

April 2022

# Innovation by Port of Barcelona



Port de Barcelona





This document was prepared by Barcelona Port Authority innovation department, based on the Innovation Plan presented to the Board of Directors in November 2021. This document will be updated periodically.

Updated April 2022

**Innovation Department**

Barcelona Port Authority



01.

# The Port and innovation

Innovation has been steadily growing in importance in port strategy. What started initially with some cutting-edge ports, such as Rotterdam and Singapore, which began to develop spaces for start-ups, has become more widespread in recent years. Challenges, hackathons and hubs have mushroomed in port and logistics communities and new competition to attract talent and new technology-based companies has emerged in recent years.

The introduction of the Ports 4.0 Fund promoted by *Puertos del Estado* (National Ports) has further boosted the interest of Spanish ports in leading innovation initiatives and presenting themselves as the ideal place to run pilot tests and prototypes. In this regard, the vast majority of the ports on our coastline have launched actions that range from services to promote and encourage innovation to providing physical spaces to house new companies (start-ups, scale-ups and spin-offs) associated with port and logistics activity.

In the case of Barcelona, a great effort has also been made in recent years to establish its position as an innovative port. As such, a specific innovation model and the action lines pursued in recent years formed the basis to prepare the 2021-2024 **Innovation Plan** with the long-term goal of **consolidating a technology district linked to the Port of Barcelona with a focus on innovation in logistics and the blue economy**. This plan was framed as a series of goals and action lines.

## Background

The Port of Barcelona has a great tradition of innovation which has made it a trailblazer and a global benchmark, exporting its know-how to ports around the world and to other areas of the economic and social fabric. This activity has been reflected in several documents in recent years.

The study “**Análisis de la actividad de I+D+i de la Autoridad Portuaria de Barcelona (Analysis of the R&D and Innovation activity of Barcelona Port Authority)**”, produced by IDOM in 2010, identifies 49 innovative projects under development by the port authority.

This study formed the basis of the document “**Port de Barcelona: port innovador. L’estratègia d’innovació del Port de Barcelona 2010-2011 (Port of Barcelona: innovative port. Port of Barcelona innovation strategy 2010-2011)**”, which establishes the concept of innovation for the port, proposes an open innovation model to deliver it and defines action lines to implement it.

“**Estratègia d’innovació del Port de Barcelona 2013-2015 (Port of Barcelona Innovation Strategy 2013–2015)**” focuses on four action lines: fostering relationships with research centres and universities; developing management structures for innovation;

fostering innovative spirit at the Port of Barcelona; and taking part in subsidised European innovation projects.

However, it was not until the **Port of Barcelona’s Third Strategic Plan** was adopted that innovation itself began to play a key role in the Port’s strategy. This led to the development of initiatives that have firmly established it as an international benchmark: PierNext, Smart Port: Piers of the Future, PortInnova, OpenPort, Barcelona Port Challenge, the digital project, etc.

As such, the document “**Port of Barcelona Innovation Strategy 2018–2020**” defines the Port’s innovation model (Port of Barcelona’s innovation steering wheel) and integrates it with the smart port concept. In addition, it establishes the four development factors that are still valid today: the innovation governance model, alliances for innovation, stimulation of innovation and dissemination of innovation.

Lastly, the “**Port of Barcelona’s Fourth Strategic Plan 2021-2025**”, establishes innovation as one of the pillars of development for the port and establishes specific goals to deliver it. Specifically, in its social component, the plan proposes enabling the creation of new companies through entrepreneurship and the development of an innovation ecosystem in the field of logistics and transport to help attract talent; and in its **Vision 2040**, the best-case scenarios identify Barcelona as a benchmark in logistics innovation and blue economy and the goal of creating an innovation hub is set.

In November 2021, following the lines established in the Fourth Strategic Plan, the Board of Directors was presented with the **2021-2024 Innovation Plan**, which forms the basis for this document.



## Barcelona, a history of innovation

In recent decades, the Port of Barcelona has been the setting for major groundbreaking innovations in both technology and the development of new business models that have not only impacted the port itself, but have also become international benchmarks.

Many of these success stories were, and continue to be, replicated by other ports.

The following are the most strategic and iconic innovations.



**Gerencia Urbanística Port Vell (Port Vell Urban Management)**, with its own legal personality, was established by the Port of Barcelona in 1988.

Currently it comprises a territory of 70 hectares, bringing together highly diversified activities including a wide range of nautical, sporting, business, cultural, tourist and leisure activities.

Port Vell is recognised around the world as an archetype of port-city integration and its management model has been adopted by various port authorities.



Created in 1992 and managed by CILSA (Centro Intermodal de Logística, SA), the ZAL Port (Logistics Activities Zone) was the first port logistics platform established in Spain. It is a model for development and ZAL has now become a generic term.

It is designed to generate maritime traffic with logistics infrastructure services with added value for goods. It is home to companies like Decathlon, Caprabo, Damm, Lidl, Agility, Kuhne & Nagel and Carrefour.

30 years on, many ports are in the process of developing similar projects.



**TMZ (Zaragoza Maritime Terminal)** was established in 2001 with the idea of creating a logistics hub in Zaragoza to boost exports and imports in Aragon. Initially promoted by Mercazaragoza and the Port of Barcelona, it was the first inland maritime terminal in Spain.

Its railway terminal became operational in 2007 and it has been expanded three times since then.

Although TMZ was the trailblazer, the main Spanish ports have now developed similar initiatives by creating other dry ports or inland terminals in their hinterland.



In 2000 the Port of Barcelona set up the company **Creuers del Port de Barcelona, S.A.** to accelerate development of the nascent cruise industry at the port.

**Creuers del Port** has helped to make Barcelona the busiest cruise port in Europe and the fourth in the world.

In 2013 the Port withdrew from the company. **Creuers del Port** now belongs to Global Ports Holding, the world's largest cruise terminal operator.



The European School of Short Sea Shipping (Escola Europea de Short Sea Shipping) was created in 2006, with funding from the European Marco Polo programme, to foster the use of the motorways of the sea by training logistics professionals.

In 2017 it changed its name to European Intermodal Transport School (Escola Europea Intermodal Transport), in line with its new training focus.

Today, after over 15 years in operation, more than 15,000 students have attended training courses at the School.



In 2012 **BEST (Barcelona Europe South Terminal)**, run by Hutchinson Port Holding group, opened at the Port of Barcelona. It is the first semi-automatic terminal in the Mediterranean, using ASC systems for all container yard movement.

The level of automation has made it one of the highest productivity terminals in the world. In 2021 BEST handled nearly 2.5 million containers and was recognised as the best terminal in Europe at the AFLAS 2021 award ceremony.



The **Efficiency Network (EN)** quality label was created by the Port of Barcelona in 2011 to take a leap forward in its Quality Plan, the origins of which date back to 1993.

EN is the quality label for operators specialising in containerised cargo and, since November 2017, also for services to vessels.

Currently, 92 companies and four administrations are EN quality label partners.

This port community label model has been exported to other ports in Uruguay, Mexico, Chile, Colombia and Argentina.



**Portic Barcelona** is the e-commerce platform for all the players in the port community. It was created by the Port of Barcelona in 1999.

It is part of the first generation of PCS (port community systems), such as Portbase in Rotterdam and Dakosy in Hamburg

Nearly 40 million messages exchanged in 2021 attest to its importance for the sector.



2021 saw the formation of **B2B Logistics (Busan Barcelona Hub) S.L.**, a *neutral logistics operator created by the ports of Busan and Barcelona* to operationally facilitate traffic flows between the two ports.

Together with a similar initiative between Rotterdam and Busan, it represents a new port business model, a groundbreaking proposal for partnership between port authorities to facilitate international trade between their respective countries.

The logistics platform will be operational in 2022.

The **Steering Council for the Promotion of the Barcelona Port Community and development of the Strategic Plan** was created in 2007 from the previous port Quality Plan Steering Council, the origins of which date back to 1993.

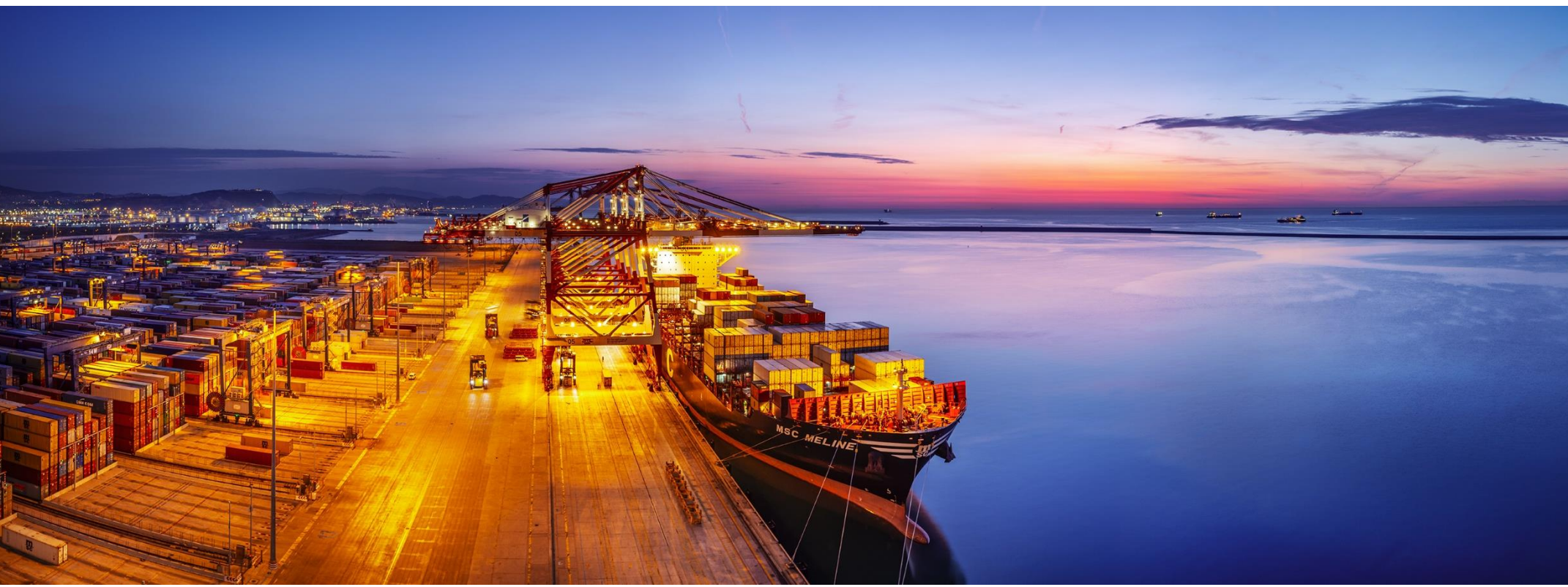
It is an *advisory body formed of all the players in the port business*. It currently comprises about 70 people. As many as 10 working groups have been created from it, with about 300 members in total.

The development and management of the Steering Council represent a model of stakeholder representativeness for ports.

The **Barcelona Logistics Institute (Institut de Logística de Barcelona)**, will be a new *vocational training centre focusing on vocational training in logistics*, located at the Port of Barcelona.

Although it will initially open provisionally for the 2022-2023 academic year, the Education Consortium and the Port will work together to roll out the new institute, which will move to the future San Bertrán hub in 2025.

It is a groundbreaking initiative that aims to gear vocational training more closely to the needs of the sector through a process that immerses learners in the world of logistics



# The Port of Barcelona's innovation model

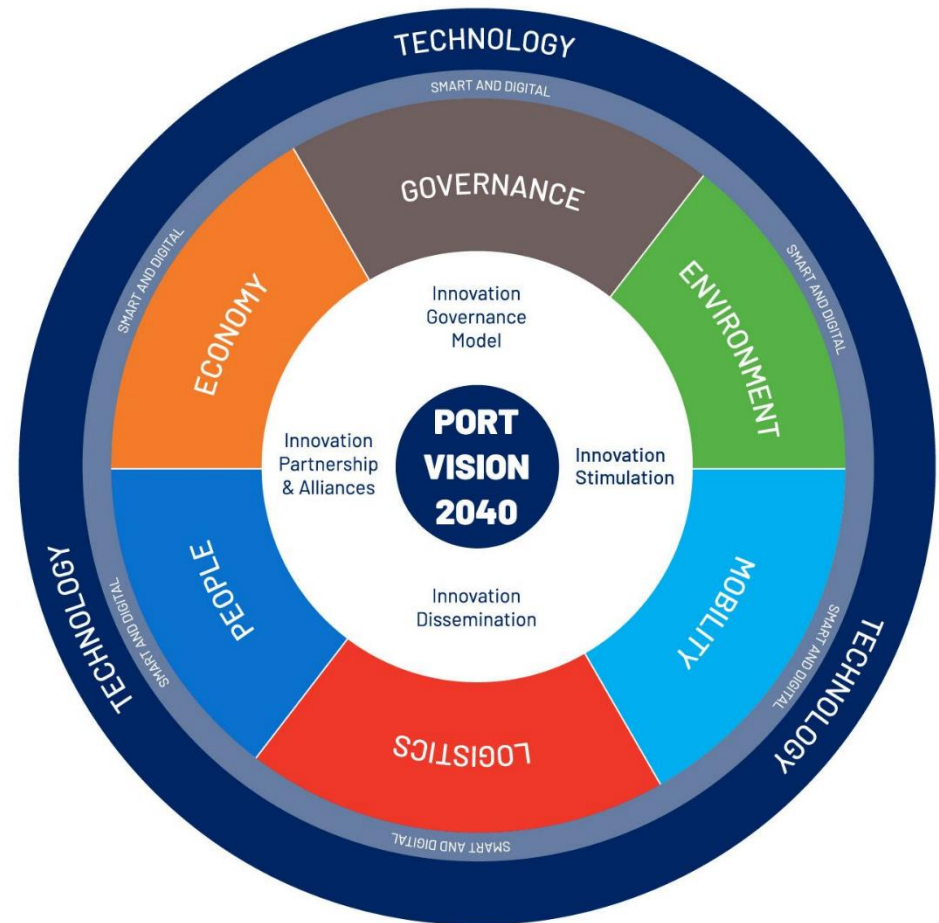
Developed in 2018, the **Port of Barcelona's steering wheel** is the conceptual model that brings together the Port of Barcelona's open innovation vision in one framework.

Keeping the **Vision 2040** at the forefront of the Port of Barcelona's actions, the steering wheel focuses on the four action lines to be pursued:

- Developing appropriate management structures.
- Forging agreements and alliances with centres of innovation.
- Actively stimulating and fostering sectoral innovation, creating an innovation ecosystem associated with port activity
- Disseminating this innovation activity.

These action lines are outlined in the 2021-2024 Innovation Plan

The model also defines the six major areas where innovation should be applied: **logistics, mobility, the economy, people, governance and the environment** and establishes technology as the key element that binds them all together.





Innovating means transforming new ideas into value for the port community, its customers and society.

The long-term goal is the consolidation of a technology district linked to the Port of Barcelona with a focus on innovation, logistics and the blue economy.

## The 2021-2024 Innovation Plan

The Port understands **innovation as the transformation of new ideas into value for the port community, its customers and society.**

In recent years, a specific innovation model and a smart port model have formed the basis for the promotion of a set of action lines with the long-term goal of **consolidating a technology district linked to the Port of Barcelona with a focus on innovation, logistics and the blue economy.**

This innovation hub has three main goals: transforming the Port of Barcelona into a driving force for growth and recovery, developing the Port as a facilitator of innovation and digitalisation in the logistics ecosystem and making it an element of cohesion for the metropolis of Barcelona, fostering port-city synergies.

To put this into effect, innovation has been framed around the four action lines defined in our innovation model.

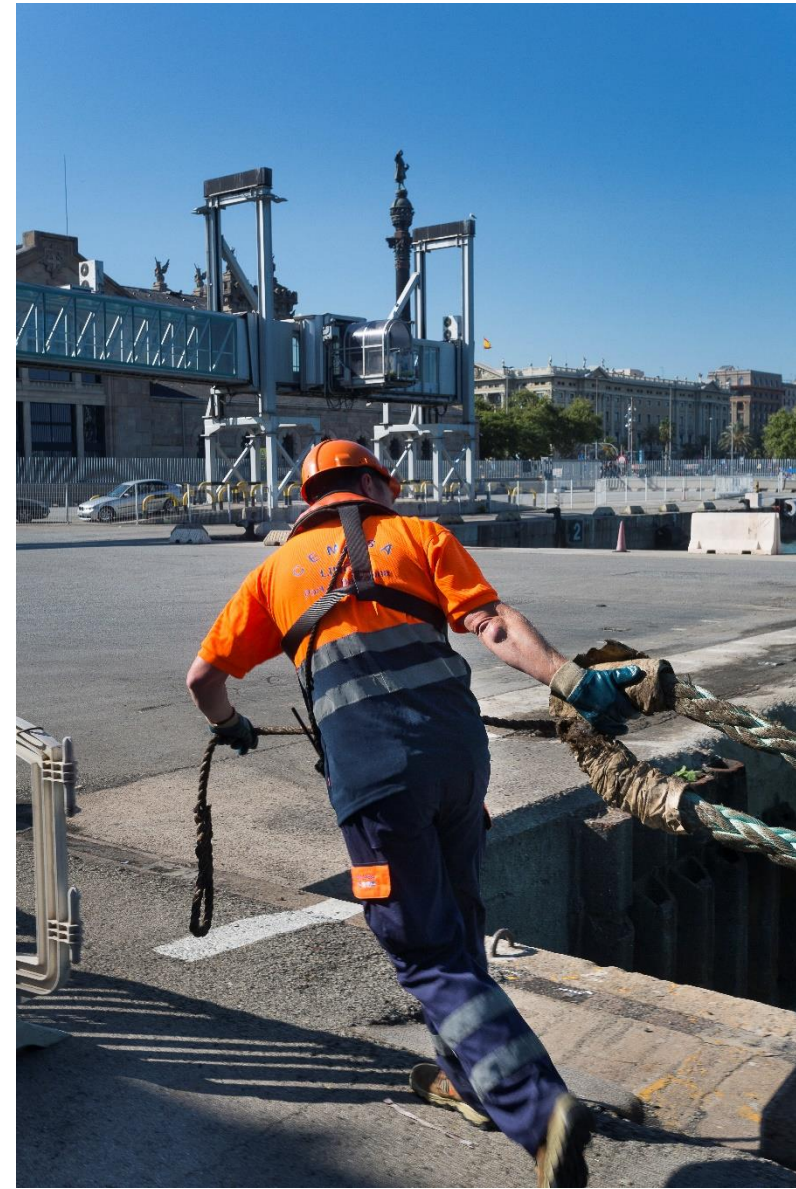


These lines, in turn, are framed as a set of actions that we wished to present in the Port of Barcelona innovation model as the machinery that drives our ecosystem of innovation and entrepreneurship.

### Management structures

Proper management of innovation at the Port necessitates the creation of informal working groups such as the APB Digital Committee, the Strategy and Innovation Working Group under the Steering Council and the APB Technical Panel for R&D and Innovation. On a formal level, the new Sub-directorate for Innovation and Business Strategy was created in 2021, along with the Innovation Department, and the post of digitalisation officer has existed since 2018.

However, it is necessary to develop a new structure that is more streamlined than the port authority itself to foster and manage innovation processes in the port community as a whole. This structure will be developed through the creation of a private foundation: the **BCN Port Innovation Foundation**.



## Agreements and alliances with centres of innovation

Barcelona is one of the continent's major technological capitals and a centre for start-up creation, a potential that must be harnessed to develop port innovation.

In this regard, it is necessary to seek strategic alliances with certain players in the ecosystem such as Acció, Barcelona City Council, Barcelona Activa, Barcelona Tech City, Barcelona Tax-Free Zone Consortium (Consorti de la Zona Franca de Barcelona), 22@, Mobile World Capital, Barcelona Trade Fair (Fira de Barcelona), etc., to create winning synergies.

Partnerships with universities, research centres and business schools are also needed because appropriate training is key to developing the innovation ecosystem. In this regard, it is necessary to adapt existing training programmes to the actual needs of the sector, but also to create new qualifications and top-level training courses to attract international talent to Barcelona.

Lastly, greater inter-port cooperation is also required. In this respect, Barcelona's participation in initiatives such as chainPort, Smart Ports and WPCAP are an example to be emulated and promoted.

## Stimulating innovation in the port logistics sector: creating an innovation ecosystem

This plan aims to stimulate innovation by developing three key tools:

Firstly, creating **BlueDistrict**, the physical space where innovation takes place, comprising various facilities and test centres located mainly in the Port Vell area. In point of fact, BlueDistrict includes three types of spaces:

- A **network of training and research centres** in the port area, such as the Barcelona Faculty of Nautical Studies (Facultad de Náutica de Barcelona), the Nautical Institute (Instituto de la Náutica), the European Intermodal Transport School, ICIL and the future Barcelona Logistics Institute (Instituto de Logística de Barcelona).
- A **network of innovation hubs** including the centres located at the Port, such as Tech Barcelona's Pier01 and the future Nautical Training and Technology Hub (Nodo Formativo y Tecnológico de la Náutica), to be developed by Barcelona City Council, and **Blue Tech Port**, to be developed by the Port of Barcelona, along with local centres that require special partnership arrangements, such as D·Factory, the 3D Incubator run by the Barcelona Tax-Free Zone Consortium and Tech Barcelona's Pier03.
- A group of spaces to run proofs of concept, prototypes, demonstrations and presentations, called **Blue Sandbox**.

Secondly, **OpenPort**, an interaction space for start-ups and the Barcelona port logistics community, a place for challenges, hackathons, sectoral meetings, information days, conferences, experience sharing, etc.

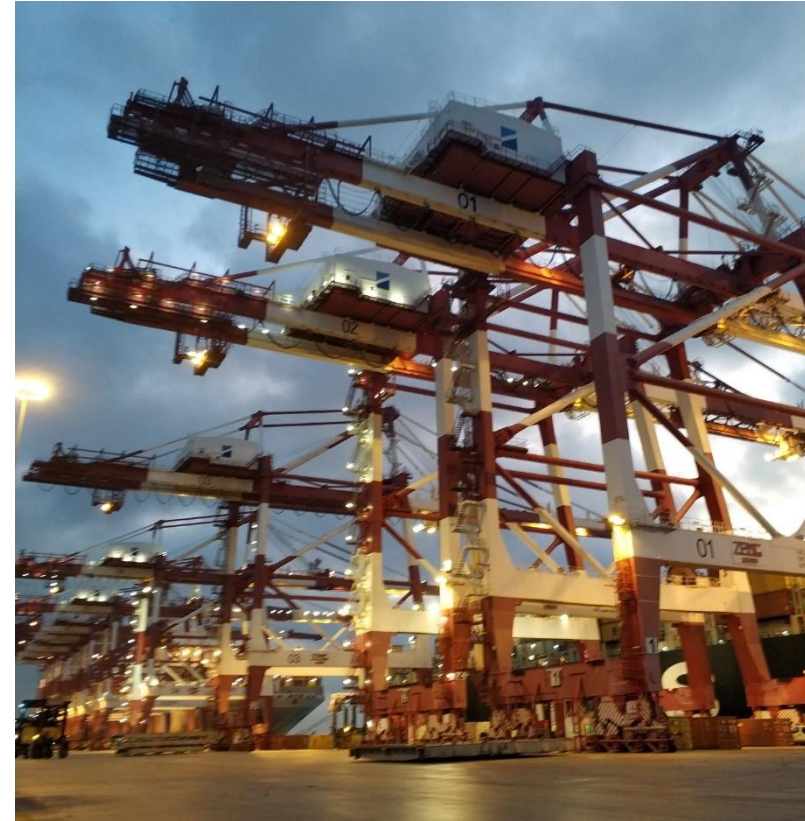
Lastly, a financial support system for innovation and start-ups, the main component of which is the [Ports 4.0 Fund](#). Despite this, it is necessary to provide additional funding for start-ups through venture capital companies, business angels and similar avenues and find additional sources of funding from the various European and national innovation funds.

Added to this are funds that can be obtained by taking part in European or national projects supporting innovation or development.

### Dissemination of innovation activity

In a context of open innovation, it is necessary to share the innovation that takes place with the various stakeholders through the creation of open platforms that make it possible to interact with them and engage them in our progress: [PierNext](#), the port authority's innovation blog, the [smartports.tv](#) platform and the [Smart Ports: Piers of the Future](#) event, for which it provides support, are clear examples of these initiatives.

In addition, the need is identified for greater involvement of port staff in technology dissemination activities and events, such as seminars, conferences, courses, etc., along with greater proactive participation in international associations.






## Barcelona, city of innovation

The Port of Barcelona is located in the city of Barcelona, one of the leading European cities in technology and entrepreneurship with more than 1,200 start-ups.

Barcelona has a long history as a city of innovation. Examples of this are the urban planning for the city implemented by Ildefons Cerdà in 1859, the 1992 Olympic Games which put Barcelona on the map internationally and its recent selection as host city for the 37<sup>th</sup> America's Cup, a sporting and technological event.

If we add initiatives like the 22@ district, Tech Barcelona, Acció, Barcelona Activa and others that have placed the city among the leading European capitals in technology and innovation, events with global impact such as the Mobile World Congress and the Smart City Expo World Congress and its prestigious universities and business schools, we get an ideal ecosystem where companies, multinationals and start-ups have established their innovation hubs.





02.

## Innovation initiatives

Over recent years, the Port of Barcelona has developed a series of initiatives to foster innovation in port community companies and share innovation know-how with other ports and the public at large.

These initiatives notably include:

- **Barcelona Port Challenge**, to define challenges for the port community and find start-ups to respond to them.
- **Port Innova**, to make port innovation more accessible to vocational training students.
- The **Digital Project**, a set of over fifty initiatives to develop the port technologically and digitally.
- **ChainPORT**, the port benchmarking community.
- **Smart Ports, piers of the future**, to showcase the most innovative initiatives from the world's major ports.
- **PierNext**, the Port of Barcelona's innovation blog.
- **Innovation Days**, innovation webinars geared towards the port community.
- **Tech Tour Maritime, Trade & Logistics**, a meeting point between start-ups and investors for the maritime and logistics sector.
- **Ports 4.0 Fund** for port logistics innovation.
- **Pier 01**, Tech Barcelona's trailblazing innovation hub at the Palau del Mar.

# Port Challenge Barcelona

**Port Challenge Barcelona** is a support programme for the creation of new technology-based businesses to help enhance the efficiency, competitiveness and service excellence of the port and logistics community in a broad sense.

The programme aims to showcase the attractiveness of the sector and bring about the necessary conditions to develop an ecosystem to foster the creation of innovative companies and highly qualified jobs in the Port of Barcelona's industrial cluster. **Port Challenge Barcelona** will support entrepreneurs who aspire to transform their business idea or start-up into a viable company.

1<sup>st</sup> ed.  
2017



The first edition, in partnership with the Founder Institute, included mentoring sessions, support to prepare a demo day for port companies; access to clients (the port itself and the companies that operate in it) and cash prizes for the most pertinent projects.

2<sup>nd</sup> ed.  
2019



The second edition of **Port Challenge Barcelona** was held under the umbrella of the SmartCatalonia Challenge and addressed six separate challenges: monitoring wharf occupancy in real time, mobility on cruise ships and ferries, use and applications of the 3D map of the port, an underwater drone for bathymetric surveys and to inspect the condition of wharves, automatic measurement of volumes and weights of waste and a network of marine pollution sensors.

3<sup>rd</sup> ed.  
2021



The third edition of **Port Challenge Barcelona**, in partnership with Quantion, was based on a unique challenge shared by the BEST and APMT terminals, referring to automated reading of container seals at the terminal entrance and exit.



BARCELONA PORT HACKATHON

**PortInnova** is a programme geared primarily towards vocational training students, but also other groups, which aims to be a contact point between students and the port's realities and opportunities.

The goals are to develop high-impact projects by students, enhance 21<sup>st</sup> century educational skills through real challenges, gear the needs of the productive sector more closely to the capacities of vocational training students and make students' talent visible to companies and organisations.

The **PortInnova** programme has been running annually since 2015 in partnership with various organisations such as Induct, the BCN Vocational Training Foundation (Fundación BCN Formación Profesional), InnoBaix, the Barcelona Metropolitan Area's Metrópolis FP Lab, etc.

The latest challenges posed are:



In partnership with the Metròpolis FP Lab and geared towards vocational training students: what tool or method can be designed to quantify the waste found on the city's pavements and relate it to that found at the port and on beaches in Barcelona?



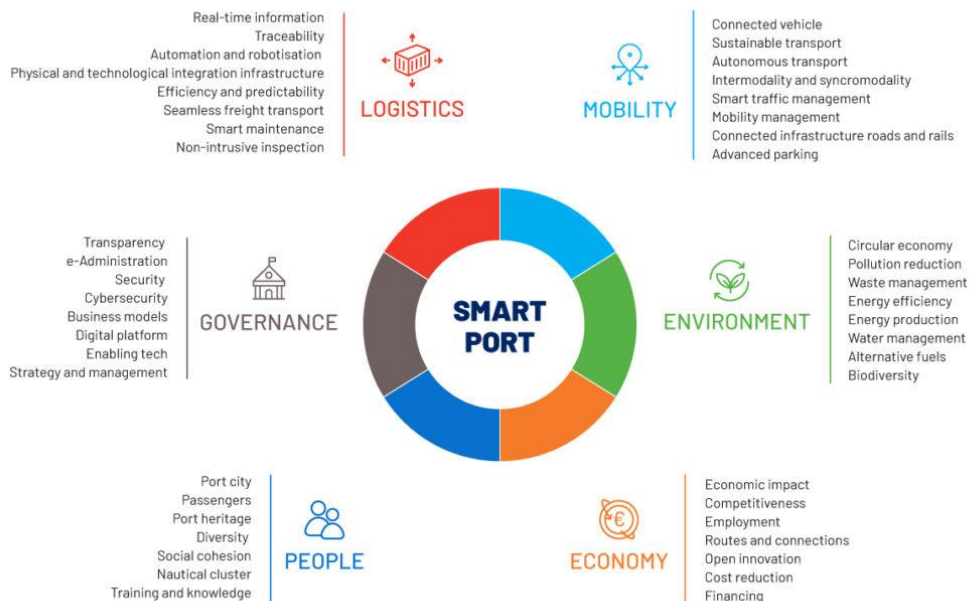
In partnership with the UPC and focusing on university students at Barcelona's School of Computer Science, the challenge posed was to expedite the work of port management by means of an RPA (Robot Process Automation) to facilitate electronic signature processes in the port authority.

# Digital project

The digital project involves the systematic, planned roll-out of 54 initiatives and projects relating to the digitalisation of the Port of Barcelona, following an analysis of the current situation of the port in this regard.

It aims to deliver digital transformation for the Port of Barcelona, engaging the various areas of business and designing a global vision for the digitalisation of the sector.

The ultimate goal is to make Barcelona a true smart port.



Launched by HPA and the Port of Los Angeles, **chainPORT** is a transnational association formed by the main ports in the world. **chainPORT** aims to bring together port authorities and their partners and customers to share experiences and develop common strategies.

By sharing strategic issues and innovations, members learn from each other and share their best practices in fields such as sustainability and the digital revolution in ports.

The **chainPORT** network includes the ports of Antwerp, Barcelona, Busan, Felixstowe, Gothenburg, Hamburg, Indonesia, Los Angeles, Montreal, Panama, Rotterdam, Shanghai, Shenzhen, Singapore and Tanger Med.

Working groups created to analyse and develop relevant issues:

- WG1: Smart IT solutions
- WG2: Global maritime logistics dialogue
- WG3: Shaping the digital culture in port authorities
- WG4: ChainPORT academy

**chainPORT** has published some playbooks with the aim of developing a practical approach for port authorities to strategically manage significant issues.

- [chainPORT Digital Playbook 2021 "Digital & Climate Change"](#)
- [chainPORT Digital Playbook 2020 "Leveraging Digital Solutions for Crisis Management"](#)





# SMART PORTS

PIERS OF THE FUTURE

**Smart Ports: Piers of the Future** is an annual conference attached to the Smart City Expo World Congress, the main international forum on smart cities and urban solutions. In 2019 six Innovation-leading ports (Antwerp, Barcelona, Hamburg, Los Angeles, Montreal and Rotterdam) reached an agreement to link the two concepts: smart cities and smart ports under the umbrella of SCEWC'19 in Barcelona.

Busan Port Authority joined in 2020. In addition, the pandemic forced a change of format with a shift to a television platform: [smartports.tv](https://smartports.tv)

It is a conference on innovation, sustainability and digital transformation. Some of the most innovative ports in the world share their innovative projects on drones, digital twins, green smart ports and smart port cities, among many other subjects, while painting a picture of how the future should be: more sustainable, efficient and connected.



# PierNext

Innovation by Port de Barcelona

PierNext is an innovation blog driven by the Port of Barcelona that aims to disseminate innovative port know-how at international level, engaging with issues and challenges relating to logistics, mobility, the environment, the economy, governance, people and technology, with a particular focus on port and maritime matters.

The initiative seeks to disseminate aspects of innovation involving transport and logistics, as well as port management, sharing the best practices in the field and endeavouring to be a benchmark for sectoral expertise.

It aims to create an innovation ecosystem and stimulate global debate on the future by showcasing the innovation that is transforming logistics and international trade.

Since its launch in September 2018, PierNext has published more than 150 articles on six port-related topics: the economy, governance, mobility, the environment, logistics and people, all connected to the Port of Barcelona's smart port model.

In 2020 a newsletter was introduced with the option of subscribing. In 2021 a document manager was added.

It is a space for expertise, analysis and reflection that is open to collaboration from any organisations and individuals interested in contributing ideas, disruptive experiences and cutting-edge resources in each of these fields, driving this transformation towards more sustainable logistics and being part of it.

It can be accessed through the link: <https://piernext.portdebarcelona.cat/>

PierNext is currently visited over 6000 times a month.





# Innovation INNOVATION DAYS by Port of Barcelona

**Innovation Days** are a series of training sessions, in webinar or hybrid format, which aim to connect companies in the port community and their customers with innovation as a business management tool, and also explain the benefits that innovation brings to companies and the sources of finance available. The ultimate goal is to boost the competitiveness of companies and the port environment.

The **Innovation Days** format is based on short sessions (usually under two hours) run in partnership with specialist organisations and speakers such as the Polytechnic University of Catalonia, Acció, KPMG and Puertos del Estado.

The sessions began in November 2021 and usually include a more presentation-based first part and a second part where success stories are set out and participants are encouraged to dialogue with the guests.

The following **Innovation Days** have been held

- 07/10/21 Innovation Concepts. A window of opportunities.
- 21/10/21 Tools for innovation. Differentiation, step by step
- 04/11/21 Incentives for innovation. 1 resource. 100 options.
- 24/11/21 Ports 4.0 fund support
- 25/11/21 People. Innovation hand in hand with expertise.
- 16/12/21 Skills. Innovating without barriers.
- 03/03/22 Next Generation EU funds
- 20/04/22 Ports 4.0 Fund. 3<sup>rd</sup> call for pre-commercial projects.



**Tech-Tours** are a series of international events that bring together the most active investors and corporate partners with the most promising fast-growing innovative enterprises, previously selected and invited by the event organisers, which are seeking funding and strategic partnerships in the broader European market.

Specifically, **Tech Tour Maritime, Trade and Logistics** is an event in which thirty start-ups will be selected from a hundred candidates to meet up with about sixty investors, companies and experts who will take part in the project presentation and networking sessions.

It is geared towards the maritime industry and will conclude with presentation sessions that will take place as part of SIL (International Logistics Exhibition). The ultimate goal is for the start-ups to obtain investment in Series A, B and C funding rounds.

Three subjects have been identified as the most salient:

- Digital trade and logistics
- Loading systems
- Sustainability





The **ports 4.0** capital fund is the corporate open innovation model adopted by *Puertos del Estado* and the Spanish Port Authorities to attract, support and enable the application of talent and entrepreneurship in the Spanish public and private port logistics sector in the context of the fourth industrial revolution.

The main goal is to actively foster and incorporate disruptive or incremental innovation as an element of competitiveness, efficiency, sustainability, safety and security in the Spanish port logistics sector, both public and private, to facilitate its transition to economy 4.0.

It is aimed at all national and international entrepreneurs and companies with innovative ideas or projects that can improve the efficiency, competitiveness and sustainability of the port logistics sector and trade in general.

Three types of programmes are associated with the fund:

- Ideas
- Projects at the pre-commercial stage
- Projects at the commercial stage

Further information on the official website: <https://ports40.es/>

The Port of Barcelona engages actively through both its financial contribution to the fund and support for start-ups that need it.



# Pier 01

**Tech Barcelona** is a private non-profit association that coordinates and fosters the local and international digital and technological ecosystem based in Barcelona. **Pier01**, its flagship space, is a benchmark for international technology hubs and one of the five most important hubs in Europe.

Located at the Palau del Mar, a former port warehouse, **Pier01** a building spanning over 11,000 m<sup>2</sup> where around 1,000 people from more than 100 companies and start-ups interact every day. The inhabitants include entrepreneurs, start-ups, established companies, investors, incubators, accelerators and company builders, universities, business schools, media firms, public administrations and other players. The space contains co-working areas, showrooms and common areas to encourage innovation and cooperation.

**Pier01** seeks to promote Barcelona's technological brand internationally, help to create a perfect environment for digital companies, attract local and international investment and connect local and international talent with companies and establish partnerships with other organisations to accelerate the technology ecosystem.





# 03.

## The project for the future

The 2021-2024 Innovation Plan establishes five major projects for the future to be delivered over the life of the plan.

- Creating the **BCN Port Innovation Foundation** as a tool to manage and accelerate innovation in the port environment.
- Weaving a **network of alliances** with administrations and other organisations to foster cooperation in innovation.
- Firmly establishing the Port of Barcelona as a significant **training hub** in the field of logistics, maritime transport and the nautical industry.
- Developing **BlueDistrict**, a network of physical spaces where innovation activity takes place, some already in operation, such as Pier01, D factory and 3D Incubator, and others to be created, like the **Blue Tech Center** and the Nautical Training and Technology Hub (**NftN**).
- Envisioning the Port of Barcelona as an expansive space where pilot tests can be run and innovative prototypes can be tested; in other words, the Port as a **Blue Sandbox**.
- Consolidating the **OpenPort** programme as an accelerator of port innovation and a meeting point between the maritime sector and innovation.

## The BCN Port Innovation Foundation

The **BCN Port Innovation Foundation** will be created and developed to establish a streamlined, participatory tool to make it possible to pool the efforts of the technology sector, the start-up ecosystem and the port community.

The **BCN Port Innovation Foundation** will be a private foundation, a non-profit organisation subject to the rules governing Catalan foundations and will focus on activities in the general interest of the Barcelona port logistics community.

The Foundation will be chaired by Barcelona Port Authority, it will have a majority private board of trustees and will, in turn, have associate members.

Its mission should focus on creating an innovation ecosystem associated with port activity. The activities that this foundation aims to undertake include exploring innovative technologies and solutions, conducting pilots in real environments, and identifying sources of funding for port innovation.



BCN PORT  
**Innovation**

## Working in partnership: alliances for innovation

One of Barcelona's great assets is the existence of a major innovation ecosystem. The [innovation model proposed by the Port of Barcelona](#) is based on establishing relationships with the city's [entire ecosystem](#), in addition to the port sector.

These partnerships should be established on three fronts:

- With [the current innovation ecosystem in Barcelona](#) and the institutions engaged in it, including public administrations and private organisations that foster innovation.
- With [universities, research centres and business schools](#), to facilitate the development and acquisition of talent in the port community.
- With other ports, particularly [cutting-edge ports and technology and innovation leaders](#). In this regard, the blueprint is the **chainPORT** model.

The following are some of the strategic partnerships in the innovation adventure:





**Barcelona Activa** is the Barcelona City Council agency for the promotion of employment, entrepreneurship and support for the business base. An agreement with the Port has been in place since 2021 to promote the blue economy on the coastline.



**El Consorci de la Zona Franca** runs two of the most significant innovation hubs in Barcelona, **3D Factory Incubator**, for the additive manufacturing industry, and **D-Factory**, for industry 4.0



**Tech Barcelona** is a private non-profit association that manages some of the most important innovation spaces in Barcelona: **Pier01** (located at the Port), **Pier03** and; in the future, **Pier05**, **Pier Healthtech** and **Urbantech Hub**.



**MWCapital** fosters development of the mobile and digital ecosystem to establish Barcelona as a benchmark global hub. It hosts the **Mobile World Congress** in Barcelona and has founded **4YFN**, in which the Port is actively involved.



**ACCIÓ**, the business competitiveness agency, implements the innovation policy of the Government of Catalonia, including advice, aid and incentives, and is responsible for the **Barcelona & Catalonia Startup Hub**



**Barcelona Chamber of Commerce, Industry, Services and Navigation (Cambra Barcelona)** runs **HUB cambraDigital**, a space for entrepreneurs who are initiating a project and need advice, an area to co-create and make their business idea a reality.



Held since 2011, **Smart City Expo World Congress (SCEWC)** is the leading international event for cities. The Port of Barcelona organises the **Smart Ports, Piers of the Future** event as part of SCEWC.



The **World Ocean Council (WOC)** is a global private-sector ocean industry alliance committed to "corporate ocean responsibility". In April 2022 it moved its headquarters to Barcelona.



**chainPORT** is a transnational port association, led by Hamburg, which seeks to share best port practices and develop common strategies.

### Puertos del Estado

In the field of innovation, **Puertos del Estado** is the body responsible for administering the **Ports 4.0** investment fund for Spanish ports, which provides subsidies for ideas, pre-commercial projects and commercial innovation projects.



The selection of Barcelona as host city for the **37th America's Cup** is a magnificent opportunity for innovation because, in addition to being a sporting event, the race is a technological challenge



The decision to hold **Tech Tour Maritime, Trade & Logistics** in Barcelona is an opportunity for start-ups and investors from all over the world to take part in investment rounds in the Port environment.



**CENIT** is a research group run by **CIMNE**. Several doctoral students conduct research at Port of Barcelona facilities thanks to the agreement signed in 2021.



The **European Intermodal Transport School** disseminates best practices in sustainability and intermodality and works with the Port of Barcelona in R&D and Innovation projects with European subsidies.



The **Valenciaport Foundation** works with the Port of Barcelona in the presentation of proposals and the management of projects associated with calls for programmes with European or national grants.



The Port of Barcelona regularly plays an active role in **BNEW (Barcelona New Economy Week)**, a physical and digital event focusing on the New Economy.



The Port of Barcelona works with the **Polytechnic University of Catalonia** sponsoring master's programmes and postgraduate studies and awarding scholarships for doctoral students who conduct research at the port.

With almost 90 members, **Barcelona Clúster Nàutic** has the goal of transforming water sports activity into an economic driving force and with the conviction that the nautical sector can become a major player in the city development.

**4YfN** is the start-up event of MWC and the official scaleup platform of GSMA. An event where innovators, creators and leaders gather to connect. In 2022 edition there were more than 61,000 attendees.

The **Boat Show (Salón Náutico)** is held every year in the waters of the Port of Barcelona, showcasing the latest innovations in recreational and sport sailing, and is one of the most important events of its kind in the world.





# The Port of Barcelona as a training hub

Knowledge and technology transfer is one of the pillars of innovation.

The Port of Barcelona has become a world-class training hub, housing the **Barcelona Faculty of Nautical Studies**, attached to the Polytechnic University of Catalonia, the **European Intermodal Transport School**, created by the port authority, the ICIL, a benchmark in logistics training, and professional training centres specialising in port-related areas of knowledge: The **Barcelona Nautical Institute** and the **Barcelona Logistics Institute**.



Founded in 1769, over 250 years ago, the **Barcelona Faculty of Nautical Studies (FNB)** at the Polytechnic University of Catalonia is a benchmark in naval training. It runs undergraduate, master's and doctoral programmes. Over 800 students take courses at FNB every year.



Created by the Port of Barcelona in 2006, the **European Intermodal Transport School** is a leading training centre for maritime logistics, intermodality and transport sustainability. It runs courses both on land and on board, on the motorways of the sea, originating in Barcelona.



The **Barcelona Nautical Institute** began operating in the 2015-2016 academic year. It is an integrated vocational training centre focusing on training in recreational and sport sailing and provides dual training in ship maintenance and sea-related sporting activities..



The **Barcelona Logistics Institute** will begin operating in the 2022-2023 academic year with more than 300 new students. It will focus on dual training in logistics and international trade. It is due to move its operations in 2025 to the new port innovation hub..



**ICIL** is the leading national organisation for research, training, dissemination and business applications in the area of logistics, its exclusive field of activity since 1980. It has over 1,200 associated professionals, with centres in Barcelona, Madrid and Bilbao.



## A network of spaces for innovation

Given the city of Barcelona's potential for innovation, the Port of Barcelona must draw on existing innovation hubs created by the urban ecosystem, such as Tech Barcelona's Pier01 and Pier03, the 3D Incubator and D Factory, run by the Tax-Free Zone Consortium, etc.

As such, to exploit synergies, the innovation spaces will be developed as a network, in partnership with the centres that are already in place, either at the port itself or in neighbouring areas of the city. The aim is to form part of the city's entrepreneurial ecosystem, not to compete with it.

Of all the centres that will make up the network, three are worth highlighting in particular: a hub that is already in place, Pier01, and two new centres to be built in the coming years:

- In operation since 2016, **Pier01** is an international technology hub, a trailblazer in Europe that should be a model for future developments. Created by Tech Barcelona and located at the Palau del Mar, its approximately 1000 m<sup>2</sup> are home to more than 100 companies and start-ups employing over 1000 people.
- **NftN**, the Nautical Training and Technology Hub, is a new building commissioned by Barcelona City Council that will be

erected at Nova Bocana and will house part of the facilities of the current Barcelona Faculty of Nautical Studies, along with a business incubator managed by Barcelona Activa.

- The second hub to be developed is **Blue Tech Port**, which will be located at the San Beltrán sheds and will house a business accelerator, along with innovation centres run by companies involved in logistics, transport, port activity and the blue economy in general. It will also be home to the Barcelona Logistics Institute.

Together, these spaces are intended to make it possible to attract talent, create new jobs, encourage entrepreneurship, and create new technology-based companies in the maritime, logistics and nautical sectors; but also attract key research centres and innovation areas run by companies and corporations.

## BLUE TECH PORT

Blue Tech Port should develop as the benchmark blue economy space in Europe and the Mediterranean.

The campus is structured as an ecosystem with various connected and coordinated parts (incubation, acceleration, training, services, etc.).

The San Beltrán warehouses at the Port of Barcelona offer the perfect location and identity to accommodate this activity. They are a group of six interconnected former port warehouses located near Plaça de les Drassanes, comprising a total floor area of 9,240 m<sup>2</sup>.

One of the warehouses will be home to the Barcelona Logistics Institute, making it possible to merge training and entrepreneurship.







## The test space: the Blue Sandbox



The Port of Barcelona is the ideal place to test innovation. Its infrastructure makes it a great sandbox for companies with prestigious innovation projects that need to conduct a proof of concept or test the viability of their prototype.

The port service area offers:

- Spaces to run proofs of concept, tests and prototypes in both maritime and terrestrial settings.
- Spaces for demonstrations, presentations, conferences and showrooms, such as the Barcelona hall, the Aula dels Estels, the Àgora hall, the WTC auditorium, etc. In this regard, the accessible spaces at the city port and the commercial port.
- Spaces for conferences and large-format presentations, such as the World Trade Centre.

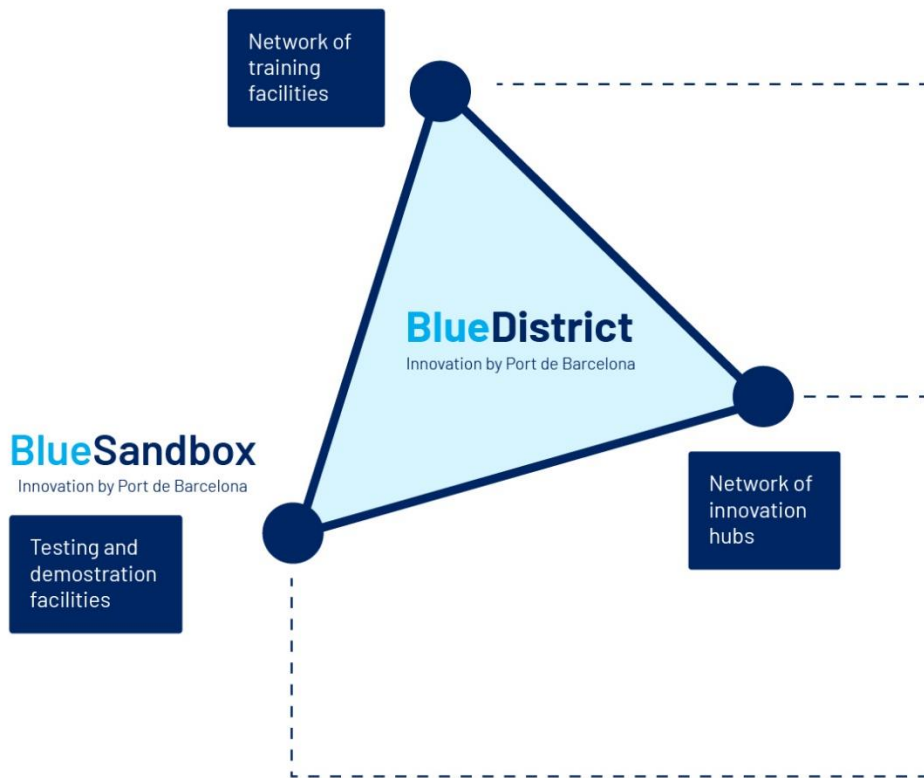
The screenshot displays a web application interface for container tracking. The top navigation bar includes 'Home', 'Now reading', 'Dashboard', 'All Logs', 'Configuration', and 'My Account'. The main content area is titled 'Now reading' and features a large image of a Maersk container with the BIC code MRKU 0086060 42G1. To the right of the image, there are two data panels: 'CONTAINER BIC CODES' showing MRKU 0086060 42G1 with a 98.17% match, and 'WAGON UIC CODES' showing 227144390423 with a 97.93% match. At the bottom right, there are buttons for 'Export as...' and 'Log Out'.



# A district for blue innovation: BlueDistrict

The integrated training and research hubs, innovation spaces and testing and demonstration areas at the Port of Barcelona make it the ideal ecosystem to conduct innovative activity associated with the blue economy and logistics.

Indeed, this is the goal of the innovation plan: the creation of a technological district associated with the blue economy and logistics in the prime Port Vell area. This is what we have named **BlueDistrict**, the physical space where interaction occurs between the innovation ecosystem and the port logistics community.



In the port services area	<p><b>BLUE TECH PORT</b> (Innovation hub in San Beltrán)</p> <p><b>NftN</b> (Nodo formativo y Tecnológico de la Nàutica, Nova Bocana)</p>
Near the port	
<p>PoC, prototypes, test and Living Lab areas, Spaces for presentations, demonstrations and showroom</p> Congresses center	

# Blue District

Innovation by Port de Barcelona



**NftN**

**Blue Sandbox**  
Innovation by Port de Barcelona  
Cruise and Passenger test area (Adossat Wharf)

**Blue Sandbox**  
Innovation by Port de Barcelona  
Maritime test area (Southern enlargement)

**Blue Sandbox**  
Innovation by Port de Barcelona  
Railway test area (Terminal C)

**Institut de Logística de Barcelona**  
connected to change

**Blue Sandbox**  
Innovation by Port de Barcelona  
Road test area

**DFACTORY**  
BARCELONA

**3D INCUBATOR/**

**BLUE TECH PORT**

**World Trade Center Barcelona**

**Institut de Nàutica de Barcelona**

**iciL**

**Port de Barcelona**  
Barcelona Hall

**Escola Europea Intermodal Transport**  
ESCOLAEUROPEA.EU

**Aula dels Estels**  
Serravallo Pressures | Port de Barcelona

**Port de Barcelona**  
Port Center

**Blue Sandbox**  
Innovation by Port de Barcelona  
Port-city test area

**Tech Barcelona**  
Pier01

**UPC**  
Barcelona Faculty of Nautical Studies

**Tech Barcelona**  
Pier03

Logistic Hub at Post Office building

EXISTING	EXPECTED	
		INNOVATION HUB / INCUBATOR / ACCELERATOR
		SANDBOX / SHOWROOM / CONGRESSES / PRESENTATIONS
		TRAINING / RESEARCH / UNIVERSITY





## OpenPort: accelerating innovation for the port logistics community

The **OpenPort** programme was created with a mission: to connect the city of Barcelona's innovation ecosystem with its port logistics community, with the primary goal of boosting the competitiveness of the sector and of industry in the territory through open innovation.

This programme focuses on three key targets:

1. Developing an innovation network. Creating interaction spaces for the port community and the innovation ecosystem to share ideas, challenges and analysis. **OpenPort** is designed to be a meeting point between the world of start-ups and port companies.
2. Generating and disseminating innovation expertise. **OpenPort** seeks to further the generation of expertise by holding inspiring and informative talks and disseminating innovation experiences.

3. Supporting funding. The Port of Barcelona supports innovative companies and projects in their efforts to secure sources of funding, both public and private, and through the Ports 4.0 fund in particular.

These three targets are pursued with specific initiatives such as:

To develop the innovation network:

- **Barcelona Port Challenge**, to define challenges for the port community and find start-ups to respond to them.
- **Port Innova**, to make port innovation more accessible to vocational training students.
- **chainPORT**, the global port benchmarking community.

To disseminate innovation expertise:

- **Smart Ports, piers of the future**, to showcase the most innovative initiatives from the world's major ports.
- **PierNext**, the Port of Barcelona's innovation blog.
- **Innovation Days**, innovation webinars geared towards the port community.

To finance innovation

- **Ports 4.0 Fund** for port logistics innovation.
- **Tech Tour Maritime, Trade & Logistics**, a meeting point to interact with investors for the maritime and logistics sector.

Further new initiatives will be added to these initiatives in the future.



