The Port of Monfalcone and PIXEL

Looking forward smart port capabilities

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The geographical position

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

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The Project has received funding from the European's Union Horizon 2020 research innovation program under GA No. 769355

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

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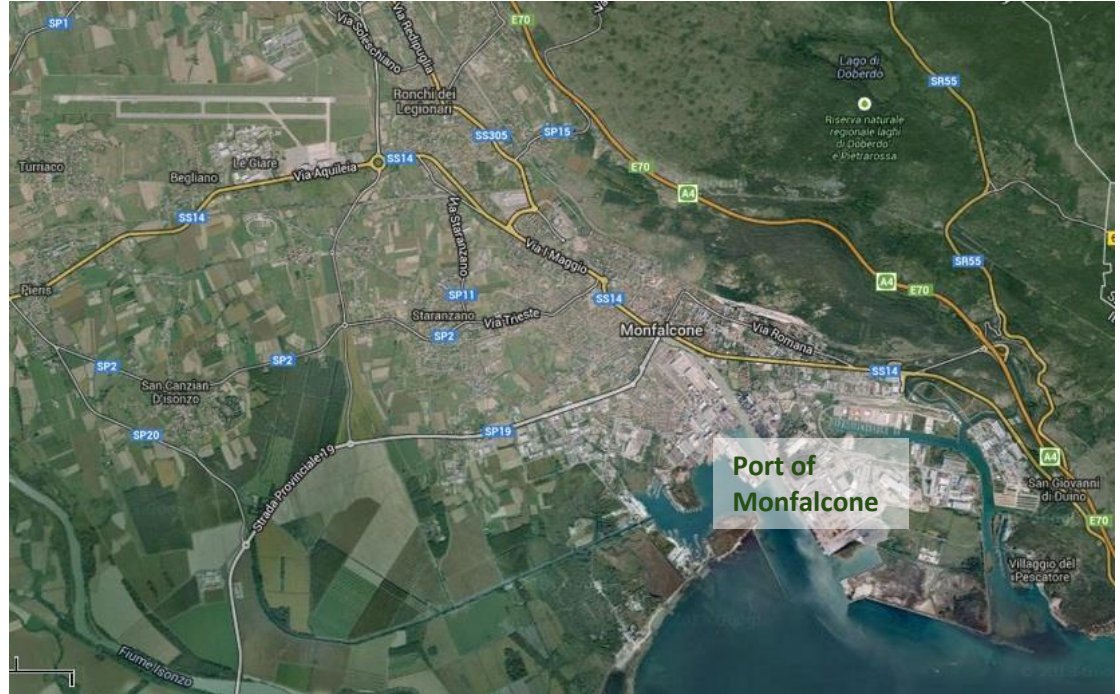
The facility

- 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

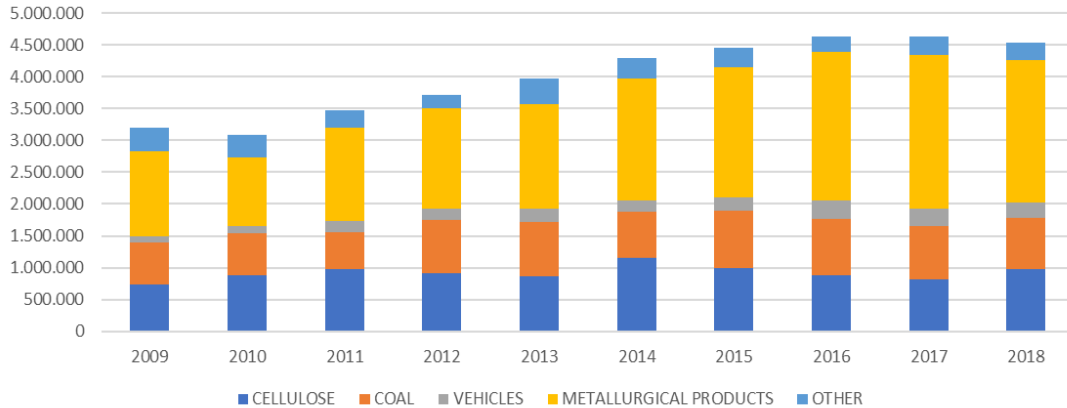100,000 m² Immediately available development area

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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)

Chart legend: CELLULOSE, COAL, VEHICLES, METALLURGICAL PRODUCTS, OTHER

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

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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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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)

PIXEL – Port IoT for Environmental Leverage

Secure IoT solutions for port ecosystem operations

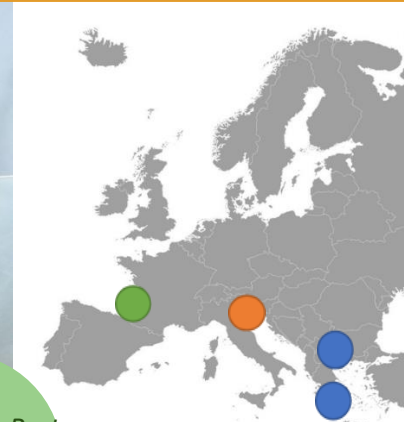**Business intelligence** w/ predictive analytics

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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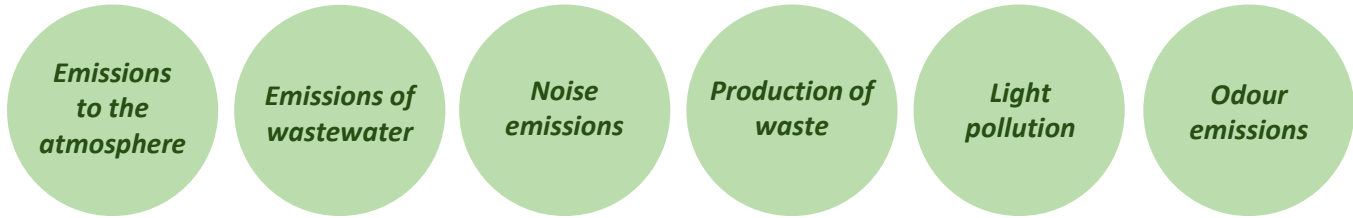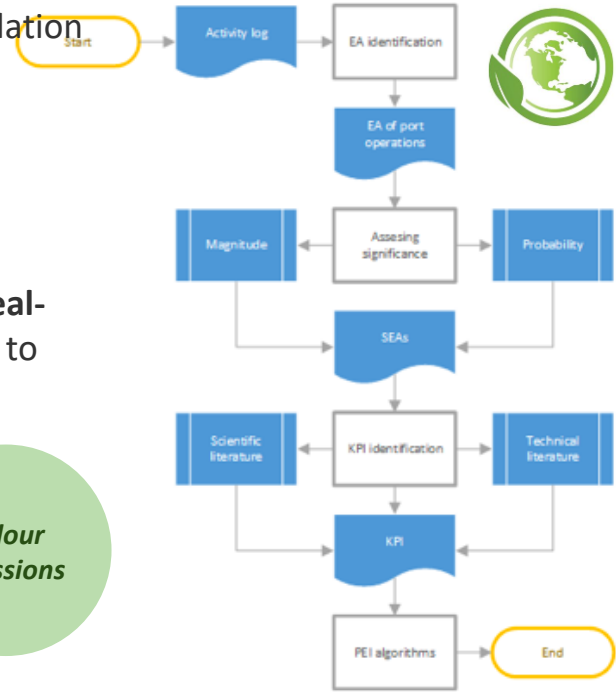**Gilda De Marco, gilda.demarco@insiel.it**
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A useful **Port Environmental Index**

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

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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