Port of the Future: an instance in Livorno

State of the Art and On-going Initiatives

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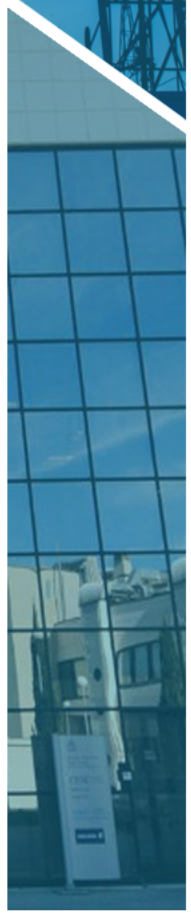

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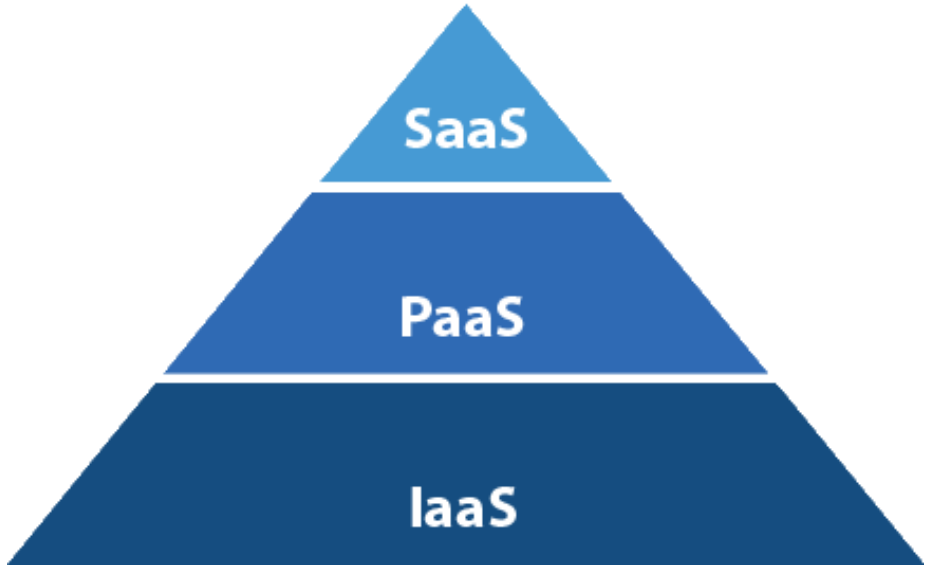
Port of Livorno

The Port Authority of the Northern Tyrrhenian Sea in collaboration with CNIT is conducting a deep digital revolution that is already transforming port industrial activities.

Provide services

Provide platforms

Connects the port



Standardization process

Integration need at **Infrastructure**, **Platform**, and **Software layers**.

New IT solutions (ESB, DV)

Service Oriented Architecture (SOA)

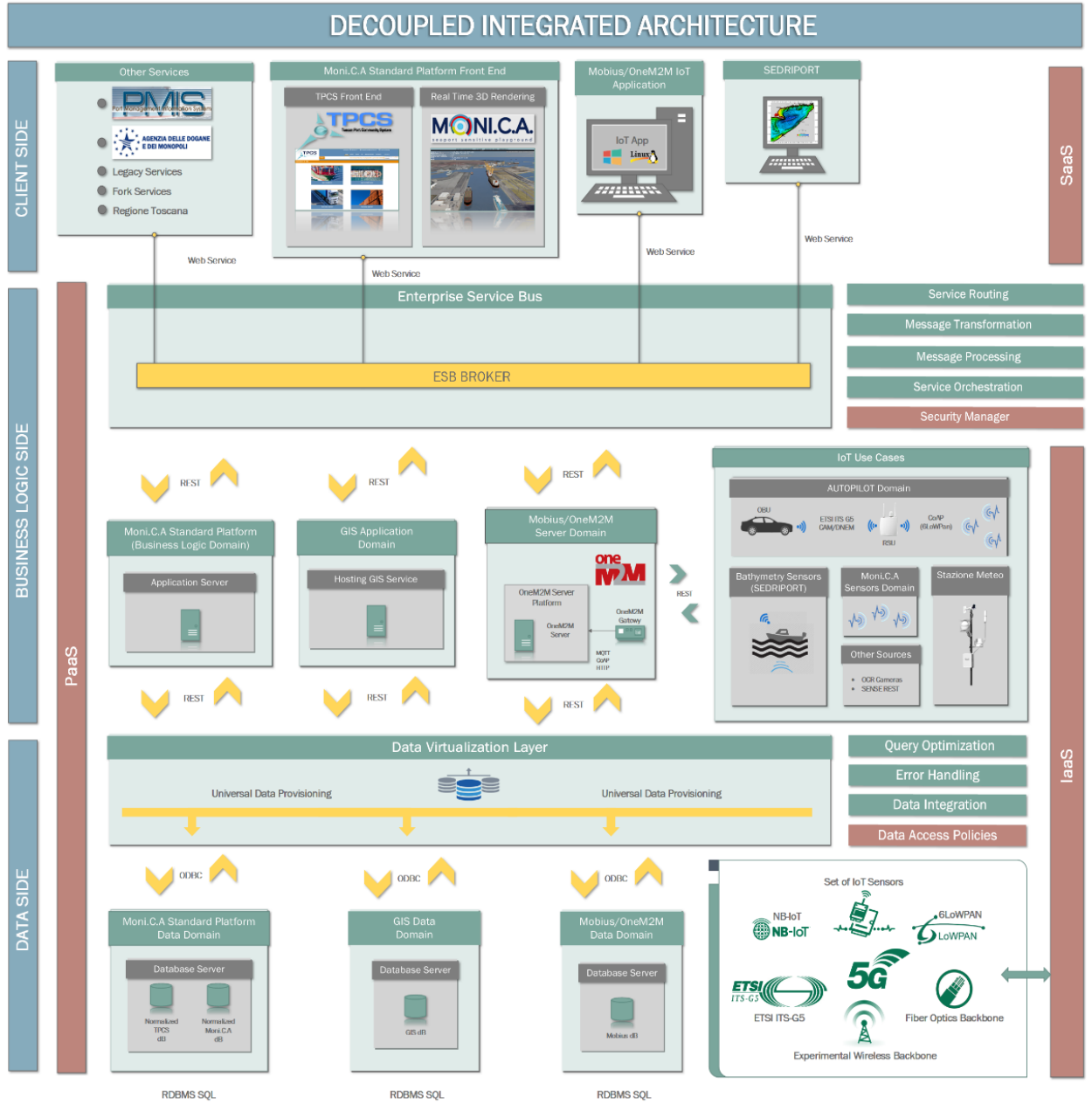
Innovative Services

Supporting IoT devices (M2M)

Coexistence with legacy functions

New security policy

Standard Platform



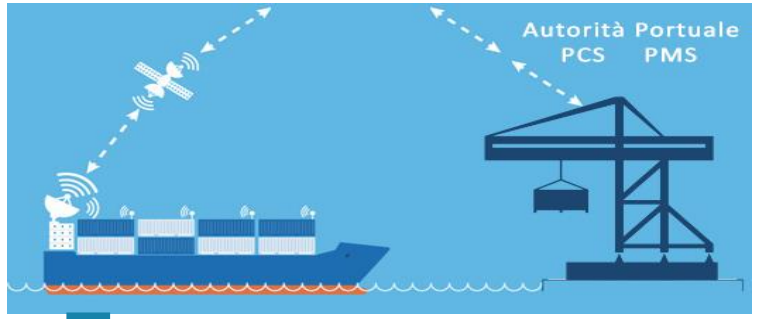
Connected Vessel

Vessel connected to:

- ❑ Shipbuilders
- ❑ Container Terminals
- ❑ Port Authority
- ❑ Coast Guard
- ❑ Logistic Operators
- ❑ Port Infrastructure

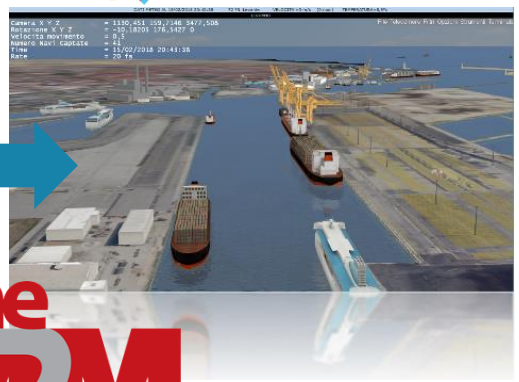
Port Community System

- ❑ Enable smart and secure information sharing
- ❑ Digitalize Import/Export procedures.



TPCS
Tuscan Port Community System

MONI.C.A.



one M2M

5G is needed

- High Bandwidth
- Diversified QoS
- Real Time Services

- More concurrent users
- Big Data

Network Type	Download Speed
3G Network	384Kbps
4G Network	100Mbps
5G Network	1-10Gbps (theoretical)

Network Type	Latency (ms)
3G Network	120 (actual)
4G Network	45 (actual)
5G Network	1 (theoretical)

Real-time control

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Acquisizione dati sensori

Integrazione con TOS e PCS

Istantanea del Terminal

Use Case

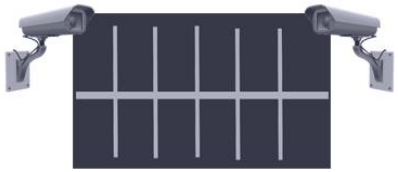
1. the goods are unloaded on the square

2. the quay operator capture 3D structure (dimensions) of general goods boxes using a LIDAR based system.

5. now the operator is able to see the arrangement of all the goods on his tablet. He knows which box must be moved to pick up a certain commodity through the Optimized Storing Software.

ERICSSON

3. a QRcode is associated to each boxe for the identification, then it is placed in the appropriate slot, recording its GPS position on the square.



4. transmission through a 5G local network and storing of the data into a local Database Server engine.

Standard Platform

oneM2M

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CT Operator

Control Room

Corealis and sustainable growth

The environmental impact is closely linked to the process of resource management, and use allocation/optimization

Real-time control of dock operating vehicles

Truck Appointment System (TAS)

General Cargo Management

Fuel Consumption Reduction

Redction of service time for docked vessels

Reduction of CO_2 emissions

Reduction of Acoustic Pollution

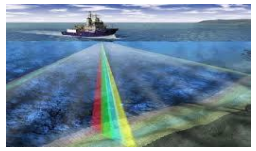
Optimization of vehicle trips during loading / unloading operations of containers and / or general cargo.

Cross-fertilization and Innovation Actions

- The result is a strong and structured collaboration with the main port innovation and scientific initiatives in Europe and beyond;
- The authority is an active player towards EC and EU most relevant lobbies (ESPO, Corridor Forum, ERTICO).

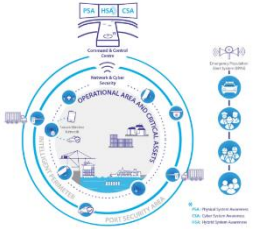
AUTOPILOT

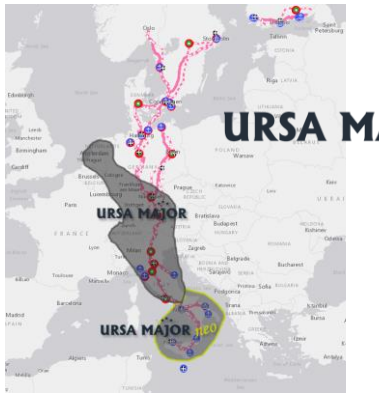
SEDRI PORT

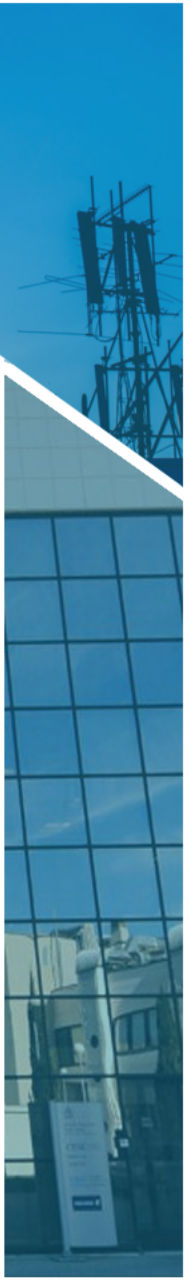


ROBORDER

Sauron







THANK YOU FOR YOUR ATTENTION

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