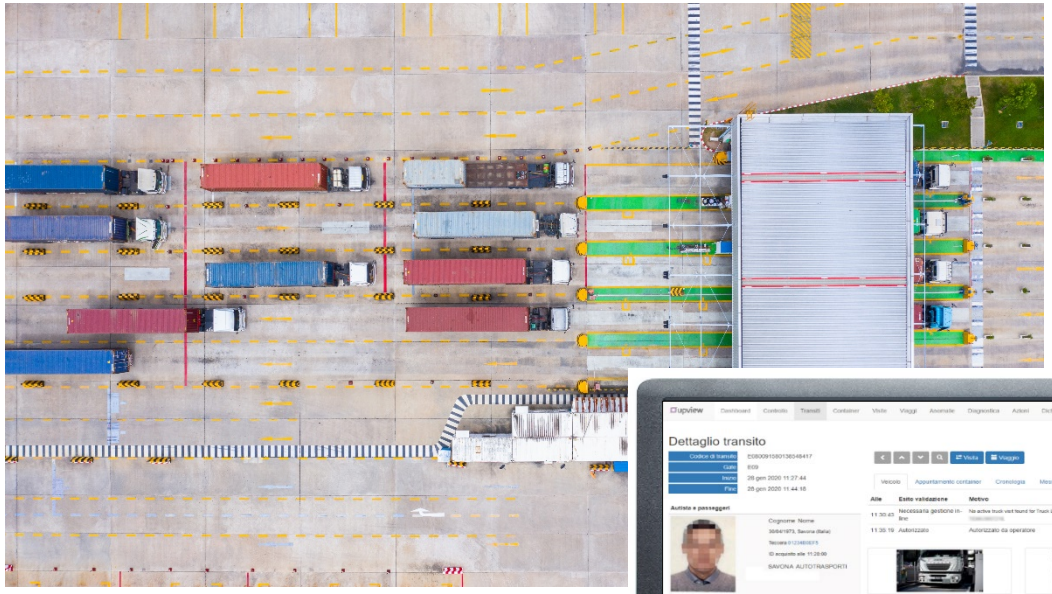
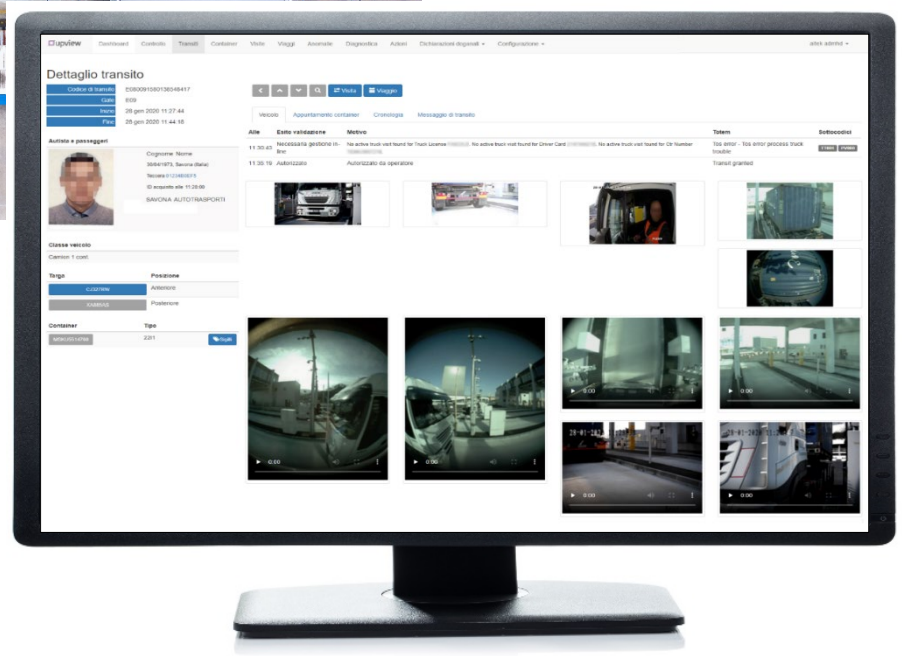
Gate Management

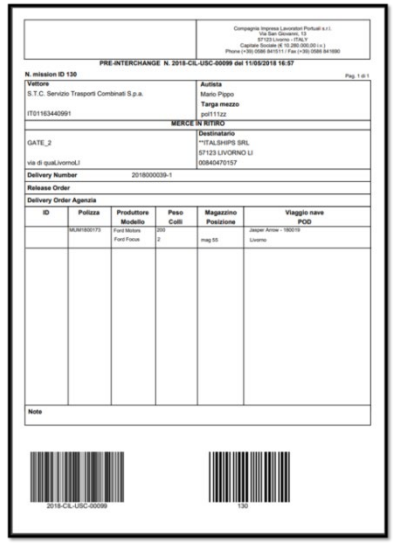


Gate Management allows to manage gate-in and gate-out operations and to store information relating goods and drivers that passes through the terminal gate.



The pre-Interchange is delivered to the driver with information which allows the stoker to identify the correct cargo.

The final interchange is delivered to the driver with detailed information of all goods picked-up or delivered



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Rail Park Planning

- Planning of **rail park occupation** (see **graphical views** below) based on train voyages schedules.

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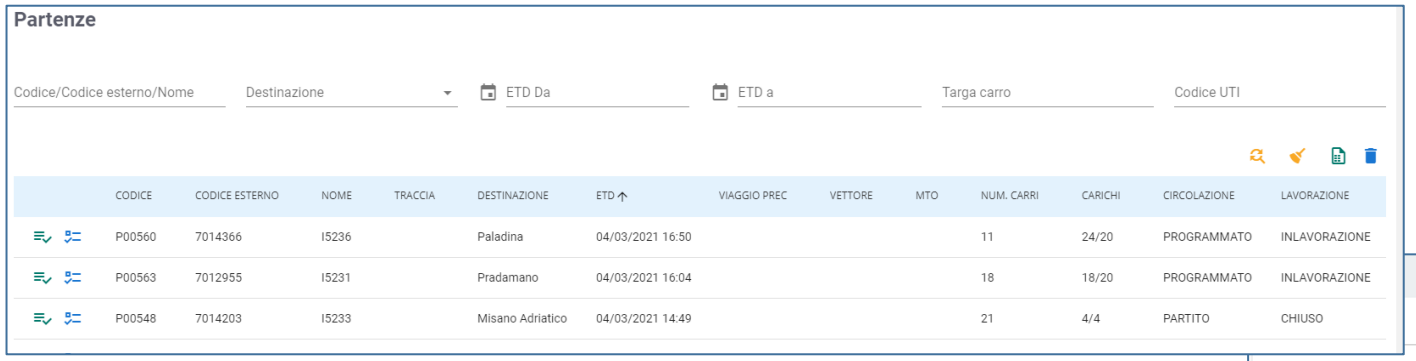
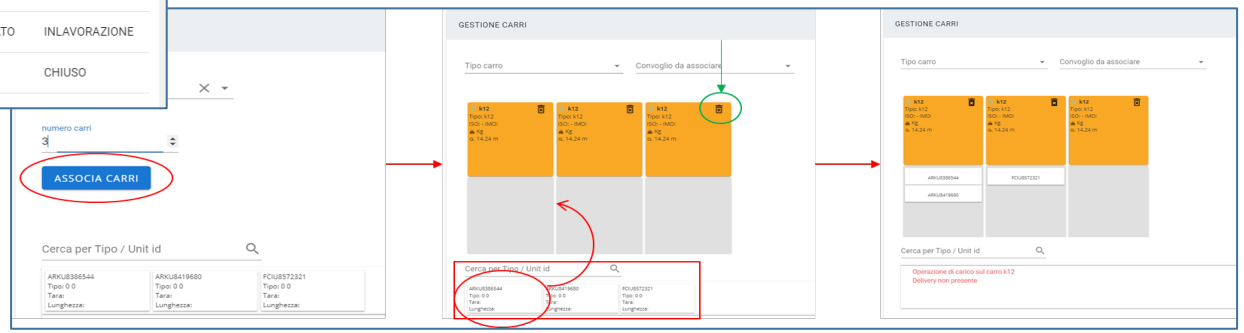
Rail Train Planning

Rail Train Planning

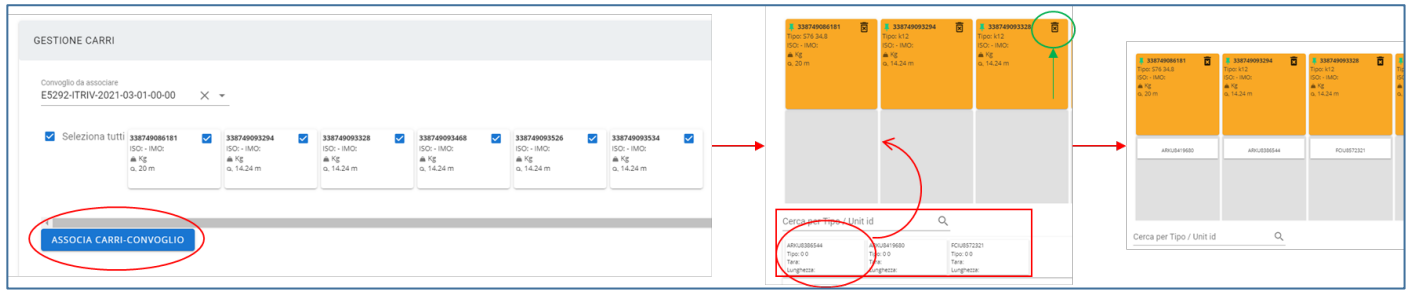
- **Planning** of train discharging and loading operation with **automatic controls** on weight and dimension rules for rail wagons.



Pre-Plan



Loading Plan



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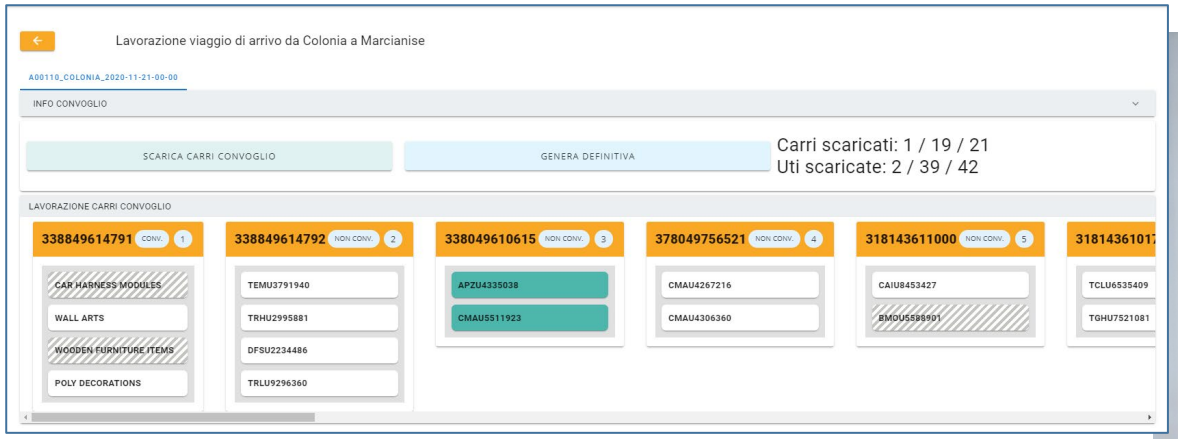
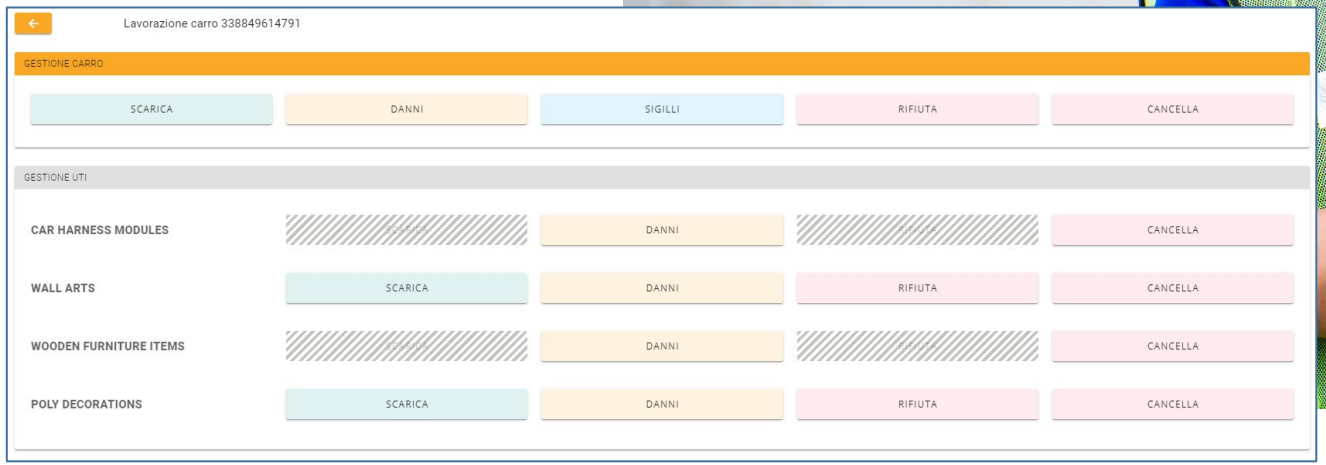
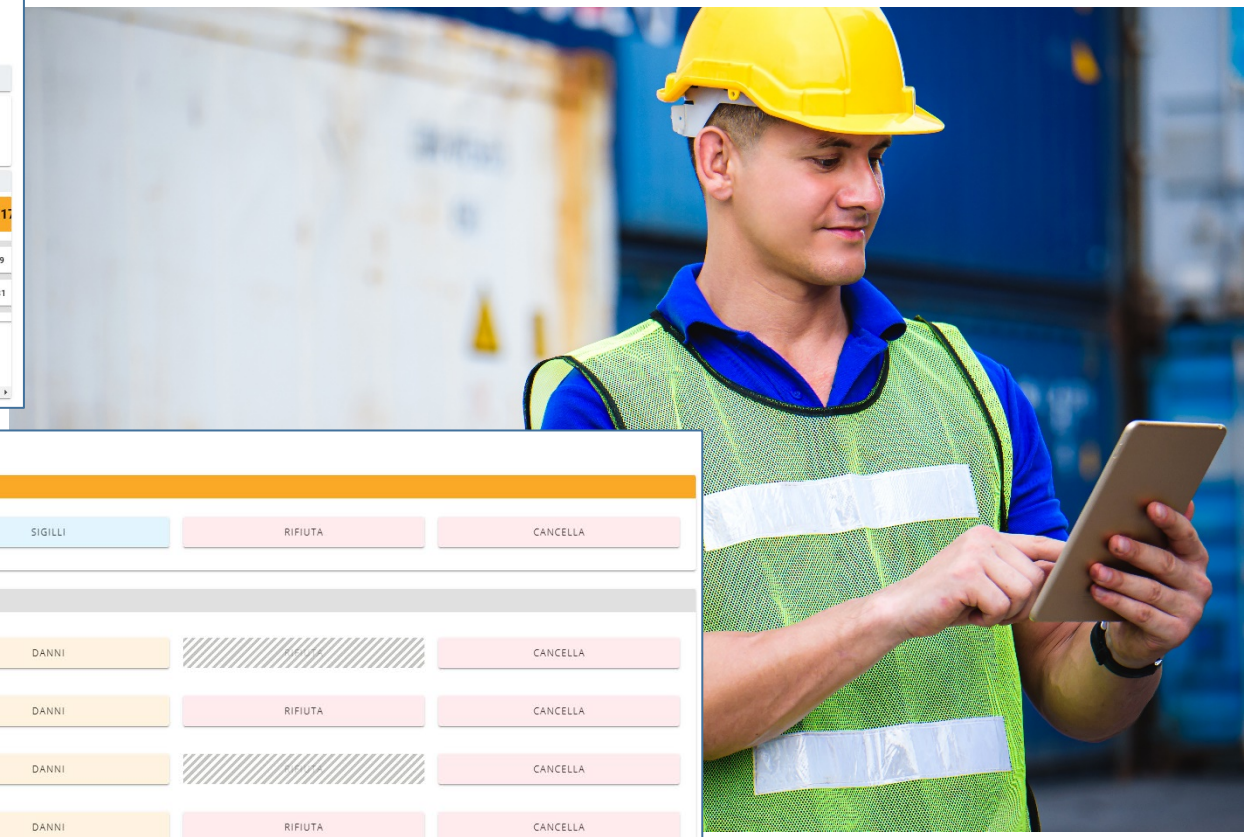
Rail Train Execution

Rail Execution

- The rail loading and discharging **execution** can be easily performed also thanks to **mobile App** (see views below).







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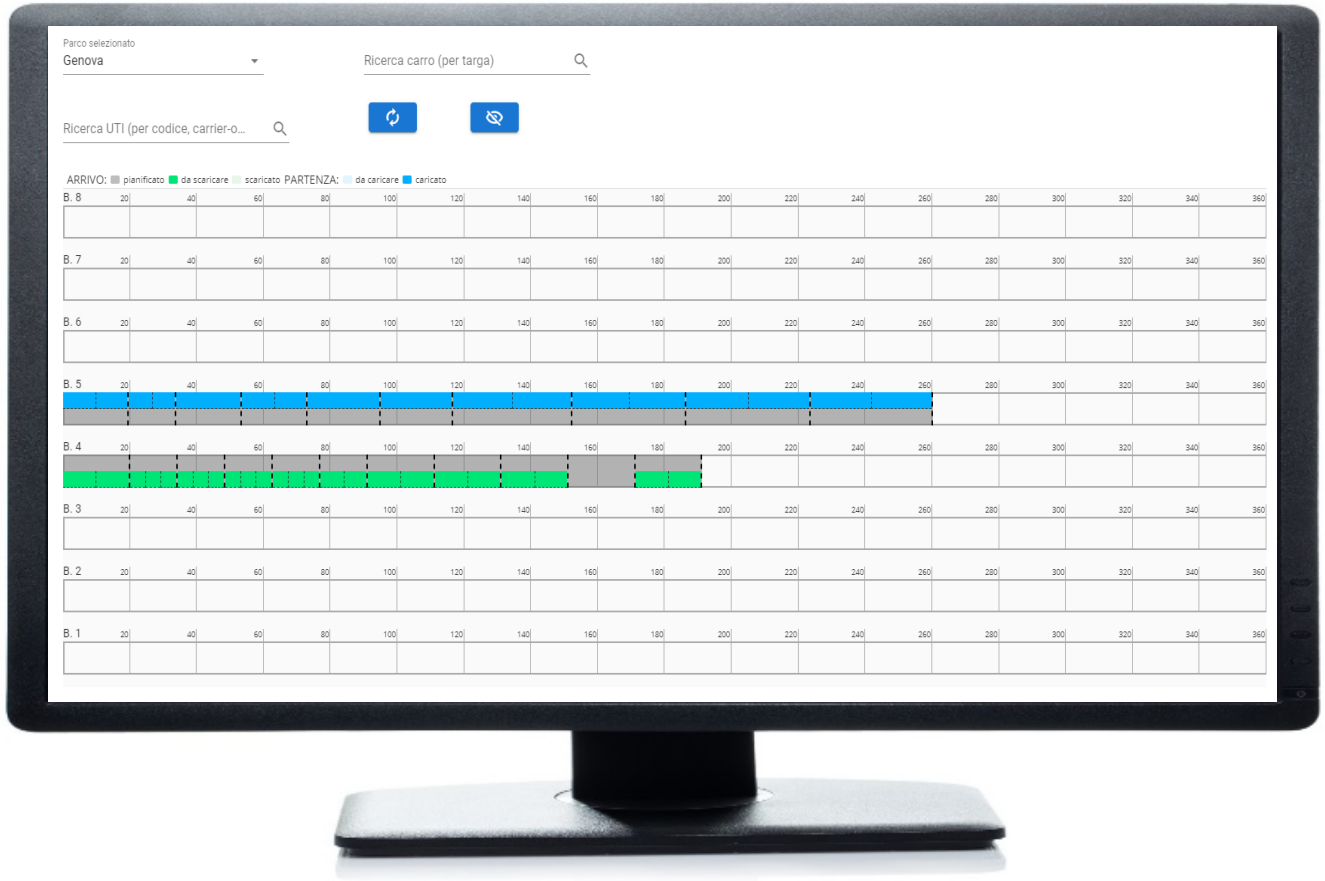
Rail Park - Real Time View

Rail Park - Real Time View

- Control operations in **real time**, see **graphical views** below of rail parks.



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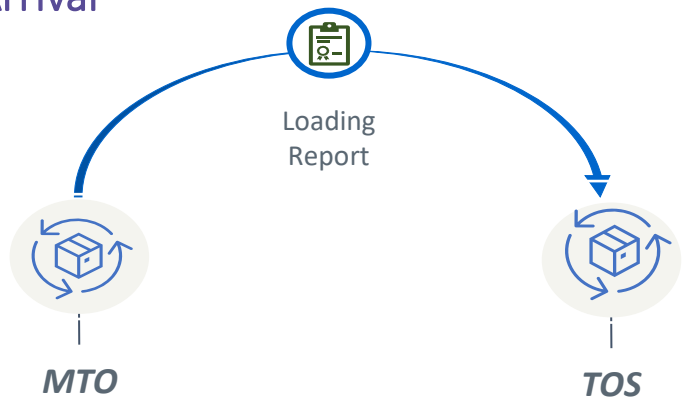
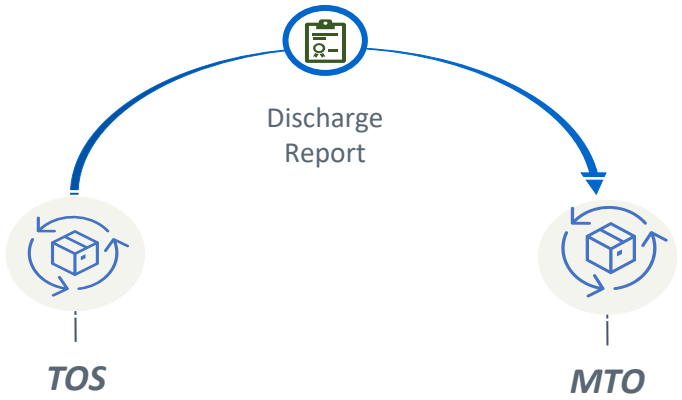
Rail Management – Interconnected Systems

Arrival

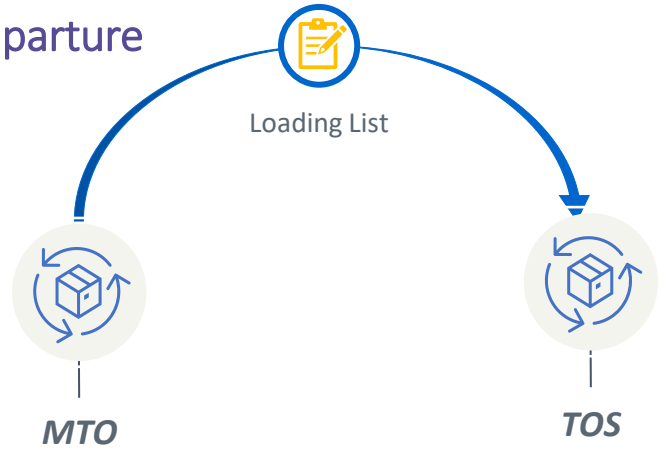


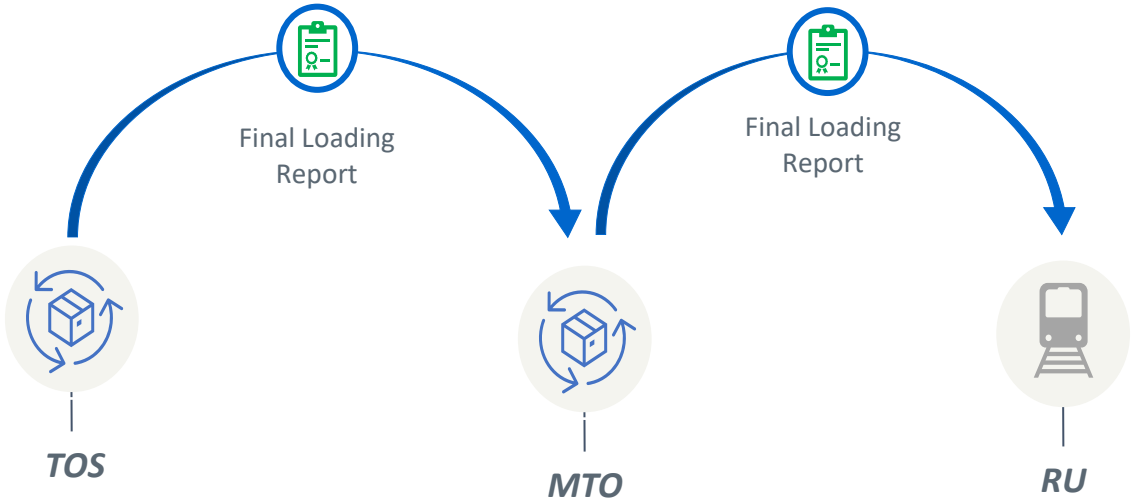


Rail Transport

- Railway Undertaking
- MTO
- Shunting companies

Departure





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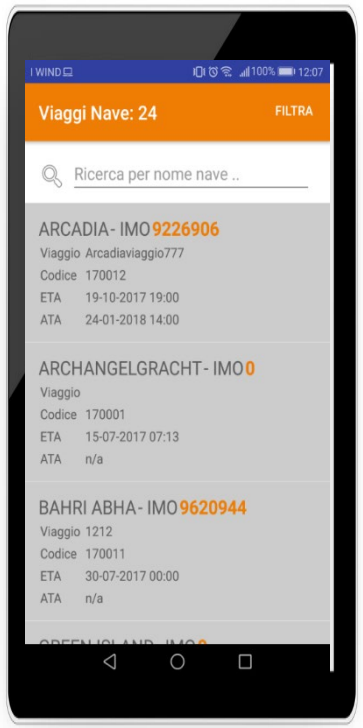
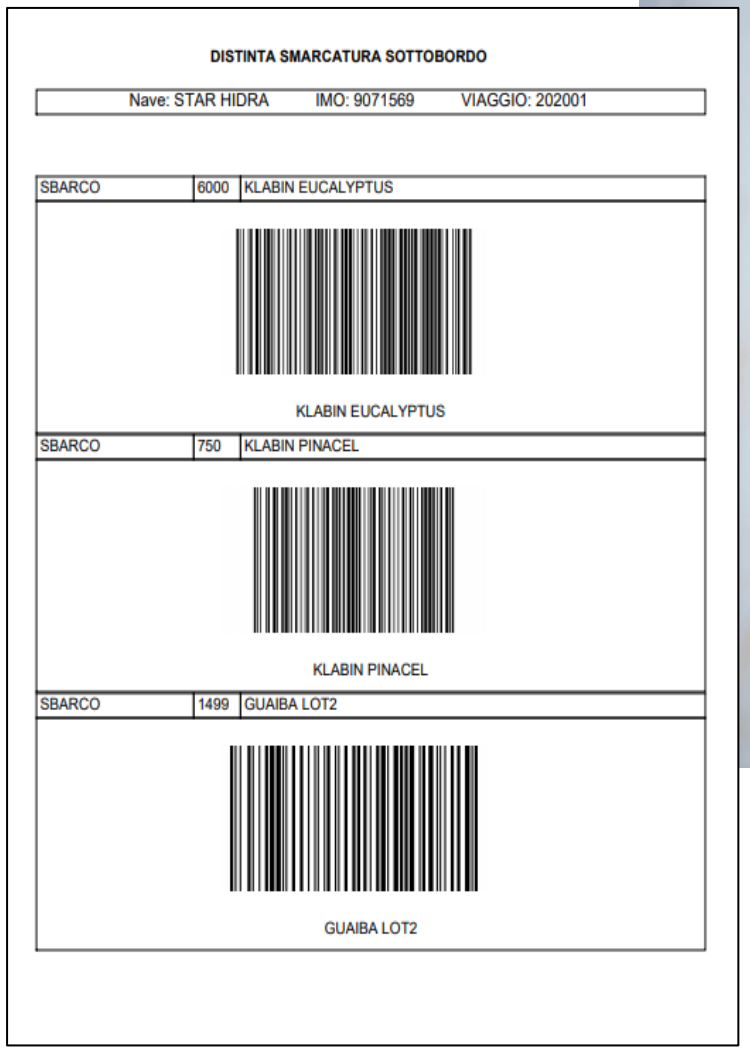
Mobile – Loading/Discharging Operation





The mobile App allows terminal operators (operative del terminal) to perform Vessel and Rail Loading/Unloading activities, yard operations relating stocking activities, **Delivery/Receipt of goods, advanced IoT functionalities**

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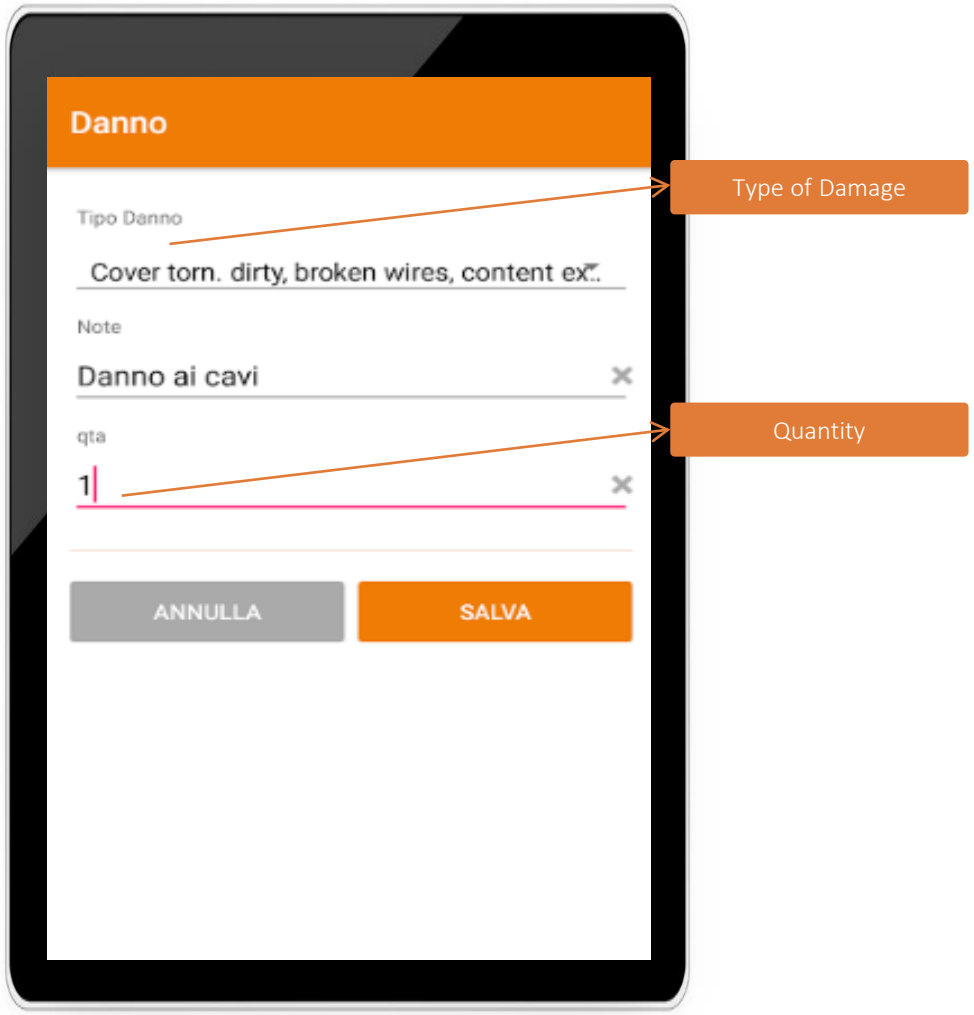
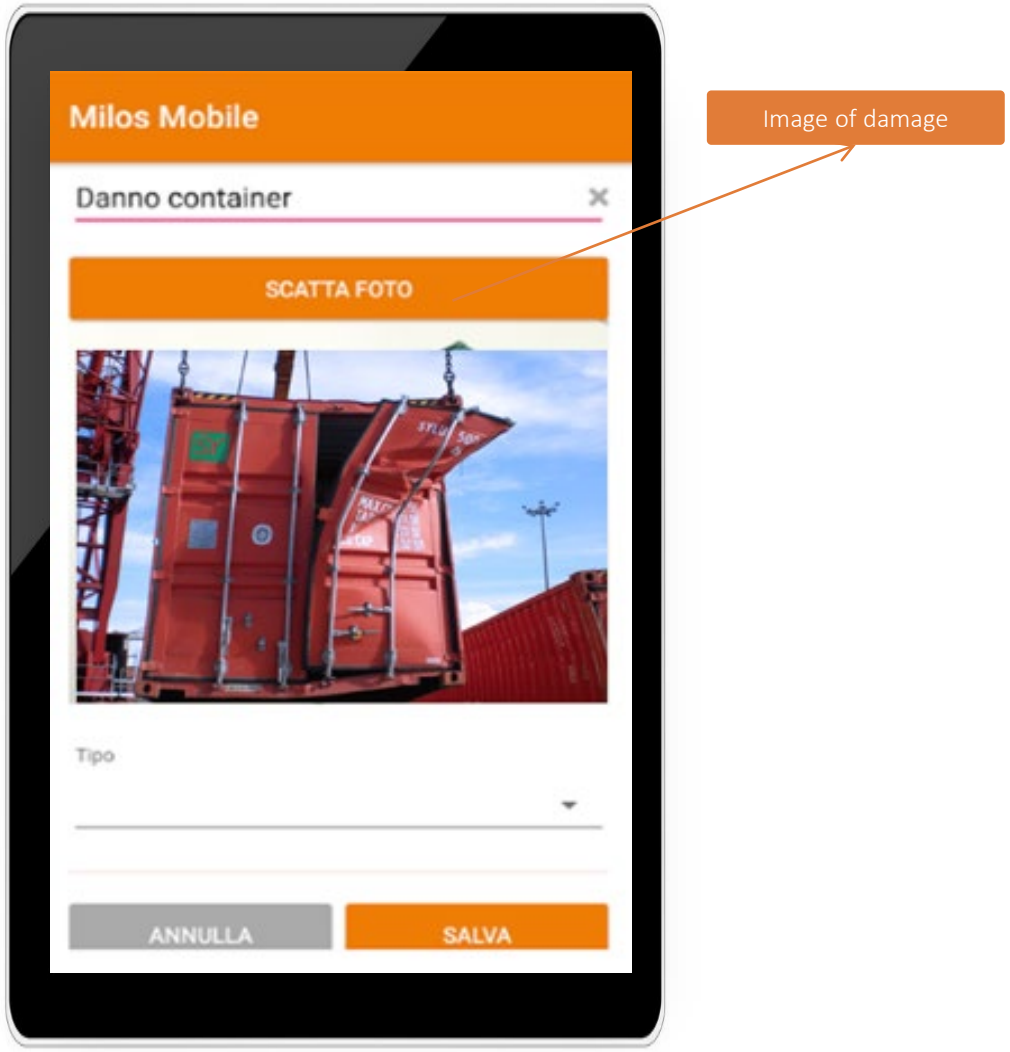
Mobile –Damage Reporting





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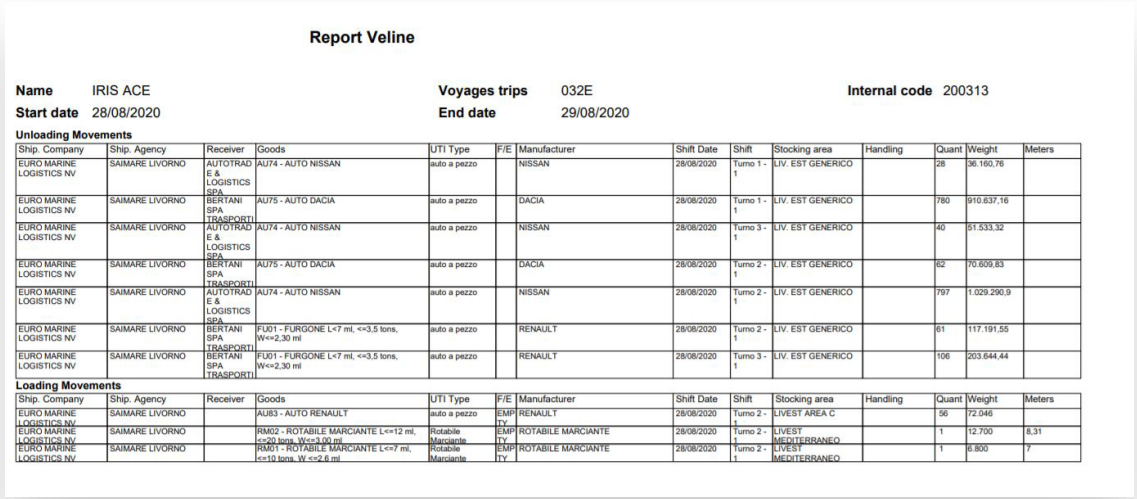
TOS Reports



Report Veline

Name IRIS ACE **Voyages trips** 032E **Internal code** 200313
Start date 28/08/2020 **End date** 29/08/2020

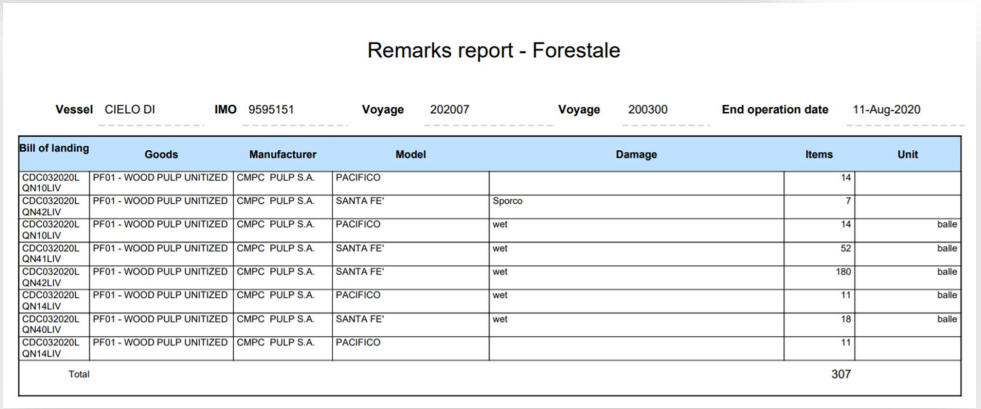
Unloading Movements

Ship. Company	Ship. Agency	Receiver	Goods	UTI Type	F/E	Manufacturer	Shift Date	Shift	Stocking area	Handling	Quant	Weight	Meters
EURO MARINE LOGISTICS NV	SAIMARE LIVORNO	AUTOTRADE & LOGISTICS SPA	AU74 - AUTO NISSAN	auto a pezzo		NISSAN	28/08/2020	Turno 1 - 1	LIV. EST GENERICO		28	36.160,76	
EURO MARINE LOGISTICS NV	SAIMARE LIVORNO	BERTANI SPA TRASPORTI	AU75 - AUTO DACIA	auto a pezzo		DACIA	28/08/2020	Turno 1 - 1	LIV. EST GENERICO		780	910.637,16	
EURO MARINE LOGISTICS NV	SAIMARE LIVORNO	AUTOTRADE & LOGISTICS SPA	AU74 - AUTO NISSAN	auto a pezzo		NISSAN	28/08/2020	Turno 3 - 1	LIV. EST GENERICO		40	51.533,32	
EURO MARINE LOGISTICS NV	SAIMARE LIVORNO	BERTANI SPA TRASPORTI	AU75 - AUTO DACIA	auto a pezzo		DACIA	28/08/2020	Turno 2 - 1	LIV. EST GENERICO		62	70.609,83	
EURO MARINE LOGISTICS NV	SAIMARE LIVORNO	AUTOTRADE & LOGISTICS SPA	AU74 - AUTO NISSAN	auto a pezzo		NISSAN	28/08/2020	Turno 2 - 1	LIV. EST GENERICO		797	1.029.290,9	
EURO MARINE LOGISTICS NV	SAIMARE LIVORNO	BERTANI SPA TRASPORTI	FU01 - FURGONE L<7 ml, <=3,5 tons, W<=2,30 ml	auto a pezzo		RENAULT	28/08/2020	Turno 2 - 1	LIV. EST GENERICO		61	117.191,55	
EURO MARINE LOGISTICS NV	SAIMARE LIVORNO	BERTANI SPA TRASPORTI	FU01 - FURGONE L<7 ml, <=3,5 tons, W<=2,30 ml	auto a pezzo		RENAULT	28/08/2020	Turno 3 - 1	LIV. EST GENERICO		106	203.644,44	

Loading Movements

Ship. Company	Ship. Agency	Receiver	Goods	UTI Type	F/E	Manufacturer	Shift Date	Shift	Stocking area	Handling	Quant	Weight	Meters
EURO MARINE LOGISTICS NV	SAIMARE LIVORNO		AU83 - AUTO RENAULT	auto a pezzo	EMPTY	RENAULT	28/08/2020	Turno 2 - 1	LIVEST AREA C		56	72.046	
EURO MARINE LOGISTICS NV	SAIMARE LIVORNO		RM02 - ROTABILE MARCIANTE L<=12 ml, <=20 tons, W<=3,00 ml	Rotabile Marciante	EMPTY	ROTABILE MARCIANTE	28/08/2020	Turno 2 - 1	LIVEST MEDITERRANEO		1	12.700	8,31
EURO MARINE LOGISTICS NV	SAIMARE LIVORNO		RM01 - ROTABILE MARCIANTE L<=7 ml, <=10 tons, W <=2,6 ml	Rotabile Marciante	EMPTY	ROTABILE MARCIANTE	28/08/2020	Turno 2 - 1	LIVEST MEDITERRANEO		1	6.800	7

Vessel, Yard, Gate & Rail **Operative Reports** can be automatically generated



Remarks report - Forestale

Vessel CIELO DI **IMO** 9595151 **Voyage** 202007 **Voyage** 200300 **End operation date** 11-Aug-2020

Bill of landing	Goods	Manufacturer	Model	Damage	Items	Unit
CDC032020L QN10LIV	PF01 - WOOD PULP UNITIZED	CMPC PULP S.A.	PACIFICO		14	
CDC032020L QN42LIV	PF01 - WOOD PULP UNITIZED	CMPC PULP S.A.	SANTA FE'	Sporco	7	
CDC032020L QN10LIV	PF01 - WOOD PULP UNITIZED	CMPC PULP S.A.	PACIFICO	wet	14	balle
CDC032020L QN41LIV	PF01 - WOOD PULP UNITIZED	CMPC PULP S.A.	SANTA FE'	wet	52	balle
CDC032020L QN42LIV	PF01 - WOOD PULP UNITIZED	CMPC PULP S.A.	SANTA FE'	wet	180	balle
CDC032020L QN14LIV	PF01 - WOOD PULP UNITIZED	CMPC PULP S.A.	PACIFICO	wet	11	balle
CDC032020L QN40LIV	PF01 - WOOD PULP UNITIZED	CMPC PULP S.A.	SANTA FE'	wet	18	balle
CDC032020L QN14LIV	PF01 - WOOD PULP UNITIZED	CMPC PULP S.A.	PACIFICO		11	
Total					307	

Damage Reports can be automatically generated

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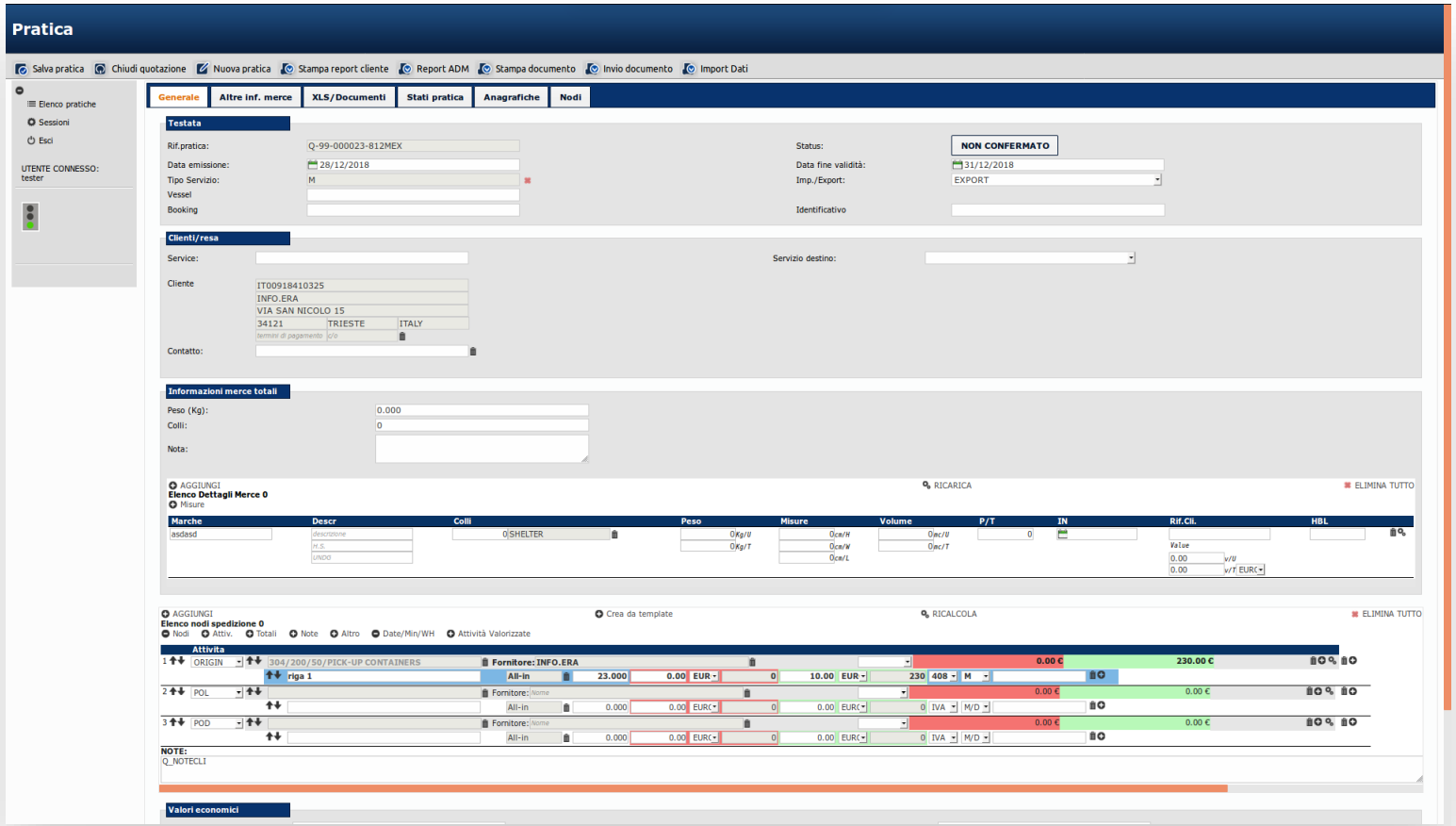
Invoice



INVOICE is a smart link between the operative and the administrative side.

The module create the document and performs a preventive check of the adequacy and validation of the data before transfer of the same to the ERP connector for the creation of the accounting records.

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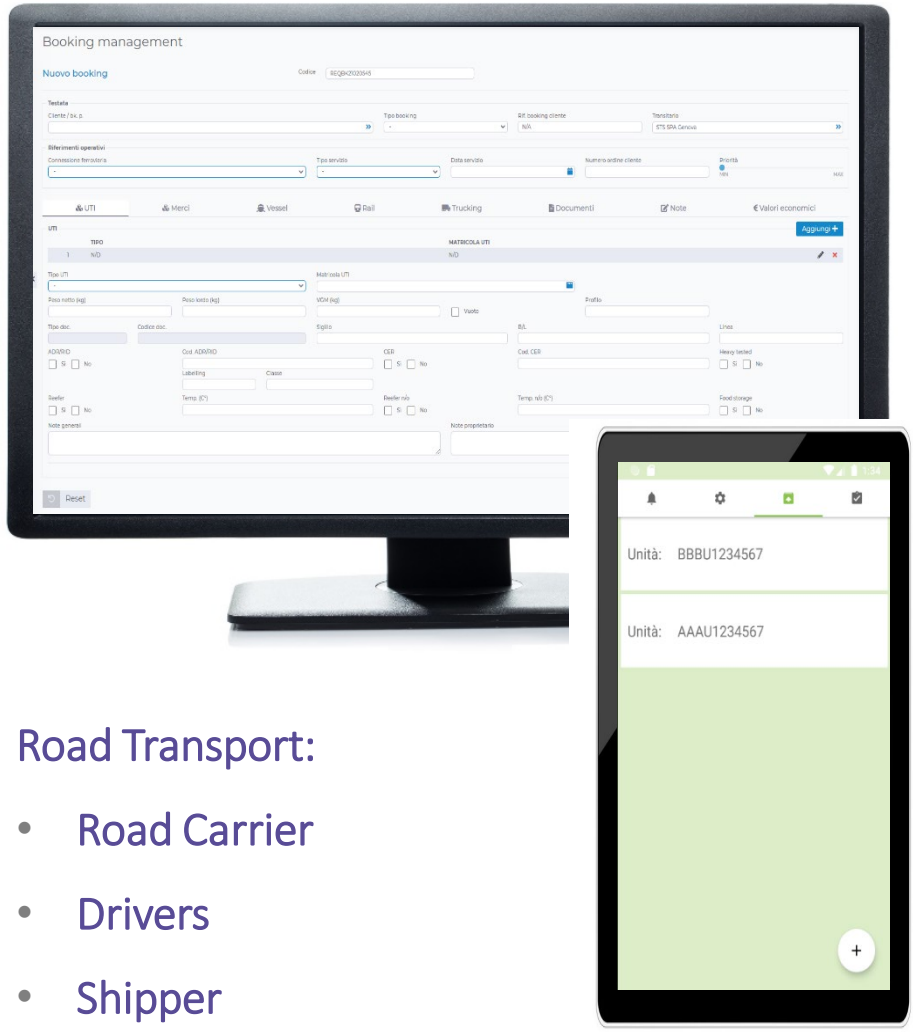
Pre-Announcement & Truck Appointment Systems



The **Pre-Announcement** (PA) modules allows hauliers to make a booking of delivery and/or pick-up to the Terminal, by providing information relating ITU and goods delivered and uploading the mandatory documentation in order to receive the authorization from the terminal itself.

The **Truck Appointment** System is a module that allows to enrich the PA module with the possibility for the Haulier to book the delivery and/or pick-up of ITU in time slots configured by the Terminal.

Thanks to this interface between Hauliers, Terminal and Drivers, all of them can optimize the allocation of Yard Operation and Booking Orders during the day.

Road Transport:

- Road Carrier
- Drivers
- Shipper

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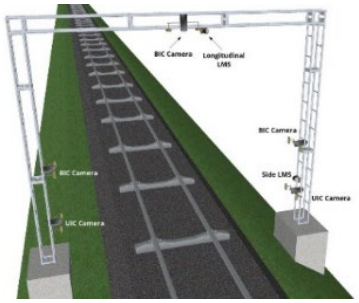
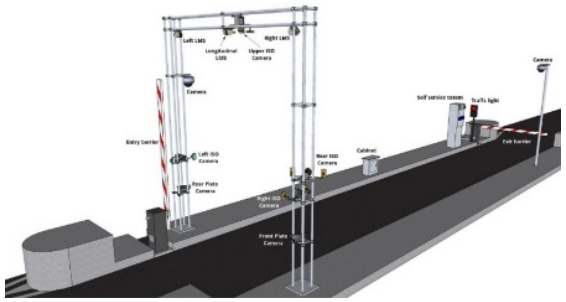
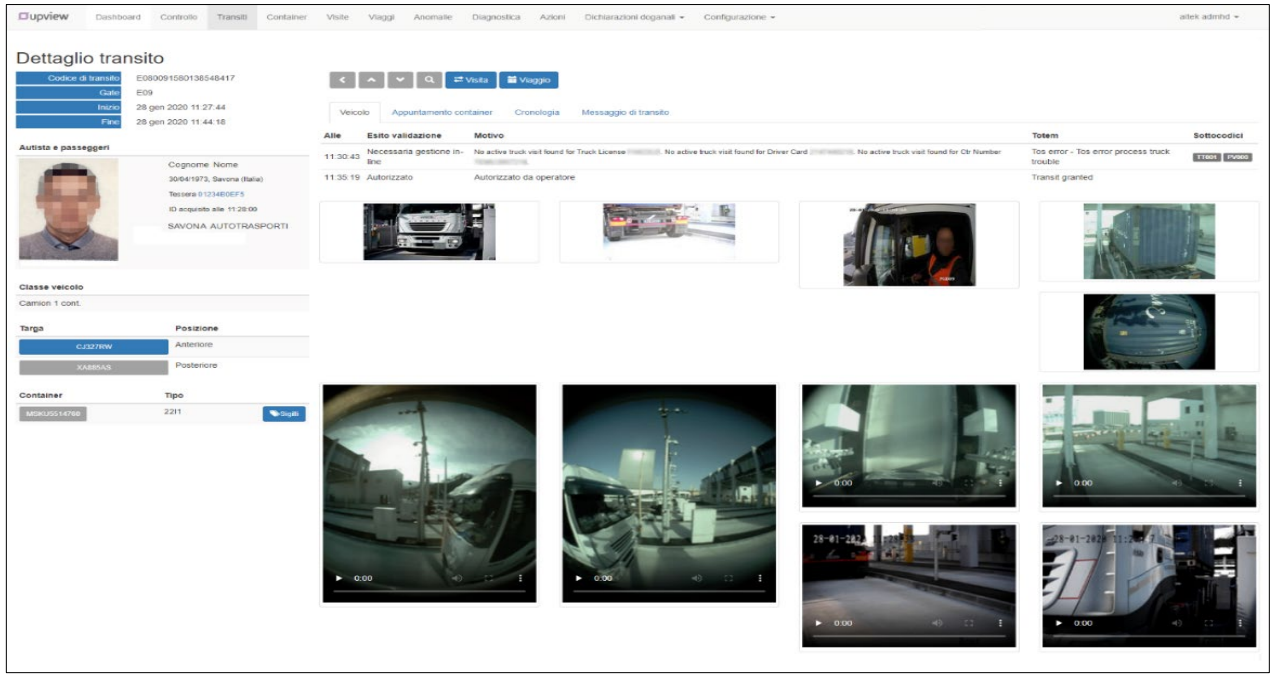
Gate Automation







Gate Automation is a hardware (OCR, RFID, etc..) and software solution which allows automating gate operations and exchange both operative and customs data with stakeholders involved in the logistics process, also exploiting innovative Customs simplified procedures by using IOT devices in compliance with EU Customs Code.

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TOS – Multipurpose IoT Solution

Compliance with the most common RFID tags including inkjet RFID printing solutions used by producers of goods to be exported

RFID Tracking

Automatic Gate-in and Gate-out at the terminal thanks to RFID tags and chipless markings

Digital check of loading/unloading operation with mobile APP

Warehouses of final destination

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Integrated solutions for Terminal: Supply Chain automation and digitalization

Rail & inland Integration

Interchange Notarisation

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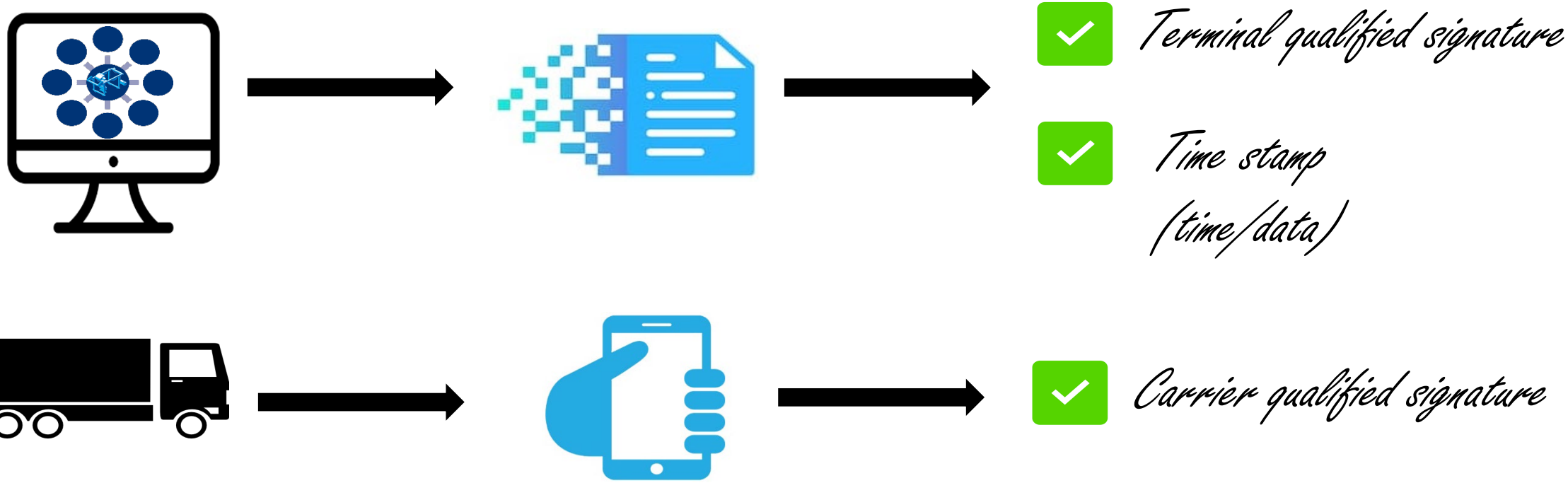
Road Transport - Interchange notarization

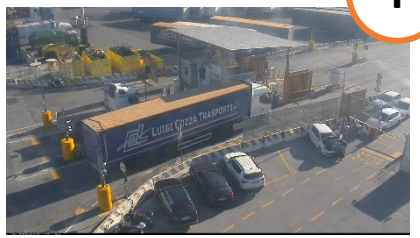


- **Digitization** of a document signed and shared between the parties, accessible on a certified server;
- **Certification** of document with legal validity;
- Reduce transit time of driver at gate;

Road Transport - Interchange notarization

Process

I



Gate-In

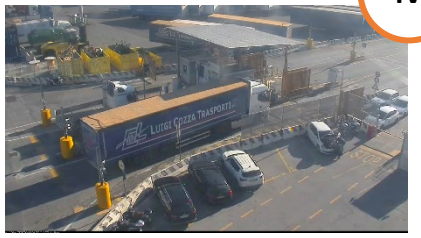
II

Yard

III

Lettura OCR

IV



Gate-Out

1

Pre-Interchange
Delivery with QR code

2

Delivery or Collection of ITU by the stocker

Production and Signature of Digital Interchange by the stocker
=> Sent to Notarisation Service

Signature of driver by reading QR code on Pre-Interchange
⇒ ***Sent to Notarisation Service***

⇒ ***ELECTRONIC NOTARISATION COMPLETED***

3

Automatic gate opening if ITC is signed by Stocker and driver

4

Notarised document is shared with Terminal and Road Carrier and it has legal validity

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PCS - RAIL FEDERATED SERVICE

TOS

MTO, RU and

Shunting Companies

RFI PIC

PCS RAIL

PCS - RAIL FEDERATED SERVICE

TOS

MTO, RU and

Shunting Companies

RFI PIC

PCS RAIL

Processes

- Import
- Export
- Rail Track Port Area
- Tracking Rail voyages (PIC)

PCS - RAIL FEDERATED SERVICE

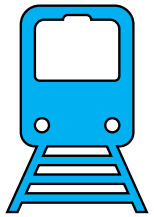
	IMPORT		EXPORT	IMPORT/EXPORT
Actor	Loading List	Final Loading Report	Loading report	Tracking Rail Voyages
MTO				
RU				
Terminal				
PCS RAIL				

Legenda

Sender

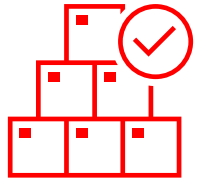
Receiver

Next step PCS RAIL



Last Mile

Shunting Company



Interoperability Goods
Customs status

Customs Gate
Automation

Thank you

Simone Siria

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Circle Group