

Smart Port Developments in Creating Sustainable Futures

Lluís París
Head of Automotive, roro, SSS & Bulk Division



Port de Barcelona



INDEX

- Introduction
- Connectivity
- IV strategic plan 2021-2025
- Investments for the next 8 years (€1,500m)
- Projects
- Priority axis



Introduction

What does BARCELONA offer as a Euro-Mediterranean distribution center?

1,5% Spanish area and 10% Spanish population, account for:

23 % Spanish GDP

39% Spanish exports of goods

±20%

Spanish industry

Spanish exporting companies

Spanish foreign trade

Spanish tourists

6 biggest metropolitan area in Europe with more than 5 million inhabitants. (source: Eurostat)

Global clusters

Automotive, chemical, pharmacy, fashion....

3rd city in Europe and 10th in the world as tourist destination

2 Business schools among the 10 best in Europe and in the top 25 worldwide

**Headquarters of Global Companies
SEAT, MANGO, Desigual, E-dreams, TOUS...**



Introduction

Specialized terminals for all types of cargo



Port de Barcelona: Solutions for all kind of traffic



Introduction

A unique port due to its specialization in different traffics

	2020	2021	%	2019	2021	%
Total traffic	58.5 M tons	65 M Tons	11.3 %	65.8 M tons	65 M Tons	-1.1 %
Containers	2.9 M TEU	3.5 M TEU	19.3 %	3.3 M TEU	3.5 M TEU	6.2 %
Hinterland	1.79 M TEU	2 TEU	15.2 %	1.93 M TEU	2 TEU	6.6 %
Transshipment	1.2 M TEU	1.5 M TEU	25.5 %	1.4 M TEU	1.5 M TEU	5.7 %
Cars	480,337 Cars	499,011 Cars	3.9 %	777,690 Cars	499,011 Cars	-35.8 %
Bulk	58.4 M tons	65 M tons	11.3 %	65.7 M tons	65 M tons	-1.1 %
Liquid Bulk	12.8 M tons	12.4 M tons	-3.4 %	15.9 M tons	12.4 M tons	-22.4 %
Dry Bulk	4.0 M tons	4.5 M tons	9.9 %	4 M tons	4.5 M tons	10.5 %
Ro-Ro	347,093 UTI	396,730 UTI	14.3 %	410,546 UTI	396,730 UTI	-3.4 %
Cruises	198,842 pax	520,854 pax	161.9 %	3.1 M pax	520,854 pax	-83.4%



Introduction

Port, airport, logistics areas and free zones within 5 kilometers



- **Only location in Southern Europe hosting, within 5 kilometers, all together a port, airport, free zones and logistics areas with warehousing capacity and rail terminals.**
- Only facility in Spain fitted with **UIC rail connections over 750m long** in the very maritime terminals ready to increase flows linking central Europe with any maritime destination. A true logistics hub.
- **Strong synergies among all transport** modes for inbound and outbound flows and global distribution.
- A **unique integration of world-class infrastructures** (port, airport, free zone and logistics zone), **services** and **top commercial & logistics partners.**



Introduction

ZAL: Logistics Area



*Important logistics
international & national
operators choose ZAL
Barcelona as logistics hub and
distribution center for the
South of Europe and North of
Africa*



	ZAL BCN	ZAL PRAT	ZAL
Surface (Ha)	65	143	208
Development area (m2)	265,000	580,000	845,000
Warehouses & offices (m2)	250,000	550,000	800,000
Services (m2)	14,000	32,000	46,000
Companies	100	120	220
Workers	5,000	8,000	13,000
Investment (thousand €)	55,000	235,000	290,000





Connectivity

Maritime container connectivity

Almost **100** regular shipping lines
operated by **44** shipowners
connecting Barcelona with **190** ports



MAIN BARCELONA MARITIME ROUTES	Number of services from / to Barcelona
Europe – Far East	4
Europe – Indian Subcontinent	2
Europe – Middle East	4
Europe – Africa	26
Europe – North America	8
Europe – Central & South America	6
Mediterranean	37

Major shipowners' partnerships:

2M: MSC & Maersk

Ocean Alliance: CMA-CGM (APL), COSCO, Evergreen & OOCL

THE Alliance: Hapag-Lloyd, Yang Ming, ONE Line & HMM

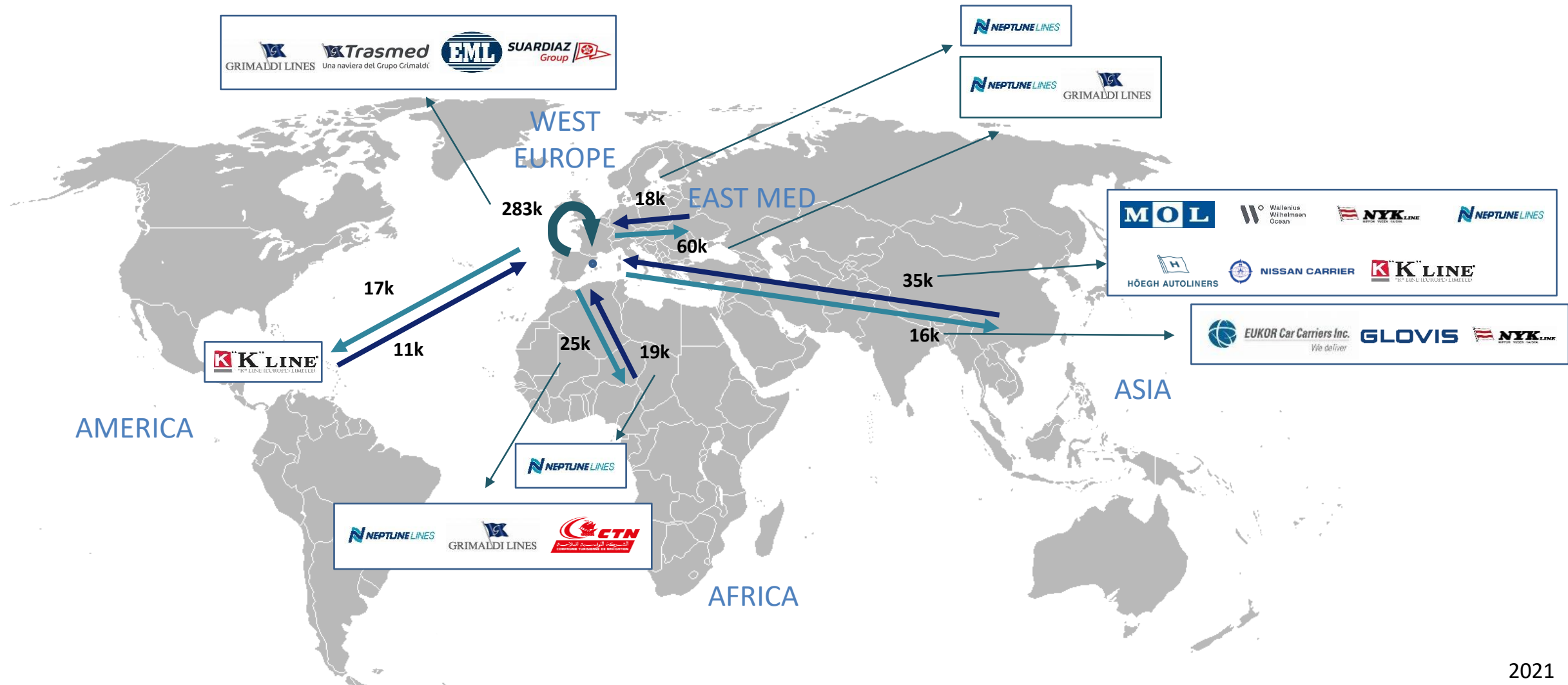
You can check updated services at:

<http://www.portdebarcelona.cat/es/web/Port-dels-Negocis/lineas-regulares>



Connectivity

Vehicles Maritime Connectivity

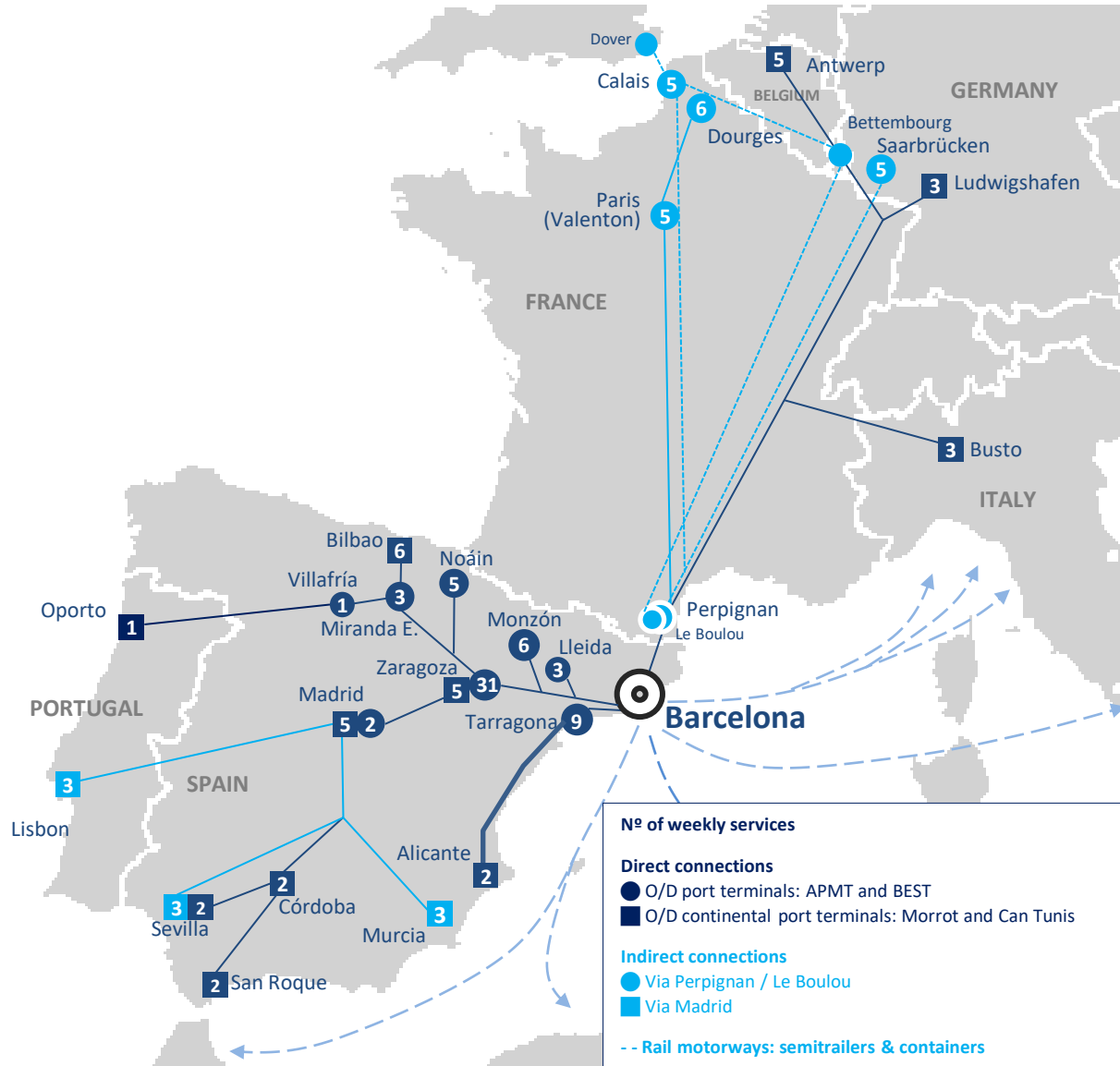




Port de Barcelona

Connectivity

Distribution capacity: rail container services



From / to port terminals: APMT and BEST	TO / FROM	RAIL LOGISTICS OPERATOR	WEEKLY AVERAGE SERVICES
	Lleida, Pla Vilanoveta	APMT Railway	3
	Madrid, PSA Azuqueca	APMT Railway (Direct and via TMZ)	2
	Miranda de Ebro (Burgos)	Synergy	3
	Monzón TIM + AgroTIM (Huesca)	APMT Railway: Dry + (Reefer NEW) MSC Dry + Reefer	6
	Noáin TIN (Pamplona)	Synergy	5
	Tarragona	TP NOVA	9
	Villafria (Burgos)	Synergy NEW	1
	Zaragoza TMZ	APMT Railway: Dry+Reefer	25
	Zaragoza PLAZA (Noatum rail terminal and LTA)	SICSA / APMT Railway	6

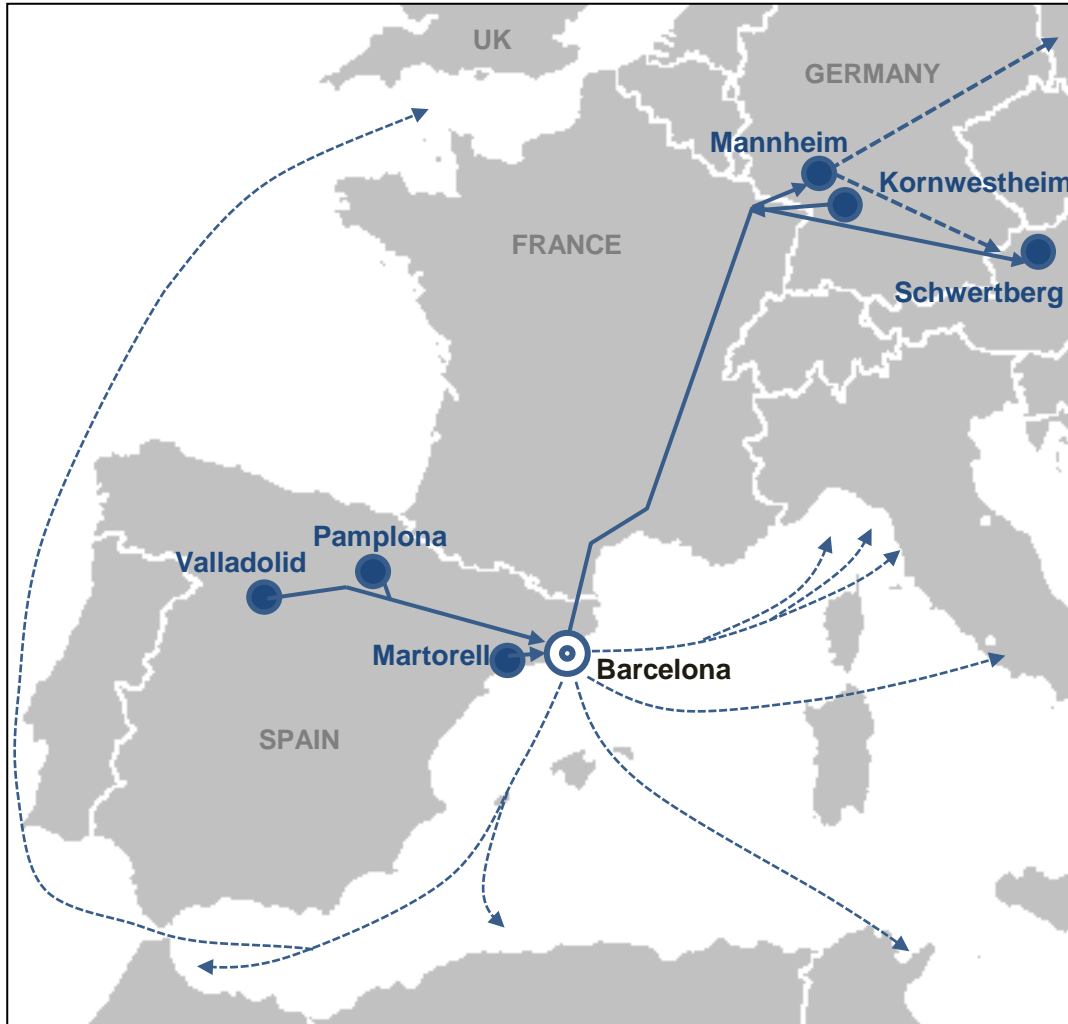
From / to continental port terminals: MORROT and CAN TUNIS	TO / FROM	RAIL LOGISTICS OPERATOR	WEEKLY SERVICES
	Antwerp (Belgium)	HUPAC Containers & semitrailers	5
	Busto (Italy)	HUPAC	3
	Ludwigshafen (Germany)	KOMBIVERKHER	3
	Oporto (Portugal)	MEDWAY (via Zaragoza PLAZA) NEW	1
	Alicante	Synergy NEW	2
	Córdoba, Sevilla, San Roque	MULTIRAIL	2
	Bilbao	CONTINENTAL / SICSA	6
	Zaragoza PLAZA and Madrid Abroñigal	RENFE	5

Via Perpignan / Le Boulou	Services offered by VIIA (Bettembourg and Calais), DB CARGO (Saarbrücken), CARGOBEAMER (Calais NEW), NOVATRANS (Paris-Valenton and Douges) and other rail logistics operators.
Via Madrid Abroñigal	To Murcia, Sevilla and Lisbon. Operated by Renfe: 5 weekly services



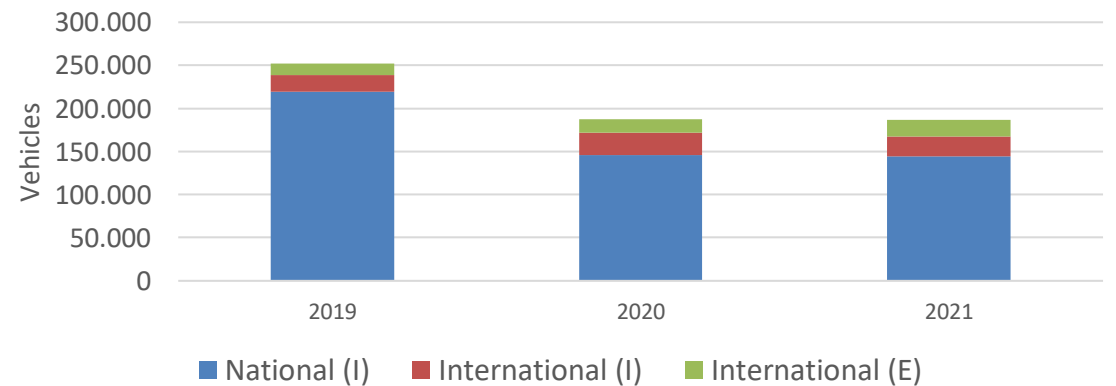
Connectivity

Vehicles Rail services to/from Barcelona



	Origin / destination	Frequency and Operator
National	Martorell	15 trains/week (FGC)
	Pamplona	6 trains/week (Pecovasa & Transfesa)
	Valladolid	1 trains/2 weeks (Transfesa)
International	Kornwestheim (Germany) Southbound	4 trains / week (BD)
	Mannheim (Germany) Northbound	4 trains / week (BD)
	Schwertberg (Austria) Northbound	1 train / week (Hoedlmayr)

Vehicles rail traffic in the Port of Barcelona





IV Strategy Plan 2021 – 2025

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 logistic hub in the MED
Sustainable - Multimodal – Agile – Resilient - Transparent

GENERAL STRATEGIC OBJECTIVE

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



IV Strategy Plan 2021 – 2025

Port's vision. Evolution of uses 2025

Logistics and industry

-  Additive manufacturing (3D printing)
-  Port Centric Logistics
-  Urban Goods Distribution

Infrastructure works

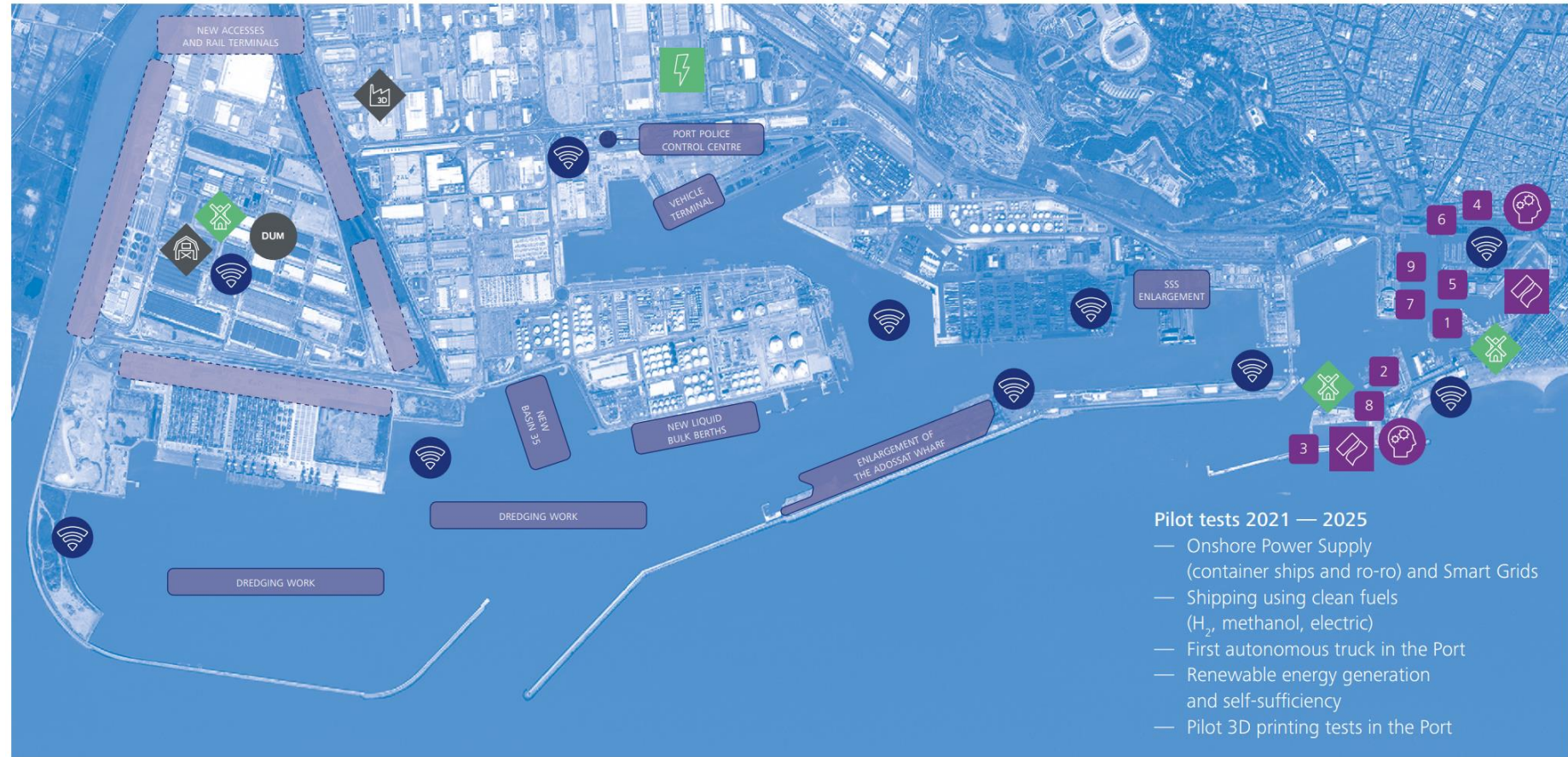
-  Ongoing infrastructure works
-  Completed infrastructure works

Port Vell

- 1 Fishermen's wharf
- 2 Sheds on Oriental wharf
- 3 Urban development of the new Rambla Marina Vela
- 4 Balcony on passeig de Colón
- 5 Refurbishing the Espanya wharf
- 6 Port Center
- 7 Nautical bus
- 8 Innovation, knowledge and training node
- 9 National basin

Energy transition

- Renewable energy production
 - Electrical substation



Knowledge and innovation

-  Knowledge & training hub
-  Blue Economy technology district

Digitalisation

- Operations with Digital Twin
- Communications network 5G

Pilot tests 2021 — 2025



IV Strategy Plan 2021 – 2025

Port's vision. Evolution of uses 2030

Energy transition

- Renewable energy production
- Short Sea Shipping
- Rail terminal
- Electrical substation
- Onshore Power Supply

Logistics and industry

- Additive manufacturing (3D printing)
- Port Centric Logistics
- DUM Urban Goods Distribution
- Electric mobility

Infrastructure works

- Ongoing infrastructure works
- Completed infrastructure works
- Consolidated actions

Knowledge and innovation

- Knowledge & training hub
- Blue Economy technology district

Digitalisation

- Operations with Digital Twin
- Communications network 5G

New modes of transport

- Rail motorway terminal





IV Strategy Plan 2021 – 2025

Port's vision. Evolution of uses 2040

Energy transition



Renewable energy production



Short Sea Shipping



Rail terminal



Onshore Power Supply



The Port is energy self-sufficient

Infrastructure works



Consolidated actions

New modes of transport



Rail motorway terminal



Drones



Autonomous vessels in the Port

Logistics and industry



Additive manufacturing (3D printing)



Port Centric Logistics



Urban Goods Distribution



Electric mobility



New activities

Digitalisation



Operations with Digital Twin



Communications network 5G

Knowledge and innovation



Knowledge & training hub



Blue Economy technology district





Investments for the next 8 years (€1,500m)

New investments' plan



- 1 Cruises activity concentrated in the Adossat wharf.
- 2 Relocation of the Morrot rail terminal.
- 3 Relocation of the container activity to the south area.
- 4 Onshore Power Supply (OPS).
- 5 New road and rail accesses.



Investments for the next 8 years (€1,500m)

New investments' plan: OPS

Onshore Power Supply (OPS): €90m

GENERAL STRATEGIC GOAL

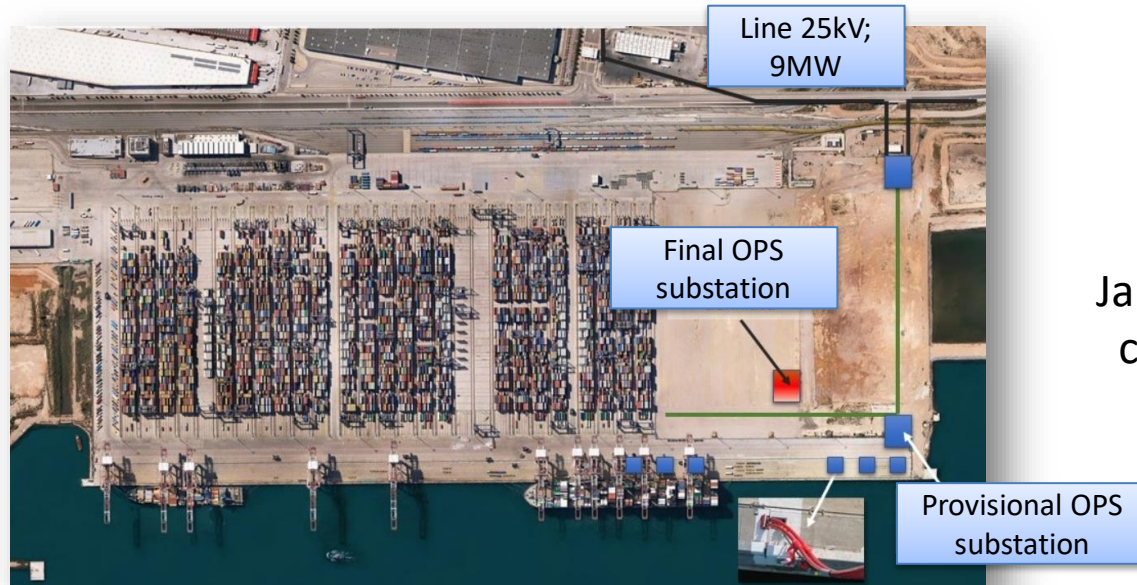
70/50/40

Economic sustainability	Environmental sustainability	Social sustainability
€70 billion is foreign trade value	50% electrified container and ro-ro wharves	40,000 people working at the Port
Foreign trade and cabotage (excluding transshipment) that is transported through the Port	Provisional network and consolidated OPS pilot connections or with electrification projects underway	Employees who work there physically, on a daily or regular basis



Onshore Power Supply (OPS)

January 2021: tender published for the construction and commissioning of the first OPS points for containers in Hutchison BEST terminal.





Investments for the next 8 years (€1,500m)

Other investments

New road and rail accesses: €600m



SHORT TERM

Before the end of 2024: adapting the “Calle 4” tracks to UIC gauge.

MID TERM

July 2022: the basic project for the works will be ready. It includes:

- Rail access through a tunnel from *Bellvitge* to *Nou Llobregat* terminal.
- New rail access to Can Tunis.
- Road highway exclusively for port traffic from *Nudo Llobregat* to the south area of the Port.
- Electric control and supply facilities.



Investments for the next 8 years (€1,500m)

Other investments

New road and rail accesses: €600m



- Rail management in cooperation with ADIF
- Internal crossings automation

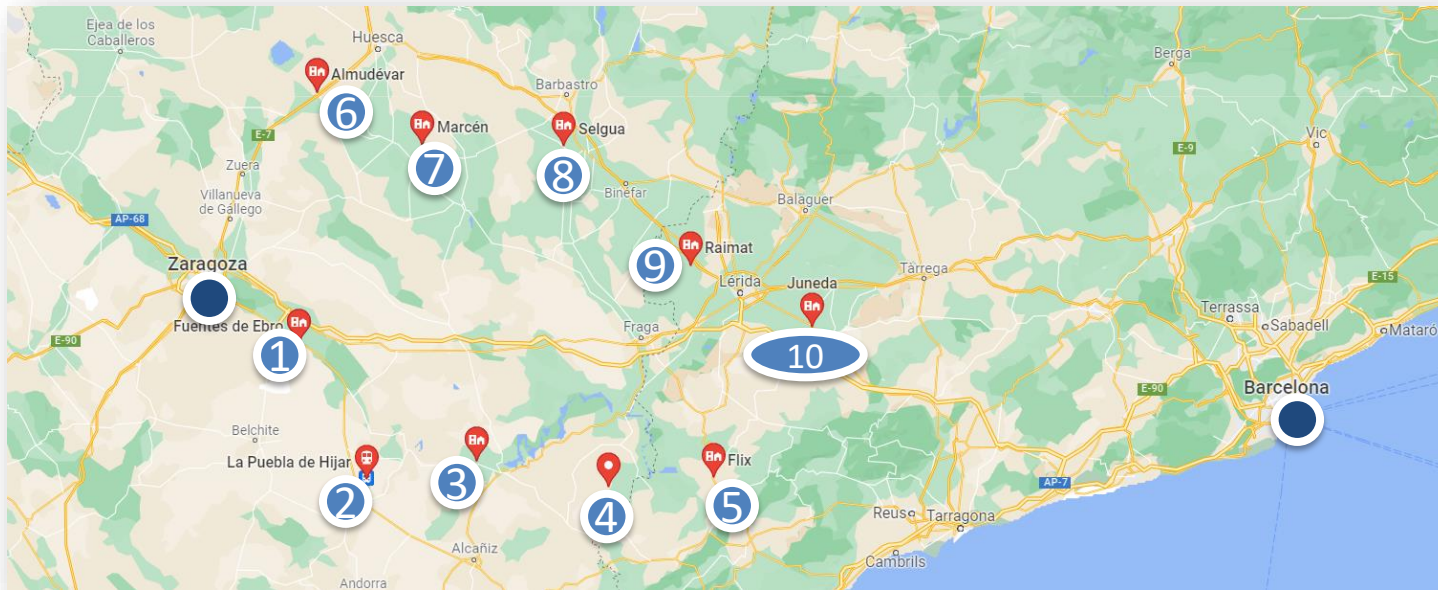
- New digital control centre (in progress)
- Possibility of operating 24h/day by turns of 6 hours



Investments for the next 8 years (€1,500m)

Other investments

New sidetracks in the Zaragoza-Barcelona corridor: €60m



Via Caspe:

- ① Fuentes de Ebro (Zaragoza)
- ② La Puebla de Híjar (Teruel)
- ③ Chiprana (Zaragoza)
- ④ Nonaspe (Zaragoza)
- ⑤ Flix (Tarragona)

Via Lleida:

- ⑥ Almudévar (Huesca)
- ⑦ Marcén Poliñino (Huesca)
- ⑧ Selgua (Huesca)
- ⑨ Raimat (Lérida)
- ⑩ Juneda (Lérida)

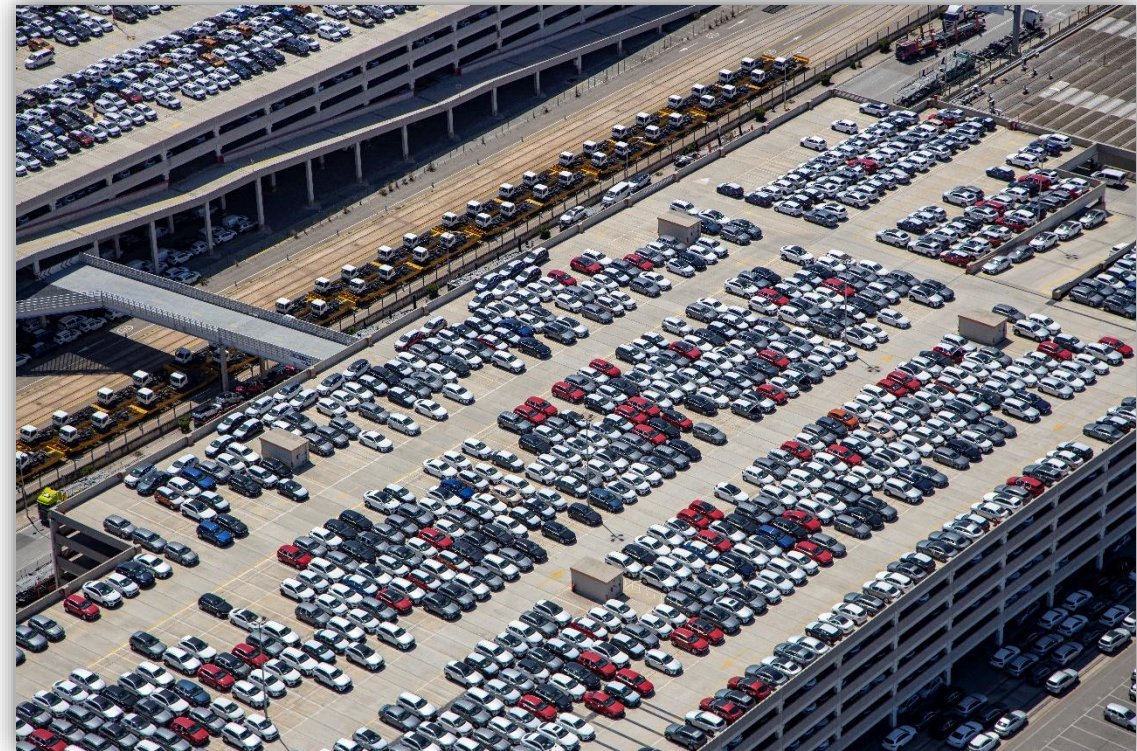
- Investment in the ADIF network for the enlargement of the sidetracks until a useful length of 750m in the Madrid-Barcelona corridor.
- May 2021: according to the agreement signed among Ports of Spain, ADIF and the Barcelona Port Authority (APB), ADIF has awarded the contract for the redaction of the construction projects.



Projects

Finished projects

- Improvement of the stowage conditions by incorporating external staff in many growing functions for vehicles.
- Rail traffic managed jointly by ADIF and APB for its optimization.
- Internal crossings automation growing.
- Completely operative UIC+IB+M tracks in Príncipe de España with lengths up to 1,000m that allow operations for trains up to 750m in two parts to get more agility.
- Specific study of the needs of each terminal regarding EV charging points. By ETECTRA Mobility Services.

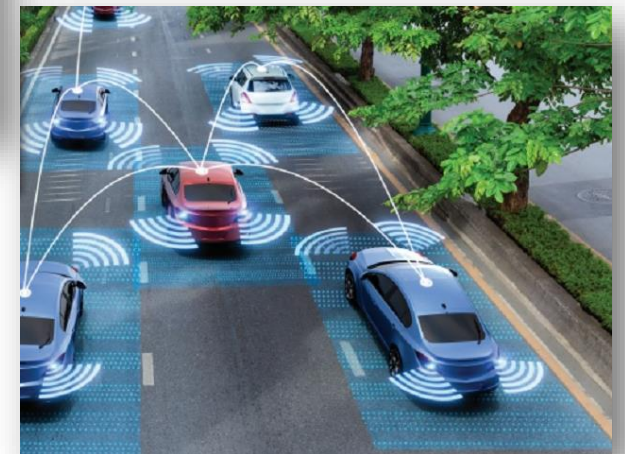




Projects

Ongoing projects

- Study regarding the possibility of installing solar panels in all the terminals → 0 emissions port
- Energy wharf terminals with big oil tanks able to be used for new fuels such as green hydrogen or ammonia.
- Working towards the implementation of a 5G network allowing self-driven cars to be fully operational within the Port.
- Rail digital control centre. Estimated for 2024.





Projects

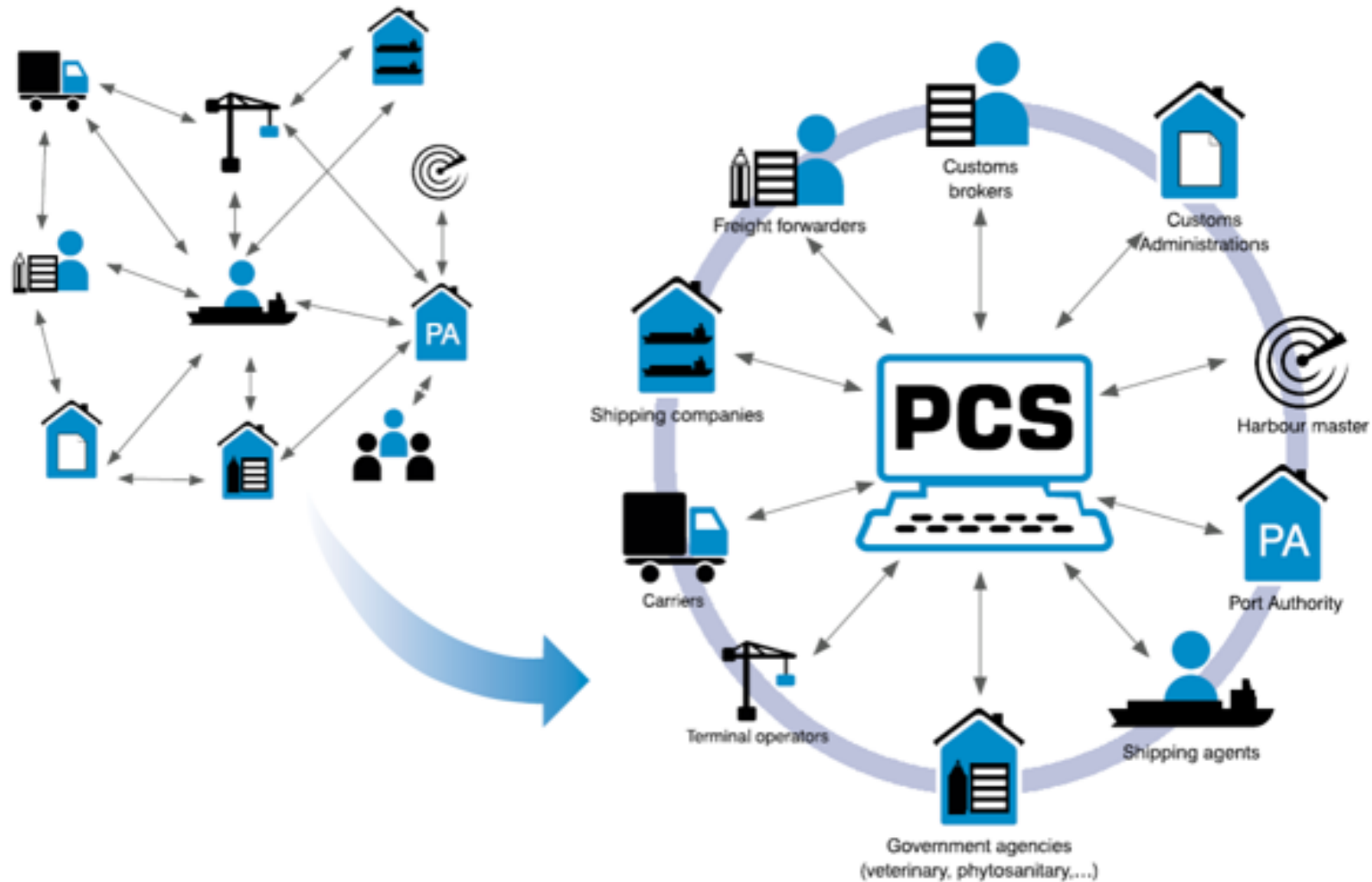
Other innovation projects: platooning





Projects

Other innovation projects: Vehicles Port Community System





Projects

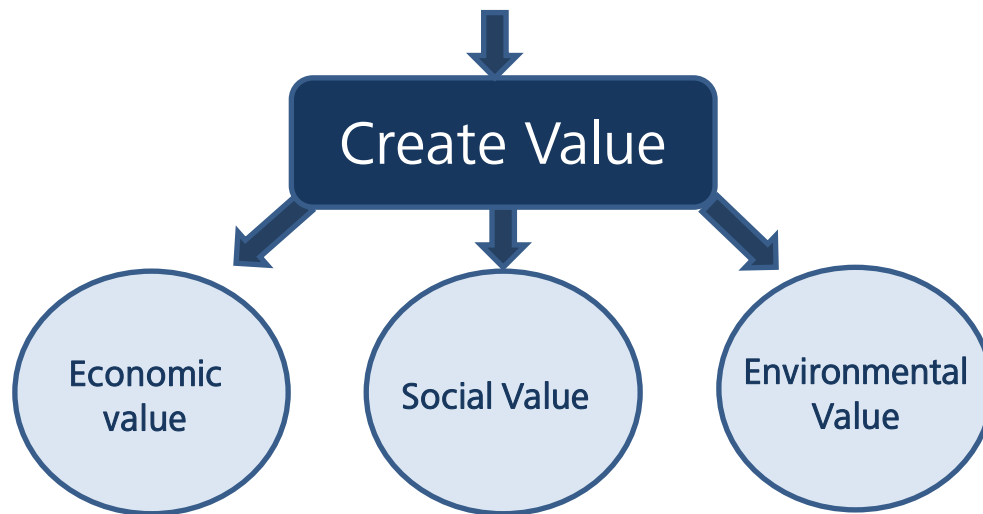
Other innovation projects: Autonomous Vehicles





Priority axis
Sustainability

Port Community Goal



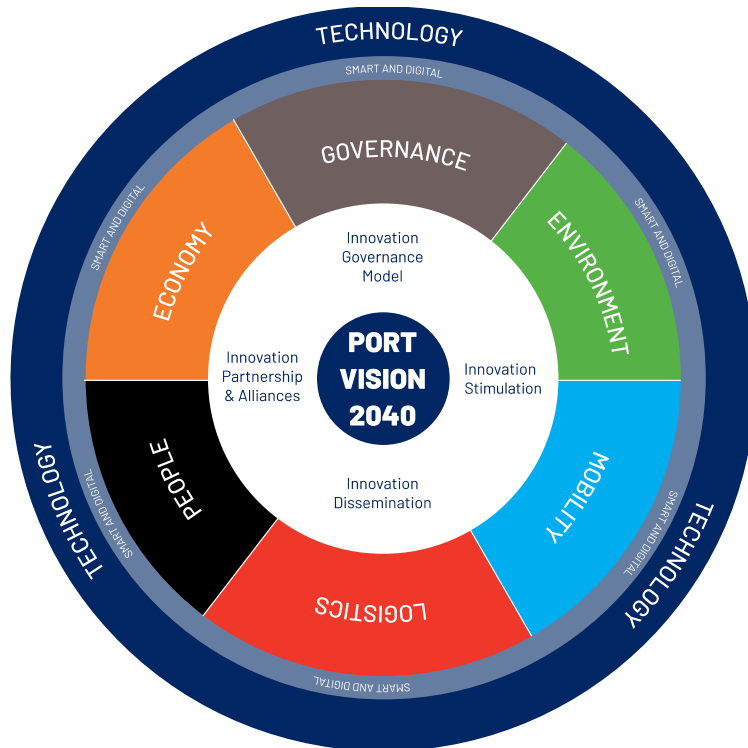
Active contribution to **13 of the 17** United Nations Sustainable Development Goals (SDG).





Priority axis

Innovative and digital transformation



Smart Logistics



Trough technology and automation:

- makes the entire logistics chain more efficient, reliable, predictive and productive
- record and share information in real time with customers
- integrates physical and technological infrastructures.

Smart Mobility



- Local and international multimodal accessibility.
- All modes of transport
- Infrastructures and ICT
- Traffic management

...are efficient, integrated, sustainable, innovative and safe

Smart Environment



- Protects and is respectful with its surroundings
- Promotes measures to reduce pollution
- Makes efficient management of natural and energy resources
- It is sustainable from an energy point of view

Smart Economy



It is the economic engine of its area of influence and generator of public value

- Creates wealth
- Dynamize the labour market
- It facilitates the Internationalization and competitiveness of its environment
- Drives innovation and entrepreneurship

Smart People



There is a good port-city integration that enhances ...

- the diversity
- learning, creativity and participation of people
- culture
- social cohesion
- the tourist attraction of its surroundings

Smart Governance



- Makes an efficient management of public resources
- It's transparent
- Encourages participation
- Guarantees physical and legal security for the benefit of the citizen and the economy ..



Port de Barcelona