



# The International Maritime Transport and Logistics Conference

## “MARLOG 12”

**Sustainable & Innovative  
Technologies**

Towards a Resilient Future

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## Carles Rúa

**Head of innovation, Port de Barcelona**

Director, Master executive in Supply Chain Management, BarcelonaTech

Professor at Escola Europea Intermodal Transport

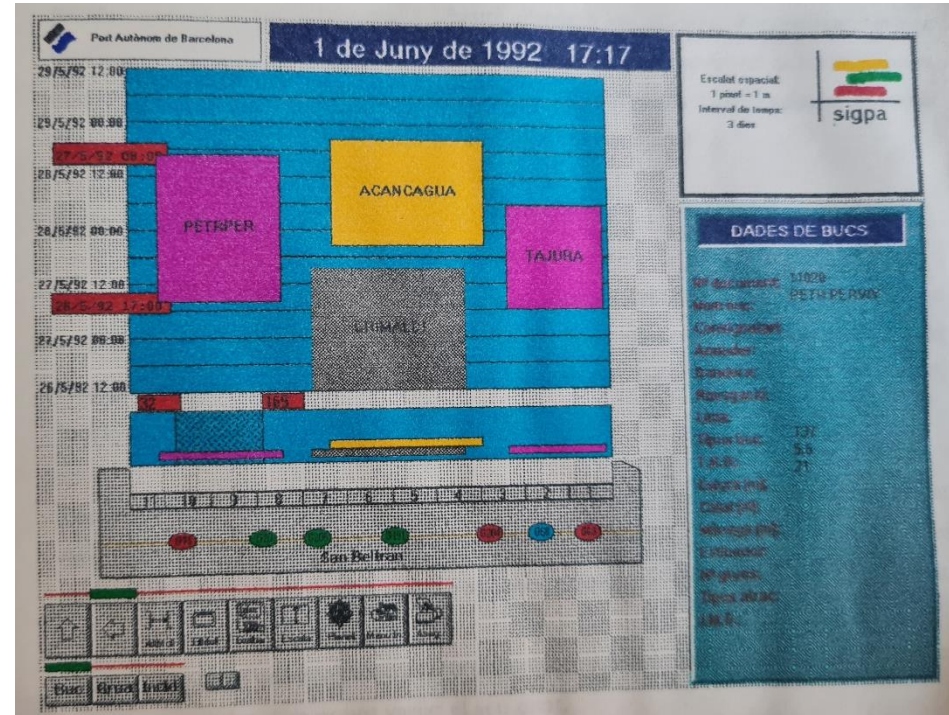
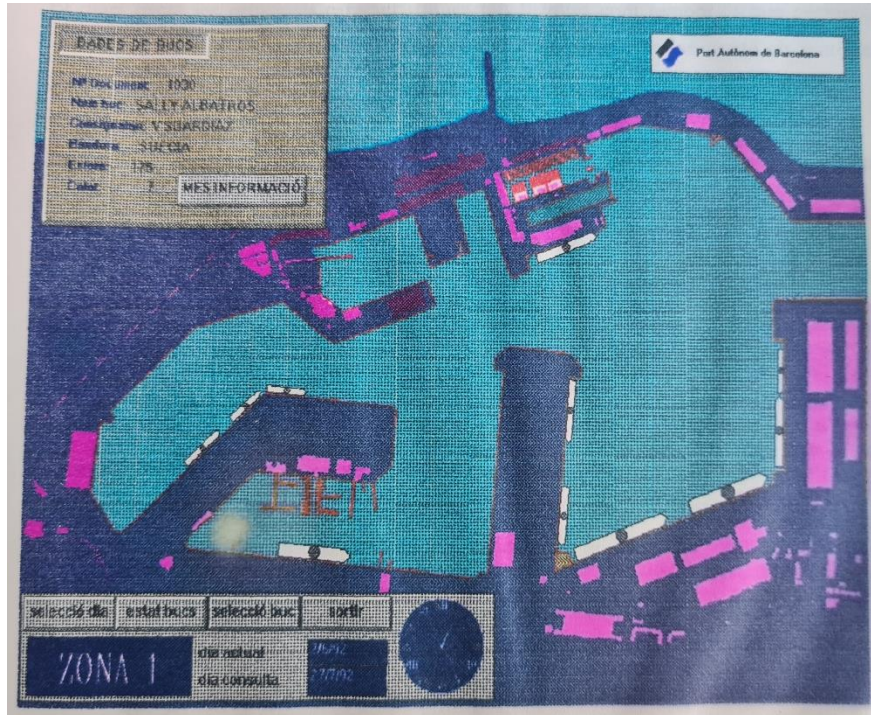
Co-editor of PierNext, the port innovation blog

# Port authority digitalization: what and why

The experience of the  
Port de Barcelona



# Starting digitalisation: my personal experience





# Starting digitalisation: my personal experience (30 years after...)





## First lesson

An aerial photograph of a port area, likely the Port of Barcelona, showing several large cruise ships docked at piers. The ships are white with multiple decks and are surrounded by port infrastructure, including buildings and roads. The background shows a cityscape and a hillside.

**Digitalisation is not an objective, digitalisation is a path.**



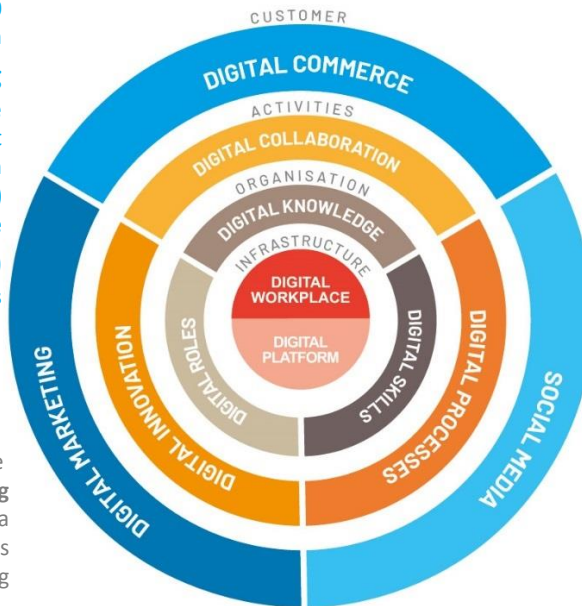
# Our Digital Project

## CUSTOMER

- PortBCN 360
- Twitter Optimization
- PierNext – Innovation blog**
- Increase LinkedIn presence
- Social media management
- New Web definition
- Annual facts video (multi-format)
- Smart Ports. Piers of the future
- Bport (LinkedIn group for clients)**
- Digital graphics and infographics

## ORGANIZATION

- Digital committee
- Cybersecurity training
- Training in social media
- Cybersecurity best practices
- Training in Digital marketing
- Port Academy**
- BIM training
- Technical Office for BI**
- SmartCity participation



## ACTIVITIES

- Strategy and innovation model
- Open Innovation
- New CRM
- Pilot geolocation
- SmartPort model**
- BCN Booking System**
- E-contract platform (VORTAL)
- JIT SEA TRAFFIC MANAGEMENT**
- New e-signature system
- Rail digitalisation

## INFRASTRUCTURE

- Video-conference equipment
- Conference room equipment
- Digital Twin**
- iPads
- Cloud / SaaS / IaaS
- Pilot HCP (multimedia file storage)
- 5G Infrastructure Deployment**
- New PCS architecture**



## Second lesson

A blue-tinted photograph of a ship's hull. Two workers in white hard hats and safety gear are visible in the foreground, one holding a rope. The ship's name 'HUCEMIAS' and 'S.A.' are partially visible on the hull. The background shows a cityscape with buildings and a car.

**Digitalisation is 25%  
about technology and  
75% about people.**



## 8+1 key IT projects

**Cloud / SaaS / IaaS**

**New PCS  
infrastructure**

**5G deployment**

**AI / IR**

**Cybersecurity**

**Twin port**

**Digital  
administration**


**Rail digitalisation**

**JiT operations (STM)**



# 5G: Business needs and strategic positioning


## Decision criteria



### Exploitation

Due to resource capacity, lack of knowledge and complexity of the network, APB considers that this function should be outsourced.

**BIDDING FOR ENGINEERING, DEPLOYMENT AND O&M OF THE NEW NETWORK**



### Interconnection

Interconnection with RESCAT is considered essential, as well as the possibility of interconnection with other mobile operators.

**INTERCONNECTION WITH RESCAT**



### Finalist voice service

APB only considers voice service as self-provision and only in port territory. It will be essential to be able to access public mobile operator services, specifically voice for generalist services.

**VOICE APPLICATIONS APB OPERATIONS AND READY FOR VOICE GENERALIST SERVICE AND O&M OF THE NEW NETWORK**



### Technology

Given the state of maturity and prospects of the market in this aspect, an evolution strategy is considered feasible, considering the state of the art at the time of bidding, but always starting from a 5G solution.


**EVOLVABLE 5G NETWORK**



### Locations

The APB will not act as an intermediary with the Concessions for negotiation of the locations.

**PRIORITIZE APB'S OWN LOCATIONS**



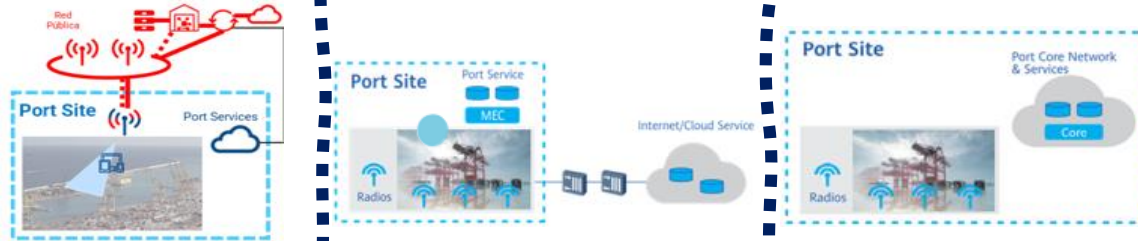
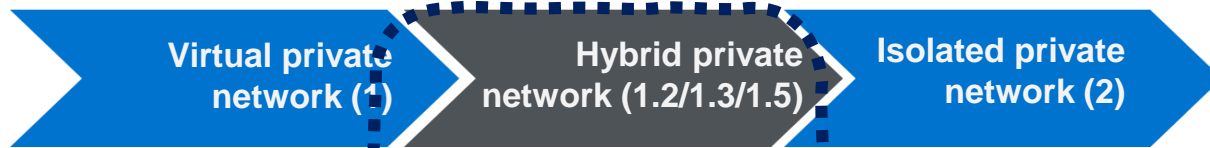
### Monetization

The APB does not consider monetizing network services. It does, however, consider allowing access to third parties (cessionnaires, citizens, etc.).

**APB WILL NOT FUNCTION AS OPERATOR, AND THE PRIVATE NETWORK SERVICE WILL BE ACCESSIBLE TO THIRD PARTIES THROUGH ADJU**

# 5G: Private network scenarios

Schemes Scenarios



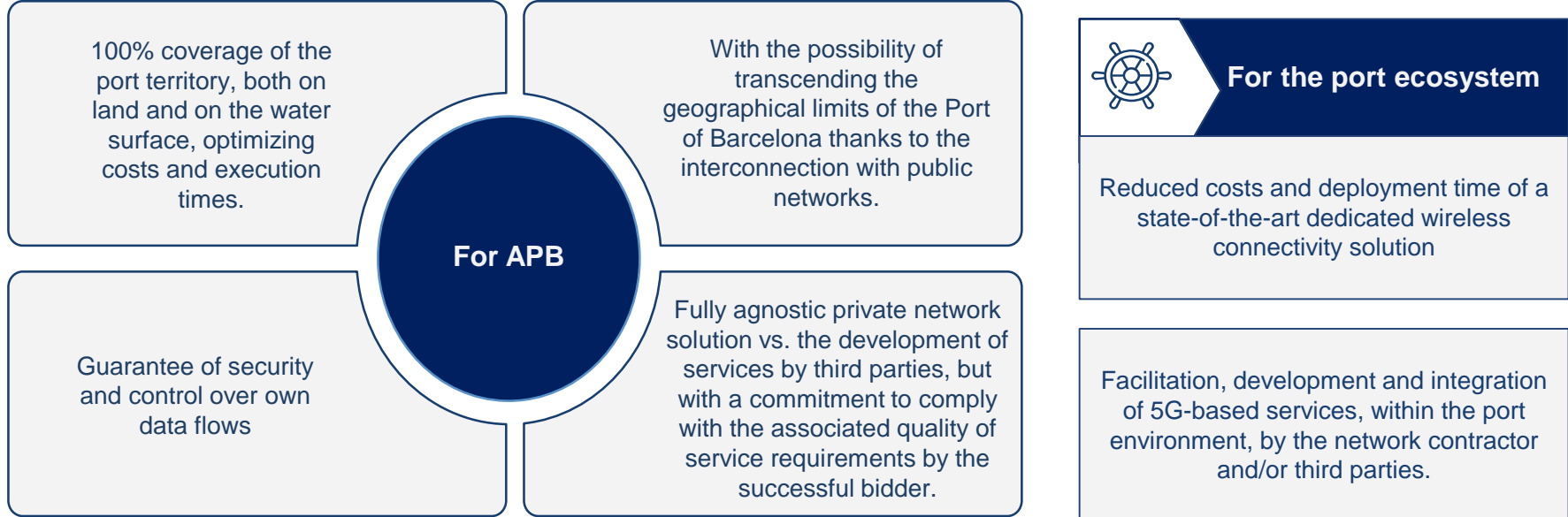
- QoS guaranteed
- Own data does not leave the port
- Own Network Resource Control
- Interworking with public networks

QoS guaranteed	Partial	Full	Full
Own data does not leave the port	None	Partial	Full
Own Network Resource Control	None	Partial / Partial / Partial	Full
Interworking with public networks	Full	None	None

Scenario of interest

## 5G: Main characteristics of the tendered scenario

### 5G Private Network IaaS Solution Benefits



## AI / IR: Possibilities

OCR for truck plackards

Virtual gates

Vehicle tracking

Rail cargo identification

Train maps

Real time emissions

Vessel identification

Maneuvering / JIT operations

Operational decisions

Intrusion detection

Safety and security

Digital twin

Cargo identification / status

Operational data

Real time information

## AI / IR: Some examples (pilots)

5G maritime initiative

Volumetric cargo analysis (LIDAR technology)

Rail data gathering and communication

Authomatic container seal identification

Complete cargo identification / status

...



## Third lesson

An aerial photograph of a busy port. In the foreground, a large, multi-decked cruise ship is docked at a pier. Behind it, several cargo ships are visible, one of which has the name 'ARKAS' on its side. The port is filled with stacks of shipping containers and various port infrastructure. The text 'Digitalisation is about collaboration, standardisation and integration.' is overlaid in large white letters across the center of the image.

Digitalisation is about  
collaboration,  
standardisation and  
integration.



# Thank You

More information on:



**PierNext**  
Innovation by Port de Barcelona

<https://piernext.portdebarcelona.cat/>

**SMART**

**PORTS**

PIERS OF  
THE FUTURE

<https://smartports.tv/>