SMARTenerifePORT: a case study

Puertos de Tenerife

Autoridad Portuaria de Santa Cruz de Tenerife

D. Santiago Yanes Díaz
Head of Industrial Facilities
Puertos de Tenerife
Athens, April 2018

Port Authority of Santa Cruz de Tenerife

Island of Tenerife:

- Port of Santa Cruz de Tenerife
- Port of Los Cristianos
- Port of Granadilla

Island of La Palma:

- Port of Santa Cruz de la Palma

Island of La Gomera:

- Port of San Sebastián de La Gomera

Island of El Hierro:

- Port of la Estaca

Port Authority of Santa Cruz de Tenerife

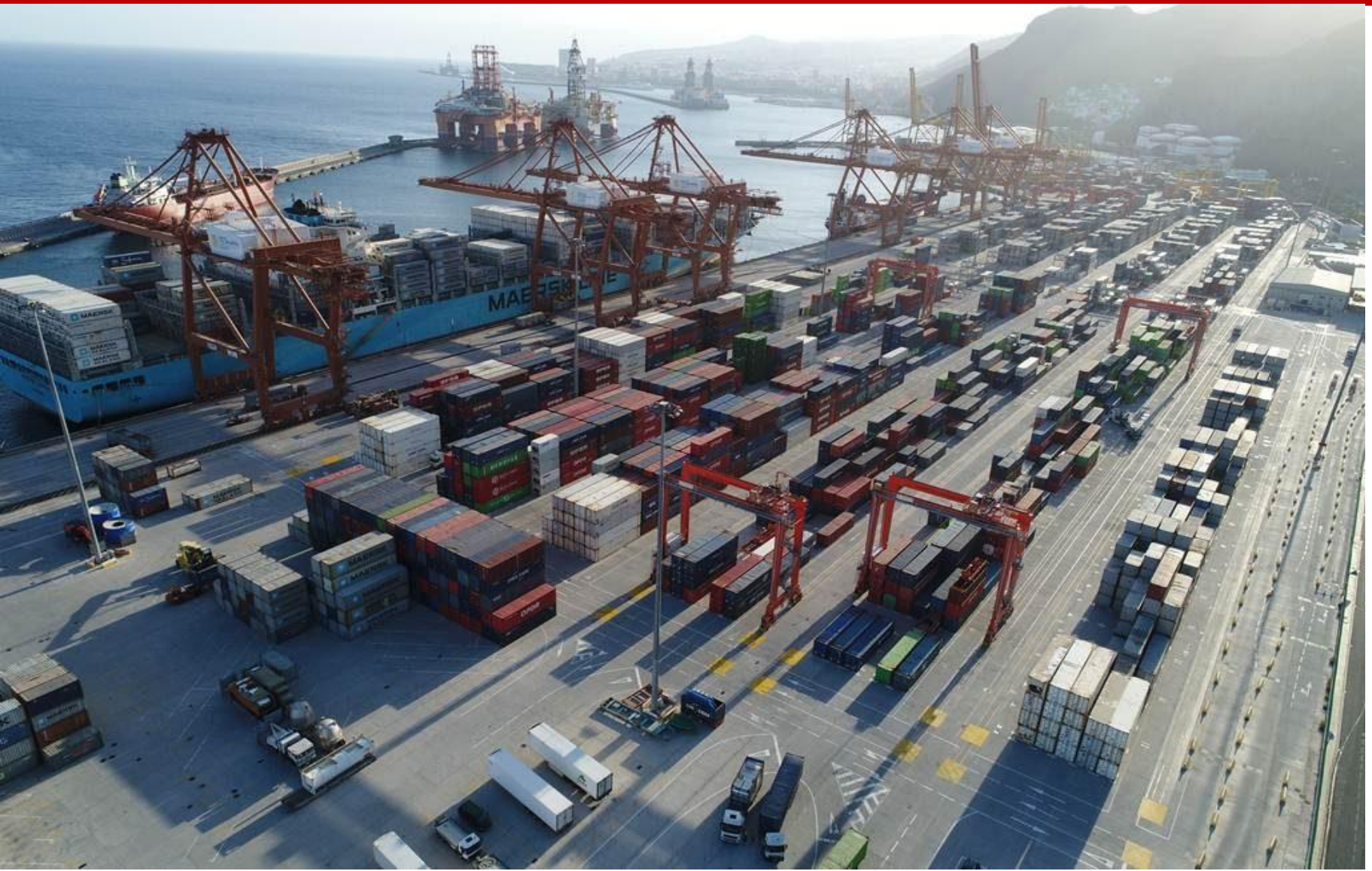
Puertos de Tenerife

Autoridad Portuaria de Santa Cruz de Tenerife

Santa Cruz de Tenerife

Port Authority of Santa Cruz de Tenerife

Puertos de Tenerife
Autoridad Portuaria de Santa Cruz de Tenerife



Santa Cruz de Tenerife

Port Authority of Santa Cruz de Tenerife

Puertos de Tenerife
Autoridad Portuaria de Santa Cruz de Tenerife

Granadilla

Port Authority of Santa Cruz de Tenerife

Puertos de Tenerife
Autoridad Portuaria de Santa Cruz de Tenerife

Los Cristianos

Port Authority of Santa Cruz de Tenerife

Puertos de Tenerife
Autoridad Portuaria de Santa Cruz de Tenerife

La Gomera

Port Authority of Santa Cruz de Tenerife

Puertos de Tenerife
Autoridad Portuaria de Santa Cruz de Tenerife

La Palma

Port Authority of Santa Cruz de Tenerife

Puertos de Tenerife

Autoridad Portuaria de Santa Cruz de Tenerife

El Hierro

SMARTenerifePORT

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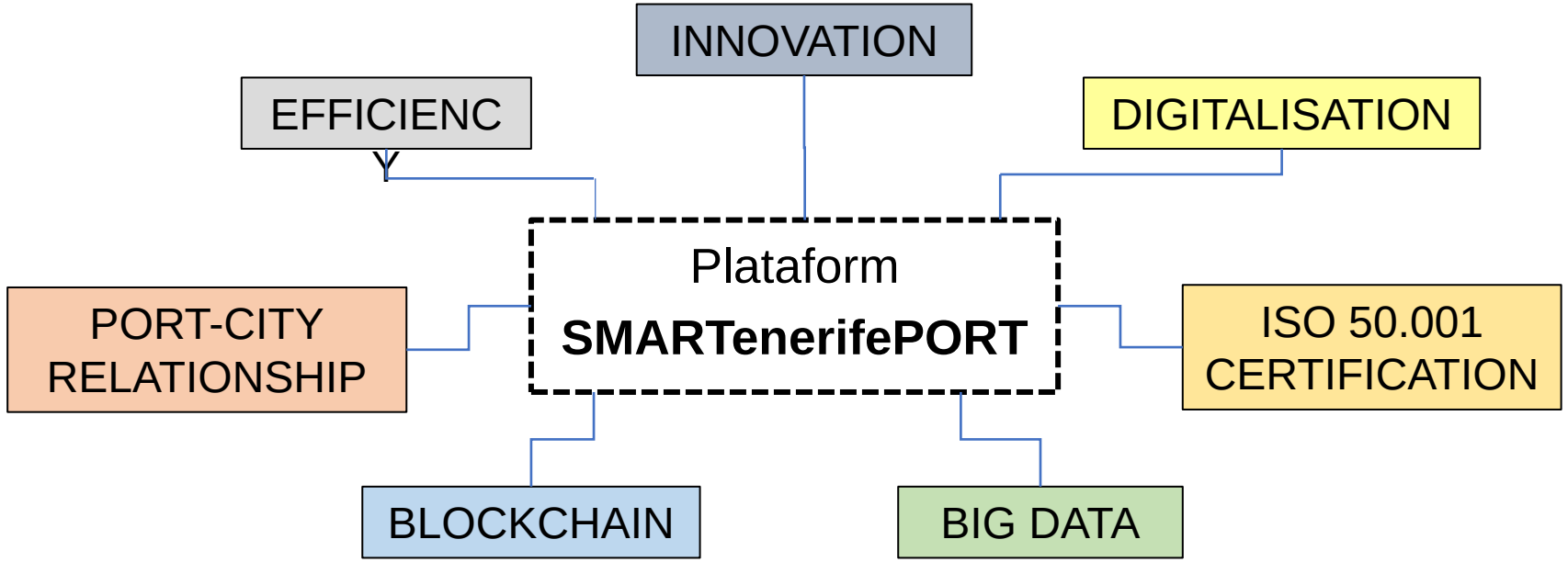
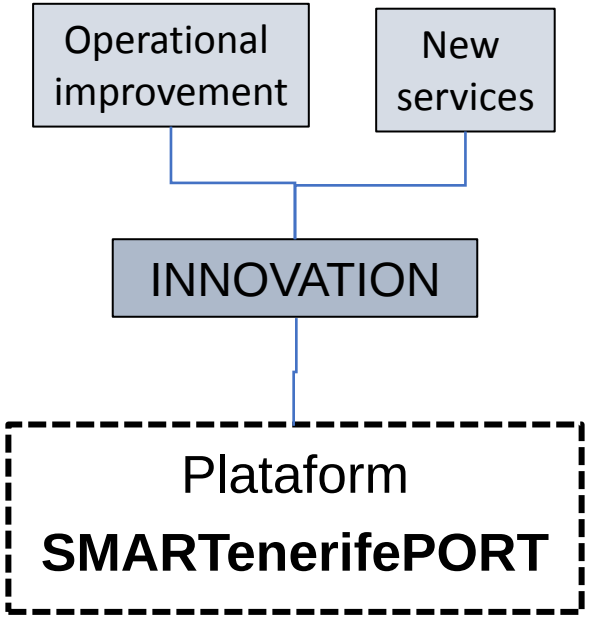


SMARTenerifePORT: Innovation



Onshore Power Supply

COMMISSION RECOMMENDATION of 8 May 2006 on the promotion of shore-side electricity for use by ships at berth in Community ports
(2006/339/EC)

OPS installation

Puertos de Tenerife
Autoridad Portuaria de Santa Cruz de Tenerife

Project title:
"OPS Master Plan for Spanish Ports"

Co-financed by the European Union
Connecting Europe Facility

Socios del proyecto:

Puertos del Estado · Gobierno de España Ministerio de Fomento · Puertos de Tenerife · Puertos de Las Palmas · Ports de Balears · Universidad Politécnica de Madrid · ULPGC · UCA · seaplace · MarineTraffic · UECC · GHENOVA ingeniería · inova labs change & innov@te

OPS installation

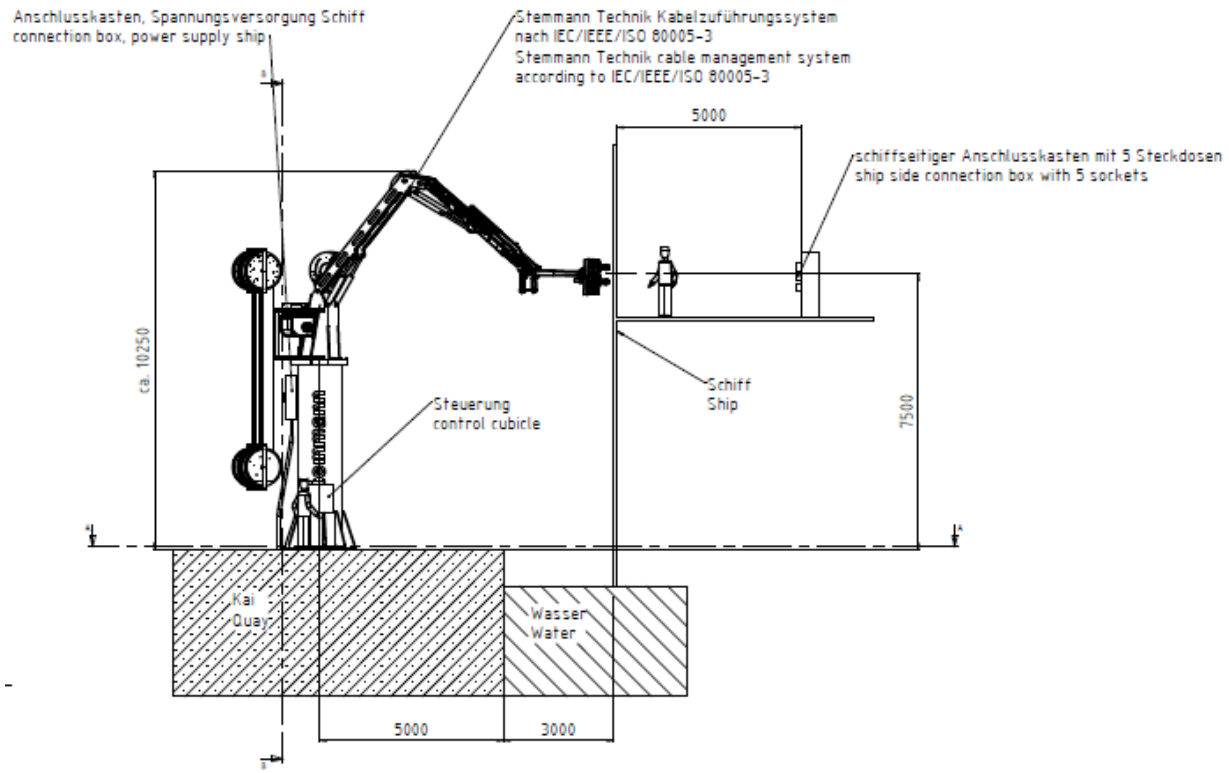
NAVIERA ARMAS	
Power	800 kva
Voltage	20 Kv/400 v
Frequency	50 Hz

NAVIERA FRED OLSEN	
Power	100 kva
Voltage	400 v
Frequency	50 Hz

CONCEPTO	PRESUPUESTO	
1.- Obra Civil	51.097,85 €	6%
2.- Instalaciones eléctricas	307.689,42 €	39%
3.- Sistemas de gestión de cable	391.168,37 €	48%
4.- Sistema de control	17.709,26 €	2%
5.- Gestión de residuos	8.008,20 €	1%
6.- Seguridad y salud	32.553,73 €	4%
TOTAL PEM	**808.226,83 €**	**100%**
TOTAL PEC	**961.789,93 €**	**119%**

OPS cable dispenser system

STEMMANN – ShoreCONNECT Cable crane



IEC ISO IEC PAS 80005-3

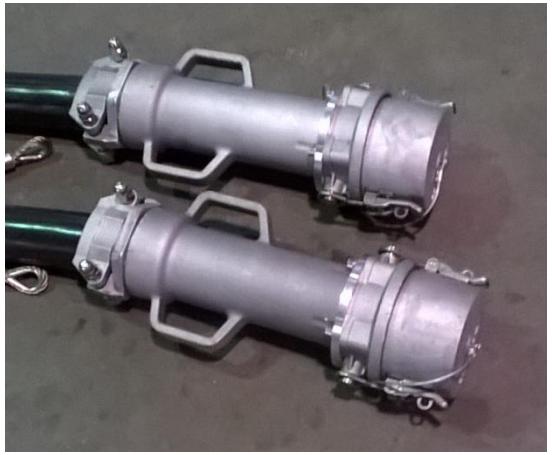
Edition 1.0 2014-08

PUBLICLY AVAILABLE SPECIFICATION

PRE-STANDARD

OPS cable dispenser

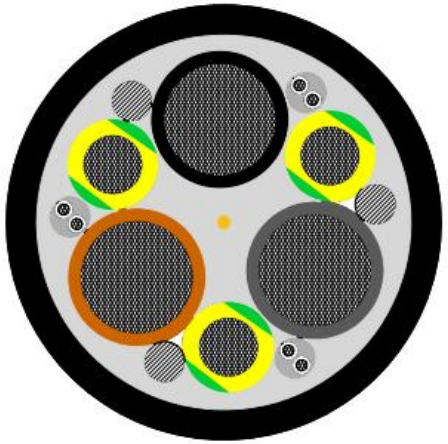
In order to simplify system, only one type of plug/sockets and cable are specified



Cable dispenser

- 4 LV plugs according IEC standard guarantee interoperability with other vessel following standard
- 4 independent motorized cable dispenser deploying system to allow easy operation (only one cable at time shall be handle)
- Independent limit switches for alarms required by IEC standard
- Transition box from yard to flexible cables
- Control box
- Radio remote control

CAVOFLEX AMP
3x185 + 3G95/3 + 3x(2x1.5)C
0.6/1 (U_m 1.2) kV



9 kg/m

Other OPS in Tenerife

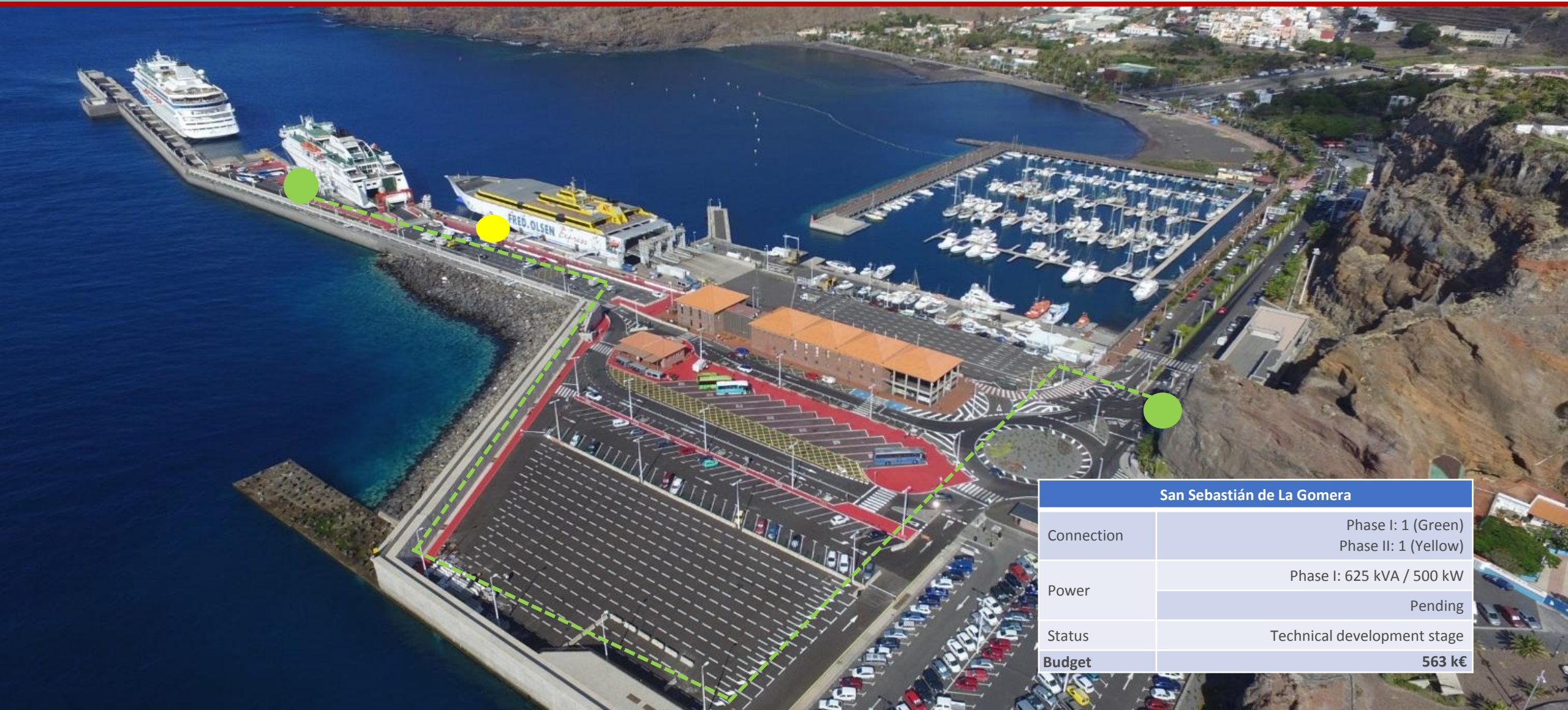
Santa Cruz de Tenerife. Dique Este	
Power	800 kW
Status	Operative
Budget	**292 k€**

Santa Cruz de Tenerife. Los Llanos	
Power	320 kW
Status	Operative
Budget	**97 k€**

Santa Cruz de Tenerife. Dique Sur	
Power	800 kW
Status	Pending documentation
Budget	**190 k€**

Granadilla	
Power	500 kW
Status	Upcoming tender
Budget	**366 k€**

OPS in La Gomera

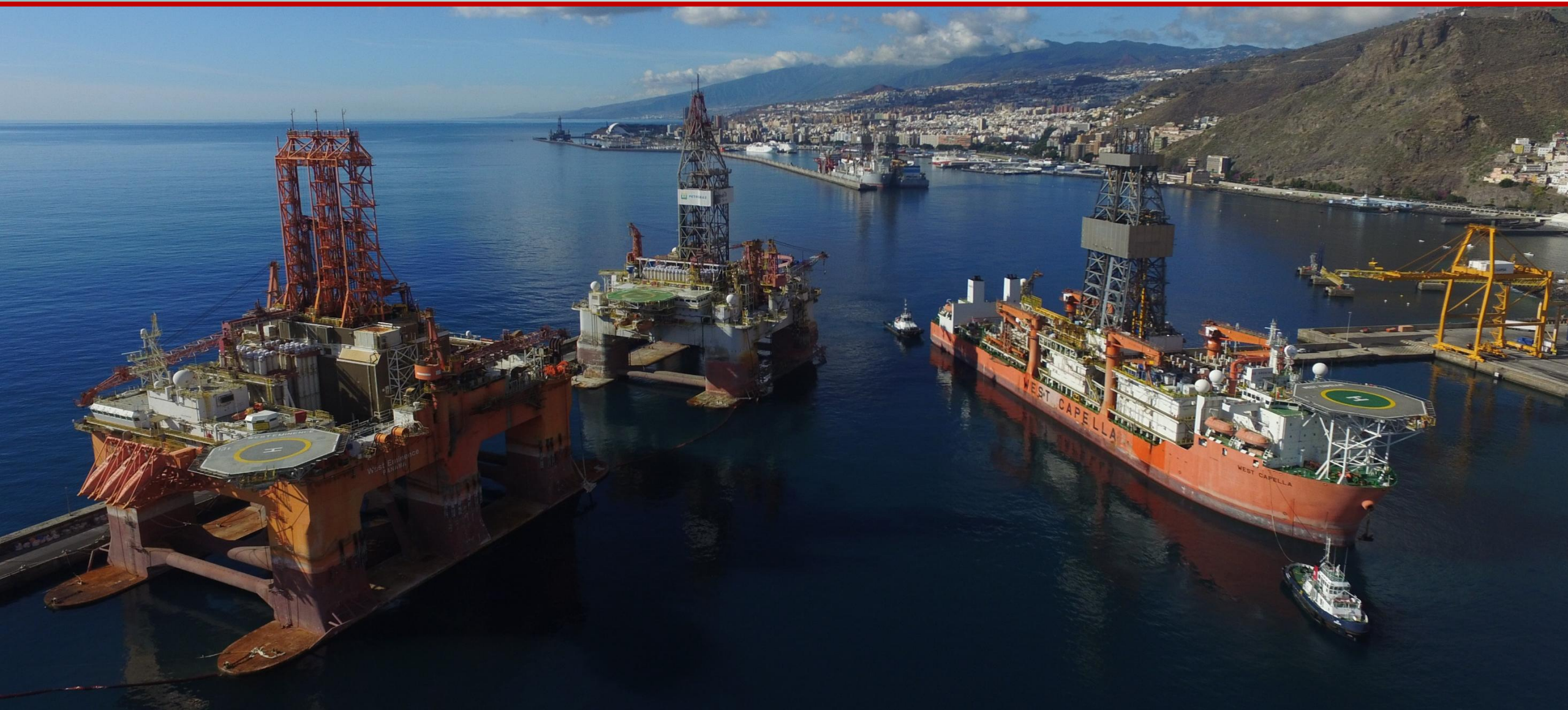


San Sebastián de La Gomera	
Connection	Phase I: 1 (Green) Phase II: 1 (Yellow)
Power	Phase I: 625 kVA / 500 kW
	Pending
Status	Technical development stage
Budget	**563 k€**

OPS in La Palma

La Palma	
Connection	Dique del Este Pantalán 1 -8
Power	Dique del Este 500 kVA / 400 kW
	Pantalán 1-8 170 kVA / 130 kW
Status	Technical development stage
Budget	**854 k€**

Why OPS?



Why OPS?

Why OPS?

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Autoridad Portuaria de Santa Cruz de Tenerife

ENVIRONMENTAL

- Decrease in Greenhouse Gases
- Decrease in noise and vibration
- Green harbour target

ECONOMIC

- Reduction of 50% of the cost for docking
- Variation of costs by type of primary source
- Business opportunity by having OPS

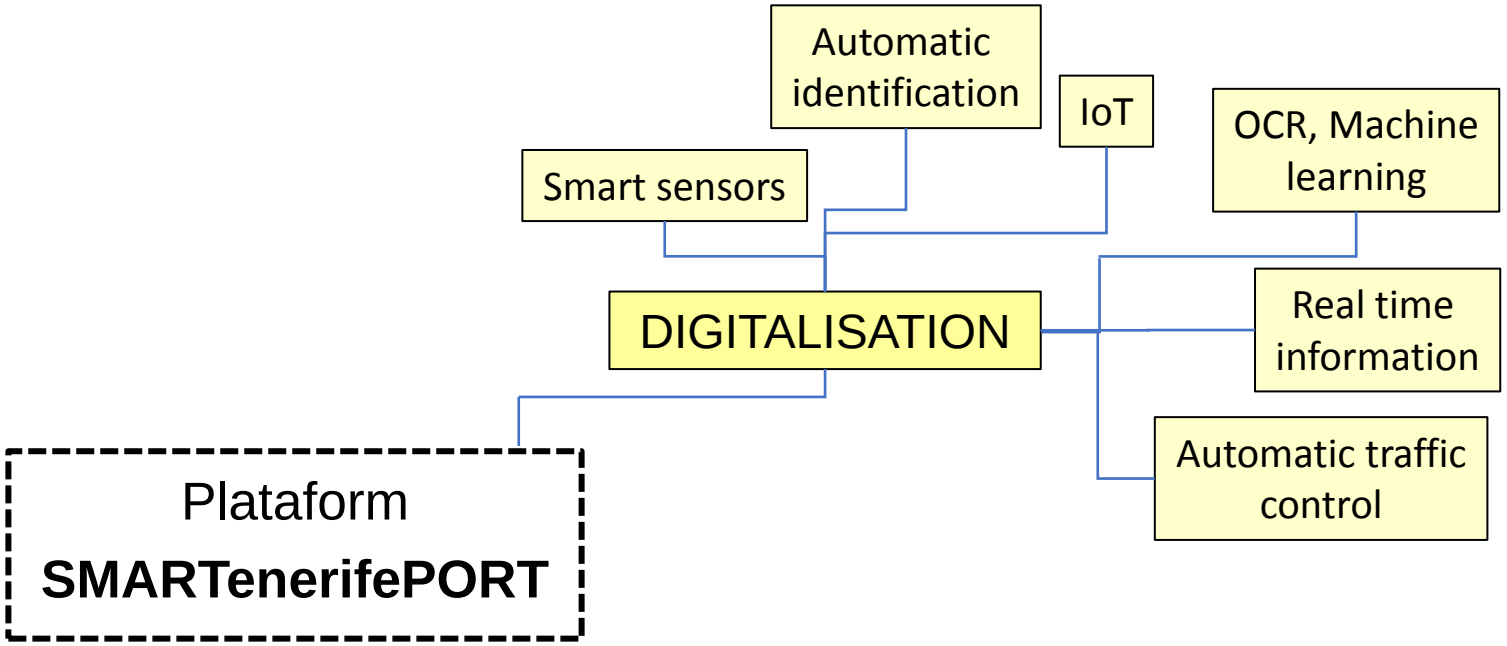
SOCIAL

- Relation port-city
- Corporate Social Responsibility

OPS in numbers

FUEL SHIPPING COMPANIES	OPS SHIPPING COMPANIES	PORT AUTHORITY
Cost of conversion (10 years) 0 €	Cost of conversion (10 years) 48.000 €	Cost of conversion (10 years) -254.000 €
Fuel comsumption 361.000 €	Energy consumption 1.280.000 €	Energy income 278.000 €
Tax costs T1 1.750.000 €	Coste Tasa T1 875.000 €	Tasa T1 875.000 € -875.000 € (50%)
Auxiliary motors maintenance 200.000 €	Auxiliary motors maintenance 0 €	OPS maintenance - 20.000 €
Total Fuel/year 2.311.000 €	**Total OPS/year 2.203.000 €**	**Total AP/year 4.000 €**

SMARTenerifePORT: Digitalisation



CityTouch

Optical system

Uses for energy saving

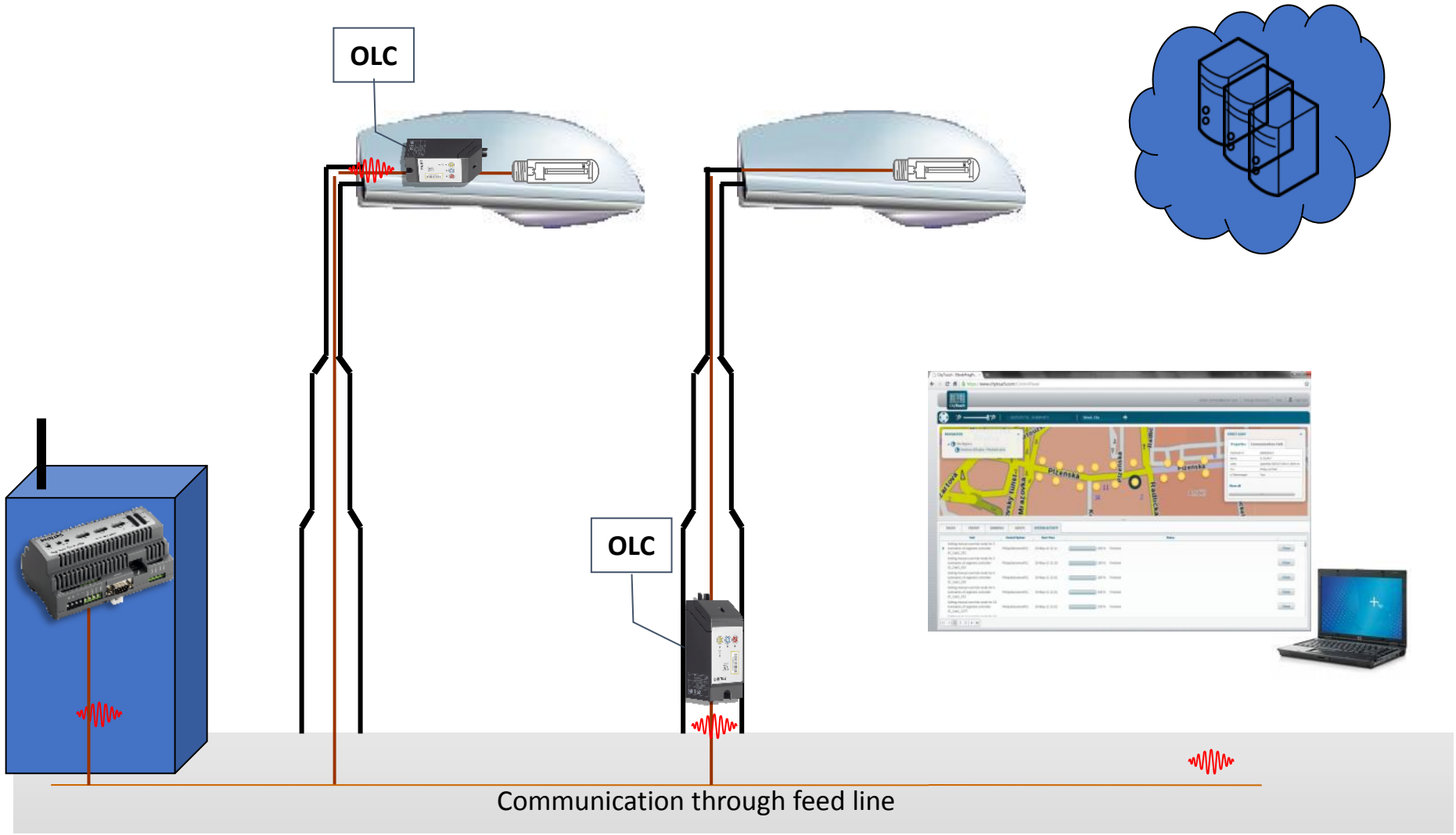
- Point-to-point remote management

  CityTouch Light Wave and Starsense

- Interactive control

  LumiMotion and SmartSense Urban

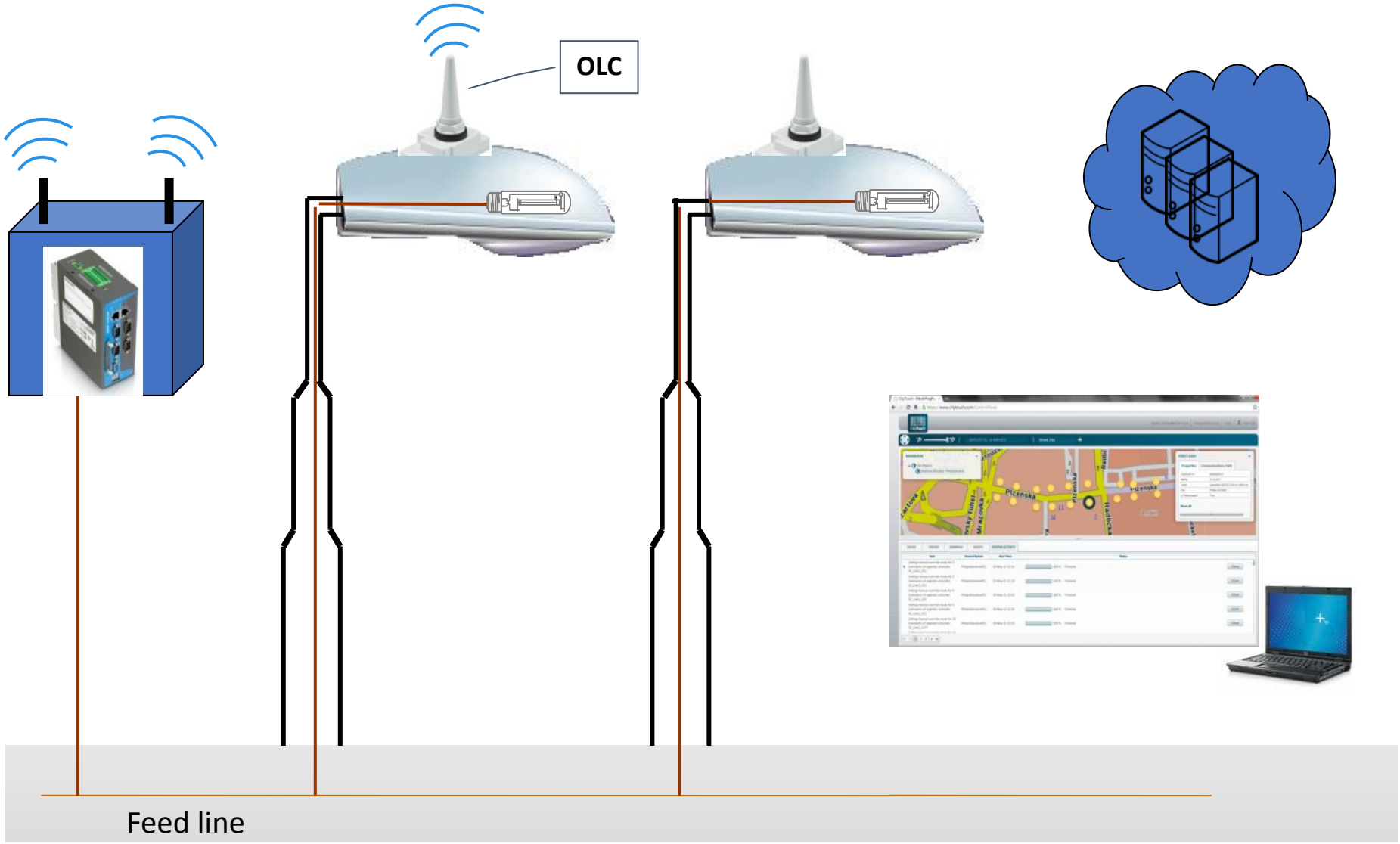
CityTouch systems



Carrier waves system

- Control of up to 140 light points (LP) by control centre

CityTouch systems



Radio frequency system

- Scalable network of up to 2.000 LP
- Long range communication, 300 m

CityTouch systems

GPRS system

- Based on General Packet Radio Service
- Automatic connectivity
- Automatic location
- Automatic start-up
- Data importing of the automatic luminaire

Consumption

Lamp	Consumption with equipment (W)	Equivalence
High-pressure sodium 150	166	Led Luma 2 – 85 W
High-pressure sodium 250	274	Led Luma 2 – 120 W
High-pressure sodium 400	431	Led Luma 3 – 220 W

80 lm/w in 2011 to 145 lm/w in 2018

	2012	2014	2016	2017	2018
Luma 3	1.500 €	1.448 €	1.171 €	840 €	660 €

CityTouch

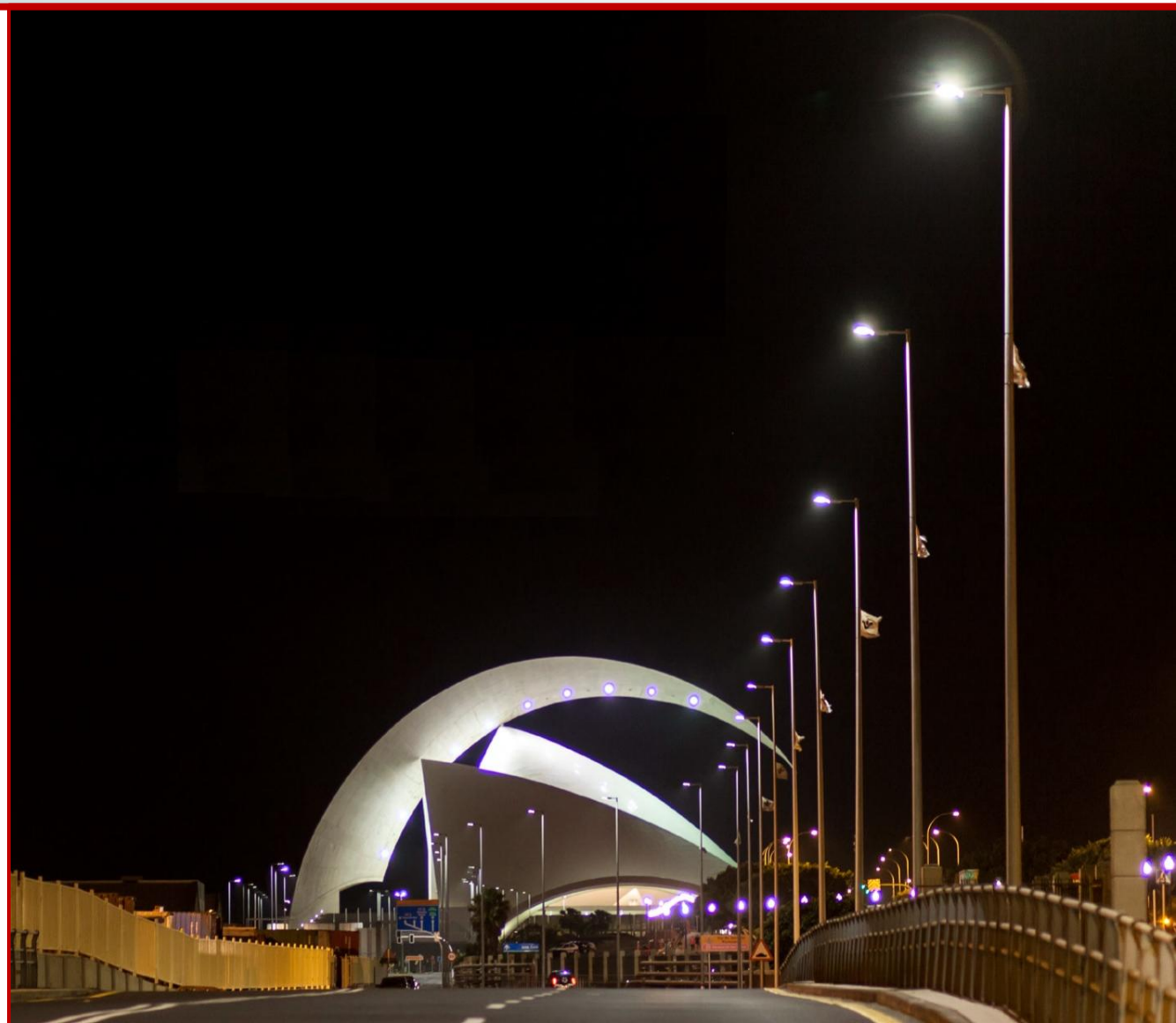
Unión Europea
FONDO EUROPEO
DE
DESARROLLO REGIONAL
FONDOS RUP
"Una manera de hacer Europa"

50 % financing with European funds

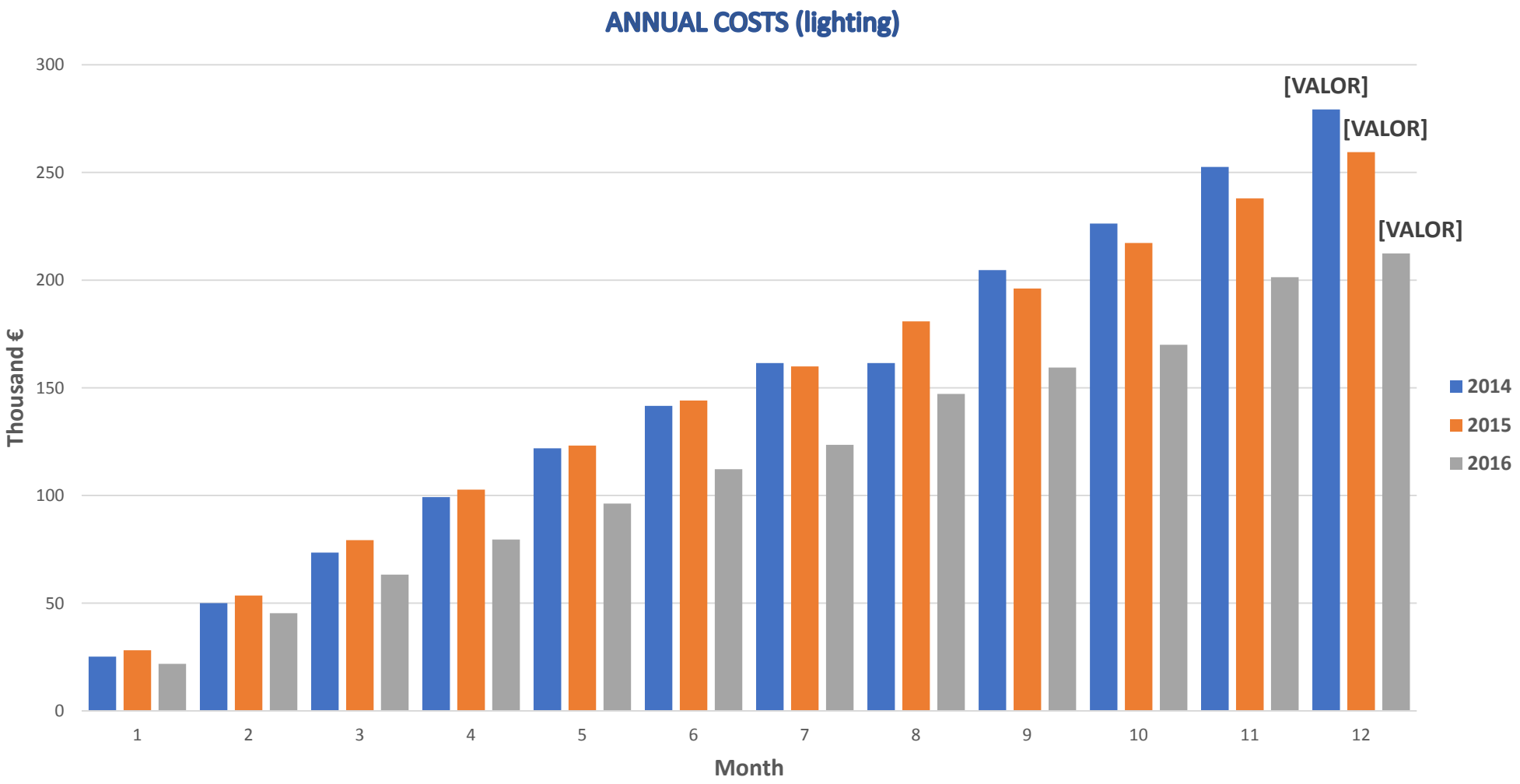
Results in the Port Authority

	Consumption (kWh)	Surface (m^2)	Ratio (kWh/m^2)
2012	4.614.707	2.690.363	1.71
2013	4.529.389	2.690.363	1.68
2014	4.444.045	2.690.363	1.65
2015	4.266.176	2.690.363	1.58
2016	3.831.465	2.690.363	1.42

Main consumptions	%
Street lighting	39,2
Buildings (low voltage, lighting, air conditioning)	45,1
Others (lighthouses, industrial facilities, tunnels)	15,7



Results in the Port Authority



SMARTenerifePORT: ISO 50.001

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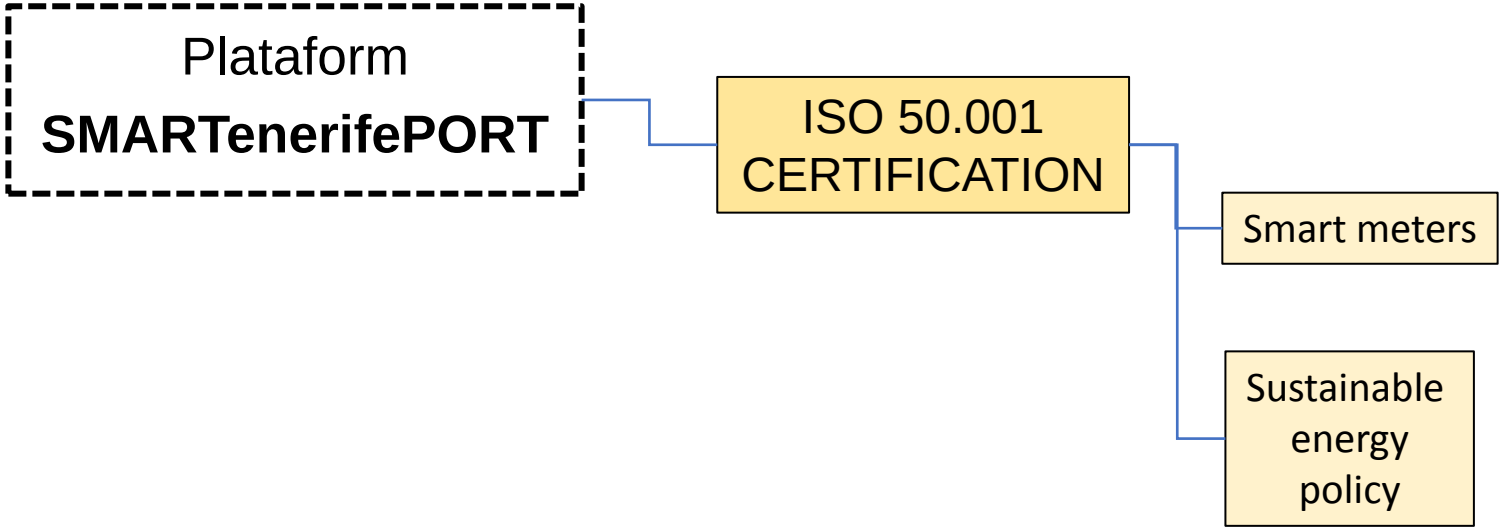

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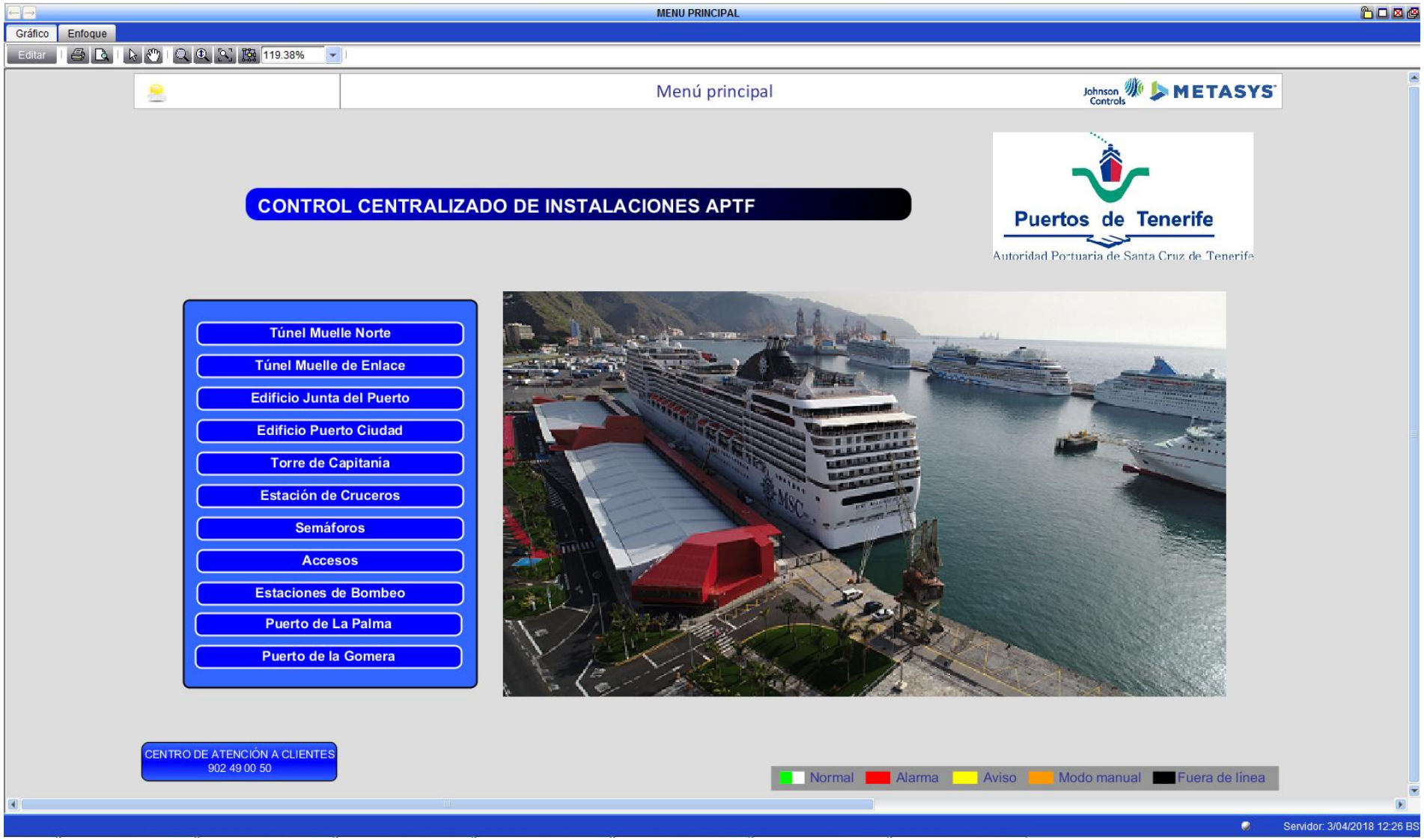

SMARTenerifePORT: ISO 50.001

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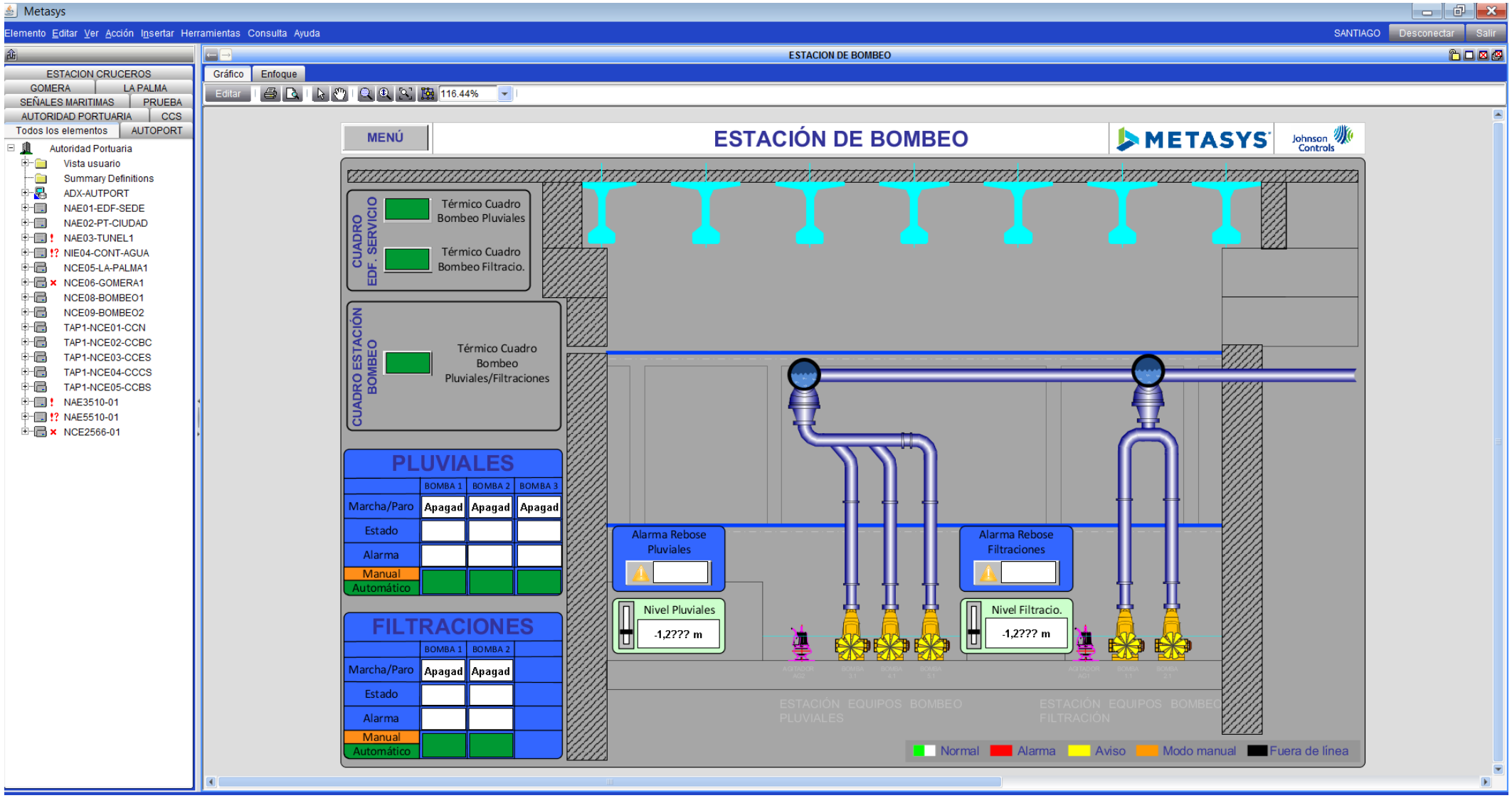

SMARTenerifePORT: ISO 50.001

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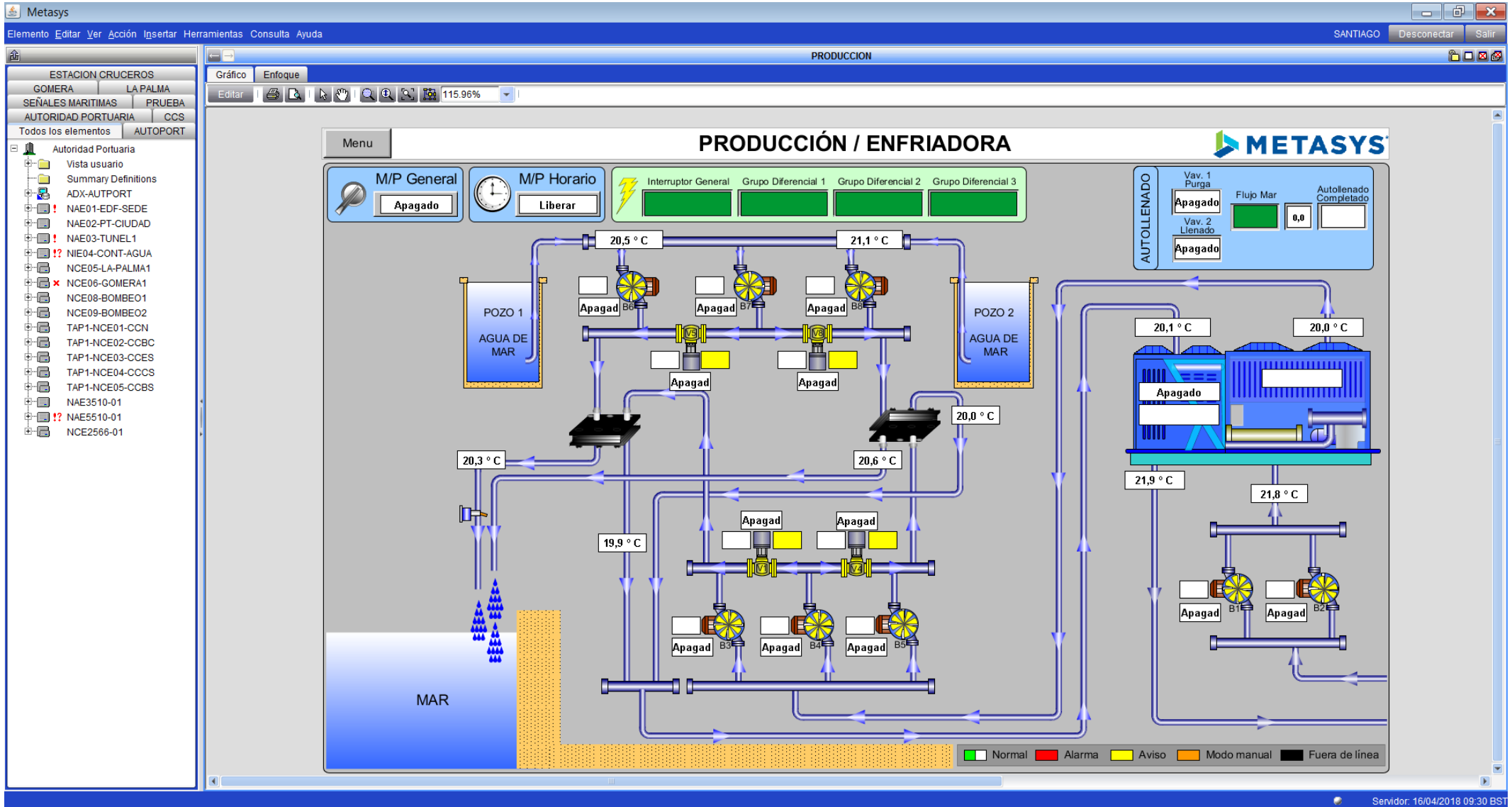
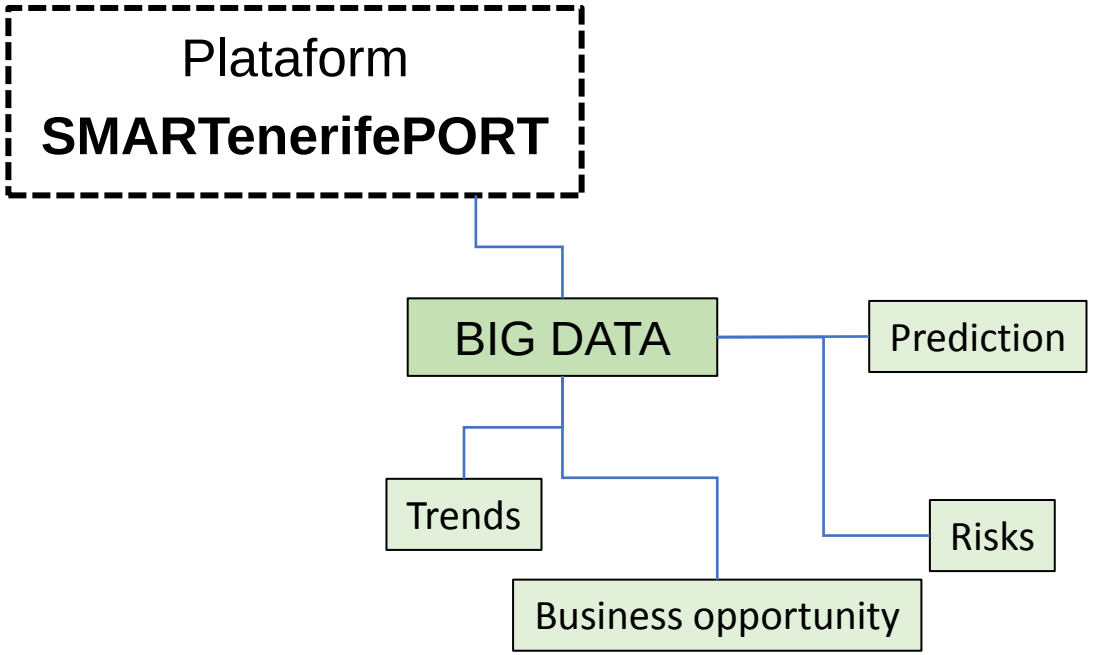


SMARTenerifePORT: Big Data



SMARTenerifePORT: Big Data

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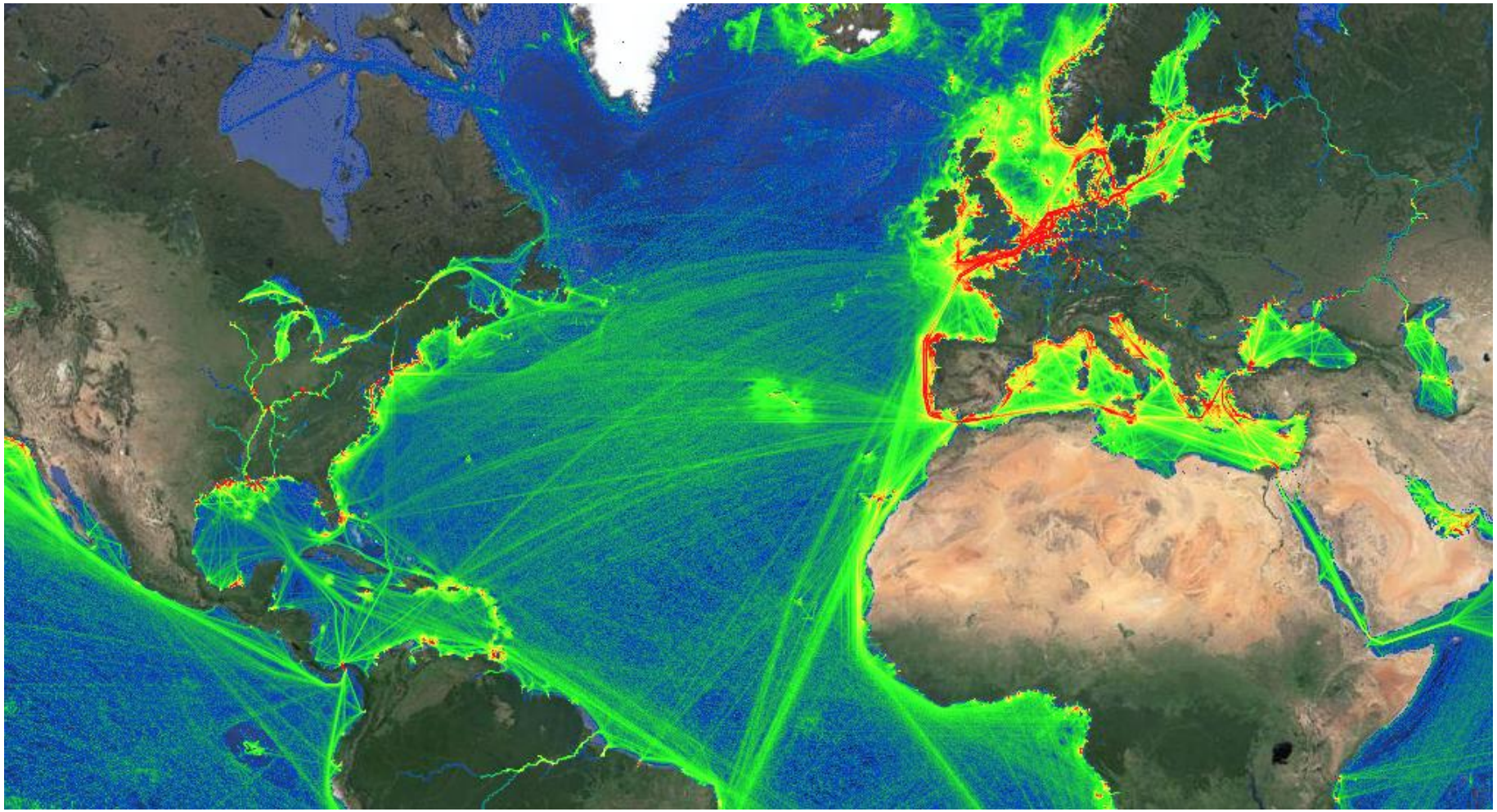
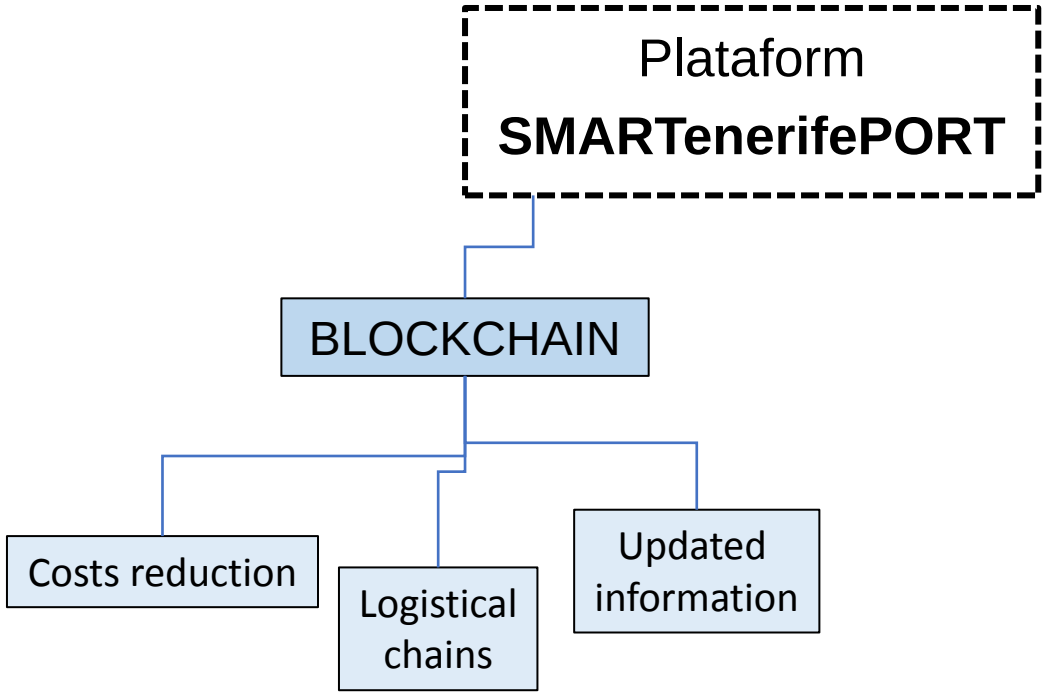
Autoridad Portuaria de Santa Cruz de Tenerife



Source: MarineTraffic - Global Ship Tracking Intelligence

MarineTraffic

SMARTenerifePORT: BlockChain



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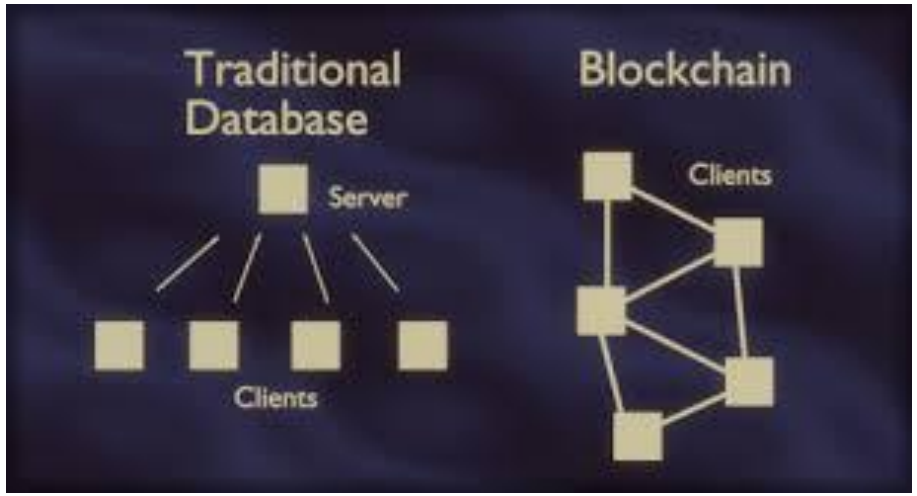

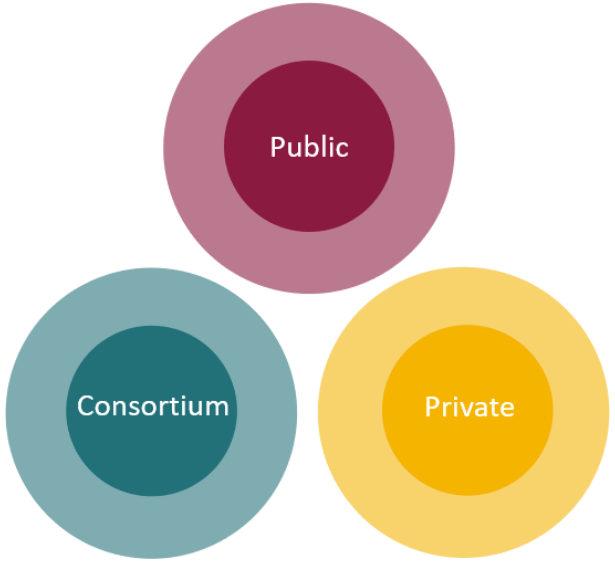

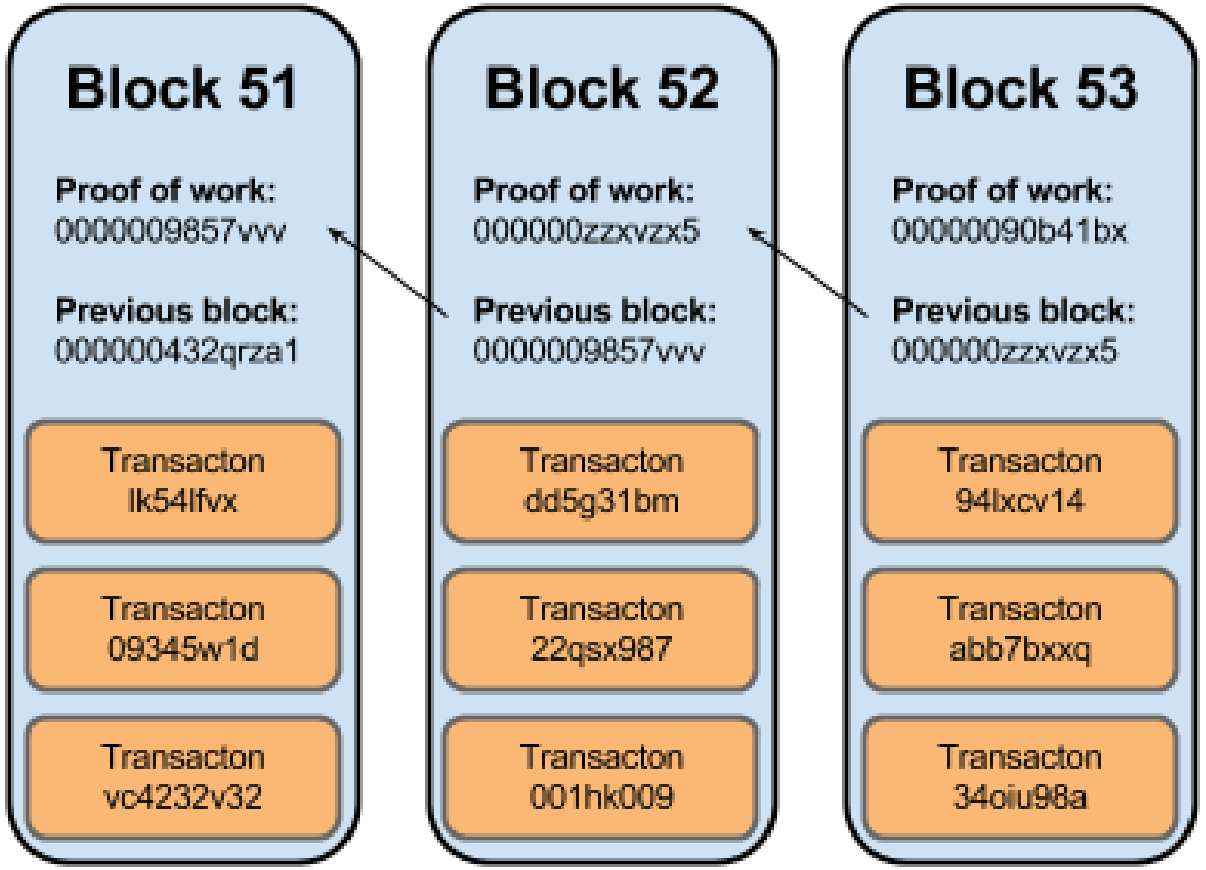

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Santander

SAN share (Madrid) 5.385 | 0.79% | 10:26

Spanish

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12/04/2018

Santander launches the first blockchain-based international money transfer service across four countries

One Pay FX

- The new service, known as 'Santander One Pay FX', makes it possible for customers to complete international transfers on the same day in many cases or by the next day.
- It is now available to retail customers in Spain, UK, Brazil and Poland, with the bank expecting roll the service out across more countries in the coming months.
- As well as being faster, the service also shows customers the exact amount that will be received in the destination currency before they make the transfer.

Madrid, 12 April 2018 – PRESS RELEASE

Banco Santander today announced the launch of a new international payments service using blockchain-based technology. The service is available to retail customers in Spain, UK, Brazil and Poland, and will be rolled out across more countries in the coming months.

SMARTenerifePORT: BlockChain

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Samsung Planning Blockchain Shipping Strategy

16 Apr 2018 08.56am

Samsung is planning a blockchain ledger system in order to monitor billions of dollars-worth of trade, according to Bloomberg.

It is believed such a system could cut shipping costs by 20%.

SMARTenerifePORT: BlockChain

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"Maersk and IBM to form joint venture applying blockchain to improve global trade and digitise supply chains"[1]

Tuesday, January 16, 2018

[1] www.maersk.com/press/press-release-archive/maersk-and-ibm-to-form-joint-venture

SMARTenerifePORT: BlockChain

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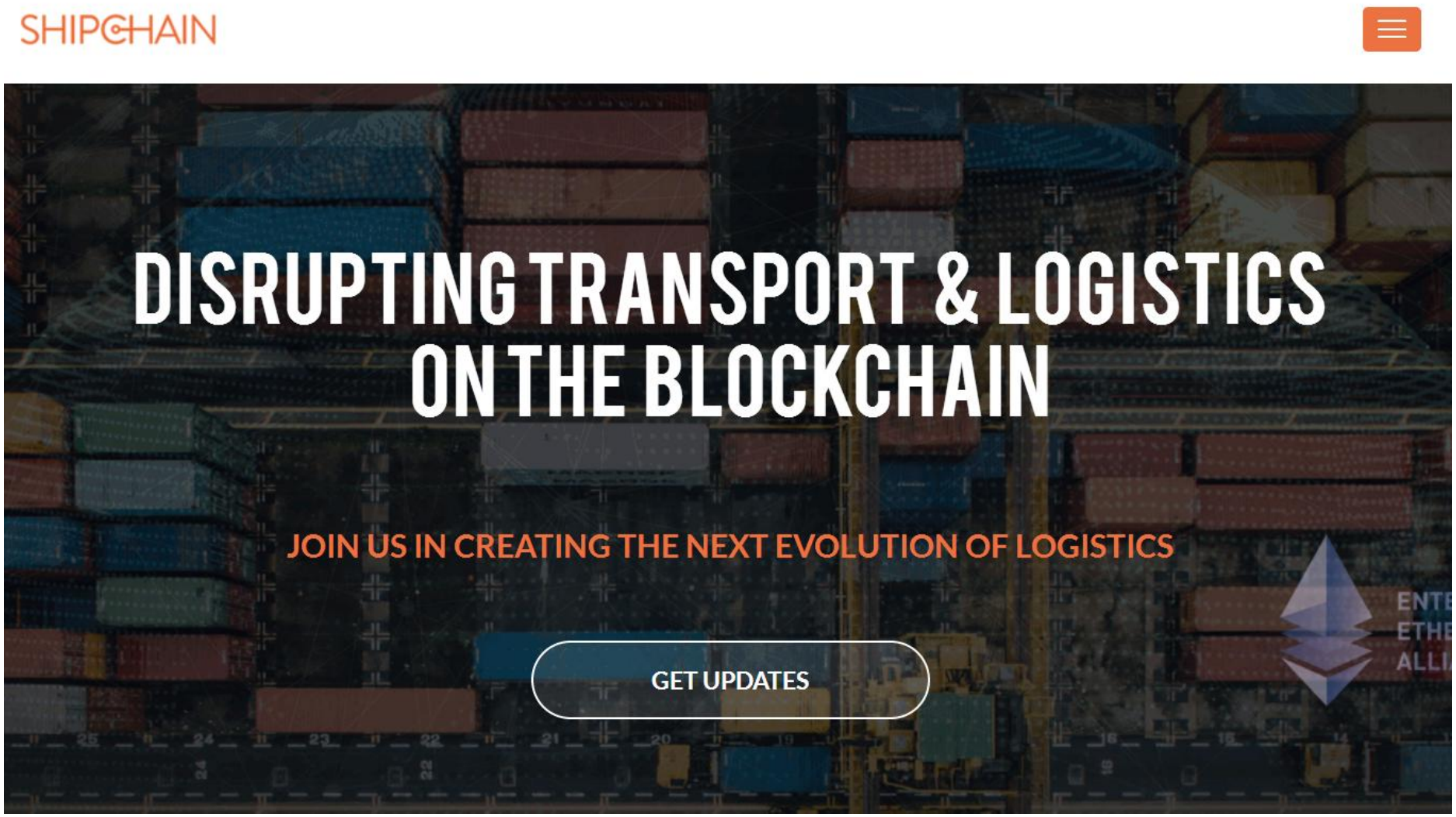
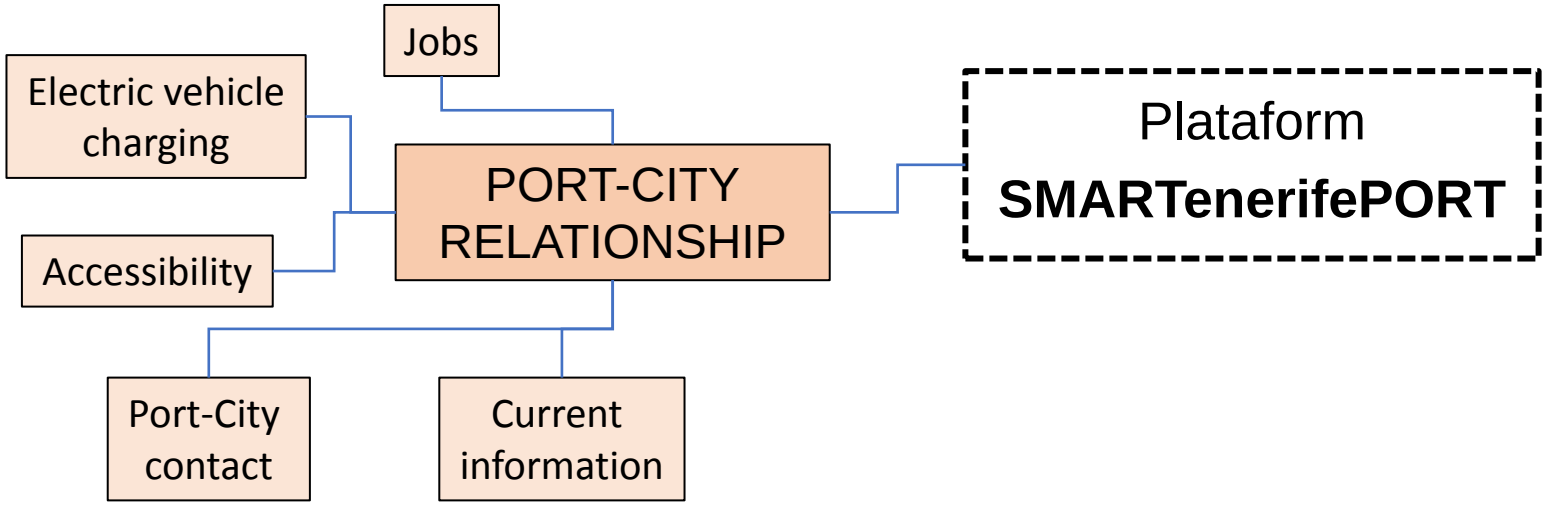


SMARTenerifePORT: Port-City



SMARTenerifePORT: Port-City

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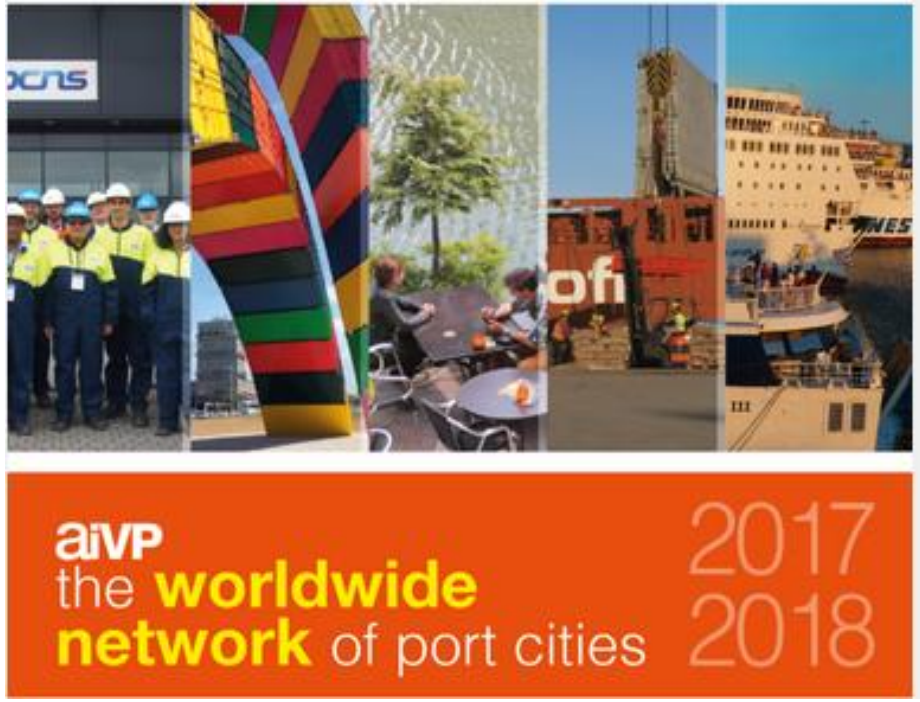
SMARTenerifePORT: Port-City



Obras en el entorno de la plaza de España, en Santa Cruz de Tenerife. | CARSTEN W. LAURITSEN

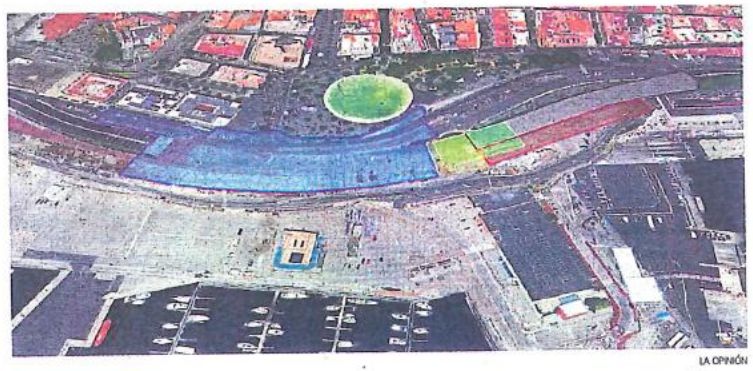
Comienza la obra en la plaza de España con la que Santa Cruz se acercará al mar

La ciudad ganará unos 20.400 metros cuadrados, lo que equivale a cuatro campos de fútbol ▫ Se preparará el espacio para el parque infantil "más grande de Canarias"

Eloísa Reverón
SANTA CRUZ DE TENERIFE

El Cabildo ha iniciado las obras con las que el centro de Santa Cruz se acercará un poco más al mar. En concreto, se trata de los trabajos incluidos en el denominado Proyecto de Remodelación de la Plaza de España y su Entorno, ámbito II, fase I, con los que la ciudad ganará unos 20.400 metros cuadrados más para el uso peatonal y de paseo, lo que equivale a cuatro campos de fútbol. Entre otras actuaciones, se urbanizará, asfaltará y acondicionará por fin, para su uso público, la zona ocupada por los tableros superiores de los túneles de la Vía Litoral y del Puerto, que en la actualidad son intransitables.

Ayer, la UTE (Unión Temporal de Empresas) a la que el Cabildo adjudicó en enero la ejecución del proyecto, y que está formada por Dragados y Elfidio Pérez Construcciones, ya comenzó a señalizar y a preparar el terreno en el que se va a intervenir, por lo que, de momen-



LA OPINIÓN

Ámbito de actuación. La zona de color azul, 18.500 metros cuadrados, corresponde al ámbito que acondicionará el Cabildo, a los que se suman 1.915 de la zona amarilla, como mejoras planteadas por la empresa contratada. La zona roja, de 3.500 metros cuadrados, será acondicionada por el Ayuntamiento. El futuro parque infantil, de 2.500 metros cuadrados, ocupará parte de la zona verde y amarilla. Si se añaden los 6.000 metros cuadrados ya asfaltados, tras acabar todas las obras, la ciudad ganará casi 30.000 metros cuadrados, lo que equivale a cinco campos de fútbol.

finalización de los túneles de la Vía Litoral y de servicio del Puerto, y "en el acondicionamiento para el uso

plica en el pliego de prescripciones técnicas del proyecto.

En dicho documento se señala

en todo caso, la mirada sobre el mar y el horizonte, a la espera de las futuras actuaciones en el ámbito del

ral de la ciudad hacia el Puerto y desde el Puerto a la ciudad", dice el documento técnico al que ha tenido acceso LA OPINIÓN DE TENERIFE.

En concreto, la superficie de actuación de este proyecto es de 18.500 metros cuadrados, pero se suman 1.915 más a raíz de las mejoras que ejecutará la UTE contratada para preparar el espacio donde el Ayuntamiento tiene previsto ubicar, según palabras del concejal de Infraestructuras, José Alberto Díaz-Estébanez, el parque infantil más grande de Canarias.

El Cabildo indica que el proyecto estará terminado el 5 de agosto de 2019

Los trabajos previstos suponen una inversión de 3,4 millones de euros

"Será un parque tematizado sobre La Gesta del 25 de Julio, por lo que ofrecerá mucho más que unos cuantos columpios", ha manifestado el edil. El Ayuntamiento de Santa Cruz invertirá en este nuevo espacio infantil casi 400.000 euros y tiene previsto licitar el proyecto en el segundo semestre de este año

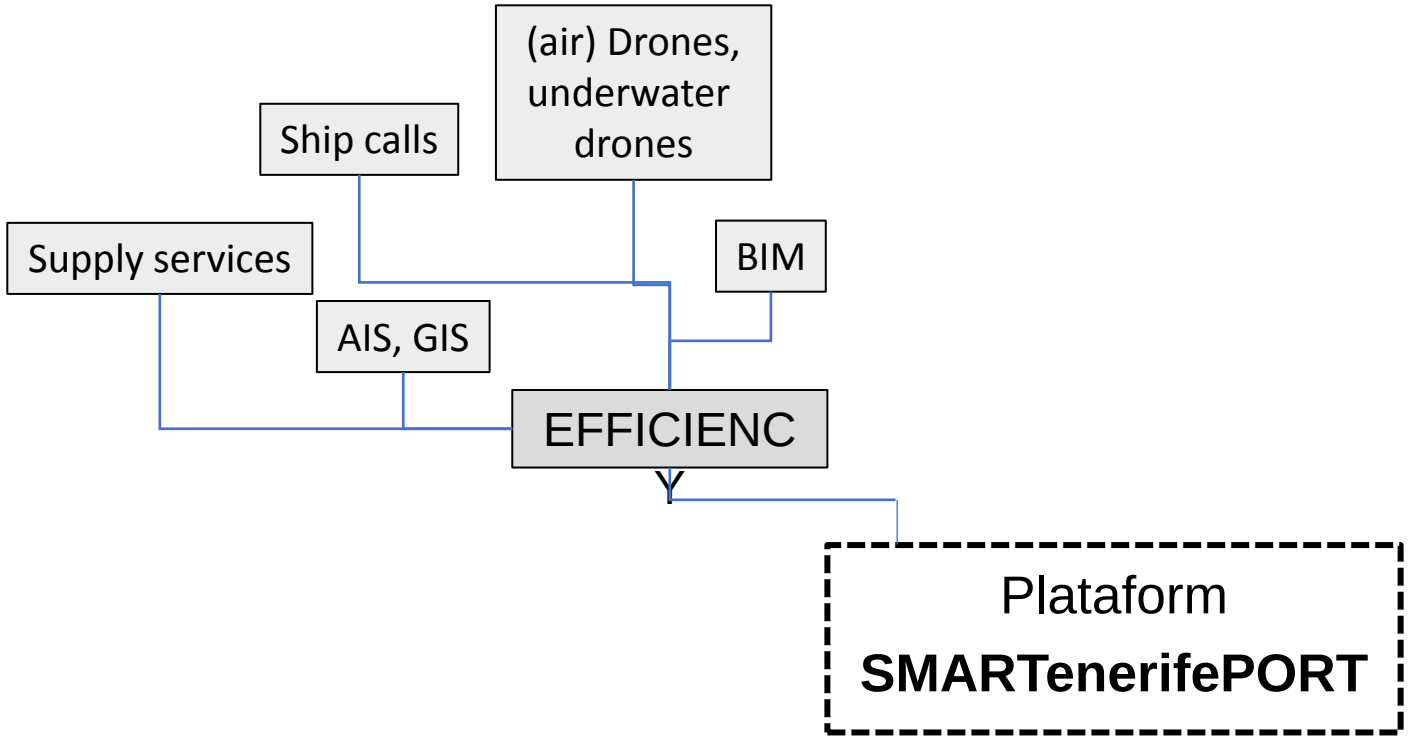
Puertos de Tenerife
Autoridad Portuaria de Santa Cruz de Tenerife

SMARTenerifePORT

e - ISLAND

- **Fast charging points**
  - Tenerife: 4 units
  - La Palma: 2 units
  - La Gomera: 2 units
  - El Hierro: 2 units
- **Carsharing**
  - Electric cars
  - Electric motorcycles
  - Electric bicycles
- **SmartPort App**
  - Information
  - Booking
- **Self-consumption**
  - PV panels
- **Onshore Power Supply**
  - Engine shutdown
- **Communication & sensitivity**
  - Social networks

SMARTenerifePORT: Efficiency



SMARTenerifePORT: Efficiency

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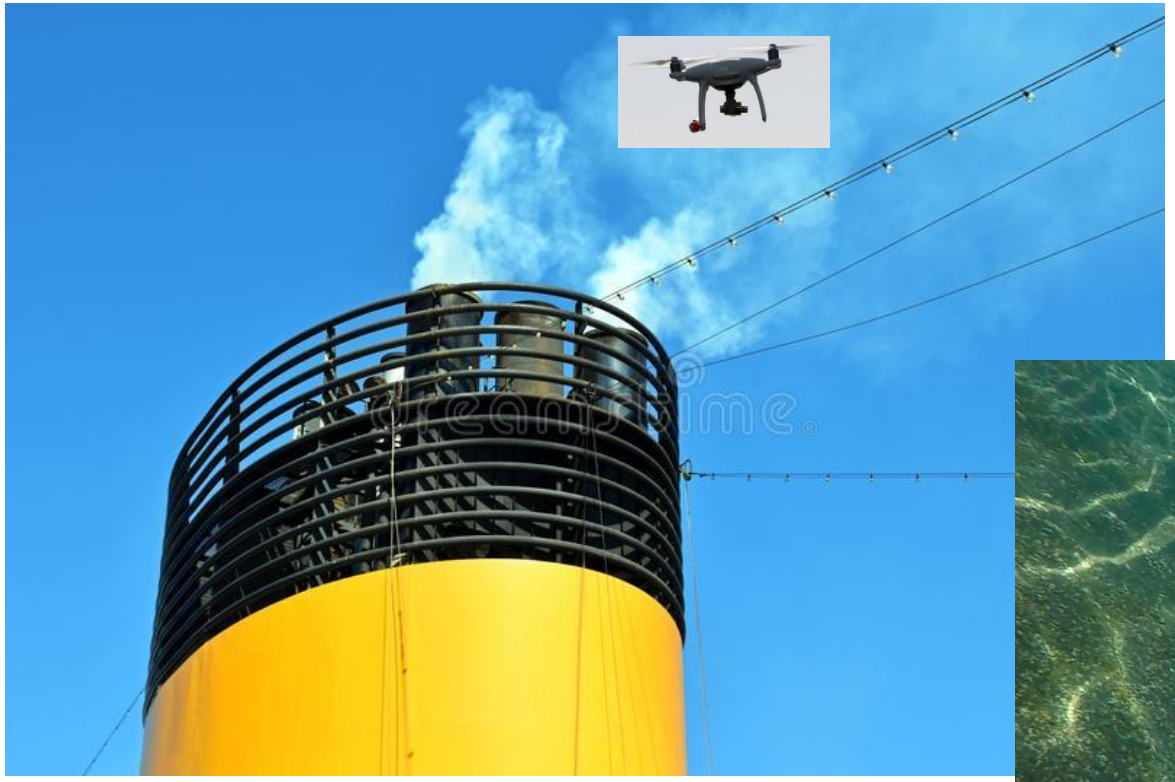

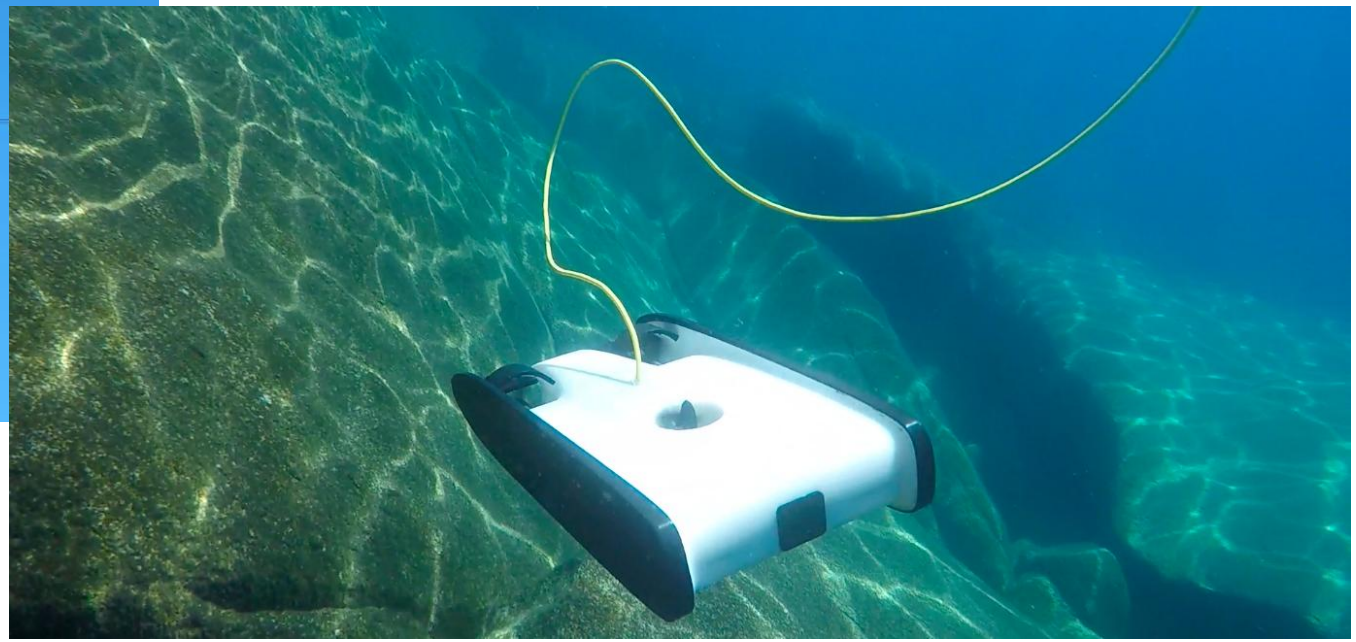

SMARTenerifePORT: Efficiency

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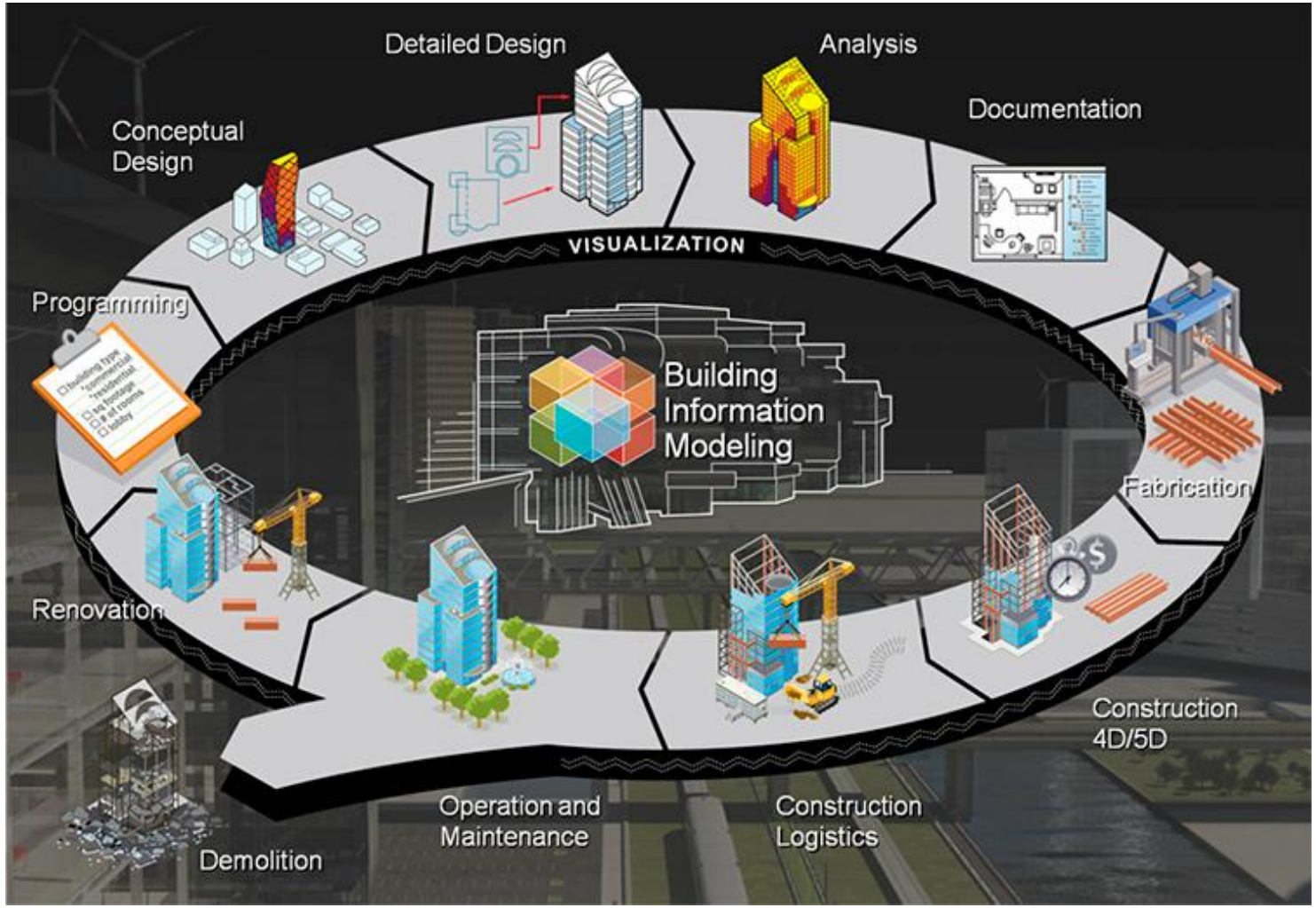

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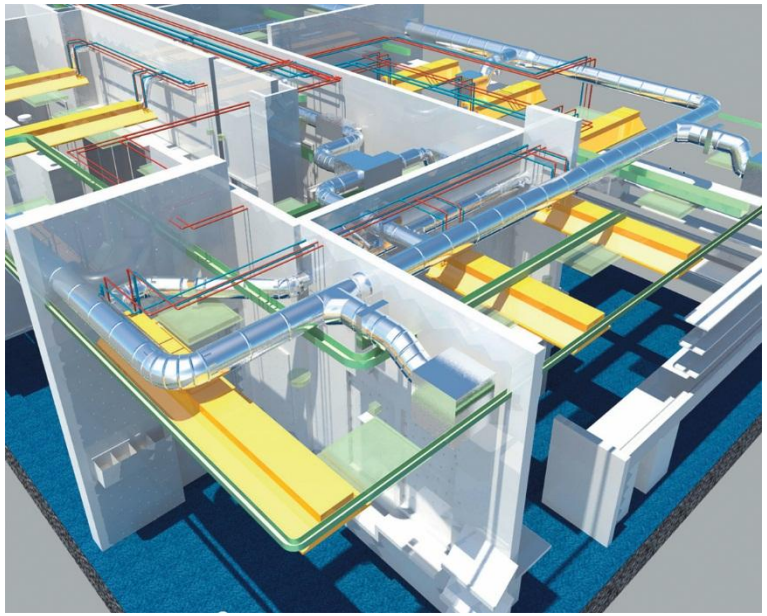

SMARTenerifePORT: Efficiency

Puertos de Tenerife
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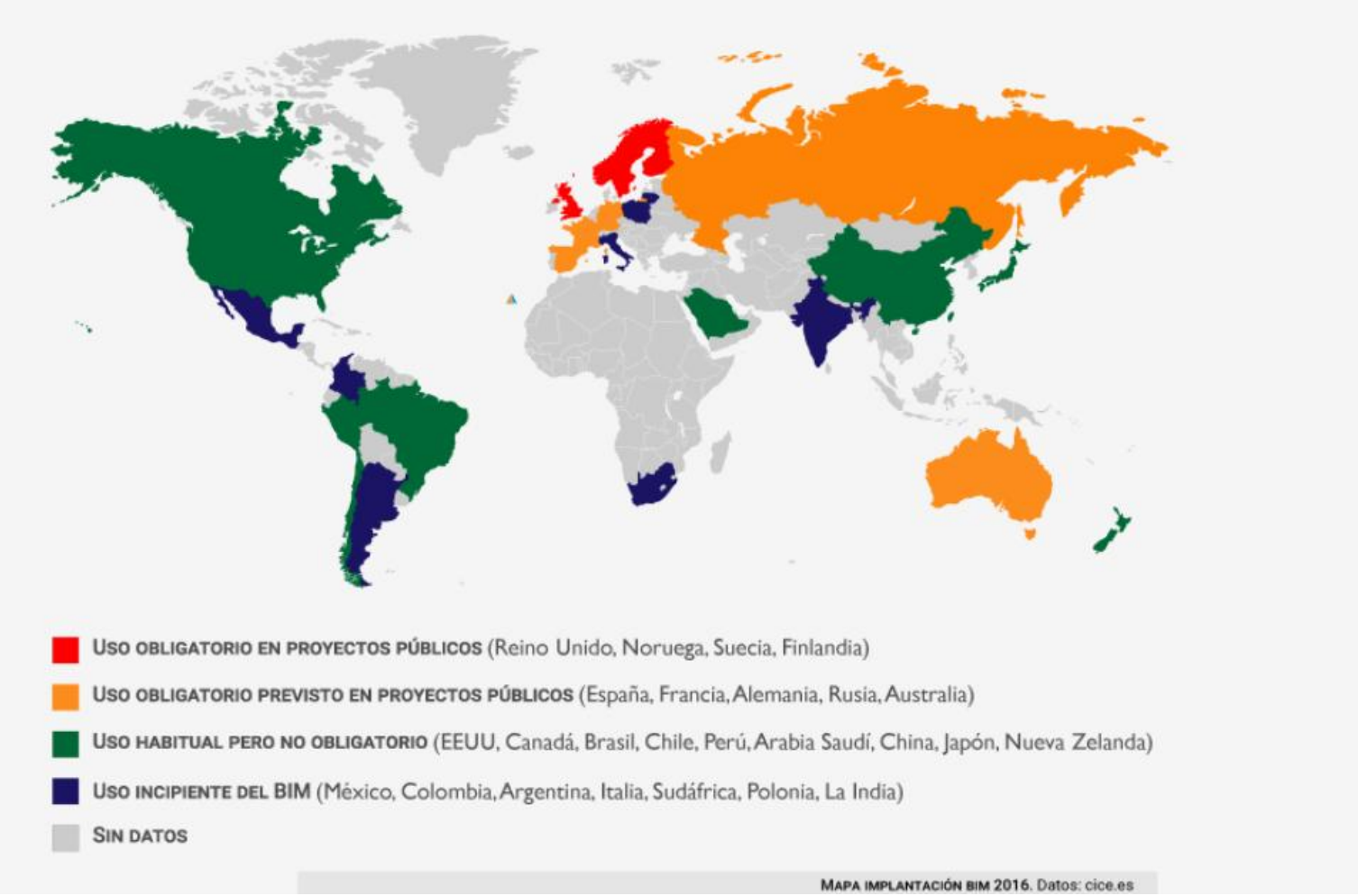

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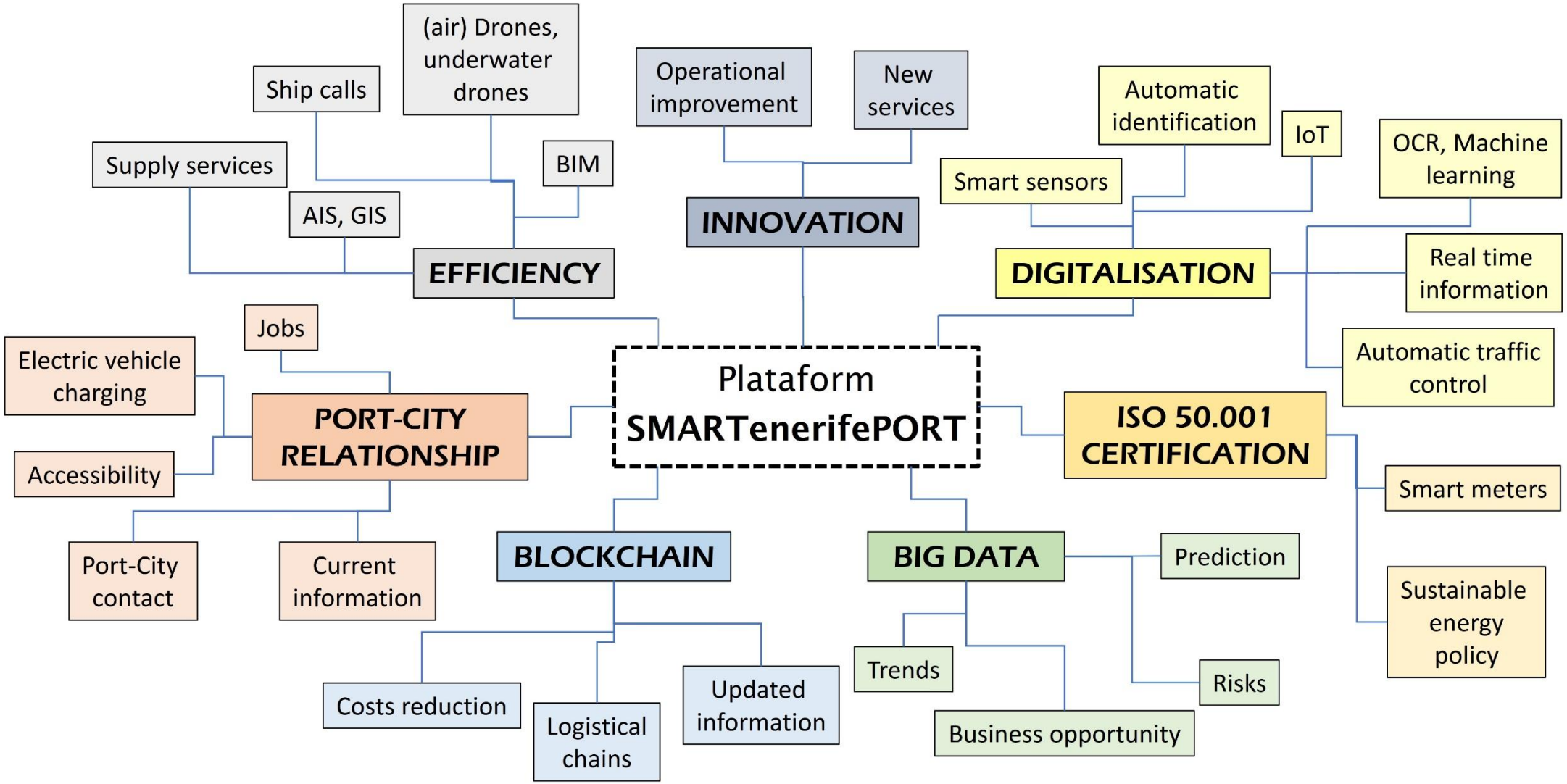
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