# The Port of Monfalcone and PIXEL

# Looking forward smart port capabilities
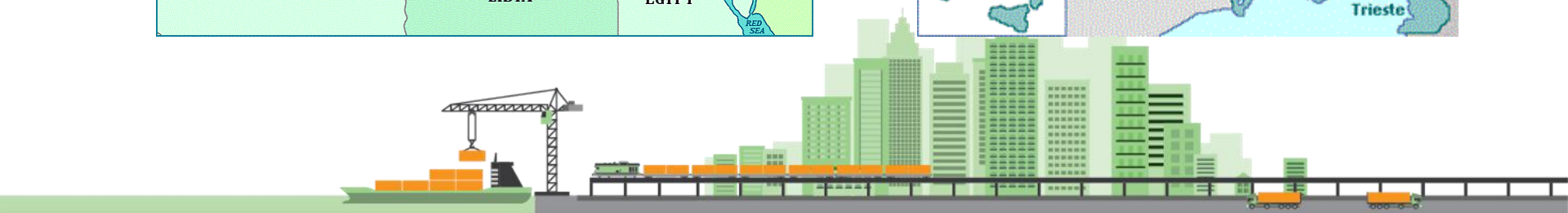
# The geographical position

- The most northern port of the Adriatic Sea, the closest one to central Europe

Stefano Bevilacqua, s.bevilacqua@monfalconeport.it
Gilda De Marco, gilda.demarco@insiel.it
Casablanca – 27 June 2019

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# The logistic platform

**Motorway gate:**
**1,5 km**

**Railway station:**
**3 km**

**International airport of FVG:**
**10 km**

**Gorizia interport:**
**20 Km**

**Fernetti interport:**
**25 Km**

**Port of Trieste:**
**12 nmi**

**Cervignano interport:**
**20 Km**



Port of Monfalcone

Stefano Bevilacqua, s.bevilacqua@monfalconeport.it
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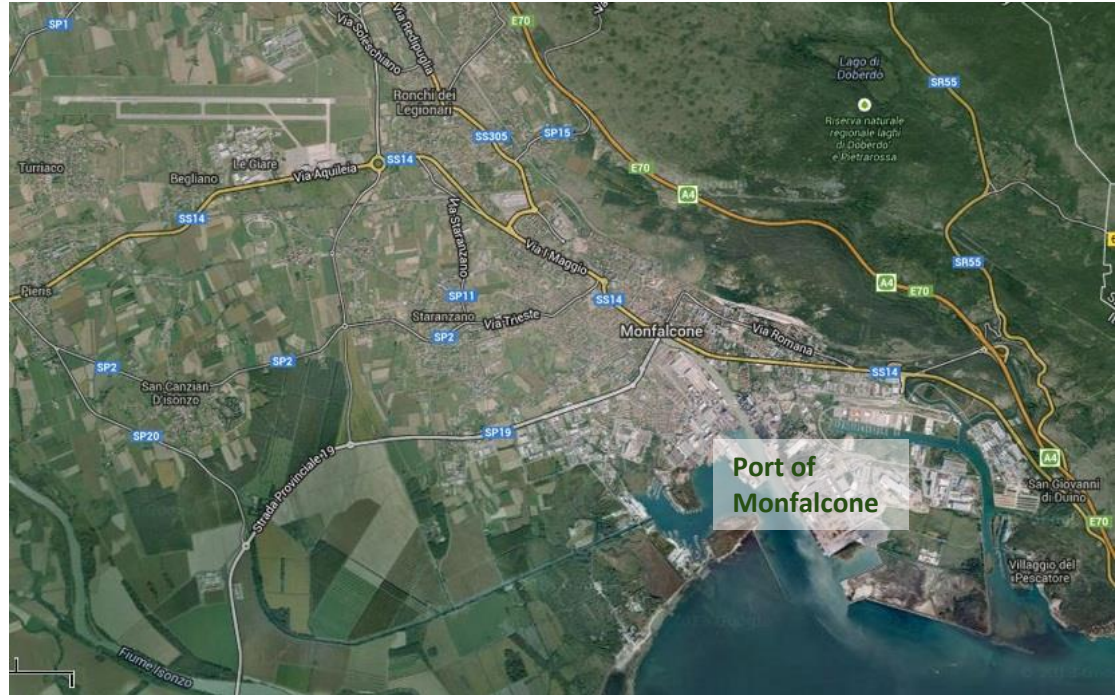
# The facility

- 1,500 m of quay
- 9 berths
- 11.70 m depth  (12.50 m expected after dredging)
- Max accepted draft -10.90 m (-11.90 m expected after dredging)
- 66,000 sqm covered surface
- 19 km tracks

750,000 m² Present operating area

40,000 m² Motorways of the Sea area

600,000 m² Future development area

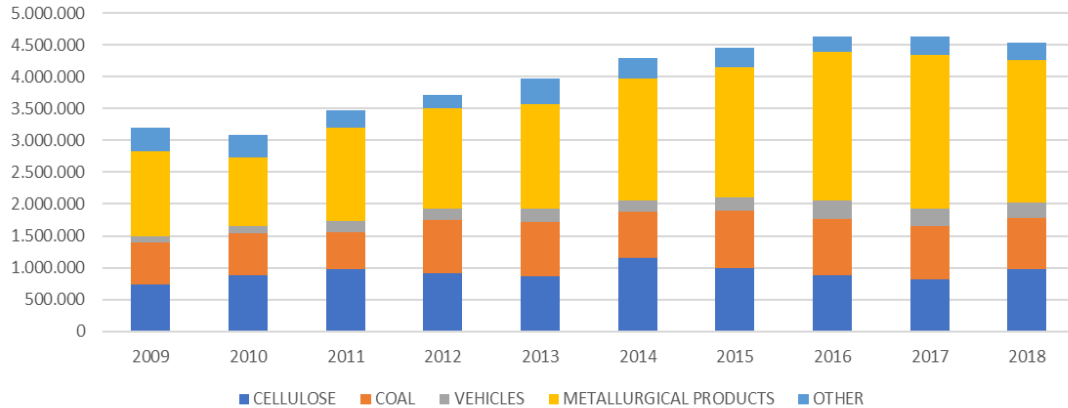100,000 m² Immediately available development area

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# The traffic: general, dry bulk, RO-RO and project cargo

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# Statistics

## Trend of the main goods handled in the last decade (2009 - 2018)



Legend: CELLULOSE ■ COAL ■ VEHICLES ■ METALLURGICAL PRODUCTS ■ OTHER

| TONS PER YEAR | |
| --- | --- |
| 2018: | 4.537.278ton |

*Main goods handled*
- FOREST PRODUCTS (mainly WOODPULP)
- STEEL PRODUCTS (SLABS, PIG IRON, BILLETS, IRON RODS, H B I)
- CARS
- COAL
- PROJECT CARGO
- CHINA CLAY (KAOLIN)
- UREA
- CEREALS

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# Terminals

**STEEL PRODUCTS TERMINAL**
- 200,000 sqm
- over 2,000,000 t handled per year
- billets, slabs, HBI, cast iron, metal sheets, tubes, wire rods

**FOREST PRODUCTS TERMINAL**
- 200,000 sqm, partially covered
- over 1,000,000 t handled per year
- forest products and woodpulp

**SOLID BULK GOODS TERMINAL**
- 14,000 sqm
- over 100,000 t handled per year
- kaolin, urea, grit, cement, powdry raw materials

**GRAIN SILOS**
- max capacity 70,000 t
- 120 m long dock, direct connection with the railway
- two pneumatic cranes on rail for loading/unloading, 250 t/h

**CAR TERMINAL**
- 100,000 sqm
- 125,000 cars per year
- washing/dewaxing bio-plant for cars & vehicles, with underbody washing;PDI Services (pre-delivery inspection)

**SERVICE BUILDINGS**
- two buildings at the main entrance of the port
- customs and port operators offices
- petrol station, car wash station, restaurant, drivers services

# CHALLENGES

## Current state
(small medium ports)

**Isolated information system**

**No enhancement of available data**

**Any integrated environmental management**

## What ports need

**Connection beetween regional knots**

**Solutions to optimize operations**

**Environmental monitoring system**

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Stefano Bevilacqua, s.bevilacqua@monfalconeport.it
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# PIXEL Innovation Management

## Equilibrium environmental vs. cost-benefit

Reduction of **environmental impact** of port activities (e.g. greenhouse gases for 15-20%)

Increase of **renewables energy uptake** in use-cases at small, medium and large ports

Adoption of a **Port Environmental Index** as a **global quantitative measure** to monitor and act on own environmental footprint

Reduction of **operational and infrastructural costs** with better Port-City integration

Improvement of logistics through data analytics over **waiting time for vessels**, **on-time performance**

**Heterogeneous information hub** tailored for the interoperability in building over the limited data **interchange of Port Community Systems** (PCS)

**Stefano Bevilacqua, s.bevilacqua@monfalconeport.it**
**Gilda De Marco, gilda.demarco@insiel.it**
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# PIXEL – Port IoT for Environmental Leverage

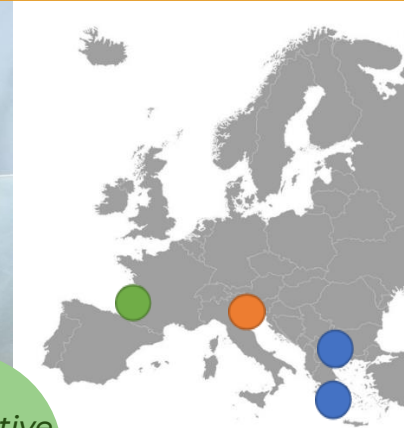- **Secure IoT solutions** for port ecosystem operations
- **Business intelligence** w/ predictive analytics
- **Environmental awareness** with actionable tool: PEI
- Addressing **medium and small ports with scalability** to big ports
- Focusing on **port-city ecosystem challenges**

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*Big Data analytics*

*Interoperab. secure IoT ecosystem*

*Energy simulation & prediction*

*Quantitative Port Env. Index*

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# A useful **Port Environmental Index**

**Today's environmental challenges** must fit real global needs, enhanced by legislation and standards - Ports need clear understanding of their **overall environmental performance**

Ports can **optimise their use of resources** to include the appropriate monitor of environmental-related activity and act on it

PEI is a global indicator of the impact in ports that permits the ports to have a **real-time measure of their environmental footprint and to plan actions** to reduce it to desired levels
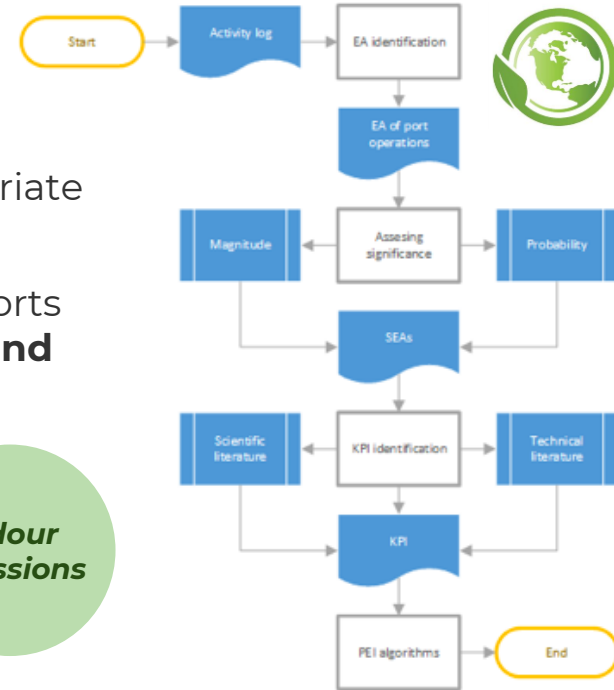
**Emissions to the atmosphere**

**Emissions of wastewater**

**Noise emissions**

**Production of waste**

**Light pollution**

**Odour emissions**

Start

Activity log

EA identification

EA of port operations

Magnitude

Assesing significance

Probability

SEAs

Scientific literature

KPI identification

Technical literature

KPI

PEI algorithms

End

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# PIXEL – Where IoT meets the Port of the Future

First **IoT integrated platform** focused on optimization of operations w/ reduction of **environmental impact**

**Port Environmental Index** (PEI) as a quantitative composite indicator of the overall environmental performance of a port

**Secured dashboard** with **operational tools** for decision support (real time monitoring and predictive analysis)

**Information hub** and optimization operations through **smart models** (energy, transportation, pollution and port-city integration)

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# THANK YOU

Get to know us at **pixel-ports.eu**

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