ANNUAL REPORT 2017/2018

FUNDACIÓN valenciaport


FUNDACIÓN
valenciaport

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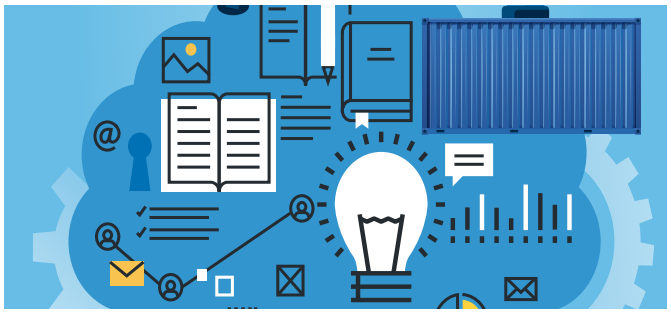
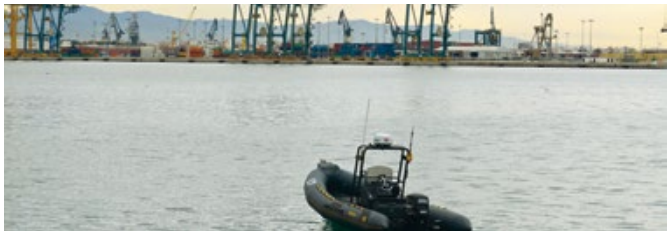
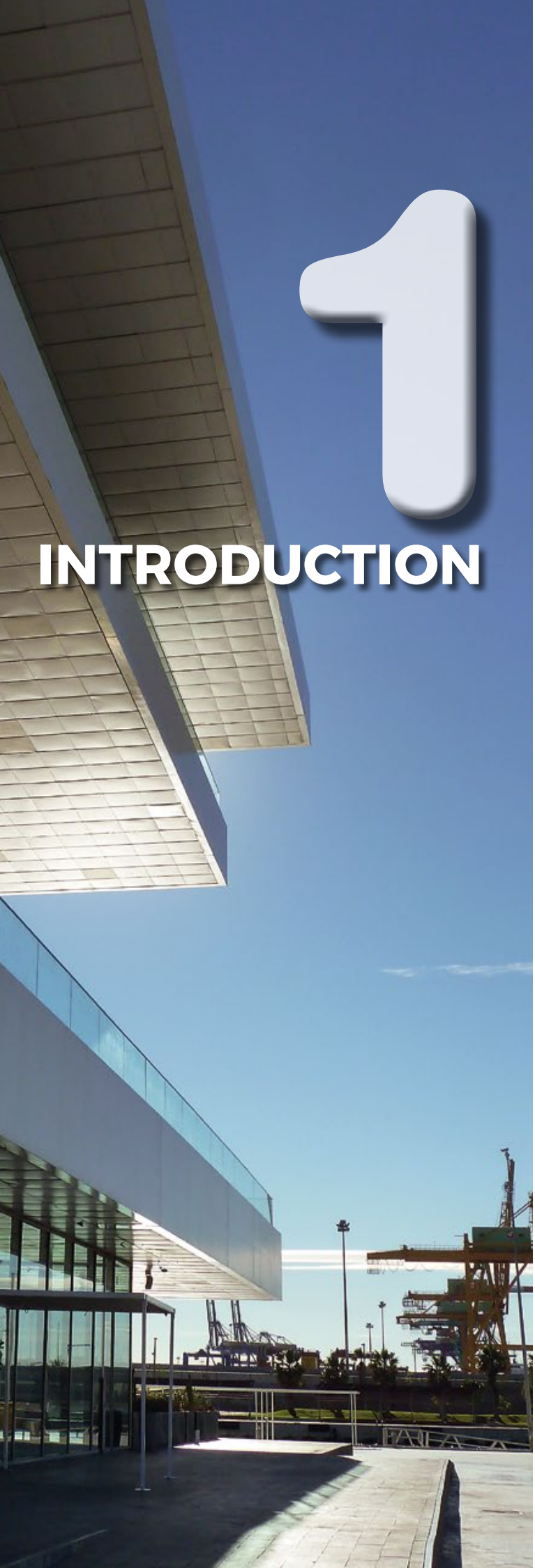






1 INTRODUCTION

1.1. LETTER FROM THE PRESIDENT

It gives me great pleasure to introduce this report, which covers the activities carried out by Fundación Valenciaport over the last two years.

I firmly believe that the Port Authority of Valencia's commitment to training and innovation—which led to the creation of Fundación Valenciaport 15 years ago—has been the driving force behind establishing Valencia as the Mediterranean's flagship port. Beyond meeting the requirements to fulfil our remit in terms of infrastructure and service, the only way for Valenciaport to distinguish itself is by generating high-value-added activities associated with knowledge creation and management.

April 2019 marked 15 years since Fundación Valenciaport was established. The numbers confirm our track record: more than 200 applied research and innovation projects; 30,000 hours of training; and collaboration with more than 400 partners from 60 countries. Through all this, we support the competitiveness of the companies and organizations that make up the Port Community of Valenciaport.

2017 and 2018 have witnessed intense activity in many different fields. In line with the priorities set out under European transport policies, Fundación Valenciaport has developed a substantial number of projects in several related areas. These areas include sustainability, supporting numerous initiatives that promote clean energies and the use of alternative fuels in the port-maritime industry; digitalization, with initiatives that involve promoting the Internet of Things or the use of blockchain technology; security, both in the field of maritime security as well as in cyber-security; and port-city integration, responding to joint needs in terms of sustainable mobility and cruises.

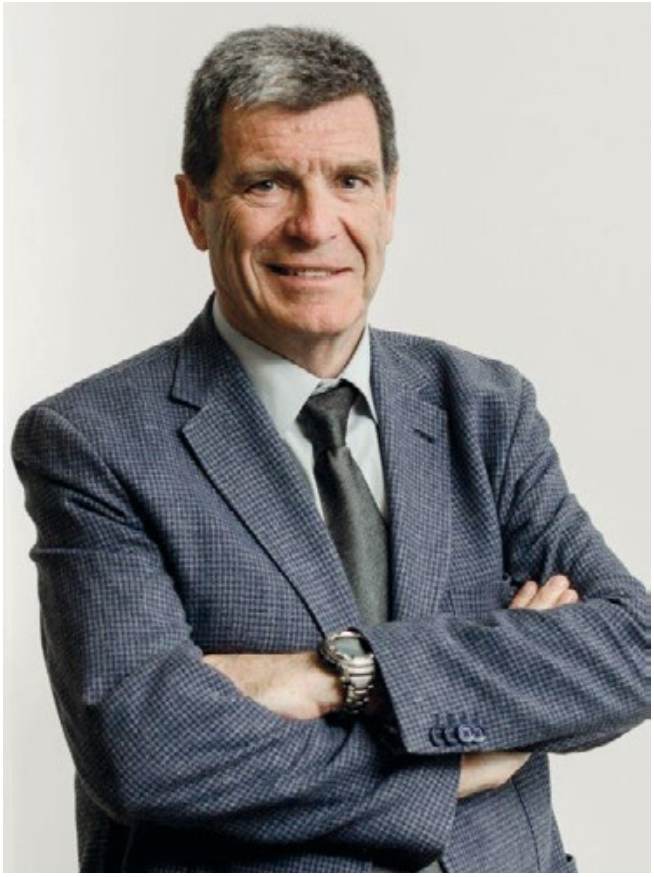
A crucial element in all these activities has been Fundación Valenciaport's strong ties in Europe; Valenciaport is clearly acknowledged as one of the principal hubs of port innovation, thanks to its solid, ongoing collaboration with ports and innovation centres within this geographical area. In addition, our commitment to regular involvement in the main forums and platforms launched by European institutions has meant we are well placed to promote projects of all kinds.

Training, as a means to achieving a better qualified port community, has also experienced a huge boost; more and more companies in the Port of Valencia rely on Fundación Valenciaport to train their staff. Moreover, growing numbers of clusters from other ports are starting to cooperate with us on training activities, in a wide range of different markets including Buenos Aires, Alexandria, Livorno and Rotterdam.

Last but not least, international cooperation yields enormous value, both tangible and intangible, as it plays a key role in raising the visibility of our port on a global scale. In the last two years, in addition to activity in our traditional markets in Latin America, initiatives have been developed in countries such as Indonesia and Cameroon, which are of great potential interest to our local companies.

Along with these core activities, we have further consolidated other relevant tools for the cluster. These include our port documentation centre, or the area of corporate social responsibility, which coordinates the activity of the association Aportem–Puerto Solidario Valencia.

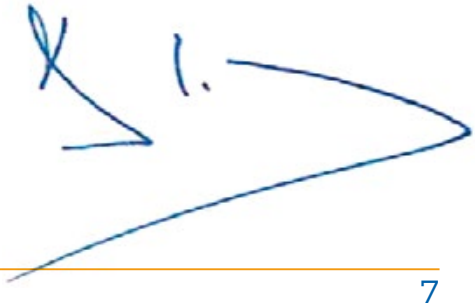
I would also like to draw attention to the challenges we face in the near future, of which there are many. First, an inherent part of Fundación Valenciaport's activity is in the field of market intelligence; although we still have a way to go in this regard, we are continually working to support the competitiveness of our port. The creation of a specific management team to promote this activity is a sign of our commitment to this goal. In addition, an innovation plan for the Valenciaport logistics community has been developed over recent months. This has led to the creation of an Innovation Committee, made up of executives renowned for their innovative approach. From 2019, this committee will work to better orient Fundación Valenciaport's activities towards the needs and challenges of our port. Together with all this, we are developing our Strategic Plan 2025, which seeks to respond to the competitiveness challenges faced by our port community. To that end, the aim is to provide knowledge and innovation within a framework of economic, social and environmental sustainability.



AURELIO MARTÍNEZ
FUNDACIÓN VALENCIAPORT PRESIDENT

By way of conclusion, I would like to emphasize the opportunities that our cluster can enjoy as a result of having access to a research, training and cooperation centre like Fundación Valenciaport, made up of a team of top-level professionals. Besides the high volume of port traffic that we have achieved, being recognized as an international benchmark in know-how and innovation is undeniably valuable in terms of strengthening our position as one of the leading ports in the Mediterranean.

If you haven't already done so, let me encourage you to knock on our door and discover what the Fundación Valenciaport can do for your organization.



1.2. CORPORATE INFORMATION

1.2.1. ABOUT US:

Fundación Valenciaport is an **Applied Research, Innovation & Training** centre providing services to the port and logistics cluster.

This initiative of the Port Authority of Valencia has enjoyed the collaboration of notable businesses, universities and institutions from the port community. Since its establishment, it has developed projects in more than 60 countries, primarily Mediterranean nations, as well as from the rest of Europe, Asia and Latin America.

1.2.2. WHAT WE DO:

- Fostering **innovation**, by promoting the design, implementation and execution of **R&D&I projects** in the port logistics sector, aimed at improving the competitiveness of companies and institutions in the sector.
- Knowledge management initiatives, offering specialized, high-value-added **training** for the continuous improvement of the human capital of the port logistics community.
- Policy of active **cooperation** with other port communities **around the world,** by means of **technical assistance** initiatives and support for Spanish logistics operators in their **internationalization processes.** Raising the international profile of the Port of Valencia's know-how.
- **Market intelligence** service for developing indexes, databases and reports of strategic interest for the sector
- Structuring the **port logistics community,** fostering cooperation within the sector, while reaching out to and engaging in dialogue with the general public, all within the framework of a collective **social responsibility** strategy.

1.2.3. LOCATION:

Fundación Valenciaport headquarters are located in the PAV Phase III Building in Av. del Muelle del Turia.

1.3. ORGANIZATIONAL STRUCTURE

1.3.1. FUNDACIÓN VALENCIAPORT BODIES

- BOARD:

The **Board** is the highest governing, administrative and representative body of the Fundación Valenciaport. It is made up of both ex-officio and elected members, up to a maximum of 25. There are currently 19 members, all ex officio, from 16 different organizations.

- CHAIRMAN:

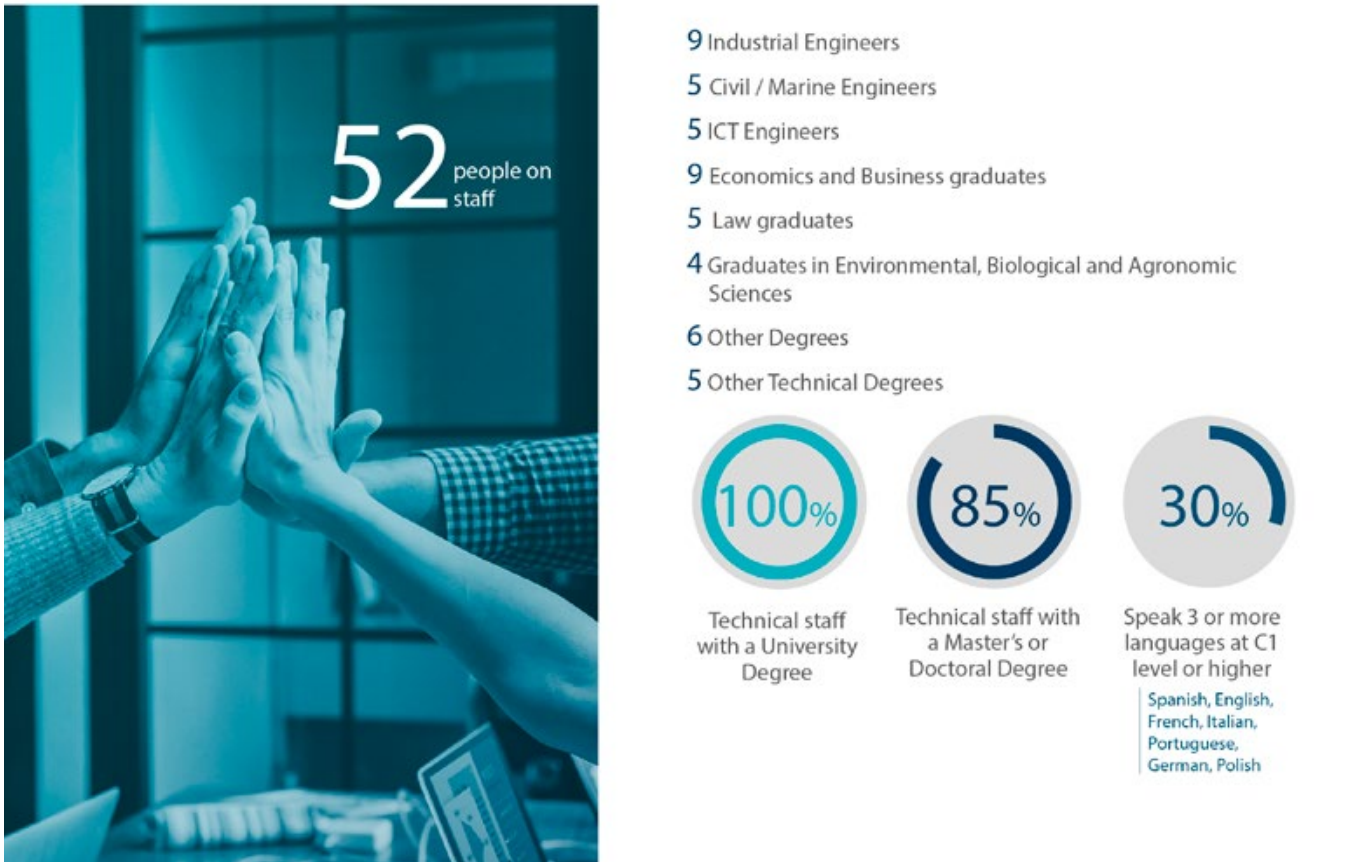
The board elects its chairman from among its ex officio members, with their choice based on professional expertise, suitability and track record in the port sector; the appointment is then made by the Port Authority of Valencia. Since 2nd October 2015, the **Chairman of the Fundación Valenciaport Board** has been Mr. **Aurelio Martínez Estévez.**

FOUNDING BODY	REPRESENTED BY
Port Authority of Valencia	Mr. Aurelio Martínez Estévez Mr. Francesc Sánchez Sánchez Mr. Álvaro Rodríguez Dapena Mr. Federico Torres Monfort
Fundación Bancaja	Mr. Emiliano García Domene
Generalitat Valenciana	Mr. José Luis Ferrando Calatayud
ATEIA Valencia – Association of Freight Forwarders, International Shippers and Related Companies	Mr. Luis Rosa Vidal
Valencian Shipping Association	Mr. Vicente Boluda Fos
Official College of Customs Agents and Commissioners of Valencia	Mr. Emilio Guardiola Huertas
Noatum Container Terminal Valencia	Mr. Gustavo Ferrer Soriano
APM Terminals Valencia	Mr. José Luis Alabau Vázquez
Remolcadores Boluda, S.A	Mr. Vicente Boluda Ceballos
Valencia International Exhibition Centre	Mr. José Vicente González Pérez
Official Chamber of Commerce, Industry and Shipping of Valencia	Mr. José Vicente Morata Estragués
Valencian Business Confederation	Mr. Salvador Navarro Pradas
Valencia City Council	Mr. Carlos Galiana Llorens
Valencia Provincial Council	Mr. Bartolomé Nofuentes López
University of Valencia. General Studies	Ms. Mª Dolores Real García
Polytechnic University of Valencia	Mr. Francisco José Mora Mas

1.3.2. HUMAN RESOURCES

As of 31/12/2018, Fundación Valenciaport has a staff of 52 highly qualified professionals working in the different departments.

This team also regularly collaborates with researchers from other organizations and university interns to develop projects related to the port-maritime field: port management and planning; port logistics chains; smart ports and traceability; security, protection and sustainability; and port-city integration.



1.3.3. FUNDACIÓN VALENCIAPORT LEGAL FRAMEWORK

- Law 8/1998, of 9 December, on Foundations of the Valencian Community.
- Decree 68/2011, of 27 May, of the Council, approving the Regulation of the Foundations of the Valencian Community.
- Law 49/2002, of 23 December, on the Tax System of Non-Profit Entities and Tax Incentives for Patronage.
- Royal Decree 1270/2003, Regulation of the Tax System of Non-Profit Entities and Tax Incentives for Patronage.
- Royal Decree 296/2004. Simplified accounting system.
- Accounting system for financial year 2012 and subsequent years: Resolution of 26 March 2013, of the Institute of Accounting and Auditing, which approves the General Accounting Plan for non-profit entities.
- Royal Decree 1491/2011. Regulations on adaptation to the General Accounting Plan for non-profit entities and the action plan model.
- Additional provisions 2 and 3 of Royal Decree 1517/2011 the Law of Account Auditing.
- RD 1514/2007 approving the General Accounting Plan.
- RD 1159/2010 approving the Regulations on the Preparation of Consolidated Financial Statements and amending the General Accounting Plan approved by Royal Decree 1514/2007.
- RD 602/2016 amending the General Accounting Plan approved by Royal Decree 1514/2007; Regulations on the Preparation of Consolidated Financial Statements approved by Royal Decree 1159/2010 and Regulations on adaptation to the General Accounting Plan for non-profit entities approved by Royal Decree 1491/2011.
- RESOLUTION of 19 December 2003, of the Bank of Spain. Agreement of the Governing Council in relation to the Code of Conduct of non-profit entities making temporary financial investments.
- Organic Law 3/2018, of 5 December, Protection of Personal Data and Guarantee of Digital Rights.
- Collective Agreement on Office Work in the Province of Valencia.

2 PROJECTS

2.1. INTRODUCTION

In the period 2017-2018, Fundación Valenciaport consolidated its position as an international benchmark for applied research in port logistics, managing projects of unquestionable relevance for the sector. At the local level, it has continued its work of promoting R&D&I in companies that are part of the Valenciaport logistics cluster. Indeed, there has been a progressive rise the number of businesses that collaborate with Fundación Valenciaport to find solutions to their competitive challenges, through innovation and know-how.

In terms of the topics covered, in addition to the traditional lines of action, new research programmes linked to the latest trends in port logistics have been implemented. Along with port logistics, security and protection, digitalization, environmental sustainability, port-city integration, port planning and management programmes, new challenges have emerged which are of great interest for the sector. These include cybersecurity, blockchain technology, the circular economy in port-logistics environments or the latest trends in the creation of smart cities and smart ports. All these topics have been incorporated into the innovation and international collaboration programme designed in collaboration with the Port Authority of Valencia, and complement the major efforts being made at European level.

Within this European framework, the main achievements range from the organization and coordination of ground-breaking initiatives such as the GAINN projects, promoting the use of Liquified Natural Gas in maritime and port environments, SAURON which aims to integrate the management of physical and cyber security in port terminals, GESPORT 4.0 for the implementation of blockchain technology in the port-logistics chain, COREALIS for the design of new tools and instruments that allow us to become the port of the future, or SUMPORT to encourage sustainable urban mobility in port cities.

Outside of Europe, significant headway has been made in terms of cooperation with other countries, with the transfer of the accumulated knowledge and expertise of the Port of Valencia to a variety of different fields. These include port planning, with the drafting of the Management Plan for the national ports system of Uruguay and the Master Plan for the Port of Callao, or the development of solutions for the management of port traffic, with different projects being undertaken in both Argentina and Chile.

By way of a conclusion, we are continuing to make progress in what we consider to be our most important mission: consolidating our position as the primary driver of R&D&I in the Valenciaport cluster. Collaboration has been closer with certain groups than others, but always in pursuit of the goal to not only attend to the needs expressed to us by businesses and associations, but also to have a proactive approach and to put forward new ideas and innovative projects. The following pages outline the projects carried out in each of the port-logistics knowledge areas covered by the institution.

2.2. KNOWLEDGE AREAS

2.2.1. Digital Transformation

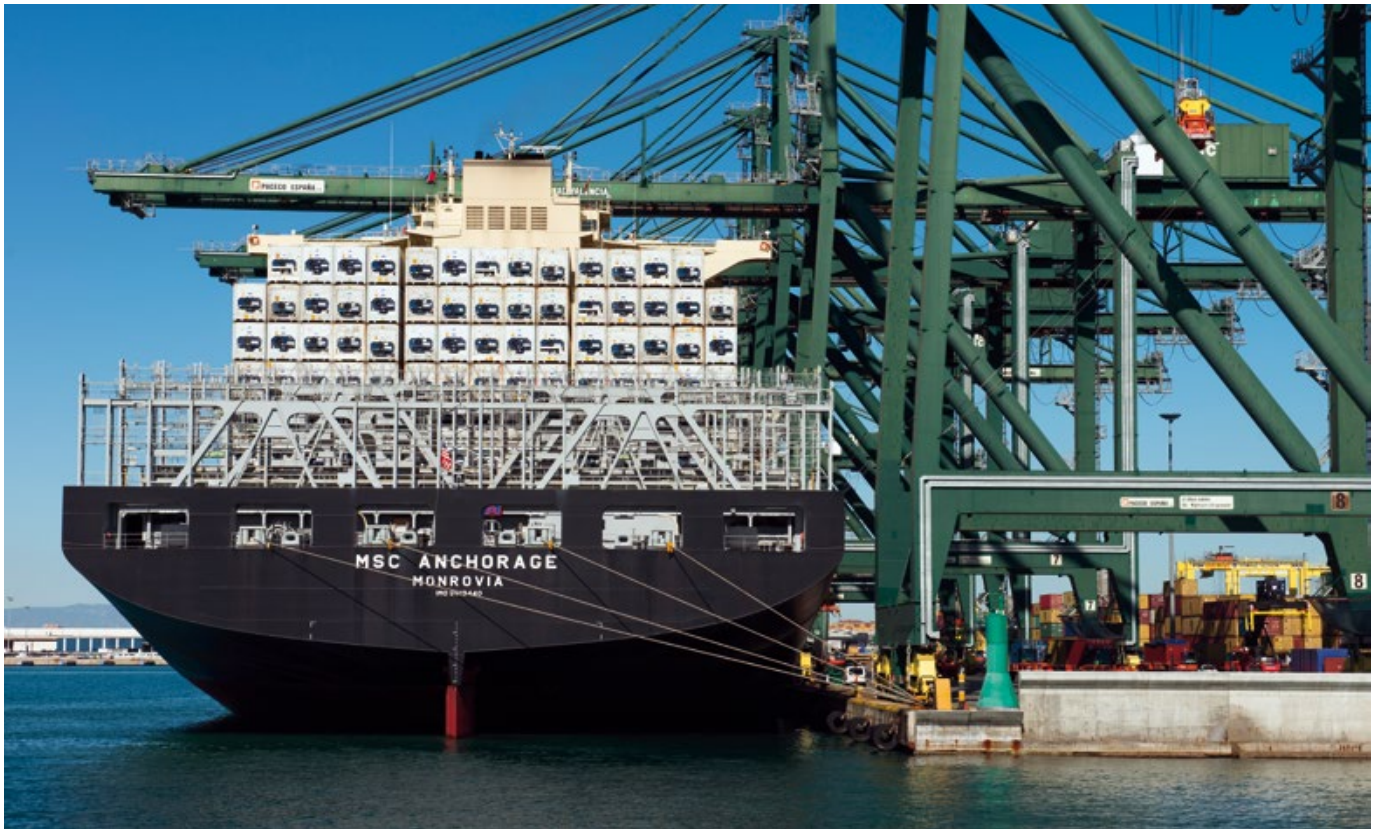
Digitalization is the evolution of the traditional information and communication technologies towards a more connected world where the physical and virtual aspects of our life come together. Digital technologies are associated with the transformation of our environment to a smart environment. Digitalization involves a physical element with a digital representation that can be accessed over the Internet and can be administered using information technologies. Digitalization is achieved by incorporating electronic sensors and devices into physical elements, turning them into smart devices or cyber-physical systems that in turn form part of a far broader concept, the Internet of Things.

Digital transformation is the use of technology to radically improve businesses' performance. Senior management teams from all industries are using digital breakthroughs such as analytics, mobility, social networks and smart devices, as well as improving the use of traditional technologies such as ERP (Enterprise Resource Planning) to change the dynamics of relationships with clients, internal procedures and value propositions. Two key elements must be considered in the digital transformation process: transforming the client experience and transforming operational procedures.

Digital transformation is affecting all aspects of our lives. At home, more and more household appliances are smart devices; our cities are also turning into smart cities (for example, lighting, transport, parking or smart recycling); and industry is undergoing what is being termed the fourth industrial revolution.

Digital technologies ensure flexibility, reduce costs and encourage rapid communication; they are also useful tools when it comes to making strategic decisions. The rapid acquisition and exchange of reliable data between the different stakeholders in the transport chain are key factors in the coordination of services, in both time and place, ensuring better results and providing any necessary information.

Currently, all sectors are seeking new, more efficient, attainable, secure and accessible technological solutions, taking advantage of the growing connectivity of objects and people (Internet of Things), the availability of geolocation systems (GPS, EGNOS and Galileo), cloud computing solutions, the massive storage and processing of data (Big data), machine learning and AI and the Internet of Value, with the application of distributed ledger technology (DLT), better known as blockchain.



All these solutions and technologies have the potential to improve productivity at port facilities, resolve a variety of different mobility issues and provide a distinctive and more tailored service for both freight and passenger transport. The management of vast quantities of data in the areas of accessibility, procurement, storage, distribution and use of information will lay the foundations for achieving smart ports and transport. However, other components must also be taken into account, such as the reliability, confidentiality, privacy, ownership and cybersecurity of data, in order to ensure users' acceptance and adoption of these solutions.

Within the Port Authority of Valencia, three distinct information systems can be identified: the management systems, the industrial systems and the port community system (PCS). Supplementary to the systems administered and maintained by the Port Authority of Valencia are the information systems used by the operators, clients and users of the ports that come under the remit of Valenciaport, as well as the information systems of other public administrations that are involved in foreign trade and maritime transport (such as Customs).

It is clear that for Valenciaport to enjoy a greater competitiveness compared to other ports, both the system managed by the PAV and the rest of the systems involved in port-logistics operations are of great importance. Special attention must be paid to the Terminal Operating Systems (TOS), systems used at inspection points, as well as systems belonging to other public administrations, such as those used by the Customs Department or the Inspection Agencies. As far as the industrial systems administered by the Port Authority of Valencia are concerned, the automated port access systems (particularly the one used for accessing the Port of Valencia), and the eventual implementation of a comprehensive physical monitoring of the port and the use of the acquired data, are key to the Port 4.0 strategy.

Presently, Valenciaport is internationally known as a leading port in the implementation of digital technologies. Nevertheless, to maintain its position, it must continue to encourage the evolution, modernization and coordination of the different information systems, both its proprietary systems and those of third parties. It must also lead the way in emerging models that bring together all these solutions to create a Smart Port and position Valenciaport as a benchmark among the ports of the future, the Corridor Community Systems, and the European platforms backed by the European Commission.

Since 2014, Fundación Valenciaport has been working on digital transformation to achieve smart port logistics. It does so within the framework of the defined Action Plan, and partially subsidized by the Port Authority of Valencia, and has already achieved significant breakthroughs and results.

Many of these activities form part of various European and national projects which Fundación Valenciaport has been involved in, such as Inter-IoT, Transforming Transport, Gesport 4.0, Herit-Data, Sauron, STM Validation, Picasso, Monalisa, B2MoS, Mednet, Medita, Stimulo, Sea Terminals, Mos4Mos and Mitigate.

The issues being considered in the digital transformation strategy adopted by the Fundación Valenciaport to achieve smart port logistics are as follows:

- The use of the Internet of Things (IoT) within the port environment to allow objects and people to be able to connect and interact anywhere and at any time via a network of sensors, actuators, smart objects and devices, communications and interfaces that allow the information to be captured, recorded and processed via local and global networks.

- Mobile communications for the secure exchange of information between stakeholders (users, service providers, operators, communities), with special attention being paid to the role of the driver and the vehicle and the adoption of intelligent transport systems (C-ITS) as part of the vehicle-infrastructure communications architecture (V2I).

- Communications, mass data storage and quick secure, robust and reliable (Big data) processing, which includes delivery facilities and the appropriate presentation to the port authority services, customs, border patrol authorities, the port and transport community and those involved in international trade.

- The supply of spatial and positional information of freight in transit using GPS systems, RFID and 3G/4G/5G services.

- Open, web-based platforms that facilitate the secure exchange of reliable and write-protected information between suppliers, manufacturers, logistics operators and distributors—without the need to create costly interfaces—by using disruptive technologies such as blockchain and distributed ledger technology (DLT).

- Technical and organizational guidelines for administering the information systems, technical aspects of the IT solutions, business models and processes.

- Roll-out of plans for the implementation of collaborative systems and services, assessing and putting forward recommendations about business practices or legal issues.

As part of this strategy, Fundación Valenciaport, together with the Port Authority of Valencia, is taking part in the Digital Transport and Logistics Forum being organized by the European Commission.

With the new phase that began in 2019, digital transformation activities will focus on applying all the hard work, expertise and skills to extend this transformation process to all the members of the Valenciaport cluster, including the Port Authority of Valencia, as well as all agents and sponsors who consider Fundación Valenciaport to be their trusted partner when it comes to making progress in these areas.

GESPORT 4.0 – CONTAINER PORT MANAGEMENT 4.0

CLIENT / FUNDING ENTITY: Agència Valenciana de la Innovació (AVI)
DATE: 2018
LOCATION: Valencian Region
CONTACT:
Miguel Llop Chabrera - Director of Digital Transformation - mllop@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

Equating to more than 80% of the volume of global freight transport, the maritime transport industry plays a key role in the growth of international trade. Given the experience and substantial expertise in the sector, the expediency of high-volume capacity on each route, the economies of scale, and reliability when faced with adverse climate conditions, maritime transport is the preferred choice when it comes to transporting goods over large distances. Consequently, there is a keen interest in research into new courses of action that will help to optimize current procedures and ensure the sustainable growth of the industry over the coming years.

Nevertheless, there are numerous logistical issues to consider during shipping operations, stemming primarily from the comprehensive, stringent regulations in place, in addition to the labour-intensive processes associated with the paperwork required to be able to standardize freight export and import operations in ports. This series of procedures slows down an already sluggish operation; therefore, the streamlining of these bureaucratic procedures would hugely benefit the entire sector and indirectly other sectors that depend on maritime freight transport for their day-to-day operations.

By means of document digitalization, the project aims to put forward new solutions to improve the efficiency of management and communication procedures between the different stakeholders of transport logistics operations.

Blockchain technology is an ideal candidate for the exploration of new solutions that lead to future process reengineering. Blockchain enables the transfer of value via the Internet between different stakeholders who need

to validate and exchange information, giving rise to the so-called Internet of Value.

This technology has already proven itself to be a powerful monitoring and transaction tool in the field of cryptocurrencies. It also has the capacity to minimize frictions, raise confidence and empower users. Nowadays, research is being carried out into other revolutionary uses for it in almost all sectors, including energy, trade and the media. Blockchain has the potential to make complex systems a thing of the past, but it must also face up to certain challenges such as base code fragmentation, security threats and the centralization of power.

With its implementation in the logistics and transport sector, blockchain makes it possible for physical assets, such as containers or the goods they contain, to be replicated on a decentralized platform where all stakeholders can check the provenance and validity of documents provided by each one, in a very transparent format for all agents involved.

But the implementation of blockchain would also improve and guarantee the conditions of security and traceability of operations, as well as the confidentiality of the data and information exchanged between participants of said transactions.

The proof of concept, which will take place in the Port of Valencia, will consist of the redesign of the supply chain process that incorporates different companies for the receipt and delivery of containerized freight. This will provide the starting point for the transformation of the entire logistics ecosystem. Similarly, an analysis will be carried out to select the best architecture and blockchain solution for this case.

DEFINITION OF THE PRIMARY SCIENTIFIC AND/OR TECHNOLOGICAL OBJECTIVE

The aim of this project is to carry out planned research in order to assess the suitability of blockchain, to acquire new knowledge and learn new techniques based on blockchain technology. This will lead to the creation of new products, processes and services in and around the container freight transport industry. The project includes the creation of components, both those inherent to the blockchain distributed network (for example the creation of participants, assets or smart contracts), as well as external ones (off-chain components such as identification technology, access and permissions, programming applications and interfaces) required to carry out this industrial research project. These components will provide a generic validation of the technology applied to the container transport sector.

Ports are considered critical infrastructures given the enormous importance they have in global trade. As such, their IT platforms should be protected given the growing number of hostile agents who try to infiltrate these systems for the sole purpose of causing the greatest possible damage. Consequently, features of blockchain technology, such as data decentralization, duplication and protection, make it an ideal candidate for registering and managing documents and data, and ensuring the traceability of the value chain. Indeed, they make it impossible, in practice, for an attacker to modify records contained within the blockchain network. Given the nature of the data that is handled during maritime transport operations, data integrity must be guaranteed. Similarly, infrastructure security is of major importance in this area, in order to stop malicious actors from taking control of the platform and corrupting port operations.

Given its innovative character, this project has the potential, in the short term, to become the showcase blockchain technology logistics project in Spain, thereby positioning the Valencian Region and its logistics industry at the cutting edge of this emerging technology. Furthermore, the project will boost the expansion of blockchain expertise in logistics ecosystems at national level, with the pull effect that this will have on the rest of the companies in the sector and in other countries. As a consequence, this could help position Valencian industry as a benchmark for innovation.

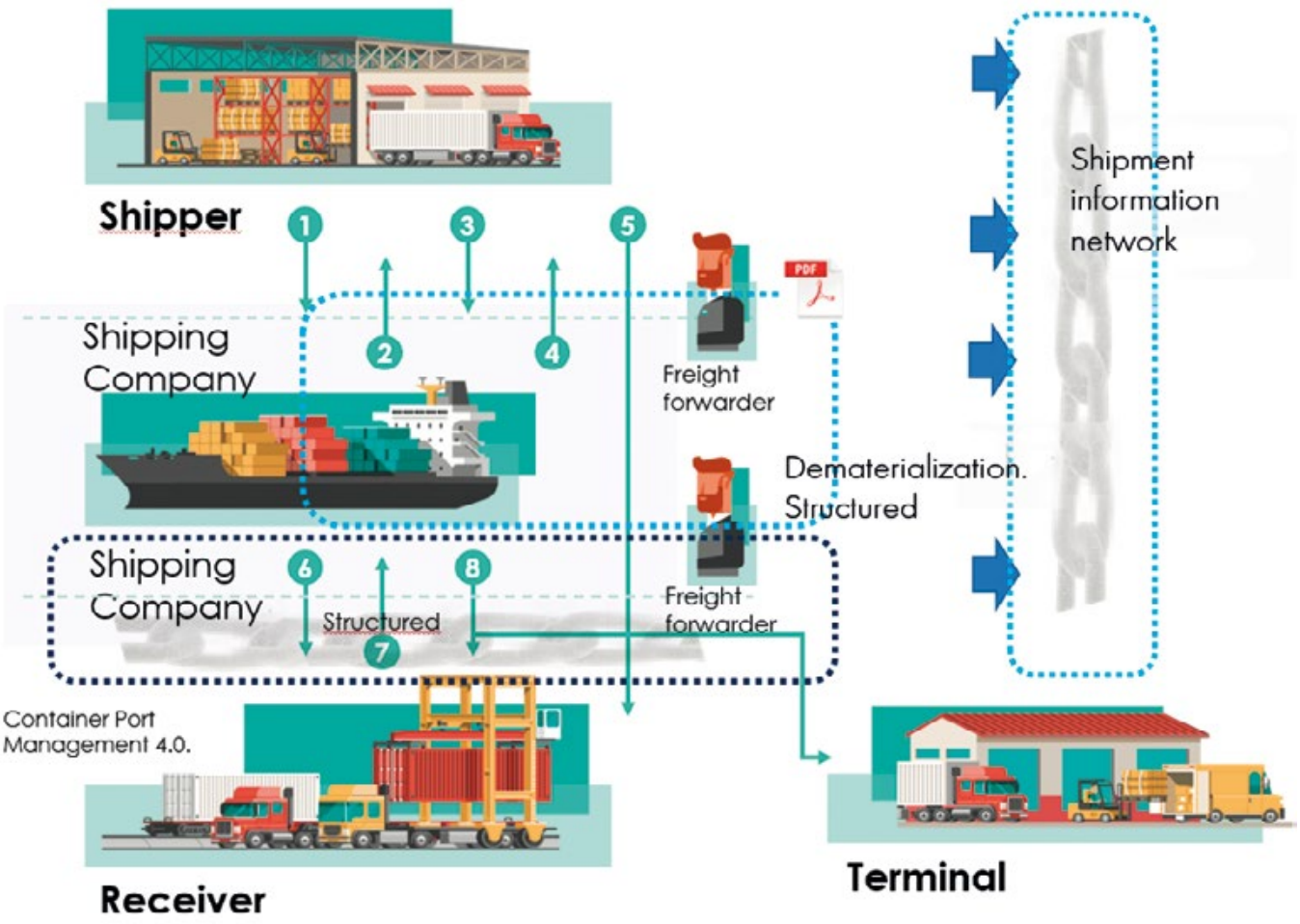
In this context, the project in question aims to:

1. Boost innovation in the logistics sector through a greater adoption rate of blockchain technology. This in turn will generate the necessary know-how to lay the foundations for the transformation of this ecosystem, starting with the supply chain sub-process, where different businesses interact during the reception and delivery of containerized cargo.

2. Redesign the current supply chain process using blockchain technology, at a conceptual and technical level, centring on the integration with third-party systems. The aim here is to generate a more efficient and competitive ecosystem.

3. Analyse and select the best architecture and blockchain solution to cover the business use case, on the basis of research and development of components that enable technological validation (carried out as part of the project), and with a view to subsequent implementation and scaling.

Complementarity and innovation of the project



INNOVATION THAT CONTRIBUTES TO THE STATE OF THE ART OR TO THE MARKET

The container port management 4.0 project aims to:

- Research the applicability of the technology to different transactions that occur at a port through blockchain networks.
- Facilitate the movement of goods and containers in the port.
- Improve and guarantee the conditions of security, traceability and the immutability of transactions and associated operations.
- Extend and expand port transactions to other economic spheres (e.g., financial, maritime) and the traceability of cargo (for example foodstuffs).
- Guarantee the confidentiality of data and information exchanged between transaction participants, based on clearly-defined rules stemming from smart contracts and identification systems for data access.

The proposed solution presented in this project incorporates the necessary innovation within the state of art and the market. As a result, processes based on the exchange of structured data, as required for port-logistics chains, can be carried out in a more reliable and flexible way through blockchain networks. To a large extent, it can be said that the container port management project is highly complementary with the expertise obtained to date, while incorporating new points of focus for research (structured data, confidentiality and content access control, integration of blockchain with existing systems, integration of logistics chains with financial processes etc.).

In conclusion, this industrial research process will facilitate the acquisition of the knowledge and techniques needed to be able to implement this range of technologies in the current systems of shipping companies (connecting them to their current transport and container management systems); ground transport companies (connecting them to the fleet management systems); and ports (connecting them to port community systems and the operational systems of the terminals).

Given the importance of the Port of Valencia in international container transport, this project lies within a particularly significant environment in which to assess the deployment of this technology in maritime transport, streamline processes and facilitate the movement of goods. Fundación Valenciaport, Infoport technologies and everis, together with other logistics partners and the ITI, as a Valencian research group, are developing a proof of concept in the Port of Valencia. To this end, they have the backing of the Port Authority of Valencia and its ValenciaportPCS platform.

The initiative has also enjoyed the support of the Valencia Innovation Agency (AVI), which awarded a subsidy of approximately 350,000 euros within the framework of its support programme for strategic collaboration projects. The findings of the industrial research carried out with the backing of the AVI will serve to continue with the proof of concept and the assessment of the technology over the course of 2019.

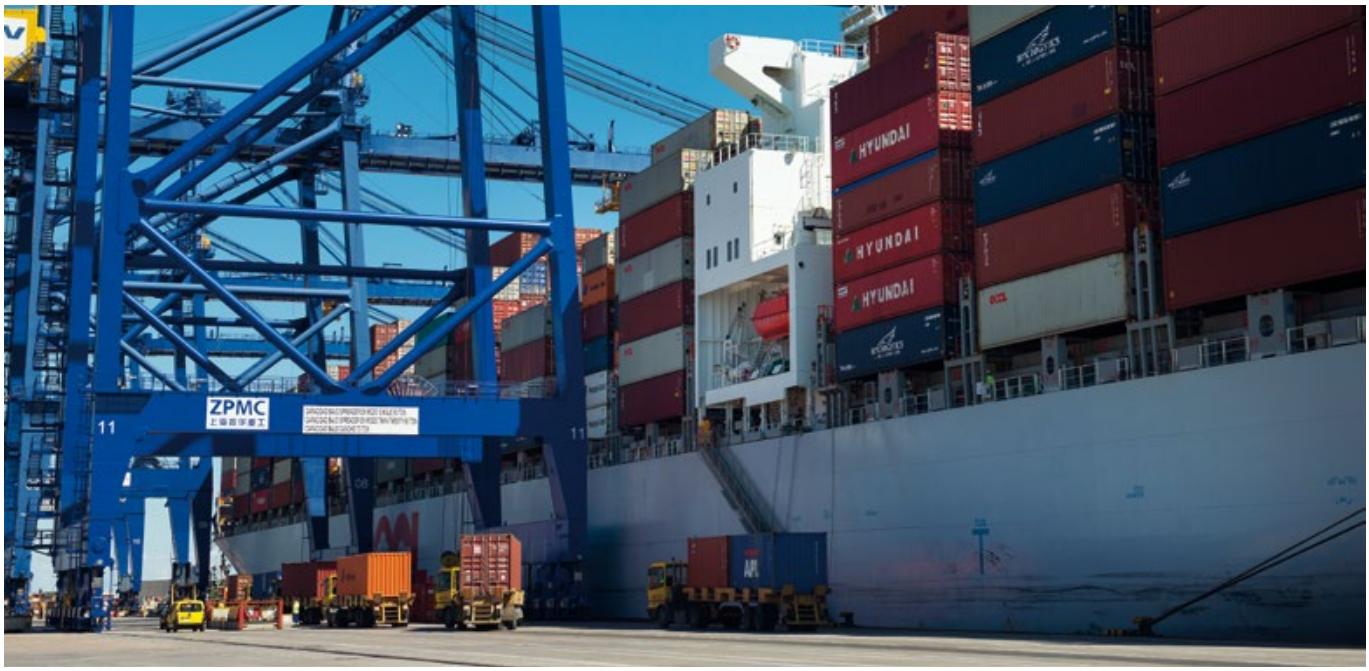
COOPERATIVE DEVELOPMENT

In addition to its role as coordinator of the consortium of entities promoting the project, Fundación Valenciaport will carry out the modelling of the new smart contracts and, with the support of the Valencian research centre, ITI, will deploy them. The blockchain network deployment infrastructure which has been selected for the testing is Amazon Web Services (AWS) which will be supplied by the Valencian company BeLike.

The research project boasts the technological backing of multinational business consultants everis, who will be tasked with selecting the blockchain platform and its subsequent implementation in the project. Other collaborators include Infoport, who will be responsible for adapting the port community system, ValenciaportPCS (the technology platform that manages the flow of freight into the Port of Valencia) for the influx of blockchain data. To that end, Infoport will work closely with the Port Authority of Valencia, who has ownership of this platform.

The involvement of other logistics stakeholders from the port community of Valenciaport, with broad experience in the sector, guarantees the continuance of the trials.

Given its innovative nature, this initiative has the potential, in the short term, to become the **benchmark blockchain logistics project in Spain,** which would position the Valencian Region and its logistics industry as a launchpad for this emerging technology.



DESIGN OF PORT COMMUNITY SYSTEMS (PCS)

CLIENT / FUNDING ENTITY: Port Authorities and Communities
DATE: 2017–2018
LOCATION: Europe and Latin America
CONTACT:
Miguel Llop Chabrera - Director of Digital Transformation - mllop@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

Fundación Valenciaport boasts broad expertise in the design of collaborative systems used by Port Communities, called Port Community System or PCS, not only in the Port of Valencia, with its own port community system ValenciaportPCS, but also in other countries such as Argentina, Australia, Brazil, Chile and Indonesia, where studies have been carried out on the design of these systems. Similarly, Fundación Valenciaport is a regular collaborator of the International Port Community System Association (IPCSA), representing the Port Authority of Valencia, as well as international institutions such as UNCTAD or the BID in subjects such as PCS, technology, port management systems and single-window systems.

Based on the definition provided by the IPCSA and on key issues that characterize a port community system, the main features with which a PCS must comply are as follows:

- Conceived as an open and neutral platform that facilitates the secure and smart exchange of information between private operators and public entities with the aim of improving the competitive standing of the port community.
- Manage, optimize and automate port and logistics processes using tools that enable the sharing of information, collaborating and connecting the different stakeholders of transport and logistics chains.
- Configured in line with the port's electronic platform that connects the numerous different systems operated by different stakeholder organizations and authorities involved in port transport and logistics, including the single-window systems that operates in Spain. The PCS should not replace the current systems, but rather be complementary, covering any existing shortcomings, digitalising any processes that are still carried out manually, introducing the shared use of applications and technologies, fostering interoperability and encouraging the shared electronic and automated access to data by all parties.

The aim of implementing PCS is to improve the competitiveness of the port through the simplification and improvement of processes, making them more efficient. Similarly, in the design of a PCS, consideration must also be given to the digital transformation procedures, currently taking place in all aspects of our lives and which have been associated with a new industrial revolution known as Industry 4.0, giving rise to Logistics 4.0 and Port 4.0. Digital transformation implies the use of all digital advancements that arise such as blockchain, mobility, the potency of computing and computation, social networks or smart devices, together with the improvement of all applications and traditional technologies to change the relationships with clients, internal processes and value proposals.

Likewise, the design of the PCS incorporates considerations about governance, investment, operation and sustainability of the platform.

- The model of governance aims to create the necessary structure to define standard processes and procedures that are supported by PCS, determine which services PCS should offer, defining the operating policies of this system, agree strategies, create relationships and establish alliances, and define and agree commitments and undertakings by the entire port community. A key aspect of a PCS is that it must be a neutral and reliable system for all stakeholders. Said neutrality and reliability should be achieved via governance mechanisms whereby the whole port community is involved, and through a leadership that is acknowledged by all parties.
- As for the business model, it will determine who will be involved in the necessary investment to create the PCS and which investment recovery policy will be applied. Lastly, the operational model will determine the dimensioning and structure of human and physical resources required, the way in which they will be organised to allocate an operator for the PCS.

The operational model must also consider the technical and enterprise architecture that provides the service that will allow the PCS to operate. The location of any assets required must take into consideration the location of the offices and the location of the digital assets (servers, network

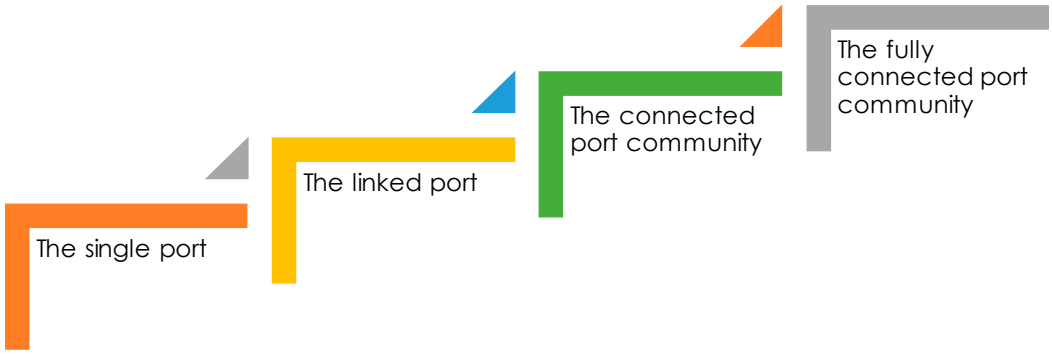


Figure 1. Stages of the digital transformation of ports

infrastructure, identification systems, automation, sensors, actuators, etc.).

When designing a PCS, the technical assistance provided by Fundación Valenciaport means that ports find themselves in the third stage of the digital transformation process, what we call the connected port community, enabling them to lay the foundations for their evolution towards a fully connected port community or Smart Port.

The activities associated with this type of work comply with the ADM methodology of the TOGAF. ADM (Architecture Development Method) is the enterprise architecture development method within the TOGAF (Open Group Architecture Framework) development framework. TOGAF contains some essential guides about what should be done to set up the kind of enterprise architecture initiative required for the transformation process associated with a PCS and design the necessary skills to support this transformation in order to aligning the information systems with the actual business needs.

The **ADM method advocates a clear and concise way to set out the different phases** for the deployment of an enterprise architecture initiative (EA), which in turn, is carried out iteratively in order to achieve continuous improvement.

The underlying concept of ADM is based on a preliminary analysis of the current situation of the organisation "AS-IS" (in the Architecture domain according to TOGAF, Business, Information and Technology), **identify, define and prioritise the "TO-BE" transformation needs to be able to carry out the business strategy and achieve the aims of the organisation. These phases** are followed by a gap analysis, the roadmap is designed, and lastly there is a transference stage during which the technical specification sheet that will be used in the PCS bidding procedure can be prepared.

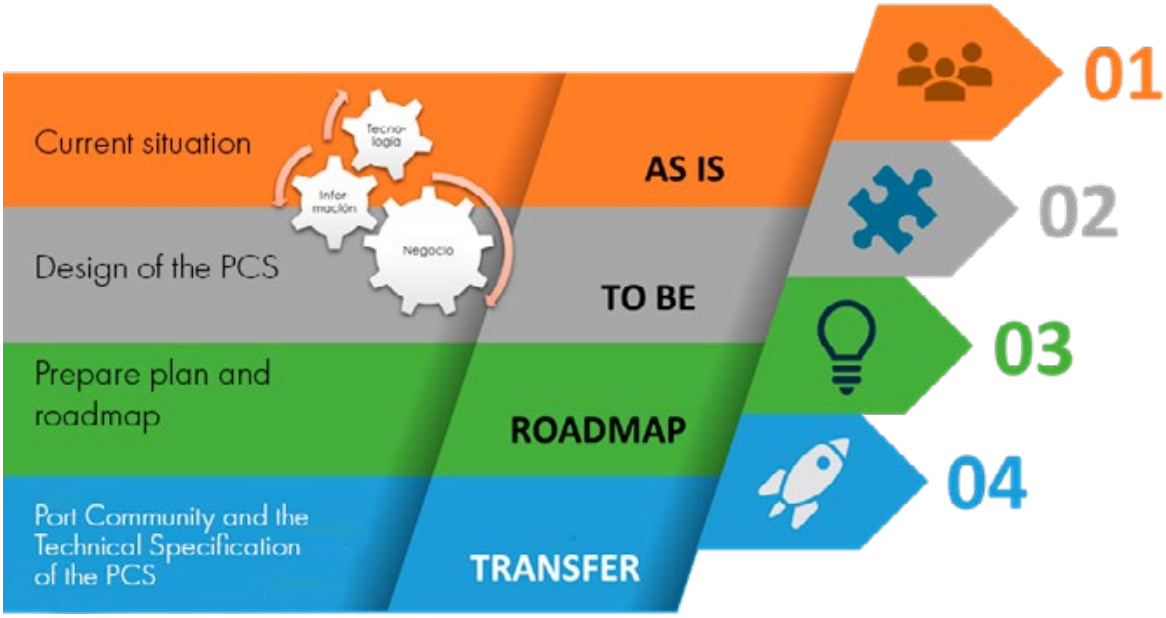


Figure 2. Application of the TOGAF methodology to PCS design]

CONSULTING STUDY TO REVIEW THE IT STRATEGY FOR PELINDO I

CLIENT / FUNDING ENTITY: PT SGS Indonesia
DATE: November 2016 – April 2017
LOCATION: Indonesia
CONTACT:
Miguel Llop Chabrera - Director of Digital Transformation - mllop@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

The aim of this consulting study was to collaborate with Pelindo I (a public entity of the Indonesian government specialising in port operations, among other things) to review and overhaul its information technology strategy, updating the Information Technology Master Plan of the organisation. Similarly, to help Pelindo I to understand how best to manage its applications and information technology systems, improving their performance and positioning the ports of Pelindo I at the forefront of the competition in the region.

TRANSFORMING TRANSPORT, BIG DATA TT

TRANSFORMING TRANSPORT

European Commission | Horizon 2020 European Union funding for Research & Innovation

CLIENT / FUNDING ENTITY: European Commission, H2020 Programme
DATE: January 2017 – June 2019
LOCATION: European Union
WEBSITE: www.transformingtransport.eu
CONTACT:
Miguel Llop Chabrera - Director of Digital Transformation - mllop@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

The Transforming Transport project aims to realistically, measurably and reproducibly show the transformational effects that Big Data will have on the mobility and logistics market. To this end, the project will validate the technical and economic feasibility of Big Data to remodel transport service processes to significantly increase operational efficiency, provide a better client experience and encourage new business models.

Within the framework of the project, seven crucially important pilots for the mobility and logistics sectors in Europe will be carried out: Smart motorways; sustainable vehicle fleets; proactive railway infrastructures; Ports as smart logistics centres; Efficient air transport; Multimodal urban mobility and Dynamic Supply Chains.

More specifically, Fundación Valenciaport will take part in the "Ports as smart logistics centres" Work Package the overall aim of which is to show how the deployment of Big Data technology can transform operations at port hubs and improve the execution and management of the supply chain. The specific aims are as follows:

- Design and deploy a global productivity cockpit for logistics and port operations.
- Improve and implement the traffic management system, programming and allocation, taking into account the estimated time of arrival, the order of the work assignments, forecasting, human behaviour and external factors to increase performance, the lifespan of the equipment and productivity.
- Adapt and integrate a predictive maintenance system based on information received from equipment sensors and minimise the down times and glitches.

INTER-IOT - INTEROPERABILITY OF HETEROGENEOUS IOT PLATFORMS

CLIENT / FUNDING ENTITY: European Commission, H2020 Programme
DATE: January 2016 – December 2018
LOCATION: European Union
WEBSITE: www.inter-iot-project.eu
CONTACT:
Miguel Llop Chabrera - Director of Digital Transformation - mllop@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

The aim of the INTER-IoT project is to design, deploy and gain experience of an open framework in different layers and an associated methodology to enable interoperability between heterogeneous platforms of the Internet of Things (IoT). The system facilitates the effective and efficient development of adaptive and smart IOT applications and services on different heterogenous IOT platforms, which handle single and/or multiple application domains. The project has been defined to focus on particular scenarios. Consequently, implementation and testing will be carried out using three large scale true-to-life:

- Transport and logistics of the Port of Valencia with heterogeneous platforms and approximately 400 smart objects.
- The Italian National Health Centre for mobile health services with approximately 200 patients, equipped with body sensors, mobile sensors, and smart, mobile devices.
- They will be deployed and tested at the Port of Valencia facilities in the form of a pilot project for both application domains that involve IoT platforms.
- Inter-IoT will address any issues needed to achieve interoperability, including an infrastructure, methodology, APIs and tools, with the following benefits:
- For the device: the constant integration of the new IoT devices and their interoperability with already existing and even heterogeneous devices.
- For the contact networks: design and implementation of fully connected ecosystems.
- For the middleware: global use of large (and even extreme) -scale smart objects belonging to multiplatform systems.
- For the application of the service: reuse and exchange (import/export) heterogeneous services between different IoT platforms.
- For the integrated IoT platform: design of multiple-platform IoT applications.

ACTIVITY MODIFICATIONS FOR THE BCISQL05 PLATFORM

CLIENT / FUNDING ENTITY: Port Authority of Valencia
DATE: December 2016 – January 2017
LOCATION: Valencia
CONTACT:
Miguel Llop Chabrera - Director of Digital Transformation - mllop@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

The aim of the technical assistance is to provide guidance to the Port Authority of Valencia on any necessary actions for the development of the BCISQL05 platform. The actions are as follows:

- Audit existing DBs and their corresponding relational tables.
- Assemble, review and update existing documentation.
- Identify information sources and standardise information in its corresponding format.
- Update the platform to set up Web Services for external communications.
- Document the development of applications and scripts to automate tasks related to insertion, subtraction and deleting of existing information in the databases.
- Analyse the Data Recovery Plan: review of the back-up copy system, data periodicity. Identify any shortcoming of the Recovery Plan.
- Identify the different third-party systems (In-house applications) and the mode of interconnection between them: information exchange languages (EDIFACT, ANSI X12, XML, JSON, ASCII...) information exchange protocols (VAN, SOAP, REST...).
- Analyse and propose conceptual and logical data models for the databases.

UCC VALENCIAPORTPCS - "DEFINITION AND UPDATING OF VALENCIAPORTPCS SERVICES FOR COMPLIANCE WITH THE REQUIREMENTS OF THE NEW UNION CUSTOMS CODE (UCC)"

CLIENT / FUNDING ENTITY: Port Authority of Valencia
DATE: December 2016 – December 2017
LOCATION: Valencia
CONTACT:
Miguel Llop Chabrera - Director of Digital Transformation - mllop@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

The aim of the technical assistance is to identify any actions required for the updating of the services provides by ValenciaportPCS to ensure compliance with the new requirements of the Union Customs Code (UCC). A variety of diagnostic studies will be carried out to identify and analyse a set of measures to quickly adapt the Port of Valencia operations to the requirements of the UCC.

DESIGN OF A PCS AND REVIEW OF INFORMATION TECHNOLOGY SYSTEM PLANS FOR THE PORT OF BUENOS AIRES

CLIENT / FUNDING ENTITY: **State**-owned General Ports Administration
(Port of Buenos Aires)
DATE: July 2018 – April 2019
LOCATION: Argentina
CONTACT:
Miguel Llop Chabrera - Director of Digital Transformation - mllop@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

Design of a PCS to improve the competitive edge of the Port of Buenos Aires and facilitate the secure and smart exchange of information between operators, transport and logistics chains, including both private and public-sector entities. The PCS is seen as a complementary electronic platform to check the rest of the procedures currently being used, moving as such towards a connected and smart port community.

FUNCTIONAL DEFINITION AND SPECIFICATION OF THE NEW CUSTOMS AND CONTAINER AND VEHICLE MANAGEMENT SERVICES IN VALENCIAPORTPCS

CLIENT / FUNDING ENTITY: Port Authority of Valencia
DATE: December 2018 – December 2020
LOCATION: Valencia
CONTACT:
Miguel Llop Chabrera - Director of Digital Transformation - mllop@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

The main aim of the project is to provide technical assistance with the functional definition and specification of the new customs and container and vehicle management services in ValenciaportPCS.

This work involves the structuring of new services in ValenciaportPCS that respond to the need for the port community systems to evolve, implementing new functions and processes to ensure the smooth running of trade and port logistics, as well as complying with regulatory obligations contained within the Union Customs Code (UCC). Similarly, by defining new value-added customs services, we hope to equip the PAV with a greater degree of digitisation and control of port operations, as well as service levels that guarantee greater levels of quality in all activities carried out within its area of operations.

REQUIREMENTS DEFINITION FOR THE LAUNCH OF A POSITIONING MANAGER IN VALENCIAPORT

CLIENT / FUNDING ENTITY: Port Authority of Valencia
DATE: February 2018 – July 2018
LOCATION: Valencia
CONTACT:
Miguel Llop Chabrera - Director of Digital Transformation - mllop@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

The aim of this project is to respond to the need for a Positioning Manager in the ports overseen by the Port Authority of Valencia. This role requires meeting the demands of the Customs Single Window (CSW) project and effectively and efficiently dealing with the large volume of inspections, which may exceed 200 containers per day from a dozen different locations.

This service involves carrying out a study of the technical and functional requirements that will be needed for the future creation of a Positioning Manager in ports overseen by the Port Authority of Valencia within the framework of the ValenciaportPCS.

TECHNICAL ASSISTANCE FOR THE HIGH-LEVEL RELATIONSHIP BLUEPRINT FOR THE EXISTING PAV SYSTEMS (PCS AND INDUSTRIAL NETWORK) AND THE CUSTOMS OFFICES THAT ARE PART OF THE “LEVANTE SIN PAPELES” (PAPERLESS LEVANTE) INITIATIVE

CLIENT / FUNDING ENTITY: Port Authority of Valencia
DATE: December 2017 – January 2018
LOCATION: Valencia
CONTACT:
Miguel Llop Chabrera - Director of Digital Transformation - mllop@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

Conceptual analysis to improve the identification of the different relationship and links of each system involved in the process of the entry and departure of goods from the port, which will also lead to a greater understanding of the global system, improvement to the search for solutions to potential issues that arise during operations.

2.2.2. Port Logistics

The Port Logistics programme encompasses a field of knowledge that transcends the port environment per se, providing as such a comprehensive overview of the logistics chains and infrastructures. This integrated concept of the logistics system is required to be able to face up to the current situation and to tackle the future challenges of a highly globalized environment that is experiencing significant technological disruptions (digital and energy transformation, operations based on the management of vast volumes of data, the use of artificial intelligence and business intelligence, etc.). Against this backdrop, port logistics has become a key instrument with which to increase the competitiveness of the ports and their associated clusters as the principal nodes of the supply chains.

Container logistics, the connection of ports to their hinterlands, maritime-railway integration, logistics nodes and intermodal logistics platforms, the growth of automation and robotization of logistics facilities, the integration and competitiveness of the port-logistics cluster, and urban logistics; these are just some of the topics on which work has continued from both a strategic and planning perspective, and from an operational perspective to optimize and improve efficiency.

Over the past two years, these areas of action have been the focus of a large number of projects which have provided support not only to ports and other institutions specializing in logistics and transport, but also to different businesses from the port-logistics community who have put their trust in the knowledge and expertise of Fundación Valenciaport. The European and international scope of many of the projects have enabled us to have direct contact with other realities, share experiences and transfer best practices that help to bring about improvements to the supply chain.

One of the most important projects in terms of the scope of its objectives, the investment by the European Commission and the number of businesses taking part, has been the Sea Traffic Management Validation (STM) project. The aims of this project, headed up by the Swedish Maritime Administration and co-funded by the European Commission through the Connecting Europe Facility Programme (CEF), were to move towards the digitalization of the ship-to-ship and ship-to-port navigation services in the maritime transport sector and the port-logistics environment. The STM project, which lasted for three years (2015- 2018) looked to develop technologies, navigation services and communication infrastructures aimed at facilitating the evolution of maritime transport towards a model founded on the digital exchange of information, heightened security, efficiency and sustainability. Consequently, numerous pilot projects were carried out including the integration of new communication systems in 300 ships and the design of information exchange platforms to deal with the port calls of these ships in 9 European ports.

The first pilot project demonstrated the technological feasibility of the real-time exchange of route plans and navigation routes between ships which, when in close proximity, are at risk of colliding. The digital

exchange of this information managed to minimize the risks of accidents and incidents at sea by sharing the intended navigation routes of a ship with those of others located nearby.

The second pilot project focused on improving port-call efficiency and ship moorings at port. To this end, a real-time information exchange platform was developed to facilitate the digitization of the operational process whereby the different stakeholders were tasked with providing technical-nautical services, increasing as such the visibility of the processes for these agents and providing validated and reliable information about the different characteristic operations of the port-call process.

Moreover, work has continued on railway-maritime integration projects such as CAPACITY4RAIL and CONNECT VALENCIAPORT. The first is aimed at defining the future vision of rail freight transport (Horizon 2050) and anticipating any future infrastructural and superstructural needs, and the second comprises a wide range of actions to improve infrastructure and railway operations in the Port of Valencia, including the connection to the Mediterranean Corridor and adapting it to the standard European rail gauge, as well as upgrading to be able to handle trains of 750m in length.

In addition, activities have continued on the design of solutions to improve road traffic planning and management in and around the ports, a common problem in ports around the world, which has become more acute with the advent of mega-ships that concentrate the traffic and increase the pressure on the hinterland. Several of the international projects carried out deal with the issue of traffic management in ports in Argentina and Chile. In the case of Chile, one of the projects carried out goes far beyond ground transport and a comprehensive study has been carried out on the logistics chains of the Port of San Antonio including the modelling and analysis of the entire range of port-logistic processes.

Lastly, other projects have dealt with demand analysis and/or financial and cost-benefit analysis of new infrastructures or logistics facilities in ports and intermodal corridors.

In short, the Port Logistics programme, together with the other specialized areas of Fundación Valenciaport, is part of the common aim to keep the Valenciaport cluster at the very forefront of knowledge and expertise and to consolidate Valencia's position as a logistics benchmark for the Mediterranean and for Europe.

FUNCTIONAL AND OPERATIONAL DESIGN OF THE NEW PREGATE FOR THE PORT OF BUENOS AIRES

PUERTO BUENOS AIRES

CLIENT / FUNDING ENTITY: Port of Buenos Aires (General Port Administration).
DATE: 2017
LOCATION: Buenos Aires (Argentina)
CONTACT:
Salvador Furió Pruñonosa - Director of Innovation and Cluster Development- sfurio@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

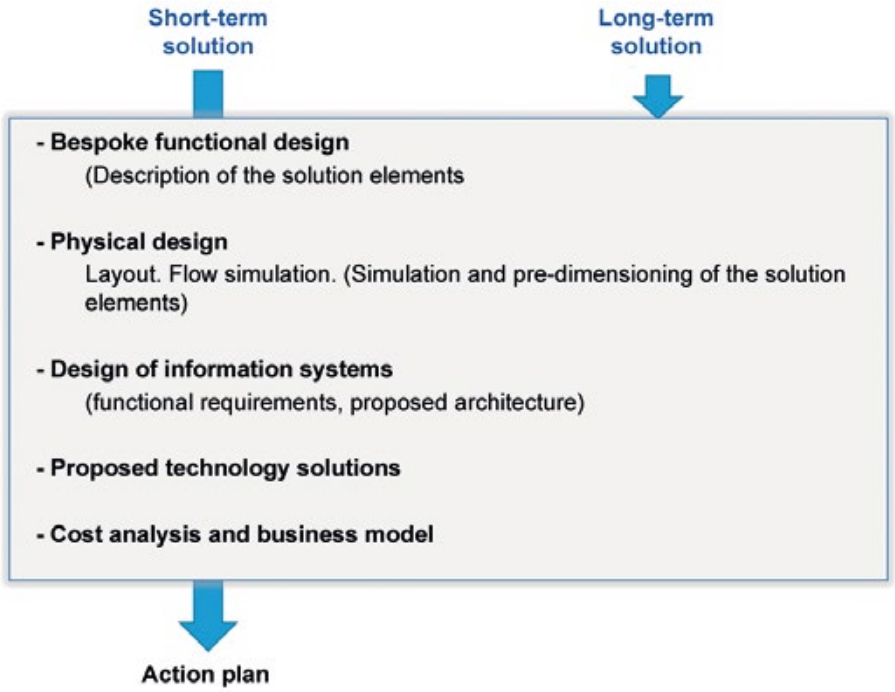
The aim of the project is to draw up a detailed design of a new pregate solution for the Port of Buenos Aires (PBA). This should include the functional and operational design, the physical design, in addition to the design of the technology and information systems that support the solution, as well as any associated cost analysis and business modelling.

The project is part of a process of renovation and profound change in the PBA driven by a number of circumstances: arrival of a new management team, end of the concession period for the container terminals, end of the concession period for the Port Vehicle Traffic Control, and development of other infrastructure projects with a direct impact on the activity of the port, such as the project for the new Waterfront Highway (Paseo del Bajo) or the plan to revive the railways, among others. The project takes as its starting point the findings of a preliminary study "Road Traffic Diagnostics in the PBA. Proposed Solutions and Bespoke Action Plan", in which one of its recommendations is to implement a new *pregate* solution for the new structure of the Port of Buenos Aires.

METHODOLOGY

Given the need to coordinate the new *pregate* solution with changes to the port, a work methodology was drafted defining both a short-term solution and a long-term one.

In both cases, the following stages were implemented:



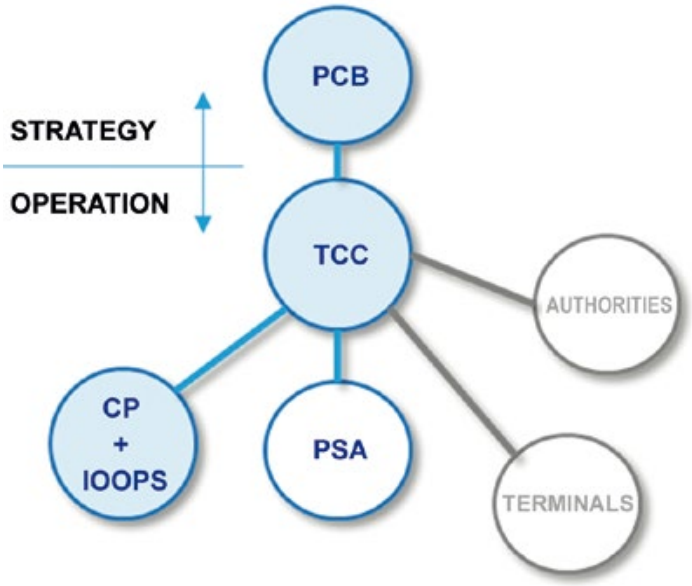
RESULTS

SHORT-TERM SOLUTION

The new short-term *pregate* solution aims to respond to a five-year framework marked by the impact of the traffic flow from the work on Paseo del Bajo and Villa 31, as well as the reorganization of the terminals linked to the completion and expansion or renewal of the concessions.

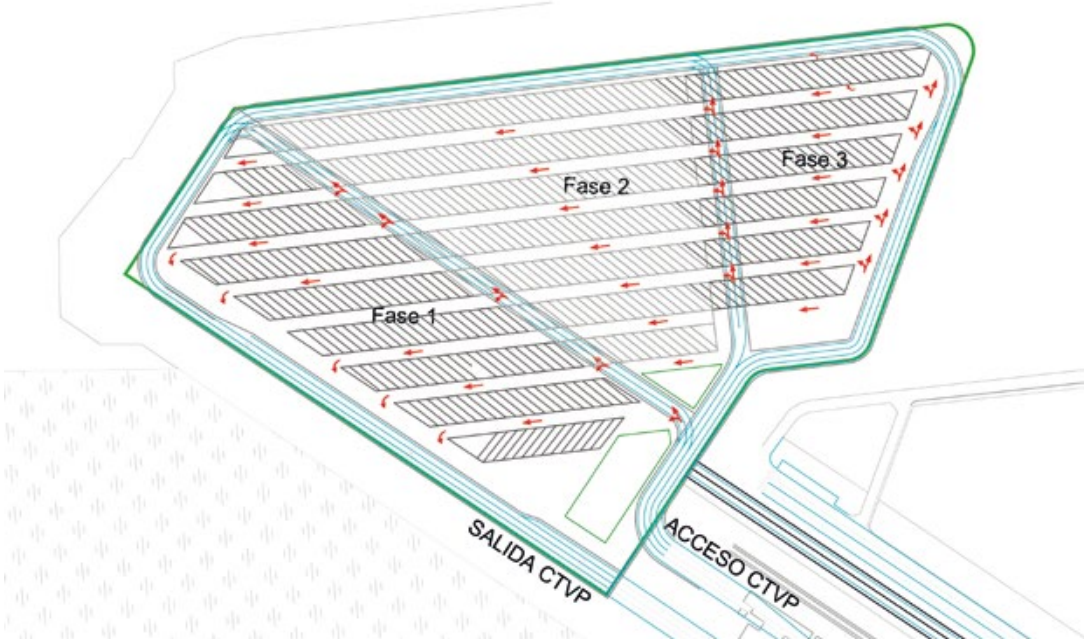
The proposed solution advocates a new *pregate* system comprising the following elements:

La solución propuesta plantea un nuevo sistema de 'pregate' compuesto por los siguientes elementos:

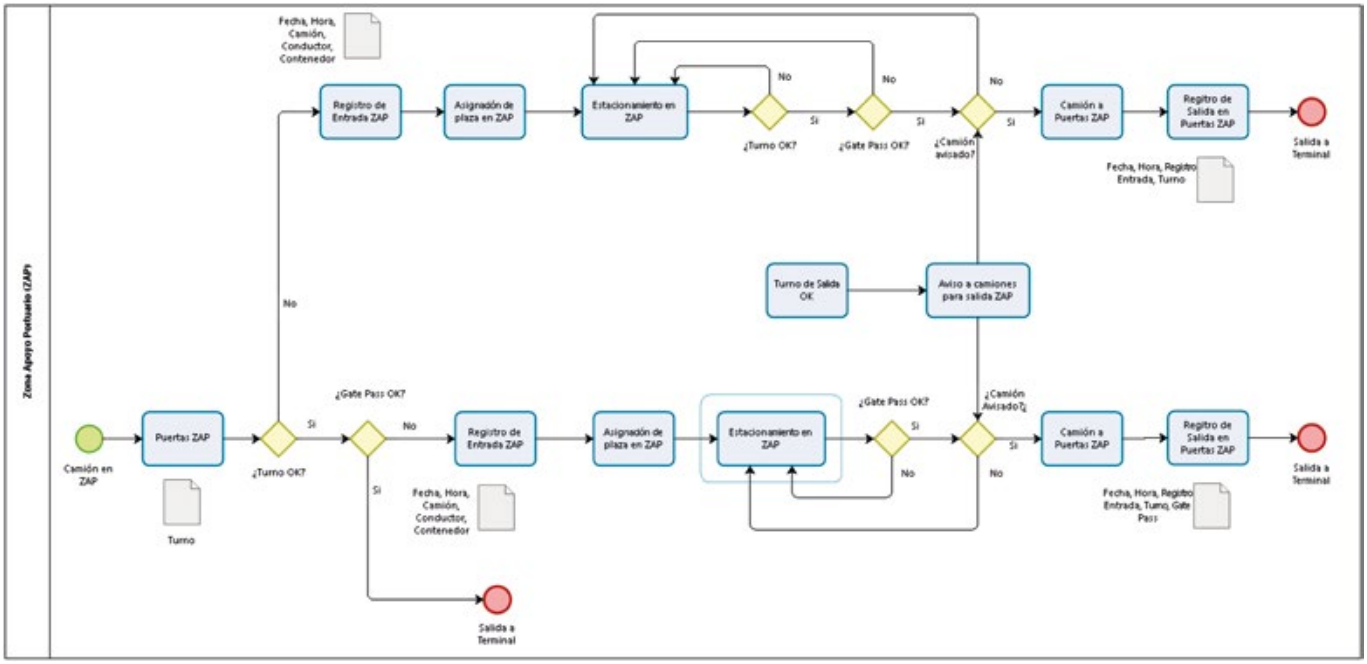


Elements of the Short-term Pregate Solution

- **Coordination Board (PCB): High-level structure primarily comprising** representative from General Ports Administration, Prefecture, Police, Customs, City of Buenos Aires, Ausa, Freight companies, Customs brokers and Terminals, for making strategic decisions that affect the management of traffic in the PBA area.
- **Traffic Control Centre (TCC):** Centre administered by the PBA with access to CCTV images, information from a new operating panel for managing and controlling traffic in and around the PBA, and with direct contact with terminal operations, the PSA and transit agents. In addition to its security function, it will be in charge of:
  - Controlling the state of traffic in the port area
  - Initiating the response of the proper authorities when situations are identified that affect traffic and that require their involvement
  - Ensuring coordination between the PSA and the terminals
  - Managing and coordinating actions by checkpoints (North and South)
  - Ensuring the good management of heavy traffic in the port area
- **Checkpoints (CP):** Potential checkpoints set up in the North and South access routes to the PBA, with permanent contact via TCC and mobile devices access to shift and gate-pass information, to manage truck traffic until their arrival in the port areas and direct them to the PSA, terminals and any other additional buffer areas as appropriate.
- **Port Support Area (PSA): Its primary function is to act as a parking buffer** and oversee traffic as it makes its way towards the terminals. With the potential to provide 24/7 coverage and attending to all kinds of traffic (trucks delivering full containers for export; trucks delivering empty containers; trucks to take away full containers for import; trucks to take away empty containers). The PSA boasts some 3.5 hectares, and feasibly a 9-hectare capacity in the short to medium term.



ZAP Layout. Stages of development



ZAP Process

- **Controlled and/or exclusive lanes:** 'Exclusive' and controlled lanes for truck traffic in the stretch between the PSA and the terminals. The aim is to segregate heavy-vehicle traffic from the intense traffic from the city to avoid traffic jams. These lanes will be controlled by TCC.
- **Information Systems (IS):** The information systems for the short to medium term solution and the PSA management system, the TCC control panel and the mobile solution for the checkpoints.

TCC CONTROL PANEL - KPIs definition

ZAP + CCT + PVP + LOOP + SI

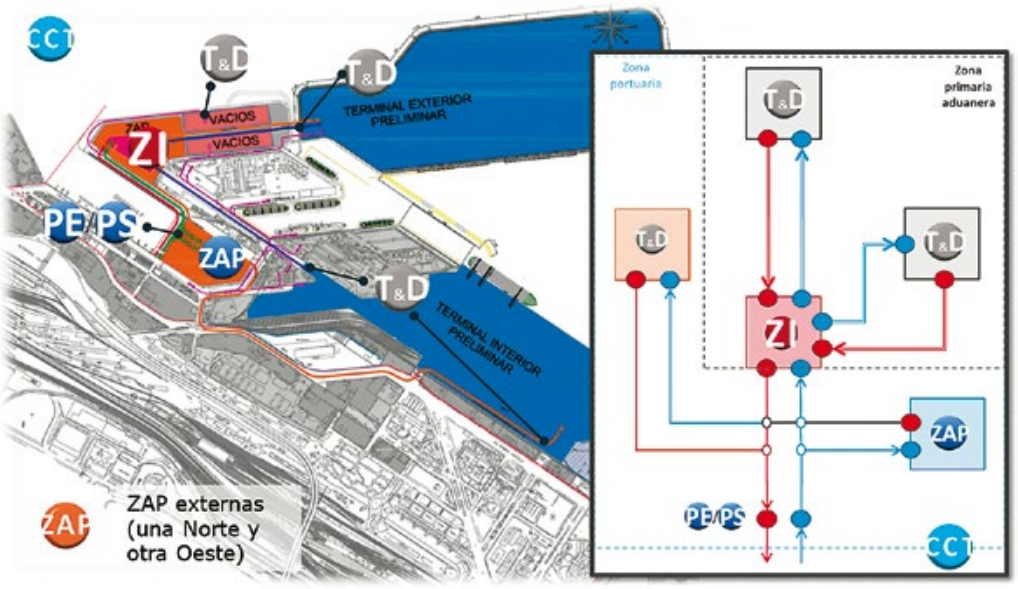
KPI - Definition	KPIs	Sources	Update frequency
Level of congestion along the different stretches of the main roads	**Clear, slow, very congested** (Others: ADT – Average Daily Traffic; speed; vehicle group: service level A, B, C, D, E and F)	**Computer vision** (automated analysis of the CCTV footage) **Google Maps, Wazer, BA Móvil etc.**	**~15 min**
Service level of the entry gates for each of the terminals	**Number of trucks (gate-in) per hour** (total and subtotal per type of traffic)	**Gate information that the terminals send to the GPA**	**~15 min**
Service level of the exit gates for each of the terminals	**Number of trucks (gate-out) per hour** (total and subtotal per type of traffic)	**Gate information that the terminals send to the GPA**	**~15 min**
No. of trucks within the terminal	**Number of trucks within the terminal**	**Gate information that the terminals send to the GPA**	**~15 min**
No. of shifts assigned	**Number of shifts assigned per hour** (total and subtotal per type of traffic)	**Gate information that the terminals send to the GPA**	**~60 min**
Service level of the entry gates of the PVTC (PSA)	**Number of trucks (gate-in) per hour** (total and subtotal per type of traffic)	**Gate information that the PVTC (PSA) send to the GPA**	**~15 min**
Service level of the exit gates of the PVTC (PSA)	**Number of trucks (gate-out) per hour** (total and subtotal per type of traffic)	**Gate information that the PVTC (PSA) send to the GPA**	**~15 min**
No. of trucks within the PVTC (PSA)	**Number of trucks within the PVTC (PSA)**	**Gate information that the PVTC (PSA) send to the GPA**	**~15 min**
Transit time from PVTC (PSA) to each of the terminals	**Average transit time from gate-out PVTC (PSA) to terminal gate-in**	**Gate information from terminals and PVTC (PSA)**	**~60 min**
Predicted activity level for each of the terminals	**Predicted activity level of the terminal in number of daily operations (by ship and land)**	**Predicted information about the terminal**	**Weekly**

TCC Control Panel

LONG-TERM SOLUTION

The new long-term *pregate* solution aims to respond to a new port structure with a closed port area, the integration of terminals and a new exterior terminal, dedicated lanes, controlled transport flows and centralized customs control.

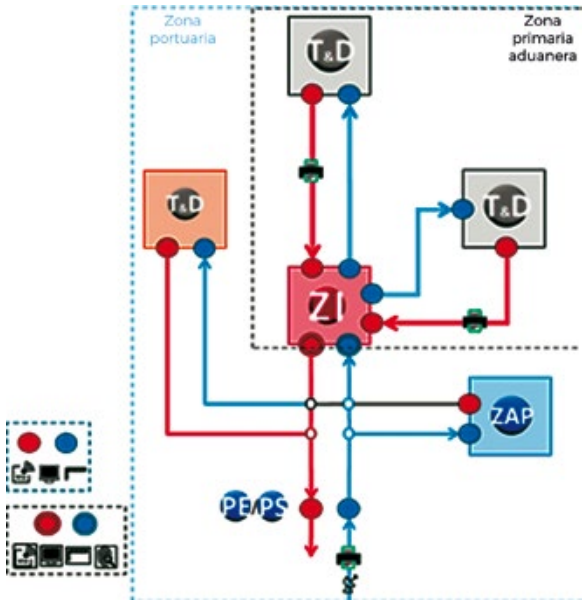
The proposed solution puts forward a new *pregate* system comprising the following elements: Entry and exit gates with automated control (EG, XG), Port Support Area (PSA), Inspection Area (IA), Traffic Control Centre (TCC), dedicated lanes between the CIA and terminals, entry and exit gates with automated control in terminals and empty container depots, Integrated Transport Operations System (ITOS).



Long-term "pregate" solution elements

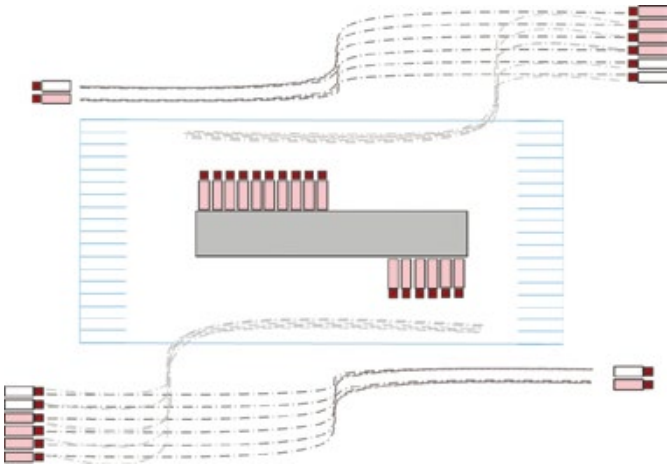
- **Automated entry and exit gates (EG/XG):** One of the new elements of the long-term solution is the automated gates system equipped with a barrier system and with different integrated technologies (integrated port system - IPS) which automatically activates a series of controls.

Identification technologies. Automatic doors



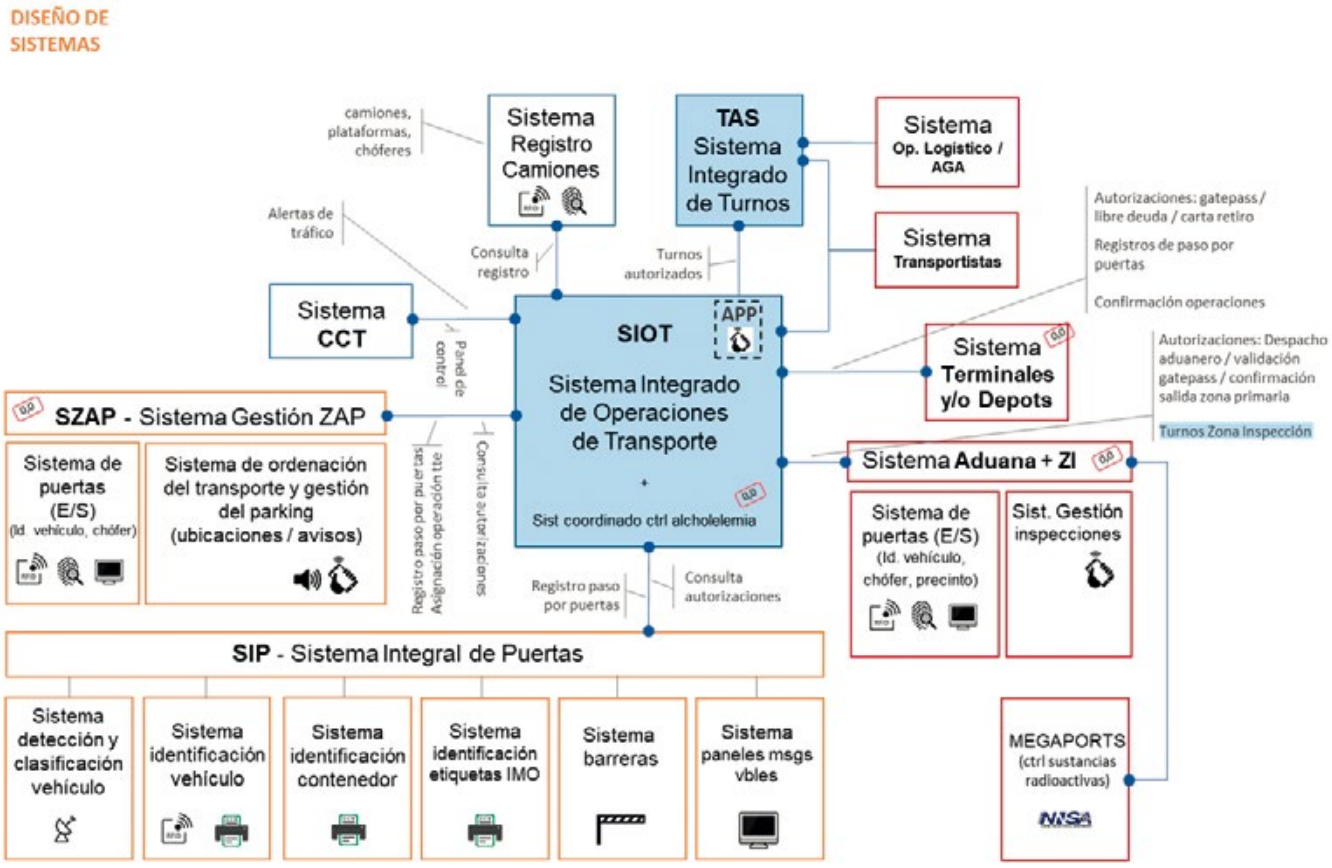
Automatic gate equipment. Location of identification technologies

- **Customs Control and Inspection Area (CIA):** Another new element of the long-term solution is the centralized Customs and Inspection control area that will be equipped with a shift system coordinated using the terminal shift system and integrated with the integrated ports system (IPS), PSA system and TCC. The primary control operations to be carried out in the IA are: Custom control status of loaded containers for export or import, control and seals for loaded containers for export, control and seals for empty containers, radioactive controls (mega ports), ramp inspection, x-ray inspection, attaching of satellite container seals.

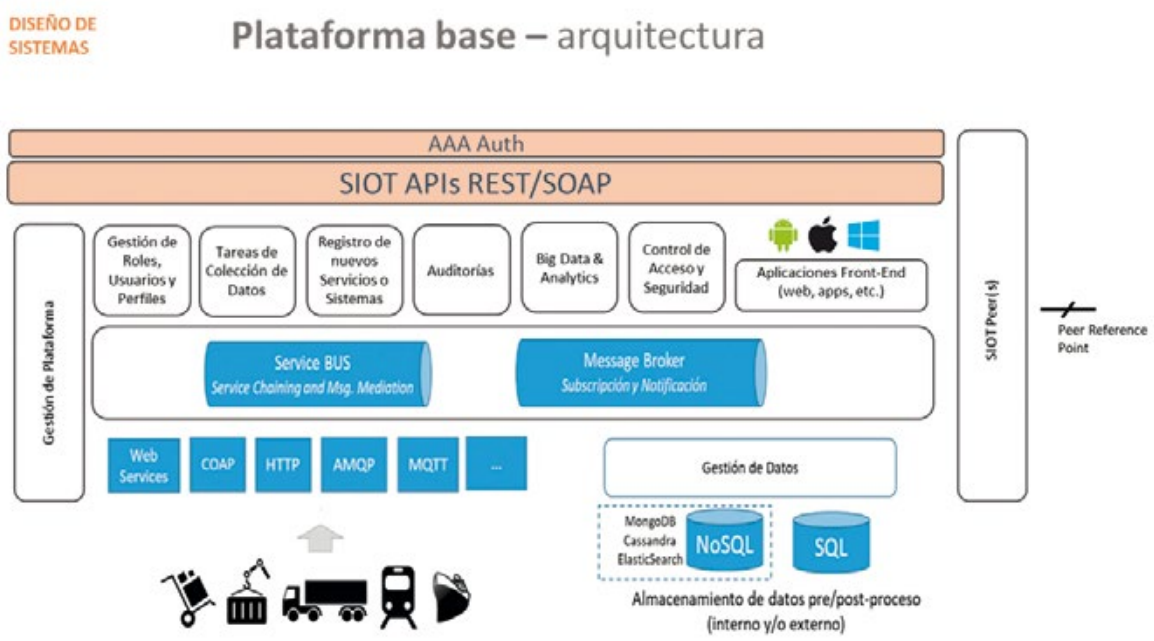


Layout of the potential inspection area

- **Integrated Transport Operations System (ITOS):** The proposed long-term solution requires an information system capable of integrating and coordinating the different elements and systems that form part of the solution. The following diagrams summarize the overall proposed architecture: field platform and base platform.

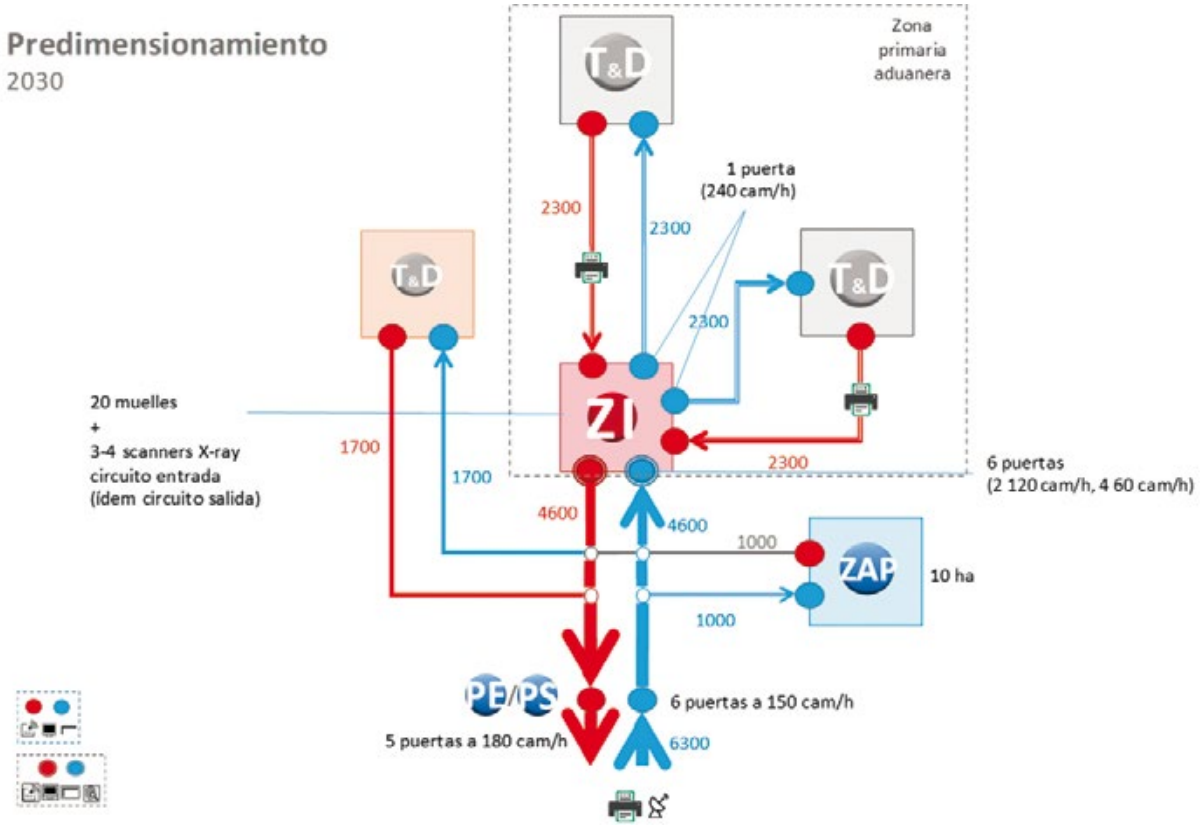


Systems architecture. ITOS. Field platform



Systems architecture. Base platform

For the pre-dimensioning of the different elements **of the new *pregate* solution,** a simulation tool will be developed that will enable the generation of different scenarios based on the estimated transport flows and its distribution over the course of the day. It will also allow the introduction of any additional hypothesis required and dimension it according to the number of gates, inspection scanners, inspection docks, surface area of the PSA, etc. The following diagram summarizes the flows and pre-dimensioning for one of the scenarios in 2030.



Pre-dimensioning of the elements of the pregate solution. Scenario (1) 2030

COREALIS – CAPACITY WITH A POSITIVE ENVIRONMENTAL AND SOCIETAL FOOTPRINT: PORTS IN THE FUTURE ERA

Horizon 2020
European Union funding
for Research & Innovation

CLIENT / FUNDING ENTITY: European Commission, H2020 Programme
DATE: May 2018 – April 2021
LOCATION: European Union
WEBSITE: https://www.corealis.eu/
CONTACT:
Salvador Furió Pruñonosa - Director of Innovation and Cluster Development- sfurio@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

MOTIVATION

The COREALIS project is one of three projects selected as part of the "The port of the Future" call for proposals. It puts forward an innovative and strategic framework supported by disruptive technologies that include the Internet of Things (IoT), big data, advanced traffic management and 5G networks so that ports can face up to both current and future challenges of capacity, traffic, efficiency and sustainability.

The innovations proposed in the project go far beyond the state of the art and their aim is to increase the efficiency of port operations and optimize land use while being economically sustainable and respecting the principles of the circular economy and environmental sustainability. These innovations are:

- **COREALIS Green Truck Initiative** to improve the efficiency of ground transport that will implement:
  - A dynamic ground transport management system using appointments to be able to coordinate and optimize the arrival of trucks to the Port based on city traffic, the capacity of the terminals and other port operations so as to minimize queues, waiting times and congestion. This innovation will be tested in the ports of Valencia and Haminakotka.
  - A Marketplace so that port terminals can share container-ship platforms via bookings through an online platform and thus reduce the total number of port facilities. This marketplace will be deployed in the Port of Antwerp.
- **The COREALIS Cargo Flow Optimizer whose aim is to provide port operators and container terminals** with the load movements and flows between all the intermodal modes of transport. This platform will be deployed in the Port of Antwerp.
- The **COREALIS Predictor,** which is a tool for the dynamic and streamlined managements of port facilities through predictive maintenance which reduces maintenance costs, the stock of parts and, thus, lengthens the service life of port equipment. This platform will be deployed in the port of Piraeus.
- **COREALIS PORTMod,** which consists of a simulations tool the aim of which is to increase the operational efficiency, the security of port staff and the real-time analysis of emissions through modelling and the exchange of information, optimizing the load and data flows within the port and terminals. This platform will be tested in the Port of Haminakotka.
- **COREALIS RTPORT,** which will deploy a system for the real-time control of port operations via a 5G network. This system will be implemented in the Port of Livorno and will be used for general freight operations.
- The game **COREALIS "Port of the Future",** the aim of which is to assess the feasibility and sustainability of the socio-economic and environmental growth of a port located in a coastal and urban environment and which moreover will enable different stakeholders, both public and private, to assess the implications of the growth and expansion of the port.

- El **COREALIS green cookbook,** the aim of which is to help ports to reduce their emission of greenhouse gases, their carbon footprint, assess their energy profiles and move towards a cleaner transport system with a more sustainable energy source.
- The **COREALIS Innovation Incubator Programme,** the aim of which is to make ports the epicentre of the local landscape over which to support the growth of local industry, enterprising SMEs and start-ups to create synergies that boost innovation in the port sector.

Innovations will be implemented and tested under real functional conditions in five Living Labs in the COREALIS ports, which are five large ports all over Europe: the ports of Piraeus, Valencia, Antwerp, Livorno and Haminakotka.

OBJECTIVES:

Social and technological innovations fostered in COREALIS for each of the ports taking part in the project are designed to meet the following aims:

Objective 1. Adopt circular economy models for both the strategy and port operations.

Objective 2. Reduce the carbon footprint of ports associated with intermodal connections and the urban environment which surrounds it in the three primary modes of transport: road/truck, railway and inland waterways.

Objective 3. Improve operational efficiency as well as optimizing the port capacity and freight transportation without the need for any additional infrastructure investment.

Objective 4. Allow ports to make medium and long-term strategic decisions based on information and data and becoming as such urban innovation centres.

The aims mentioned above will be achieved through the implementation of a three-stage methodology:

1. Identification of port requirements, which include technical, operational, social, environmental, legal, security requirements, etc. (Stage 1).

2. Technical design and development of the different COREALIS innovations (Stage 2).

3. Large-scale deployment of the innovations in the Living Labs (LLs) with the corresponding impact assessment of the COREALIS innovations.

RESULTS:

The aim of COREALIS is to take a step forward so that future ports maximize their capacity and efficiency at the same time as they minimize their investment in infrastructures and improve the port-city relationship. To that end, the COREALIS project hopes to have a multidimensional impact and a high potential for innovation across all areas:

- **Impact on the environment: one of the main challenges for European ports is to reduce the negative environmental effects on the local communities which are caused, for the most part,** by the handling of goods and by associated transport activities. For that reason, the COREALIS innovations aim to decrease the environmental impact of ports by reducing CO2 emissions and the noise caused by port operations.
- **Impact on operations:** Ports are faced with the challenge of adapting themselves to current tendencies of world trade which compels them to effectively and efficiently manage their ever-growing volumes and concentrations of traffic. Accordingly, the wide range of ICT components of the COREALIS project are focused on meeting the capacity and efficiency aims. The proposed framework aims to improve the efficiency of terminal operations, maximize the use of infrastructures and the facilities and reduce operational costs, as well as other externalities such as congestion, idle runs and idle times.
- **Impact on society:** The establishment of a two-way relationship with the urban areas surrounding the ports is of paramount importance for COREALIS, which also has the aim of keeping citizens and interest group satisfied by improving the quality of life and the port-city relationship. COREALIS aims to establish effective and efficient connections with the hinterland and promote the use of most efficient modes of transport from an energy and environmental perspective and the railway or the inland waterways. It also aims to foster the smart urban growth of port cities, allowing port administrators to make informed decisions about sustainable policies together with the rest of the interested parties from the city.

STM VALIDATION

Co-financed by the Connecting Europe Facility of the European Union

CLIENT / FUNDING ENTITY: European Commission, Connecting Europe Facility Programme
DATE: January 2015 – December 2018
LOCATION: European Union
WEBSITE: www.stmvalidation.eu
CONTACT:
José Andrés Giménez Maldonado - Director of Port Logistics - jagimenez@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

The main aim of this project is to validate the set of technologies, systems and procedures that show the feasibility of the **Sea Traffic Management concept as a new maritime traffic management system in Europe.**

Sea Traffic Management aims to substantially increase the safety levels in shipping, reduce its associated carbon footprint and boost the European internal market, proposing a totally connected and digitized maritime ecosystem between stakeholders, both on land and at sea, deriving the following benefits:

- Providing the foundations for right routing, resulting in shorter journeys and consequently optimizing the use of energy, and improving shipping security.
- Synchronizing the arrival in port of the different agents involved in the process (ship, shipping company, pilots, tugs, Maritime Authority, Port Authority, etc.) enabling green or slow steaming over the last stage of the shipping route.
- Enabling fast turnaround processes, facilitating the necessary information to carry out just-in-time operations to the providers of port services.
- Synchronizing processes related to the arrival and departure and port readiness.

DESIGN OF THE TRANSPORT IDENTIFICATION SYSTEM FOR FOREIGN TRADE AND DRIVERS

CLIENT / FUNDING ENTITY: Chilean Ministry of Transport and Telecommunications, National Strategic Logistics Programme for Exports
DATE: April 2017 – September 2017
LOCATION: Chile
CONTACT:
Miguel Llop Chabrera - Director of Digital Transformation - mllop@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

The aim of the project is to design the Transport Identification Systems for Foreign Trade (SIT by its initials in Spanish), considering the following components:

a) Transaction system to validate the information of transport businesses and their resources: trucks and drivers. This system will be open to consultation and the design should consider the technical, economic and regulatory feasibility of its deployment, taking into consideration that said system will interoperate with the different stakeholder systems, such as ports, terminals, logistics operators, freight companies, as well as the Public Services with whom the validations will be carried out that enable us to have updated information of companies and drivers.

b) Web module registry for transport companies, its fleet of vehicles and drivers. This Web should have information forms and user profiles. The information entered will be validated by the transaction system described above.

TECHNICAL ASSISTANCE FOR A FINANCIAL ANALYISIS OF A BORDER INSPECTION POST IN THE PORT OF SAGUNTO

CLIENT / FUNDING ENTITY: Port Authority of Valencia
DATE: November 2017 – December 2017
LOCATION: Valencia
CONTACT:
Amparo Mestre Alcover - Market Intelligence - Area Manager - amestre@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

The aim is to carry out a financial feasibility analysis of the project included in the 2018 Business Plan for the construction of a Border Inspection Post (BIP) in the Port of Sagunto. This infrastructure, which will cost 4 million euros, will provide the Port of Sagunto with a greater competitiveness, by allowing it to expand the type of goods that it receives at its facilities. Up to now, only goods of plant origin can enter the Port of Sagunto, so the setting up of the new BIP will enable it to carry out controls of goods of animal origin. From the new inspection post, the Spanish Ministry of Health, Agriculture, Industry and Trade will carry out any necessary health, veterinary and plant-protection checks on all goods imported from the European Union with the aim of preventing potential risks to the population.

MULTIDIMENSIONAL SURVEY OF LOGISTICS CHAIN PROCESSES AT THE PORT OF SAN ANTONIO AND PROPOSED SOLUTIONS FOR ITS OPTIMIZATION

PUERTO SAN ANTONIO

CLIENT / FUNDING ENTITY: San Antonio Port Authority (EPSA)
DATE: October 2016 – September 2017
LOCATION: Chile
CONTACT:
Salvador Furió Pruñonosa - Director of Innovation and Cluster Development- sfurio@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

Identify improvements to optimize the logistics chain of the Port of San Antonio (Chile) with the incorporation of new procedures, business rules, regulatory elements (sites or others), Implementation of Technologies via PCS (Port Community System) type Information Systems, hardware platform to carry out system-specific services, technological elements for the automated capturing of data, identification of all the necessary interactions for the integration of processes between companies, as well as configuration upgrades of the sites where activities linked to the aforementioned processes are carried out and lastly business models that enable the use of said technological platforms and implementation sites of logistics activities.

CONNECT VALENCIAPORT - IMPROVEMENT OF THE HINTERLAND RAIL CONNECTION AND MARITIME ACCESIBILITY TO THE PORT OF VALENCIA

Co-financed by the Connecting Europe Facility of the European Union

CLIENT / FUNDING ENTITY: European Commission, Connecting Europe Facility Programme
DATE: January 2014 – December 2020
LOCATION: European Union
WEB: http://www.connectvalenciaport.eu/
CONTACT:
Salvador Furió Pruñonosa - Director of Innovation and Cluster Development- sfurio@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

The CONNECT VALENCIAPORT project aims to improve the rail connection of the Port of Valencia with its hinterland, the ultimate goal of which is to increase the number of containers and the volume of goods that enter and leave the Port of Valencia by rail, thus improving the competitiveness of businesses in the hinterland of the Port of Valencia thanks to the increase in efficiency of rail operations and the reduction of costs. The development of rail as a continuity to maritime transport is a strategic factor to be able to face up to the new challenges stemming from the growth and concentration of traffic, tendencies will be heightened in the future.

Specifically, the CONNECT VALENCIAPORT project tackles the most urgent problems to affect the rail infrastructure of the Port of Valencia, coping with the interoperability shortcomings of the port-rail infrastructure with the Mediterranean Corridor. Thus, the project includes studies and construction, and focuses both on adapting the rail infrastructure to the UIC gauge through the deployment of a third track, and the operating of trains of up to 750 metres in length. Additionally, security will be improved by eliminating five level crossings and an increase in the control of rail operations within the port enclosure.

CAPACITY4RAIL - INCREASING CAPACITY FOR RAIL NETWORKS THROUGH ENHANCED INFRASTRUCTURE AND OPTIMISED OPERATIONS

CLIENT / FUNDING ENTITY: European Commission, VII Framework Programme
DATE: October 2013 – September 2017
LOCATION: European Union
WEB: www.capacity4rail.eu
CONTACT:
Salvador Furió Pruñonosa - Director of Innovation and Cluster Development- sfurio@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

The primary aim of the project is to define the vision of the railways sector in Europe in 2050, identifying the main changes anticipated in the design, construction, maintenance and management of goods shunting and transhipments operations in the terminals. Capacity4Rail wants to help to increase the capacity, availability and performance of the rail system based on identifying the necessary changes in the design of the infrastructure, the construction and maintenance, operational management, the management of incidents with real-time information, freight operations with a special focus on transhipment.

TECHNICAL ASSISTANCE FOR THE COST-BENEFIT ANALYSIS OF THE MASTER PLAN OF THE PORT OF SAGUNTO ACCORDING TO THE MEIPOR 2016 METHOLOGY

CLIENT / FUNDING ENTITY: Port Authority of Valencia
DATE: July 2017 – October 2017
LOCATION: Valencia
CONTACT:
Amparo Mestre Alcover - Market Intelligence - Area Manager - amestre@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

Technical assistance to the Port Authority of Valencia (PAV) to carry out the cost-benefit analysis of the Master Plan of the Port of Sagunto according to MEIPOR 2016 methodology. The PAV carried out a review of the current Master Plan for the Port of Sagunto in order to adapt the scheduling contained in the document to the evolution of traffic and infrastructure needs. Addressing the provisions of section 54.1 of Royal Legislative Decree 2/2011, of 5 September, approving the Consolidated Text for the State Ports and Merchant Navy Act, the Master Plan should include: the assessment of the initial situation of the port when the Master Plan was originally drafted, the definition of the development needs of the port with at least a ten-year timeframe, to determine the different development alternatives, the analysis of each one of them and the selection of the most suitable one, the Environmental Report should the plan have to be subjected to strategic environmental assessment, traffic forecasting, the capacity of infrastructures and facilities and their degree of use in each of the development stages, the economic evaluations of investments and resources, the financial and cost-benefit analysis and the definition of the road and rail network of the service area, consistent with the current and predicted road access. Technical assistance focused on drafting the financial and cost-benefit analysis contained in the aforementioned section.

TECHNICAL ASSISTANCE WITH THE FINANCIAL ANALYSIS OF THE PROJECT TO INCREASE THE DRAFT OF THE TRANSVERSAL COASTAL DOCK IN THE PORT OF VALENCIA

CLIENT / FUNDING ENTITY: Port Authority of Valencia
DATE: May 2017
LOCATION: Valencia
CONTACT:
Amparo Mestre Alcover - Market Intelligence - Area Manager

PROJECT DESCRIPTION (ABSTRACT):

The aim of the technical assistance was to carry out the financial feasibility analysis of the project to increase the draft of the Transversal Coastal Dock in the Port of Valencia, included within the Investment Plan of the Port Authority of Valencia, in keeping with the Evaluation Method of Port Investment (MEIPOR, 2016), drafted by the Spanish State Ports Authority, using demand forecasting to estimate future traffic in the terminal, as well as revenue and expenditure forecasting for the Port Authority stemming from the project.

TECHNICAL ASSISTANCE FOR THE COST-BENEFIT ANALYSIS OF RAIL ACCESS PROJECTS TO THE PORT OF SAGUNTO AND IMPROVEMENTS TO THE SAGUNTO-TERUEL-ZARAGOZA RAILWAY LINE

CLIENT / FUNDING ENTITY: Port Authority of Valencia
DATE: February 2017 – April 2017
LOCATION: Valencia
CONTACT:
Amparo Mestre Alcover - Market Intelligence - Area Manager - amestre@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

The aim of the project was to carry out an economic and financial feasibility analysis of two projects included as part of the 2017 Business Plan for the Port Authority of Valencia; rail access to the Port of Sagunto and the improvement to the Sagunto-Teruel- Zaragoza railway line. Said line forms one of the communication axes of the Port of Valencia to the rest of the Peninsula, which is why the Port Authority is interested in consolidating it, assessing the potential of carrying out improvements paid for by the Financial Fund for Port Road Accessibility, in order to facilitate the circulation of longer trains along the corridor. As for activities in rail access to the Port of Sagunto, it aims to resolve the current situation and provide the port with a connection to the Rail Network of General Interest.

The methodological focus used to carry out the economic and financial feasibility analysis was in keeping with that set out in "Revision and Upgrade of the Assessment Method of Port Investment" (MEIPOR 2016), drafted by the Spanish National Ports Authority. Along these lines, the analysis incorporated the following components set out by MEIPOR 2016: analysis of the context and aims of the project; identification of alternatives; projects definition; financial analysis; economic analysis and sensitivity and risk analysis.

TECHNICAL ASSISTANCE REGARDING SHORT SEA SHIPPING AND PORT INFRASTRUCTURES SPECIALIZING IN FREIGHT AND PASSENGER TRANSPORT IN FERRY TYPE VESSELS

CLIENT / FUNDING ENTITY: Peruvian Ministry of Transport and Communications
DATE: December 2017
LOCATION: Peru
CONTACT:
Eva Pérez García - Director of Promotion of Innovation and Sustainability - eperez@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

The activities carried out are as follows:

- Raising awareness of the current situation of cabotage in Peru.
- Analysis and drafting of an outcome report on the current situation of cabotage in Peru.
- General recommendations about how to approach the future of cabotage in Peru and technical opinion about the proposed cabotage regulation.
- Opinion and recommendations regarding the feasibility of short sea shipping along the Peruvian coast, through the use of roll on/roll off, ferry type vessels.

LOGISTICS INFORMATION SYSTEM

CLIENT / FUNDING ENTITY: Uruguayan National Institute of Logistics (INALOG)
DATE: February 2017 – February 2018
LOCATION: Uruguay
CONTACT:
Miguel Llop Chabrera - Director of Digital Transformation - mllop@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

The primary aim of the project is to build a repository, called the "Logistics Information System (LIS)", for the consolidation, standardization, analysis and dissemination of relevant information for the Uruguayan logistics sector, bringing together and coordinating different constantly updated databases. The project will enable us to complete and improve the quality of existing information, analyse it and make it available to stakeholders in the logistics sector to bring about an increase in the overall competitiveness of the logistics chains. As such, the LIS be incredibly useful for those responsible for public policy by enabling them to deal with the making of decisions in their respective areas of expertise and assess the relative efficiency of the different measures put into place.

2.2.3. SUSTAINABILITY

Environmental sustainability has become one of the key concerns of society, the result of a greater social awareness and of the policies fostered by the public sector that focus on environmental improvement. As proof of this, according to the Eurobarometer 479, in 2018, 93% of European citizens have serious concerns about climate change and believe that it is caused by human activity. One catalyst of this heightened commitment to the environment is the perception of climate change as a challenge at a planetary scale that requires joint, coordinated actions to reduce greenhouse emissions, the causes of average temperature rises on the planet, and other environmental impacts that cause the acidification of the oceans and other damage to the marine environment.

The European Union has positioned itself at the forefront of action against climate change and has fostered a concrete global response within the framework of the Paris Agreement. Accordingly, the European Commission has published a document (COM(2018) 773 final) which outlines the long-term vision of a prosperous, modern, competitive Europe and with a neutral economy from a climatic perspective by 2050. This strategy shows how the EU would lead the way towards climate neutrality investing in technological solutions, empowering citizens, and coordinating actions in key areas such as industrial policy, finance, research and innovation.

The action plan for a neutral economy from a climatic perspective requires joint action in seven key strategic areas: energy efficiency, development of renewable energy, clean and safe mobility that improves connectivity, bio-economy, natural carbon sinks, and the capturing and storing of carbon emissions. Achieving these goals set out in these seven strategic priorities will help to make the 2050 vision a reality.

In keeping with situation described above, the aim of the subject of sustainability is to carry out R&D&i initiatives and projects to enable the maritime-logistics-port sector to steer towards a sustainable and neutral model from a climate perspective. All the while respecting one of the key principles of the Rio Declaration on the Environment and Development, which sets out that sustainable development consists of "meeting the needs of the present generation without compromising those of future".

Within the field of maritime-logistic-port sustainability, and helping significantly with the seven strategic

priorities defined by the European, new lines of action have arisen such as energy efficiency; the use of alternative fuels and the development of renewable energies to either power ships or run port equipment and for logistics purposes; commitment to clean and secure mobility; the creation of new business models in a circular economy, in the renewable energy sectors and the fuel conversion of transport assets and port machinery and logistics to new forms of propulsion tending towards zero emissions; carbon emission capturing and storage technologies in ports and logistics zones and the adaptation of infrastructures to climate change.

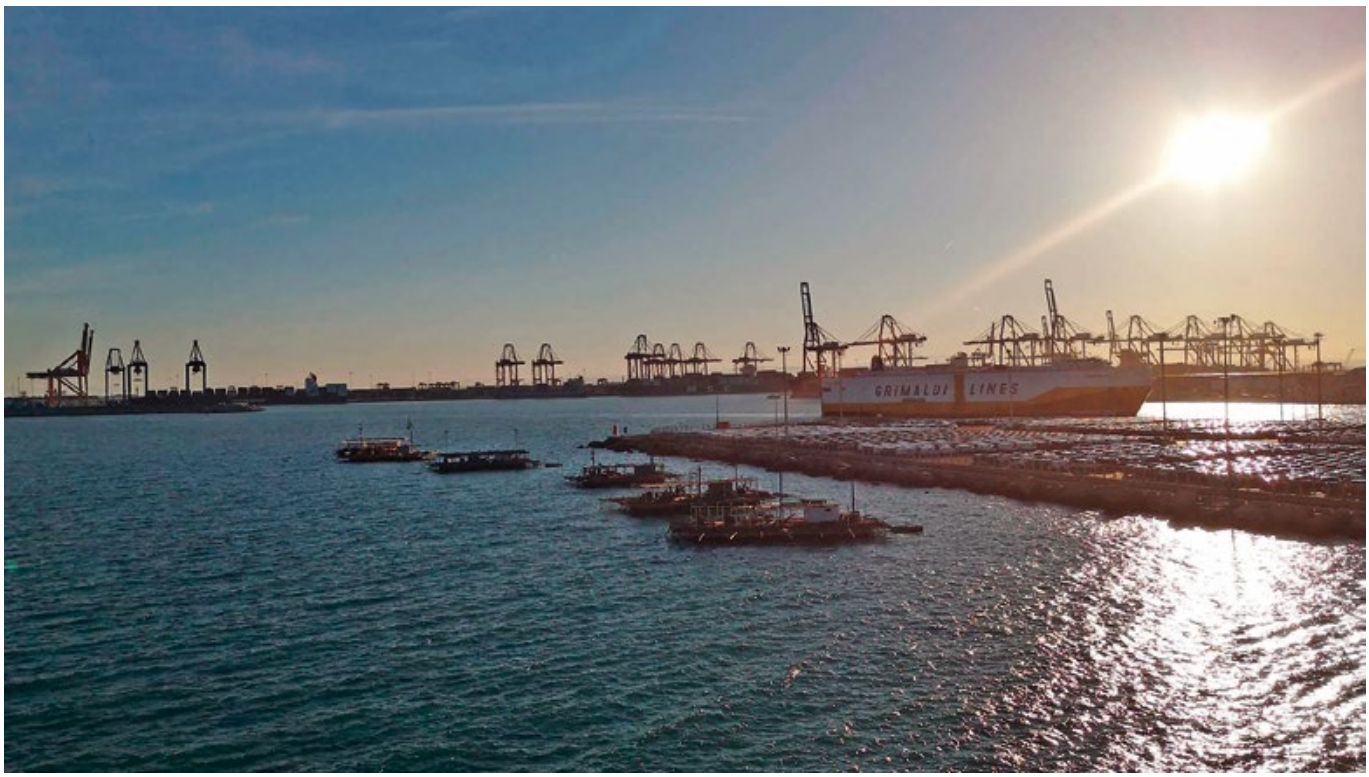
Between 2017and 2018, Fundación Valenciaport has continued working on projects to improve energy efficiency of the ports managed by the Port Authority of Valencia, managing as such to bring about a reduction of energy costs in the terminals and consequently an improvement in their level of competitiveness.

Similarly, projects have been carried out to prepare the port facilities for the provision of alternative fuels such as liquefied natural gas (LNG), as well as refitting and adapting ships for LNG. Additionally, studies have been carried out on the development of in-port renewable energy projects and work has begun on a pioneering project in Europe that encourages the use of hydrogen to run port machinery. As far as clean and safe mobility is concerned, mobility projects have also been undertaken using electric vehicles to improve connections between the port and the city.

With regard to the circular economy, in 2018 work began on the LOOP Ports project in which new circular economy business models are studied, analysing success stories from other sectors and international ports that might be deployed. Also, as part of this project, the first European network of ports collaborating in this type of initiative was set up.

Lastly, and also over the 2017-2018 period, work has begun on the impact of climate change on port infrastructures and the need to adapt to them given the different possible climatic scenarios in the future.

Over the coming years, rapid and substantial changes are expected in Spanish and European regulations, including: National Energy and Action Plans Against Climate Change in all EU countries, the possible declaration of the Mediterranean as an Emission Control Area (ECA), tightening up of emission regulations for the maritime sector and the banning of technologies that are unable to guarantee minimal levels of impact on seas and oceans, whereby it is only by continuing with the arduous work already underway can we guarantee that the maritime, logistics and port sectors are able to adapt to the changes required, emerging strengthened by this great environmental challenge demanded by society over the coming three decades.



LOOP-PORTS - CIRCULAR ECONOMY NETWORK OF PORTS

Climate-KIC is supported by the EIT, a body of the European Union

CLIENT / FUNDING ENTITY: European Institute of Innovation and Technology (EIT) through EIT Climate-KIC
DATE: October 2018– November 2020
LOCATION: European Union
WEB: www.loop-ports.eu
CONTACT:
Eva Pérez García - Director of the Promotion of Innovation and Sustainability - eperez@fundacion.valenciaport.com

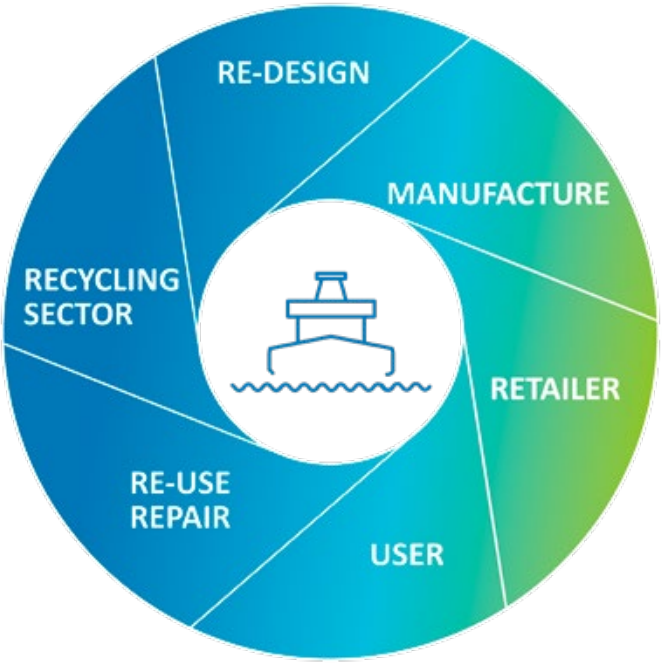
PROJECT DESCRIPTION (ABSTRACT):

MOTIVATION:

As part of its continued efforts to transform the European economy to a more sustainable one, in December 2015, the European Commission launched the "EU Action Plan for the Circular Economy [COM(2015)614]". The plan aims to facilitate and foster the transition towards a circular economy through the implementation of a series of proposed solutions in the areas of production, consumption, waste management, the secondary raw materials market and water recycling. Furthermore, the plan considers that encouraging research, growth and innovation is a key transversal element of this transition process. Furthermore, in 2017, the European Commission and the European Economic and Social Commission created the "European Circular Economy Stakeholder Platform", a platform whose aim is to facilitate political dialogue between interested parties and disseminate activities, information and best practices about the circular economy.

In this regard, the port is a key sector for the deployment of the EU Action Plan for the circular economy, given that it acts as a meeting and transit point for all kinds of industrial waste and flows, and acts as a logistics centre for the import and export of waste. The port environment is therefore an ideal place in which to assess and deploy circular economy strategies.

Despite the fact that in recent years a variety of different circular economy initiatives have been implemented in the port environment, the truth is that these have been developed in an isolated manner. A real move towards a circular economy requires the active and coordinated involvement of the port sector in this new production and consumption model. Said commitment should be possible with the help of LOOP-Ports, a project through which over the course of 2019, a network of circular economy ports will be created, the aim of which will be the transformation of the current system towards a new paradigm, tackling the most significant factors from the port perspective. Said network will provide know-how, expertise, best practice, policy recommendations, business models, training and new business opportunities for the ports sector and other related industries. Moreover, LOOP-Ports will attempt to include the circular economy to the strategic agendas of European ports through their interaction with the port stakeholders involved in the network and the European Sea Ports Organisation (ESPO), primary interface between European maritime ports and European institutions.



OBJECTIVES:

The primary aim of LOOP-Ports is to facilitate the transition towards a circular economy in the port sector, in which the value of products, materials and resources is maintained in the economy during the maximum time possible while minimizing the generation of waste. The project will help to make this transition possible through the creation a network of ports focusing on the circular economy, which will provide an innovation ecosystem based on port activities and will stimulate circular economy initiatives within the port environment. The network will focus on materials that generate high levels of emissions, primarily metal, plastics, cements and biomaterials.

Among its primary goals, the project aims to:

- Understand the intricacies of the port sector and its innovation needs, through the analysis of the main flows of materials generated and/or used in the ports sector, the identification of different initiative developed around the world in terms of the circular economy, as well as the technologies used for waste recovery.
- Help with the development of new products, processes and services that encourage the circular economy in port logistics activities as a consequence of the development of business models.
- Foster replication in EU ports of the initiatives and best practices identified.
- Identify specific synergies and complementarities between the different stakeholders in the port sector, in order to identify and assess best practices that might be significant in helping with the transition towards new circular-economy business models.

- Identify political and financial obstacles to the development of these initiatives and provide recommendations.
- Interact with the different agencies, initiatives and programmes launched at an EU level aiming to convert the European economy to a more sustainable one, as well as with the EU port associations, in order to share knowledge, best practices and policy recommendations.
- Identify opportunities and put forward financing mechanisms to encourage the creation of new circular economy initiatives linked to port activities.
- Strengthen the competencies and knowledge of the port sector through the development of three pilot training projects that will take place in Spain, Italy and Denmark.
- Generate a reliable and proven information point that collects the best practices analysed, as well as the main findings of the different activities carried out as part of the project.

GAINN4MOS AND GAINN4SHIP INNOVATION - LIQUEFIED NATURAL GAS AS A FUEL FOR SHIPS AND PREPARATIONS FOR THE SUPPLY IN PORTS

Co-financed by the Connecting Europe Facility of the European Union

CLIENT / FUNDING ENTITY: European Commission, Connecting Europe Facility Programme
DATE: January 2015 – September 2019
LOCATION: European Union
WEB: http://www.gainnprojects.eu/
CONTACT:
Eva Pérez García - Director of the Promotion of Innovation and Sustainability - eperez@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

MOTIVATION:

Emerging within the framework of port sustainability are new areas of development such as the use of alternative fuels, which are considered to be a key element for maintaining and even increasing the competitiveness of the shipping and port sector. The constant uncertainty in the evolution of energy costs when compared to fossil fuels, positions energy efficiency and the development of alternatives for ship propulsion based on less polluting fuels such as liquefied natural gas (LNG) as an improvement opportunity, to reduce greenhouse effect emissions in the maritime port and logistics environment, in keeping with the current strategy of the European Commission regarding emission reduction and the so-called 20/20/20 targets.

In this regard, the European Commission, as part of its goal to develop sustainable modes of transport, is giving a boost to different initiatives that encourage the use of alternative, less polluting and more efficient fuels. The fact that the Mediterranean has been classed as an ECA (Emission Control Area) in line with European Commission regulation that came into force in 2015 in the north of Europe and the coming into force of the 0.5% sulphur content world limit in fuels used on board ships as of 1 January 2020, impels the search for and the development of solutions that enable a reduction in the emissions generated on ships and at ports. In this situation, the use of LNG is seen as one of the most economically efficient and feasible alternatives.

More specifically, European Parliament Directive 2012/33/EU regarding the content of sulphur in marine fuels and international regulations by the International Maritime Organisation (IMO) that will come into force on 1 January 2020 have led shipowners to look for alternative fuel sources with a lower sulphur content that enables them to comply with the regulation. In this regard, the use of LNG is considered to be one of the most convenient routes for a number of EU member states, with the complete backing of the European Commission. Nevertheless, one of the major problems with the introduction of LNG is the lack of any kind of supply infrastructure networks capable of meeting the potential demand with reasonable assurance.

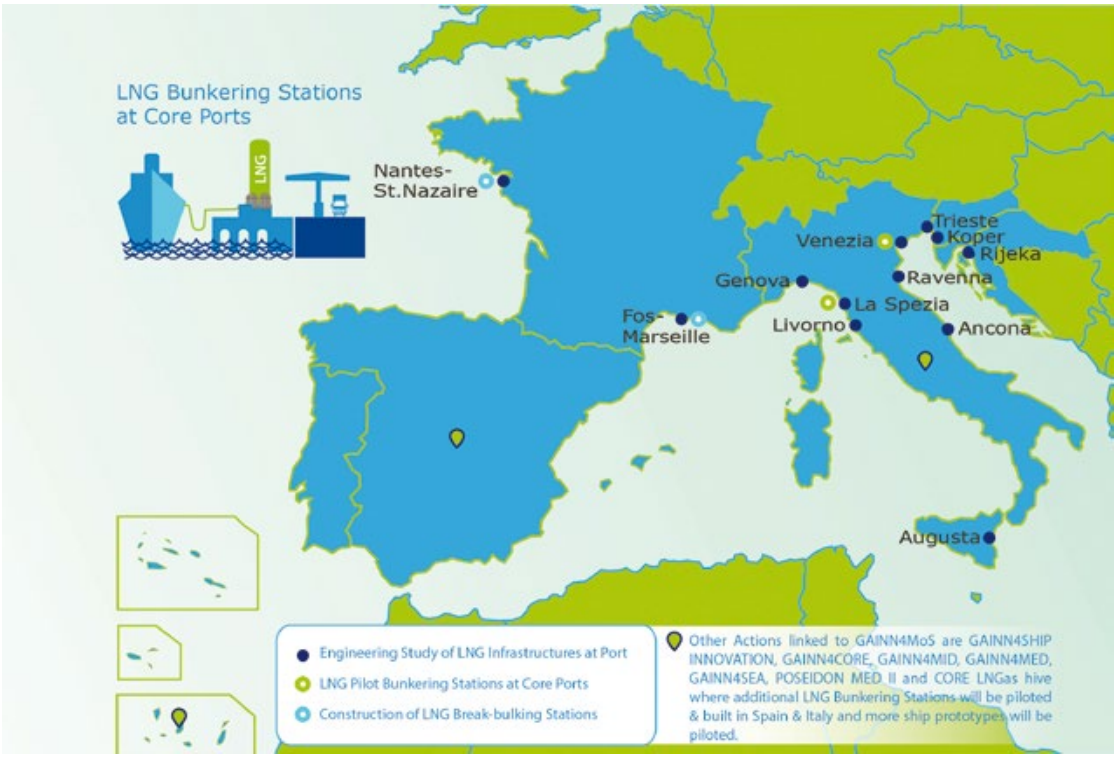
The work carried out within the framework of the GAINN4MOS and GAINN4SHIP INNOVATION projects has underlined the need to continue moving ahead in this potentially huge field in order to maintain the commitment to continued improvement outlined in the environmental policy the Port of Valencia and the rest of the project partner ports with which it works. Once the GAINN pilot projects were completed or near completion, other actions that have emerged along the way were launched for the deployment of solutions tested in GAINN, which we hope will achieve the desired results so that we can soon boast a large fleet of LNG vessels sailing to Mediterranean port facilities that are equipped to handle this type of fuel.

RESULTS from Sustainable LNG Operations for Ports and Shipping - GAINN4MOS

The aim of the GAINN4MOS project is to develop engineering studies and pilot fuel stations and ships propelled using Liquefied natural gas (LNG) in six member states: Spain, Portugal, France, Italy, Slovenia

and Croatia. From an administrative perspective, the GAINN4MOS project is divided in two given that Croatia is eligible for financing from the European cohesions fund, although the project framework is identical for both.

Specifically, the first phase of the project comprised the development of preliminary and detailed engineering reports corresponding to the design of fuel stations in the ports of Koper, Rijeka, Venice, La Spezia, Fos-Marseille and Nantes-Saint Nazaire as well as studies on retrofitting ships to run on LNG.



The second stage consisted of a set of pilot projects that include LNG supply stations in two Italian ports selected by the Italian Ministry of Transport, as well as the construction of the first LNG fuelled ro-pax ship in the Mediterranean which is already operating in the Stretch of Messina in Italy.

The vessel selected by the Italian Ministry of Transport is a ferry belonging to Caronte and Tourist, with seven decks, able to transport 1,500 passengers, 290 private cars and 35 truck trailers. The main dimensions of the ship are as follows 133.6 x 21.5 x 4.5m. The main engines are duel fuel engines (6L34DF) designed by Wartsila with a total capacity of 9,000 KW. The LNG fuels tanks have a 150m3 capacity. The service speed and the maximum velocity are 12.5 and 15 nots, respectively. The ship flies the Italian flag and is RINA classified (in accordance with the IGF code).

The project also includes work to adapt the Elengy regasification plants in Nantes-Saint Nazaire and Fos-Marseille to equip them with LNG fuelling stations for lorries and in the case of Fos-Marseille, for ships.

Lastly, the network of ports involved in GAINN4MOS — Rijeka, Koper, Italian ports represented by the Italian Ministry of Transport and Infrastructure, Fos-Marseille, Nantes-St Nazaire, Valencia, Ports of the Azores and Madeira—have taken part in defining a methodology to carry out the risk analysis in simultaneous operations involving freight loading, and passenger boarding while refuelling the ship with LNG, pooling together their results. Additionally, this port network has worked on emergency port and pilot boat staff training initiatives.

In this regard, the GAINN4MOS project, through the creation of engineering studies, pilot testing in ports and with the building of the first LNG ro-pax ship to operate in the Mediterranean, and projects to adapt the French LNG plants has confirmed the technical, economic and environmental feasibility of the use of LNG as a marine fuel, creating situations of confluence in the levels of supply and demand in participating ports.

Results of the LNG Technologies and Innovation for Maritime Transport for the Promotion of Sustainability, Multimodality and the Efficiency of the Network - GAINN4SHIP INNOVATION

The GAINN4SHIP INNOVATION project consists of an Action within the framework of the global GAINN project, the aim of which is to facilitate the development of alternative fuels in general (and more specifically liquefied natural gas (LNG) in the maritime and port logistics industry in the western Mediterranean coastline (Spain and France) and environmentally vulnerable areas such as the Canary Islands.

GAINN4SHIP INNOVATION proposes the development of a study of fuel alternatives and the adaptation of an HSC (high speed craft) LNG-fuelled ro-pax ferry to reduce the environmental impact on the passenger routes of the Canary Islands.

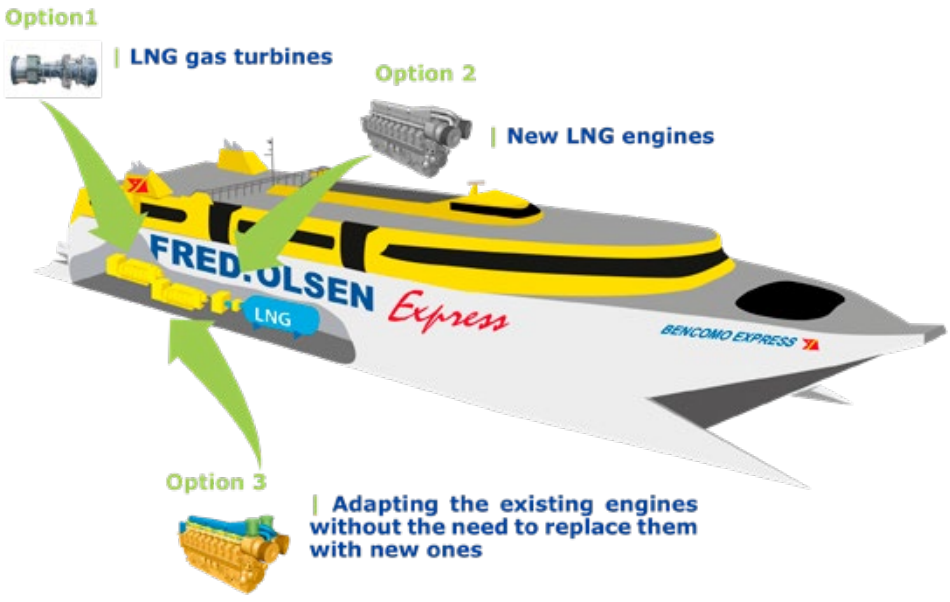
As part of the project, pioneering technology was developed to adapt the HSC Bencomo Express to LNG given that currently there is no technology available to implement it in high speed craft. This was the first case in the world of the adaptation of an HSC ro-pax to run on diesel (10%) or LNG (90%).

The different options available for the retrofitting of the HSC Bencomo Express underwent in-depth analysis:

1st alternative retrofitting: Retrofitting of the HSC Bencomo Express with LNG turbines.

2nd option: Installation of new LNG motors in the HSC Bencomo Express.

3rd option: LNG retrofitting of the existing motors.



The only feasible solution from both a financial and technical perspective was the retrofitting of the existing engines so that they were fuelled by a mixture of diesel and LNG. This solution is the one that provides the best results from an environmental perspective, meeting compliance with environmental regulations and ensuring the technical and financial feasibility of the project.

Given that there was no conversion kit for the Caterpillar 3618 (CAT3618) high-speed engines, Fred. Olsen developed a kit together with a team of engineers and highly specialized businesses. To avoid a long stay in dry docks for the ship being retrofitted, the engine conversion kit was developed using an external second-hand sister engine. As a result, the tests could be carried out in the shipyard in a controlled environment, increasing the number of parameters and scenarios that could be tested.

Through a competitive bidding process, the Navantia shipyard in Cartagena was chosen as the test bench. The next step was to define the design of the required test bench to be able to test the adapted engine for dual fuel operational integrity according to the DNV-GL for ship facilities fuelled using gas, which came into force in January 2016.

The test bench was adapted for dual fuel operations in accordance with present legislation, in order to ensure its safe functioning with natural gas. A portable Endesa LNG fuel station was implemented in Navantia to supply LNG to the test bench at the required pressure and flow.

Lastly, the testing to confirm the technical characteristics and emissions of the adapted engine (FO3618DF) were successfully completed at the end of November 2016.

For more information, please watch the following video https://www.youtube.com/watch?v=nLpDdlsGdxA.

The results, in terms of emission reduction were even better than expected. The dual engine emissions following conversion reduced SOx by 90%, CO2 by 32% and NOx by 45% with the engine operating at a ratio of 90% natural gas and 10% diesel.

As far as motor performance is concerned, normal operational conditions were simulated and showed a considerable decrease in fuel consumption due to the increased efficiency of the motor. The scenarios reproduced during testing in the shipyard included sailing in adverse weather conditions, demonstrating, in all of them, the high feasibility of dual-fuel mode.

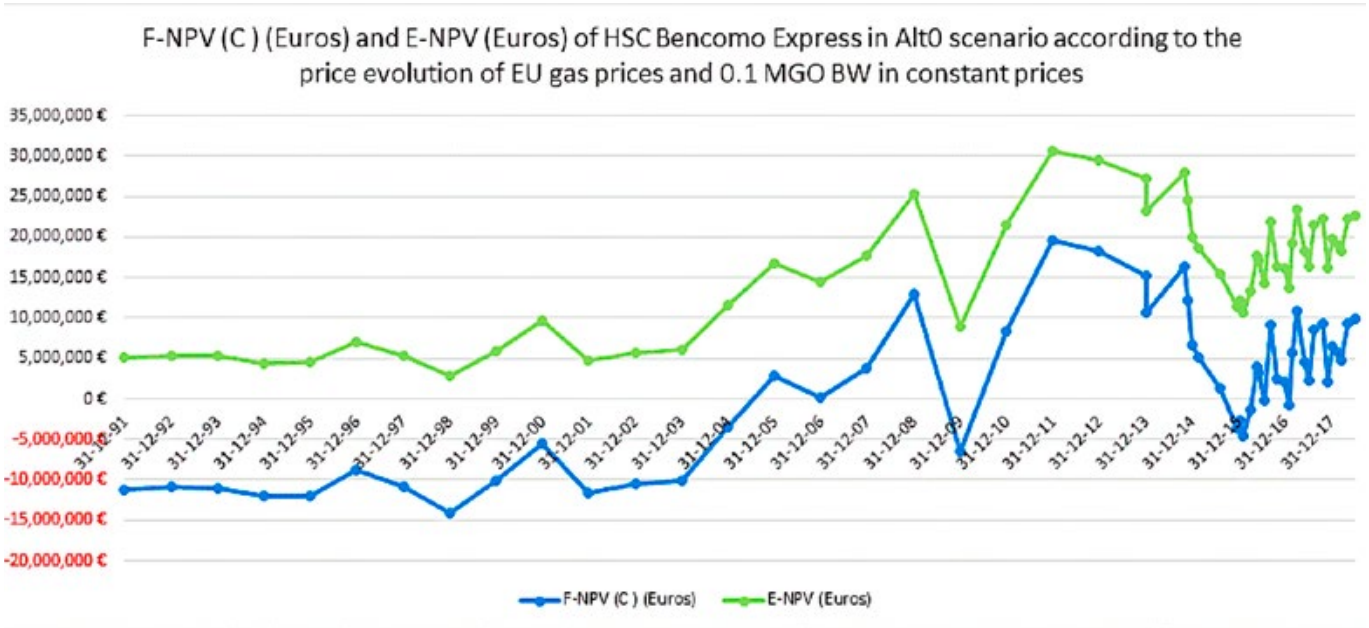
This pioneering technology may be applicable to most high velocity ships that operate in the world.

Following completion of the engine conversion kit, we proceeded to start on the basic engineering project on the HSC ro-pax Bencomo Express in keeping with the regulatory studies, guidelines and IGF code in order to achieve the DNV GL classification and fly the Spanish flag.

The main challenges that were resolved in the study were the perfect location for the LNG tanks, the configuration of the machine room and its retrofitting to be able to operate using dual fuel LNG, modifications to the ship systems, installation of the bunkering system, any necessary adjustments for questions of security and stability.

Although the DNV-GL classification company and the Directorate General of the Merchant Navy gave their approval to the technology developed for the conversion to LNG of high-speed ships carried out on the second-hand external motor at the end of 2017, the Board of Directors of Fred. Olsen decided not to go ahead with the adaptation of the ship given the shortage of the LNG supply in the Canary Islands and the high costs of transporting LNG from the Spanish mainland. Fred. Olsen had expressed concerns a number of times since the start of the project, namely that the retrofitting of the ship would only make sense if the regasification plant planned in Tenerife for over a decade would finally move forward. Uncertainty about the future of this project as well as the high logistics costs of supplying LNG from the Spanish mainland led to the GAINN4SHIP Innovation project coming to an end ahead of time.

Upon completion of the project, a complete cost-benefit analysis of the ship retrofitting was carried out. As can be seen from the following graphic (which shows one of the findings of analysis carried out), the FNVP (financial net present value) of the project to retrofit the ship would have been in positive numbers during the vast majority of the period under study taking into consideration the prices of LNG and MGO over time. If the LNG plant in Granadilla (Tenerife) was built and the suppliers of LNG took into account the average difference in price between LNG and MGO over the past ten years, a long term contribution over ten years would have meant the cost effectiveness of the retrofitting and operational use of LNG of the HSC Bencomo Express. The current net socio-economic value is positive whatever the price difference between LNG and MGO and has been since 1991.



As a result of the project, the first conversion kit of a rapid 7.2 MW engine with a weight of only 35 tonnes and an rpm of above 1000 was developed, constituting a great success from a technical perspective given that it achieved the same operational performance with dual fuel but with a noticeable reduction in emissions.

Fred. Olsen, Fundación Valenciaport and the rest of the project partners have shown that the technology for high speed ships with LNG is ready for operation and is available in the market thanks to the developments made within the framework of GAINN4SHIP Innovation. Although regretfully the retrofitting of the Bencomo Express was unable to be completed, Fred. Olsen hopes to be able to complete the project as soon as there is a competitive LNG distribution chain in the Canary Islands .

CRISI-ADAPT - CLIMATE RISK INFORMATION FOR SUPPORTING ADAPTATION PLANNING AND OPERATION

CLIENT / FUNDING ENTITY: **European Institute of Innovation and Technology (EIT)** - Climate-KIC via EIT SGA 2018

DATE: **July 2018 – December 2018**

LOCATION: **European Union**

CONTACT:

Salvador Furió Pruñonosa - Director Cluster Innovation and Development - sfurio@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

The main result of CRISI-ADAPT is the identification of the most significant climate change related variables that might affect urban services, infrastructures, local economies and the health of citizens. With that in mind, the project will identify risks associated with climate change and will put forward a tool to assess and avoid any impact that climate change might have on cities, citizens as well as critical infrastructures such as ports. Specifically, data collection will be used to study how to adapt port infrastructures to climate change with the goal of avoiding major impacts both in the immediate environment and in port employees. Furthermore, the act of facilitating access to information for the assessment of climate risks will also facilitate its adaptation to other sectors that are not included as part of the study.

As far as the tools of the project are concerned, namely CRIT (Climate Risk Information Tool) and MEET (Monitoring Extreme EvenTs), the aim is that they can be used in other European cities and thus generate climate change scenarios, short-term prediction of seasonal events and also long-term prediction of extreme events.

LNGHIVE2 VESSELS DEMAND: GREEN AND SMART LINKS - LNG SOLUTIONS FOR SMART MARITIME LINKS IN SPANISH CORE PORTS

Co-financed by the Connecting Europe Facility of the European Union

CLIENT / FUNDING ENTITY: European Commission, CEF Blending
DATE: Abril 2018 – Julio 2021
LOCATION: European Union
CONTACT:
Amparo Mestre Alcover - Market Intelligence - Area Manager - amestre@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

The LNGHIVE2 GREEN AND SMART LINKS project lies within the framework of the LNGHIVE2 global project, the aim of which is to implement Directive 2014/94 for the development of LNG infrastructures and demand for maritime port operations in Spain, within the framework of the National Action for the development of Alternative Fuels.

Within the framework of the project, actions include the retrofitting of five ships to run on LNG (Abel Matutes, Nápoles, Sicilia, Bahama Mama and Martín i Soler), retrofitting their main engines without needing to replace them with new ones. These five ships will be the first fleet of ferries fuelled by LNG and which will operate in the Mediterranean, making the Balearic Islands a pioneer in this market and the first to generate demand for LNG as a fuel in the main Spanish ports. The projects to modernise these five ferries includes the involvement of a number of European engine and equipment manufacturers, shipyards, engineering firms and certification companies, creating qualified employment opportunities in Europe and offering opportunities to further develop European technological expertise in a sector with huge potential growth.

LNGHIVE2 INFRASTRUCTURE AND LOGISTICS SOLUTIONS

Co-financed by the Connecting Europe Facility of the European Union

CLIENT / FUNDING ENTITY: European Commission, CEF Blending
DATE: September 2018 – February 2022
LOCATION: European Union
CONTACT:
Eva Pérez García - Director of the Promotion of Innovation and Sustainability - eperez@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

The LNGHIVE2 Infrastructure and Logistics Solutions project lies within the framework of the LNGHIVE2 global project, the aim of which is to implement Directive 2014/94 for the development of LNG infrastructures and demand for maritime port operations in Spain, within the framework of the National Action for the development of Alternative Fuels.

The expected results of the project are the completion of construction and implementation of the following projects:

1. Adaptation of the regasification plant in Huelva to supply LNG to barges
2. Construction of an LNG fuel station in the dry dock of Majarabique in Seville
3. Retrofitting of the diesel locomotive to LNG and the launch of operations along the Majarabique – Huelva corridor
4. Implementation of a multi-truck to ship system in the Port of Huelva
5. Adaptation of the SAGGAS regasification plant to supply LNG to barges
6. Construction of a multifuel barge

DRAFTING OF A TENDER DOSSIER THAT GOVERNS THE PUBLIC TENDER FOR THE OPERATION, AS AN ADMINISTRATIVE CONCESSION, OF A PLANT FOR THE RECEPTION, STORAGE AND FINAL TREATMENT OF LIQUID WASTE GENERATED BY SHIPS (ANNEXES I AND IV FROM THE MARPOL CONVENTION 73/78) AND OTHER SIMILAR LIQUID WASTE AUTHORISED BY THE PORT AUTHORITY OF VALENCIA

CLIENT / FUNDING ENTITY: Port Authority of Valencia
DATE: December 2016 – Abril 2017
LOCATION: Valencia
CONTACT:
Eva Pérez García - Director of the Promotion of Innovation and Sustainability - eperez@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

The aim of this contract is to review applicable law and the assessment of the suitability of expanding the plant for the storage and treatment of MARPOL VI waste, as well as the drafting of a tender dossier for the construction and operation, as an administrative concession, of the storage and final treatment plant of liquid waste from ships and other similar liquid waste permitted by the PAV.

FINANCIAL ANALYSIS OF THE CONSTRUCTION OF AN ELECTRICITY SUBSTATION IN THE PORT OF VALENCIA

CLIENT / FUNDING ENTITY: Port Authority of Valencia
DATE: December 2017
LOCATION: Valencia
CONTACT:
Amparo Mestre Alcover - Market Intelligence - Area Manager - amestre@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

The aim of this project is to carry out the financial feasibility analysis of the implementation project for a new electric substation in the Port of Valencia within the framework of the Port Authority Business Plan. The project responds to the need to satisfy the growing demand for electricity in the port whose facilities currently suffer from a series of supply limitations, with a current distribution network of 20 KV. The new substation will enable the supply network of the Port Authority of Valencia facilities to connect to those of the high tension supply network with a 132 KV voltage level as well as a high voltage buried line that will complement said infrastructure and will allow the port to continue attending to the needs of the businesses that have set up operations there.

CORE LNGAS HIVE - CORE NETWORK CORRIDORS AND LIQUEFIED NATURAL GAS HIVE

CORE LNGas hive

Co-financed by the Connecting Europe Facility of the European Union

CLIENT / FUNDING ENTITY: European Commission, Connecting Europe Facility Programme
DATE: January 2014 – December 2020
LOCATION: European Union
WEB: http://corelngashive.eu
CONTACT:
Eva Pérez García - Director of the Promotion of Innovation and Sustainability - eperez@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

The aim of the project is to create an integrated secure and efficient logistics chain for the provision of liquefied natural gas, LNG (small scale and bunkering) as a fuel in the transport sector, especially maritime transport, in the Iberian Peninsula.

CORE LNGas hive contributes to the decarbonisation of the European Mediterranean and the Atlantic corridors and marks another step forward in the race to reduce emissions, the advancement of clean energies for transport and taking care of the environment, with the backing of the European Union.

The project includes 25 initiatives, comprising both studies and pilot projects, with the aim of adapting the infrastructure and LNG supply logistics, as well as its commercial growth. It will encourage small-scale supply services and the supply of fuel to the Iberian Peninsula. Among the initiative included in the project are:

- Adaptation of the infrastructures of all regasification plants for the small-scale supply services and/or the supply of fuel.
- Creation of LNG distribution barges in Barcelona and the north of Spain
- Use of LNG as a fuel in tugboats, port cranes and ground transport (rail transport).

STUDIES

- Estimation of the potential demand for LNG and the logistics chain required for its supply.
- Creation of technical and security regulations.
- Analysis of public acceptance of LNG
- Study of the training needs for the use of LNG and its subsequent deployment.

Furthermore, the CORE LNGas hive project provides know-how to other European countries to develop their own procedures, legislation and the setting up of training activities. Similarly, the project will encourage international expansion of the LNG sector, integrating initiatives from within a coherent and global project through the combined efforts of both public and private sectors.

2.2.4. Port-city, mobility and cruises

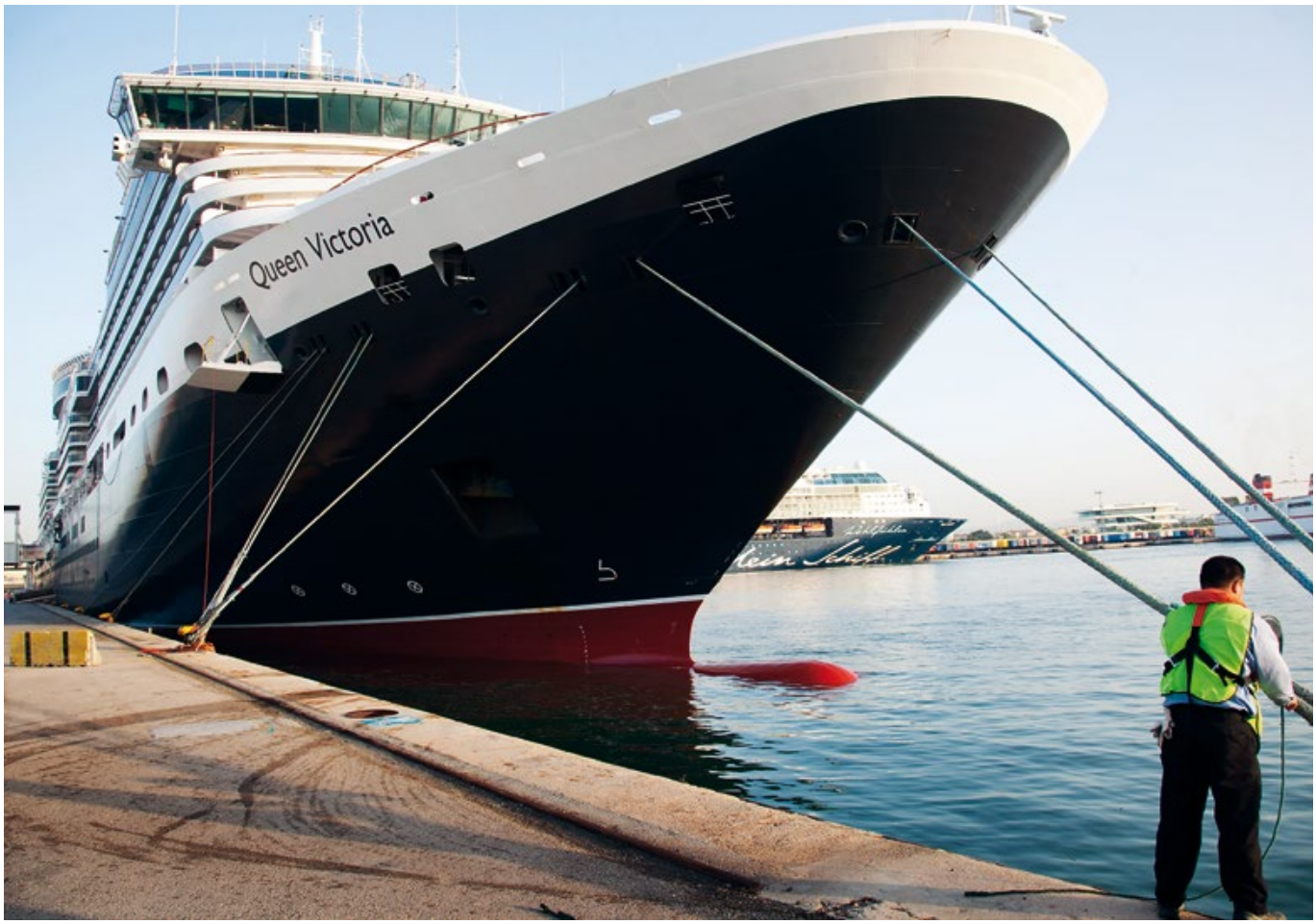
According to data from the European Commission, urban transport is responsible for 40% of CO2 emissions, causing problems of pollution, noise and traffic congestion. On the other hand, ports are nodes that generate high levels of economic and social activity, which has an impact on cities not only in terms of freight transport flows but also in regard to people.

For these reasons, Fundación Valenciaport is paying particular attention to improving the port-city relationship. The aim is to foster the development of the port in balance with its natural and urban environment.

In this context, Fundación Valenciaport collaborates with different entities such as the Port Authority of Valencia, Valencia City Council, Tourism Valencia and the Valencian Tourism Agency, among others. Together, we are working to define the policies, strategies and actions that contribute to the development of sustainable and innovative solutions that improve the quality of life of citizens and tourists, and that enhance Valencia's potential as a tourist attraction.

In the line of work targeted at achieving more sustainable tourism, it is worth highlighting Fundación Valenciaport's participation in the CO-EVOLVE project. This project aims to encourage the adoption of policies and initiatives that promote the sustainable, responsible development of coastal and maritime areas, applying the principles of integrated coastal zone management and maritime spatial planning. In addition, participation in the HERIT-DATA project involves working to reduce the impact of tourism activities on cultural heritage, through the use of technology and exploitation of data. Also in the field of sustainable tourism, it is worth mentioning the TOURISMED project, which aims to showcase the traditional fishing work carried out in the Valencian ports. In doing so, this project seeks to bring the general public into contact with this work, while also supporting the fishing profession by providing new sources of income.

Regarding the line of work on urban logistics and mobility, it is worth noting the SUCCESS project, which involved an analysis of the use of Consolidation Centres to improve construction logistics. Furthermore, the SUMPORT project is aimed at updating the Mobility Plan of the Port. As part of this project, different pilot initiatives are being carried out to improve the mobility of both passengers and workers in the port and its surrounding area.



SUMPORT - SUSTAINABLE URBAN MOBILITY IN MED PORT CITIES

CLIENT / FUNDING ENTITY: European Commission, Interreg MED
DATE: February 2017 – September 2019
LOCATION: Mediterranean Countries
WEB: www.sumport.interreg-med.eu
CONTACT:
Carolina Navarro Correcher-Port-City, Mobility and Cruises - Area Manager

PROJECT DESCRIPTION (ABSTRACT):

MOTIVATION

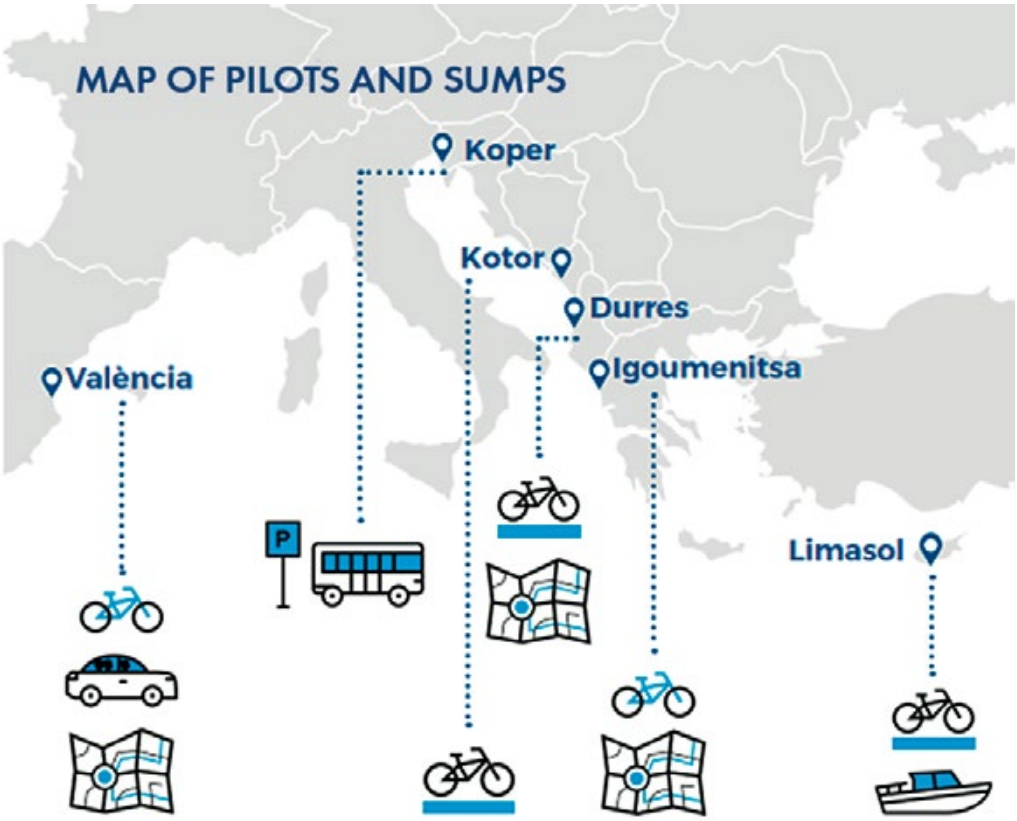
Mediterranean port cities are facing common challenges due to their social, economic and geographical characteristics. As a case in point, in 1960, 34% of the world's population lived in urban environments; by 2014 this figure had risen to 54% and it continues to rise. The same trend can be seen in the countries of Mediterranean Europe, where the rate is expected to reach 72% by 2025. In addition, the MED region is home to almost a quarter of the European population and its cities are the most popular tourist destinations in Europe. In this context, it is crucial for the port cities of the Mediterranean arc to strategically plan their mobility systems to ensure greater sustainability.

In light of all of the above, the project SUMPORT (Sustainable Urban Mobility in MED PORT cities) was designed to help improve port cities' capacity to plan for sustainable mobility, by sharing experiences and organizing pilot projects and training activities. In fact, SUMPORT will enable participating port cities to develop or update their Sustainable Urban Mobility Plan (SUMP), as well as medium-to-long-term strategic documents that set out the future development of the city while effectively addressing transport problems.

The SUMPs and pilot actions in the SUMPORT project put forward alternatives for sustainable mobility that will contribute to reducing individual use of vehicles, benefitting both city residents and visitors. In addition, each action or pilot will be monitored for impact, effectiveness and results. The result of this evaluation will serve as feedback to improve the SUMPs.

The pilots to be developed within the SUMPORT project are related to the following areas:

- **Extension or creation of bike lanes,** promoting active modes of transport (e.g. cycling and/or walking) and reducing motorized traffic. These pilot actions are taking place in the cities of Limassol, Durrës and Kotor.
- Actions aimed at promoting **shared bike systems,** promoting shared mobility and reducing motorized traffic. These pilot actions are taking place in Valencia and Igoumenitsa.
- **Maritime transport simulations** to promote sustainable **multimodal smart mobility** by assessing alternatives to road transport. This pilot action will take place in the city of Igoumenitsa.
- Implementation of **carpooling schemes and platforms for port workers** so as to promote shared mobility and reduce the impact of traffic and motor vehicles. This pilot action will take place in the Port of Valencia.
- **Preparation, updating or harmonization of the SUMPs** so that they promote mobility plans in port cities that can improve the quality of life of citizens and tourists. These pilot actions are taking place in Valencia, Durrës and Thesprotia .
- **Enhancing infomobility to foster the use of public transport** by means of modernized public transport systems incorporating car parks and buses equipped with sensors. This will allow users to get real-time schedules, and will help organize public parking spaces in the Old Town that boost intermodality (park-and-ride systems). This pilot action will take place in the city of Koper.



Lastly, specific training courses will be taught in four SUMPORT cities, in order to improve planning skills and competencies in organizing events to transfer the results of the pilots to other cities.

OBJECTIVES:

The overall aim of the SUMPORT project is to enhance the sustainable mobility of port cities and to promote the planning of smart mobility through the exchange of experiences, pilot actions and training activities.

To that end, the project has the following specific objectives:

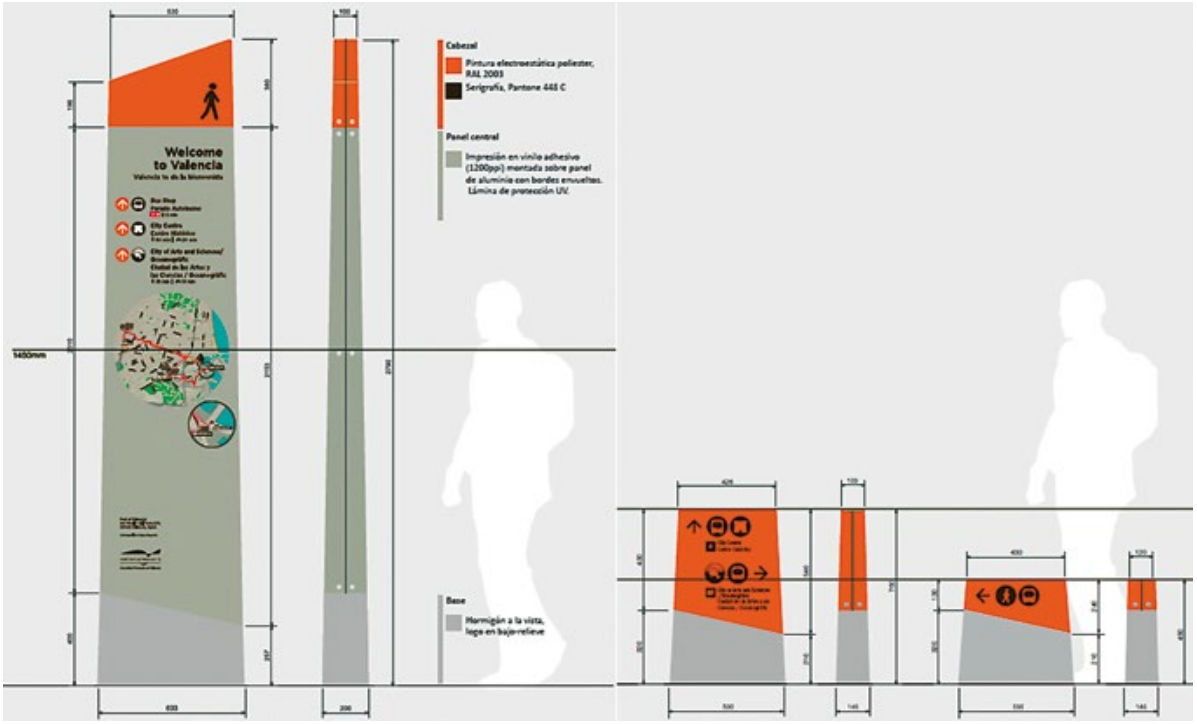
- Improve sustainable mobility planning skills by training public officials, who will benefit from the experience of and the groundwork done by the participating MED port cities;
- Test or simulate pilot actions related to sustainable mobility in participating cities: Valencia, Koper, Kotor, Durrës , Limassol, Igoumenitsa;
- Develop, update or harmonize SUMPs in participating port cities in MED;
- Develop a SUMPORT e-learning platform that includes the step-by-step method for writing a SUMP and advice for implementing actions related to sustainable mobility;
- Share SUMPORT experience and ensure that it can be replicated in similar contexts, through events, face-to-face training activities and the e-learning platform.

RESULTS:

The main objective of SUMPORT is to improve sustainable mobility in the port cities of the Mediterranean, integrating port and urban traffic flows in the planning of sustainable public transport.

In the specific case of the Port of Valencia, the main results include:

- **Updating the Sustainable Mobility Plan of the Port of Valencia** so that it is conducive to sustainable mobility systems such as public transport, bikes, pooled transport, etc. To update this new SUMP, an analysis of the previous mobility plan was first carried out, assessing the degree of implementation of each of the measures it contained. In parallel, port community workers were surveyed to learn about their travel habits and also about any suggestions they may have that could help to enhance sustainable mobility in the port environment.
- Conducting a **Wayfinding study of the signage** within the port area and how to improve it. This study served as the basis for conducting a pilot test to improve the existing signage, guide cruise tourists out of the port area and ensure they can reach the city centre by public transport. This pilot test was carried out using a series of signposting and wayfinder totems that indicated the main routes to follow depending on the selected destinations.



- **Development and implementation of a carpooling app** for port workers in order to promote shared mobility and increase the occupancy of private vehicles. To create this app, a functional analysis was carried out of the existing carpooling network of the Port Authority of Valencia. A series of improvements were then proposed as well as a change of the web format in order to improve the use of the service.

- **Pilot test of E-Bikes for cruise tourists** and other passengers in the Port of Valencia. A pilot test was carried out with 10 electric bicycles kept in automatic parking stations in the vicinity of the passenger terminal. The aim was to facilitate mobility for port passengers moving from the port area to the tourist areas of the city.

CO-EVOLVE - PROMOTING THE CO-EVOLUTION OF HUMAN ACTIVITIES AND NATURAL SYSTEMS FOR THE DEVELOPMENT OF SUSTAINABLE COASTAL AND MARITIME TOURISM

CLIENT / FUNDING ENTITY: European Commission, Interreg MED
DATE: May 2017 – October 2019
LOCATION: Mediterranean Countries
WEB: www.co-evolve.interreg-med.eu
CONTACT:
Carolina Navarro Correcher - Port-City, Mobility and Cruises - Area Manager
cnavarro@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

MOTIVATION

The project seeks to promote the "co-evolution" of human activities and natural systems in tourist coastal areas. To that end, a series of threats are analysed (such as climate change, pollution, or the overload of the carrying capacity of natural and human systems, among others) along with facilitating factors identified at Mediterranean-wide scale (factors linked to governance, the conservation of ecosystems, etc). The project is set within the framework of the principles of integrated coastal zone management and maritime spatial planning, which are considered suitable procedures for avoiding the undesirable effects resulting from the application of approaches that are exclusively sectoral.

The CO-EVOLVE consortium is made up of regional and research bodies from France, Italy, Croatia, Greece and Spain, which, during the previous programming period of the INTERREG programme (2007-2013), developed lines of work in areas related to tourism and the management of coastal resources, under other territorial cooperation projects. Other participants include the Conference of Peripheral Maritime Regions and PAP/RAC (one of the United Nations' regional action centres for the Mediterranean).

OBJECTIVES:

The overall aim of CO-EVOLVE is to move towards more sustainable models for the development of tourism activities in coastal areas, identifying the main threats and facilitating factors for their development, and implementing pilot demonstration actions to achieve this goal.

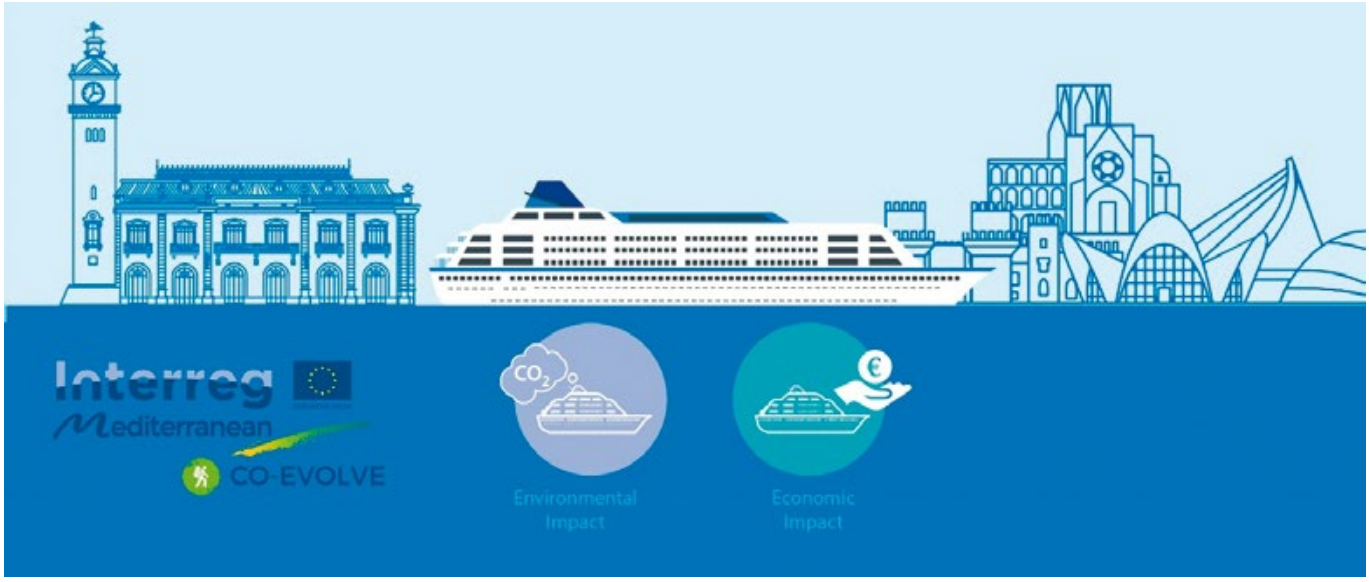
The project aims to:

- Analyse the main threats and facilitating factors in the development of sustainable coastal tourism in the Mediterranean.
- Design a conceptual model to assess the level of sustainability of tourism in the Mediterranean through indicators.
- Prepare action plans (in selected pilot areas) for the development of sustainable tourism.
- Develop a set of tools that contribute to the sustainability of tourism in coastal areas of the Mediterranean, testing them at local level (in selected pilot areas) and then facilitating their transfer to the Mediterranean level.

Conceptual framework of the methodology used to draw up Action Plans

Achieving these goals at the local level of project development, entails the following specific objectives for Fundación Valenciaport:

- Make progress in identifying and measuring the socio-economic impact of cruise tourism in Valencia and raise awareness of it among the local community, establishing recommendations to help ensure that the economic impacts of cruise tourism are more appropriately distributed.
- Contribute to reducing the negative environmental effects attributed to cruise ship traffic by developing a tool that helps evaluate the environmental aspects associated with this traffic, linked to the implementation of good environmental practices.



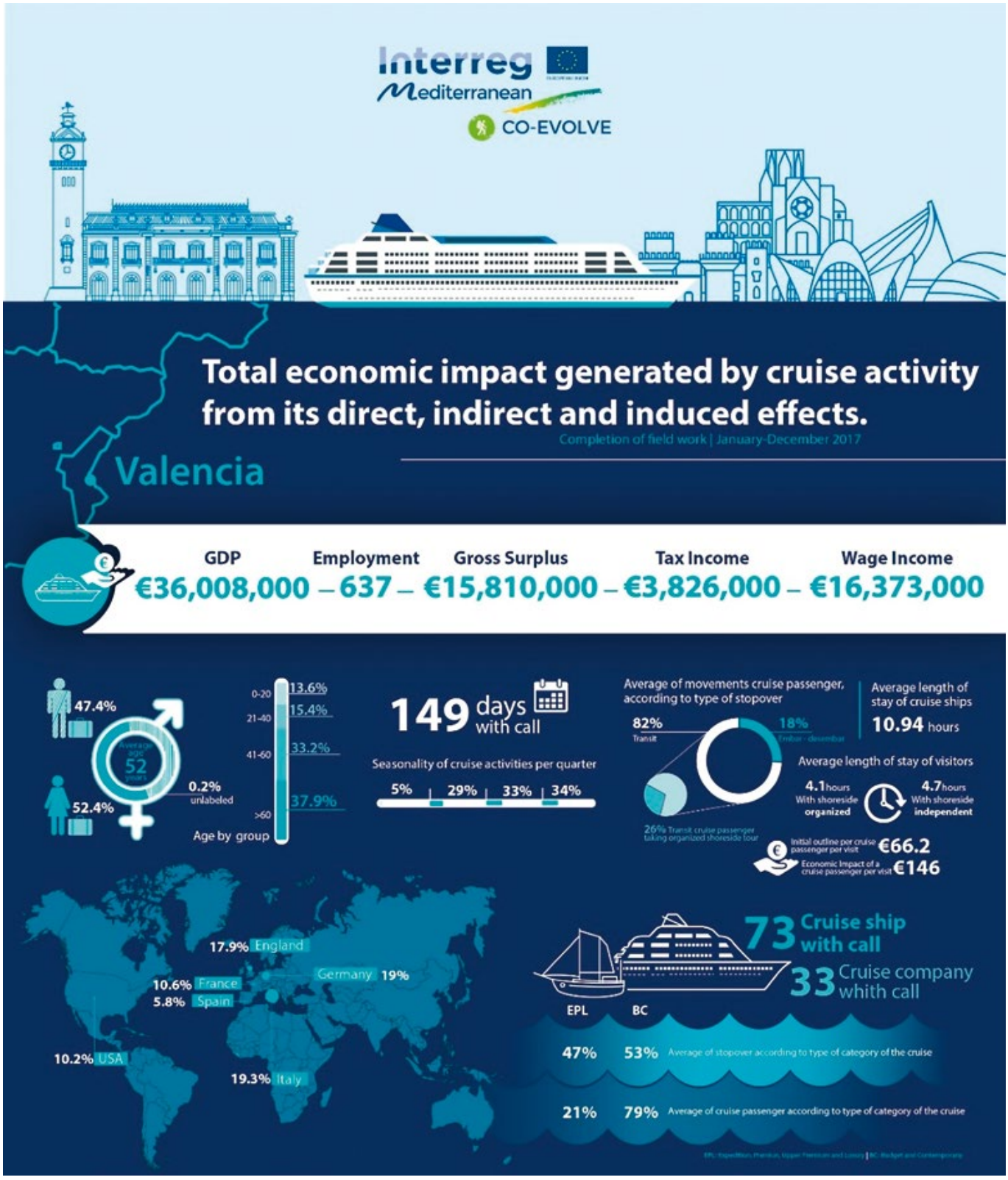
Valencian pilot: analysis of the sustainability of cruise tourism in Valencia

RESULTS:

At the project level, during the period 2017-2018, an analysis was carried out—both at MED level and in the participating pilot areas—of the main threats and facilitating factors that influence the development of sustainable coastal tourism.

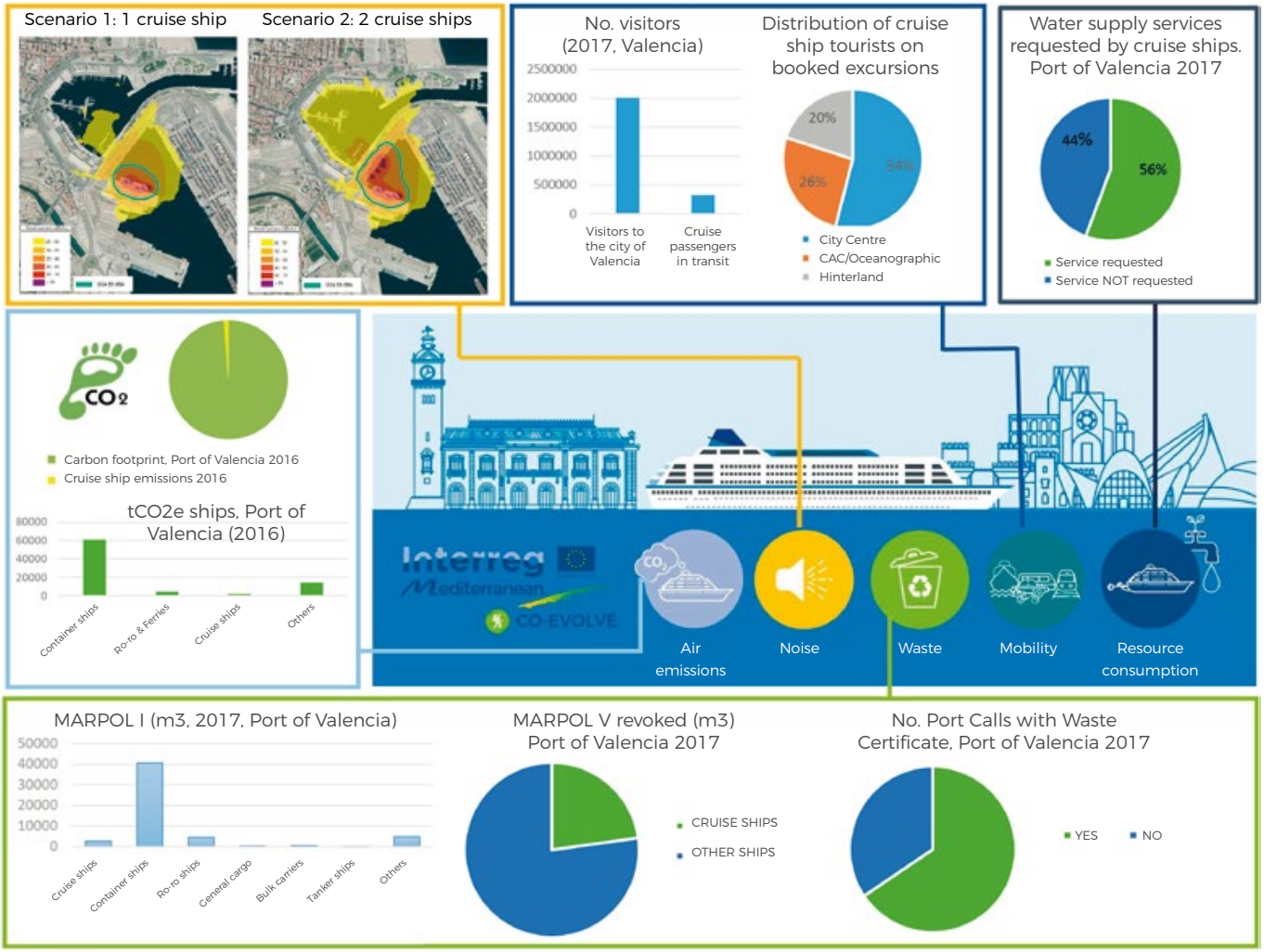
On the basis of this analysis, we have developed local action plans aimed at achieving sustainable tourism in these pilot areas, taking into consideration the principles of Integrated Coastal Zone Management (ICZM) and maritime spatial planning (MSP).

In the specific case of the Valencia Port-City pilot area, a study was carried out of the economic impact that the cruise industry has on the city of Valencia, valued in terms of employment and income generated. The study sought to determine how important this traffic is for the economic growth of the city.



Economic impact of cruises in Valencia

Likewise, a study was carried out to characterize the environmental aspects linked to the activity of cruise tourism. This aim of this study was to evaluate whether and to what extent these aspects are significant, and where necessary, to propose measures aimed at correcting them or minimizing them.



Environmental characterization of cruise ship activity in Valencia

Work is also under way to develop a proposal for indicators to monitor cruise tourism (ECO-TOOL), in order to be able to monitor both the socio-economic and environmental aspects, and thus evaluate the sustainability of the activity.

With all these results, the aim is to lay the foundations for drawing up, in a subsequent phase, an Action Plan that will contribute to the development of sustainable cruise tourism in the city of Valencia.

HERIT.DATA - SUSTAINABLE HERITAGE MANAGEMENT TOWARDS MASS TOURISM IMPACT THANKS TO A HOLISTIC USE OF BIG AND OPEN DATA

CLIENT / FUNDING ENTITY: European Commission, Interreg MED
DATE: February 2018 – February 2022
LOCATION: Mediterranean Countries
WEB: https://herit-data.interreg-med.eu/
CONTACT:
Carolina Navarro Correcher-Port-City, Mobility and Cruises - Area Manager
cnavarro@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

The project is aimed at improving cooperation, integrated planning and management of conflicts of interests in order to better manage two types of cultural tourism destinations: historic city centres and sites of archaeological interest, particularly for visitors.

To achieve this objective, the project will draw on technologies and innovation in management tools. In particular, the project will seek to make use of the benefits of Big Data, Open Data, the Internet of Things, existing sensors, camera systems, etc. In fact, one of the main objectives of the project is to develop and test a new Artificial-intelligence-based Management System.

ELECTROTOUR - ELECTRO-MOBILITY IN TOURISM

Climate-KIC is supported by the EIT, a body of the European Union

CLIENT / FUNDING ENTITY: European Institute of Innovation and Technology (EIT) through EIT Climate-KIC
DATE: January 2018 – June 2018
LOCATION: European Union
CONTACT:
Carolina Navarro Correcher - Port-City, Mobility and Cruises - Area Manager
cnavarro@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

The aim of the project is to promote initiatives to replace internal combustion engines, which use fossil fuels, with electricity. Specifically, in the field of tourism, Electrotour seeks to promote the use of electric cars in various scenarios that reflect the heterogeneity of the tourism sector in the Mediterranean. Electrotour will analyse the feasibility of using electric cars for the mobility of tourists arriving at airports, train stations and cruise lines. It will also examine the need for charging stations and the feasibility of creating tourist corridors where tourists can travel with electric cars.

SUCCESS - SUSTAINABLE URBAN CONSOLIDATION CENTRES FOR CONSTRUCTION

CLIENT / FUNDING ENTITY: European Commission, H2020 Programme

DATE: May 2015 – April 2018

LOCATION: European Union

CONTACT:

Salvador Furió Pruñonosa-Director of Innovation and Cluster Development -sfurio@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

Within the framework of this project, actions have been carried out to reduce the negative impact of the urban distribution of construction-related freight in cities, while also reducing costs, gaining a better understanding of freight distribution logistics in this sector and demonstrating the impact it has on transport and environmental efficiency.

SUCCESS has addressed the optimization and integration of the construction supply chain (for example by introducing supplier cooperation schemes, or supplier integration agreements) and through the use of Construction Consolidation Centres (CCCs) in urban areas or in suburban regions. The project also seeks to develop best-practice guidelines on innovative approaches to integrating the knowledge and competencies of research centres, public authorities and private agents.

Thanks to this project, the following objectives—among others—have been achieved:

- Improvement in the current state of construction logistics in urban areas, from an operational and economic point of view. To that end, 4 pilot projects were carried out in Luxembourg, Paris, Valencia and Verona. All the pilots were located in urban areas with heavy traffic congestion, high urban density and strict environmental restrictions.
- Collection of the most relevant data from the construction works in each of the pilot cities, in order to design optimized solutions based on these data.
- Design of a sustainable and reliable business model for use in the field of construction logistics in urban areas, taking into account the use of CCCs, the use of optimization tools and ICT as well as models of cooperation between the actors involved. This model has also been disseminated at European level.

TOURISMED - PÊCHE TOURISME POUR UN DÉVELOPPEMENT DURABLE DANS LA RÉGION MÉDITERRANÉENNE

CLIENT / FUNDING ENTITY: European Commission, Interreg MED
DATE: June 2017 – July 2019
LOCATION: Mediterranean Countries
WEB: https://tourismed.interreg-med.eu/
CONTACT:
Antonio Torregrosa Maicas - Director General - atorregrosa@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

The mission of Tourismed is to explore the business models of fishing tourism that can guarantee a sustainable coastal tourism activity in the Mediterranean and enable the diversification of traditional fishing work.

To that end, Tourismed aims to test a model of fishing-tourism (the type of fishing tourism that takes place on board a boat) in coastal territories of Italy, Cyprus, Greece, Albania, France and Spain. These models should foster sustainable tourism at the same time as promoting the preservation of marine ecosystems and traditional fishing in the Mediterranean.

SIROCCO – SUSTAINABLE INTERREGIONAL COASTAL & CRUISE MARITIME TOURISM THROUGH COOPERATION AND JOINT PLANNING

CLIENT / FUNDING ENTITY: European Commission, Interreg MED
DATE: April 2017 – April 2018
LOCATION: Mediterranean Countries
WEB: www.sirocco.interreg-med.eu
CONTACT:
Antonio Torregrosa Maicas - Director General - atorregrosa@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

The objective of the SIROCCO project is to help tackle the negative impacts of cruise tourism, conserving the natural and cultural heritage of the Mediterranean; reducing the seasonality of demand; addressing its impacts on infrastructure; and minimizing the use of resources and waste generation.

To address these issues, the project will draw on relevant data and knowledge and decision-making capacity will be enhanced to optimize planning and management. Moreover, the project will entail the development of policies and the coordination of strategies between territories and actors at the interregional and transnational level.

In short, SIROCCO will provide an integrated view of the current state of cruise tourism in the Mediterranean, as well as its impacts (environmental, economic and social). Furthermore, part of the project involves producing a forecast of cruise tourism in the Mediterranean for the upcoming decades, along with evidence-based transferable recommendations verified by the interested parties, in order to develop value chains in cruise destinations (CVCs – Cruise Value Chains).

2.2.5. Safety and Security

Maritime freight and passenger transport is a highly complex industry, with a large number and wide variety of agents involved as providers of services including transport, loading and unloading of goods, handling, inspection, storage, etc. The growth of international trade, facilitated by the emergence of the container as a standard unit of transport, has led to the development of large port infrastructures. At the same time, technological developments have enabled ever-larger ships and equipment, with increased transport and operational capacity.

These factors, coupled with the special nature of some of the goods carried on ships and handled in ports, generate a range of very diverse risks, with the potential to cause serious damage. For these reasons, safety and security, in the broadest sense of the concept, is an important area of work focused on the prevention of accidents, emergencies, environmental disasters and other events that would adversely affect the regular functioning of port activity and maritime transport.

In the port area, there are three elements to the modern concept of safety and security. The first element—as this was the focus of the first preventative actions carried out—is technical or industrial safety in the port. This refers to the responsibility for managing the risks associated with port operations.

The second element focuses on so-called environmental safety, and addresses the prevention of environmental risks. This field of action has developed significantly in recent years because of growing concern about the environment and the environmental impact of accidents involving dangerous goods capable of contaminating highly vulnerable ecosystems.

Lastly, port security covers the appropriate procedures, technologies and resources to neutralize the threats from unlawful acts such as theft, sabotage, trespassing and even terrorist attacks.

Due to Europe's key geopolitical role and Spain's strategic location as the point of connection in the main shipping lines between Asia, America and Africa, safety and security is a major aspect that must be integrated into the port-logistics chains associated with the activity of the Valenciaport cluster. The main challenge is to achieve this integration and thus minimize the risks arising from potential illicit actions, without impairing the performance and competitiveness of the cluster.

Likewise, given the level of development and the multiple interdependencies of the infrastructures and the so-called info-structure (information-sharing systems, platforms, industrial control, etc.), cyber-security emerges as a new field. Cyber-security extends the scope of security to cover networks and information sharing and management tools.

Given Valenciaport's improved R&D&I capabilities and the enhanced profile of the Valenciaport cluster and the Port Authority of Valencia through participation in national and international research projects, innovation has become the central axis around which the Port of Valencia positions itself at the forefront of port-logistics safety and security.

SAURON – SCALABLE MULTIDIMENSIONAL SITUATION AWARENESS SOLUTION FOR PROTECTING EUROPEAN PORTS

This project has received funding from the European Union´s Horizon 2020 research and innovation programme under grant agreement No 740477

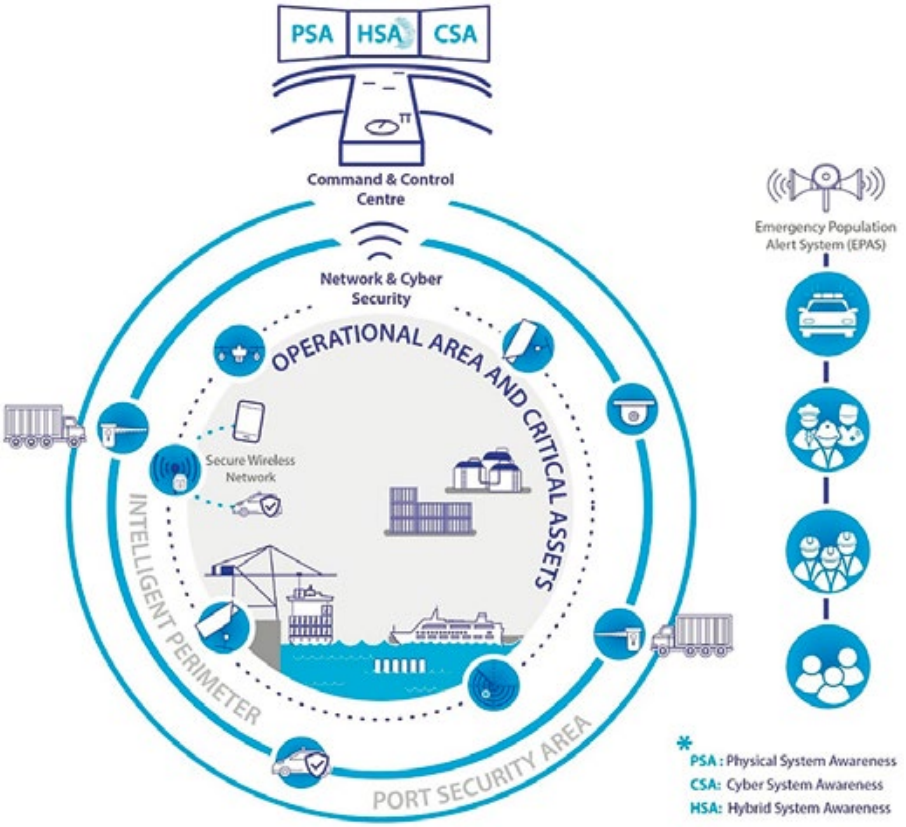
CLIENT/FUNDING ENTITY: European Commission, H2020 Programme
DATE: May 2017 – April 2020
LOCATION: European Union
WEBSITE: www.sauronproject.eu
CONTACT:
Rafael Company Peris - Innovation Promotion EU Manager - rcompany@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

CONCEPT:

Nowadays coordinated and increasingly complex terrorist attacks are shocking the world. The industrial sector and many Critical Infrastructures (CI), particularly EU ports, are becoming ever more reliant on ICT systems. As a result, the impact of a coordinated physical attack, a deliberate disruption of critical automation (cyber) systems or even a combined scenario including both kind of attacks, could have disastrous consequences for the European Member States' regions and social wellbeing in general.

Taking into account this fact and this real threat on EU ports as one of the main CI in Europe, the SAURON project proposes an holistic situation awareness concept as an integrated, scalable and yet installation-specific solution for protecting EU ports and its surroundings.



SAURON CONCEPT

SAURON combines the most advanced physical Situational Awareness (SA) features with the newest techniques in prevention, detection and mitigation of cyber-threats, including the understanding of synthetic cyber space through the use of new visualization techniques (immersive interfaces, cyber 3D models and so on). In addition, a Hybrid Situation Awareness (HSA) application capable of determining the potential consequences of any threat will show the potential cascade effect of a threat detected in either of the two different domains (physical and cyber).

During an incident, SAURON will provide information that can be used to protect the general public in the vicinity and specific rescue/security teams from any potential situation that could put their safety at risk.

The SAURON platform consists of four main pillars:

- PSA: A complete Physical SA system which includes novel features such as; dynamic location of resources and assets, location, management and monitoring of sensors, including cameras mounted on drones (under the conditions of and in compliance with all pertinent legal requirements at national and European level), security perimeter control, robust and secure tactical communication network and so on. This PSA system will be adapted to the EU ports characteristics, requirements and needs for protecting them against any kind of physical threat.
- CSA: An advanced and scalable Cyber SA framework capable of preventing and detecting threats and, in the event of a declared attack, capable of mitigating the effects of the infection/intrusion. This CSA system will include new visualization paradigms for the cyber space.
- HSA: A Hybrid SA system receiving both physical and cyber alarms on potential threats from the real world and the cyber space respectively. The HSA application and will show the potential consequences/effects of these threats in the other planes including cascade effects.
- EPWS: An Emergency Population Warning System, allowing local, regional, or national authorities to contact members of rescue/security teams and the public (also integrating Smart City Platforms (SCP)) in order to warn them and draw their attention to an immediate hazard. This will encourage them to take a specific action in response to an emergency event or threat.

These three SA approaches (Physical, Cyber and Hybrid) along with the EPWS will ensure the protection and resilience of the ports and their surroundings against any kind of threats or declared attacks (Physical, Cyber or a combination of both).

OBJECTIVES:

EU ports are currently facing cyber-physical threats which can potentially cause hundreds of thousands of casualties, with an impact on the EU economy equivalent to several billion euros. SAURON will provide a multidimensional yet installation-specific Situational Awareness (SA) platform enabling port operators and authorities anticipate and withstand cyber, physical and combined security threats to their freight and cargo business and to the safety of their employees, visitors and passengers. Special attention will be paid to the integration into this platform of the communities and specific infrastructures and assets in the vicinity of the ports. This critical infrastructure operator-led project will achieve its objectives through four specific, exploitable results, which will be validated in real conditions with the direct involvement of four EU ports.

Hence, the vision of SAURON is to provide a multidimensional yet installation-specific Situational Awareness (SA) platform to help port operators anticipate and withstand potential cyber, physical or combined security threats to their freight and cargo business and to the safety of their employees, visitors, passengers and citizens in the vicinity. This will be achieved by accomplishing the following operational objectives:

- **To produce a multidimensional and scalable SA platform:** To develop (to TRL7) and test a multidimensional and scalable SA platform easily deployable for EU ports comprising a Physical Situation Awareness (PSA) application, a Cyber Situation Awareness (CSA) application and a Hybrid Situation Awareness (HSA) application in order to prevent, detect, respond and mitigate any physical, cyber or combined threat.

- **To fuse the physical environment and the cyberspace in order to achieve a hybrid operation theatre** capable of detecting potential cascade effects for helping the decision makers to prevent, understand and face any kind of potential threat.

- **To develop and integrate innovative early-warning techniques** for informing and protecting both the inhabitants in the vicinity of the ports and the emergency teams responding to attacks.

- **To ensure compliance with legal and ethical principles and requirements,** identify lacunae and hurdles and develop concrete recommendations to policy makers

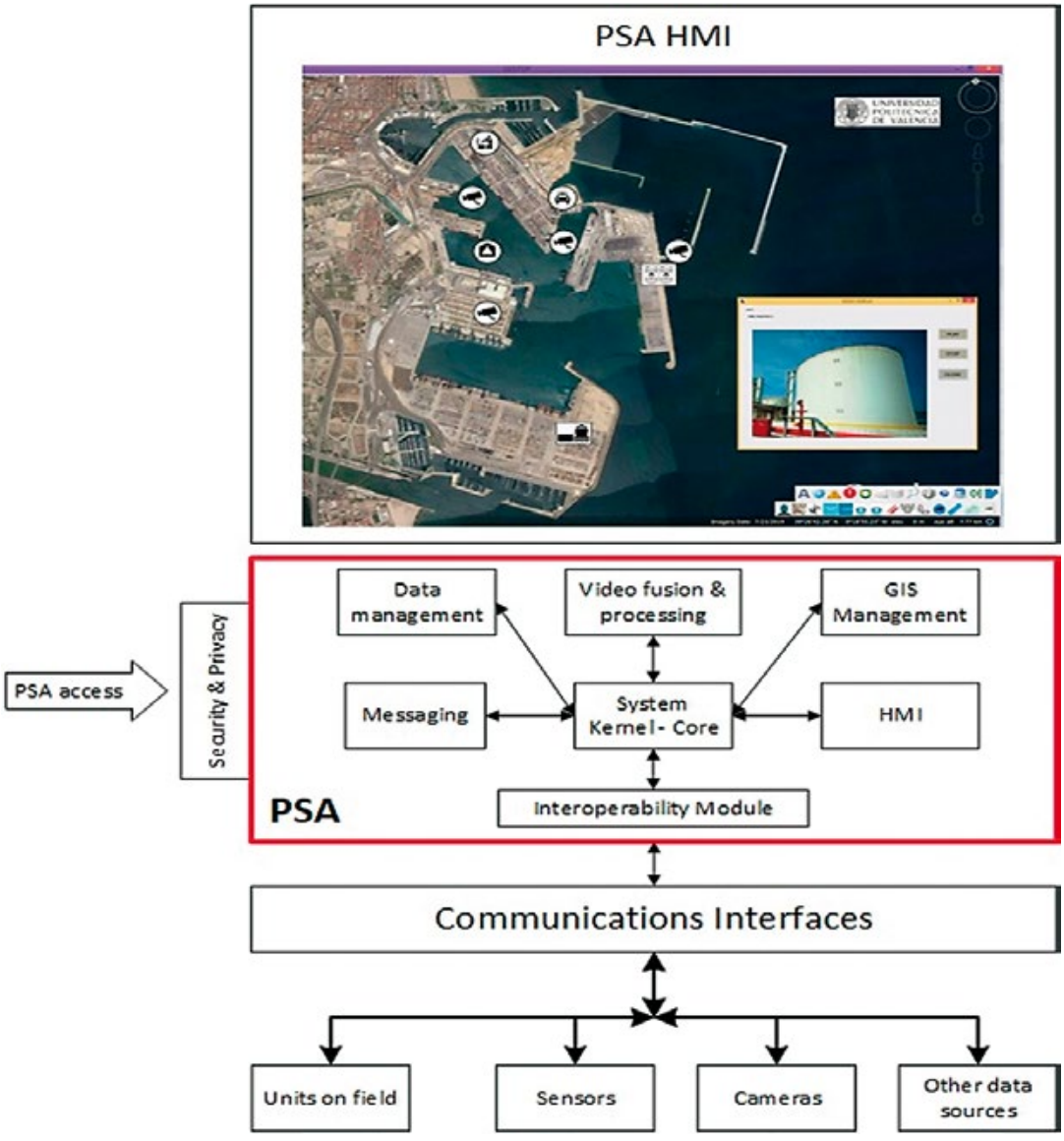
and pertinent stakeholders with the aim to ameliorate the current level of protection in the EU ports.

The targets defined are ambitious yet achievable, given the high profile partnership of SAURON, as well as the large community of ports and transport critical infrastructures operators involved in or backing the project, and also the maturity level of the technologies involved, most of which have been developed and tested in previous EU projects, what makes them innovative yet proven.

OUTCOMES:

1. Physical Situational Awareness application (PSA)

The PSA application proposed by SAURON can be adapted to different types of ports in order to cover their detected vulnerabilities and risks as well as effectively protect their main critical areas. This PSA will be based on the civil version of the Spanish Army Friendly Force Tracking (FFT) system deployed in Afghanistan, Lebanon and Mali. This system is a complete SA solution capable of integrating a wide range of sensors and offering advanced SA and Command and Control (C2) capabilities. These capabilities will allow the PSA to be used for preventing and detecting any kind of physical threat and manage the resources in field for responding and mitigating any declared threat. Information on the current situation status will be transferred to the rescue/security teams that could intervene in the mitigation activities for their own protection. The next figure shows a high level design schema of the PSA, depicting its main blocks.



Arquitectura de PSA

The PSA Human Machine Interface (HMI) presents different kind of information from different sources in real time in order to provide complete SA to the managers in charge of preventing, detecting and facing a declared threat. In addition, strict security and privacy policies will be taken into account in order to be consistent with the EU directives and the individual countries' legislations on these topics.

The information represented in the PSA HMI is as follows:

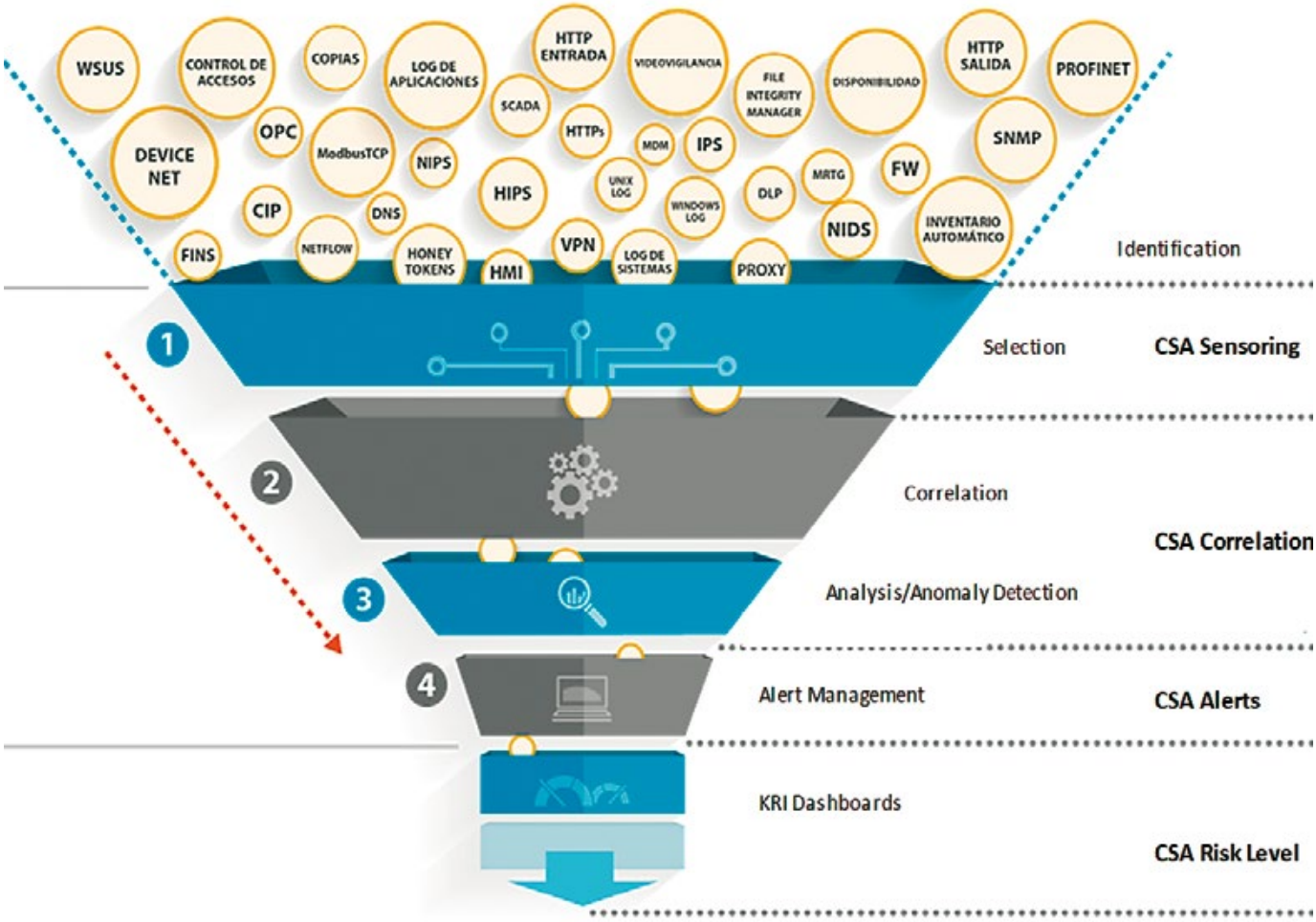
- **Maps of the affected area:** The PSA is capable of managing the main Geographical Information System (GIS) standards in order to show the more appropriate map of the affected area for geo-locating the rest of the visualized information.
- **Units on field location:** The GPS locations of the units (including vehicles) are received through the available communication interface, stored in the database and shown on the map. The refresh rate of these locations is configurable for the system administrator.
- **Aerial means location:** The GPS locations of the aerial means, e.g., unmanned aerial vehicles (UAVs), are also received through the available communication interface, stored in the database and shown on the map. The refresh rate of these locations is also configurable by the system administrator.
- **Real-time video:** The units (including terrestrial vehicles or UAVs), which have a video camera mounted, transmit their video flows through the communication network. These different real time video flows are shown on the PSA HMI on demand in order to present the situation evolution to the operators in real time. Using the same display, it will be possible to access the fixed video surveillance cameras.
- **Data from other sensors:** All data from other sensors deployed on the field that were connected to the PSA tactical network (e.g., fixed images, indoor safety detectors including smoke, fire and heat sensors, motion detection sensors, perimeter security sensors, etc.) is shown in a geo-referenced manner on the PSA HMI under the operator demand in order to see the sensors status and measurements/alarms.
- **Available GIS layers:** Different GIS layers such as; roads, grid, 3D terrain view, 3D buildings view, borders, available water points, network firewalls locations and so on are shown on the PSA HMI on demand.

Other SA and C2 capabilities of the SAURON PSA will be: messaging; data management; video processing and fusion; PSA geo-tools; PSA communications interfaces and interoperability; and PSA security & privacy.

2. Cyber Situational Awareness application (CSA)

The SAURON CSA application relies on a cyber security monitoring platform that will be able to acquire, process and analyse information gathered from multiple sources, originating from both cooperative and non-cooperative environments (i.e., both from port's own infrastructure and open sources). On a real-time basis, different cyber security sensors gather the relevant information from these sources, process the data in different cyber security incident detectors and send possible incidents to a correlation engine. This correlation engine processes all the collected information and applies intelligent rules in order to identify the most relevant facts from all the data. That is, the correlation engine will be able to generate intelligence to be disseminated to the operators of the system, in order for them to take decisions about the global cyber security state of the port.

The individual detectors include traditional, well-established threat detection measures, such as Intrusion Detection Systems (IDS), but also more innovative modules, such as Anomaly Detection (AD), aimed at detecting more complex and targeted attacks, such as Advanced Persistent Threats (APTs). These advanced modules employ intelligent algorithms, based on techniques such as machine learning, to identify previously unknown attacks, i.e., attacks that are not detectable by standard signature based models applied in traditional malware detectors or IDS. The detector modules integrated in SAURON will analyse network traffic within the organization and on its perimeters, in order to detect anomalies and to identify lateral movements and/or data exfiltration attempts, which are characteristic for APTs. In addition, the CSA will estimate a global cyber security risk level for the particular seaport infrastructure, calculated from the data gathered and analysed.



Cyber Situation awareness application schema

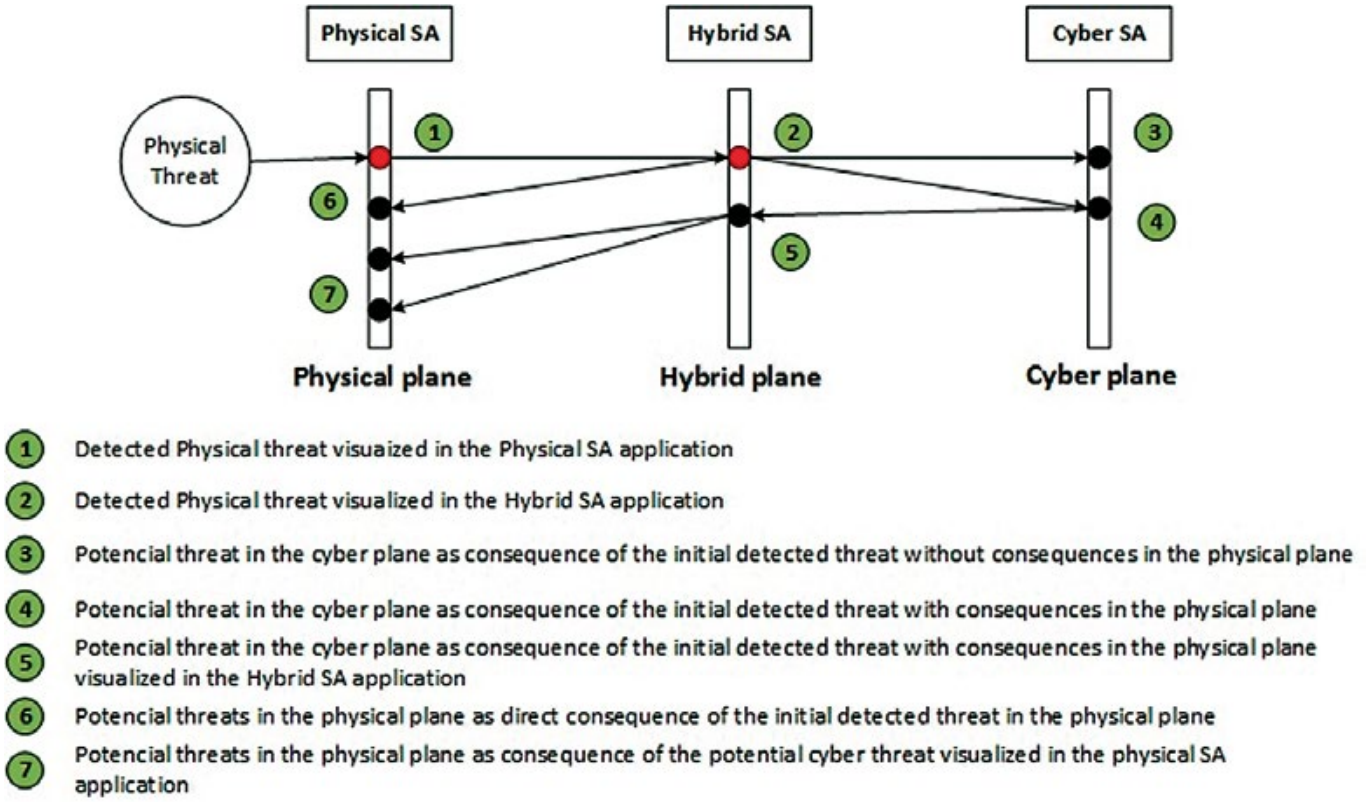
3. Hybrid Situational Awareness application (HSA)

The Hybrid SA application goes one step beyond the integration of the PSA and CSA applications. This innovative solution takes into account the real detected alarms of both applications and identifies and evaluates inter-correlations among different potential threats.

This detection functionality will be supported using mathematical concepts of graph theory and percolation theory. In addition, models of both the local physical infrastructure and the local cyber infrastructure will be created with interdependencies between them. Those approaches will allow the HSA to characterize the physical and logical interconnections between the two worlds of PSA and CSA and to identify the systems reachable from a single starting point. Additionally, percolation theory can describe the potential propagation of a threat, i.e., indicate which systems are more likely to be reached based on predefined probabilities. In this context, it is not relevant whether an incident occurred in the physical or in the cyber world: the cascade effects in both the physical and cyber world can be described simultaneously.

This way once a real physical and/or cyber threat is detected the potential consequences including cascade effect in both planes (physical and cyber) will be automatically shown to the decisions makers in order to give them a holistic SA on what is happen and how the situation could evolve.

Once the potential consequences and cascade effect of a detected threat have been shown, HSA will also propose some decision support actions that could help the decision makers to prevent or even mitigate the future stated consequences. An example of the working of this HSA application is depicted in the following diagram.



Detailed Example of a Hybrid SA

An incident in the physical plane, e.g., an explosion/fire, is detected in a building of the port. This event is detected by the PSA and is analysed by the HSA. The HSA shows in real time what potential consequences/effects this accident/attack could have in the near future in both planes. In this case study, several servers dedicated to cyber security and video management have been destroyed by the explosion. Consequently, a freight shipping application of a large company is at risk of being hacked and video flows and data have been lost from surveillance cameras and access control assets. This warns the decision makers that a physical attack and/or cyber intrusion in these items could now happen, since that specific area now has no video surveillance and access control data are no longer being received.

The HSA immediately provides advice to port staff to send security personnel to the areas that have lost video surveillance to prevent any physical intrusion and to personnel of the affected shipping company to manually check and carefully scrutinize the cargo activities until the company's IT system has guaranteed to be secure. Similar actions are performed by the HSA on the physical plane if a cyber threat is detected.

4. SAURON Emergency Population Warning System (EPWS)

An EPWS is a method whereby local, regional, or national authorities can contact members of the public en masse to warn them of an impending emergency. These warnings may be necessary for a number of reasons, including:

- Weather emergencies such as floods, hurricanes, etc.
- Geological disasters such as earthquakes, landslides, volcanic eruptions, or tsunamis.
- Industrial disasters such as the release of toxic gas or chemical contamination.
- Radiological disasters such as a nuclear plant disaster.
- Medical emergencies such as an outbreak of a fast-moving infectious disease.
- Warfare or acts of terrorism.

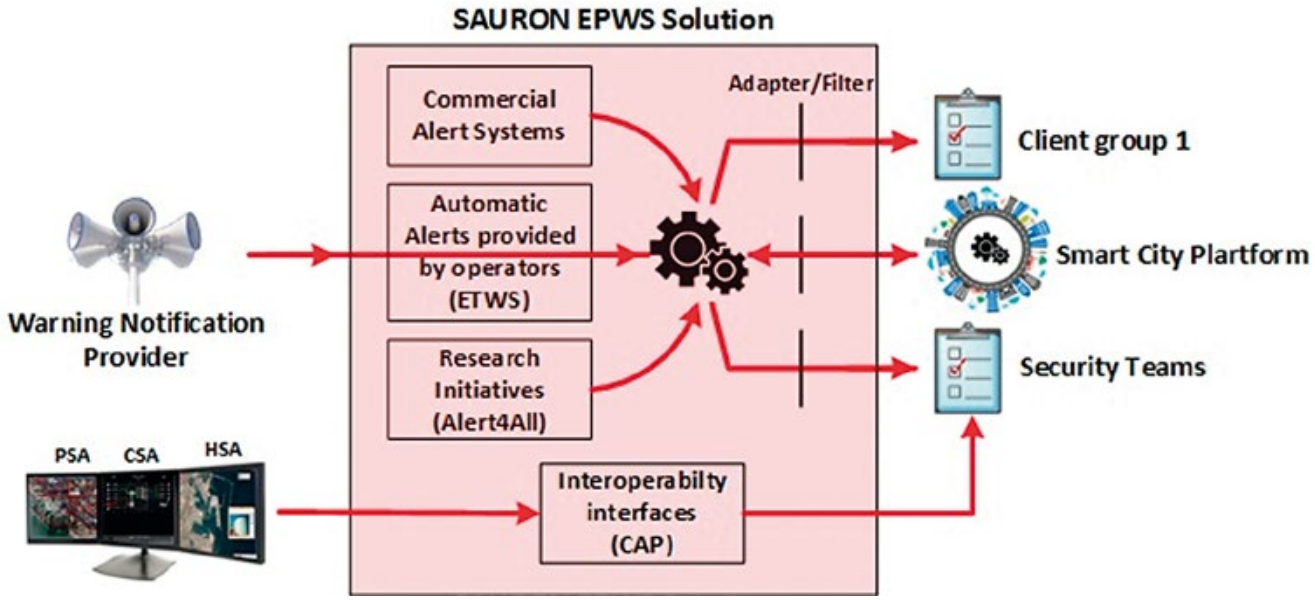
Improving CIs' resilience requires more than just hardening perimeters and increasing security protection or sends an alert to the population in the vicinity, but sharing of the information is also essential for keep the security teams informed about breaking events and current conditions, while also making it easy and safe to share intelligence with employees, government agencies and partners.

SAURON will work on the interoperability with Open Urban Smart City Platforms. Specific gateways will also be designed to allow the interaction of the SAURON system with previously existing and future Smart City Platforms (SCP).

Technically speaking an Emergency Population Warning System is composed of 5 main items:

- **An Alert Message Issuer:** it is the organization or the system that transmits the original alert. E.g.: water flood, fire, storm, etc.
- **Client groups:** alert messages can be sent to client groups: civil population, institutions, broadcaster, emergency responders
- **A message dispatch system:** who send alerts to client groups
- **An adapter from the Alert Message Issuer and the Dispatcher.** The adapter filters and adapt messages.
- **An adapter from the dispatcher to the client group.** The adapter filters, translates and adapts the message to the client group

SAURON integrará los equipos de rescate/seguridad en la solución EPWS de SAURON como un grupo de clientes específico. Además, SAURON proporcionará interfaces de interoperabilidad entre PSA, CSA y HSA con los sistemas C2 de los equipos de rescate/seguridad para informarles sobre la evolución de la situación. Estas interfaces se basarán en normas existentes, como el Protocolo de Alerta Común (CAP, por sus siglas en inglés).



SAURON EPWS Multi-layer Solution

PROTEUS - PROMOTING SECURITY AND SAFETY BY CREATING A MED CLUSTER ON MARITIME SURVEILLANCE

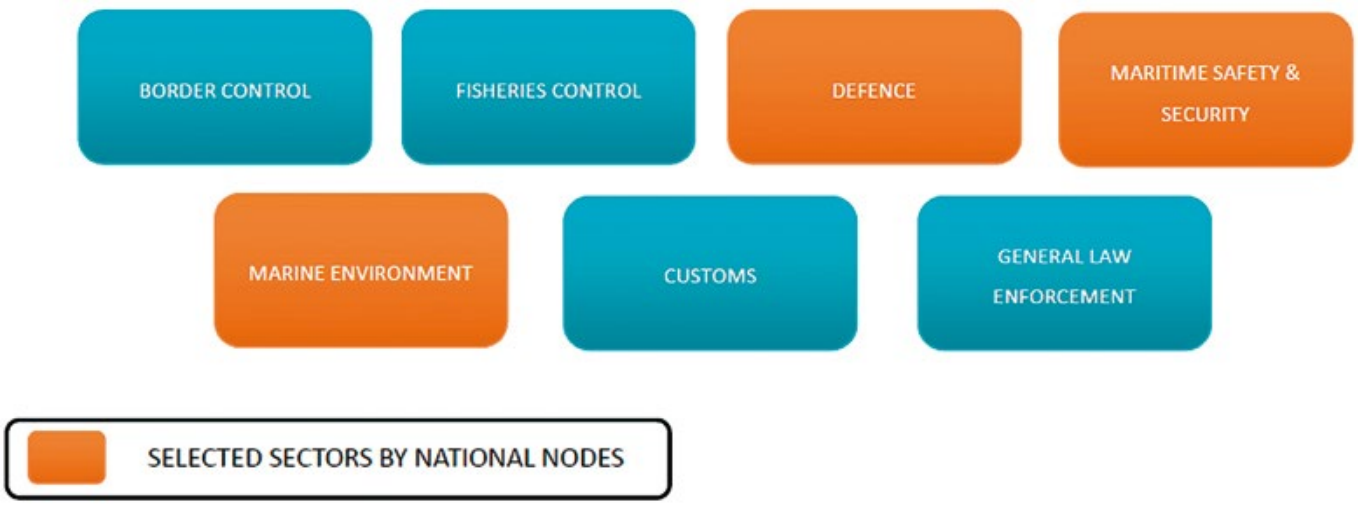
Project co-financed by the European Regional Development Fund

CLIENT/FUNDING ENTITY: European Commission, Interreg MED
DATE: 2017 – 2019
LOCATION: Mediterranean Countries
WEBSITE: https://proteus.interreg-med.eu/
CONTACT:
Pablo Palomo- Innovation Promotion - ppalomo@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

MOTIVATION

The Mediterranean Sea is a place where continents meet and the main link between the countries of the European Union, Africa, Asia and the Middle East. Within in, there are many activities that need to be monitored efficiently. The aim of **Maritime Surveillance** is to provide the necessary methods and systems that enable the actors involved to effectively exchange data on various maritime sectors and risks (Port Control, piracy, traffic and pollution monitoring, border control, defence, fisheries control). A major problem in maritime surveillance is gaps in the **information chain,** which can lead to a serious loss of time in the event of an emergency. The PROTEUS project seeks to exploit the **growth potential** of the emerging maritime surveillance industry, which can play a key role in the economic development of the Mediterranean area.

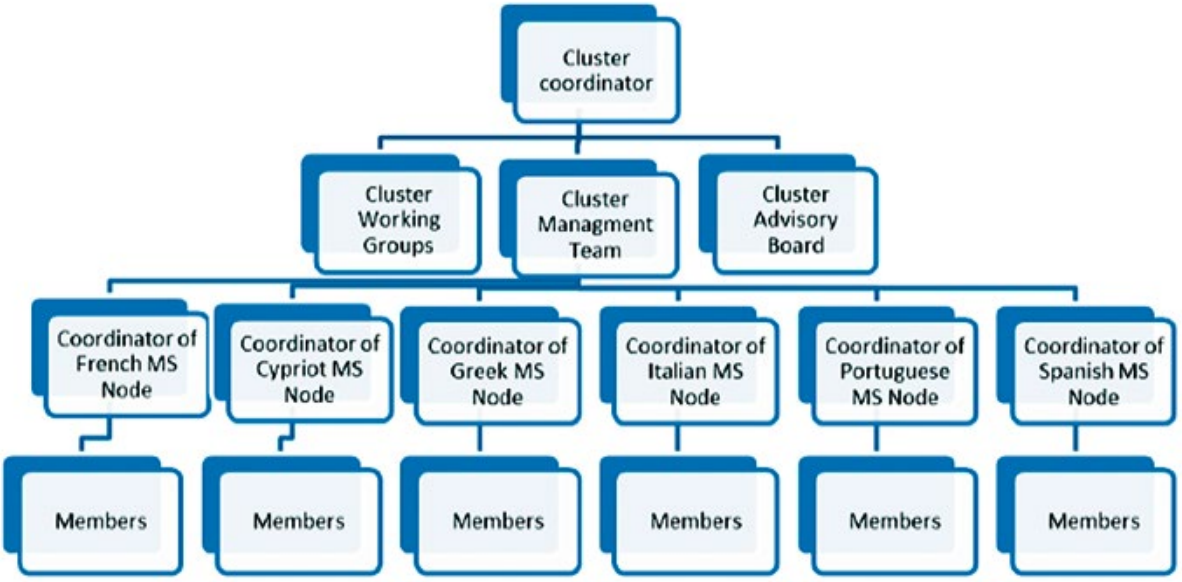


Sectors included in Maritime Surveillance

OBJECTIVE

The project aims to study various aspects and applications related to Maritime Surveillance, and to identify those that offer opportunities to develop beneficial transnational cooperation in the MED region. The project seeks to analyse aspects of Maritime Surveillance such as border control, customs, fisheries control, general implementation of legislation, the marine environment and maritime safety and security. Of particular importance is the exchange of information and data which have an impact on all these operations.

One of the underlying premises of the PROTEUS project is that these aspects can be more efficiently managed if the actors involved cooperate and exchange experiences and success stories. To that end, the project seeks to launch a Maritime Surveillance Cluster, which offers a mix of services and activities for transnational cooperation. This cluster must be composed of actors from the quadruple helix working in Maritime Surveillance: academic institutions, governmental entities, companies and civil associations. The project will compile the lessons learned from the launch of the cluster into proposals for European and regional policies and innovation opportunities for public-private partnerships.



Operational Structure of the Cluster

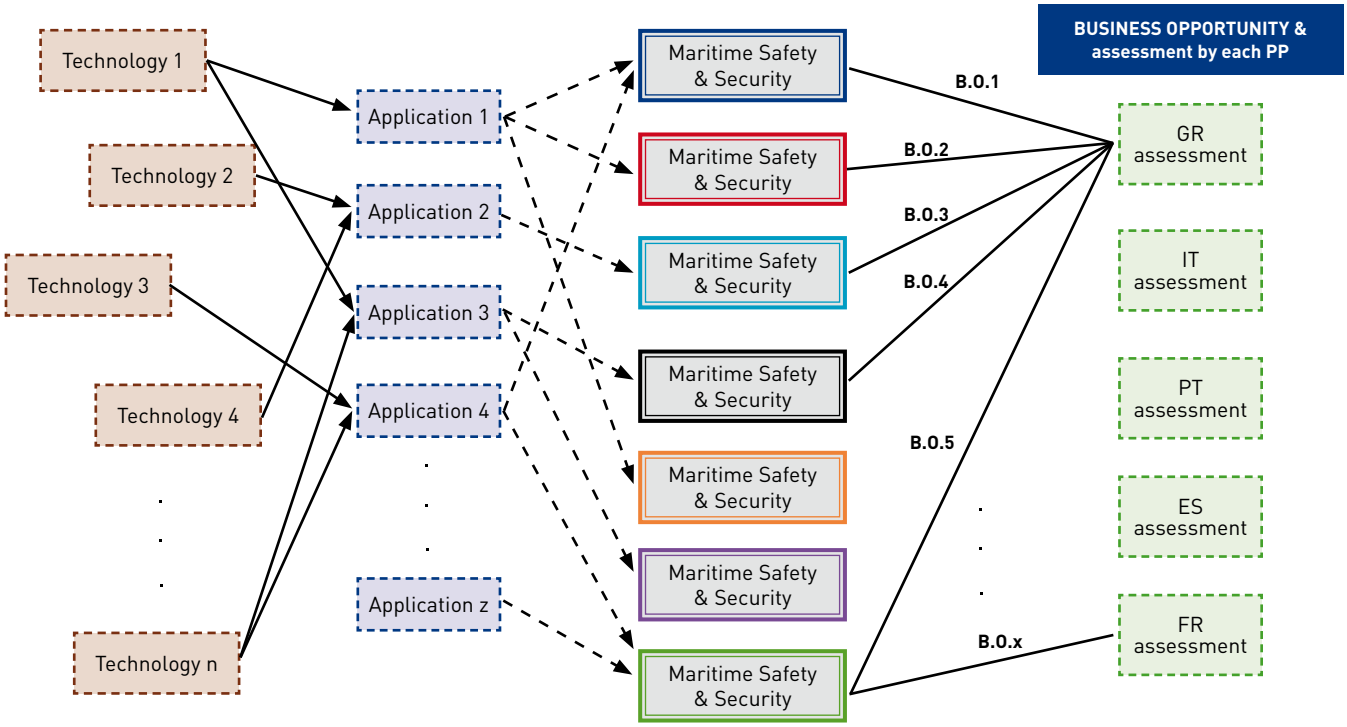
RESULTS

There are three key expected results of the project:

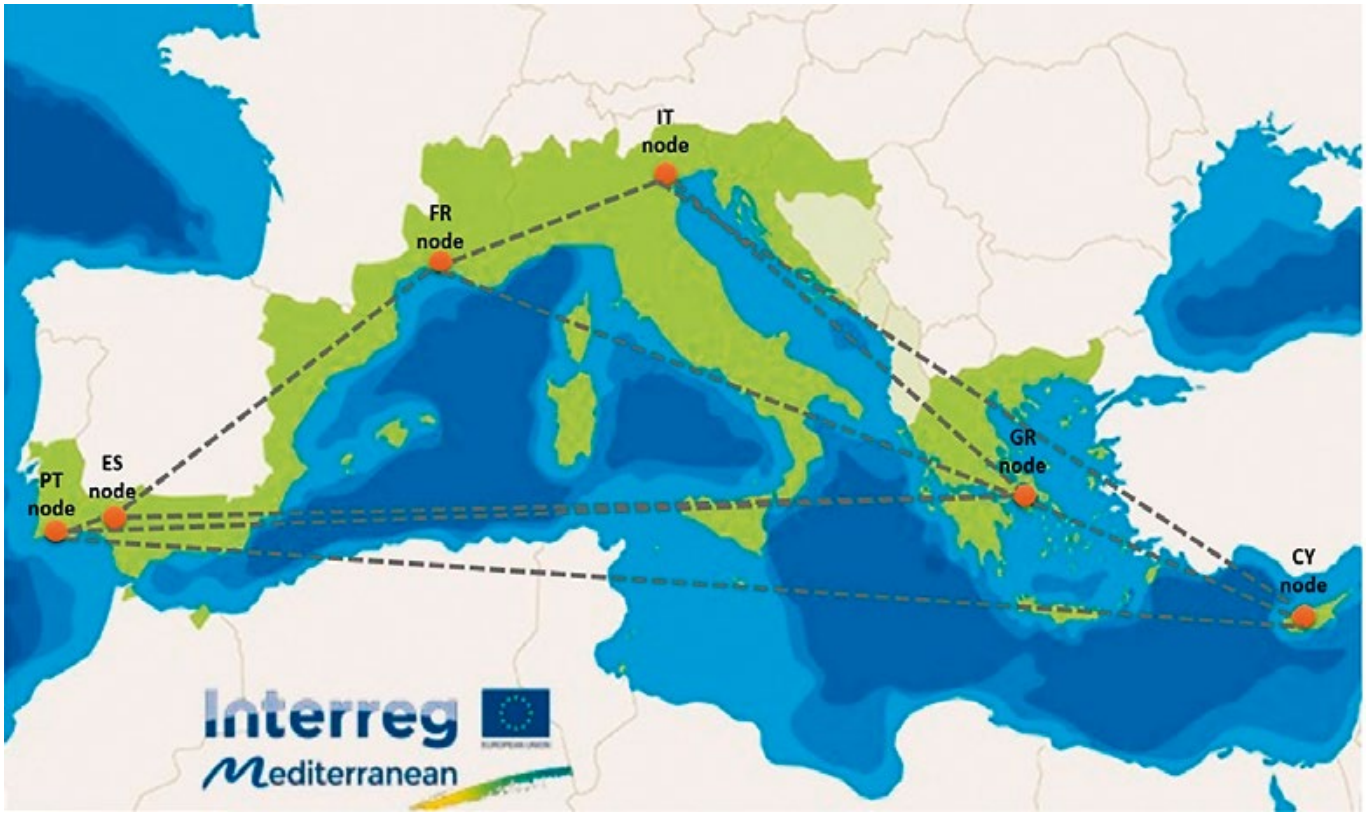
1. **Improved understanding of Maritime Surveillance and identification of the areas with the greatest potential for innovation.**

The project has identified the most crucial sectors in Maritime Surveillance in each of the countries participating in the project (Portugal, Spain, France, Italy, Greece and Cyprus). It has analysed their main needs and opportunities, focusing on priorities, best practices developed and the regulatory framework. Information has been collected from existing **Maritime Surveillance technologies** and related applications, in order to identify business opportunities and links with the industry. In that regard, the objectives of Maritime Surveillance have provided the starting point. They are: to understand, prevent and manage actions and events that may have an impact on maritime safety and security; to search for and rescue people and vessels; to respond to accidents and disasters; to control fisheries, marine pollution and customs; border control, enforcement of legislation and defence; as well as defending the economic interests of the European Union.

The project takes advantage of available sources of information, such as the most relevant previous projects on the subject, the European Commission, the European Maritime Safety Agency (EMSA), etc., in order to map out **national priorities** and the tools needed to launch activities and provide services to companies and administrations. In addition, a methodology has been designed for developing **regional nodes,** which will be the antennas of the MED Maritime Surveillance Cluster. This methodology specifies the operation of the cluster, encouraging more shared transnational.



Methodology for identifying business opportunities

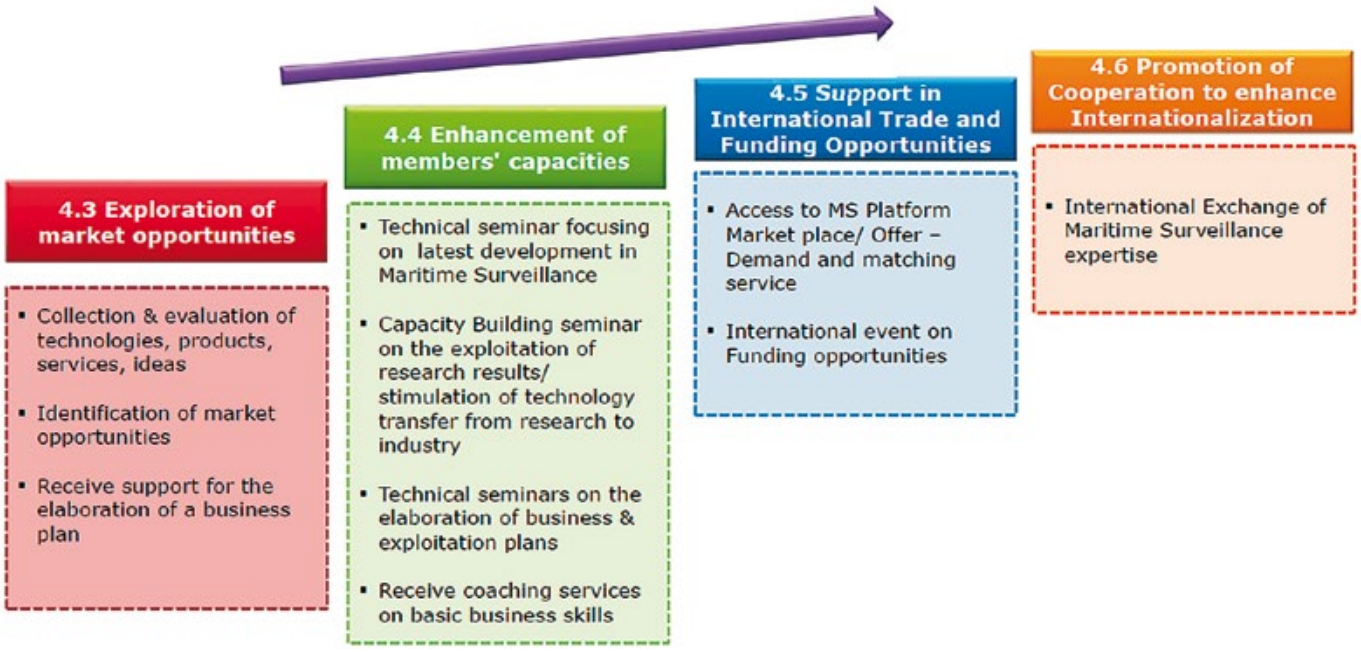


Cluster Nodes

2. Improved transnational cooperation of stakeholders with the implementation of a maritime cluster that provides a mix of support services.

The project seeks to improve and promote the **exchange of information** between authorities responsible for maritime surveillance, from coastguards and the Navy to the Port Authorities, those who control the fisheries, the customs authorities and the administrations charged with environmental monitoring and control. The enhanced exchange of information will lead to improved efficiency, quality, responsiveness and coordination of surveillance operations in the European maritime space. It will also be a boost to innovation, which will be beneficial in terms of citizens' security. In particular, the idea is that the information collected by a maritime authority which is considered necessary for the activities of other authorities should be shared, rather than collected and processed several times by different authorities.

All these initiatives underline the need for integration between the different legislation, operational proposals and technical capacities of the MED Member States. The aim of the Maritime Surveillance Cluster is to develop the means to s**hare experiences and data** between the responsible authorities, companies and innovation centres, in order to implement an integrated maritime surveillance system. This is expected to maximize the sustainable use of the sea; improve knowledge and innovation potential in maritime-related matters; ensure sustainable development and growth in coastal regions; and strengthen European maritime leadership.

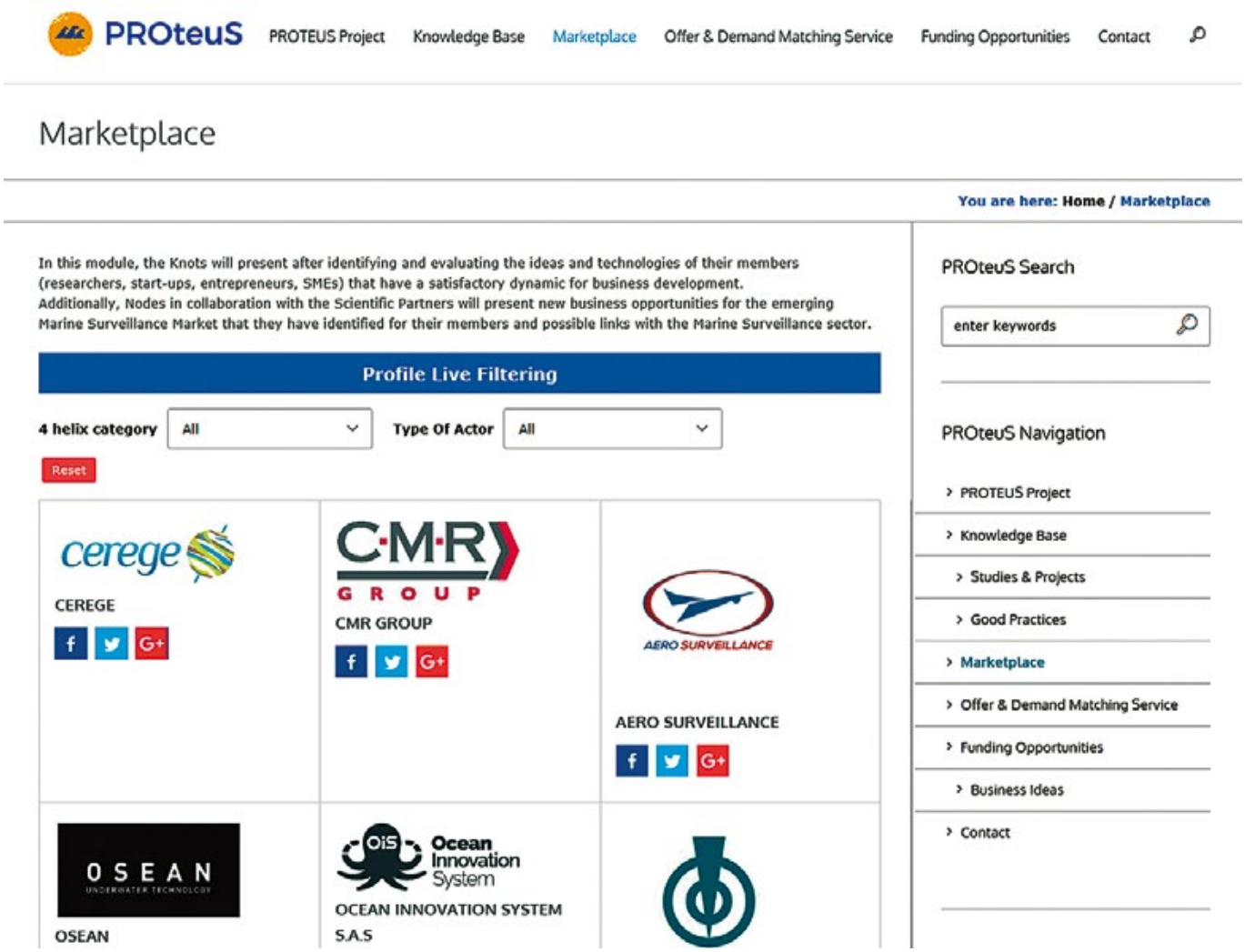


Tasks to be performed by the Cluster

3. Efficient transfer of the results from the operations of the cluster to the Action Plans on policy and innovation.

It is expected that, as a result of PROTEUS, adaptations will be made to the Maritime Surveillance plans, policies and strategies of the participating countries and the rest of the MED countries. The project will develop action plans analysing the growth potential of the Maritime Surveillance industry in the Mediterranean area. These plans will also set out lines of support for the creation of links and synergies between the Maritime Surveillance Cluster and other international networks and clusters, aimed at establishing integrated and efficient maritime policies.

Thanks to the exchange of data collected by the different responsible entities (military authorities, coastguard, Port Authorities, ...), the results of the project will highlight the opportunities for development, research and innovation, and will underline the ways in which the actors can collaborate and develop innovative services and products.



Web platform for the PROTEUS project

ODYSSEA - OPERATING A NETWORK OF INTEGRATED OBSERVATORY SYSTEMS IN THE MEDITERRANEAN SEA

ODYSSEA

European Commission

Horizon 2020
European Union funding
for Research & Innovation

CLIENT/FUNDING ENTITY: European Commission, H2020 Programme
DATE: June 2017 – November 2021
LOCATION: European Union
WEB: www.odysseaplatform.eu
CONTACT:
Rafael Company Peris - Innovation Promotion EU Manager - rcompany@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

The motivation of the project is to contribute to the preservation of the Mediterranean Sea. On the basis of the data available in the Copernicus, GEOSS, GOOS and EMODNet databases—which collect all environmental, oceanographic, biological, etc. information from the Mediterranean—a platform will be developed. This platform will provide reports that enable the impact of human activity in the Mediterranean to be monitored. There will also be other commercial uses for the platform, which means that the future sustainability of the platform will not be dependent on public resources.

In parallel, several observatories will be set up in the Mediterranean in order to collect data and analyse the impact of commercial activities (fishing, maritime traffic, tourism, etc.) in these areas. One of these observatories will be in the Valencian Community.

MITIGATE - MULTIDIMENSIONAL, INTEGRATED, RISK ASSESSMENT FRAMEWORK AND DYNAMIC, COLLABORATIVE RISK MANAGEMENT TOOLSFOR CRITICAL INFORMATION INFRASTRUCTURES

MITIGATE

European Commission

Horizon 2020
European Union funding
for Research & Innovation

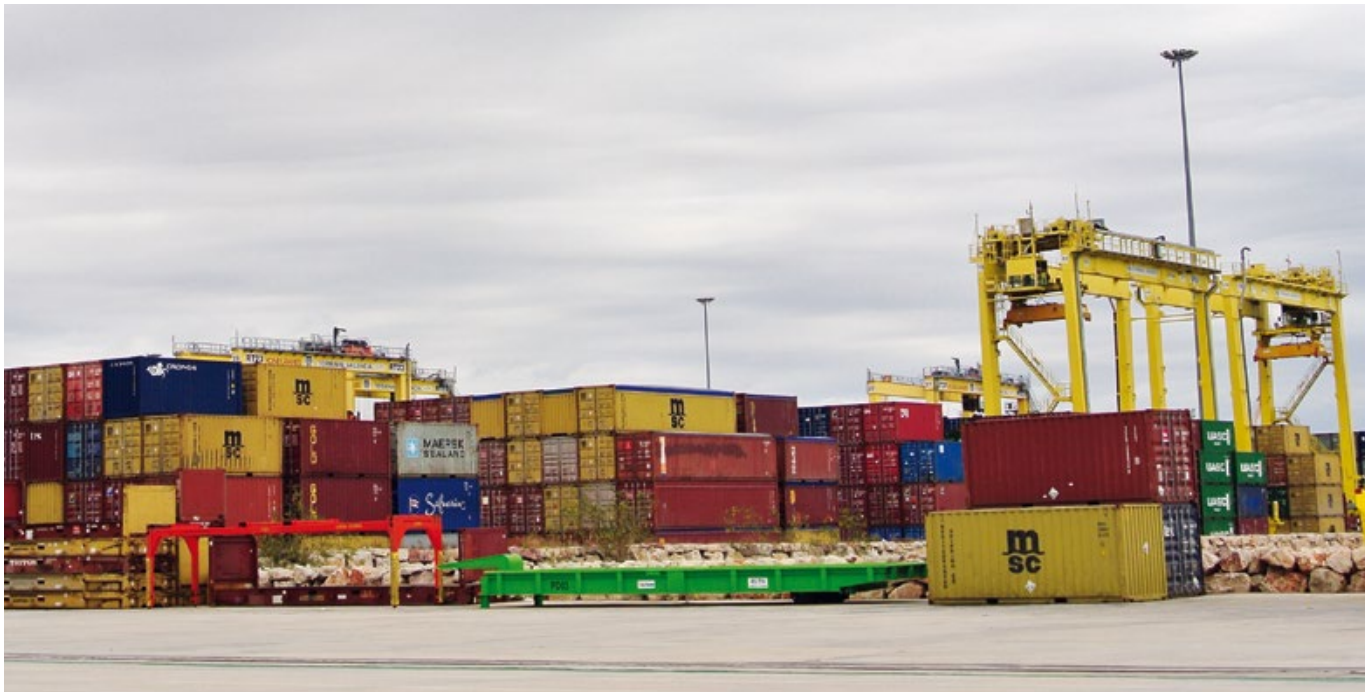
CLIENT / FUNDING ENTITY: European Commission, H2020 Programme
DATE: October 2015 – March 2018
LOCATION: European Union
WEB: www.mitigateproject.eu
CONTACT:
Rafael Company - Innovation Promotion EU Manager - rcompany@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

The objective of the MITIGATE project was to integrate, validate and commercially exploit an effective risk management system based on existing standards in critical port infrastructures. This model manages to examine all the threats identified in the global supply chain, as well as those linked to interdependencies and the "cascade effects" associated with users and critical port infrastructures.

The results of MITIGATE were validated on the basis of a real pilot developed in five ports of the European Union (Bremen, Livorno, Piraeus, Ravenna and Valencia) and with the active participation of more than 200 users (security agents, terminal operators, plant operators, standardization experts, etc.). The pilot projects carried out enabled the development and validation of a standards-based risk management framework for critical information infrastructures in ports (cyber security). The system is accessible through cloud-based ICT tools, which enables risk evaluation, the simulation of threats and the formulation of mitigation strategies.

In the case of the Port of Valencia, a real container transport scenario has been defined, showing all the actors involved in the different processes and sub-processes as well as the systems involved in the transfer of information.



PICASSO - PREVENTING INCIDENTS AND ACCIDENTS BY SAFER SHIPS IN THE OCEANS

Picasso
Preventing Incidents & Accidents for Safer Ships in the Oceans

Co-financed by the Connecting Europe Facility of the European Union

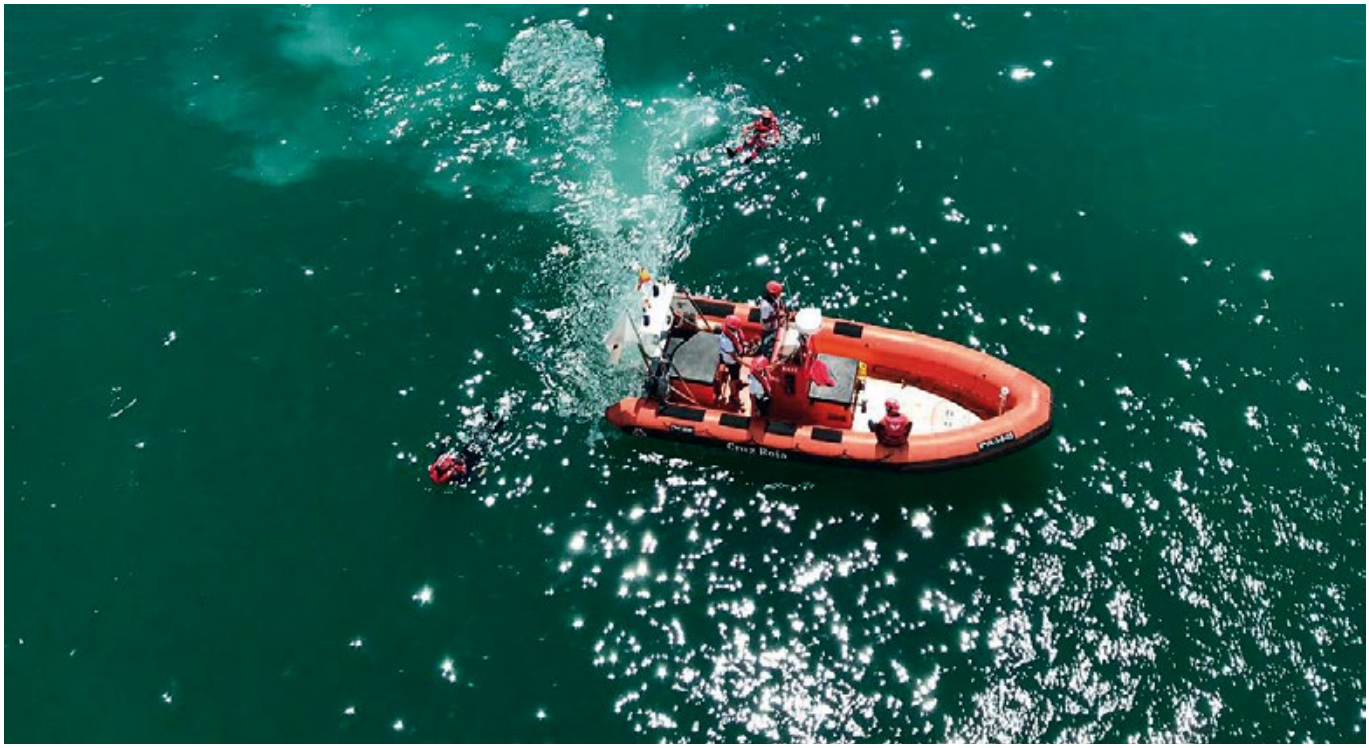
CLIENT/FUNDING ENTITY: European Commission, Connecting Europe Facility programme
DATE: May 2016 – June 2018
LOCATION: European Union
WEB: www.picassoproject.eu
CONTACT:
José Andrés Giménez Maldonado - Director of Port Logistics - jagimenez@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

The Picasso project aims to achieve modern, well-developed maritime transport, with a well-trained workforce that allows the sector to be safer, more efficient and more sustainable.

As part of the project, the following actions have been carried out:

- Development and testing of a technological solution based on the use of a remote-controlled vehicle that can monitor safety and security-related events in a port. Pilot tested at the SAGGAS terminal to monitor the seabed of the dock and ensure safer operations.
- Mass evacuation exercise with a passenger ship in Malta.
- Development of a man-overboard-detection system allowing Search and Rescue (SAR) teams to more easily detect the presence of people, small-sized dangerous elements or discharges (in the case of pollution monitoring) in the water.
- Creation of ICT tools for advanced mission and safety training of SAR teams (Serious Games).
- Organization of training on managing emergency simulations in ports.



2.2.6. Port Development

The Port Planning and Development Programme covers activity in port-related R&D&I, technical assistance, cooperation and training projects. In terms of R&D&I, during the period 2017-2018, there has been continued progress in the line of work relating to container terminals, through the application of the results of the MASPORT project (Automation and Simulation Methodologies for the Evaluation and Improvement of Capacity, Performance and Service Level of Port Container Terminals). For the analysis of port capacity, the methodology published in the context of the aforementioned project is applied to different types of terminals classified according to the type of freight and way of handling it.

With regard to international technical assistance, attention should be drawn to the projects developed in Colombia, Peru and Uruguay. In Colombia, Fundación Valenciaport worked alongside the Corporación Autónoma Regional del Río Grande de la Magdalena—CORMAGDALENA; in Peru, with the Lambayeque Regional Port Authority and the National Port Authority; and in Uruguay, with the Andean Development Corporation.

The Cormagdalena project incorporates into the programme's know-how the dimension of inland waterway transport on one of South America's major rivers. On the other hand, updating the Master Plan for the Port of Callao (Peru) consolidates the opportunity to collaborate on planning the largest port infrastructure on South America's Pacific coast. The Lambayeque Port Terminal project centres on a deep-water port facility in the north of Peru. This terminal enables mining products to be shipped out in a maritime arc without natural shelter. The form of the coastline has made it necessary to construct a bridge over the sea to access the port.

In terms of cooperation and training, collaboration continues with the TrainForTrade Port Management Programme of the United Nations Conference on Trade and Development (UNCTAD). Fundación Valenciaport also works alongside the Port Authority of Valencia in Spain as well as in Argentina, Peru, and the Dominican Republic, tackling various aspects of port planning and management. The Port Planning and Development Programme also collaborates with the rest of Fundación Valenciaport's programmes, both on specific projects and providing general support on those issues that fall within its scope.

Lastly, it should be noted that the work team in this area has actively participated in national and international congresses, conferences and training programmes, where they have delivered communications and presentations. Team members also continue to participate in their specialized continuous training programme in response to the ongoing need to stay up to date and improve their skills.

UPDATE OF THE MASTER PLAN FOR THE PORT TERMINAL OF CALLAO

CLIENT / FUNDING ENTITY: National Port Authority (APN) of Peru
DATE: March 2018 – September 2019
LOCATION: Peru
CONTACT:
Arturo Monfort Mulinas-Director of R&D&I and Port Development - amonfort@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

MOTIVATION:

The legal framework of the port system of Peru (SPN by its initials in Spanish) covers the port planning instrument referred to as the National Port Development Plan (PNDP by its initials in Spanish) of Peru. This is approved as a Supreme Decree, and must incorporate the Master Plans or Management Plans for the ports in the system. The current PNDP has been in effect since 2012 and the Master Plan for the Port Terminal of Callao, the main port facility in the country, dates from 2010. Given the time that has elapsed, the evolution of the port sector and the fact that concessions have been awarded—including the North Terminal and the Minerals Terminal in 2011—it is considered appropriate to update the Master Plan for the Port Terminal of Callao. That update is the aim of this project.

OBJECTIVES:

In accordance with the terms of service, the studies to be carried out must incorporate a particular focus on:

- An analysis of current traffic, possible new services to be implemented and factors that will shape the future business of the port, considering the corresponding service demand scenarios over a 30-year time horizon.
- An analysis of the compatibility between port development and its urban and environmental surroundings, primarily in regard to impacts on the maritime coastline from beach erosion due to the influence of the port; and
- An analysis of the requirements of the port as an intermodal node, especially with respect to its logistics facilities, functionality and accessibility.

In line with the above, the methodology used to carry out the study is intended to:

- Evaluate the current port situation and future trends.
- Study the demand.
- Compare operational capacities (supply/demand balance).
- Study the operational management of different types of traffic.
- Define foreseeable needs.
- Define objectives and strategies.
- Select, evaluate and determine the most appropriate alternatives in the time planning scenario.
- Produce the functional design of the new configurations.
- Establish the basic elements of the operational model (infrastructure, equipment, facilities and services).
- Evaluate and schedule investments.
- Consider environmental issues.

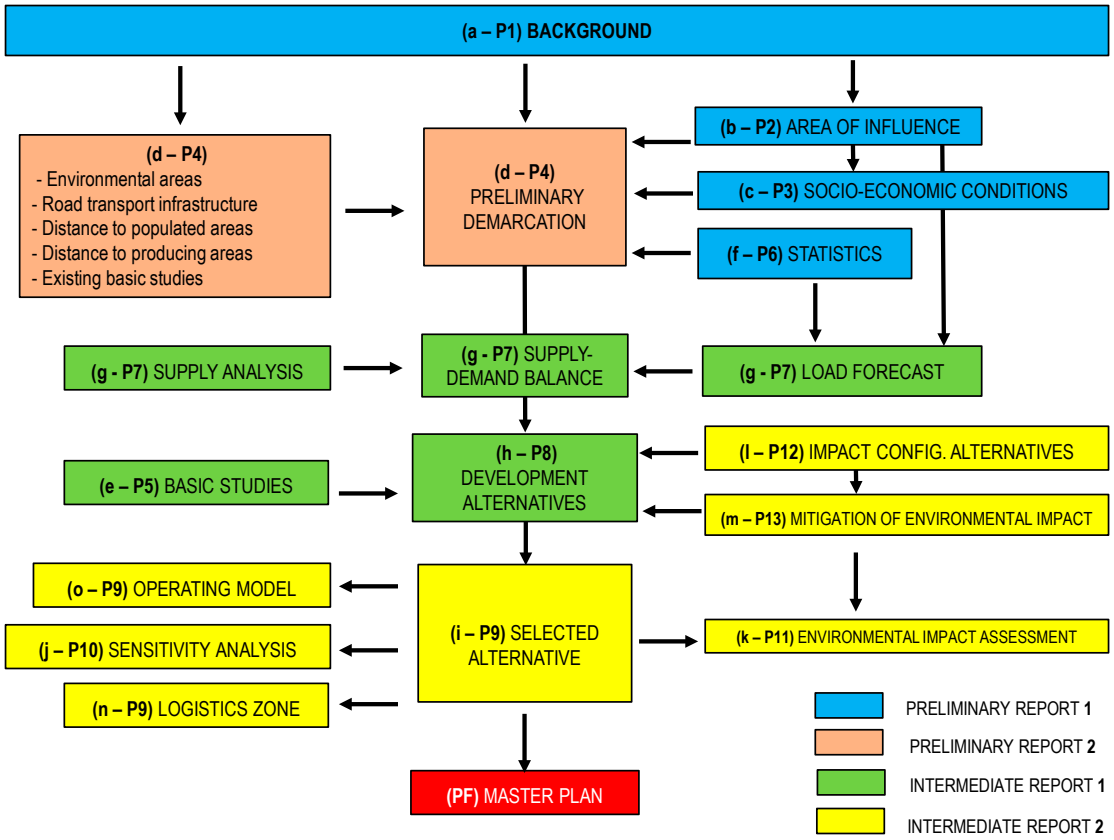
METHODOLOGY:

The methodology of the consultancy entails 5 Stages that can be broken down into 15 phases, from (a) to (o).

An additional phase, Phase 0, involves producing the Work Plan. These phases yield 13 outputs, the contents of which combine to form the final Master Plan document.

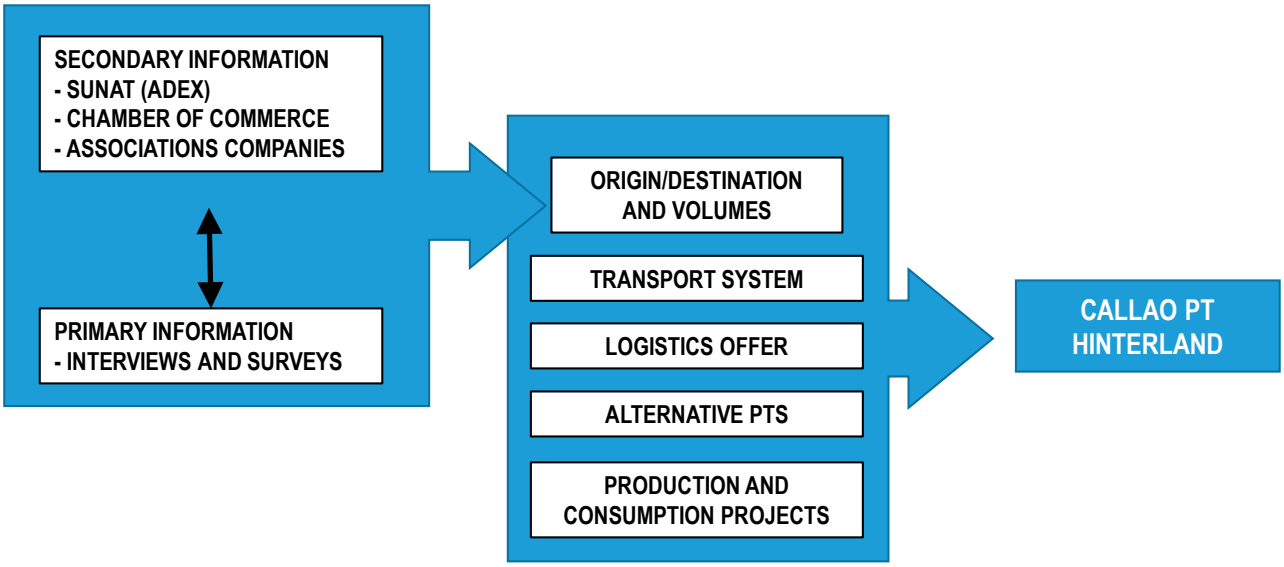
OUTPUT		PHASES and outputs 1	
1	Work Plan		P0 Work Plan 2
2	Preliminary Report 1	a	P1 Background to the Master Plan
		b	P2 Demarcation of the Area of Influence
		c	P3 Socio-economic analysis
		f	P6 Port Movement Statistics
3	Preliminary Report 2	d	P4 Preliminary Demarcation 4
4	Interim Report 1		Preliminary Report 1-2 Revised
		e	P5 Basic Studies
		g	P7 Supply-demand balance
		h	P8 Proposal of alternative development approaches
5	Interim Report 2		Interim Report, Revised
		i	P9 Selecting and developing one of the alternatives
		o	P9 Operating model
		n	P9 Logistics Zone
		j	P10 Sensitivity Analysis
		k	Environmental Impact Assessment
		l	Impact of the configuration of development alternatives
		m	Mitigation of environmental impact
6	Final Report		

METHODOLOGY: INTERACTION BETWEEN PHASES AND RESULTS (OUTPUTS)]



AREA OF INFLUENCE

One of the main results of Preliminary Report 1 was the definition of the area of influence or hinterland of the Port of Callao. The figure below depicts the methodology used: a first block of activities aimed at obtaining the necessary information and a second block consisting of analysing the origin and destination of the cargo, the freight transport system and the logistics on offer. Based on this information, the hinterland of the Port of Callao was defined.



For Preliminary Report 1, a series of interviews were carried out with agents of the port logistics community of the Port of Callao, and a forum was organized, which sparked a lot of interest. Members of the port logistics community were able to participate in the forum in order to learn first-hand about the process of updating the Master Plan and share their proposals and concerns.

Geographically, the area of influence (hinterland) of the Port Terminal of Callao (TPC) is comprised of six regions: Callao, Lima, Junín, Ica, Ancash and La Libertad, which together comprise an area of around 160,000 km2.

PRELIMINARY DEMARCATION

In accordance with the PNDP, the areas of port development must adhere to the stipulations of the Law of the National Port System (LSPN by its initials in Spanish). Thus, for the case of the Port of Callao, the following areas of port development have been identified for the area of Callao:

Focusing the future development on the current location of the port, the proposal for the expansion of the facility covers three areas: the potential expansion of the South Container Terminal, the concession for which has been awarded to DP World Callao; the expansion and restructuring of the Multipurpose North Terminal, with the concession awarded to APM Terminals; and an area of new development based on Phase VI of the 2010 Master Plan. This proposal includes the design of new breakwaters.

CONCEPTUAL SCHEME FOR THE PRELIMINARY DEMARCATION

In 2008, the APN approved both Preliminary Report 1 and Preliminary Report 2, and work got underway on Interim Report 1.

DEVELOPMENT OF A MANAGEMENT PLAN FOR THE NATIONAL PORT SYSTEM OF URUGUAY

CLIENT / FUNDING ENTITY: Andean Development Corporation.
DATE: September 2016 – April 2017
LOCATION: Uruguay
CONTACT:
Arturo Monfort Mulinas-Director of R&D&I and Port Development - amonfort@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

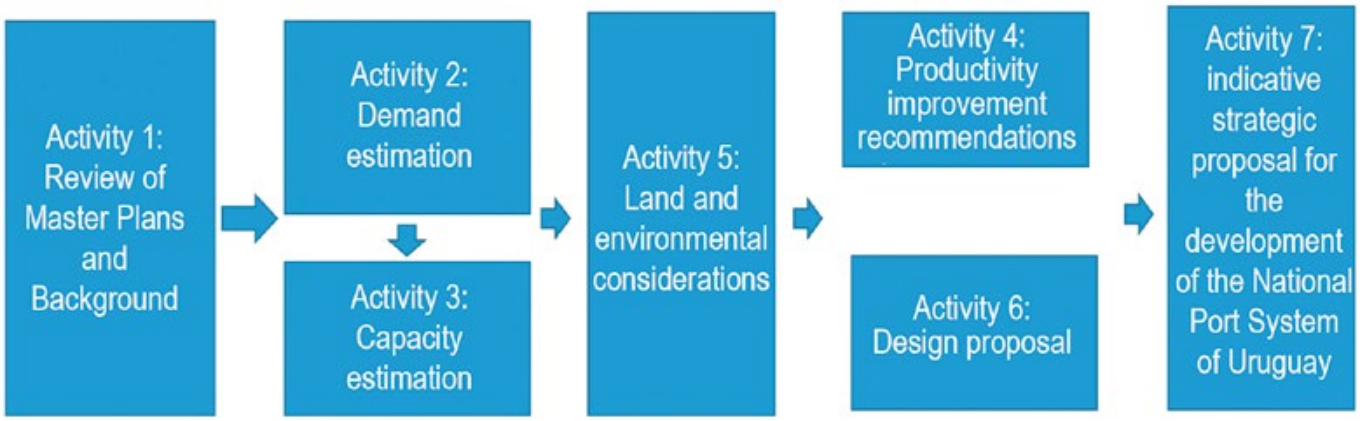
OBJECTIVE

To draw up an indicative strategic proposal for the development of the National Port System of Uruguay, with a 15-year time horizon. This is in response to the changes witnessed in the global maritime sector and the substantial rise in traffic, which are forcing ports to adapt their infrastructure to the new scenarios.

METHODOLOGY

In order to achieve the objectives and comply with the scope of the consultancy, the methodology presented below was used:

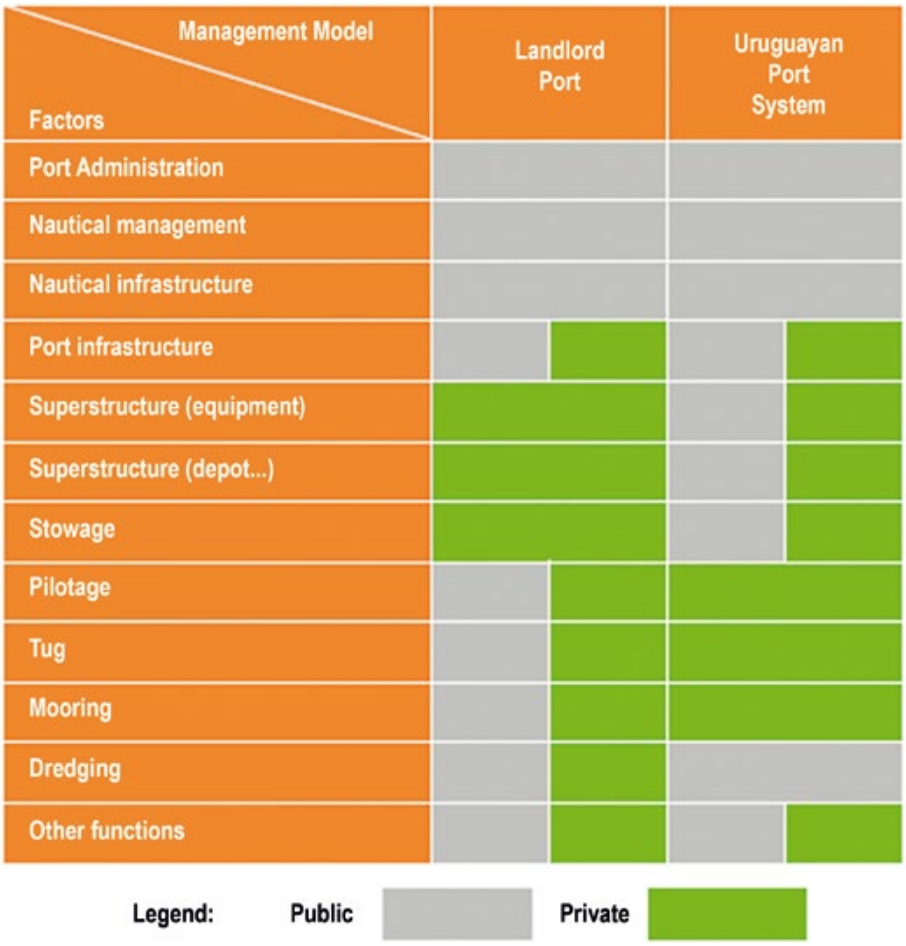
FIGURE 1: METHODOLOGY TO BE USED IN THE STUDY



Source: own elaboration

Activity 1 entailed reviewing the existing master plans for the commercial ports of Uruguay as well as other studies and data related to the project. This first activity served as the basis for the other activities of the study. In addition to analysing the Master Plans of the Uruguayan ports, the activity involved compiling existing information on Uruguayan ports' infrastructure, facilities and freight handling equipment. This included data on the features of the berthing line, management model, port layout, amount of equipment and the respective output, etc.

FIGURE 2: COMPARISON OF THE MODELS OF PORT MANAGEMENT



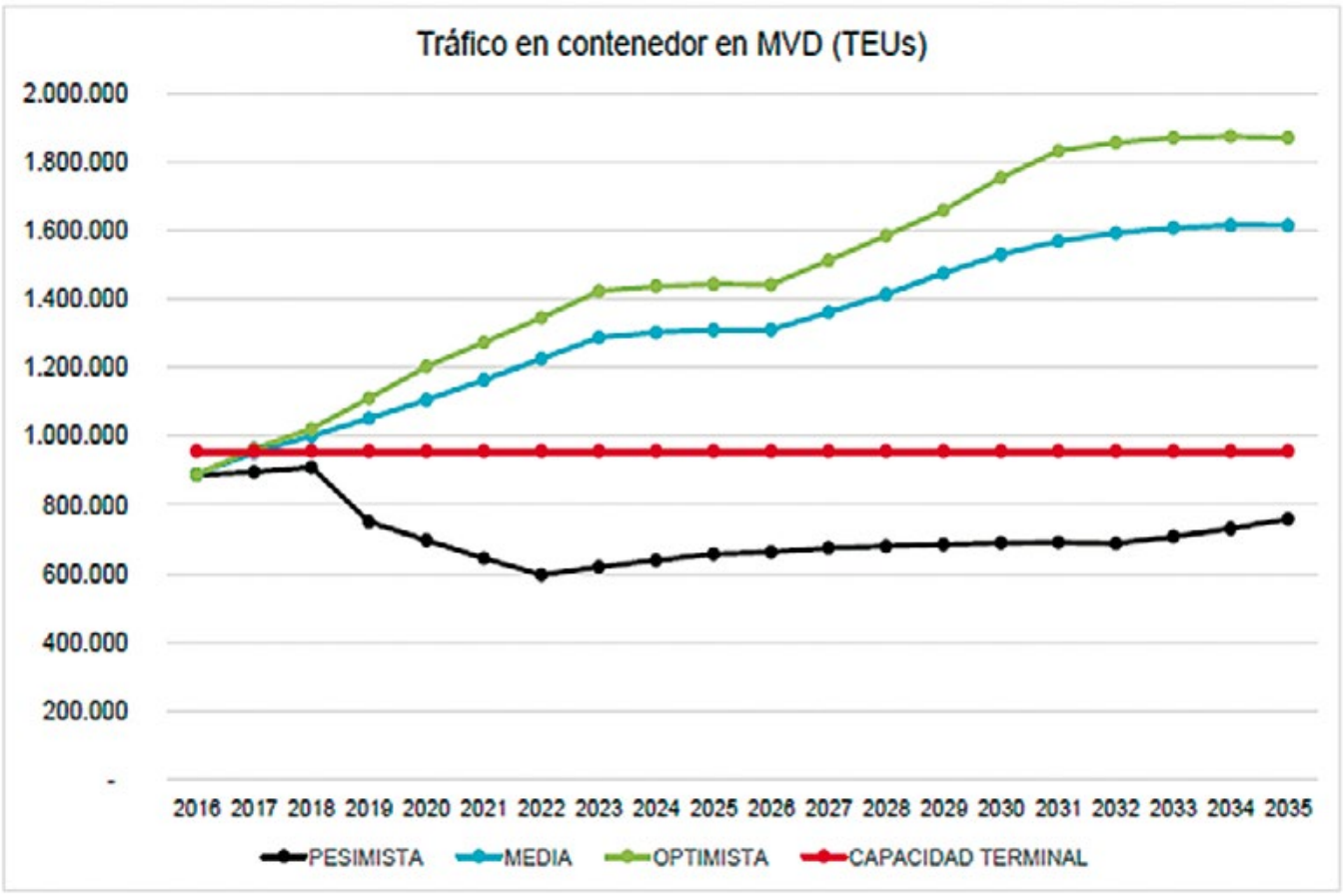
Source: own elaboration

Activity 2 yielded an indicative estimate of the port system demand for the period 2016 - 2030, for the business areas under study; namely, containers, bulk freight, fishing, vehicles, special loads and logistics partners. The results obtained in this activity represented a fundamental input for the subsequent activities included in this method for drawing up an indicative proposal for the Management Plan for the National Port System of Uruguay. Thus, the results obtained are to be adapted to meet the informational needs of the other activities.

The proposed methodology for implementing this activity was based on the combined use of two techniques: time-series analysis and macroeconomic analysis of foreign trade flows. The results obtained through the application of these two techniques were refined at a later validation stage, through the incorporation of expert opinion into the model. A final step involved stochastic modelling of the resulting data, incorporating uncertainty into the estimation of demand.

Activity 3 entailed a study of the capacity of the national port system infrastructure—that is, of the commercial ports of Uruguay—to meet both current and projected demand.

FIGURE 3 - FORECAST SCENARIOS OF CONTAINER DEMAND IN THE PORT OF MONTEVIDEO AND CURRENT CAPACITY OF THE CONTAINER TERMINAL (TEUS)



Source: own elaboration

The aim of Activity 4 was to provide recommendations on productivity improvements enabled by different actions relating to port equipment, the management model, changes in infrastructure provision and dredging, seeking specialization in some areas. Under Activity 5, an analysis was carried out of the existing national and municipal regulations and/or of imminent approval and implementation of land-use planning and environmental regulations in the area of influence, as well as any existing agreements. The aim of Activity 6 was to present general design proposals for port facilities. Lastly, Activity 7 presented the indicative strategic proposal for the development of the National Port System of Uruguay, identifying the main actions to be undertaken in the next 15 years, and outlining the required investments in infrastructure and equipment.

RESULTS:

A series of recommendations were set out to improve the functioning of Uruguay's commercial ports, with special attention paid to the Port of Montevideo. In addition, three possible development scenarios were proposed. One of the study recommendations for more optimal use of space in the port is to combine into one virtually all entrances and exits of cargo vehicles into the port area. Another recommendation was that the ANP should develop a detailed plan for internal distribution, which should be updated each year or as often as necessary given the growth in demand.

PESSIMISTIC SCENARIO:

The study provided a projection of activity within the Montevideo terminal up to 2020. To make the comparison, it took data from 2016 when the terminal handled 888,119 TEUs and 2.1 million tonnes of bulk cargo.

Under the pessimistic scenario, in 2020 the Port of Montevideo would move about 697,000 TEUs of export and import containers and containers in transit, and 1.5 million tonnes of bulk cargo. For a such a decline to occur, a series of negative events would have to take place, such as:

- Worldwide tariff increases.
- A downturn in trade
- Deterioration of commodity prices.
- Slow, slight recovery of the Southern Cone in the short and medium term.
- Greater efficiency and better prices in new terminals in Buenos Aires.
- Gradual loss of Paraguay's transshipments, which would mostly go to Buenos Aires.

MEDIUM SCENARIO:

In this projection, the Port of Montevideo would register an increase of activity in 2020, moving 1.1 million TEUs and 2.5 million tonnes of bulk cargo. For that to happen, changes should be made from the previous scenario.

- Strong commercial presence of China, India and Indonesia worldwide.
- Recovery of commodity prices.
- Moderate recovery of Southern Cone with institutional reforms in Argentina and Brazil.
- Gradual improvement of port depth up to 13.5 metres (currently 12.6 metres).
- Competitive transshipment price, even when passing through two terminals; transshipment from Paraguay still goes to Montevideo.
- Fishing dock in Capurro.

OPTIMISTIC SCENARIO:

The most optimistic scenario is that the Port of Montevideo will move more than 1.2 million TEUs by 2020, with bulk cargo increasing to 3.2 million tonnes. For that to happen, the Port Authority will have to carry out a series of infrastructure works and external conditions will have to improve:

- Single global market, global trade agreements and dismantlement of tariffs.
- Incorporation of a new specialized container terminal; improved productivity with container-handling gantry cranes.
- Montevideo gradually achieves a port depth of 14 metres.
- Investment in 300 km of railway for UPM and longer-term a rail connection with Rivera.
- Increase in transshipments from Paraguay in the port, and capture of transshipments from Patagonia.
- Fishing dock in Capurro, with competitive conditions to fill containers with frozen fish.

PLANNING AND DEVELOPMENT OF THE MAIN ASPECTS CONCEPTUALIZED IN THE MASTER PLAN FOR THE PORT TERMINAL OF LAMBAYEQUE

CLIENT / FUNDING ENTITY: Lambayeque Regional Port Authority
DATE: September 2017 – November 2018
LOCATION: Peru
CONTACT:
Arturo Monfort Mulinas-Director of R&D&I and Port Development - amonfort@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

The general objective of this consultancy service is to plan and produce the demand forecasts of the Master Plan for the Lambayeque Port Terminal. This requires verifying the capacity of the proposed offer, carrying out an economic/financial analysis in order to confirm the sustainability of the port project in the short, medium and long term, and identifying the prompts for starting subsequent stages of project development.

DIAGNOSTIC ANALYSIS OF THE CURRENT STATUS OF TRUSTMARKS IN THE PORTS OF LÁZARO CÁRDENAS, MANZANILLO, VERACRUZ AND ALTAMIRA (MEXICO) AND PROPOSED ACTION PLAN FOR IMPROVEMENT

CLIENT / FUNDING ENTITY: Integrated Port Authority of Lázaro Cárdenas, Manzanillo, Veracruz and Altamira.
DATE: October 2017 – December 2017
LOCATION: Mexico
CONTACT:
Arturo Monfort Mulinas-Director of R&D&I and Port Development - amonfort@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

The project aims to provide a diagnostic analysis of the current status and the degree of implementation of each of the quality standards in the ports of Lázaro Cárdenas, Manzanillo, Veracruz and Altamira (Mexico).

It is also aimed at drawing up an action plan for improvement. In order to achieve this overall aim, the specific objectives are:

- Gain an understating of the quality model implemented in each of the four ports through their corresponding trustmarks.
- Carry out a diagnostic analysis of the current status of each of the trustmarks in each of the four ports. This involves gaining an understanding of the processes analysed, the commitments made, the organizational structure created in the port community to maintain the quality standard, the number of users, as well as the degree of functionality.
- Evaluate the degree of implementation of the mark in each of these ports.
- Identify possible causes of incorrect implementation of the mark.
- Draw up a road map and action plan to enable the implementation of the suggested improvements emerging from the review in each of the four ports.

SKILLFUL - SKILLS AND COMPETENCES DEVELOPMENT OF FUTURE TRANSPORTATION PROFESSIONALS AT ALL LEVELS

CLIENT / FUNDING ENTITY: European Commission, H2020 Programme
DATE: September 2016 – September 2019
LOCATION: European Union
WEB: http://www.skillfulproject.eu/
CONTACT:
Ana Rumbeu Daviu - Director of Training - arumbeu@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

The main aim of Skillful is to identify the skills and competences that will be required of future transport sector workers and to define the necessary methods, tools and courses to meet these training needs. There are three specific objectives: to review the current knowledge and skills requirements of the transport industry, as well as emerging and future ones; to structure the key specifications and components of the training courses; and to identify and propose new business roles in the education and training chain.

VET-PORT - APPLYING ECVET AND ECTS TO CERTIFY COMPETENCES AND SKILLS IN THE MARITIME PORT SECTOR

CLIENT / FUNDING ENTITY: European Commission, Erasmus + Programme

DATE: May 2015 – September 2017

LOCATION: European Union

CONTACT:

Ana Rumbeu Daviu - Director of Training - arumbeu@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

The VET-Port project aims to study and promote the competences of a number of professional profiles—namely, Terminal Manager, Planning Supervisor and Articulated Vehicle Driver—in order to facilitate the mobility of these workers between the ports participating in the project (in Italy, the Netherlands, Ireland and Spain).

ANALYSIS OF THE APPLICATION TO EXTEND THE CONCESSION TERM FOR CCUPATION OF THE PUBLIC PORT OF THE PORT AUTHORITY OF VALENCIA, HELD BY NOATUM CONTAINER TERMINAL VALENCIA, S.A.

CLIENT / FUNDING ENTITY: Port Authority of Valencia

DATE: July 2017 – August 2017

LOCATION: Valencia

CONTACT:

Amparo Mestre Alcover - Market Intelligence - Area Manager - amestre@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

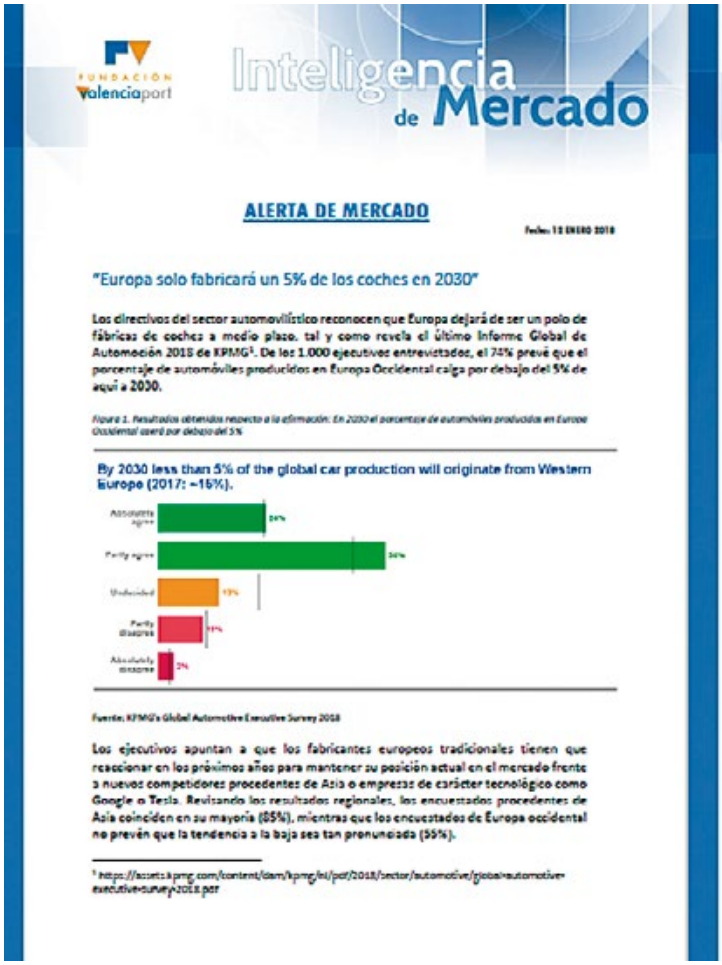
The first phase entailed a review of the agreement governing compliance with the obligations relating the concession. This review enabled the second phase, which involved an analysis of the application made by the concessionaire of the first Public Container Terminal of the Port of Valencia. The application was reviewed in reference to the "recommendations regarding the main legal, procedural and economic aspects that may be of interest in proceedings initiated under the provisions of the 10th Transitional Provision of the Consolidated Text of the Law on State Ports and Merchant Shipping", approved by State Ports.

2.2.7. Market intelligence

The ultimate aim of this line of activity is to make comprehensive, high-quality information available to the Port Authority of Valencia, the port community and related institutions, in order to assist their decision-making in an increasingly complex globalized market. The work is centred on the maintenance and operation of databases and simulators; state-of-the-art methodologies; as well as the tracking and monitoring of the maritime economy.

Since its creation, Fundación Valenciaport has made major efforts in the production and maintenance of databases, with the aim of filling the existing gaps in the field of transport statistics. The data it provides enables the analysis of the market and the setting of policies and business strategies. At present, these statistical tools constitute a strategic asset for Valenciaport. As a result, it has its own databases that supply information for which there is a growing demand, both within the organization itself and the port-logistics community. This information is released periodically, in the twice-yearly Transport Services newsletter and in the monthly analysis of the *Valencia Containerised Freight Index.*

In addition, over the period 2017-2018, Fundación Valenciaport has strengthened its commitment to providing relevant, high-quality information to the members of the Valenciaport cluster. It has consolidated the production of fortnightly "Market Alert" briefing notes, which analyse the impact of the major news in the sector, as well as the production of "in-depth reports" prepared ad-hoc for certain members of the port community, which examine in detail certain topics of particular interest.



Inteligencia de Mercado

ALERTA DE MERCADO

"Europa solo fabricará un 5% de los coches en 2030"

Los directivos del sector automovilístico reconocen que Europa dejará de ser un polo de fábricas de coches a medio plazo, tal y como revela el último Informe Global de Automoción 2018 de KPMG[1]. De los 1.000 ejecutivos entrevistados, el 74% prevé que el porcentaje de automóviles producidos en Europa Occidental caiga por debajo del 5% de aquí a 2030.

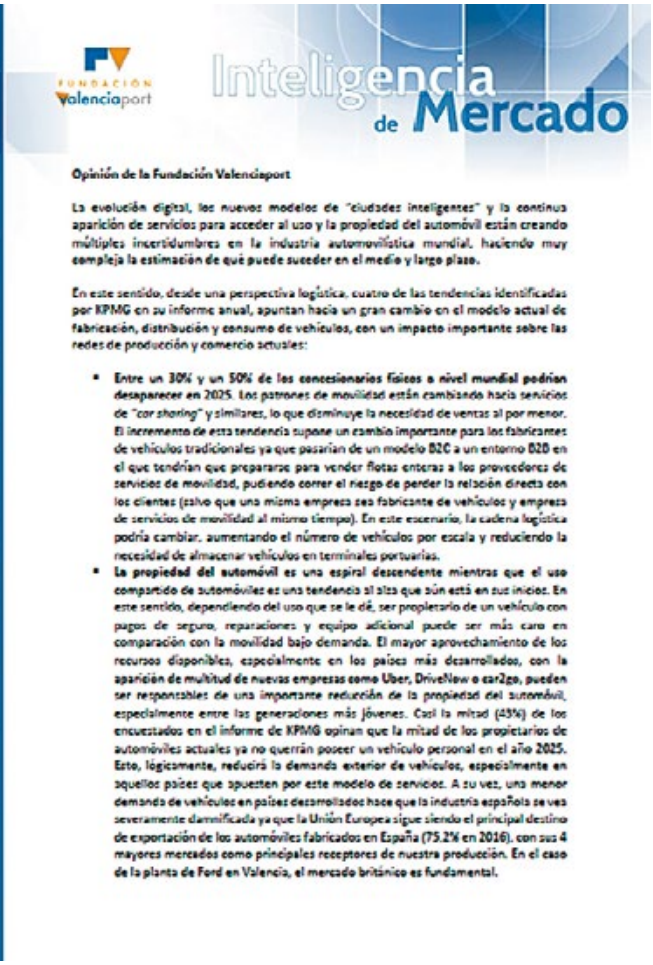
Figura 1. Resultados obtenidos respecto a la afirmación: En 2030 el porcentaje de automóviles producidos en Europa Occidental caerá por debajo del 5%

By 2030 less than 5% of the global car production will originate from Western Europe (2017: ~16%).

Fuente: KPMG's Global Automotive Executive Survey 2018

Los ejecutivos apuntan a que los fabricantes europeos tradicionales tienen que reaccionar en los próximos años para mantener su posición actual en el mercado frente a nuevos competidores procedentes de Asia o empresas de carácter tecnológico como Google o Tesla. Revisando los resultados regionales, los encuestados procedentes de Asia coinciden en su mayoría (85%), mientras que los encuestados de Europa occidental no prevén que la tendencia a la baja sea tan pronunciada (55%).

[1] https://assets.kpmg.com/content/dam/kpmg/bi/pdf/2018/sector/automotive/global-automotive-executive-survey-2018.pdf



Inteligencia de Mercado

Opinión de la Fundación Valenciaport

La evolución digital, los nuevos modelos de "ciudades inteligentes" y la continua aparición de servicios para acceder al uso y la propiedad del automóvil están creando múltiples incertidumbres en la industria automovilística mundial, haciendo muy compleja la estimación de qué puede suceder en el medio y largo plazo.

En este sentido, desde una perspectiva logística, cuatro de las tendencias identificadas por KPMG en su informe anual, apuntan hacia un gran cambio en el modelo actual de fabricación, distribución y consumo de vehículos, con un impacto importante sobre las redes de producción y comercio actuales:

- **Entre un 30% y un 50% de los concesionarios físicos a nivel mundial podrían desaparecer en 2025.** Los patrones de movilidad están cambiando hacia servicios de "car sharing" y similares, lo que disminuye la necesidad de ventas al por menor. El incremento de esta tendencia supone un cambio importante para los fabricantes de vehículos tradicionales ya que pasarían de un modelo B2C a un entorno B2B en el que tendrían que prepararse para vender flotas enteras a los proveedores de servicios de movilidad, pudiendo correr el riesgo de perder la relación directa con los clientes (salvo que una misma empresa sea fabricante de vehículos y empresa de servicios de movilidad al mismo tiempo). En este escenario, la cadena logística podría cambiar, aumentando el número de vehículos por escala y reduciendo la necesidad de almacenar vehículos en terminales portuarias.
- **La propiedad del automóvil es una espiral descendente mientras que el uso compartido de automóviles es una tendencia al alza que aún está en sus inicios.** En este sentido, dependiendo del uso que se le dé, ser propietario de un vehículo con pagos de seguro, reparaciones y equipo adicional puede ser más caro en comparación con la movilidad bajo demanda. El mayor aprovechamiento de los recursos disponibles, especialmente en los países más desarrollados, con la aparición de multitud de nuevas empresas como Uber, DriveNow o car2go, pueden ser responsables de una importante reducción de la propiedad del automóvil, especialmente entre las generaciones más jóvenes. Casi la mitad (45%) de los encuestados en el informe de KPMG opinan que la mitad de los propietarios de automóviles actuales ya no querrán poseer un vehículo personal en el año 2025. Esto, lógicamente, reducirá la demanda exterior de vehículos, especialmente en aquellos países que apuesten por este modelo de servicios. A su vez, una menor demanda de vehículos en países desarrollados hace que la industria española se vea severamente damnificada ya que la Unión Europea sigue siendo el principal destino de exportación de los automóviles fabricados en España (75.2% en 2016), con sus 4 mayores mercados como principales receptores de nuestra producción. En el caso de la planta de Ford en Valencia, el mercado británico es fundamental.

VALENCIA CONTAINERISED FREIGHT INDEX

CLIENT / FUNDING ENTITY: Port Authority of Valencia
DATE: January 2018 onwards.
LOCATION: Valencia
CONTACTO:
Amparo Mestre Alcover - Market Intelligence - Area Manager - amestre@fundacion.valenciaport.com

PROJECT DESCRIPTION (ABSTRACT):

The VCFI was created as an initiative of the Port Authority of Valencia, and jointly developed by the PAV and Fundación Valenciaport. The index was designed to reflect the evolution of market rates for the export of full containers by sea from Valenciaport. The VCFI aims to inform users about the evolution of export freight rates from Valencia, and to be the European benchmark for certain shipping routes from the Mediterranean. To that end, it uses a very similar methodology to the Shanghai Containerized Freight Index (SCFI).

The VCFI provides value-added information on shipping freight rates—a key factor in determining port competitiveness. The publication of the VCFI represents a major change in the sector, by providing the port community with information that had previously been confidential. This exercise in transparency seeks to help improve the decision-making of the different users of the port.

On the one hand, the publication of this information is useful for shippers, as they now have a composite index showing market trends. The VCFI can serve as a barometer of the health of the market by showing the Maritime Transport supply and demand for the main commercial routes from Valencia. For shippers, the VCFI represents a tool they can use to predict the evolution of freight rates within their markets of interest, which is a key determinant of the cost of their export operations. On the other hand, it will also be useful for operators that offer such services, providing a benchmark for the evolution of their own freight rates and those on the market.

As a result, the VCFI is contributing to the functioning of a more transparent market with better information available for decision-making, thereby resulting in a more efficient market. The index was launched in July in front of the port community of Valencia. It has sparked great interest, as reflected in the impact of its monthly publications.

In the first stage, the VCFI consists of an aggregate composite index, but in subsequent methodological developments, sub-indexes will be constructed, which offer more detail disaggregated by the geographical areas identified in the construction of the index. Specifically, the export destinations of Valenciaport have been grouped into 13 geographical areas that correspond to the main traffic corridors from Valencia. Within those areas, 42 ports have been selected. Those ports represent 60% of containerized export traffic from Valenciaport, and their rates will serve as a reference for the calculation of the index. The geographical areas represented in the VCFI are Eastern Mediterranean, Western Mediterranean, Atlantic Europe, Baltic States, Far East, Middle East, USA and Atlantic Canada, Central America and the Caribbean, Atlantic Latin America, West Africa, East Africa, Pacific Latin America and the Indian subcontinent.

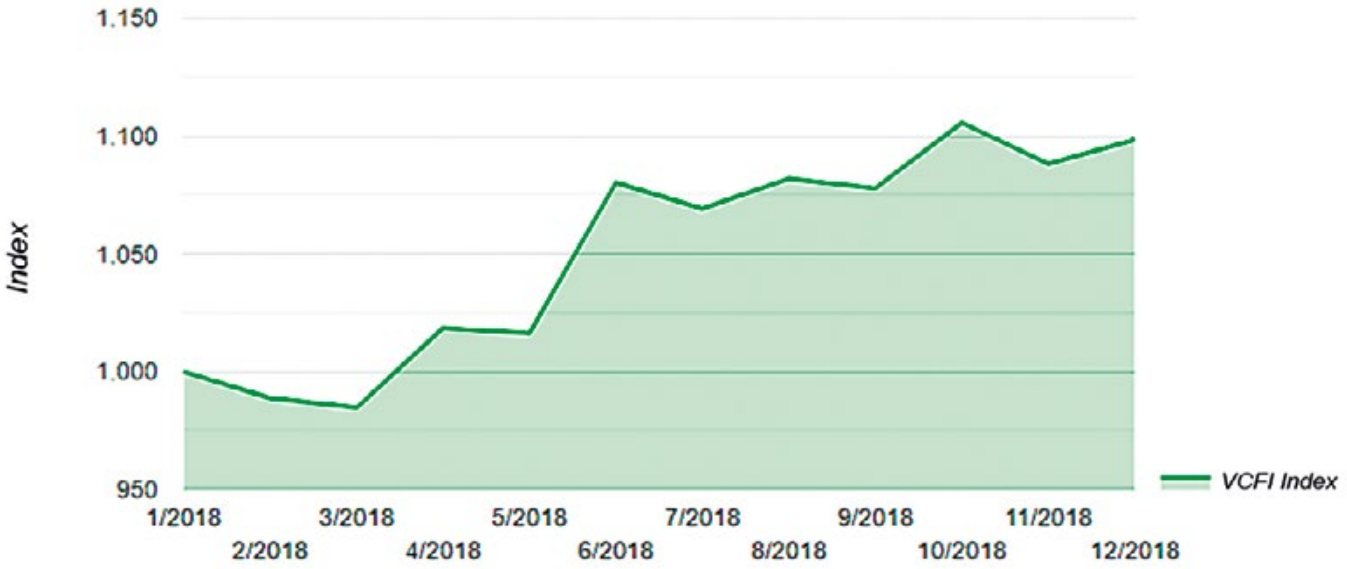
Conceptually, the VCFI is a quantitative index that allows the objective measurement and comparison of data relating to shipping freight rates from the Port of Valencia. This index has been created on the basis of information obtained from primary data sources, specifically 12 top-level panellists—including freight

forwarders—operating in the Port of Valencia. At the request of Fundación Valenciaport, they submit their monthly freight rate data at the end of each month. The panellists participating in the index are the following:

The composite index is calculated after receiving and checking the individual monthly data on export freight rates for each of the ports, and then computing the average freight rates for each port, which are entered into the composite index with the appropriate weighting. Bearing in mind that freight rates for some shipping rates are quoted in dollars, the exchange rates published monthly by the European Central Bank are used for conversion to euros. The figures provided by the panellists include spot freight rates and the following surcharges:

- Bunker Adjustment Factor (BAF)/Fuel Adjustment Factor (FAF)/Low Sulphur Surcharge (LSS)
- Emergency Bunker Surcharge (EBS/Emergency Bunker Additional (EBA)
- Currency Adjustment Factor(CAF)/Yen Appreciation Surcharge (YAS)
- Peak Season Surcharge (PSS)
- War Risk Surcharge (WRS)
- Port Congestion Surcharge (PCS)
- Suez Canal transit Fee/Surcharge (SCS)/Suez Canal Fee (SCF)/Panama Transit Fee (PTF)/Panama Canal Charge (PCC).

The VCFI is a numerical index; it is a statistical measure that reflects the evolution of a specific value—in this case, freight rates—over a time period, in relation to a base or reference period, thus revealing trends in the variable under study. The base of the composite index is 1,000 points and the base period coincides with the first publication, that is, January 2018.



This index aims to be a benchmark index in the Western Mediterranean, just as the Shanghai Containerized Freight Index is for the Asian area. The relevance and practical utility of the VCFI publication will be monitored, analysing new needs and priorities and developing complementary new statistical indicators supported by the Port Authority of Valencia and produced by Fundación Valenciaport.

TRADE-DATA-FLOWS: "TRADE AND TRANSPORT FLOWS IN SPAIN"

CONTACT:
Amparo Mestre Alcover - Market Intelligence- Area Manager - amestre@fundacion.valenciaport.com

The purpose of this database is to collect, systematize and validate information on foreign trade operations provided by the Customs and Excise Department of the Spanish Tax Agency. It is also intended to complement the available information with various variables and indicators on these operations, thus boosting the information capacity of the original source. The result is a key analytical tool on the evolution of trade patterns and transport to the hinterland.

LINEPORT: A TOOL FOR ANALYSING SSS IN SPAIN

CONTACTO:
Lorena Sáez Carramolino - Head of Projects - lsaez@fundacion.valenciaport.com

The Lineport periodically compiles information on the characteristics of the regular short sea shipping (SSS) services connecting Spanish ports with other EU ports or ports in countries bordering the Adriatic, Baltic, Aegean, Mediterranean, Black and North Seas. The information contained in Lineport offers a comprehensive view of the SSS services offered in Spain and enables detailed analysis of the characteristics of such services in each of the ports, thereby contributing to a better understanding of the current state of SSS in Spain, its limitations and potential as an alternative/accompaniment to road transport.

LINERAIL: A TOOL FOR ANALYSING RAIL SERVICES IN SPAIN

CONTACT:
Lorena Sáez Carramolino - Head of Projects - lsaez@fundacion.valenciaport.com

The LineRail database continually collects detailed information about regular rail services offered in Spanish ports with the aim of providing quality information to shippers and operators interested in using rail to transport their goods.

The potential outputs of the LinePort and LineRail databases are

- Provide the Spanish Port-Logistics Community with comprehensive, quality information on the SSS and rail service offering
- Publication of a twice-yearly newsletter on the state of SSS and rail freight transport in Spanish ports. The LinePort Newsletter can be downloaded free from Fundación Valenciaport's website.
- Creation of proprietary statistical indicators

Cover image of the publication "Oferta de Servicios de TMCD y Ferroviarios en los Puertos Españoles"

VESSL DATABASE: "VALENCIAPORT EUROPEAN SHORT-SEA SHIPPING LINES DATABASE"

CONTACT:
Eva Pérez García - Director, Promotion of Innovation and Sustainability - eperez@fundacion.valenciaport.com

This database collects information about the SSS services operating out of European ports. It includes the basic features of these services, such as the route, frequency, seasonality, shipping lines and type of traffic, among others. The database thus represents a key input in the analysis of maritime transport services in Europe.

VESSELS4VESSL DATABASE: "VESSELS FOR VALENCIAPORT EUROPEAN SHORT-SEA SHIPPING LINES DATABASE"

CONTACT:
Jorge Lara López- Head of Projects - jlara@fundacion.valenciaport.com

The Vessels4Vessl database complements the abovementioned VESSL database. It includes information on all the ships assigned to previously defined services, ranging from the ships' defining features (dimensions, type of cargo carried, capacities, operators or classification societies) to detailed information on the engines installed on ships (engine type, consumption, design, main and auxiliary power, cylinders, among others).

MARKET ALERTS

CONTACTO:
Amparo Mestre Alcover - Market Intelligence - Area Manager - amestre@fundacion.valenciaport.com

Strategic monitoring service designed for the Port Authority of Valencia, which aims to track the main trends in the port area and to provide a regular analysis (every two weeks) of the most important news stories for Valenciaport. This analysis relies on the group of experts at Fundación Valenciaport, as well as the opinions of influential actors of the cluster.


3
ASSOCIATIONS

3. ASSOCIATIONS WITH WHICH FUNDACIÓN VALENCIAPORT COLLABORATES

- AportemPuerto Solidario Valencia
- Asociación Española de Promoción del Transporte Marítimo de Corta Distancia (Spanish Association for the Promotion of Short Sea Shipping)
- Asociación Española de Fundaciones (Spanish Association of Foundations)
- Asociación Valenciana Startups (Valencian Startups Association)
- WISTA Spain
- Cámara de Comercio Internacional (ICC) (International Chamber of Commerce)
- Centro Nacional de Competencia en Logística Integral Logistop (National Centre for Integrated Logistics Competence)
- ClimateKIC
- Club de Marketing del Mediterráneo (Mediterranean Marketing Club)
- Fuel Cells and Hydrogen Joint Undertaking (FCHJU)
- European Network of Logistics Competence Centers (Open ENLoCC)
- Europhar
- Forética
- Gasnam
- Instituto Tecnológico de Informática (ITI) (Technological Institute of Computer Sciences)
- International Association of Maritime Economics (IAME)
- Plataforma Tecnológica Europea de Logística (Alliance for Logistics Innovation through Collaboration in Europe ALICE)
- Propeller Club of Valencia
- RETE, Asociación para la colaboración entre puertos y ciudades (Association for PortCity Collaboration)
- Waterborne European Technology Platform

SEMINARS AND CONFERENCES

4

RESULT OF THE RESEARCH / "EXCHANGE OF IDEAS WITH THE PORT-LOGISTICS COMMUNITY"

4.1. INTRODUCTION

Fundación Valenciaport organizes a programme of seminars and research conferences, aimed at the port-logistics cluster. On the one hand, the goal is to ensure the maximum diffusion of the results of its projects and, on the other, to promote the exchange of ideas with the Port Community. In the period 2017-2018, Fundación Valenciaport organized 13 seminars and conferences, several of them in collaboration with other entities.

4.2. LIST OF SEMINARS AND CONFERENCES

18 JANUARY 2017

"Seminar: Legal Compliance". Organized by the Port Classroom Group together with professionals from FIDES. Valencia (Spain).

28 MARCH 2017

"Seminar: Practical application of E-Maritime and mediation in the port-maritime sector". Organized by Fundación Valenciaport and the Official College of Naval and Ocean Engineers. Valencia (Spain).

30 MARCH 2017

'Conference: customs debt in the Union Customs Code". Organized by Fundación Valenciaport and the Customs Foundation as part of the presentation of the book by Mercedes Cano Martínez. Valencia (Spain).

3 MAY 2017

"Seminar: new customer loyalty strategies in the transport and logistics sector". Organized by Fundación Valenciaport and FIDES. Valencia (Spain).

18 MAY 2017

"Conference: LNG, the fuel of the future for road freight transport". Organized by Fundación Valenciaport in collaboration with the Port Authority of Valencia, Enagás, Molgas and FVET as part of the "CORE LNGas hive" project co-financed by the European Commission through the Connecting Europe Facility Programme. Valencia (Spain).

15-16 JUNE 2017

"Workshop on Maritime and Port Applications". Organized by Fuel Cells and Hydrogen Joint Undertaking in collaboration with Fundación Valenciaport and the Port Authority of Valencia. Valencia (Spain).

22 NOVEMBER 2017

"Workshop on Maritime and Port Sector 4.0. **How new technologies pave the way for safer oceans".** Organized by Fundación Valenciaport in collaboration with Magellan and Maritime Rescue as part of the "PICASSO" project co-financed by the European Commission through the Connecting Europe Facility Programme. Valencia (Spain).

23 NOVEMBER 2017

Conference: "the Union Customs Code (UCC)". Organized as part of the 4th "Customs representative" course and delivered by Nerea Rodríguez, Assistant Director General of Customs Management of the Department of Customs and Excise. Valencia (Spain).

Invitation to Pilar Jurado's conference on the customs union in Spain. Valencia, 3 July 2018

21 FEBRUARY 2018

Seminar "Current State of the Markets and Foreign Exchange and Interest Rate Prospects"-. Organized by Fundación Valenciaport in collaboration with Banca March. Valencia (Spain).

18 APRIL 2018

"Conference: Main challenges and opportunities in exporting to Colombia and Mexico." Organized by Cuatrecasas together with Fundación Valenciaport. Valencia (Spain).

28 MAY 2018

"Conference: Valencia, sustainable cruise destination". Organized by Fundación Valenciaport in collaboration with the Port Authority of Valencia, as part of the European projects "SIROCCO" and "CO-EVOLVE", co-financed by the European Commission through the Interreg MED programme. Valencia (Spain).

Agenda for "LNG, the fuel of the future for road freight transport". Valencia, 18 May 2017

3 JULY 2018

"Conference: The Significance of the Customs Union in Spain" 50th anniversary of the Customs Union". Organized by Fundación Valenciaport and delivered by the Director of the Department of Customs and Excise, Mª Pilar Jurado. Valencia (Spain).

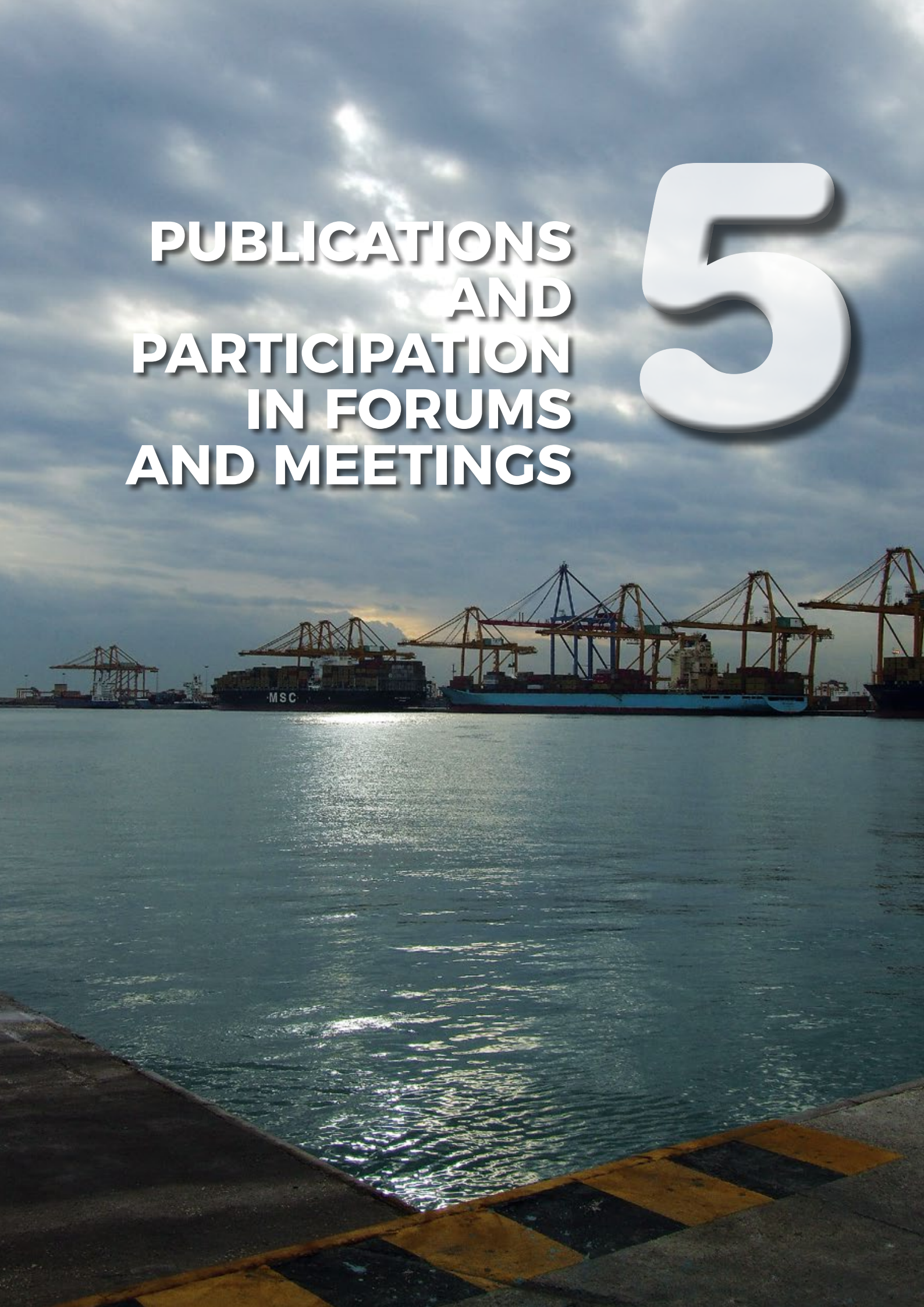
12 DECEMBER 2018

"CRISI-ADAPT - III Workshop". Workshop on Climate Change organized by Fundación Valenciaport and the Climate Research Foundation, with the collaboration of Valencia City Council, as part of the European project CRISI-ADAPT funded by EIT Climate-KIC. Valencia (Spain).

Agenda for "Maritime and Port sector 4.0". Valencia, 22 November 2017

Attendees at the "Conference: LNG, the fuel of the future for road freight transport". Valencia, 18 May 2017

5 PUBLICATIONS AND PARTICIPATION IN FORUMS AND MEETINGS



5.1. INTRODUCTION

In order to disseminate the results of the research carried out by Fundación Valenciaport, the members of the different areas have delivered presentations at numerous congresses, scientific meetings, forums, etc. They have also published research articles on port-logistics issues.

Below is a list of publications during this period:

5.2. LIST

5.2.1. Articles

"La apuesta por la economía sostenible". (Commitment to a sustainable economy)

In El Vigía. Page 5.
De Juan, Mercedes (January 2017).

"The evaluation of port governance actions by port users perspective: a study in the port of Santos, Brazil".

In International Journal of Logistics Systems and Management. (ISSN: 1742-7967).
Bergmann, Guilherme; Mendes, Jonas; Dutra, Ricardo (March 2017).

"Seguridad portuaria, ¿qué cambia?" (Port Security. What's changing?)

In El Vigía. Page 6.
Company, Rafael (July 2017).

"Multidimensional Solution for Protecting European Ports"

In NMIOTC Annual Journal "Fostering Projection of Stability through Maritime Security: Achieving Enhanced Capabilities and Operational Effectiveness".
Company, Rafael; Giménez, Pablo; Carvajal, Federico; Papastergiou, Spyridon; Polemi, Nineta (July 2017).

"Carbon footprint, a key in port sustainability"

In the Inter-American Committee on Ports (CIP) Magazine.
Company, Rafael (September 2017).

"World's first LNG dual-fuel engine adapted for high-speed vessels"

In Journal of Traffic and Transportation Engineering (ISSN 2328-2142)
Sáez, Lorena; De Juan, Mercedes; Pérez, Eva; Fernández, Iván (November 2017).

"Port Collaborative Decision Making (PortCDM): An enabler for Port Call optimization

empowered by international harmonization".
In Fathom.news.com
Lind, Mikael; Bergmann, Michael; Haraldson, Sandra; Watson, Richard T.; Park, Jin; Gimenez, Jose; Andersen, Trond (February 2018).

"The skilled collaborators - the winners in a digitized maritime sector".

In Fathom.news.com
Lind, Mikael; Bergmann, Michael; Haraldson, Sandra; Watson, Richard T.; Park, Jin; Gimenez, Jose; Andersen, Trond (February 2018).

"Enabling Effective Port Resource Management: Integrating Systems of Production Data Streams".

In Fathom.news.com
Lind, Mikael; Bergmann, Michael; Haraldson, Sandra; Watson, Richard T.; Park, Jin; Gimenez, Jose; Andersen, Trond (February 2018).

"Creating a mature data sharing regime - Thriving in the connected ecosystem".

In Fathom.news.com
Lind, Mikael; Bergmann, Michael; Haraldson, Sandra; Watson, Richard T.; Park, Jin; Gimenez, Jose; Andersen, Trond (March 2018).

"Los puertos también se preparan para las cibertormentas" (Ports also prepare for cyberstorms)

In Foro Internacional. Pages 8-9.
Company, Rafael (May 2018)

"A hybrid architecture for securing Critical Maritime Infrastructures"

In SIGA2 2018 Conference Paper - The port and maritime sector: Key developments and challenges. Antwerp (Belgium).
Company, Rafael; Giménez, Pablo; Carvajal, Federico; Pérez, Israel; Schauer, Stefan (May 2018)

"The maturity level framework for PortCDM".

In Fathom.news.com
Lind, Mikael; Andersen, Trond; Bergmann, Michael; Watson, Richard T.; Haraldson, Sandra; Karlsson, Mathias; Michaelides, Michalis; Giménez, José; Ward, Robert; Bjørn-Andersen, Niels; González, Albert; Holmgren, Bernt; Zerem, Almir; Rauer, Fredrik; Sahlberg, Henrik; Lindberg, Jouni (May 2018).

"Extending the efficiency boundary from ports to hubs: A new role for container terminal operators".

In Fathom.news.com
Lind, Mikael; Michaelides, Michalis; Watson, Richard T.; Bjorn-Andersen, Niels; Bergmann, Michael; Haraldson, Sandra; Andersen, Trond; Ward, Robert; Sancricca, Michele; Gerosavvas, Neofytos; Heidecker, Amiram; Lane, Andy; Giménez, José; Ferrús, Gabriel; González, Albert; Márquez, Miguel A.; Voskarides, Sotos; Pouros, George; Deosdad, Iván (July 2018).

"Sea Traffic Management: Moving Forward the

Digitalization of Maritime Traffic".
In Journal of Maritime Research (ISSN 1697-4040).
Calabria, Lucia; Giménez, José Andrés; Del Río, Vicente; Ferrús, Gabriel; Lara, Jorge; Alonso, Núria (August 2018).

"Conceptual framework for situational awareness in critical port infrastructures"

In 13th International Conference on Critical Information Infrastructures Security Report. Kaunas (Lithuania). Schauer, Stefan; Carvajal, Federico J.; Beyer, Stefan; Company, Rafael; Zamarripa, Sergio (September 2018)

"Perfiles de estacionalidad del tráfico de cruceros en regiones europeas como condicionante operativo para navieras y puertos" (Seasonality profiles of cruiseship traffic in European regions as an operational factor for shipping companies and ports)

In Ingeniería Naval, Volume 972, Pages 83-96. Esteve, Jerónimo; García, Antonio; Muñoz, Andrea; Gutiérrez, José Enrique (September 2018).

"Promoting innovation and sustainability in the cruise industry".

In Valencia 2018 GREENPORT Cruise Handbook. Pages 17-27.
Company, Rafael; Muñoz, Andrea (October 2018).

5.2.2. Presentations

"World's first adaptation of a high-speed ropax vessel to LNG dual-fuel".

NGV Global 2017 Conference - Natural Gas Fuel: A Choice for a Sustainable Future. Rotterdam (Netherlands).
De Juan, Mercedes; Sáez, Lorraine (March 2017)

"Primer motor GNL dual-fuel adaptado para buques de alta velocidad". (First dual-fuel LNG engine adapted for high-speed ships)

V Gasnam Congress: el gas natural garantiza la calidad del aire (natural gas guarantees air quality). Madrid (Spain).
De Juan, Mercedes; Sáez, Lorraine (March 2017)

"Perfiles de estacionalidad del tráfico de cruceros en regiones europeas como condicionante operativo para navieras y puertos". (Seasonality profiles of cruiseship traffic in European regions as an operational factor for shipping companies and ports)

56th Congress of Naval Engineering and Maritime Industry of the Spanish Association of Naval and Ocean engineers Madrid (Spain).

Mercedes de Juan giving her speech at the 5th GASNAM Congress: natural gas guarantees air quality. Madrid (Spain). March 2017

Eva Pérez during her presentation at the Motorways of the sea panel at the 2018 Ten-T Days. Ljubljana (Slovenia). April 2018

Esteve, Jerónimo; García, Antonio; Muñoz, Andrea; Gutiérrez, José Enrique (October 2017).

"Ports as vectors for an efficient and ambitious European green economy"

TOGETHER City Festival: What if sustainable cities change Europe. Antwerp (Belgium)
Pérez, Eva (November 2017).

"LNG initiatives in the Mediterranean ports"

Joint Working Group Meeting on Ports and Multimodal Terminals. Atlantic and Mediterranean Core Network Corridors. Algeciras (Spain)
Pérez, Eva (February 2018).

"The future of LNG as marine fuel"

Motorways of the Sea Panel. TEN-T Days 2018. Ljubljana (Slovenia)
Pérez, Eva (April 2018).

"A hybrid architecture for securing Critical Maritime Infrastructures"

SIGA2 2018 Conference - The port and maritime sector: Key developments and challenges. Antwerp (Belgium).
Company, Rafael; Giménez, Pablo; Carvajal, Federico; Pérez, Israel; Schauer, Stefan (May 2018)

"Iniciativas Smart en el Puerto de Valencia". (Smart Initiatives in the Port of Valencia)

Smart Ports. Gestión Energética en los Puertos Andaluces. (Energy Management in Andalusian ports.)
Málaga (Spain).
Giménez, José Andrés (May 2018).

"The impact of digitalization in container terminals".

Cargo Innovation Conference 2018. Venlo (The Netherlands).
Arjona Aroca, Jordi (June 2018)

"Conceptual framework for situational awareness in critical port infrastructures"

13th International Conference on Critical Information Infrastructures Security Report. Kaunas (Lithuania).
Schauer, Stefan; Carvajal, Federico J.; Beyer, Stefan; Company, Rafael; Zamarripa, Sergio (September 2018).

"Towards zero emission port container operations".

Hydrogen and fuel cells in ports and shipping conference. Los Angeles (USA).
Giménez, José Andrés (October 2018).

"Promoting innovation and sustainability in the cruise industry".

Greenport Cruise and Congress, Valencia (Spain).
Company, Rafael; Muñoz, Andrea (October 2018).

"Análisis de la operativa en puerto de los buques de crucero según su segmento de servicio" (Analysis of the port operations of cruise ships according to their service segment)

57th Congress of Naval Engineering and Maritime Industry of the Spanish Association of Naval and Ocean engineers
Esteve, Jerónimo; García, Antonio; Muñoz, Andrea; Gutiérrez, José Enrique (October 2018).

6

TRAINING

"FOCUSED ON PERSONAL GROWTH THROUGH TRAINING "

6.1. Vision, mission, values and objectives

- Training the port logistics sector since 1992 -

Our vision is to be the **benchmark** training centre for the port-logistics sector, both nationally and internationally. To **lead the way and excel** in the development of training programmes that promote **personal growth** and thus contribute to improving the **competitiveness** of **companies** and the **port.**

With 27 years' experience of training port-logistics sector professionals both nationally and internationally, Fundación Valenciaport's Training Department has established itself as the ***benchmark Training Centre for knowledge management in the sector.*** It has pioneered the development of specific training programmes for all actors in the port-logistic community and at all organizational levels of the company.

Our vision as a **leading national and international Training Centre** has led us to work across Spain as well as in different countries in **Europe, Africa, Asia, and Latin America.** These include Peru, Mexico, Guatemala Colombia, Honduras, Belize, Brazil, Uruguay, Ecuador, Costa Rica, Panama, Chile, Argentina, Italy, Ireland, the Netherlands, Jordan, Equatorial Guinea, Egypt, Togo, Sudan, and Tunisia.

Our mission is to **contribute** to the professional and personal growth of those who work in the sector, offering them the best possible training programmes. These high-quality programmes **create value** for course participants, for the companies where they work, and for the port community as a whole.

To that end, we design our training programmes with the aim of improving people's **technical competencies, abilities and skills,** but we also seek to provide **comprehensive training** that promotes the habits and values that enhance participants' **talent and employability.** All this helps ensure that programme participants achieve better performance at work, are **more competitive** and—who knows?—maybe even **happier.**

The courses we offer centre on the needs of the port-logistics sector, and respond to the professional concerns of current employees as well as a growing number of professionals from other sectors and young graduates seeking to join a dynamic, global and constantly growing sector. **Training programmes are the bridge that connects these people to the sector.**

We want to continue to grow and we work every day to strengthen the pillars and values on which our activity is built:

Quality, as the expression of our commitment to the customer, promoting a culture of quality based on the principles of excellence, honesty, leadership and human resources development.

The knowledge we make available, which involves finding the teachers with the best expertise and experience for the programmes. **We search out the best to help people grow.**

Organizational flexibility and responsiveness, so that we can be alert to the changes taking place in the professional environment and thus provide training which is appropriate to the circumstances, up-to-date, specially tailored and useful.

Innovation, understood as a source of growth and a determining factor in achieving competitive advantages.

Continuous improvement at all levels, particularly focused on individuals, to enhance their training and participation in the professional environment.

6.2. Achievements in the 2017-2018 period

Noteworthy achievements in the 2017-2018 period—in terms of novelty, capacity to stimulate innovation, international reach, academic influence, and impact on the sector, both at national and international level—include:

1. **In postgraduate studies:**

- The celebration of the silver anniversary of the Master's in Port Management and Intermodal Transport, 25th edition (October 2016 - June 2017).
- The start of the 27th Master's in Port Management and Intermodal Transport, in Valencia (October 2018 - June 2019).
- The new academic seal for the Master's in Port Management and Intermodal Transport. As of the 27th edition, it is now a qualification offered by the **Polytechnic University of Valencia** (UPV), with 60 ECTS credits.
- The design and delivery of a new **Master's in Logistics and Port Management,** as a qualification offered by UPV. It has been jointly designed by UPV and Fundación Valenciaport, and is taught in Buenos Aires (Argentina). March - December 2018.
- The high **employability** of students that enter the Master's programme as recent graduates. 99% of our students integrate into the sector thanks to company internships, which is a signal of our port community's recovery and a reflection of its cohesion.
- **Improved employment and professional development** for former master's students through the job postings provided by the Fundación Valenciaport Alumni Association, which brings new professionals with training and experience to the sector.

2. **2. In Refresher Courses:**

- More programmes focused on customs
  - We are one of the leading organizations in Authorized Economic Operator (AEO) training programmes.
  - We are recognized by the State Tax Administration Agency as a provider of professional training to become a Customs Representative. (Official State Gazette nº 183 of 30 July 2018).
  - We are an organization that creates its own programmes in customs management.
- In this two-year period, three editions of the **Customs Representative** theory course and four editions of the **practical** course have been delivered, involving a total of 724 hours and 150 students; after the Master's, this is the course that has the highest impact in terms of the number of hours/students
- The collaboration agreement reached with the **Propeller Club of Valencia,** (association of logistics entrepreneurs and executives) to design and impart an eminently practical, 50-hour course for active and unemployed professionals, titled "Port-Logistics Procedures and Documentation".

3. **In International Cooperation:**

- The design of new seminars titled **"Key Aspects in Port Management",** which, depending on the client's needs, focus on different topics: logistics chains, security, environment, statistics, indicators, technology, or leadership and talent development. They have been taught in Guatemala, Uruguay, and Argentina (Buenos Aires and Bahía Blanca).

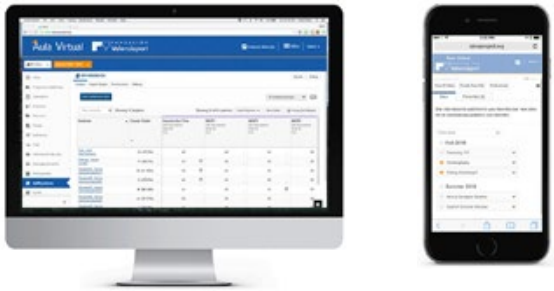
4. **In the field of management and obtaining certifications and approvals.**

- We are a **training centre that is recognized and approved** by the Valencia Employment and Training Service, LABORA (formerly SERVEF) of the Generalitat Valenciana, and authorized to impart the **MAPN0712 Certificate of Professional Standards in the port operations of loading, stowing, unloading, unstowing and transhipment.**

LABORA
Servei Valencià d'Ocupació i Formació

- We have successfully adapted the Quality Management System to the new **ISO 9001:2015** certified by Lloyd's Register Quality Assurance.

- We have modernized the platform **Fundación Valenciaport Virtual Classroom,** giving it a new interface, new functionalities, and a design that is adaptable to any device.



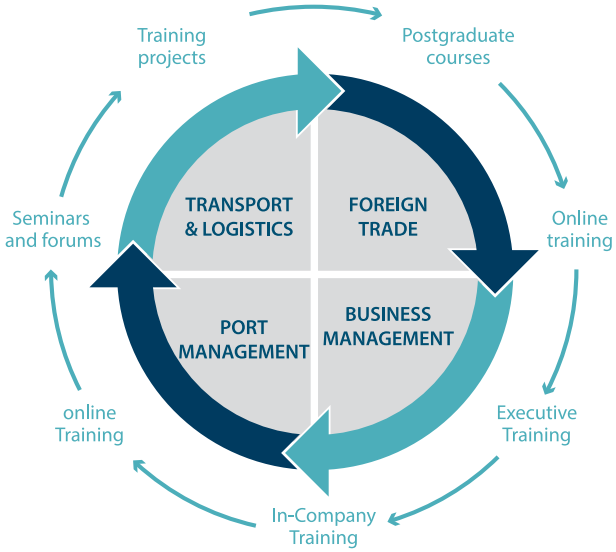
- Every year we continue to develop new unique, authentic **teaching materials** relating to customs and ports.

- Each day, we strengthen the port community's commitment to Fundación Valenciaport through the **Business Grouping Agreement of the Tripartite Foundation.** Through this organization, Fundación Valenciaport, as an organizer of subsidized training, processes the subsidies granted by the Tripartite Foundation, and plans training initiatives for companies depending on the amount of training credit they have.

6.3. Lines of action

Training is one of Fundación Valenciaport's key areas of activity; we make major efforts to contribute to continuously improving the skills of professionals who are working, or who want to work, in the port-logistics field. We encourage them to constantly strive to learn, to be informed and to stay on top of the latest innovations, as well as fostering a culture of change to help them identify opportunities.

To this end, we design, direct and develop different activities and training programmes specialized in ports, customs, international trade, logistics, transport, as well as the management and leadership of companies with a sectoral focus. We do so through the following lines of activity:

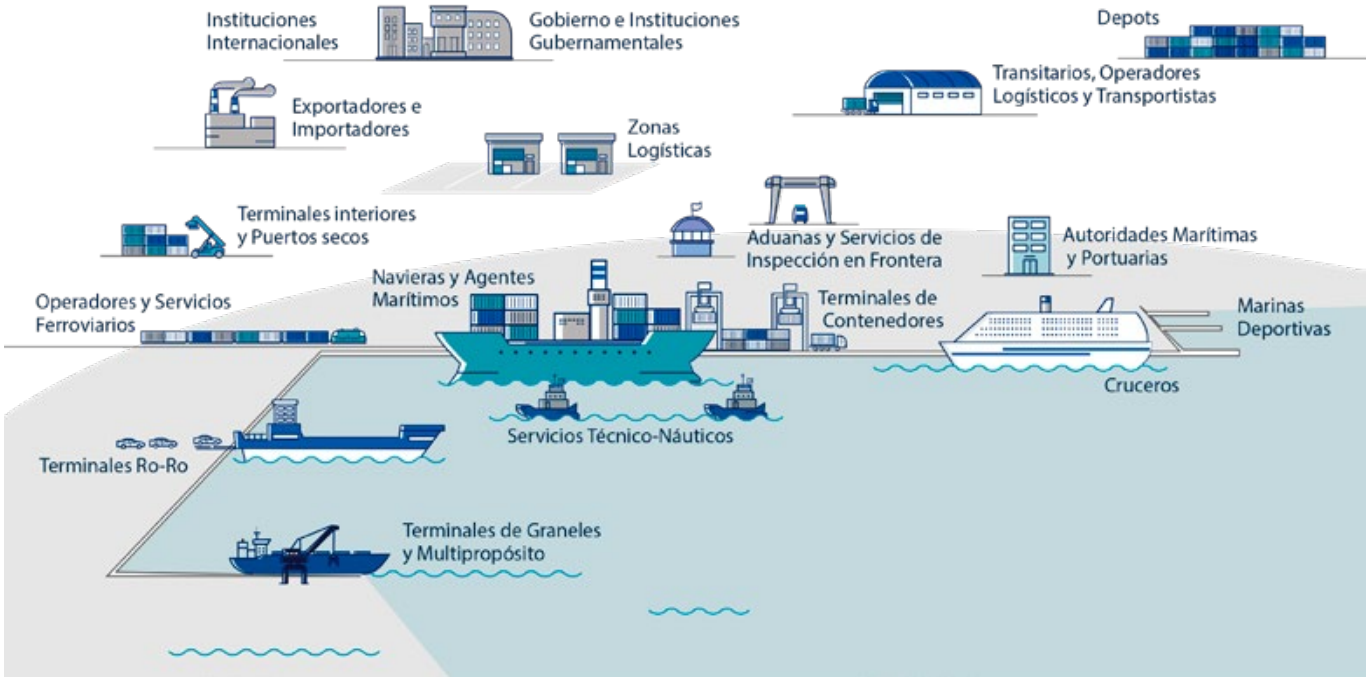


Target audience:

Our courses are aimed at **professionals working** in companies in the port-logistics community, who are looking for training in order to:

- Refresher training and acquiring new knowledge
- Compare their own knowledge with that of other professionals
- Gain a new vision of the business, helping to create a culture of change

OUR CLIENTS



But the ports and their companies also need to bring in new professionals. They may be professionals from other sectors seeking job opportunities or a change of career direction in this one, recent graduates looking to start their professional careers, young postgraduates, or unemployed people, who want to:

- * Gain new knowledge
- * Get closer to business practice and reality
- * Bolster personal qualifications
- * Enter the workforce

Geographical origin of students:

Most of our students come from Spain and work in the Valenciaport port-logistics community, but thanks to the international programmes that started in Latin America in 2004, and also due to the cultural and linguistic ties, we have worked closely with these regions creating the perfect cooperation scenario.

In 2016, Fundación Valenciaport signed a collaboration agreement with the Port Training Institute of the Arab Academy for Science Technology and Maritime Transport, with whom we have since held four international courses on various matters relating to ports. For this reason, we also have professionals from ports of Arab League countries in our classrooms, thus opening up new paths of collaboration.

Port Training Institute
Arab Academy for Science, Technology and Maritime Transport

In 2017 and 2018, we designed training programmes for students from the following countries: Italy, Panama, Egypt, Kuwait, Saudi Arabia, Brazil, Guatemala, Uruguay, Argentina, Dominican Republic, Nicaragua, Ecuador, Bolivia and Venezuela.

Teaching staff:

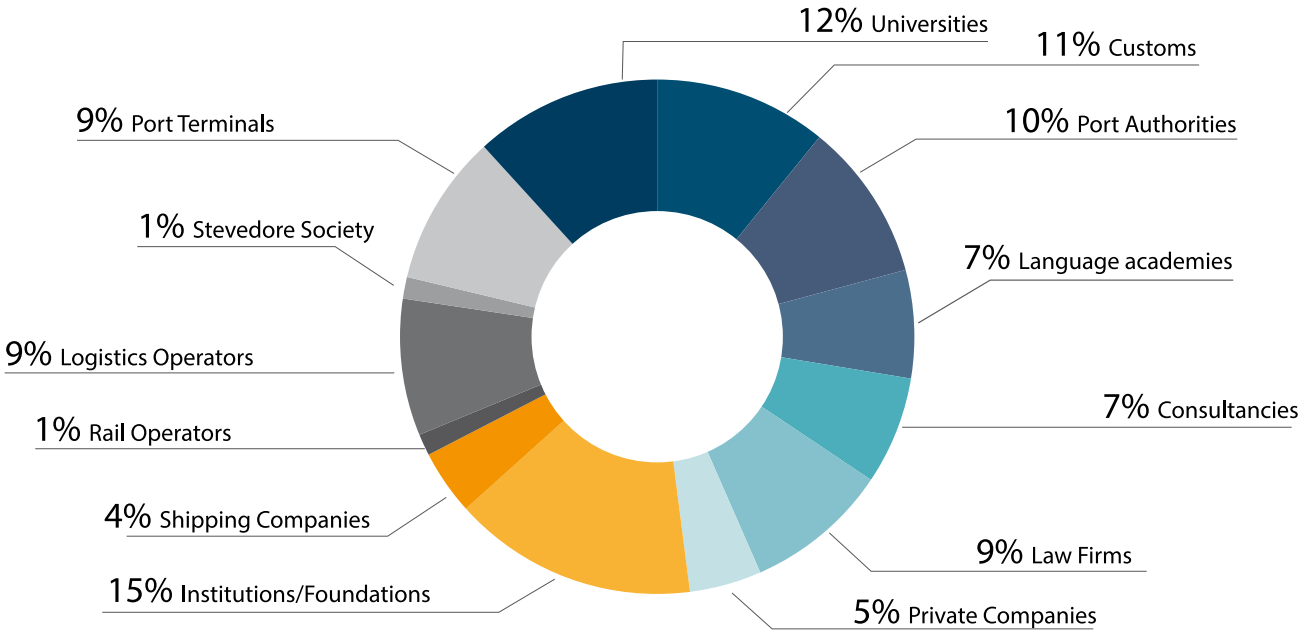
The teaching staff is composed of more than **220 professionals** from private companies in the port-logistics community (terminals, shipping companies, shipping agents, freight forwarders, operators...); from the public administration (Tax Agency, regional ministries...); from sectoral institutions and associations, foundations and port authorities, as well as other professionals of very different profiles, but always chosen in accordance with the training designed.

Flexible training. Modalities:

The entire catalogue includes courses that are delivered **face-to-face, online,** or **mixed ,** whereby different forms are combined in what is known as **"blended learning".**

Face-to-face training is provided in Fundación Valenciaport's own classrooms as well as on the premises of companies wishing to receive In-Company training. Likewise, Fundación Valenciaport sends its teachers to the countries and ports with which it works.

There has been growth in the online modality in recent years thanks to the implementation of the **"Virtual Classroom"** platform and the resulting reduction in costs. However, blended learning is gaining ground.



Professional links of teaching staff

	2017-2018		2015-2016	
	Students	Hours	Students	Hours
Postgraduate	106	1.540	89	1.075
Business	681	3.428	470	1.206
In-company	418	2.334	773	3.021
Online	202	248	129	415
Seminars	678	44	395	187
International	227	418	271	356

Gender:

In a sector which is male-dominated both in managerial positions and in jobs directly linked to port operations, women play a leading role in the technical and administrative side of companies (departments of export, import, invoicing) and in middle management, always tending towards office-based jobs.

We wanted to focus on gender in the analysis of the training given over the past two years, in order to monitor current trends.

Student evaluations:

Over the last two years, the average score awarded by students to their teachers is **8** out of 10 for postgraduate education, and for corporate training is **4.5** on a scale of 0 to 5.

The average score given by students for Fundación Valenciaport's management and customer service was **4.2.** This high level of satisfaction is an indication of the quality and service received.

Lines of activity in figures

During 2017 and 2018, the number of students and hours has increased, both in the postgraduate courses as well as in the business refresher courses and in seminars organized for the port-logistics community.

In the online modality, the number of students has increased and the hours have been reduced, which means that the courses have had more participants for each edition.

The number of students on international courses has gone down but the number of courses has increased.

6.3.1. Postgraduate university education

- Our new backer -

Thanks to all the work done over the years, the Master's in Port Management and Intermodal Transport—our flagship training programme and the course that gave rise to this department—celebrates its 27th edition in the academic year 2018/2019. It does so with the added value of a new backer, one of the most prestigious universities in Spain, the **Polytechnic University of Valencia (UPV)**, which has been chosen to endorse this Master's programme from now on.

UNIVERSITAT POLITÈCNICA DE VALÈNCIA

The UPV is a dynamic and innovative public institution dedicated to research and teaching. It is a leader in the transfer of knowledge and technology, while maintaining strong links with the social environment in which it operates.

The UPV is an institution with the capacity to spearhead changes and meet the demands of its surroundings. It is firmly committed to internationalization, both in terms of studies and in the field of research. The UPV offers a modern university education—flexible and adapted to the demands of our society—adhering to quality standards for both teaching and research.

The **Master's in Port Management and Intermodal Transport** was created by the Port Authority of Valencia in 1992. Over the years, this groundbreaking training

programme within the Spanish port-logistics sector has become established as the most internationally prestigious Spanish-language training programme specialized in ports and transport. It has had a far-reaching impact among professionals and postgraduates in Spain, Europe and Latin America. In addition to the 27 editions held in Valencia, Spain, the international edition of the Master's degree has been taught in Panama and Colombia.

During this two-year period, the following courses have been taught:

1. **Master's in Port Management and Intermodal Transport.** Valencia (25th edition 2016-2017) as a qualification offered by the Comillas Pontifical University of Madrid (ICADE Business School UPCO).

The 25th edition (2016/2017) of the Master's in Port Management and Intermodal Transport marked its silver anniversary. To celebrate this milestone, several special events were held during the year. In addition to the traditional trip to London, one of the most notable events was a special trip to the European Parliament and to the Port of Rotterdam to visit the automated terminal of APM Terminals.

Front cover of the brochure for the 27th MGPT – now supported by UPV

Students of the 25th MGPT visiting the European Parliament

MGPT students in the European Parliament with MEP Inmaculada Rodríguez Piñero

Students of the 25th MGPT visiting the APM Terminals Maasvlakte Rotterdam

2. **Master's in Port Management and Intermodal Transport.** Valencia (26th edition 2017-2018) as a qualification offered by the Comillas Pontifical University of Madrid (ICADE Business School UPCO).

3. **Master's in Port Management and Intermodal Transport.** Valencia (27th edition 2018-2019) as a qualification offered by the Polytechnic University of Valencia (UPV).

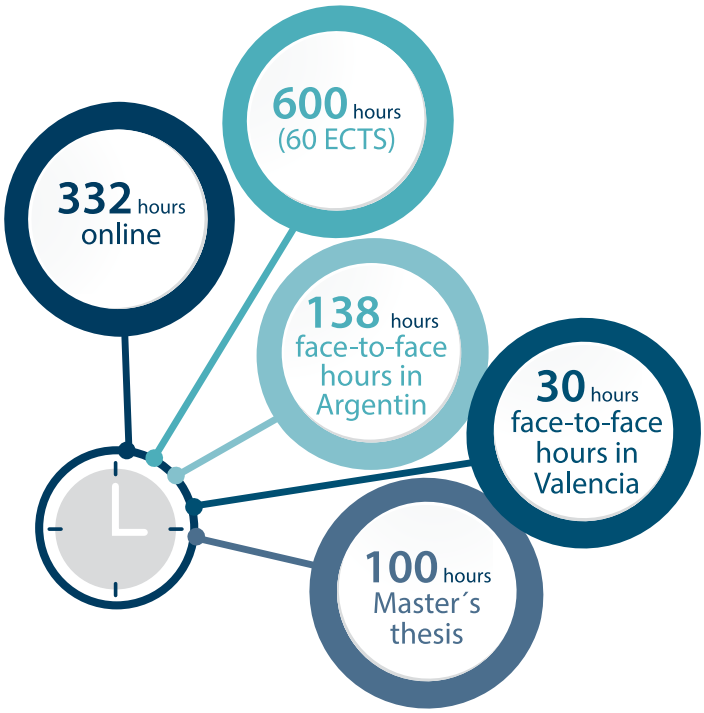
4. **Specialist courses in Maritime Transport, Land Transport, Intermodal Transport and Port Management** (23rd and 24th editions backed by UPCO and 25th edition by UPV).

5. **Master's in Logistics and Port Management,** 1st edition in Argentina (May-December 2018). Qualification awarded by the Polytechnic University of Valencia

Students of the 1st Master's in Logistics and Port Management during the week of face-to-face classes in Valencia

Thanks to this master's targeted at sector professionals, students acquire the skills required to carry out managerial functions in the port-logistics field.

For this first edition, the course received the sponsorship and collaboration of the Port of Buenos Aires (AGP. S.E), a key strategic partner for ensuring its success. The programme followed a blended learning format and consisted of a total of 600 hours distributed as follows:



What is the employment status of students entering the Master's programmes?

Of the 106 students who have completed postgraduate programmes during these two years:

- 23% are recent graduates.
- 38% are professionals working in the port-logistics sector, both in Spain and abroad in Argentina, Peru, Chile, Nicaragua, Ecuador, the Dominican Republic, Uruguay and Bolivia.
- 8% are unemployed, previously workers in other sectors, usually with an average of 10 years' work experience and seeking professional retraining and the chance to develop a new career in the port-logistics sector.
- 31% of students come from national or overseas Port Authorities: Argentina, Peru, Chile, Nicaragua, the Dominican Republic, Ecuador, Uruguay and Bolivia.

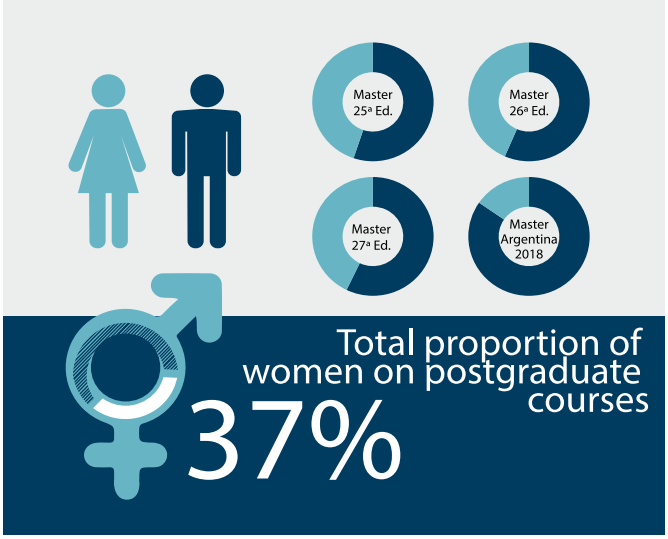
Which degrees are most commonly held by students in our postgraduate programs?

In particular, three disciplines: engineering, law, and economics and business.

DEGREE
Business Management and Administration
Civil Engineering
Law
Technical Engineering/Public Works
International Business
Economics
Architecture
Agricultural Engineering

Gender in classrooms

In the last 3 editions of the Master's in Port Management and Intermodal Transport in Valencia, the between 43% and 45% of students have been women, while in the Master's in Logistics and Port Management taught in Argentina, this percentage drops to 15%, with a total of 4 women in the classroom, coming from Argentina, Peru and Uruguay.



During the period 2017-2018, 1540 hours of postgraduate university education have been taught to a total of 106 students.

6.3.2. Business Training

The university courses undoubtedly planted the seed for Fundación Valenciaport's present day business training and refresher courses; the professionals who started their training in the Master's programme have, years later, returned to the classroom to refresh and update their knowledge.

Thanks to the experience gained over the years and, above all, the response of the sector, we are working to expand year-on-year the catalogue of courses in this business training programme.

These are essentially short courses aimed at the vocational training of managers, middle managers and operational staff of companies operating in ports and their logistics community. The aim of all these courses is to facilitate retraining and improve the work of the people employed in those companies, as well as to train people who are currently unemployed in order to create a pool of new professionals who can meet the future needs of the sector.

This type of training can be carried out either at the Fundación Valenciaport facilities in open courses, or In-Company to meet specific client needs, meaning that classes are held in the company's offices. Courses can also be taught 100% face-to-face, 100% online or mixed.

Do you speak English?

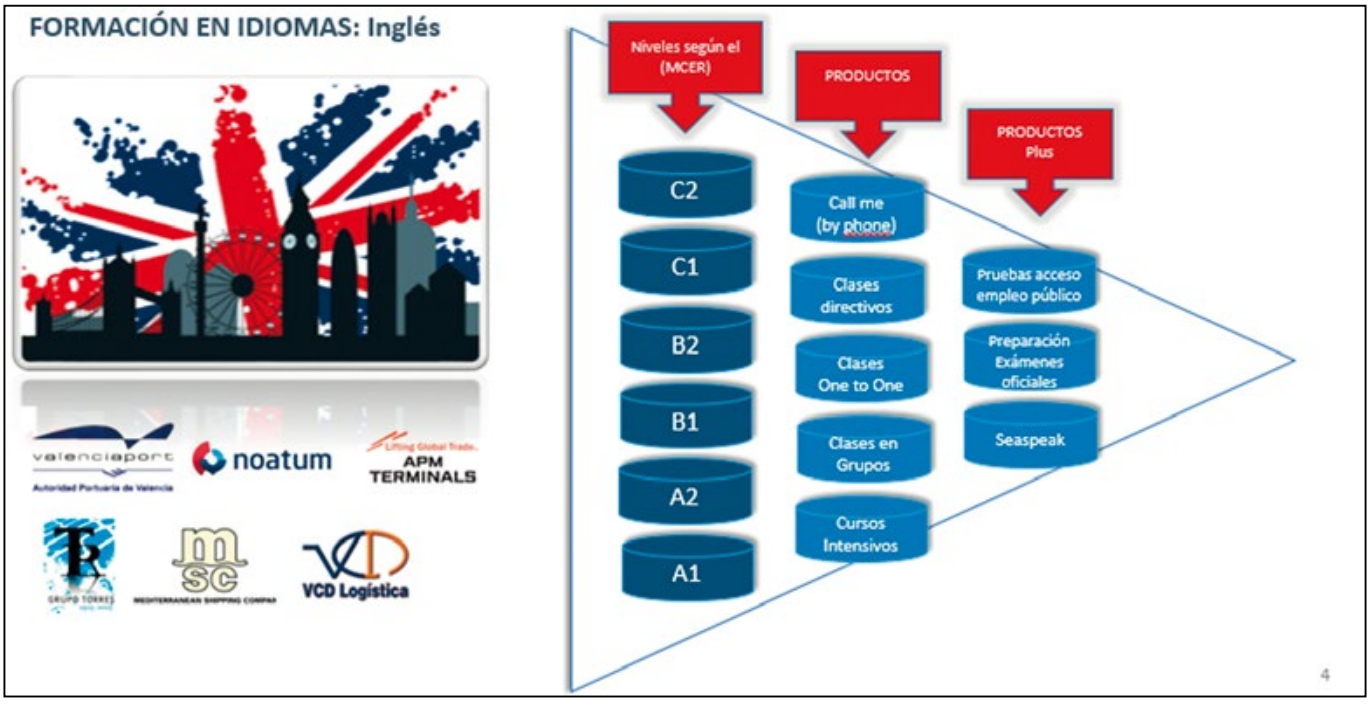
Employees in the port-logistics sector need to have a good enough level of English to work efficiently, since much of the communication happens in this language.

We here at Fundación Valenciaport are experts in adapting language-learning methodologies to the needs of the sector. On the basis of our experience gained over the years, we have developed exclusive materials and classes with port-maritime vocabulary. As such, we are the only organization that can deliver, for example, **Seaspeak** courses to the workers in the **emergency control centre** of the Port Authority of Valencia; specific maritime English courses aimed at **firefighters** so that they are prepared for any incident they may have to deal with in the port that involves communicating in English with crew and passengers; English courses for **stevedores** so that they can communicate with foreign crews and do their work properly, etc

Our courses are notable for:

- Incorporating plenty of specialized and sector-specific **vocabulary**.
- Incorporating **visual and audiovisual material** to illustrate sector-specific vocabulary (collections of photographs of ship types, port machinery, containers, elements of the port, videos, etc..).
- Including **field trips** in the port environment to **learn from experience.**
- **Learning on the job.** (e.g., the teacher accompanies the student on a working day, as if he/she were a visitor. Students have to present and describe the details of their work).
- Emphasizing **oral communication.** Students do not learn only grammar and vocabulary; indeed, their main objective is communication and so speaking skills are worked on in class every day.
- **Fun, interactive classes** that generate a good classroom vibe. It has been shown that the **emotional aspect** is key to more effective learning.
- Native **teaching staff** trained and experienced in emotional intelligence, coaching and communication techniques, and knowledgeable about the sector.
- **Not using textbooks,** which ensures that sessions are dynamic, flexible and specially tailored.

All this with a strategic partner, under a radically new methodology that has allowed us to grow our client base and gain prestige.

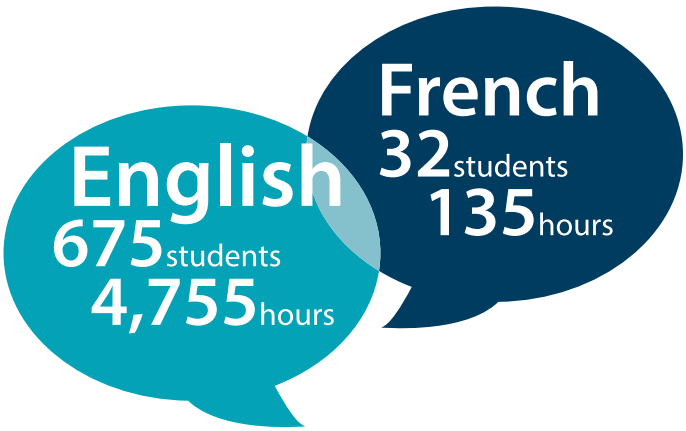


We teach all levels, from A1 to C2, in line with the guidelines of the Common European Framework of Reference for languages (CEFR), which is the international standard that defines language competence.

Modalities:

We are flexible and adapt the offer to students and companies:

1. **Group** classes at the Fundación Valenciaport facilities or In-Company
2. **One-to-One** classes.
3. **"Call me"** phone classes. 200 minutes of conversation per month, 10 min/day.
4. **Executive Weekend,** an intensive English - language weekend for managers in a natural setting.
5. **Intensive Week,** a week in Spain or abroad, with a guided programme.
6. **Preparation for all official** Cambridge exams, including the BEC (Business English Certificate) and the equivalent in French, German, Chinese, Russian and Italian.
7. **Specific courses or topics for developing sector-specific technical skills or competences.**
8. **Tests for public sector entrance exams/interviews** to evaluate the level of candidates in the positions on offer.
9. **Seaspeak** in accordance with IMO Standard Marine Communication Phrases



How to improve import and export management?

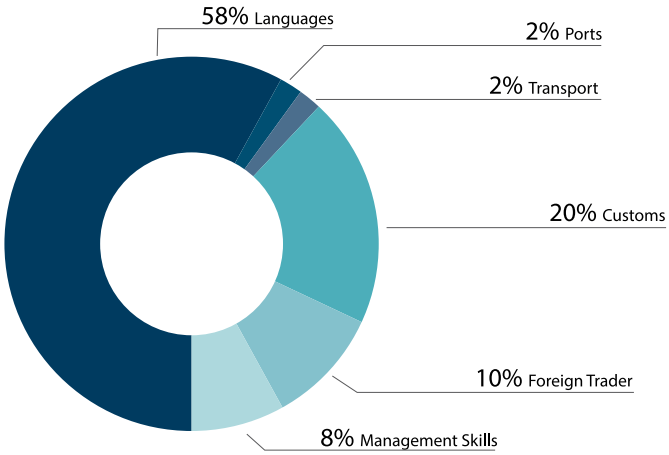
The Keys to Logistics in International Trade has been one of the contents most often requested by companies, in order become more efficient and competitive by improving their knowledge on the following topics:

- International Contracting
- Incoterms
- Import/export documentation
- Cross trade
- Customs Logistics
- Logistics operator negotiation
- Financing and payment means international trade
- Combatting marine pollution from leaks in ship unloading facilities
- Project management
- Authorized Economic Operator (AEO)

Moreover, during this period, a number of courses were open to all the actors of the port-logistics chain, namely:

- Customs Representative Course. 3rd, 4th and 5th edition. AEAT-approved course to qualify to work as a Customs representative.
- Customs Representative - practical course. 1st, 2nd, 3rd, 4th, and 5th edition.
- Course " Authorized Economic Operator and secure logistics chains: bringing AEOs in line with customs management, the new scenario created by AEO status and its relationship to ISO 28000 and 27001 standards". 1st and 2nd edition.
- Course on Port-Logistics Procedures and Documentation sponsored by the Propeller Club of Valencia.
- Course on freight transport at controlled temperatures (reefers).

It is worth highlighting the yearly increase in English courses, with students being offered more hours and the choice of In-Company classes or classes at Fundación Valenciaport's facilities.



Fundación Valenciaport's Virtual Classroom, with its new interface, new functionalities and a design adaptable to any device, facilitates the incorporation of this type of modality into the courses.

- Online course on Port Services - 25 hours
- Online course on Container Logistics - 20 hours
- Online course on VGM (verified gross weight) - 25 hours
- Mixed online/face-to-face course on Port CDM (Port Collaborative Decision Making) - 20 hours
- 19 online modules that have been designed for the Master's in Logistics and Port Management (Argentina):

1. Logistics chain strategy
2. Strategic port planning
3. Port services
4. Shipbuilding and maritime policy
5. Intermodality
6. Supply and distribution logistics
7. Environmental management in ports
8. Infrastructure for port operations and navigation
9. Container logistics
10. Container terminals
11. Terminal capacity and performance
12. Commercial management, port marketing
13. Social responsibility in ports
14. Port-city relations
15. Port economics. Costs
16. Business Process Management
17. Performance measurement systems
18. Business Process Management. Living Lab
19. Human resources management in ports

The number of hours of online training was 202, but if we add in the online hours of the postgraduate courses this figure reaches 534 hours.

6.3.3. Approved training and Certificate of Professional Standards

Every year, Fundación Valenciaport adds to the list of approved, certified and/or recognized courses it provides to respond to the training needs of different groups and individuals in the sector who need such accreditation to carry out their work:

1. Approval to teach the **"Basic Security Course"** in line with the regulations **STCW/95 of the IMO, and Order FOM 2296/2002** of 4 September, regulating the training programmes for professional qualifications for merchant navy seafarers, both deck and engine, and port captain, as well as the accreditation certificates of specialized professional experience.

2. Renewed approval of the course **"Basic operating level for the prevention and control of pollution in the operations of loading, unloading and handling of hydrocarbons in the port-maritime environment",** in accordance with **Order FOM 555/2005** of 2 March of the Directorate General of the Merchant Navy.

3. Certification by the State Tax Administration Agency as a provider of **professional training** to become a **Customs Representative.** This course has been run three times, with 97 students, who do not have to sit the theory exam.

4. We are a training centre that is recognized by the **Valencia Employment and Training Service, LABORA** (formerly SERVEF) of the Generalitat Valenciana, and authorized to impart the MAPN0712 **Certificate of Professional Standards in the port operations of loading, stowing, unloading, unstowing and transhipment.**

5. Each day, we strengthen the port community's commitment to Fundación Valenciaport through the **Business Grouping Agreement of the Tripartite Foundation.** Through this organization, Fundación Valenciaport, as an organizer of subsidized training, processes the subsidies granted by the Tripartite Foundation, and plans training initiatives for

companies depending on the amount of training credit they have.

6. As training providers, we are a **benchmark for excellence** in the sector, so companies seek out our students to recruit the best candidates to join their companies.

6.3.4. Seminars and collaborations

Fundación Valenciaport's Training Department also works to provide a platform and specialized forum for professionals in the sector to share opinions, discuss their positions and raise awareness of the environment for future actions.

To that end, we organize seminars and workshops specializing in different port-logistics topics, with the aid of the best professionals (see page 108).

In addition, we organize working groups, workshops and meetings to reach a consensus on promoting training in the sector and regulating access to working in some professional areas, as well as to identifying ways to improve employability and tools to improve work performance.

6.3.5. Teaching materials

Development of new teaching materials, technologically adapted to the required teaching modalities, on the topics that are expected to be most in demand for port-logistics sector training. These materials serve as a basis for the training courses provided; moreover, many of them are published by Fundación Valenciaport and made available for sale or consultation in the Documentation Centre.

In line with the latest developments in customs management, the following modules have been developed within the courses indicated:

- **Customs Management.** Explanation of the steps to be taken from the beginning to the end of the process, and customs procedures after the UCC.
- **Authorized Economic Operator.** Key features since its implementation.
- **AEO security requirements.** ISO 28000 Supply chain security, ISO 27001 Information security.
- **Customs Representative course.** Module 20. Decision theory.

In addition, thanks to its commitment to continuous improvement and analysis of new trends, Fundación Valenciaport has developed the following materials/ modules within the courses carried out for:

Propeller club of Valencia - Course on Port-Logistics Procedures and Documentation

- Who's who in the Port Community
- Incoterms (M2.1) and basic means of trade finance (M2.2)
- Shipping
- Container Management
- Import and export process
- Complete document flow of an import and export operation

Arab Academy

- Port Community System Valenciaport
- Career guidance and job search techniques.
- New Business Development
- Tools for success in a new market: Design Thinking/ CAVAS model
- Design thinking as a creative tool to make strategy decisions
- Case study: design thinking in ports
- Port sector as an investment objective
- PPP Models in the port sector
- The investment project
- Project approaches
- Case study
- Project Finance

Course on Key Aspects of Port Management - Guatemala (Guatemala City)

- Managing human talent
- Safety management
- Environmental port management
- The port, the logistics chain, the port community and its systems

Aspects of Port Management - Argentina (Bahía Blanca)

- Management of Port Strategy

Master's in Logistics and Port Management - Argentina (Buenos Aires)

- Logistics Chain Strategy
- Maritime Economics
- Customs Law
- Governance, quality of port services
- Logistics of supply and distribution
- Infrastructure for port operations and navigation
- Business process management in ports
- Managing terminals
- Performance Measurement Systems
- Business process management Living Lab.
- Human Resources Management in ports.

Course on Port CDM

- Introduction and background to the concept of Port CDM
- Port CDM Services
- Status maps linked to ships' port calls and information flows (particular focus on Saguntoport CDM)
- Definition of the roles of the different agents involved (particular focus on Port of Sagunto linesmen).

In addition, thanks to the collaboration with the Arab Academy and participation in the European VETPORT project, Fundación Valenciaport has developed the following materials in English:

- Driving vehicles to handle goods within the port, on board or on shore
- Working in accordance with organizational procedures, operational and safety regulations in port and terminals
- Verifying the technical functionality of the lifting, of safety devices in the operations of handling, loading/unloading of goods
- * Interacting and coordinating tasks with teams working on loading/unloading tasks
- Managing and Leading Teams and stakeholders
- Managing company objectives
- Infrastructure and terminal management

6.3.6. International Educational Cooperation

For Fundación Valenciaport, internationalization through training involves the following:

- Promoting scientific and cultural cooperation with exchanges of specialists and students.
- Conducting joint conferences, seminars, symposiums and scientific research.
- Coordinating educational and business weeks as a complement to studies.
- Offering scholarship programmes and study grants linked to training programmes.
- Exchanging plans, programmes, study materials, scientific and technical information, and audiovisual material.

During the period 2017-2018, the following actions have been carried out in this field of activity:

Arab Academy of Sciences, Technology and Maritime Transport

Organization of two week-long face-to-face seminars (one week in Alexandria, Egypt, and one week in Valencia Spain).

- **Course "Creativity & Innovation in Port Decision Makers"** (January 2018).
- Course **"Future Investments in Ports: Towards New PPP approaches"** (October 2018).

This is a solid, ongoing collaboration that began in 2016 and that allows us to cooperate with port authorities and companies including: Kuwait Port Authority (Kuwait), Saudi Port Authority (Saudi Arabia), Alexandria Container & Cargo Handling (Egypt), Damietta Container & Cargo Handling (Egypt), Red Sea Port Authority (Egypt) and General Authority Economic Zone of Suez Canal (Egypt).

Course on innovation and creativity in ports, January 2018

Inauguration of the International Diploma in Strategy and Competitiveness in Port Operations taught to Brazilian students. September 2018

The design of new seminars titled "Key Aspects in Port Management"

Depending on the client's needs, these seminars focus on different topics: logistics chains, security, environment, statistics, indicators, technology, or leadership and talent development. They have been held in Guatemala, Uruguay, and Argentina (Buenos Aires and Bahía Blanca).

- **Seminar on the International Certificate on Port Management** (for Brazilian students). FEPESE - Fundação de Estudos e Pesquisas Socioeconômicos / UFSC Valencia, February 2018.
- **Course on Key Aspects in Port Management: Logistics and competitiveness, security and talent management in ports** (CPN Guatemala). February 2018.
- Seminar on **Key Aspects in Port Management: port statistics and indicators, computerization and management of the port logistics chain** (ANP Uruguay). April 2018.
- **International Diploma in Strategy and Competitiveness in Port Operations** (for Brazilian students). Valencia, September 2018.
- **Course on Key Aspects in Port Management: Logistics and competitiveness, strategic planning and talent management in ports** (Bahía Blanca - Argentina). October 2018

European Projects

In addition to all the activity described above, the training department has also participated as a partner in two European projects: the project "**VET-PORT**-Applying ECVET and ECTS to certify competences and skills in the maritime port sector" funded by the European Commission through the Erasmus + Programme; and the project " **SKILLFUL**-developing the skills and competences needed by the Transport workforce of the future" funded by the European Commission through the H2020 programme (see Project section of this report), which continues until 2019.

Within the framework of the VET-PORT project, the following pilot courses were carried out in 2017:

- 16-21 January - Training for Terminal Directors, Rotterdam (10 Participants)
- 22-27 January - Training for Terminal Directors, Valencia (8 participants)
- 12-19 February - Training Drivers, Valencia (8 participants)
- 20-24 February - Training Drivers, Rotterdam (7 participants)
- 4-11 March - Training Planners, Livorno (6 participants)
- 2-7 April - HSE Training, Rotterdam (14 participants)

The project came to a close on 15 October, with the drafting of the final report on the competencies required for each of the professional profiles. **The project was given a score of 9.1/10 by the European Union and was published as an example of best practices.**

In addition to these international projects, every year Fundación Valenciaport manages the project called:

STRUCTURING THE PORT COMMUNITY AROUND THE TRAINING SPONSORED BY THE PORT AUTHORITY OF VALENCIA

In the competitive and changing environment companies face today, it has been shown that their human capital is the best tool they have to boost competitiveness and to cope with change. It is the people that make the difference; that's why the Port Authority of Valencia promotes this annual project to achieve the best possible performance of sector professionals, both in Spain and throughout Ibero-America. To that end, it supports specific training programmes, cooperation grants and the structuring of the Port Community.

The specific objective of these courses/seminars is to promote the transfer of the Port of Valencia's know-how on port-related matters. The cultural and, above all, linguistic ties help bring these regions together, creating the perfect scenario for cooperation.

Specific activities of this project involve running an educational scholarship programme for face-to-face training :

- 2 scholarships offered by the PAV for Spanish nationals to study the Master's in Port Management and Intermodal Transport.
- 4 scholarships convened through the CIP-OAS (Inter-American Committee on Ports of the Organization of American States), aimed at Ibero-American professionals who want to do the Master's in Port Management and Intermodal Transport.

Since the beginning of the OAS scholarship programme in 2001, professionals from Peru, Colombia, Mexico, Honduras, the Dominican Republic, El Salvador, Panama, Nicaragua, Chile and Argentina have passed through the training classrooms. This programme fulfils a dual purpose: on the one hand, it provides Ibero-American professionals with the most up-to-date knowledge on the principles of planning, organization and business management linked to the world of transport and ports; and, on the other, it promotes closer relationships and collaboration between the institutions involved. During the 2017-2018 period, students from Peru, Ecuador, Chile, and the Dominican Republic have enjoyed these scholarships.

Scholarships during the period 2017-2018

6.4. FUNDACIÓN VALENCIAPORT ALUMNI ASSOCIATION - AAAFV

The Alumni Association was founded in 1998 so that its members, former students of the Master's in Port Management and Intermodal Transport and the Specialist Courses, could keep in contact with the rest of their graduating year, their lecturers and with alumni from other graduating years. Membership helps alumni stay abreast of training developments as the sector evolves.

Its objectives are:

- To maintain the professional interest of all those who view this period of training as a positive part of their lives.
- To foster human and professional relations among a group of people who are united by this common denominator.
- Provide up-to-date relevant information on a sector as lively and dynamic as trade and transport.
- To manage job opportunities both in terms of internships for students and job openings for those who have already completed the training period.

Activities carried out in the period 2017/2018

Election of the new Board of Governors:

The **President**, Ms Carolina Ibiza Masip (Raminatrans) admits the following members to the Board of Governors:

Vice President: Alexandre Sánchez (Fundación Valenciaport)

Voting members:
Member 1: Salvador Morales (APM Terminals)
Member 2: Javier Campos (MSC Terminal)
Member 3: Gerardo Alvarez (Pilots of Valencia)
Member 4: Carlos Vicedo (Valencia Marítima)
Member 5: Lucia Calabria (Fundación Valenciaport)
Member 6: Núria Alonso (Fundación Valenciaport)
Member 7: Miguel Garín (Fundación Valenciaport)
Member 8: David López Che (Transportes López Gadea)
Member 9: Xavier Mulet (Port Authority of Valencia)
Secretary: Ana Rumbeu (Fundación Valenciaport)
Treasurer: Mª Carmen Estela (Fundación Valenciaport)

Members of the new Board

Professional activities:

- Port-logistics meeting with the General Director of the Port Authority of Valencia, Francesc Sánchez
- Seminar, "Pioneering women in Valencian logistics"
- Seminar, "The impact of alliances in the Port of Valencia"
- Course on "High-impact communication"
- Interviews with Maersk within the Job Exchange

Sports, Leisure and Cultural Activities:

- Christmas and summer dinners
- Taking part in the sector paella event

6.5. What does Fundación Valenciaport's training contribute to the sector?

- The backing of the **experience** and **know-how** gained through more than 25 years of providing training at all levels: managers, middle management and entry-level positions, both in terms of technical knowledge and generic skills. Training the staff of Port Authorities as well as staff of the private companies in the field, both domestic and foreign.
- **Design of customized programmes,** based on a definition of jobs, ensuring a training programme that is suited to each company.
- A proven **profile evaluation process** to identify the best professional profiles for the programmes designed and to ensure the uniformity of the groups, thus helping decision-makers to place a value on the knowledge and activities of each programme. ***Dynamic and innovative methodology** combining theoretical notions with analysis of practice.
- **Working together with the sector. The Port Classroom group,** an ongoing working group composed of professionals and associations in the field, which works to identify the training needs of port-maritime professionals, and functions as the primary communication channel.
- **Expert, qualified teaching staff:** specialists in the field, university lecturers and sector professionals. All programmes have an expert in the selected subject, who works together with Training Department management to design the complete programme. The rest of the course or programme contents are based around this design, and are taught by the selected professionals.
- **Renovated facilities** provide the student with state-of-the-art audiovisual and computer equipment.
- **Certifications and approvals** of certain courses to facilitate entry into to the profession or enable job improvement.

7

DOCUMENTATION/ CEDIPORT

Over the period 2017-2018, Fundación Valenciaport's Documentation Department has continued to carry out its activity based on **two main lines of work:**

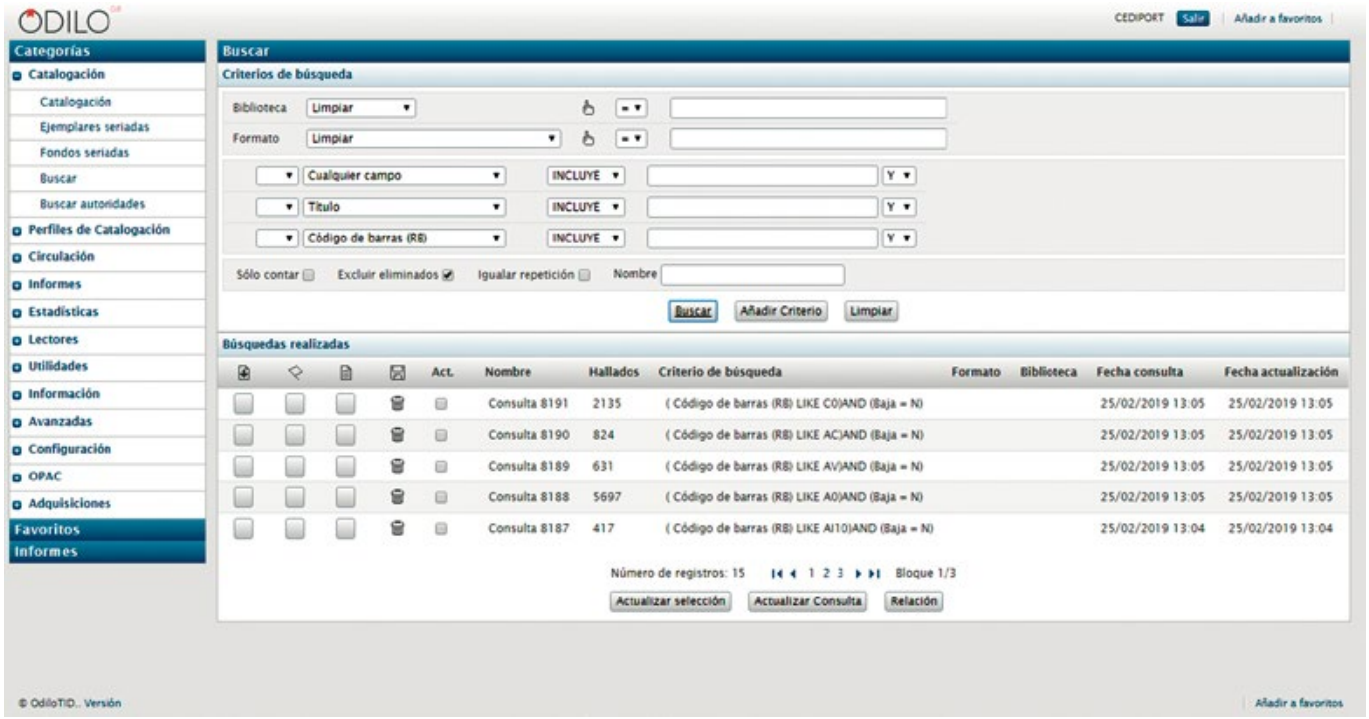
- Management of the documentation centre CEDIPORT
- Alignment with Fundación Valenciaport's areas of work. This includes the consolidation of the **Strategic Monitoring** Service, which provides information alerts related to the topics of some of the projects under development.

CEDIPORT

Since 2004, the documentation centre has been working on its objective of providing an **information and documentation service specialized in port-maritime issues.** It is oriented towards supporting the staff of related institutions, the port community, researchers and students who want to develop their professional future in this sector. As such, its efforts are focused on meeting users' needs and providing them with a selection of documentary resources and information that can help them do their jobs. In addition, CEDIPORT carries out a series of tasks and services relating to the management of this information and documentation.

By the end of the 2017-2018 period, CEDIPORT had a **collection of around 15,000 documents,** not counting copies of periodicals, specialized studies, sectoral reports that address the container transport market, scientific articles, institutional publications, statistics, etc.

Furthermore, during this period a new document management software, **ODILO GB,** was introduced with the aim of improving functionalities and as part of continuing efforts to ensure greater interaction with users.



Also related to the document bank is the volume of loans managed. In the period 2017-2018, lending activity remained high, with more than 1,300 loans in each of the two years.

Another of CEDIPORT's key functions is as a reference service; in particular, it conducts searches in response to users' requests to find documents and data located both in the CEDIPORT database as well as external informational resources, with priority given to open access sources.

STRATEGIC MONITORING

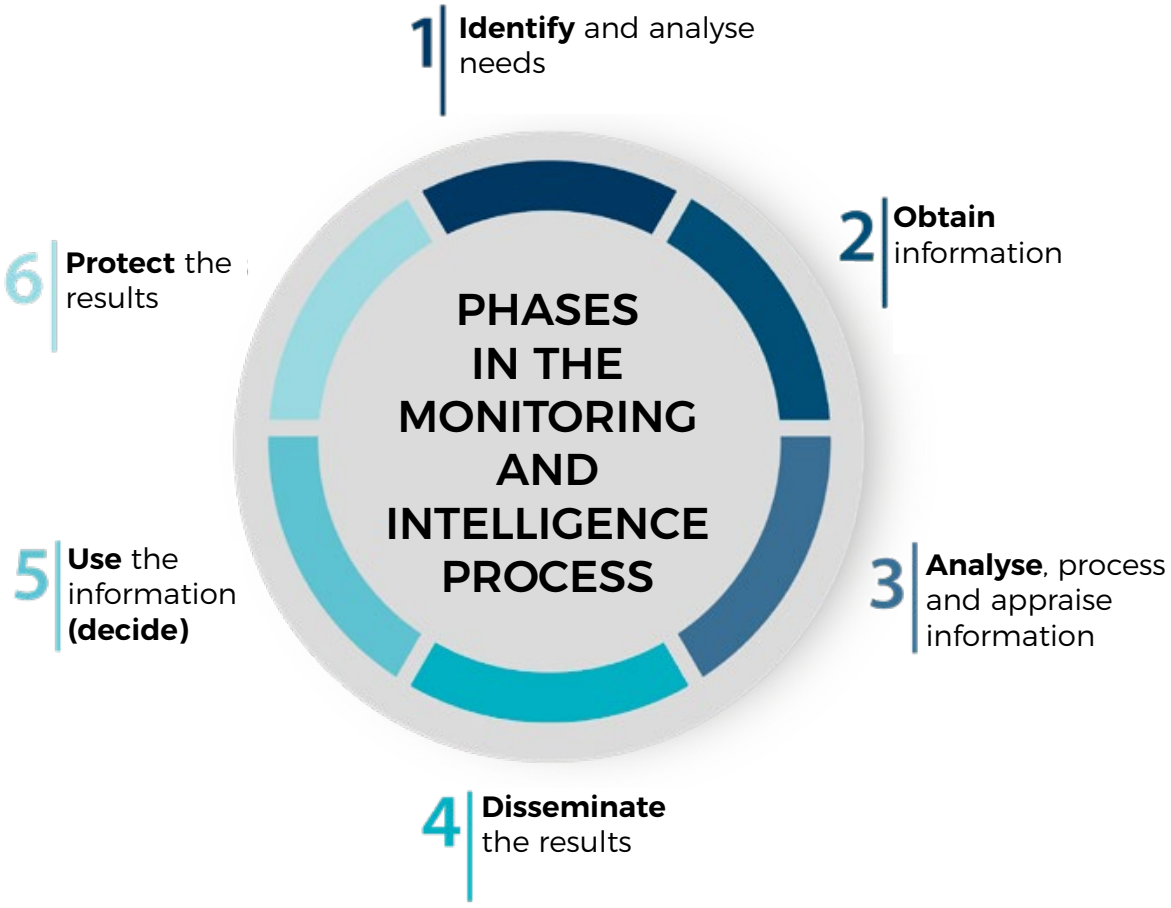
This service has strengthened its position over the period 2017-2018. The alignment with Fundación Valenciaport's work areas and projects has been key to the consolidation and success of this project among its users.

During this period, the Strategic Monitoring Service has centred on key issues such as the application of LNG in ports, as well as those under the umbrella of Market

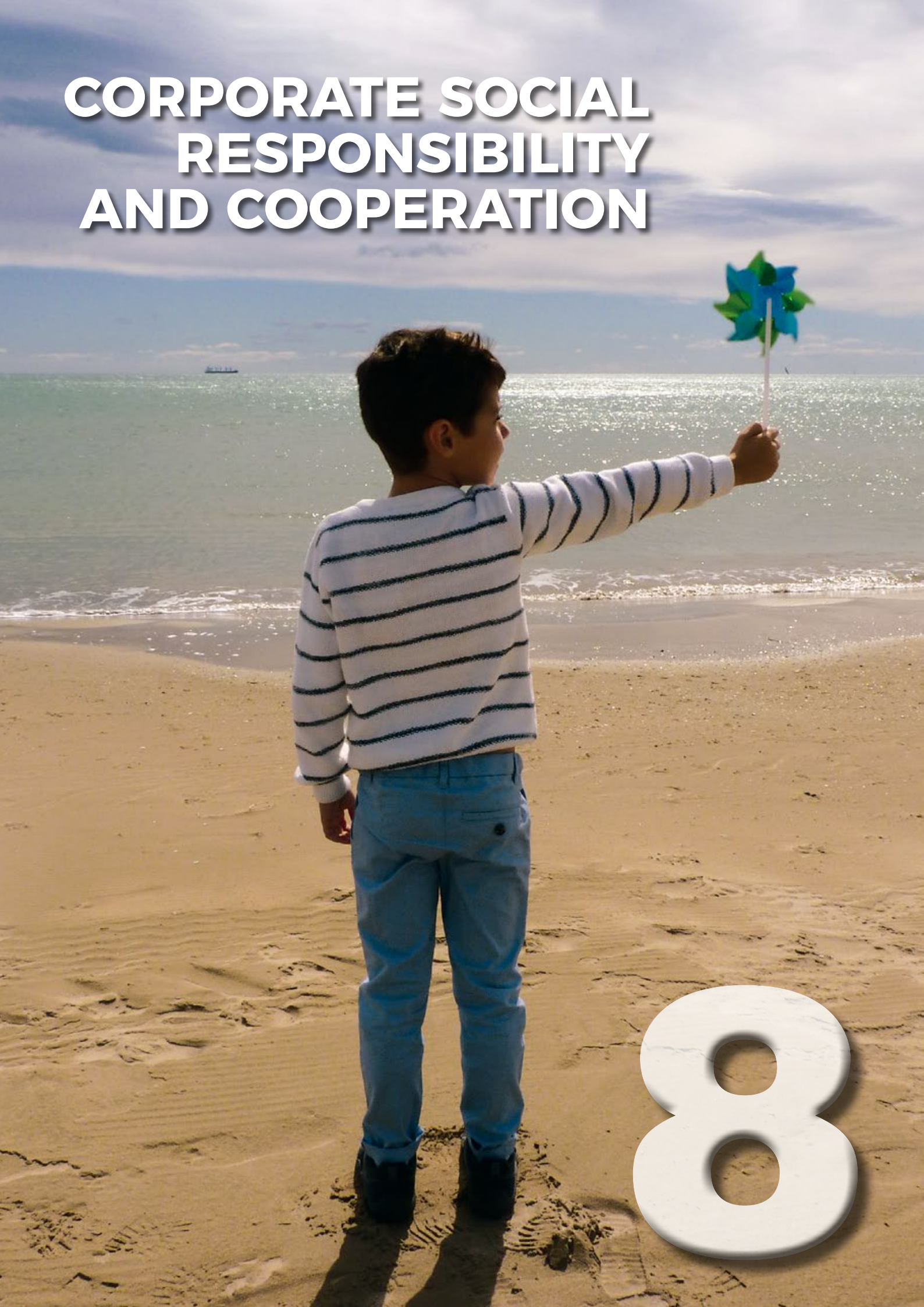
Intelligence, such as trends in the international economy and trade, trends in maritime transport, technological innovations, good port practices, port competitiveness and institutional aspects such as legislation and governance. As a result, about a hundred sources of information have been monitored, including specialized as well as more general sources. Periodic reports have also been issued and distributed to interested users. In addition, in the case of Market Intelligence, actions have included managing a database that, at year-end 2018, had a total of more than 3,700 references from news stories identified as relevant and selected for the files.

Furthermore, as part of the action plan to consolidate the service and equip it with the necessary technology to ensure its sustainability, new software was purchased at the end of 2018, in collaboration with the PAV. This software, called **HONTZA**, is specifically for technological monitoring and competitive intelligence projects. The aim of its implementation is to improve the interaction with users and to ensure the correct management and retrieval of information and documentation selected as a result of the monitoring of sources by means of classification, identification, selection and valuation.

This new software will allow CEDIPORT to collaborate with other Fundación Valenciaport projects under development, whose team members have already expressed interest in using this service, based on the work they see being done and its perceived usefulness.



CORPORATE SOCIAL RESPONSIBILITY AND COOPERATION



8

Fundación Valenciaport believes that Corporate Social Responsibility (CSR) is the appropriate tool for coordinating the actions voluntarily undertaken to benefit the area of influence of an organization. These actions arise out of the relationship and dialogue with its main interest groups, and are implemented through different departments of the organization. Such initiatives tend to be closely linked to responsible management in labour, environmental and social matters, as well as corporate governance.

As part of its commitment to improving the competitiveness of the port community, Fundación Valenciaport continues to encourage companies in the field to integrate CSR into their management practices, and to strengthen the port community's involvement in society.

To that end, Fundación Valenciaport provides resources and tools that give organizations the means to improve their CSR performance, with a particular emphasis on their social impact. This work takes the form of consultancy, guidance, training, collaboration, and sharing experiences and know-how.

Most of the actions that fall within the scope of the CSR department are developed jointly with, or in such a way as to complement the actions promoted by the Fundación Valenciaport board members and the port cluster. Moreover, these actions are targeted at groups that are of interest to all the participating entities. There is a particular focus on the port's surrounding neighbourhoods, where actions are implemented in collaboration with associations and entities linked to the port neighbourhoods and the port-logistics sector.

Listed below are some of the actions most closely related to the social sphere, carried out in 2017 and 2018:

- **Fostering best practices in CSR in the port community,** largely channelled through the association **APORTEM- PUERTO SOLIDARIO VALENCIA,** which was officially listed on the Register of Associations of the Generalitat Valenciana in August 2017. This association brings together the main professional organizations from the local area, several port terminals, as well as other institutions and companies from the sector, in order to promote social responsibility. Since the beginning of the project in 2013, this association has provided the entire Port of Valencia with a way to define its relationship with its nearest neighbours.

Partner representatives at the formal public presentation of the APORTEM association

Children from the Colegio Santiago Apóstol, wearing the tracksuits provided by APORTEM, on Mediterranean TV's Christmas Eve programme

APORTEM develops an overall action plan that comprises some 20 lines of action centred around two main groups of people: the most vulnerable people living in the port's immediate surroundings, who are given support through the socially-oriented non-profit organizations that help them on a daily basis; and the staff of the organizations themselves, who are in turn agents and beneficiaries of APORTEM's social initiatives.

In addition to the relevant general assemblies and meetings of the Board of Directors, the association is organized around work groups that facilitate the internal management, the actions undertaken to benefit the groups in question, and communication efforts. In addition to this regular work, the association also carries out direct monitoring of projects and beneficiary organizations through a meeting held every three weeks or so. This ensures steady, shared progress on the actions being developed.

Fundación Valenciaport assumes the role of Secretary and takes on the general coordination tasks of the Association. Following the necessary adaptation to the association model, several collaboration agreements have been reached to set up partnerships with product suppliers, allowing APORTEM to better serve its beneficiaries. Much of the support provided consists of covering basic needs for subsistence, education, and social and workforce integration.

The association enjoys support from the charitable element of several signature events in the sector, which are held annually. The most important ones are the World Paella Competition organized by the Diario del Puerto and the J.J. Dómine "falla", and the 10k race, "PAS RAS AL PORT", organized by the Poblats Marítims Athletics Club. In the same vein, several companies entrust their financial or in-kind contributions to APORTEM, so that it can channel these donations to the entities that need them most.

It should be pointed out that the total amount of the donations received by APORTEM goes towards initiatives that cover more than 20 neighbourhood organizations supporting severely disadvantaged residents. The initiatives implemented are closely aligned with the objectives set out, as underlined by the positive appraisal of the work reported by beneficiary entities, who are regularly consulted about their degree of satisfaction with the relationship and the form of collaboration.

At year-end 2018, partners included: Port Authority of Valencia; Fundación Valenciaport; Propeller Club of Valencia; TIBA, S.L.U.; Grupo Diario Editorial, S.L.; Official College of Customs Agents and Customs Representatives; Valencian Shipping Association; Infoport Valencia, S.A.; Noatum Container Terminal Valencia, S.A.U.; Association of Freight Forwarders, International Shippers and Related Companies - a logistics and transport organization. Customs representatives–Valencia; Boluda Corporación Marítima, S.L.; Docks Logistics Spain, S.A.; Amarradores del Puerto de Valencia, S.A. (Mooring Valencia); VPI Logistica, S.A.; Fundació Balearia Quatre-Illes; Centro Portuario De

Empleo – Valencia (Valencia Port Employment Centre); ELTC- Asociación De Empresas de Logística y Transporte de Contenedores (Association of Container Transport and Logistics Companies); MA Abogados - Salinas Legal y Tributario, S.L.; Profesional, Caixa Popular, Intermodal Global Logistics; VIMAR Brothers; Chema Ballester, S.A.; Salvador Navarro; Sertego - Servicios Medioambientales, S.L.U.; and MSC Terminal Valencia, S.A.U.

All of APORTEM's activities are posted on its website (http://www.aportem.com). Thus far it has met its objectives, which are to better contribute to well-being in the port's surroundings and to strengthen relationships between members of the entity and with society as a whole.

- **The support and advice given to other entities on how to integrate social responsibility** into their management practices takes the form of diagnostic analysis and studies, as well as the design of CSR plans, specific initiatives and general reporting. All this makes it possible to set out in the organization's strategy the best way to voluntarily contribute to sustainable development, from a combined societal, labour and environmental perspective. The most significant project in this regard is the one developed with the Port Authority of Valencia.

- In respect to the sharing of know-how and best practices in CSR, Fundación Valenciaport maintains an active policy of releasing reports and participating in forums and training. The aim is to highlight Valenciaport's commitment in this sphere as well as offering organizations

APORTEM encourages the purchase of Easter flowers with the "More than a Flower" project, through which Novaterra facilitates social and workforce integration

the opportunity to improve by extending these practices to other scenarios. Along with interviews in a variety of media, which offer different ways of reaching new audiences, some of the most notable actions include:

- Presentation on "Responsible Communication and Sustainable Development Goals" in the "100 Jornada Corresponsables" (Shared Responsibility Conference). Organized by the publication Corresponsables and Bankia (May 2017)
- Organizing the presentation of the European Pact for Youth in Valencia, along with Forética and the Generalitat Valenciana. (June 2017)
- Presentation at the 4th RSEncuentro (CRS Meeting) "Sustainable Territories" at the roundtable discussion on "SDG in cities", representing the Port of Valencia (September 2017)
- Presentation "The experience of social responsibility in Valenciaport" and technical visit to the Port of Valencia. Module on Spanish success stories and best practices in social responsibility for the Master's in Social Responsibility offered by the Polytechnic University of Valencia and the Pontificia Universidad Católica Madre y Maestra - PUCMM (October 2017)
- Presentations at the first CSR in the Valencian Community Week. (October 2017)
- Presentation at the conference "Collaborating with NGOs with passion and confidence," organized by Bankia and Fundación Lealtad (October 2017)
- Speech given at "EFIAQUA" in the Sustainability in Cities Forum organized by HIDRAQUA and moderated by Valenciaplaza (November 2017)
- Speech at the conference "CSR as a legitimacy factor for social services companies" AERTE - CEV (October 2018)

· In terms of **relationships in the local area,** interactions with prioritized special interest groups are planned out. To this end, an ongoing relationship is maintained with those who represent key agents in civil society and who convey a positive, relatable image to the general public. Similarly, there is a systematic collaboration with the neighbourhood organizations and NGOs most closely involved in the surrounding areas. All this makes it possible to directly identify the concerns and needs of the local population. There is ongoing contact and collaboration with more than 25 entities, including particularly strong ties with the following:

Sessions in EFIAQUA – Valencia Exhibition Centre, Bankia and CSR Week in Edificio del Reloj

- **Colegio Ausiàs March de Nazaret.** Denoted a 'Centro de Acción Educativa Singular' (CAES) — a school in a disadvantaged neighbourhood. Located in Nazaret, it cares for 135 children living at risk of social exclusion, with dysfunctional families and poor housing. They implement 20 comprehensive care programmes, including programmes that offer a shower and change of clothes.
- **Colegio Santiago Apóstol del Cabanyal.** CAES school located in the Cabanyal area, which annually attends to an average of 190 socially-disadvantaged at risk of dropping out of basic education.
- **Colegio Juan Manuel Montoya.** CAES school in the Punta area, which cares for an average of 150 minors, many of whom do not speak

Recognition award presented to companies and organizations in the Valencian Community that have participated in the Jornadas Corresponsables (Shared Responsibility Conferences) in Valencia up to 2017

the language and live in unstable homes in very poor conditions.

- **Colegio Nuestra Señora de los Desamparados.** School in Nazaret that attends to 270 children. It has a social volunteering programme that encourages better social adaptation and integration through educational support, tutoring, sports and other complementary programmes.
- **Colegio Nuestra Señora del Carmen.** Located the Beteró area, this public school attends an average of 115 children in need of additional educational support, and who come from socially-disadvantaged ethnic or cultural minorities.
- **Centro de Día de Menores "Santa Ana"** (Santa Ana Children's Day Centre). Located in the neighbourhood of Nazaret, this daycare for children up to 3 years old at risk of social exclusion, referred by social services. The centre provides support for early childhood and families, based on a programme of prevention and early psycho-educational intervention, among other actions.
- **Asociación Arca de Noé de Nazaret** (Noah's Ark Association of Nazaret). Public interest entity providing leisure-time interventions that make a crucial socio-educational, integrative and supportive contribution to disadvantaged children's and teenagers' personal development.
- **Asociación Brúfol.** Based in the port neighbourhood area, this organization develops training, employment and intercultural mediation projects to serve women and young people of Romani gypsy ethnicity
- **Association Veïns i VeÏnes de Nazaret** (Nazaret Neighbours Association). Social agent which as a neighbourhood organization is deeply rooted and very active in its local area of Nazaret.
- **Asociación Amigos de la Calle** (Friends of the Street Association). Volunteering organization that regularly assists people who live on the street.
- **Fundación Alanna.** Organization that develops socio-educational programmes aimed at the social and workforce integration of women who are war refugees, victims of gender violence, slum dwellers, and women in situations of severe instability in the port area and the rest of the city.
- **Fundación Novaterra.** Civil initiative involving organizations and people who fight against poverty and social exclusion by supporting the most disadvantaged people through a personalized programme that includes shelter, training in social skills and for employment, support and intermediation for social integration.

Shopping items delivered and teas to give out to vulnerable children

Volunteers of the port community distributing the products collected in the charitable campaign and delivering toys for Christmas

- **Monitoring** local, Spanish and international **trends and policies**, along with the benchmarking of best practices, are essential in order to have up-to-date information about success stories, opportunities and proven useful practices for the implementation of social responsibility. To that end, Fundación Valenciaport participates in the **principal forums** on the subject. Likewise, partnerships and specialized networks help bolster the position of the Port of Valencia. In this respect, Fundación Valenciaport plays an active part in notable organizations such as **FORÉTICA** - Forum for the Evaluation of Ethical Management, and the **ÉTNOR Foundation.** Both of these are focused on the ethics of business and organizations. They are also groundbreaking entities in Spain, which have received international recognition. In the same vein, Fundación Valenciaport also supports the work of the Spanish Association of CSR Professionals (DIRSE), AEDIPE - Comunidad Valenciana, and WISTA - Women's International Shipping & Trading Association. In terms of port-city relations, until 2017, Fundación Valenciaport was a member of major specialized networks including the International Association of Cities and Ports (AIVP) and the Association for Collaboration between Ports and Cities (RETE).

- **Enhancing corporate social action** promotes the joint participation of the people that make up the port community, in order to encourage charitable initiatives in a common space where the impact can be felt by all. In this way, the sum of the individual contributions can achieve better results and raise more awareness about the involvement in the local area. Support for local disadvantaged groups is provided through coordinated initiatives for the whole sector and with the backing of socially-oriented organizations. Thus, regular campaigns are organized to **collect toys, school supplies, clothes and other items.** One of the most useful and important actions for local beneficiaries is the eye exam that has been provided in almost all the abovementioned schools and educational centres. This has been made possible thanks to the involvement of the NGO Visió Sense Fronteres, the coordination of the Fundació Baleària and the voluntary participation of sector employees. Moreover, thanks to this collaborative approach, hundreds of children in several of the regular beneficiary schools are given a new toy for Christmas.

PROMOTING THE IMPLEMENTATION OF CORPORATE SOCIAL RESPONSIBILITY IN VALENCIAPORT

WORK TEAM

FV Coordinator: Pilar Blaya

TIMEFRAME: 2017 y 2018

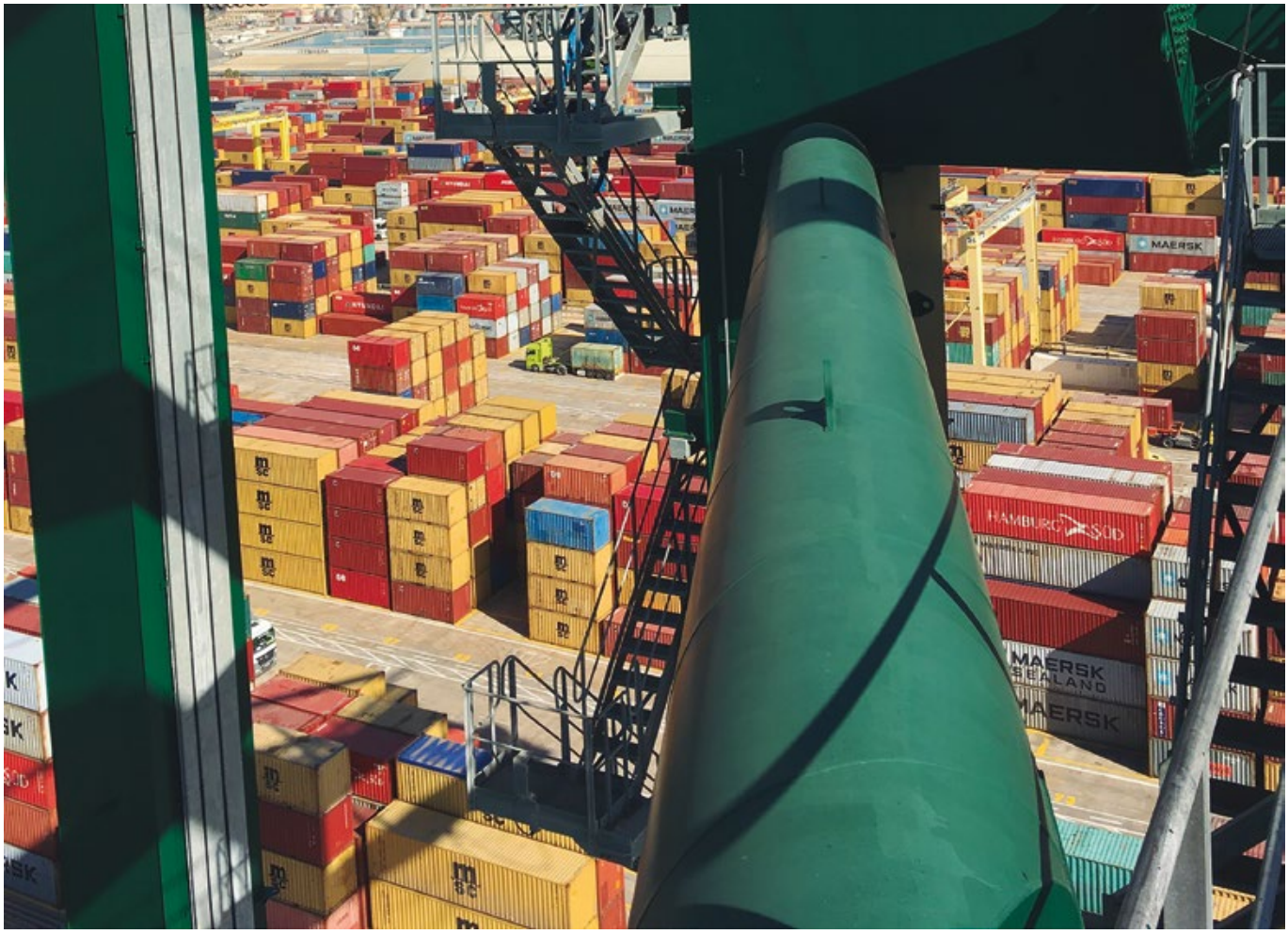
OBJECTIVE:

To promote the implementation of CSR in response to the PAV's desire to reinforce its model of contributing to sustainable development. This is based on a series of principles that guide its management model, some of which include adopting a cooperative approach and ensuring social responsibility, as well as complying with legal requirements.

This project is structured around various lines of work, which are implemented in order to improve governance, and in general to ensure responsible management in accordance with the societal, labour and environmental requirements of the surrounding area. This helps creates a corporate culture that aims to provide coherent criteria for present-day decision-making that enables the future viability of the organization and its environment. Within the framework of this project, multiple shared actions are integrated into a CSR plan that engages both entities in promoting CSR among the port community.

FUNDING ENTITY: Port Authority of Valencia

The actions included aim to offer a relatable point of reference that can help to better address the current welfare conditions in Valenciaport's area of influence. Thus, with the collaboration of the port community, it is possible to create the ideal scenario for achieving the objectives set out in Agenda 2030.



9 FINANCIAL INFORMATION

FUNDACIÓN VALENCIAPORT
BALANCE SHEET

ASSETS	31/12/2018	31/12/2017
A) NON-CURRENT ASSETS	**82,307.39**	**133,397 .68**
1 Intangible assets	**39,544,56**	**61,466 .04**
5. . IT applications	39,544,56	61,466 .04
III. Tangible assets	**36,602 .83**	**54,012 .85**
2. Technical facilities and other tangible assets	36,602 .83	54,012 .85
VI. Long-term financial investments	**6,160 .00**	**17,918 .79**
5. Other financial assets .	6,160,00	1 7,91 8 .79
B) CURRENT ASSETS	**6,699,879 .25**	**5,851,765 .59**
1. Inventory	**37,703 .09**	**42,824 .55**
1. Operational assets	33,261 .43	37,874 .39
6. Advanced payments to suppliers	4,441 .66	4,950 .1 6
II. Activity users and other debtors	**4,297,308 .46**	**3,685,728 .35**
III. Commercial debtors and other accounts receivable	**138,379 .91**	**245,555 .33**
1. Provision of services and sales to clients	137,023,00	238,538 .22
4. Staff	1,356 .91	7,017 .11
VI. Short-term accruals	**-**	**3,417 .72**
VII. Cash and cash equivalents	**2,226,487 .77**	**1,874,239 .64**
1. Cash .	2,226,487.77	1,874,239 .64
TOTAL ASSETS (A+B)	**6,782,186 .62**	**5,985,163 .27**

EQUITY AND LIABILITIES	31/12/2018	31/12/2017
A) EQUITY	**3,421,745.38**	**3,597,840.47**
A-I) Foundation Funds	**1,066,591.91**	**1,082,160.04**
1. Founding Capital	**978,382.24**	**978,382.24**
1. Founding Capital	978,382.24	978,382.24
II. Reserves	**78,117.13**	**90,687.07**
2. Other reserves	78,117.13	90,687.07
III. Surplus from previous financial years	**-**	**6,519.41**
1. Surplus	-	6,519.41
IV. Financial year surplus	**10,092,54**	**6,571.31**
A-3) Grants, donations and bequests received	**2,355,153.47**	**2,515,680.43**
1. Grants	**2,355,153.47**	**2,515,680.43**
B) NON-CURRENT LIABILITIES	**261,683.72**	**279,520.05**
IV. Deferred tax liabilities	**261,683.72**	**279,520.05**
C) CURRENT LIABILITIES	**3,098,757.54**	**2,107,802.76**
I. Short-term provisions	**226,350.00**	**55,000.00**
II. Short-term debts	**2,461,616.09**	**1,488,367.30**
2. Debts with financial institutions	506,071.51	9,880.47
5. Other financial liabilities	1,955,544.58	1,478,486.83
IV. Beneficiaries – Creditors	**1,437.75**	**-**
V. Commercial creditors and other accounts payable	**409,353.70**	**460,435.46**
1. Suppliers	60,858.30	39,208.16
3. Sundry creditors	116,458.48	95,568.18
4. Staff (Wages payable)	2,158.70	47,000.00
5. Current tax liabilities	-	-
6. Other debts with Public Administrations	205,620.12	250,791.19
7. Advance payments received for orders	24,258.10	27,867.93
VI. Short-term accruals	**-**	**104,000.00**
TOTAL EQUITY AND LIABILITIES (A+B+C)	**6,782,186.64**	**5,985,163.27**

FUNDACIÓN VALENCIAPORT
INCOME STATEMENT AND STATEMENT OF CHANGES IN EQUITY

INCOME STATEMENT	31/12/2018	31/12/2017
A) Financial year surplus		
1. Income from operating activities	**2,632,326.99**	**2,049,442.26**
a) Dues from associates and affiliates	-	-
b) User contributions	975,736.01	563,787.94
c) Income received from promotions, sponsorships and collaborations	-	-
d) Grants apportioned to financial year surplus	1,656,590.98	1,485,654.32
e) Grants, donations and bequests allocated to the financial year surplus	-	-
f) Repayment of aid and allocations	-	-
2. Spending on aid and other	**-52,106.25**	**-64,474.29**
a) Monetary aid	-52,106.25	-59,002.00
b) Non-monetary aid	-	-
c) Spending on collaborations and by the governing body.	-	-
d) Repayment of grants, donations and bequests	-	-5,472.29
3. Change in stocks of finished products and products in progress	**-**	**-**
4. Work done by the entity on its assets.	**-**	**-**
5. Procurement	**-474,023.54**	**-407,435.89**
6. Other operating income	**439,446.94**	**853,425.04**
7. Staff costs	**-3,047,335.04**	**-3,039,003.76**
a) Salaries, wages and associated costs	-2,452,809.92	-2,444,787.60
b) Social security contributions	-595,025.12	-594,216.16
c) Provisions	500.00	-
8. Other operating expenses	**-1,215,283.84**	**-1,138,601.20**
a) Outside services	-1,048,388.27	-989,391.81
b) Taxes	-133,294.40	-102,440.85
c) Loss, impairment and variation in provisions for trade operations	-	-
d) Other current operating expenditure	-33,601.17	-46,768.54
9. Fixed asset depreciation	**-48,384.16**	**-62,959.15**
10. Grants, donations and bequests of capital transferred to financial year surplus	**1,773,313.18**	**1,869,325.01**
a) Capital grants transferred to financial year surplus	1,773,313.18	1,869,325.01
b) Donations and bequests of capital transferred to financial year surplus	-	-
11. Excess provisions	**-**	**-**
12. Impairment and Gains (Losses) on Disposals of Fixed Assets	**-**	**-**
a) Impairment and losses	-	-
b) Gains (Losses) on disposals and others	-	-
13. Other results	**-3,022.44**	**-2,450.37**
A.I) OPERATING SURPULUS (1+2+3+4+5+6+7+8+9+10+11+12+13)	**4,931.84**	**57,267.65**
14. Financial income	**1,676.92**	**1,443.80**
a) From holdings of equity instruments	-	-
a1) of entities in the group and associated entities	-	-
a2) of third parties	-	-
b) From marketable securities and other financial instruments	1,676.92	1,443.80
b1) of entities in the group and associated entities	-	-
b2) of third parties	1,676.92	1,443.80

FUNDACIÓN VALENCIAPORT
INCOME STATEMENT AND STATEMENT OF CHANGES IN EQUITY

15. Financial expenditure	**-10,728.10**	**-13,385.74**
a) On debts to entities of the group and associated entities	-	-
b) On debts to third parties	-10,728.10	-13,385.74
c) Restatement of provisions	-	-
16. Changes in the fair value of financial instruments	**-**	**-**
a) Trading book and others	-	-
b) Allocation to financial year surplus of financial assets available for sale	-	-
17. Exchange rate differences	**14,211.88**	**-38,754.40**
18. Impairment and Gains (Losses) on Disposals of Financial Instruments	**-**	**-**
a) Impairment and losses	-	-
b) Gains (Losses) on disposals and others	-	-
A.2) SURPLUS FROM FINANCIAL OPERATIONS (14+15+16+17+18)	**5,160.70**	**-50,696.34**
A.3) PRE-TAX SURPLUS (A.1+A.2)	**10,092.54**	**6,571.31**
19. Taxes on profits	**-**	**-**
A.4) Changes in equity recognized in the financial year surplus (A.3+19)	**10,092.54**	**6,571.31**

STATEMENT OF CHANGES IN EQUITY	**31/12/2018**	**31/12/2017**
B) Income and expenditure directly allocated to equity		
1. Financial assets available for sale	-	-
2. Cash flow hedging operations	-	-
3. Grants received	1,594,949.89	1,642,002.91
4. Donations and bequests received	-	-
5. Actuarial gains and losses and other adjustments	-	-
6. Tax effect	-159,494.99	-1 64,200.29
B.I) Changes in equity from income and expenditure directly recognized in equity (1+2+3+4+5+6)	**1,435,454.90**	**1,477,802.62**
C) Reclassifications to the financial year surplus		
1. Financial assets available for sale	-	-
2. Cash flow hedging operations	-	-
3. Grants received	-1,773,313.18	-1,869,325.01
4. Donations and bequests received	-	-
5. Tax effect	177,331.32	186,932.50
C.I) Changes in equity from reclassifications to the financial year surplus (1+2+3+4+5)	**-1,595,981.86**	**-1,682,392.51**
D) Changes in equity from income and expenditure directly allocated to equity (B.1+C.1)	**-160,526.96**	**-204,589.89**
E) Adjustments for changes in accounting standards		
F) Adjustments for errors		
G) Changes in founding capital		
H) Other changes		
1) TOTAL RESULT, CHANGE IN EQUITY IN THE FINANCIAL YEAR (A.4+D+E+F+G+H)	**-150,434.42**	**-198,018.58**

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Directors of the Noatum Terminals, Intersagunto Terminals and APM Terminals receive training from STC Rotterdam, as part of the Vetport project. Valencia (Spain), January 2017.

Meeting in the Port of Buenos Aires facilities for the start of the Port Pregate technical assistance project. Buenos Aires (Argentina), March 2017.

MGPT Students in their class with the President of MSC Spain, Francisco Lorente. Valencia (Spain), February 2017.

Meeting of the partners in the European project STM Validation. Valencia (Spain), May 2017.

Kick-off meeting for the European project SAURON. Valencia (Spain), May 2017.

Presentation by Fundación Valenciaport's Director of International Development, Miguel Garín, at the "Second Hemispheric Conference on Inland Ports, Waterways and Dredging" organized by the CIP-OAS and the Under-Secretariat of Ports and Waterways of Argentina Buenos Aires (Argentina), May 2017.

Conference on "LNG, the fuel of the future for road freight transport", organized by Fundación Valenciaport as part of the CORE LNGas hive project. Valencia (Spain), May 2017.

Pilar Blaya, Fundación Valenciaport's Director of CSR and Human Capital participated in the "100 Jornada Corresponsables", a meeting that addressed the keys to responsible communication and SDGs. Valencia (Spain), May 2017.

Closing ceremony of the 25th Master's in Port Management and Intermodal Transport. Valencia (Spain), June 2017.

The Valencian partners of the European SUCCESS Project, Fundación Valenciaport and Las Naves, took part in the 2017 Civitas Forum. Torres Vedras - Lisbon (Portugal), September 2017.

Salvador Furió, Fundación Valenciaport's Director of Innovation and Cluster Development took part in the 9th meeting of the Inter-American Network of International Trade Single Windows and Trade Facilitation. Montevideo (Uruguay), September 2017.

European GAINN projects host a stand at the Connecting Europe Conference Exhibition. Tallinn (Estonia), September 2017.

Third Steering Committee and first scientific committee of the European project Proteus. Valencia (Spain), October 2017.

Fundación Valenciaport presents the Port of Buenos Aires with the results of the technical assistance to develop the logistics corridor. Buenos Aires (Argentina), November 2017.

Public presentation of the Association Aportem - Puerto Solidario Valencia. Valencia (Spain), November 2017.

INEA field trip to the works carried out at the truck loading station in the Montoir LNG terminal; part of the GAINN4MOS project. Montoir-de-Bretagne (France), January 2018.

Course on "Innovation and Creativity in Ports for Decision-Making", organized by the Fundación Valenciaport and the Arab Academy for Science, Technology and Maritime Transport. Valencia (Spain), January 2018.

Representatives of the FV and PAV meet with Peru's Minister and Deputy Minister of Transport and Communications. Valencia (Spain), February 2018.

Students of the course "International Certificate in Port Management", taught by the FV to Brazilian managers. Valencia (Spain), February 2018.

Initial meeting of the technical assistance project for updating the Master Plan of the Port of Callao. El Callao (Peru), March 2018

Signing of the collaboration agreement between FV and CODESA - Companhia Docas do Espírito Santo, the company that manages the Port of Vitoria (Brazil). Sao Paulo (Brazil), March 2018.

Training session on fishing tourism for the Valencian Community fishing sector, organized by the FV as part of the European Tourismed project. Jávea-Alicante (Spain), March 2018.

The GAINN projects host a stand at Ten-T Days 2018. Ljubljana (Slovenia), April 2018.

Kick-off meeting for the European project Herit-Data. Florence (Italy), April 2018.

Final Conference of the European project Picasso. Gijón - Asturias (Spain), May 2018.

Conference "Valencia, Sustainable Cruise Destination", organized by the FV, in collaboration with the PAV. Valencia (Spain), May 2018.

José A. Giménez, Fundación Valenciaport's Director of Port Logistics took part in the seminar "Smart Ports. Energy Management in Andalusian ports". Málaga (Spain), May 2018.

The students of the 26th MGPT visit the ship MSC Venice. Valencia (Spain), June 2018.

Meeting of the partners in the European project SUMPORT Igoumenitsa (Greece), June 2018.

Students of the Course on Port-Logistics Sector Procedures and Documentation. Valencia (Spain), June 2018.

Electric bike service for cruise passengers, launched in the Port of Valencia by the European project SUMPORT. Valencia (Spain), July 2018.

Presentation of the Valencia Container Freight Index (VCFI). Valencia (Spain), July 2018.

The Noatum terminal in the Port of Valencia hosts the pilot demonstrator of the European project Transforming Transport. Valencia (Spain), September 2018.

Fundación Valenciaport takes part in defining the New Port Community System (PCS) for the Port of Buenos Aires. Buenos Aires (Argentina), September 2018.

Kick-off Meeting of the European project LOOP-Ports. Valencia (Spain), October 2018.

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