

Impact of digitization and innovation in ports

June 2024

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Port de Barcelona



Port of Barcelona Fourth Strategic Plan 2021-2025

Port Vision 2040

MISSION

TO GENERATE PROSPERITY IN OUR COMMUNITY, INCREASING THE COMPETITIVENESS OF OUR CUSTOMERS BY PROVIDING EFFICIENT AND SUSTAINABLE LOGISTICS AND TRANSPORT SERVICES

VISION

SMART LOGISTICS HUB

The SMARTest logistics hub in the MED

S	M	A	R	T
Sustainable	Multimodal	Agile	Resilient	Transparent

THE GENERAL STRATEGIC OBJECTIVE FOR 2025 CAN BE SUMMARISED IN THE FIGURES 70/50/40

Economic sustainability

€70 billion in foreign trade value

Environmental sustainability

50% electrified container and ro-ro wharves

Social sustainability

40,000 people working at the Port



The strategic proposal

Strategic axes and objectives

Strategic axes	Strategic objectives
Environmental sustainability Energy transition	<ul style="list-style-type: none">▪ Develop a new energy model▪ Decarbonise maritime-port activity▪ Reduce pollution▪ Increase intermodality
Economic sustainability Competitiveness	<ul style="list-style-type: none">▪ Diversify the port business▪ Differentiate the offer of services▪ Attract logistics activity▪ Develop the necessary infrastructures
Social sustainability Human capital	<ul style="list-style-type: none">▪ Foster training, employment, entrepreneurship and talent attraction▪ Promote equal opportunities▪ Integrate the Port into the urban and metropolitan environment▪ Ensure the health, safety and security of people and facilities



Economic impact of the commercial activity and digitalisation of the Port of Barcelona

This study highlights that the importance of the Port of Barcelona is revealed and measured not only in traffic figures, but also in terms of the **Port's impact on job creation, wealth creation, environmental sustainability and, ultimately, the creation of prosperity.**

Impact of the commercial activity:

The commercial activity of the Port of Barcelona generates an impact of **€4.213 billion in gross value added (GVA)** and helps sustain **46,469 jobs.**

The Port's contribution to the economy represents **2% of Catalonia's GVA and 1.4% of jobs.**

The tax yield generated by the Port's economic activity amounts to **€849 million, representing 2% of tax revenues in Catalonia and 0.4% in Spain.**



The economic and environmental impact of digitalisation of the port

- One of the key aspects to explain the growth in the Port of Barcelona's activity in recent years, both in terms of traffic and, in particular, of qualitative growth, is the level of digitalization that has been brought into its processes and operations.
- The report "Economic impact of the commercial activity and digitalization of the Port of Barcelona" analyses this impact
- The study examines the following aspects of digitalization:
 - Transferring documentary processes online (administrations, suppliers and customers).
 - Information, communication and management systems for vessel traffic.
 - Management and planning operating systems:
 - Advanced software systems for terminal operation
 - Automated management of truck entry/exit;
 - Operational automation; storage management systems, and truck fleet management.
 - And all other digital processes, services and systems designed to improve customer and supplier management.





The economic impact of digitalisation of the port

Short-term economic impact of digitalisation

The main benefit of digitalisation of the Port has been a notable improvement in productivity that has enabled it to gain growth potential and increase its competitiveness:

€450 million

in cost reduction per year, representing 15% of the Port's operational expenditure

2,700

jobs saved

Long-term economic impact of digitalisation

Digitalisation has resulted in an increase in the ability of port companies to grow in terms of business activity and, consequently, in job creation

€427.4 million

in increased sales

2,564

jobs created, the equivalent of 16% of direct employment at the Port in 2018



The environmental impact of digitalisation of the port

The improvements in productivity were also quantified based on a series of actions relating to port operations and movements, which involve a reduction in fuel consumption and consequently in polluting emissions:

- Reducing terminal access and exit times for trucks thanks to the introduction of smart gates.
- Reducing average docking times for vessels and optimising the performance of land-based machinery through the introduction of advanced operating systems (TOS).
- Reducing the number of visits required for companies to complete administrative formalities by transferring services online.

The direct impact of digitalisation has represented an improvement in environmental efficiency equivalent to a 13% reduction in the total polluting emissions emitted by the Port and 12% in the carbon footprint.

Reduction of 781.7 tonnes in polluting emissions (NO_x and PM), representing 13% of the Port's total emissions.

Reduction of 38,629 tonnes of CO₂eq in carbon footprint, representing 12% of the total CO₂eq produced by the Port.

The CO₂eq saving is highly significant overall and is the equivalent of planting 234,117 trees or 316 ha of new forest.¹

1. Calculated on the basis of 165 Kg CO₂/tree and a planting density of 739 trees per hectare.



Red Sea Crisis

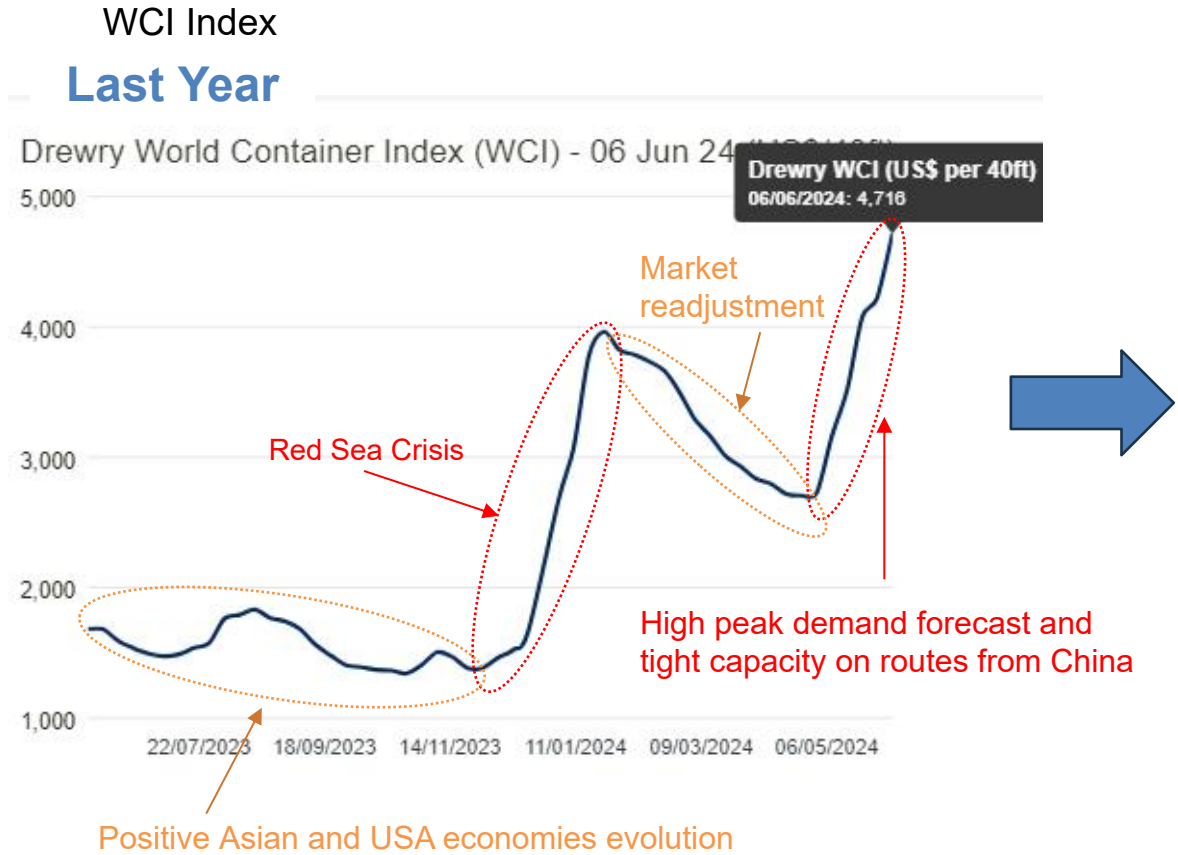
Impact of Maritime Transport in South Europe

- Routes through the Suez Canal have been altered since November following Houthi attacks on ships sailing through the Red Sea
- Deviation around the Cape of Good Hope: Asia-Mediterranean transit time increases by 40% (15 additional days)
- This diversion of ships is causing congestion in some West Mediterranean ports that serves as a hub to cover East Mediterranean ports
- There is no sign of a solution to the conflict, although in recent weeks COSCO and CMA-CGM have begun to resume some services through Suez, to cover Eastern Med ports





Red Sea Crisis Freight rate evolution



Freight rates increase, but far from the post-pandemic situation





Red Sea Crisis

A positive reading:

- Enhances the use of Port of Barcelona as a hub port for distribution to East Med increasing traffic up to 25% compared to same period last year (remarkable increase of transshipments by 40%)
- Red Sea crisis has no real impact on vessel capacity: world fleet has increased by 9% since the beginning of the year
- There has been an increase in demand from companies to ensure supplies and avoid breaks in production lines.





The three pillars of port innovation

Digitalization

Energy transition

Open innovation & talent

WHAT PORTS ARE DOING

Cybersecurity **A.I.**
 Track & trace Digital twin BIM
 Automation **STM** Data management
 Analytics Port optimisation
 Machine learning Operational efficiency
 Digital processes

New fuels Power generation
 Smart grid Clean energy Methanol
 Operational efficiency Photovoltaic Ammonia
 Circular economy
LNG OPS Windmills PV

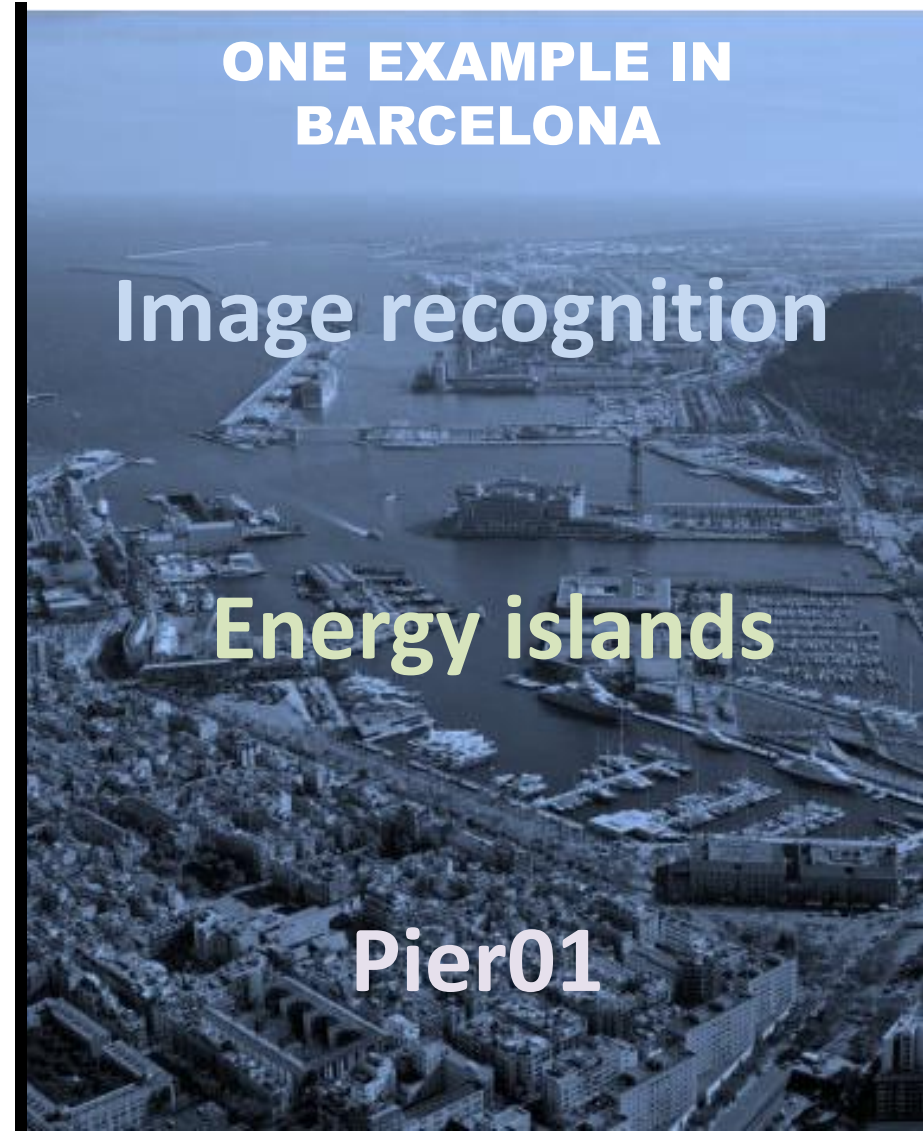
Training Innovation hub
 Data sharing Start-ups scale-ups
 Technological partnership Talent retention
Collaboration Research
 Talent gathering Spin-offs

ONE EXAMPLE IN BARCELONA

Image recognition













Energy islands

Pier01





Port de Barcelona's innovation plan
Strategic axis

<p>Governance model</p>	
<p>Partnerships & alliances</p>	   
<p>Create the ecosystem</p> <p>Advice</p> <p>Spaces</p> <p>Financing</p>	      
<p>Dissemination</p>	     

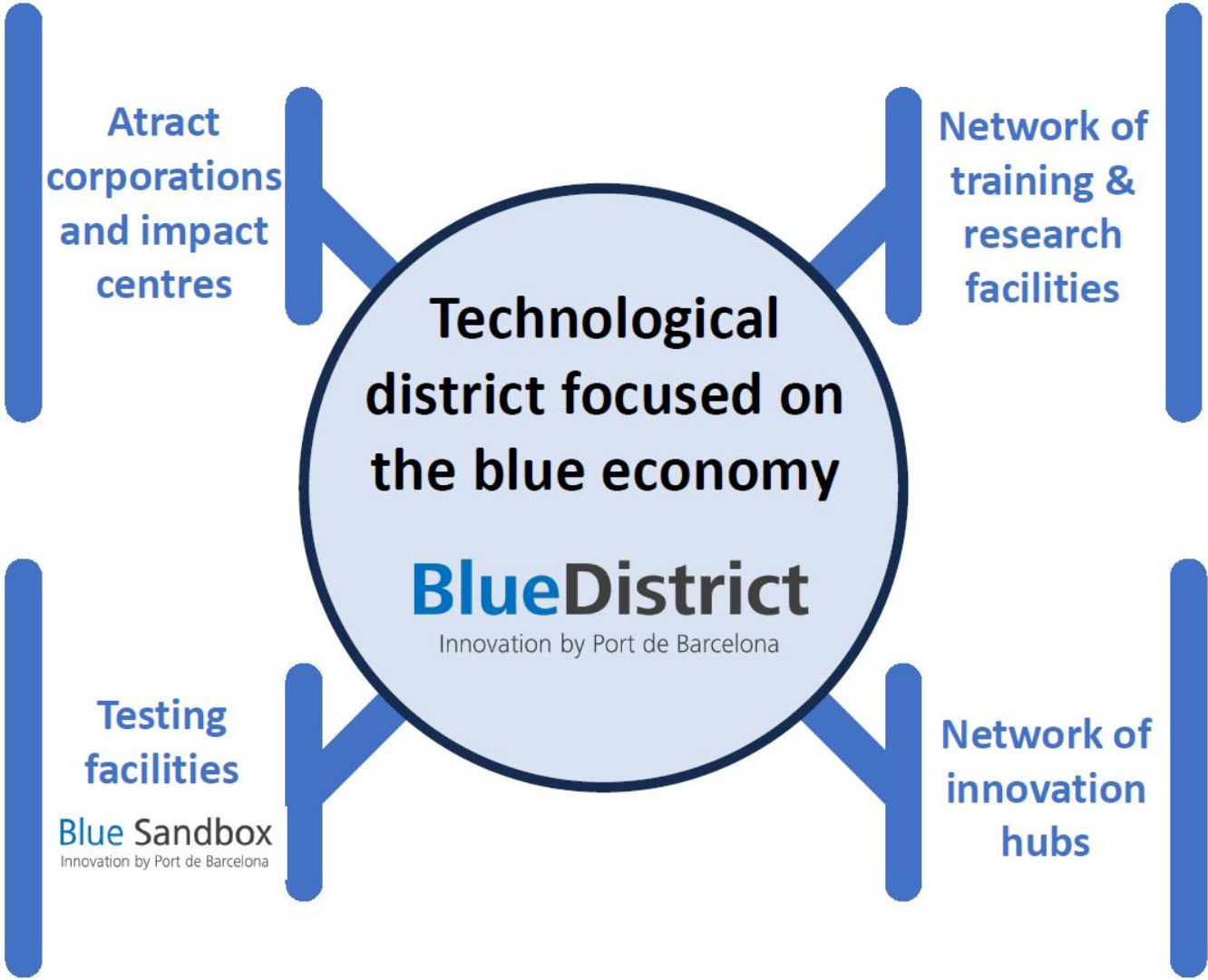


Developing of an innovation area





What means an innovation district?



[Video](#)



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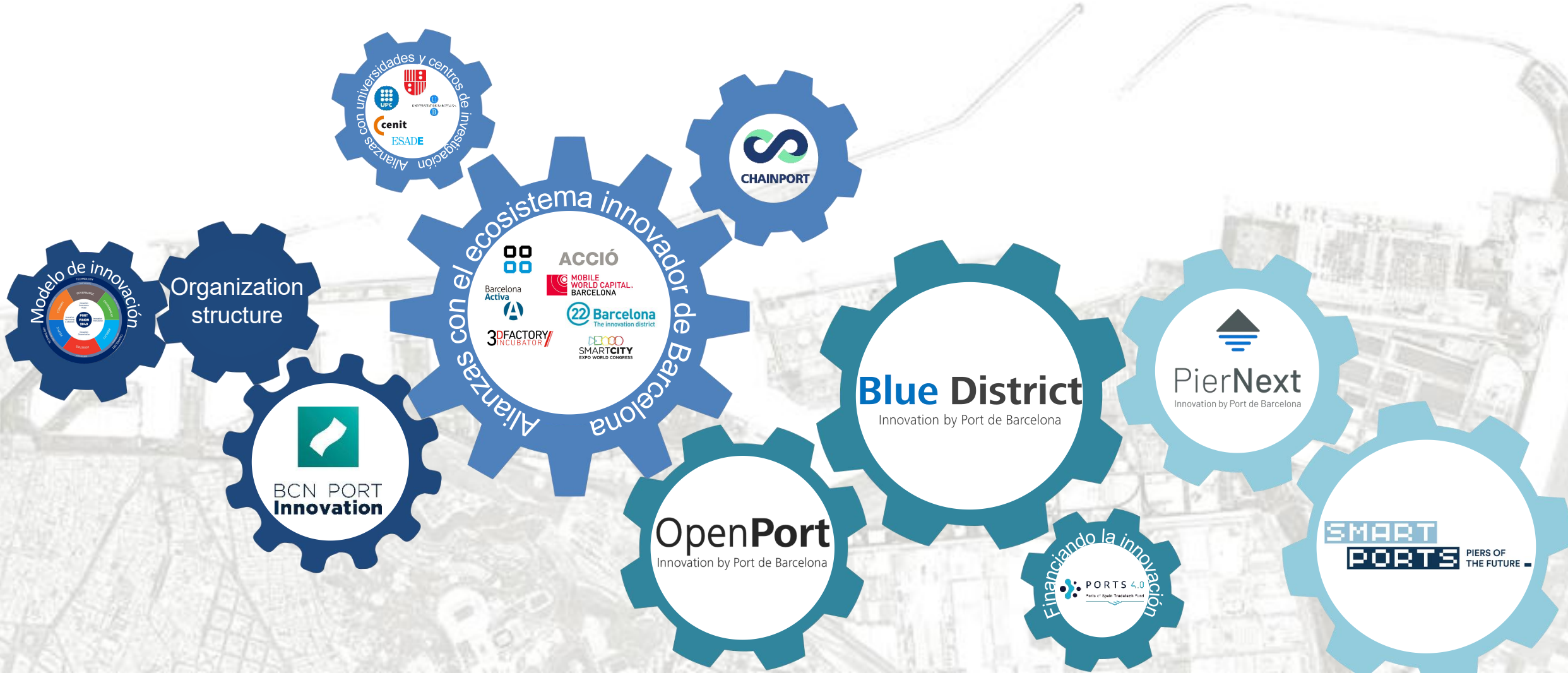


Management structures

Strategic alliances

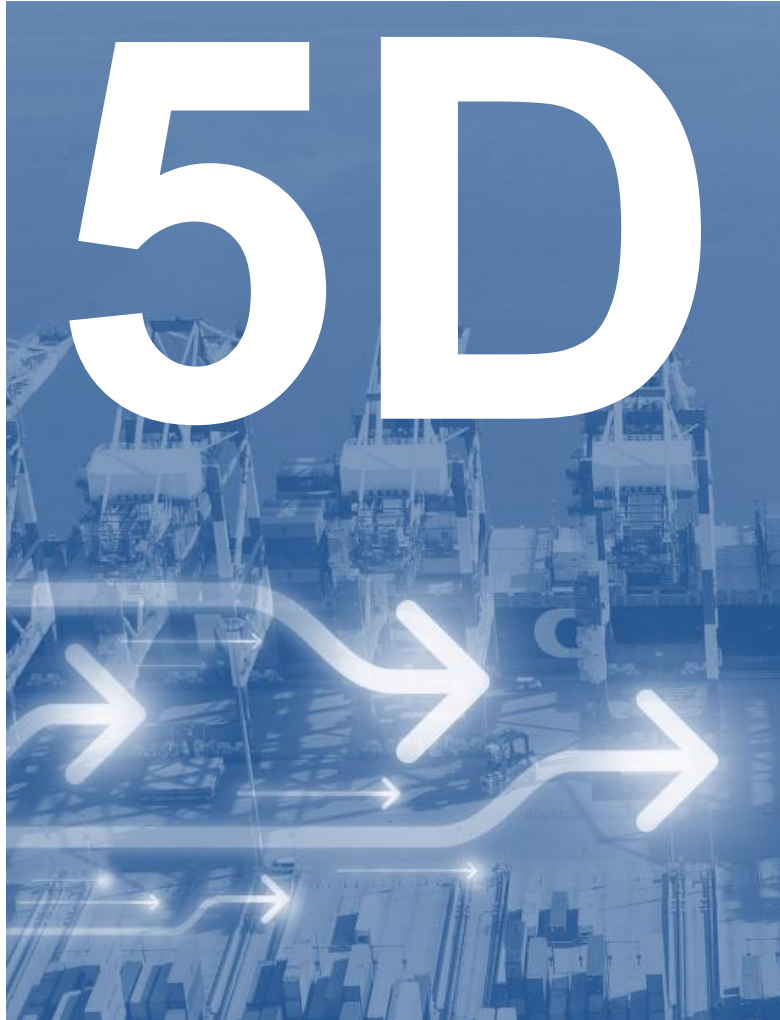
Sectoral stimulation

Dissemination





The 5D



DIVERSIFICATION

Logistics area, nautical industries, America's cup, rail motorways

DIFFERENTIATION

Strengthen logistics ecosystem, ecommerce

DECARBONIZATION

OPS, energy generation, alternative fuels

DIGITALIZATION

AI & automation

DISRUPTIONS

Flexibility

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