



# Ports of the Future: Current Needs & Technological Innovations

## Speaker Name

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# Why do we Need the Port of the Future?

Ports are becoming hubs connecting sea and land and striving for efficiency, supporting customers, promoting frictionless trade and enabling highly efficient processes for cargo movement. The goal is clear: to **maximize efficiency and support international supply chains**.



*«The way physical objects are moved, handled, stored, realized, supplied and used throughout the world is not sustainable **economically, environmentally and socially**.»*

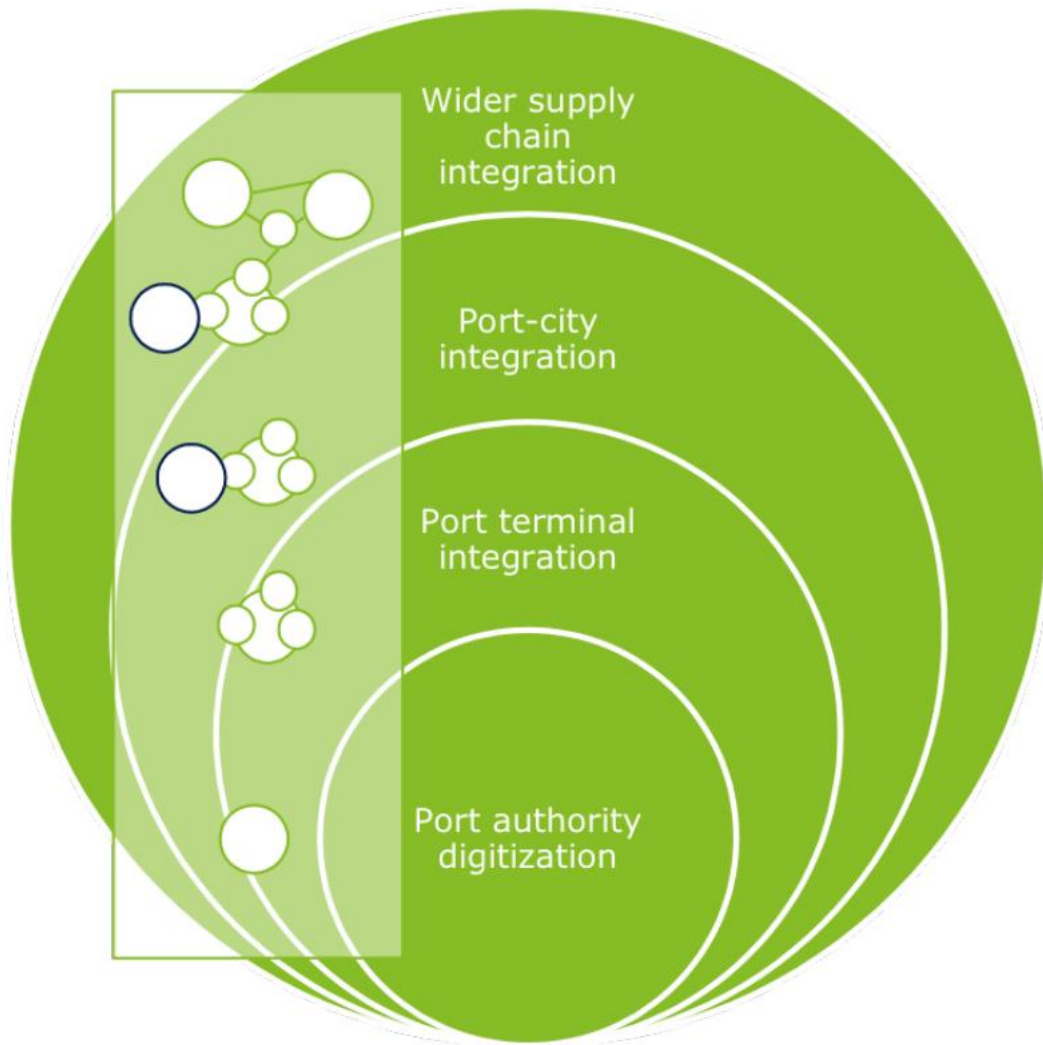
*Benoit Montreuil*

## Technical & Strategic Issues (I)

The diverse nature of a port, with a wide variety of companies and ecosystems, operating different kinds of equipment and requiring different types of products and services creates a complicated environment with multiple stakeholders. In addition to heterogeneity of data, a **fear of transparency** also remains a major issue. Ports are typically comprised of a cluster of competing companies.

Moreover, determining **which technologies, how to implement** them and **the way in which they can support the overall digital strategy** of the port remains the main challenge.

## Technical & Strategic Issues (II)



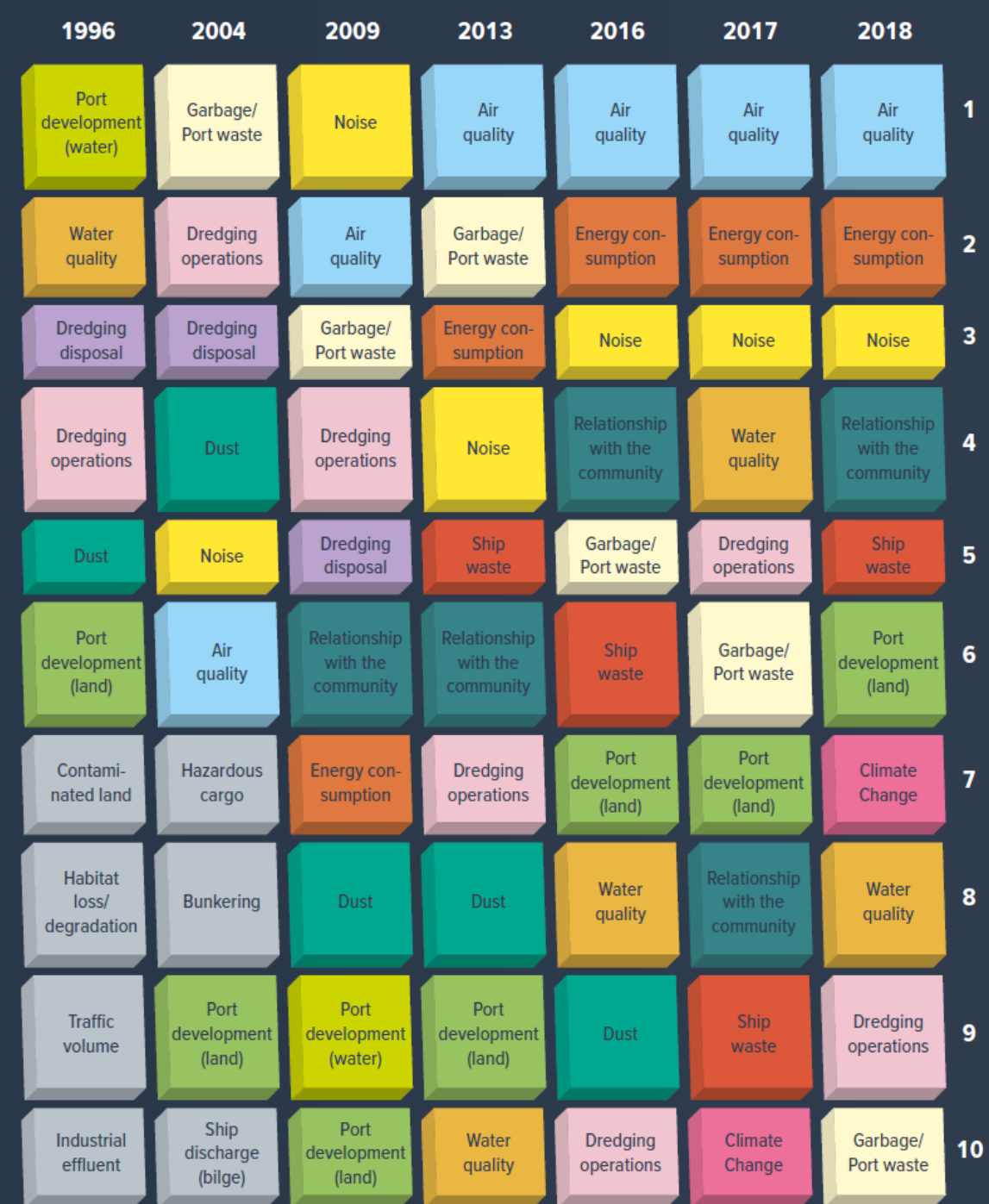
However, not all ports have the potential to integrate fully with their surroundings. Some ports might lack infrastructure or physical integration with their surroundings or might simply not have the scale required to perform the necessary investments.

**The determination of which level of digitization that can be achieved should be performed on a case to case basis.**

# ESPO Environmental Report 2018

## Top 10 Environmental Priorities of the Port Sector Over Years

The report shows the priority status ascribed by port professionals to current issues that are assessed as being important and noteworthy in terms of the port's environmental management programme.



# Current Innovation Trends



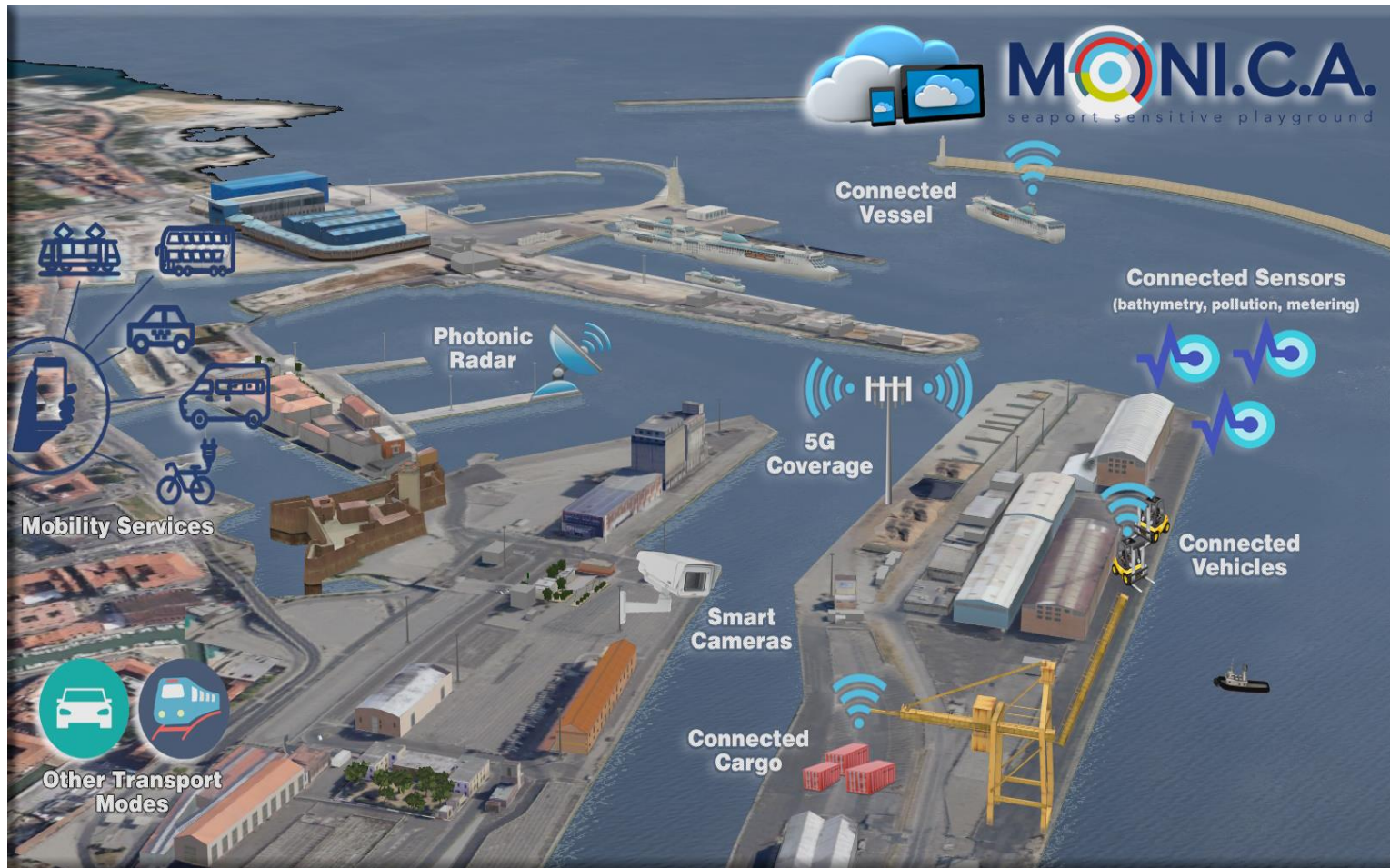
Ports must adopt a digital mentality and implement innovative technologies to remain productive, efficient and competitive.

Technology does not represent innovation in the strict sense of the word: it is only a tool capable of enabling **innovative services**.

## PORT of the FUTURE



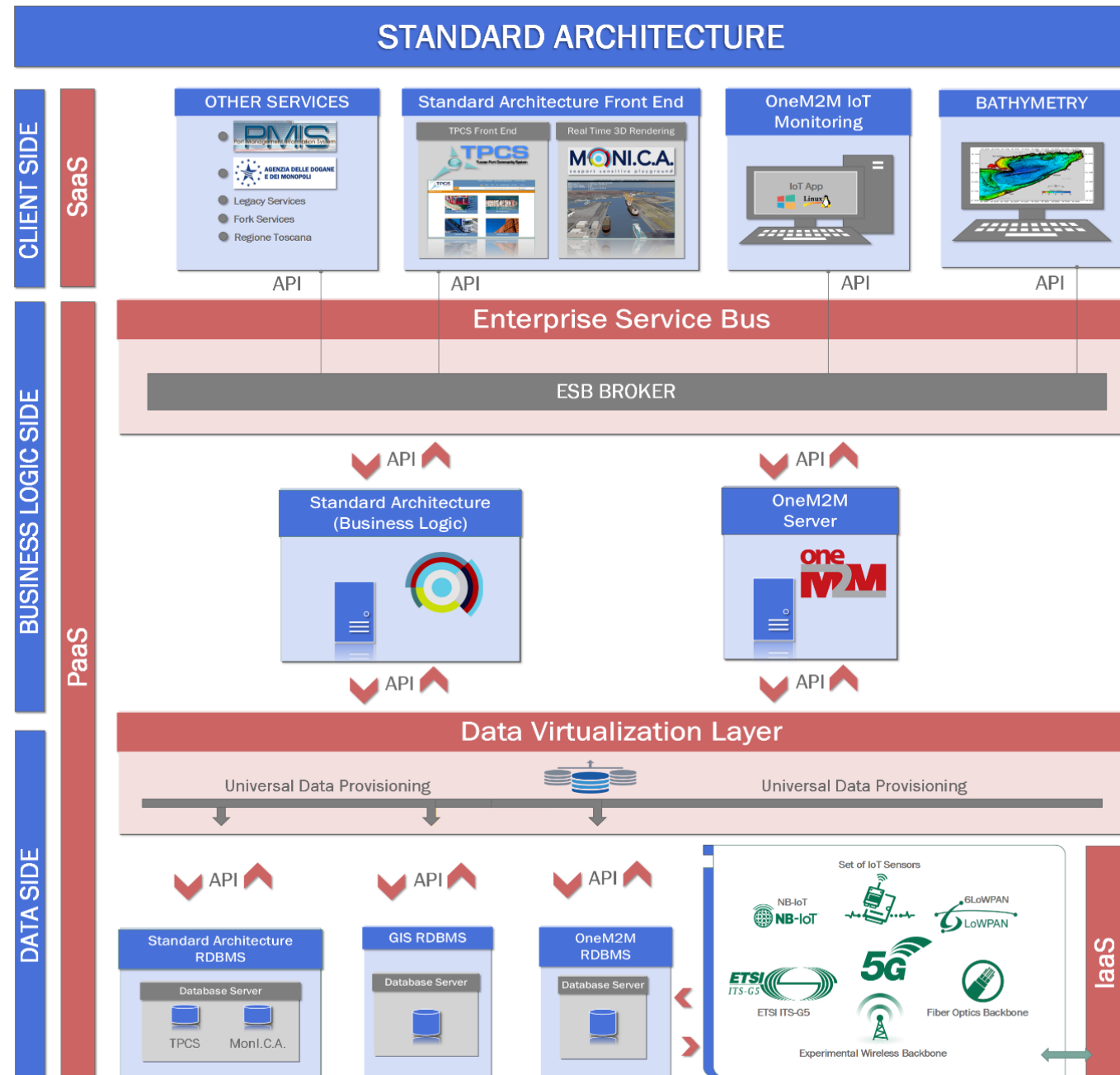
# The Digital Agenda at the Port of Livorno: Joint Laboratory of Advanced Sensing Networks & Communication in Sea Ports



- ❑ Convergence platform for data and services;
- ❑ Sharp layer separation:
  - 1) data production;
  - 2) custodial, indexing, retrieval:
    - interaction with other platforms (e.g. Coast Guard, Line Operators, Regional Authorities, City Hall, etc.);
  - 3) data consumption (i.e. final user services and applications).

# ICT Stack

- Service-oriented architecture (SOA);
- Cloud solution;
- Full support for IoT devices;
- New security policies;
- New infrastructural elements: ESB & DVL;
- Integration with Legacy IT systems;
- High scalability/flexibility;
- Decoupling between the application level and the data level;
- Easy development/integration of new services;
- Redundancy/clustering.





# R&D Activities Play an Important Role



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**COREALIS**  
THE PORT OF THE FUTURE



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# Real Time Control of the Intra-Terminal Operations



First Italian Port to experiment the 5G technology applied to logistics: real-time monitoring of the general cargo handling integrated with the PMS.

# C-ITS, VBS & Blockchain

## C-ITS

Full (ETSI-G5) **C-ITS infrastructure** covering the maritime terminal and part of the Livorno - Florence public highway in the AUTOPILOT project.



## VBS

A web based software able to manage the **booking of truck entrances** within the port area and the terminals, to perform storage (export) or picking (import) of loading units. Integrated with the PCS.



## Blockchain

A service integrated with the PCS that implements an **intelligent logistics chain** that contains all the information on the goods and the related events, making them available through an interface to the end users.



**THANK YOU FOR YOUR ATTENTION**

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