

# Smart Ferry Port Vision



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# Smart Port now: our experience from the most advanced ferry terminals

For more than 20 years, we have revolutionized port and maritime operations. As the preferred Smart Port partner for numerous advanced ferry terminals, we've continually set new benchmarks for efficiency, customer experience, and environmental impact.

Our extensive collaboration with the Port of Tallinn is a testament to our expertise and innovative spirit. Our systems, recognized as the best in the industry at the 2023 Global Smart Port Summit in Hamburg, are meticulously designed to provide a fully automated, intelligent user experience.

Dive into the following pages to discover the cornerstone features of a Smart Port system today and look ahead as we explore its future vision.

Join us in shaping the next era of port management!



1

## Digital set-up

Prepare the terminal set-up and layout (digitally) based on arriving vehicles.

- Dynamically control areas for data collection, check-in, gathering, etc.
- Smart Port administrator app for overview and adjustments
- Integrate with shipping operators' booking and/or ticketing systems

2

## Pre-gate

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

- Identify vehicle booking through license plate reading
- Collect all necessary data, incl. vehicle size, weight, origin, make & model, pre-existing damage, number of passengers, dangerous goods in cargo
- Analyze discrepancies between booking, terminal/vessel capacity, driving directions

3

## Check-in area

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

- Automatic passage is granted for vehicles that meet predetermined requirements (e.g., online check-in done, vehicle matches booking information)
- Recognition of vehicles through license plate (or alternatively a QR code)
- In semi-automatic lanes, check-in staff gets information about arriving vehicles ahead of time

4

## Digital marshalling

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

- Fill gathering lanes automatically based on the loading preparation scheme
- Identify vehicles for randomized checks when vehicles enter through the automatic lanes
- Open new lanes automatically when needed

5

## Loading

Load vehicles onto the ferries efficiently, safely, and clearly – with perfect overview of status (digital twin).

- Passage to the vessel clearly indicated with automatically controlled loading area traffic lights and screens
- Operator staff has full visibility over the loading procedures (app) and can intervene when needed

6

## Unloading

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

- Unmanned guiding of vehicles out of the terminal
- Damage control images recorded for comparison
- Integration with customs, police & border guard to ensure arrival compliance and security



1

## Gate operating System

Make sure that access to and exit from the terminal is accurate, secure and efficient through gate operations.

- Automatic pre-gate, incl. weigh-in-motion, 3D measurements, trailer connected to a tractor number, damage control recordings, seals identification
- Parking directions (display, app, paper)
- Verification of correct trailer upon exit
- Time slot booking/mgmt.

2

## Yard management

Have an additional pair of eyes in every corner of your yard, and make sure every space is correctly used.

- Allocation of optimized parking spots
- Yard inventory mgmt. and automatic verification of parking data (e.g., tower camera, tug cameras, or QR)
- Alerts for abandoned trailers; charge for longer stays

3

## Community integrations

Have all your databases streamlined and maximize the knowledge.

- Integration with customs clearance (permission to load/leave the terminal)
- Integration between terminal operator and port
- Integration with shipping line booking system

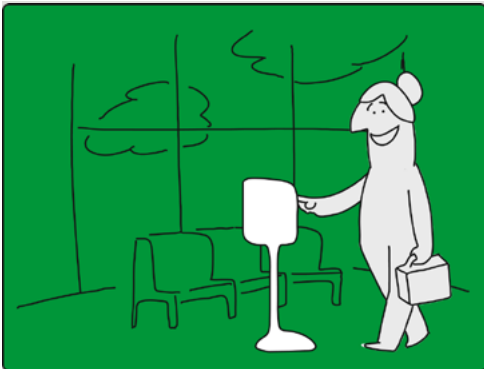
3

## Work planning

Make data-informed decisions. Improve inventory management by easily tracking the location of trailers in real time.

- Work order planning and mgmt.
- Vessel load planning
- See where and which trailer is parked (correct inventory automatically)



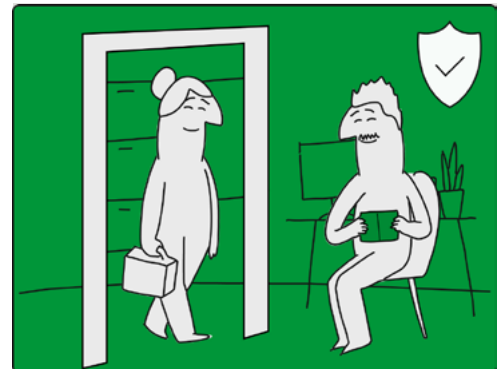


1

## Self-service check-in

Allow customers to perform their self-service procedures conveniently and without interference.

- Modern customer friendly user interface
- Saves time for travelers and staff (incl. identity verification if needed)
- Opportunities for upselling and personalized offers.

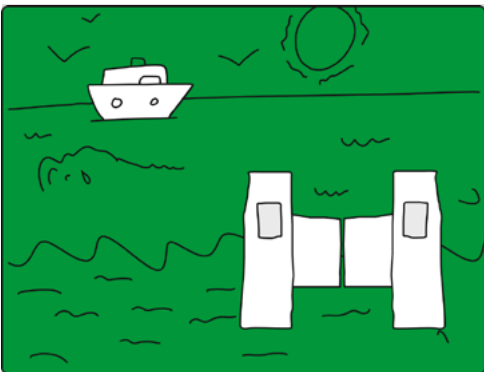


2

## Security gates

Make sure that travelers have only access to the correct areas of the terminal.

- Usage of different gate technology depending on use case
- Integration of biometric recognition (if needed)
- User friendly and modern interfaces that make it easy to use as travel or staff.



3

## Digital signage

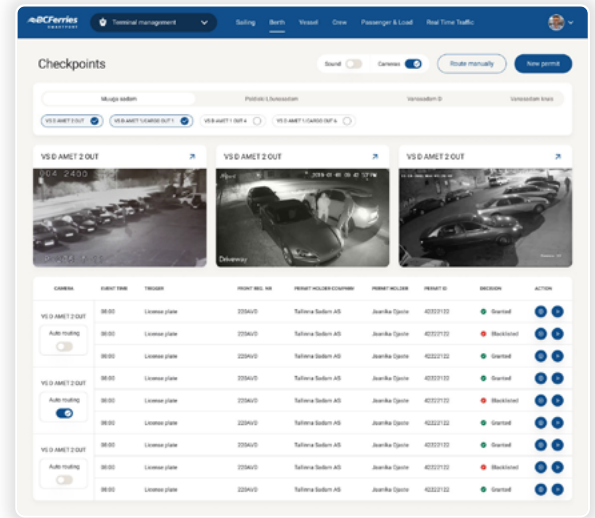
Create a safe and convenience travel experience through well considered and informative signage.

- Appropriate information at all journey points
- Possible to overlay urgent information
- Contemporary and well-considered design of content.

## 1 App for operational staff

Manage port functions through an easy-to-use system that conveniently minimizes errors and risks.

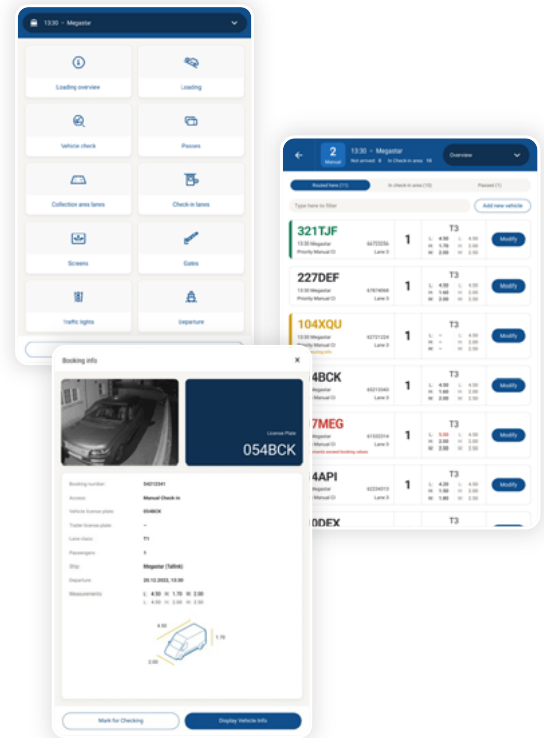
- Central control of all terminal hardware
- Overview of arriving traffic and traffic in port
- Ability to perform manual interventions or additional checks.



## 2 Check-in interface

Enjoy a precise and up-to-date overview, ensuring smooth operations from bookings to check-in.

- Vehicle information from pre-gate scanning
- Precise up-to-date overview – highlighting any discrepancies with booking
- Possible to add upselling recommendations.



## 3 Digital twin of hardware

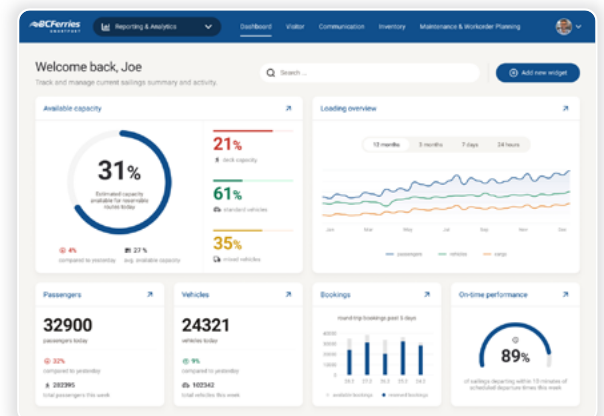
Overview and control of possibly hundreds of IOT devices in the terminal.

- Performance metrics – alerts for maintenance
- Simulation tool to try out new hardware solutions.

## 4 Operational data

Get a comprehensive real-time overview of everything that happens in the terminal.

- Traffic statistics and throughput performance
- Various KPIs, standard reports and role-based overviews
- Regular report generation.



# Smart Port Future Vision

Welcome to our Smart Port Vision.

While this vision has yet to be implemented, it represents a forward-looking perspective enriched by research-based feedback from our clients, their customers, and technology development.

This is the vision of Smart Port, where data is captured at every touch-point, fueling predictive analytics to drive efficiency and performance.

The focus is on a seamless customer experience, stripping away unnecessary actions to create a frictionless journey. Passengers benefit from personalized offers and services, enhancing their satisfaction.

Where sustainability and safety are prioritized, leveraging smart technologies. Join us in shaping the future of port operations – smarter, more efficient, and passenger-centric.







01

## AR glasses

Staff equipped with smart glasses can see relevant operational information in real time.

- Data on vehicle and passenger specifics
- Planned vs actual traffic routes
- Performance statistics and next tasks.



02

## Video oversight

Aerial cameras keep an eye on the terminal to ensure everything works as planned.

- Identify when lanes are full (or bottle neck builds)
- Follow trailers to their actual parking spot (record)
- Identify unauthorized movements and wrong turns.



03

## AI video analysis for safety

Use AI video analytics to identify safety & security hazards and near-misses

- Identify dangerous traffic movements
- Identify people moving in unauthorized areas
- Identify insufficient safety equipment.



04

## Flexible routing with light

Use lighting beams to visualize changing routes on terminal layout.

- Allow drivers to follow their personal indicator projected onto the ground
- Change routing directions more flexibly than screens
- Make it easier to perform more difficult manoeuvres.



05

## Logistics integration

Logistics companies are directly integrated into ferry operator systems, allowing for seamless connectivity.

- Better prediction of demand and load planning
- More accurate cargo documentation
- Streamlined check-in process.

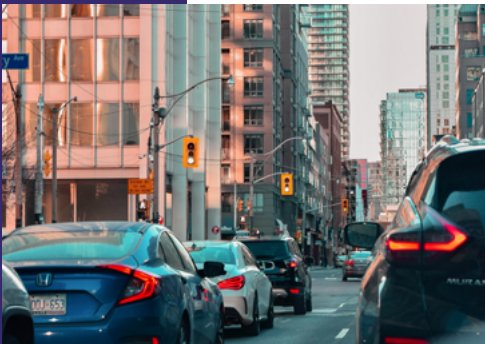


06

## Digitally assisted inland terminals

Traffic is directed to wait outside the port and called to port through digital channels just on time.

- Reduce congestion in terminals
- Perform any digital pre-boarding activities beforehand (e.g. weighing, measuring)
- Directions to port based on real-time schedule updates and traffic conditions.



07

## Traffic control outside the terminal

Ensure traffic to and from the terminal runs without disruptions with traffic monitoring and integration with regional traffic control.

- Gather real-time traffic data (e.g., signal from mobile phones)
- Connect with city/region traffic mgmt. system
- Control traffic lights and signaling
- Direct to alternative routes



08

## Remote identity verification

Passengers and drivers identify themselves in pre-booking process – no ID check by check-in.

- Travel document scanned and authorized (NFC and/or optical)
- Fingerprints gathered through smartphone
- Biometrics recorded and matched to document (In-port free-flow identification)
- Customer experience



09

## Gamified program for truckers

Truck drivers are incentivized to follow operational procedures through loyal customer game/app.

- Motivate just-in-time arrival, digital info exchange, compliance with booking, etc.
- Truckers compete alone or in teams to support efficient operations
- Rewards participation and compliance with discounts or onboard services



10

## Personalized offers

As passengers move through terminal on foot or in car, display personalized offers for add-on sales, services, or duty free.

- Based on previous purchases, weather, holidays, etc.
- Assist staff with options for add-on sales
- Use screens or static displays to show offers and QR codes for purchasing set deals

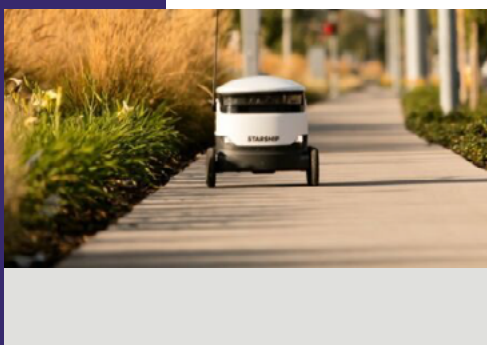


11

## Gamification while waiting

Use in-port screens (and app) to engage passengers while waiting – small games, cartoons, quizzes.

- Encourage use of digital channels, e.g., link to operator app
- Motivate add-on purchases, e.g., discounts for services as prizes
- Potential advertising revenue



12

## Small deliveries while waiting

Use small parcel delivery robots to deliver freshly made food, drinks, or smaller duty-free purchases.

- Keep people away from moving around in the terminal area
- Link with delivery companies like Bolt and Wolt
- Deliver some duty-free purchases while still waiting in the terminal



# 13

## Integration with vehicle interfaces

Display port directions, passenger instructions, and/or personalized offers directly to vehicles' interfaces.

- Connect with Apple Play and Android Auto (on car screen or windshield)
- Offers real-time, in-vehicle updates for lane assignments and traffic management
- Keeps drivers informed and connected throughout their port journey

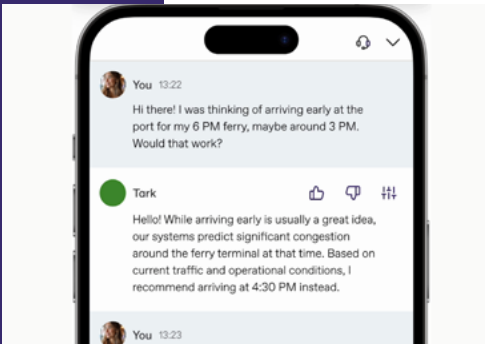


# 14

## Robotic valet parking

VIP customers park their cars in the gathering area and board the ferry to begin enjoying onboard services.

- Under-car robot loads cars to ferry
- Access to ferry organized in safe passage
- Help use terminal area flexibly

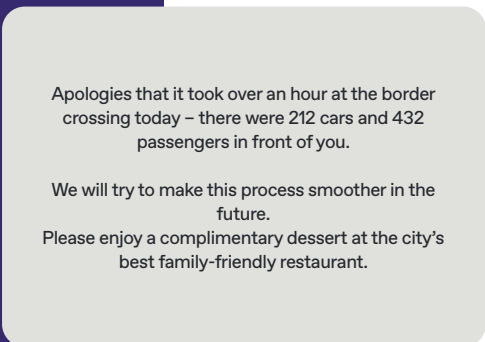


# 15

## AI assistant for travelers

Provide an in-pocket AI assistant for passengers – to ask questions in natural language.

- Connect with already existing documents, procedures, websites, etc.
- Allow access in any language – translate automatically on the go
- Can also be made available for customer service staff



# 16

## Personalized messages

Ensure passengers and drivers are well informed and feel safe moving through the port process.

- Utilize customer movement data to optimize the delivery of messages
- Use Smart Port data to predict processing time (e.g., border processing is expected in 38 min.)
- Use data on total experience to give a final exit greeting
- Data management



17

## Smart Port data ecosystem

Every activity related to traffic and passenger movements is monitored in real-time and used for performance optimization.

- Follow terminal operations in real-time – identify bottlenecks
- Identify patterns over time and develop scenarios for traffic flow optimization
- Predict future terminal capacity needs and turnaround times

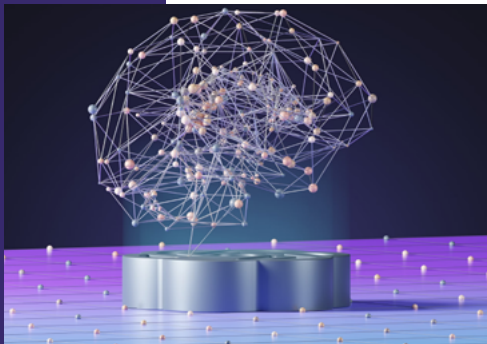


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## Sustainability portal

Use Smart Port data as part of a greater sustainability overview, incl. traffic in port, vessel movements, etc.

- Integrate various systems to provide data on usage of energy, fuel, paper, and other resources
- Full overview of environmental footprint
- Easily accomplish reporting to ports and authorities
- Identify patterns for lowering emissions and costs



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## Operational AI/LLM

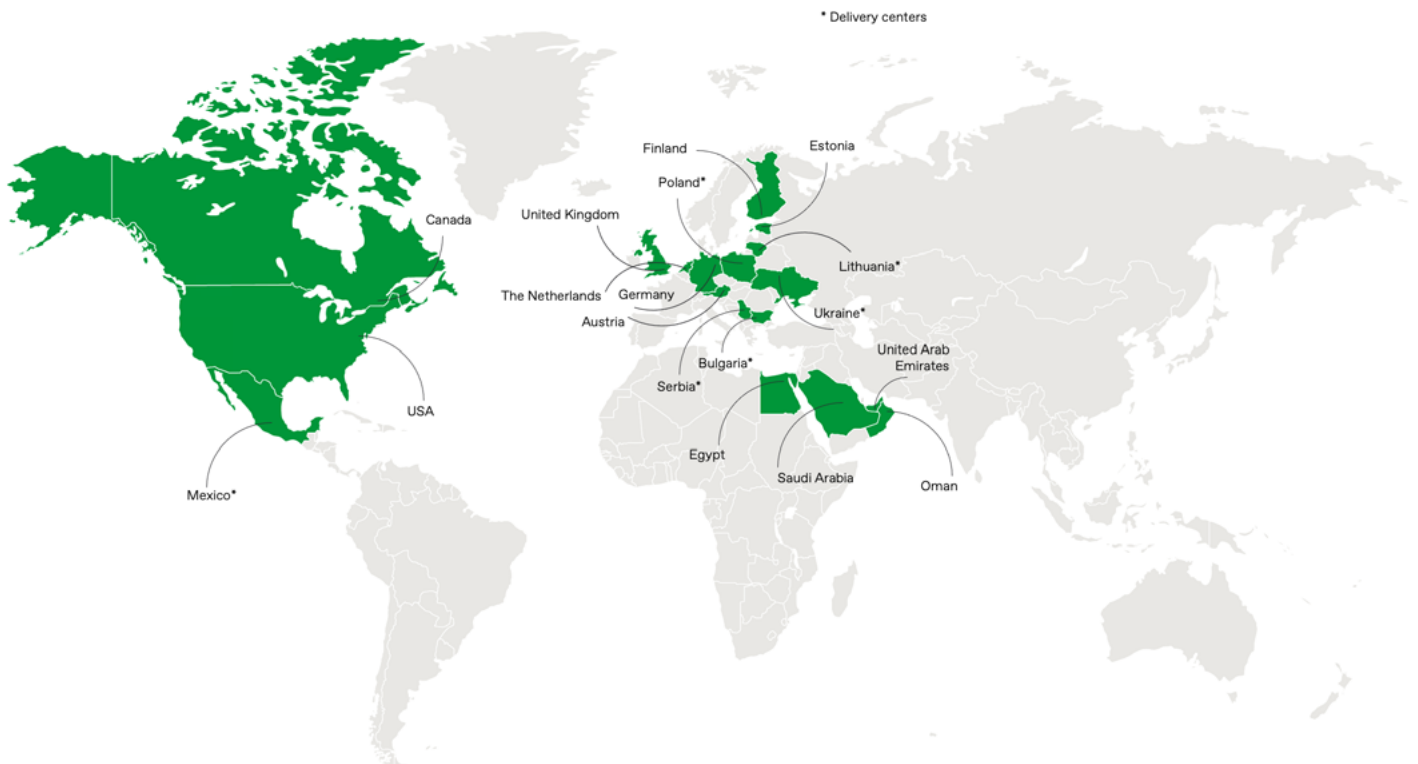
Use a company-specific large language model to provide on-the-spot conversational advice on operational topics.

- Include all internal documents in any language (e.g., equipment manuals, service-level agreements, procedures, etc.)
- Combine answers based on any or all of these documents
- Input and output language totally independent of each other
- Control access to information based on authorization level

Nortal is a fast-growing, impact-driven global IT powerhouse and a strategic partner for governments, healthcare institutions, the maritime industry, leading businesses, and Fortune 500 companies. With a strong physical presence in North America, Europe, and the Middle East and a global talent pool, the company can shape tailored ecosystems and future solutions that are human, data-driven, and safe.

### Nortal is a digital transformation powerhouse

- Software solutions
- Project management
- Business consulting  
*(incl. cyber security & data science)*
- Service design
- Change management



With 26 locations across Europe, North America, and the GCC region, our robust physical presence across markets and time zones allows us to be close to our customers while gathering a deep understanding of local cultures and business practices.