Port of Tallinn:
The first mover in port innovation

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Member of the Management Board /
Chief Business Development Officer

PORT OF TALLINN
The Port of Good News

Agenda

1. Company
2. Greentech journey
3. About Smart Port
4. Our innovation roadmap

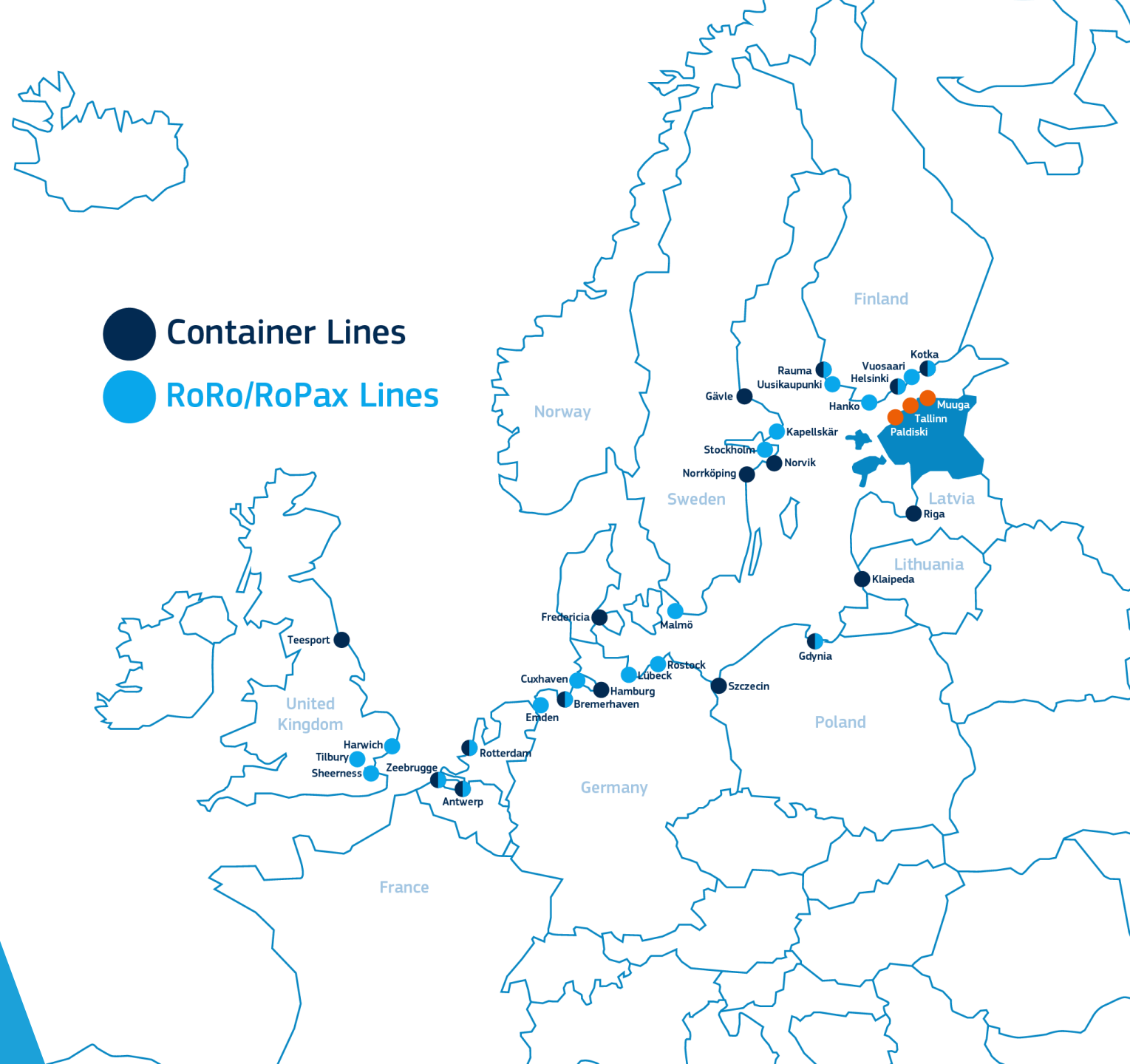
TALLINNA SADAM

Company

Location

Positioned as a gateway to hundreds of millions of customers.

- Excellent road-, rail- and maritime connections for multimodality
- Regular daily connections with Scandinavian and European ports
- Ideal geographical location with low business risk for nearshoring



NASDAQ BALTIC AWARDS
2021 INVESTOR RELATIONS OF THE YEAR

Port of Tallinn is a Listed Company

Port of Tallinn is listed on Nasdaq Tallinn Stock Exchange since June 13, 2018.

Shareholders include:

67% Republic of Estonia
33% Investment funds,
pension funds, private investors

Nasdaq acknowledged Port of Tallinn as the most remarkable stock exchange debut of the year.

NASDAQ BALTIC AWARDS 2019
STOCK EXCHANGE EVENT OF THE YEAR
IPO OF TALLINNA SADAM IN ESTONIA

BUSINESS FIELDS

PORT OF TALLINN

Passengers

- 10 M passengers a year
- 5450 ferry calls a year
- Old City Harbour and Saaremaa Harbour
- Welcoming passenger ships, offering and developing the port infrastructure, serving passengers and vehicles

Cargo

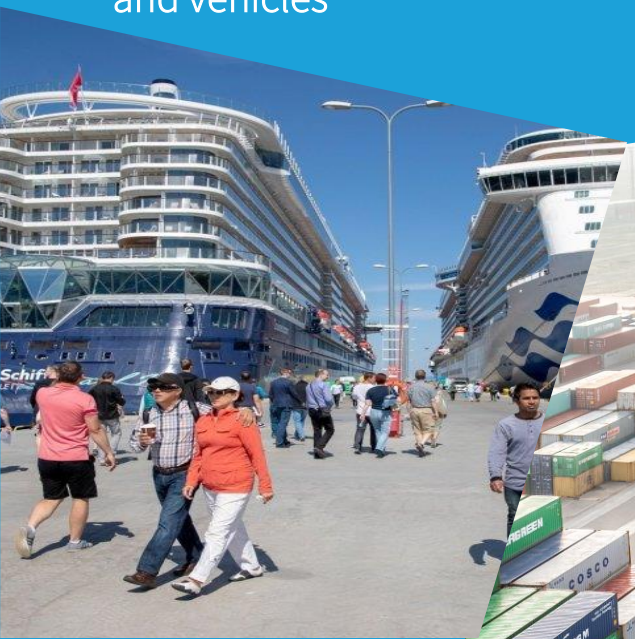
- 20 mln tons of cargo a year
- 1637 cargo ship calls a year
- Muuga Harbour, Paldiski South Harbour
- Welcoming cargo ships, offering and developing the port infrastructure, serving passengers and vehicles

Shipping

- Operating ferry traffic between the mainland and major islands
- 2 mln passengers, 1 mln vehicles a year
- Ice breaking in the ports of Northern Estonia

Real Estate

- 16 ha Old City Harbour real estate development
- 76 ha Muuga Industrial Park
- 39 ha Paldiski South Harbour Industrial Park
- 10 ha Saaremaa Harbour
- Land and commercial space



PORT OF TALLINN

Where we operate

from harbours to vessel operations

Port of Tallinn doesn't by far mean ports in the city limits of Tallinn.

Port of Tallinn is a port complex with harbours located all over Estonia.

Ice-breaker Botnica

Muuga Harbour

Tallinn: Old City Harbour & Old City Marina

Paldiski South Harbour

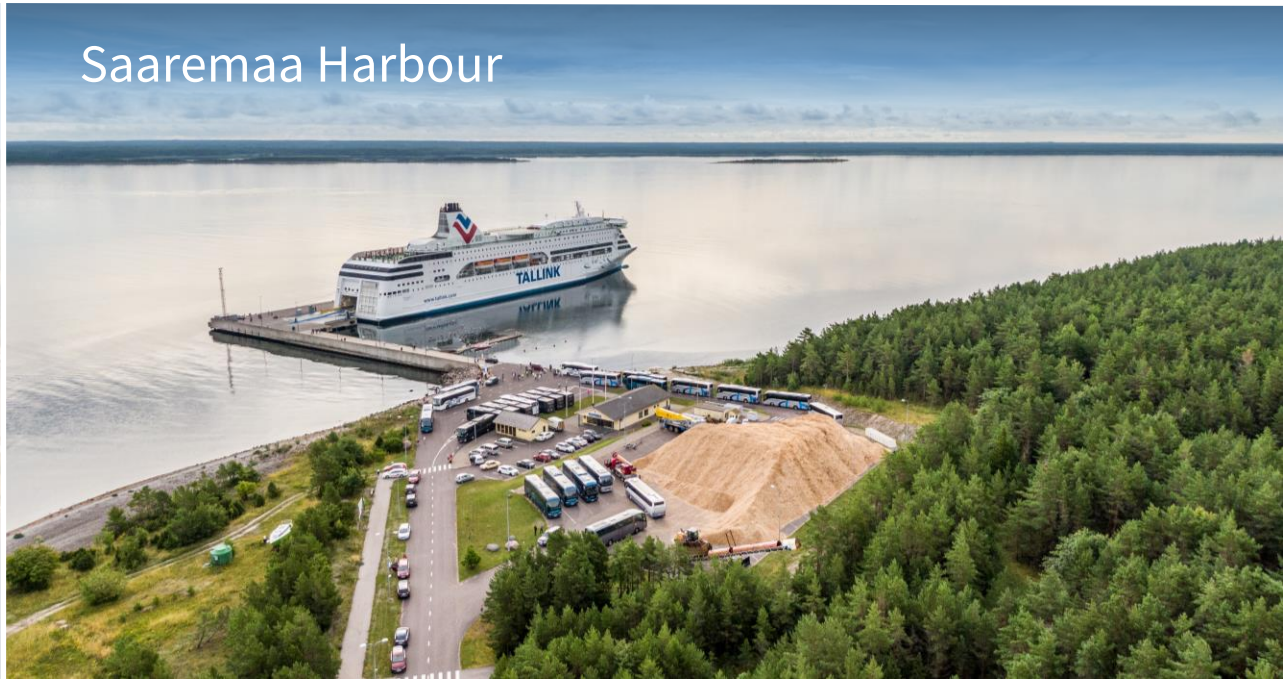
Ferry transfer to islands

Saaremaa Harbour

Old City Harbour

Muuga Harbour

Paldiski South Harbour


Saaremaa Harbour
TALLINK

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Greentech journey

Automooring

- 3 quays
- In use from 2021
- For ships on the shorter sea routes
- Shorter mooring time and lower fuel consumption
- Less air pollution
- Less noise and vibration

Onshore Power

- 5 quays
- In use from 2019
- Ships of the Finnish and Swedish route
- Less air pollution, noise and vibration
- 1 ship 7 h per day, decrease per year:

- 1440 t CO_2;
- 20 t NO_x ;
- 820 kg SO_x;
- 2,5-3%fuel consumption

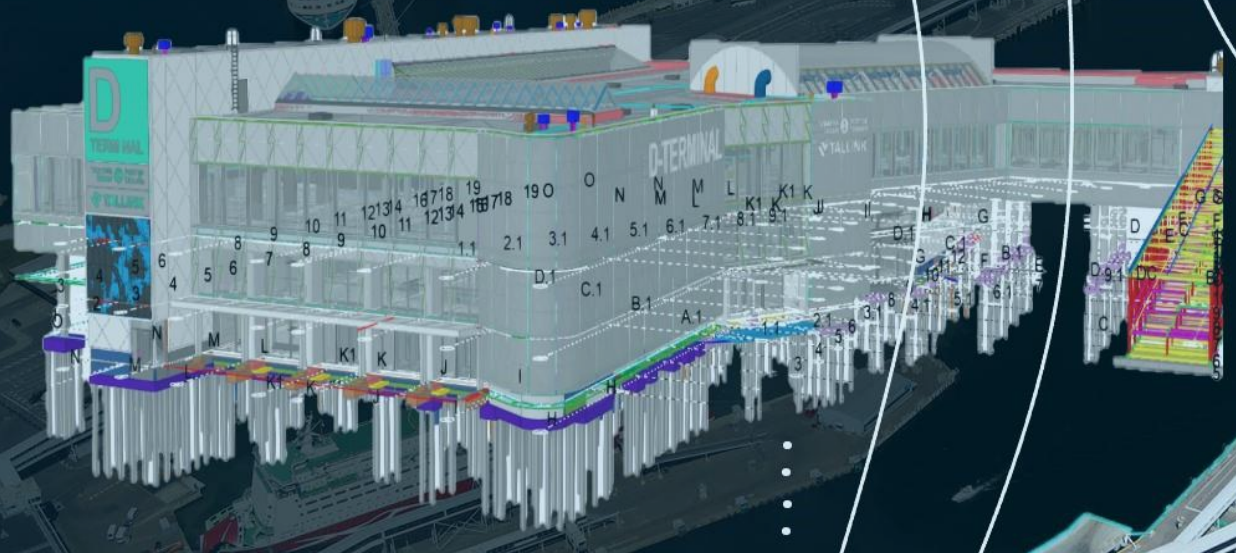
- Frequency 50 Hz, voltage 11kV

Port of Tallinn Digital Twin

Smart Port -

intelligent system which automates the vehicle traffic and shortens the time passenger cars and trucks spend on harbour premises

Links to document management software



Digital work orders based on port assets

ERP

Tallinn Harbour Asset Management System

-Underground utilities and abouve ground assets

Building BIM

Information Modeling

GIS

CRM

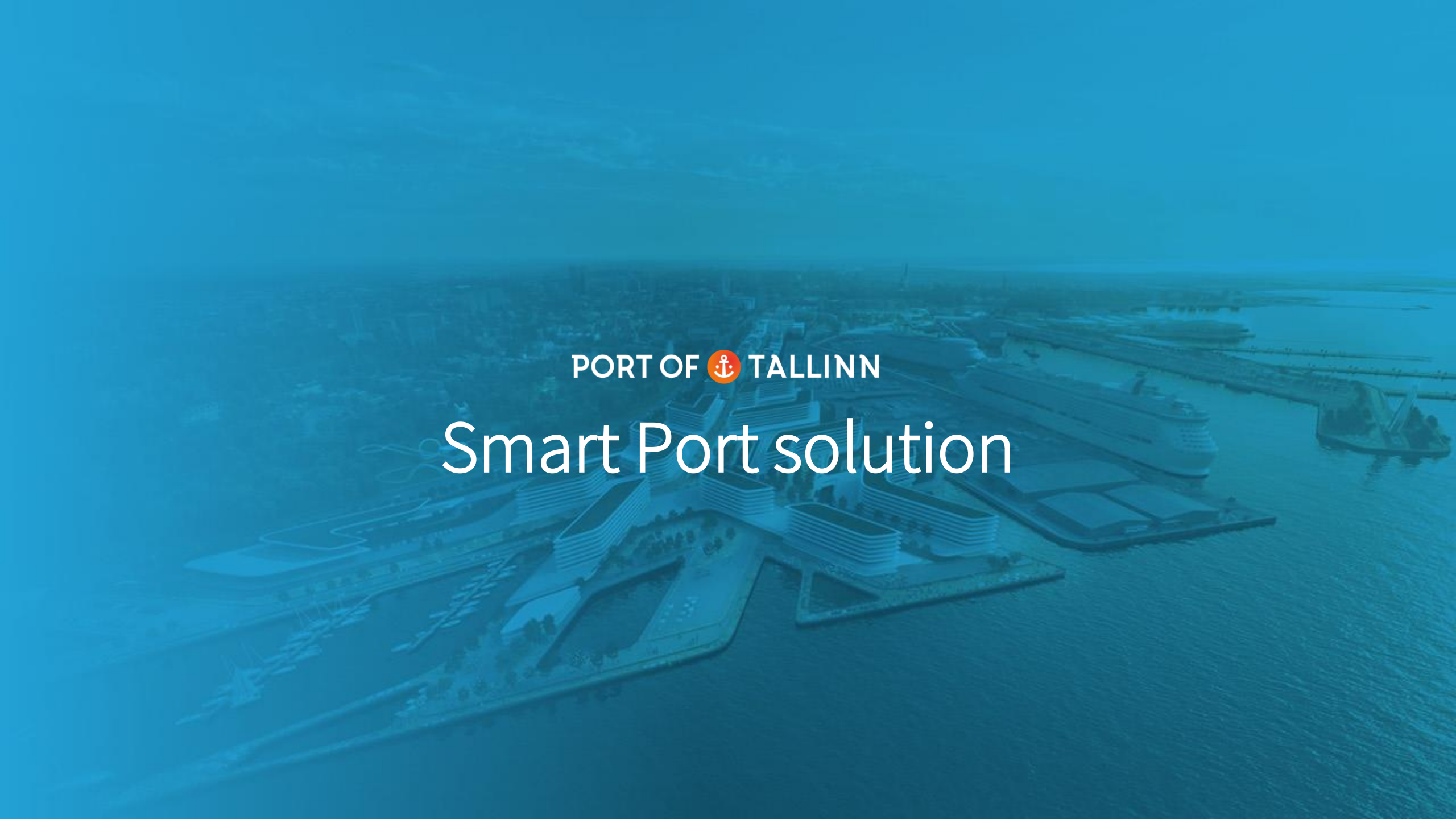
Customer Relationship Management

NavVis Indoor viewer- *real situation in 3D from the building*

Drone area mapping

+

Point Cloud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Smart Port solution

Pre-gate
Check-in
Gathering area
Smart Port
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Over our 10 years of Smart Port journey,
we have documented clear benefits for all parties involved

PORT OF TALLINN

Ferry operators

Efficient terminal operations

E.g. 75% of FTEs saved on check-in and marshalling in Port of Tallinn; with additional potential. Loading efficiency. Easier to cope with seasonality.

Great customer experience

Terminal experience influences everything else on board!
NPS increase from 40 to 78 at TS Laevad.

Recover lost revenue

From correct classification of vehicles, number of passengers & long-term trailer parking.

Timely departure

Manage traffic flows in port and support timely departure of vessels - leading to lower sailing speeds and lower costs.

Port authority

Optimal use of land

Ferry operations can be accomplished from fewer m2.
Several operators in same terminal.

Additional departures

Port enables efficient operations – attractive for new departures.
Additional sailings can be added at unmanned hours.

Improved sustainability

Reducing congestion, idling in the port, and supporting fast turnaround of vessels in ports.

Access to accurate real time data

Opportunity for further operational improvements, supply chain efficiency, sustainability effect, and intermodal integrations.

2. Smart Port at Port of Tallinn

IMPLEMENTED

The Smart Port covers all aspects of ferry terminal operations with possibility for full-scale automation and most advanced data orchestration through integrations.

SMART PORT terminal operating system
provides a comprehensive, accurate, real-time data overview of terminal operations.

Ro-pax & trucks

- Automatic data gathering
- Automatic check-in
- Exception handling
- Automatic classification
- Automatic marshalling
- Digitally assisted loading.

Drop trailers

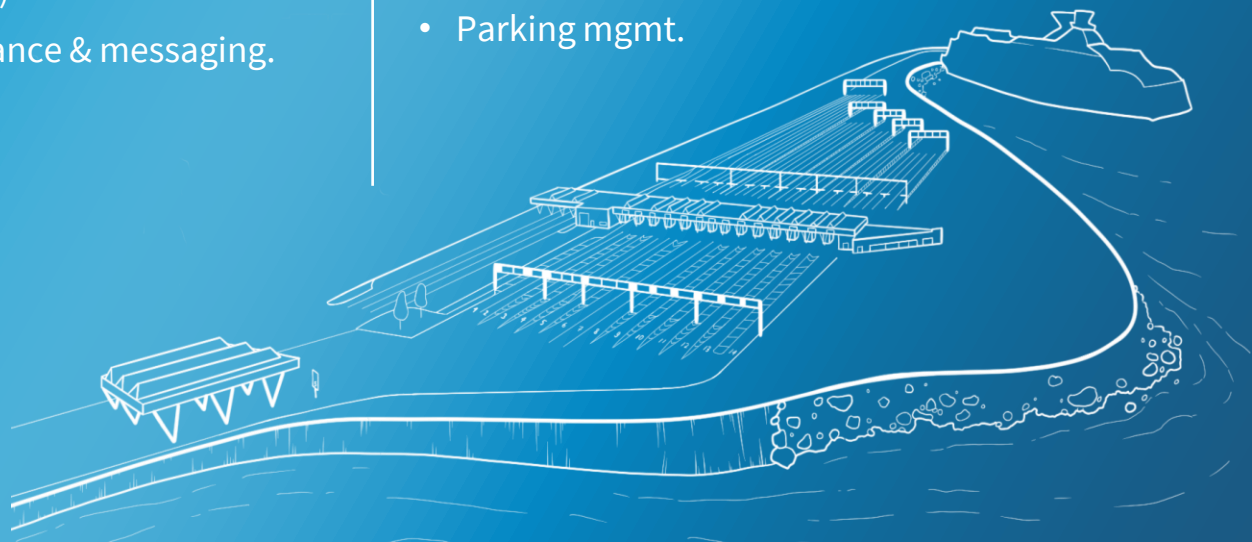
- Access control & digital gate in
- Damage control
- Optimization of loading & work planning (integration with TOS)
- Validation at gate out.

Foot-pax

- Digital check-in
- Access control (smart gates)
- Guidance & messaging.

Employees & contractors

- Temporary & permanent permits
- Digital requests & request mgmt.
- Control across terminals
- Parking mgmt.



2. Smart Port at Port of Tallinn: Ro-pax & trucks

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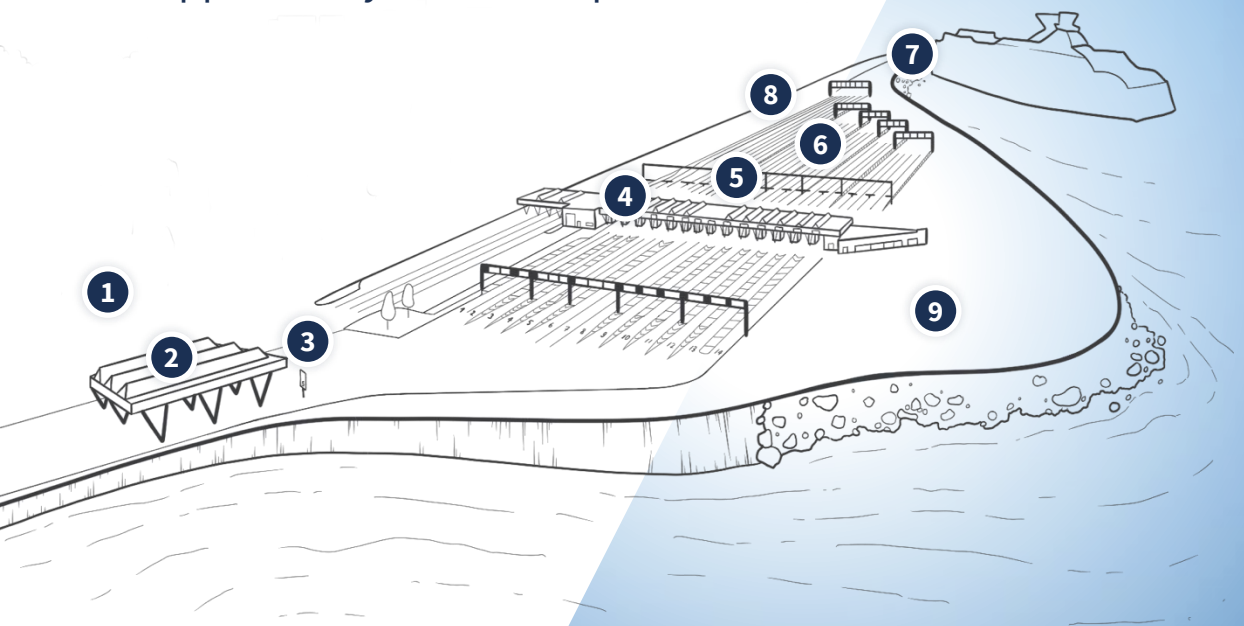
Terminal automation

The Smart Port solution provides a holistic view of terminal operations to support every team's unique needs.



1. Before the departure

Prepare the terminal gathering area layout (digitally) based on arriving vehicles.

2. Pre-gate

Identify vehicles and gather all relevant data to enable automatic processing, safety & security, and revenue mgmt.

3. Driving directions

Get the travelers attention and start the smooth, efficient and safe traffic guidance with personalized directions.

4. Check-in area

Provide access to the restricted loading/gathering area and direct drivers to the correct lane for loading.

5. Lock area

Provides orderly and safe passage to the correct marshalling area lane.

6. Digital marshalling

Automatically gather all vehicles per loading allocation type and prepare for loading.

7. Loading

Load vehicles onto the ferries in an efficient, safe and clear manner – with perfect overview of status.

8. Unloading

Guide vehicles out of the vessel and terminal – processes aligned with border guard and customs for needed checks.

9. Border shop

Duty free shop is integrated into the system as a seamless add-on, boosting revenues and customer experience.

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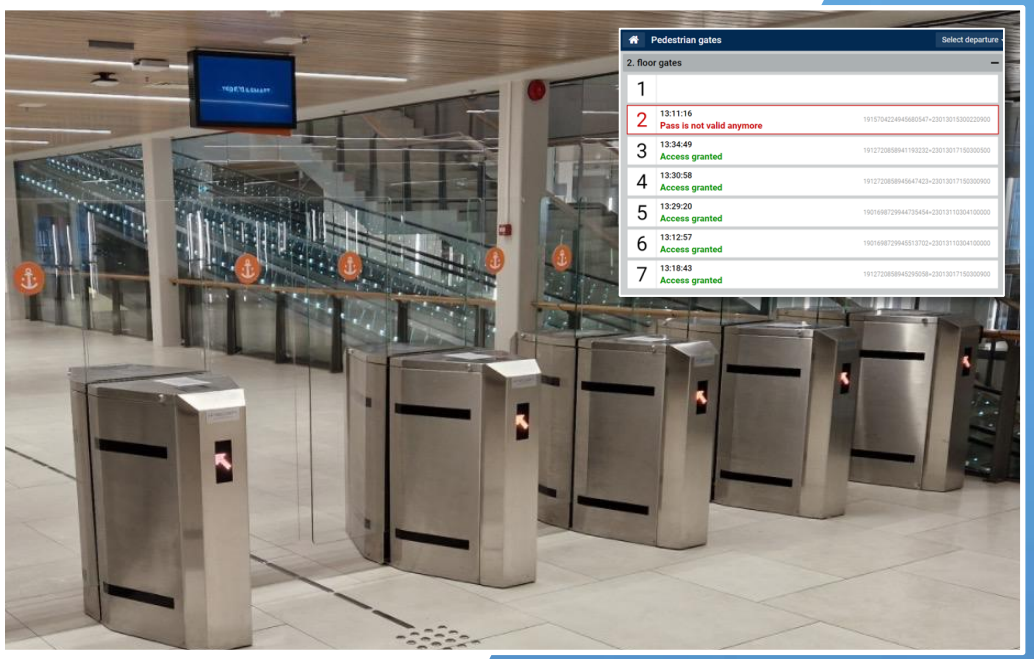
The Foot-PAX solution

allows for automatic passenger registering and smooth guidance to the vessel



FUNCTIONALITIES

- Ticket and/or booking check
- Count passengers with speedgates and counting cameras
- Error handling through employee app
- Passenger guidance in terminal
- Passenger announcements and messages on screens

- Same speedgates can handle multiple operators' passengers
- Multi-tier gate possibilities to better control passenger movement to correct operator and/or departure.

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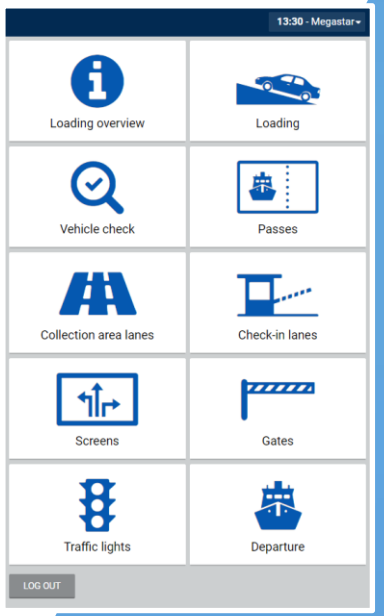
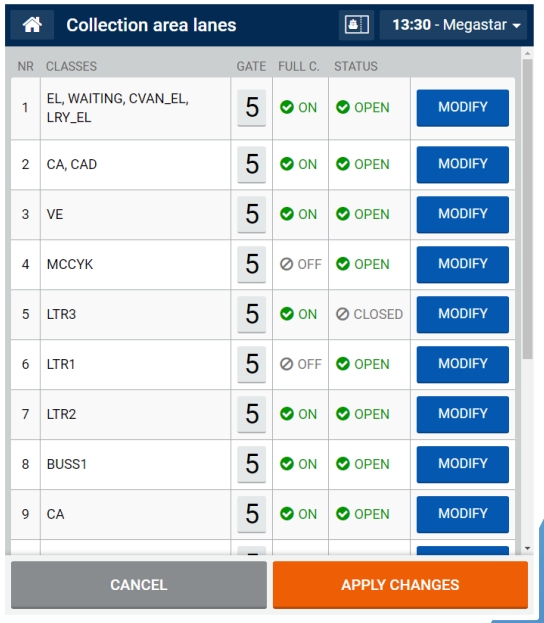
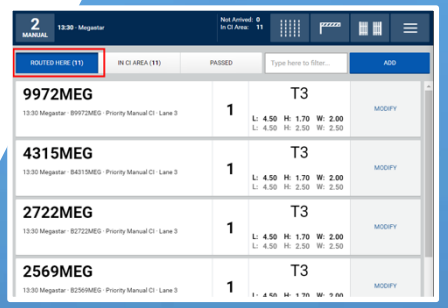






Software applications

for port and operator staff make the system easy to use

App for staff

- Loading, vehicle check, lane allocation changes, etc.
- Central control of gates, traffic lights, information displays, etc.

Check-in interface for ferry operators

- Vehicle information from pre-gate scanning
- Bookings' check

Admin console

- Reporting, schedules, configuration

+90% of employees happy with the ease & use of system (POT)

Partners

Smart Port system was developed and implemented with our innovation and digitalization partner **Nortal** (incl. system design, algorithms, integrations, user interfaces, reporting etc.)

Nortal

Nortal is still involved to develop the system further.

Hansab

Hansab is acting as a hardware partner.

Innovation roadmap

Seamless customer experience where all unnecessary actions have been removed

Data captured at every touch point to **optimize and improve** through predictive analytics

Sustainability and safety reinforced through smart technologies.

Smart Port roadmap ideas

Raise the level of automation

City ring-road parking and cargo trucks just in time to terminal

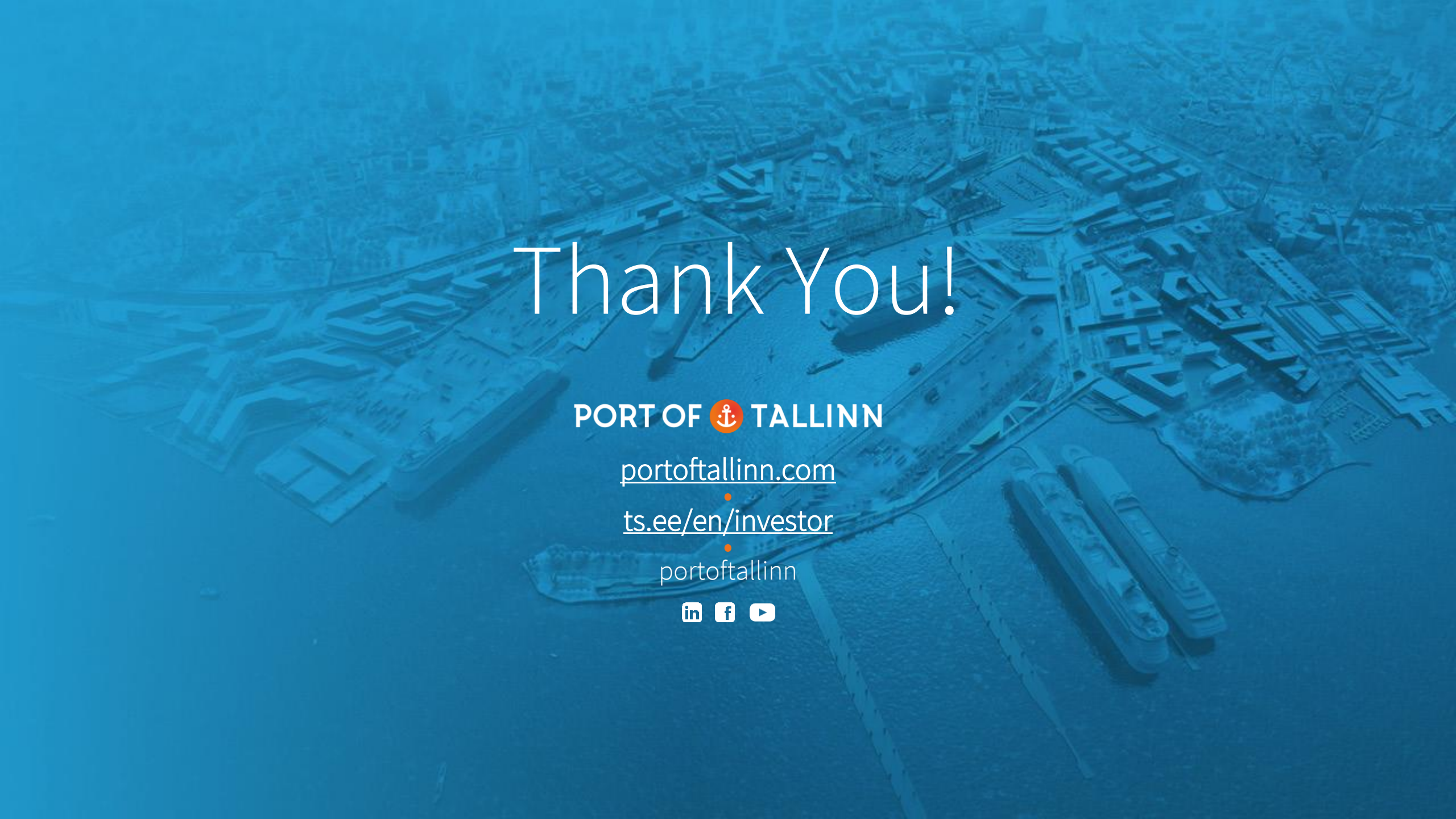
Cruise passenger and terminal visitor automation

Self-service kiosks for digital ropax check-in

PAX counting cameras full implementation

Data automation – Single Window

New A terminal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