ISPO CONFERENCE 19

PALMA DE MALLORCA · SPAIN · 11 & 12 SEPTEMBER

SAFELY PLANNING THE FUTURE OF THE PORT. PILOTS´ ASSISTANCE & TRAINING

Puertos del Estado

GOBIERNO DE ESPAÑA MINISTERIO DE FOMENTO

Palma, 11 de Septiembre 2019

Ports de Balears

Autoritat Portuària de Balears

GOBIERNO DE ESPAÑA MINISTERIO DE FOMENTO MINISTERIO PARA LA TRANSICIÓN ECOLÓGICA

CEDEX CENTRO DE ESTUDIOS Y EXPERIMENTACIÓN DE OBRAS PÚBLICAS

SPANISH STATE PORTS

5 PORTS IN 4 DIFFERENT ISLANDS
(4.500 km2;
Pop.: 1,1 mill inhab + 0,9 “floating”)

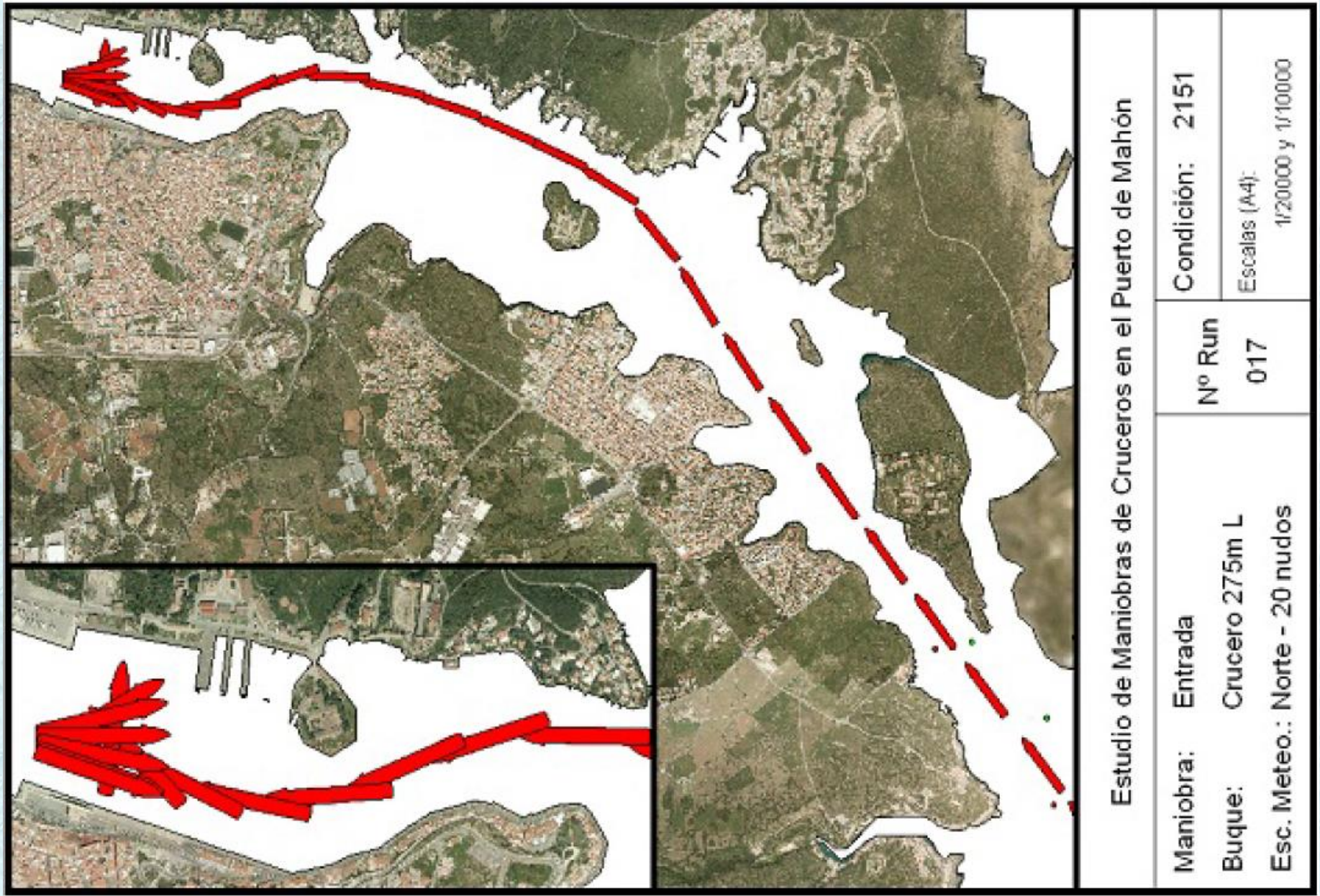
INSULAR, TOURIST and ***URBAN PORTS***.
FRAGILE AND SENSIBLE ENVIRONMENT, STRONG PORT-CITY RELATIONS, meaning DIFFICULTIES TO GROW

BALEARIC STATE PORTS.
Main traffics and activities:

- ***Cruise and ferrys*** (2018):
  - **860 cruise calls (1st in Europe and Med Region** ranking)**,**
    2,4 million cruise passengers.
  - **6,5 million ferry passengers,**
    and general cargo (13 million tonnes of ro-ro / ro-pax)

- ***Recreational navigation*** **(marinas and reparation and maintenance facilities**), more than 50 % of total income of our ports

PORT OF MAÓ: Access viability analysis for large cruise vessels. (Jovellanos Centre, and CSMart)

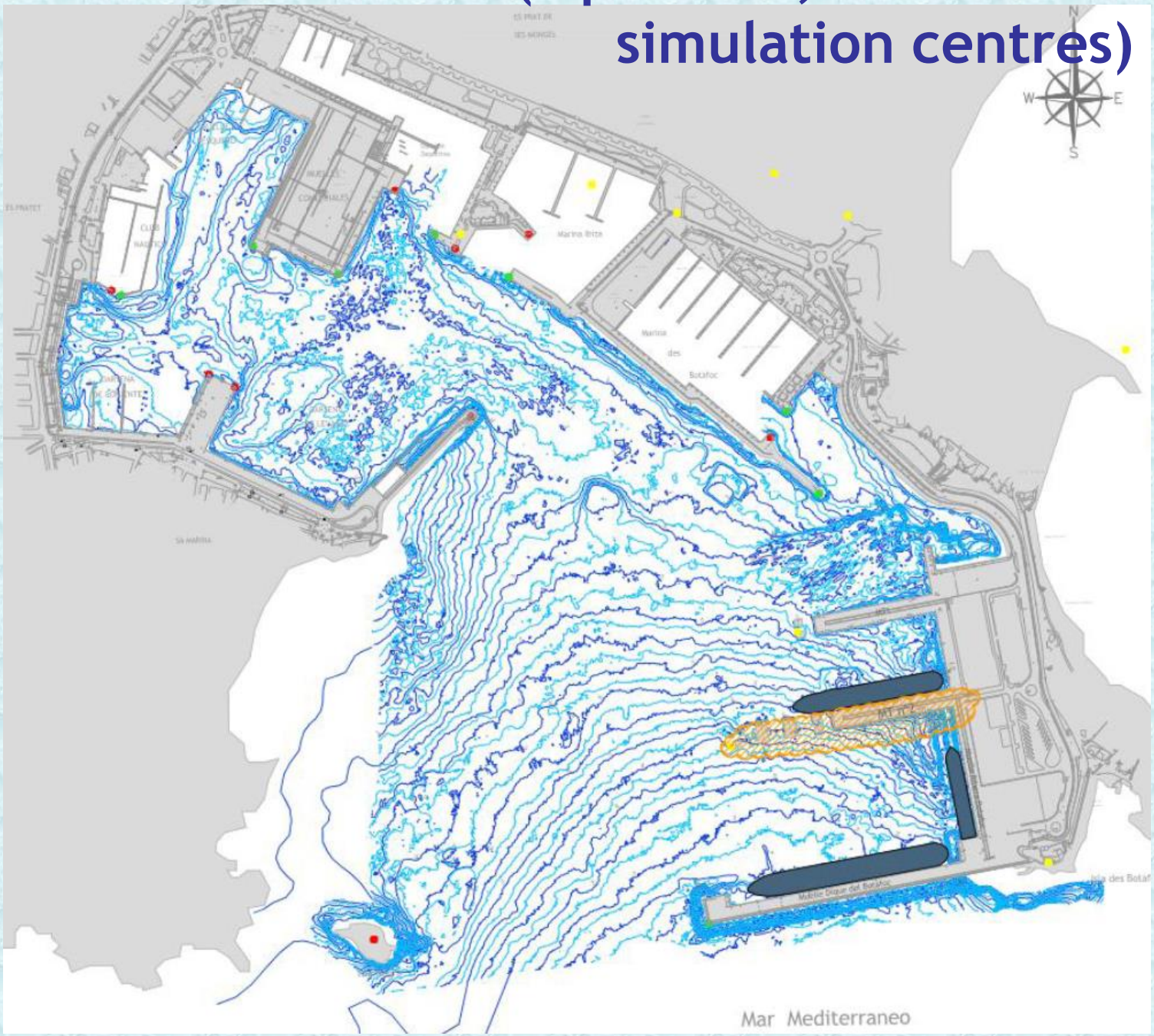


PORT OF MAÓ, Safe Port Access criteria: beyond traditional limits based on length and draught

Propulsion System	Overall Length (m)	Manoeuvring Means Minimum power required		Maximum Draft	Average Wind Maximum	Accredit. Required
		Total lateral bow thrust power	Total lateral stern thrust power			
With Azipods	> 265 and <= 277	3700 KW	---	8.0 m	20 knots in Roads	Yes
	> 255 and <= 265	3200 KW	---			Yes
	> 245 and <= 255	2800 KW				Yes
	> 235 and <= 245	2400 KW				No
	> 220 and <= 235	2100 KW	---			No
Without Azipods	> 255 and <= 265	3200 KW	1600 KW	8.0 m	20 knots in Roads	Yes
	> 245 and <= 255	2800 KW	1300 KW			Yes
	> 235 and <= 245	2400 KW	1000 KW			Yes
	> 220 and <= 235	2100 KW	---			No

PORT OF EIVISSA: Analysis of safe berthing conditions on an extended jetty

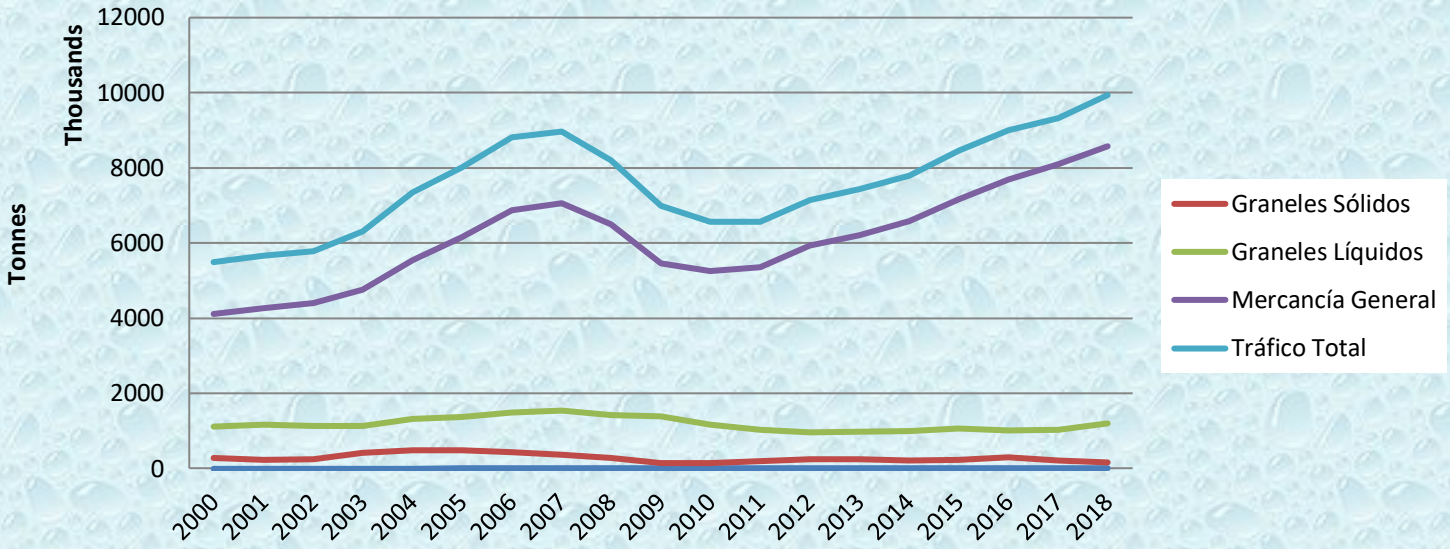
PORT OF EIVISSA (Siport XXI, and CSMart simulation centres)



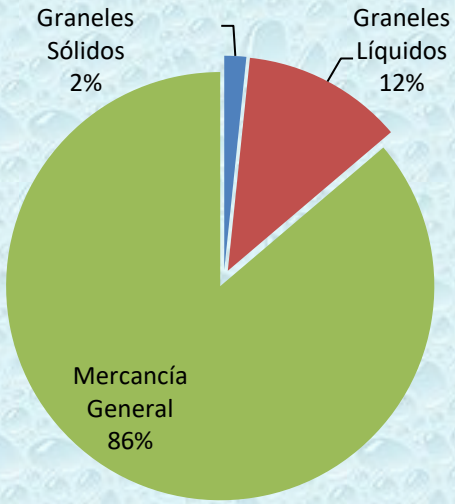
PORT OF PALMA:

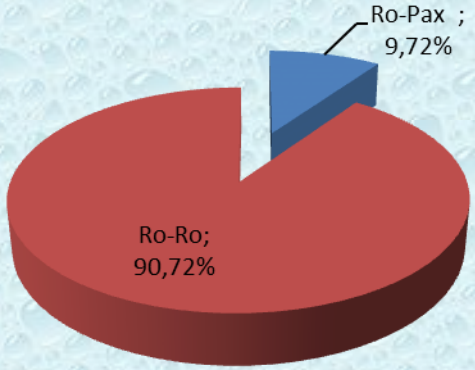
SAFELY PLANNING ITS FUTURE

TRAFFIC EVOLUTION - CARGO 2000-2018



In 2018, total traffics 9,9 MT (86% general cargo; 90% of ro-pax)

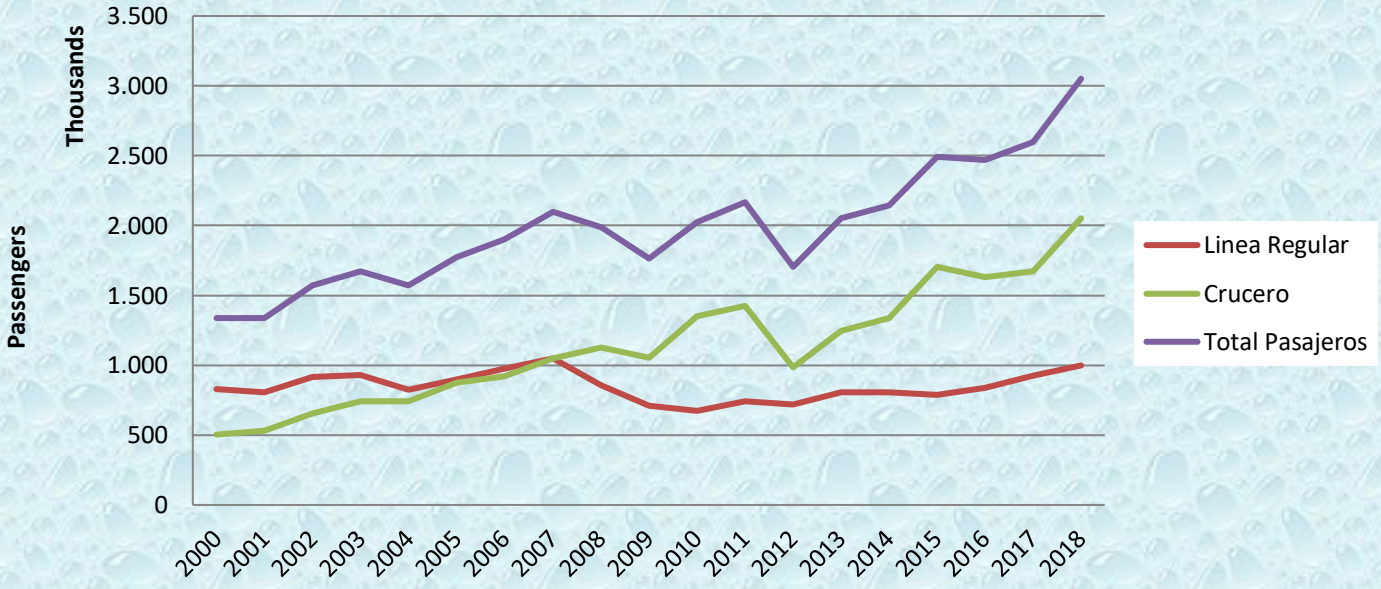




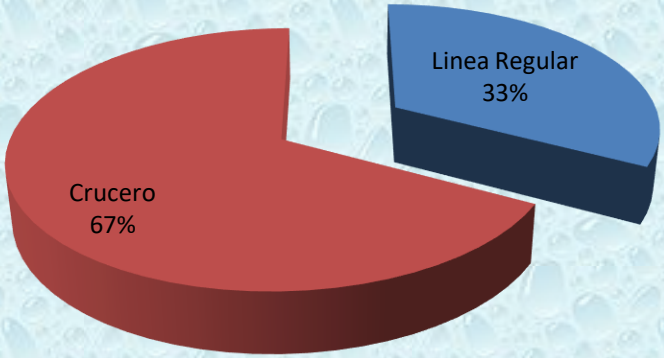
Unloaded tonnes represent 71 % (2018) of total traffic

TRAFFIC EVOLUTION - PASSENGERS

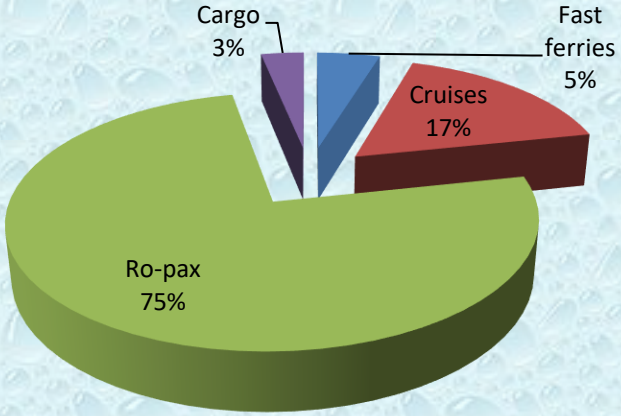
EVOLUTION



3,05 M Passengers in 2018 (historical record), with 67% cruise pax and 33% ferry pax

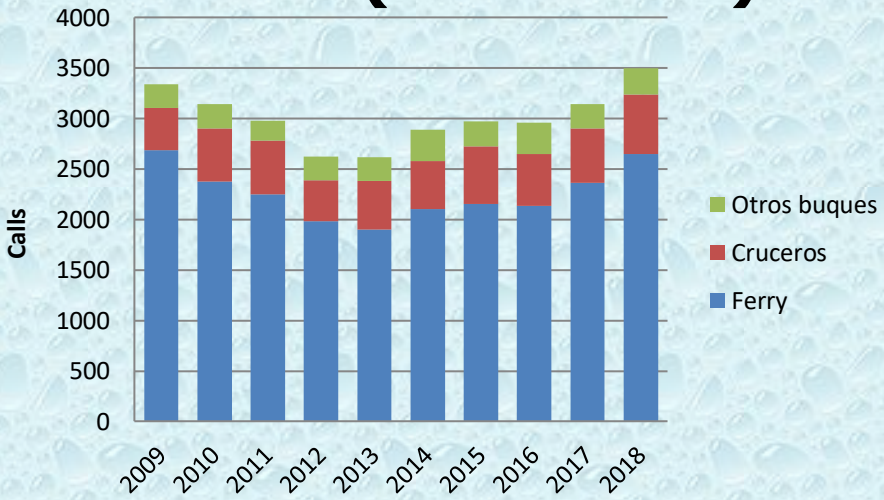


TYPES OF VESSELS (units)



2018
FERRIES → 2.499 calls → 71%
CRUISES → 594 calls → 17%
REST → 406 calls → 12 %

Nº of CALLS (evolution):



3.499 VESSEL CALLS IN 2018

RO-PAX TRAFFIC (PASSENGERS AND GOODS)

2014:

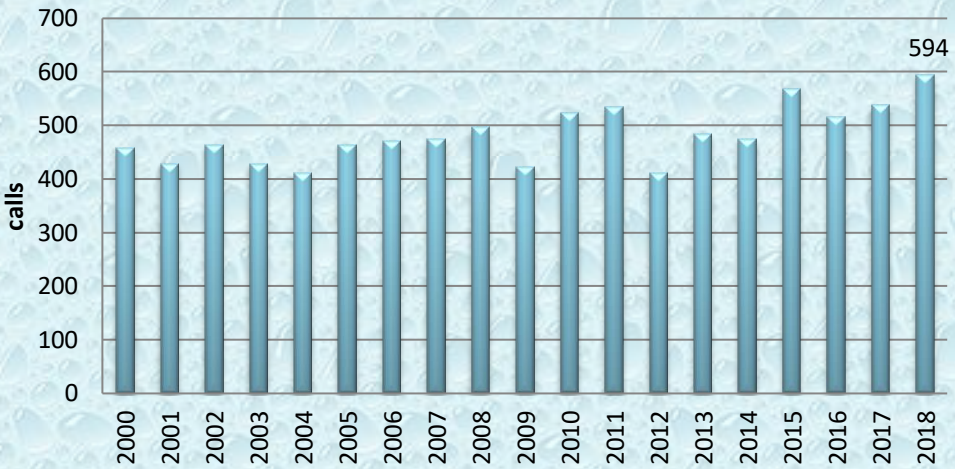
Ferry/ Ro-Ro Vessels	Name of the ship	Length (m)	Bread (m)	Depth (m)	Capacity
Most frequent	Abel Matutes (Ferry)	190,5	26	6	900 pax 247 vehicles
Biggest	Superfast Baleares (Ro-Ro)	209,43	26,5	7,1	1.000 vehicles 3.400 ml

2018:

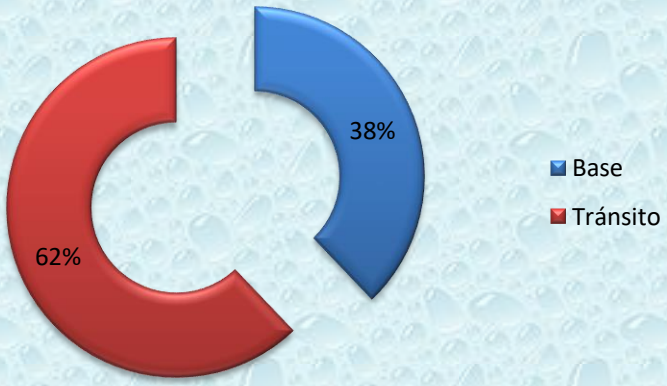
Ferry/ Ro-Ro Vessels	Name of the ship	Length (m)	Bread (m)	Depth (m)	Capacity
Most frequent	Forza	199	27	6,4	969 pax 195 vehicles
Biggest	Forza	199	27	6,4	969 pax 195 vehicles

CRUISE PASSENGERS

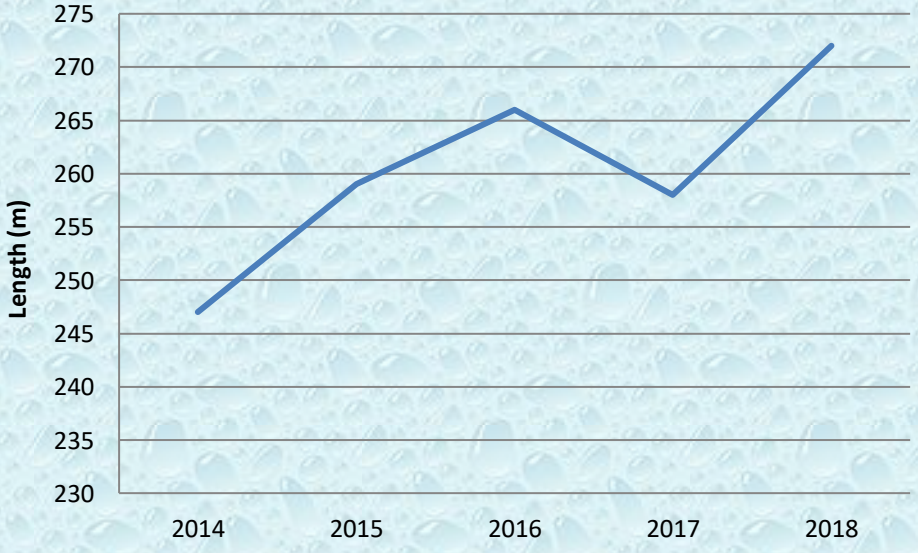
CRUISE CALLS



TYPE OF CRUISES (transit vs homeport)



EVOLUTION OF CRUISES AVERAGE LENGHT



TRAFFICS -CRUISES

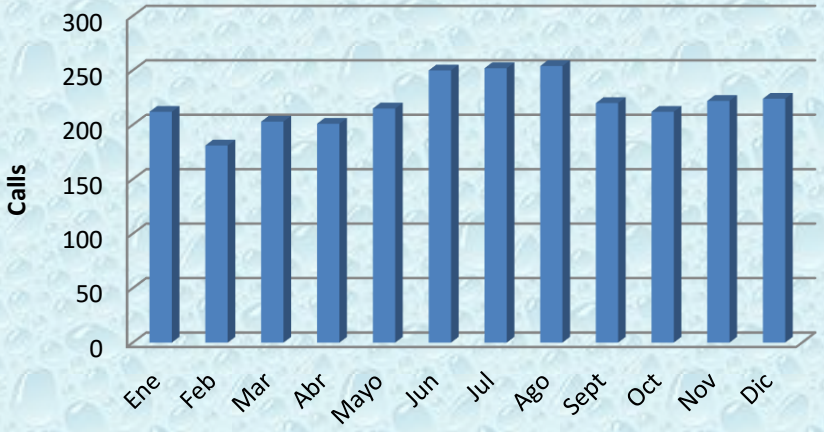
Cruise vessels	Name of the ship	Length (m)	Bread (m)	Depth (m)	Capacity (pax)
Maximum in transit	Symphony of the Seas	362	47	9,30	6.360
Maximum in homeport	Aida Perla/Prima	300	37	8,5	3.300

Symphony of the Seas

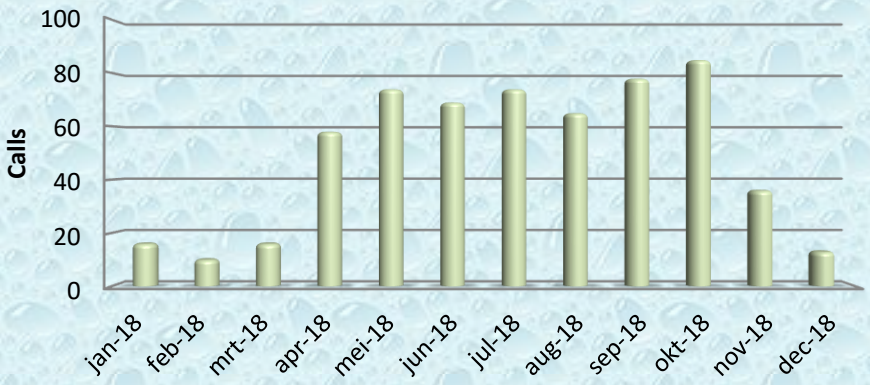
Aida Perla

TRAFFICS - SEASONALITY (Ferrys + Cruises)

FERRYS (2018)



CRUISES (2018)

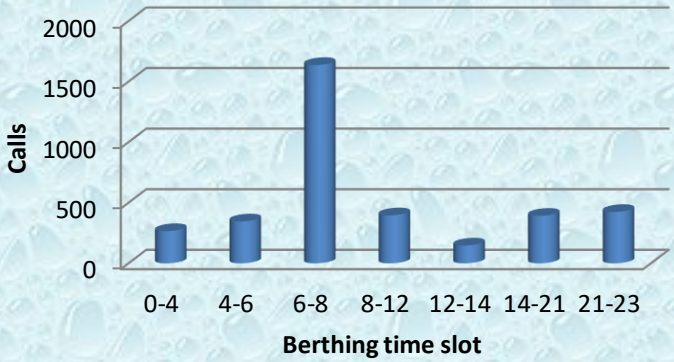


- Ferrys → between winter and summer, there is a difference of about 45 ferry calls/month, meaning 25% more (2018).

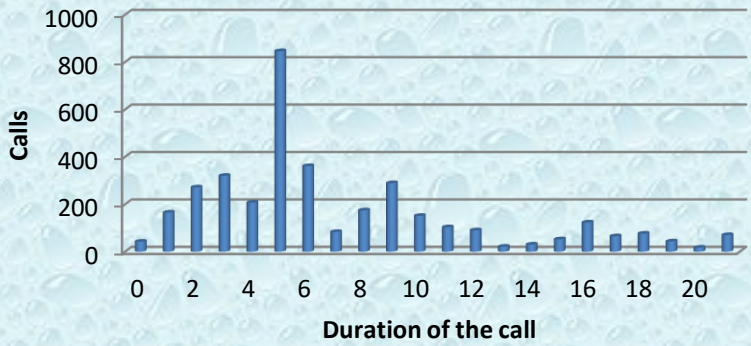
- Cruises → 90% of cruise traffic between Apr and November. 2 peaks: Sept (78 calls) and October (85 calls) (2018).

TRÁFFICS - SIMULTANEITY (Ferrys + Cruises)

FERRYS (2018)

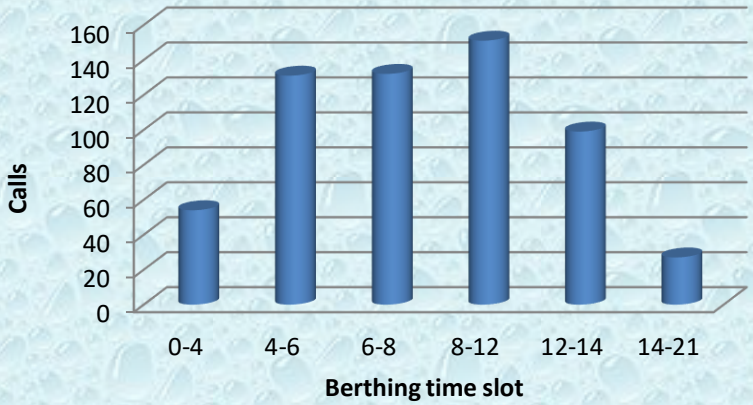


62,33% of ferrys arrive before 8h

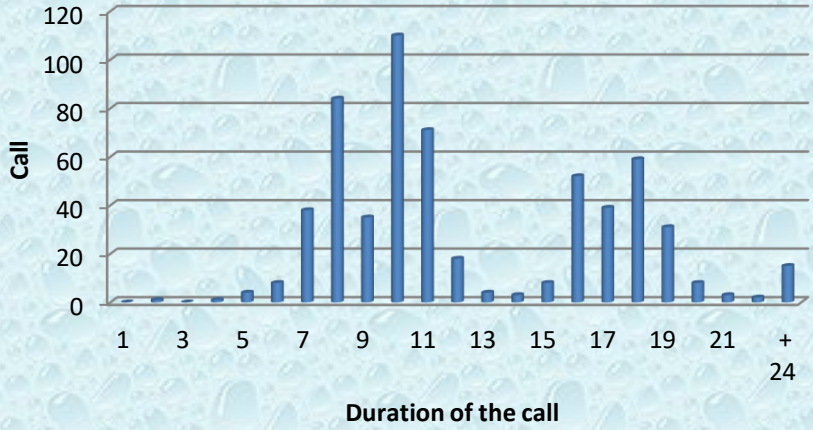


- ***51,43% of ferrys stay < 5h***
- ***76,63% of ferrys stay < 9h***

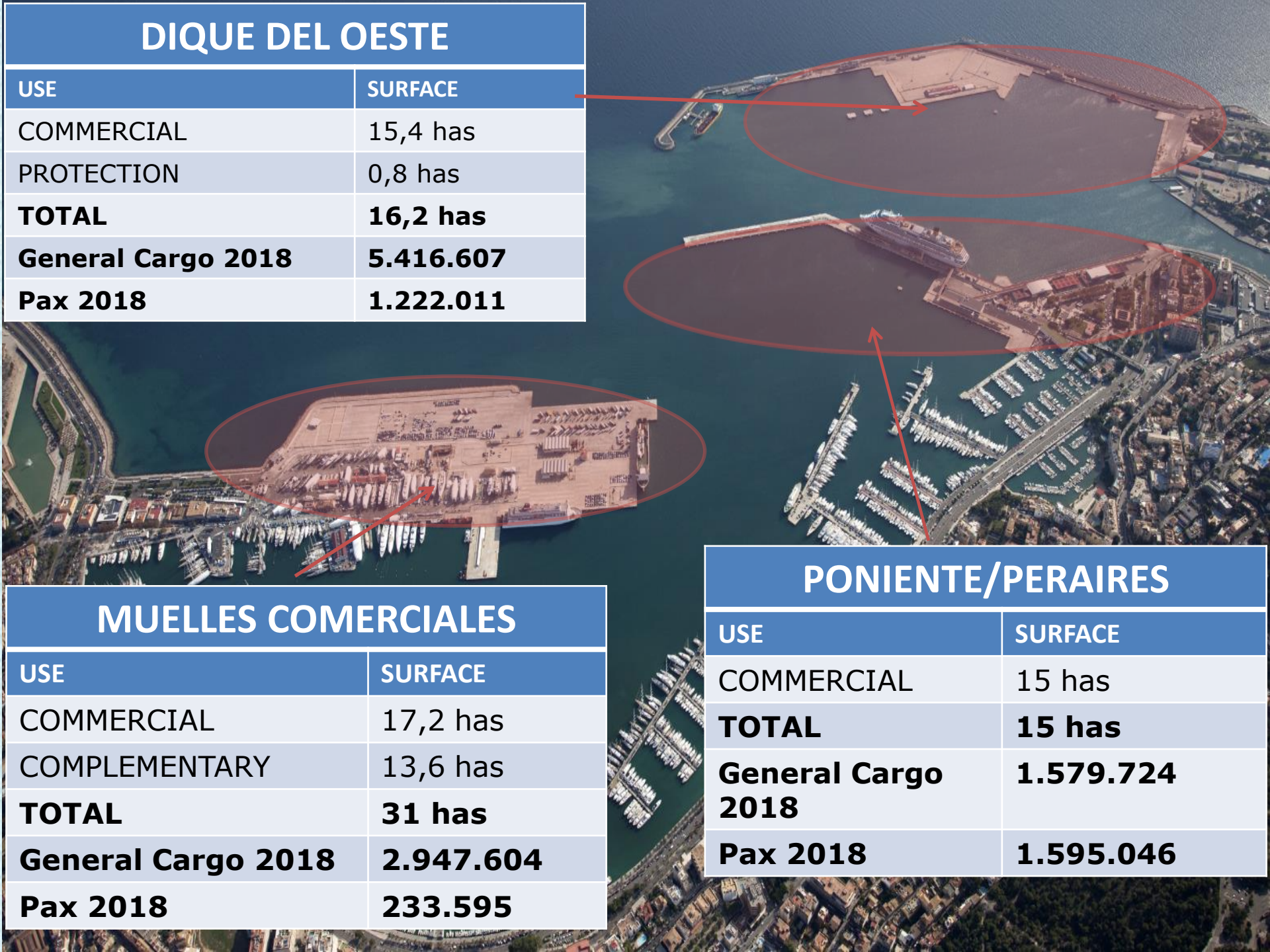
CRUISES (2018)



- ***78,79% of cruises arrive before 8h***
- ***95,45% of cruises arrive before 12h***



- ***59,26% of cruises stay < 11h***
- ***90,07 % of cruises stay < 18h***



DIQUE DEL OESTE

USE	SURFACE
COMMERCIAL	15,4 has
PROTECTION	0,8 has
TOTAL	**16,2 has**
General Cargo 2018	**5.416.607**
Pax 2018	**1.222.011**

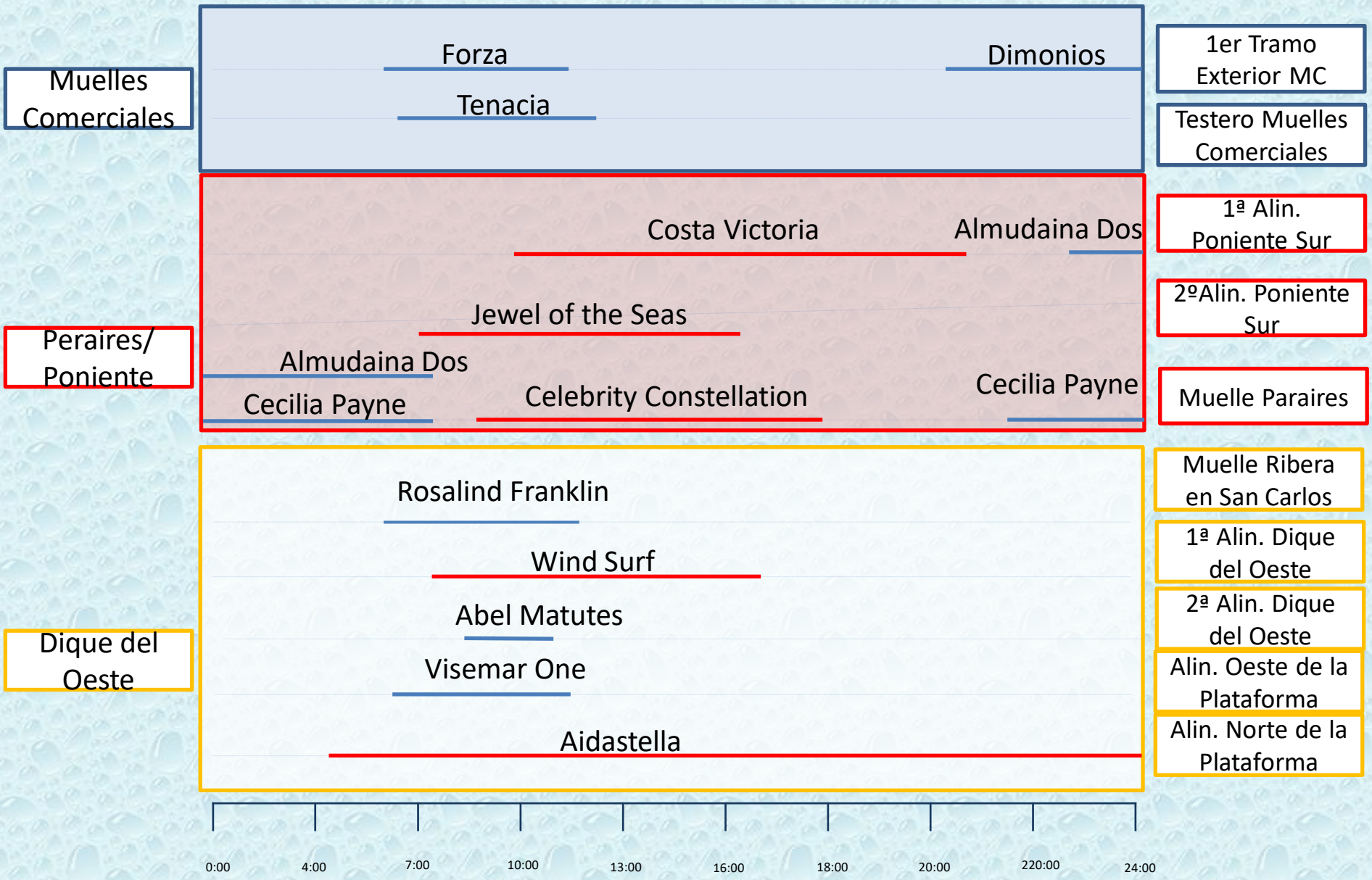
MUELLES COMERCIALES

USE	SURFACE
COMMERCIAL	17,2 has
COMPLEMENTARY	13,6 has
TOTAL	**31 has**
General Cargo 2018	**2.947.604**
Pax 2018	**233.595**

PONIENTE/PERAIRES

USE	SURFACE
COMMERCIAL	15 has
TOTAL	**15 has**
General Cargo 2018	**1.579.724**
Pax 2018	**1.595.046**

28th Juny 2018 (not so excepcional):



FERRYS (RO-PAX)

- **Time of arrival and port operations** expected to continue **without major changes**
- **Preponderance of Ro-ro cargo in ferrys (Ro-Pax)** also expected to remain.
- **Likely growth of ferry size (up to 230-240 m)**
- **Slow increase in the number of ferrys**. Potential new operators?
- **Number of berths** for simultaneous operations:
  - ✓ **Present: 6/7;**
  - ✓ **Future (2024): 8/9**

CRUISES

- **Growth in the average sizes of the cruise vessels**, leading to **increasing number of calls by ships over 300 m** in length, and even longer. Likely, in the next future, simultaneous calls of up to 2 vessels 360 m long.
- High proportion of **home-porting and inter-porting**
- **Seasonality** will remain a challenge (for commercial strategy of the Port Authority, the destination and the region as a whole)

SIMULTANEITY + SEASONALITY:

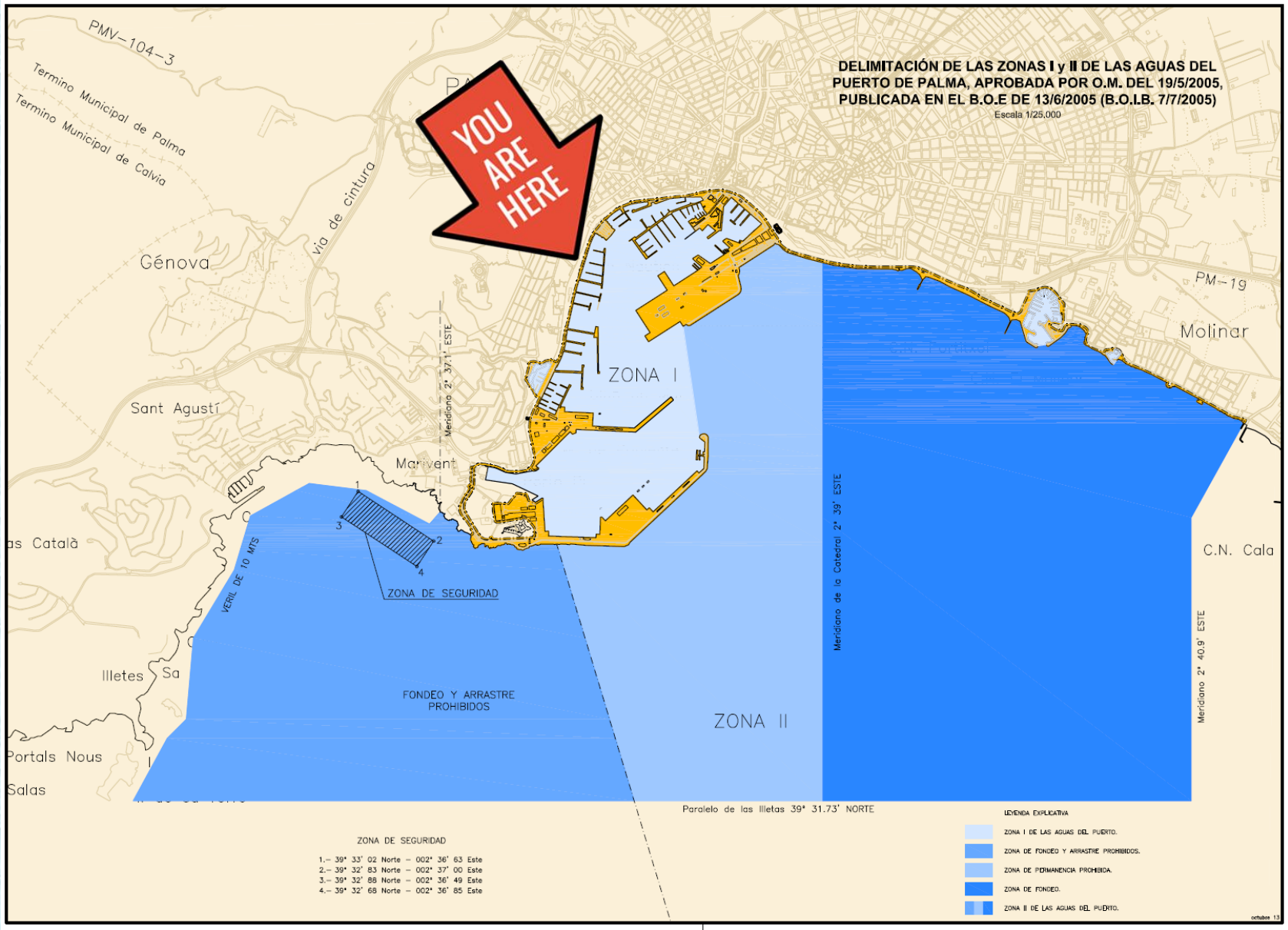
MAIN FACTORS GOVERNING BERTH DEMAND

FERRYS + CRUISES

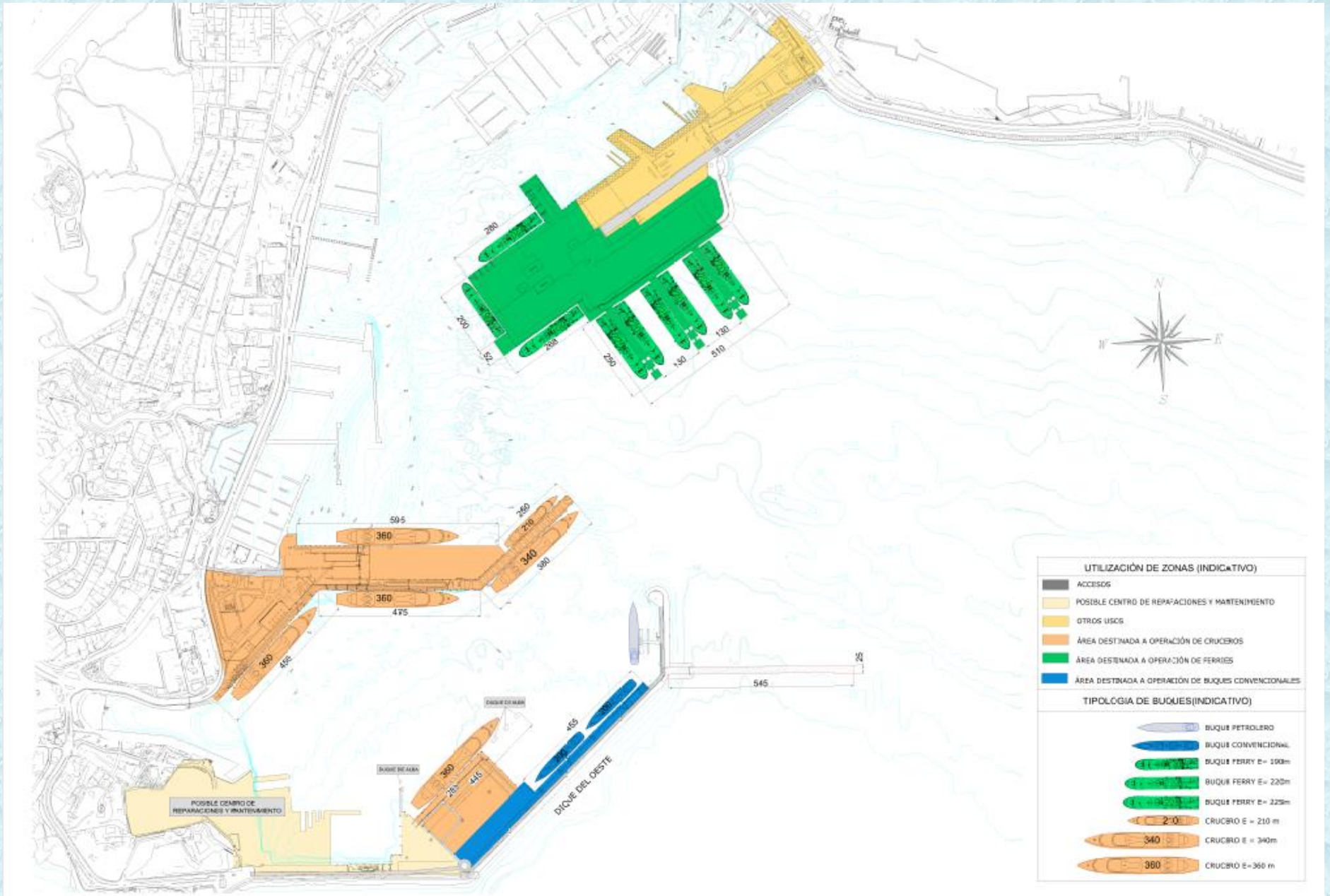
IN THE PORT OF PALMA

(SPECIALIZATION DESIRABLE)

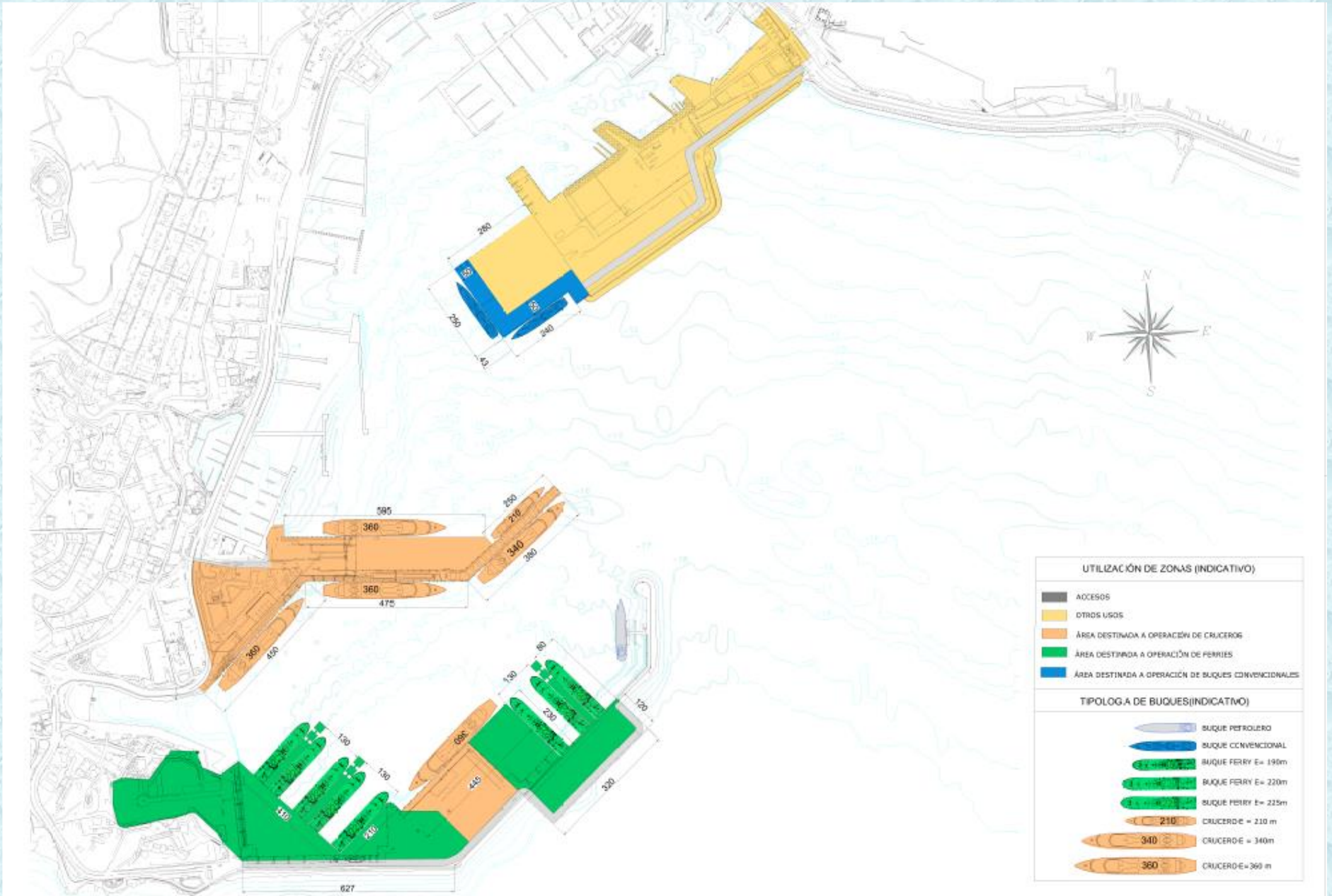
THE PORT OF PALMA:
Land and Water areas



Option A). FERRIES on the East Commercial Quays (and industrial ship repair and maintenance areas to the West Breakwater area)

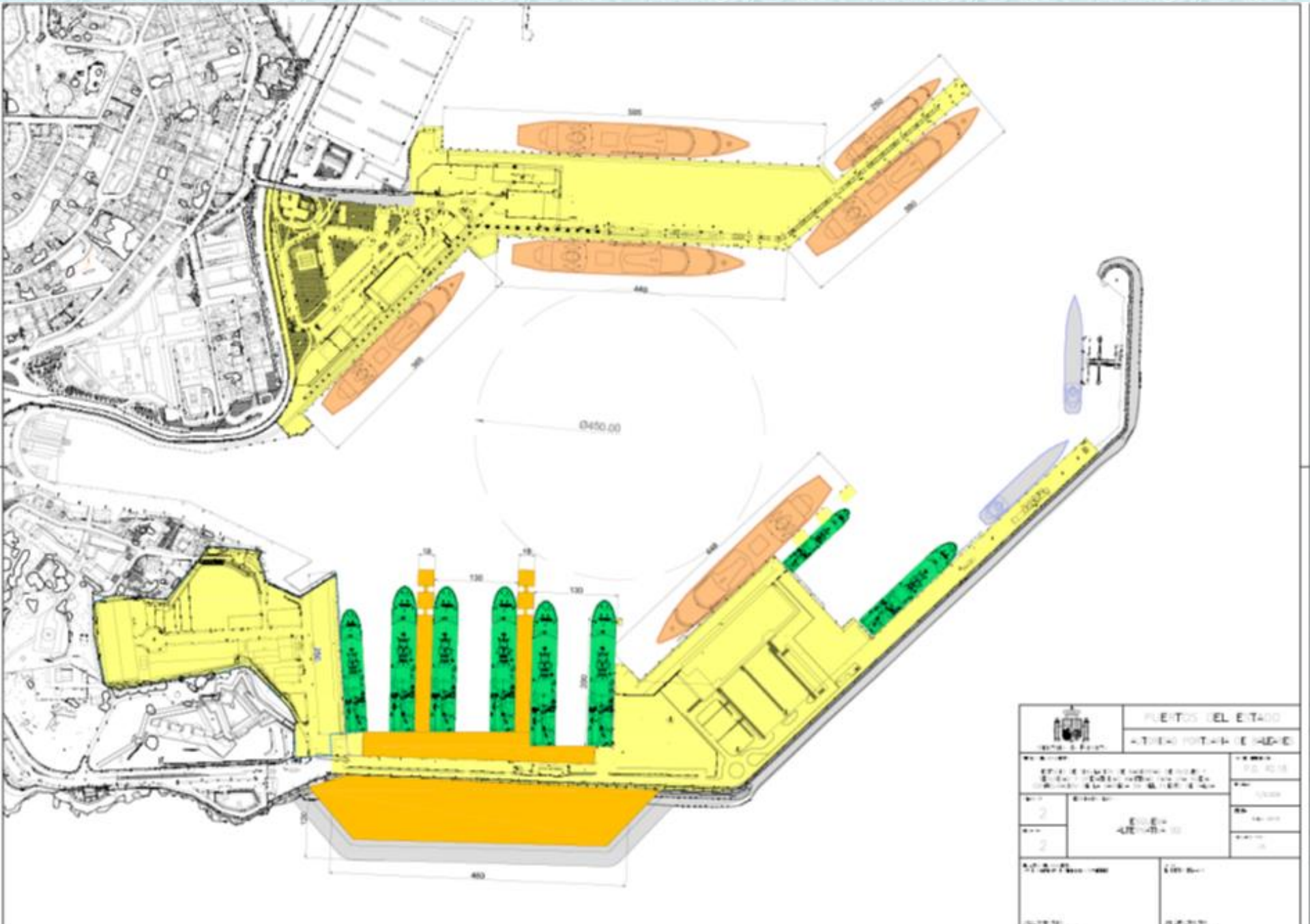


Option B). Ferries on the West Breakwater area (and industrial ship repair and maintenance areas on the Commercial Quays)



ALTERNATIVE B1 – 3 P:

ALTERNATIVE B2:



ALTERNATIVE B1 – 2 P (opt):

Ministerio de Fomento	PUERTOS DEL ESTADO
	AUTORIDAD PORTUARIA DE BALEARES
TÍTULO DEL DOCUMENTO: ESTUDIO DE SIMULACIÓN DE MANIOBRAS DE BUQUES Y SEGURIDAD Y OPERATIVIDAD MARÍTIMAS PARA UNA NUEVA CONFIGURACIÓN DE LA DÁRSENA SW DEL PUERTO DE PALMA	Nº DE REFERENCIA: P.O. 40.18
PLANO Nº: 2	DENOMINACIÓN PLANO: ESQUEMA ALTERNATIVA B3
HOJA Nº: 1	ESCALAS: 1/2.500
	FECHA: Mayo 2018
	DIBUJADO POR: J.S.
EL AUTOR DEL DOCUMENTO: Jefe de Departamento de Planificación y Sostenibilidad	Nº Nº: EL DIRECTOR DE LA A.P.B.

COLLABORATION AND COOPERATION

Ports de Balears

Autoritat Portuària de Balears

GOBIERNO DE ESPAÑA | MINISTERIO DE FOMENTO | MINISTERIO PARA LA TRANSICIÓN ECOLÓGICA

CEDEX
CENTRO DE ESTUDIOS Y EXPERIMENTACIÓN DE OBRAS PÚBLICAS

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SECRETARÍA DE ESTADO DE INFRAESTRUCTURAS TRANSPORTE Y VIVIENDA
SECRETARÍA GENERAL DE TRANSPORTE
Dirección General de la Marina Mercante
Capitanía Marítima de Palma de Mallorca

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NAVIERA ARMAS 100 1917-2017 TRASMEDITERRANEA

CORPORACIÓN DE PRÁCTICOS DEL PUERTO DE PALMA S.L.P.

BALEARIA

Ports de Balears

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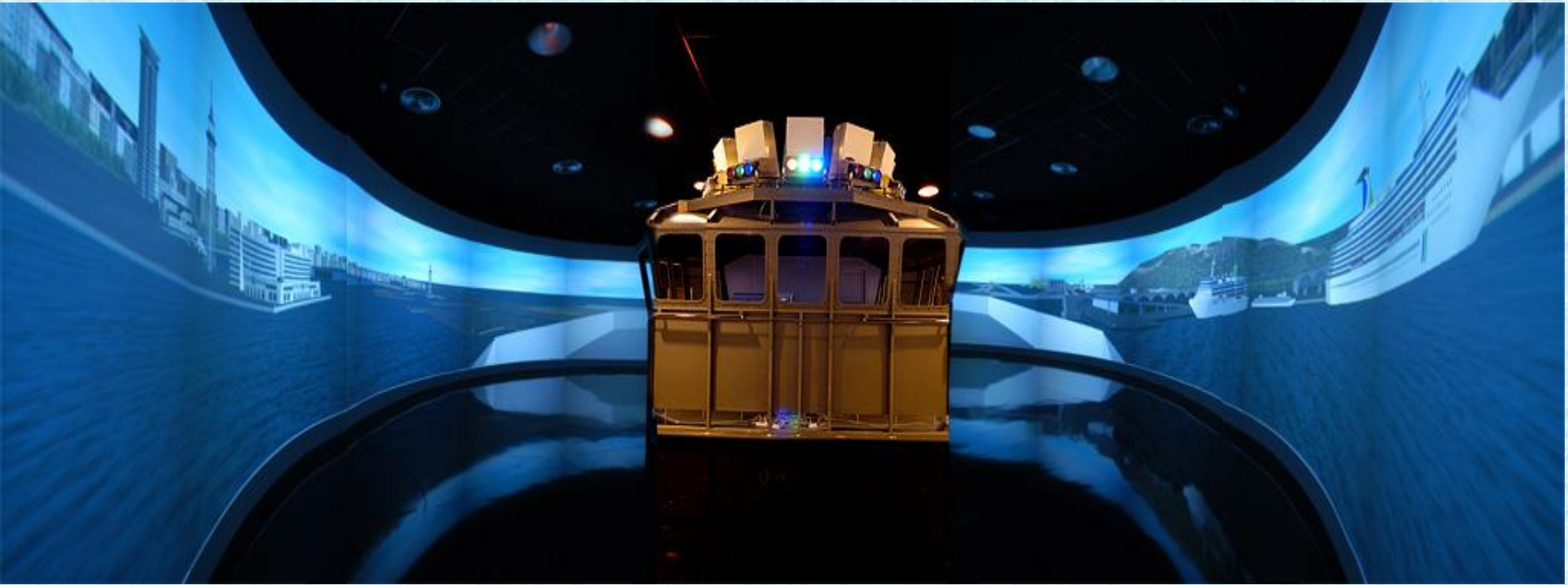
CEDEX
CENTRO DE ESTUDIOS Y EXPERIMENTACIÓN DE OBRAS PÚBLICAS

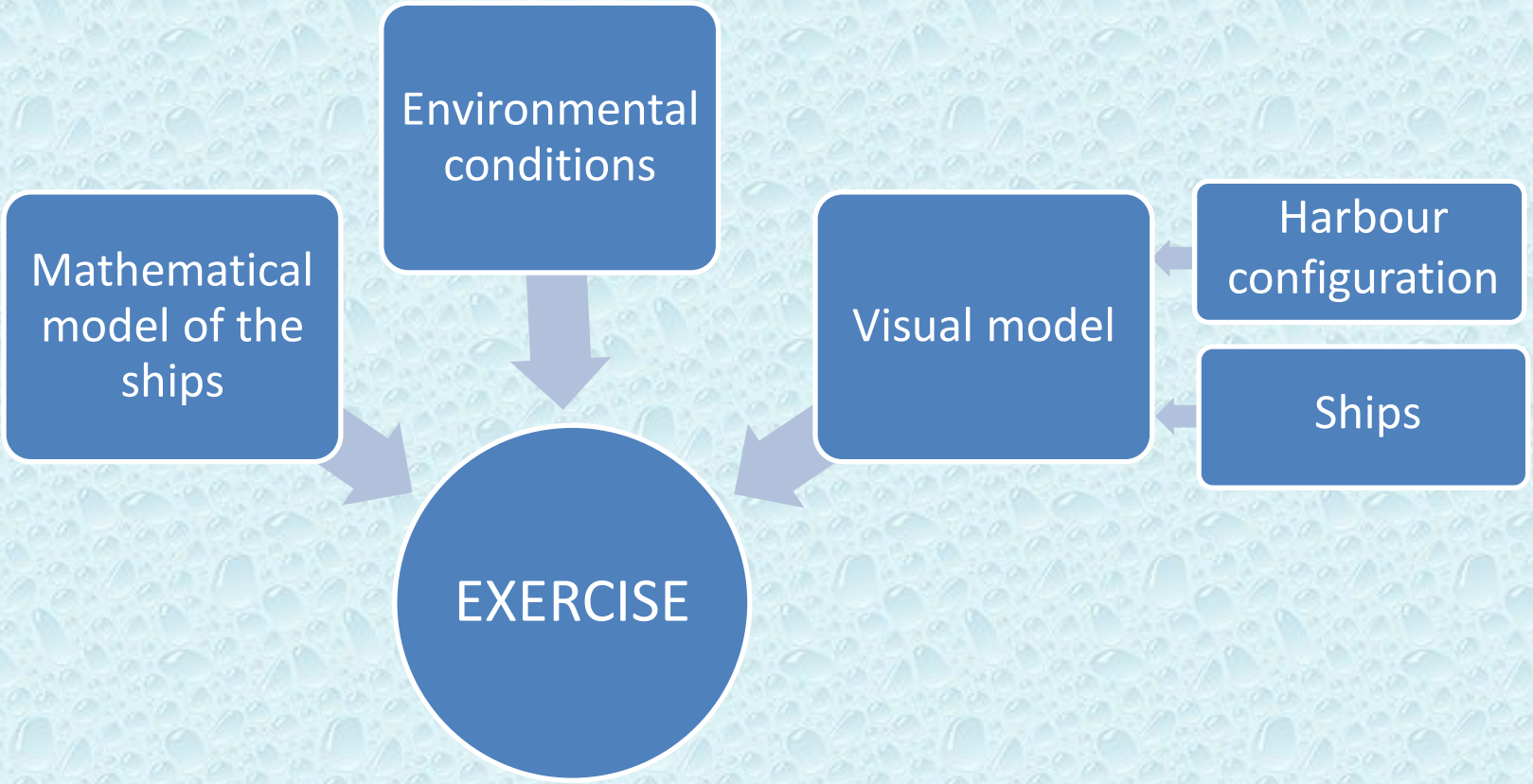
PILOTS ASSISTANCE IN MANOEUVRABILITY STUDIES



SHIP MANOEUVRING REAL TIME SIMULATOR OF CEPYC (CEDEX)

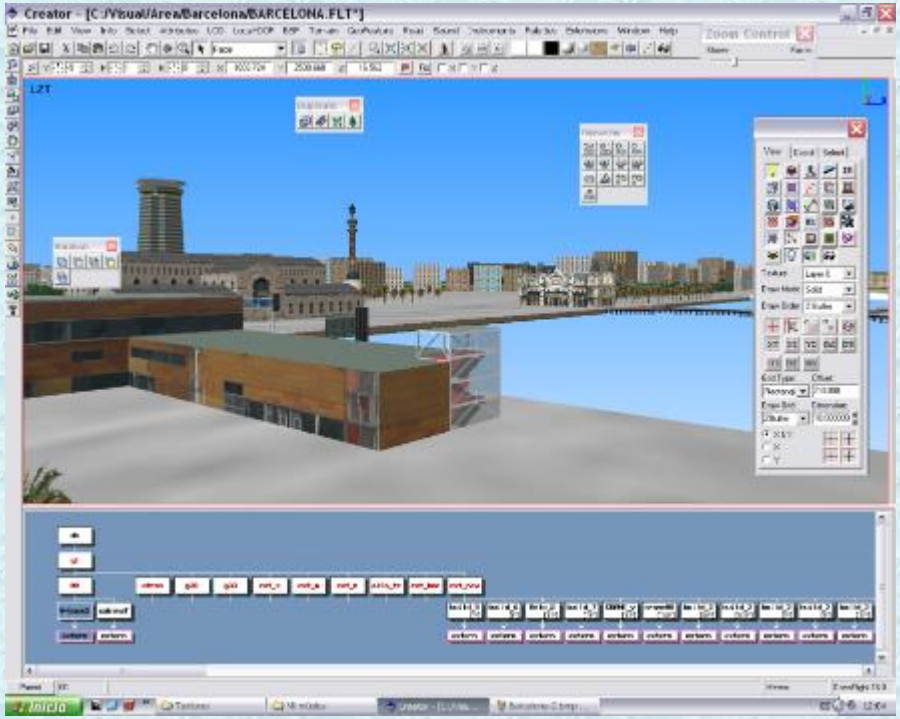
POLARIS, KONGSBERG NORCONTROL SIMULATION (Norway)

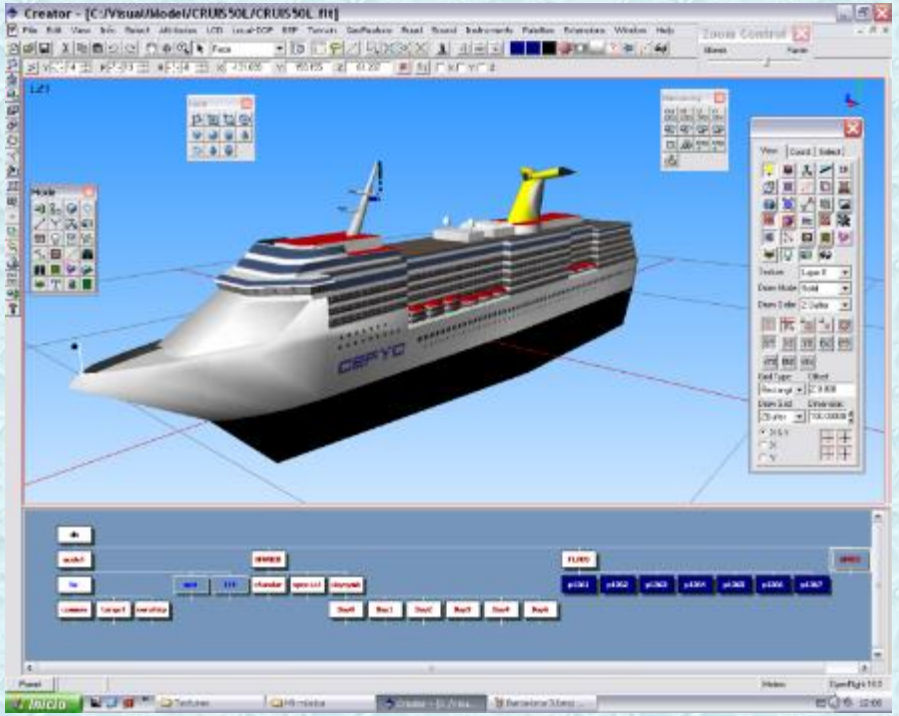
MANOEUVRABILITY STUDY



MANOEUVRABILITY STUDY

- Visual model of the ships and the harbour configuration





MANOEUVRABILITY STUDY

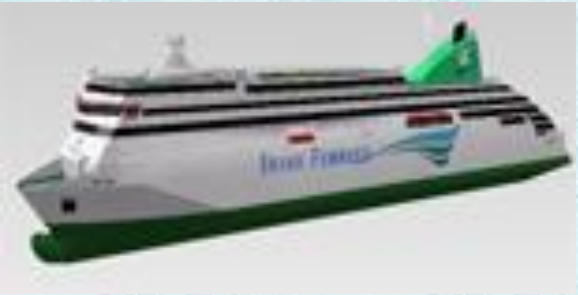
- Visual model of the harbour configuration and the ships
- Mathematical model of the ships
  - Hydrodynamic effects
  - Equipment dynamics
  - External forces

Oasis of the Seas

Model of Oasis of the Seas

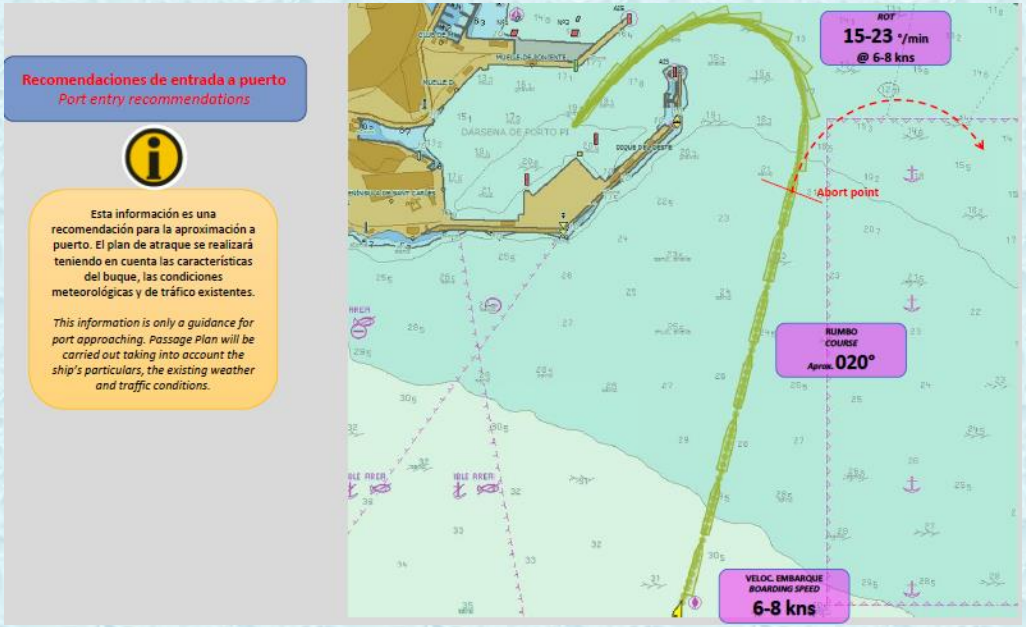
MANOEUVRABILITY STUDY

- Visual model of the harbour configuration and the ships
- Mathematical model of the ships
- Environmental conditions: wind, waves, current…



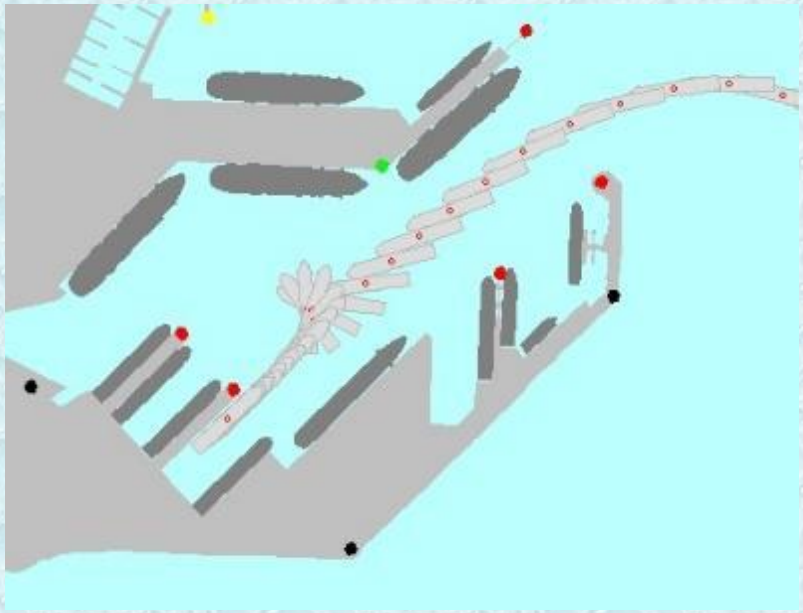
PILOT ASSISTANCE

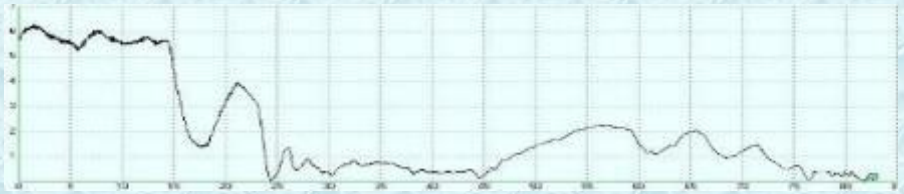
- Definition of scenarios to simulate
- Validate ship behaviour and visual simulation área
- Define usual manoeuvre strategy at the harbour
- Describe the way of working of the tugs at the port
- Analysis of results and conclusions



RESULTS OBTAINED

- Expert rating: evaluation of single runs based on the experience of engineers and captains.
- Statistical analysis is also possible if a high number of runs are done.





Time serie. Speed (kn)

Time serie. Bow thruster (t)

THANK YOU!

Ports de Balears

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