



# The implementation of GIS system for Port Management: The experience in the Port of Lisbon



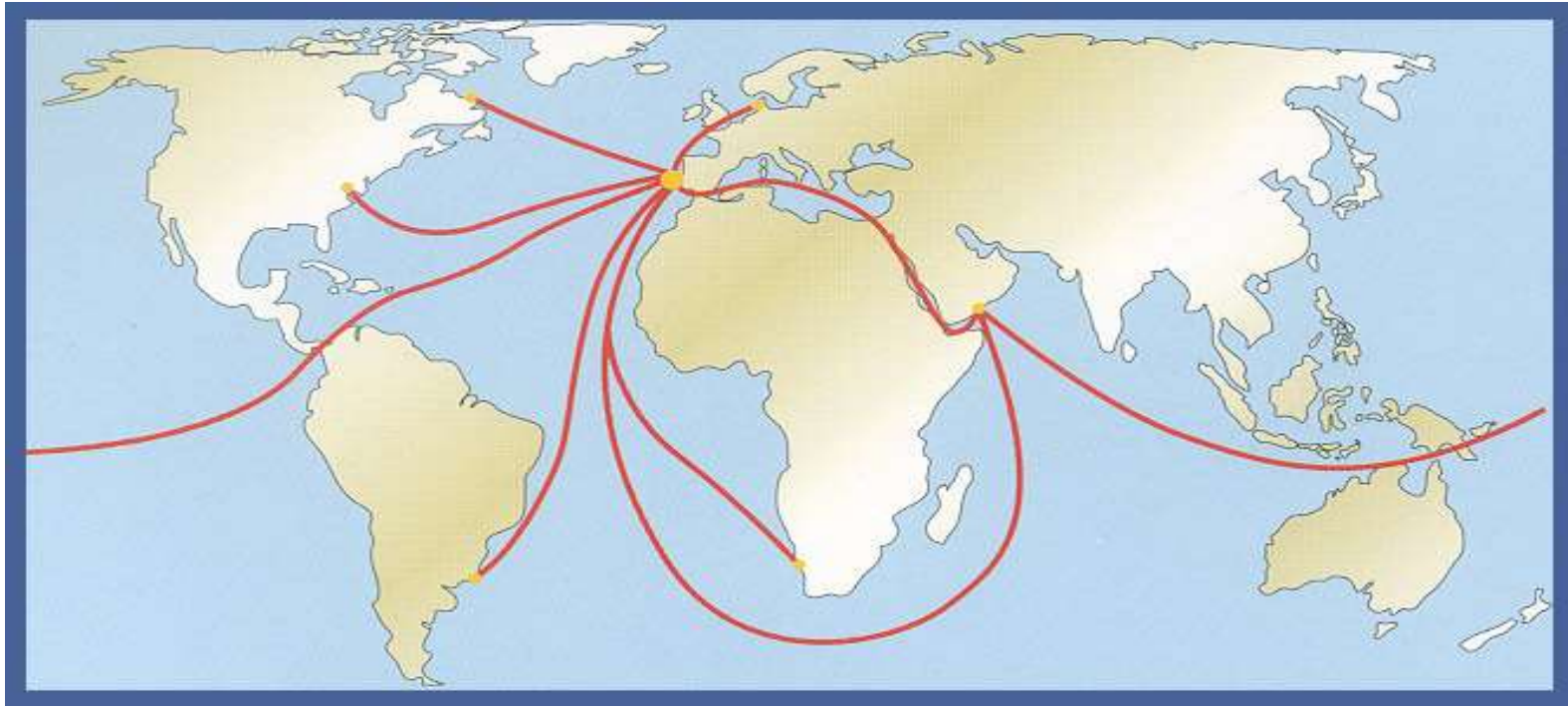
**Porto de Lisboa**



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27-05-2015



- The Port of Lisbon is a large European Port with an Atlantic orientation whose geo-strategic centrality gives it a high statute within the logistics chain of international commerce and in the main cruise circuits

- The port of Lisbon is integrated in the railway network of the region of Lisbon which is articulated with the national and international transeuropean transport network



The estuary of River Tagus, with an extension of 50Km and between 2 and 14Km in width, offers the Port of Lisbon excellent navigating conditions.

The main access channel of the port has depths of -15,5m ZH.

Port of Lisbon Authority (APL SA) concluded its transformation on a port authority model type "landlord" thanks to the development, over the last years, of a concessions program for private operators in general port activities.





Porto de Lisboa



Porto de Lisboa



Porto de Lisboa



Porto de Lisboa





Porto de Lisboa

SEIXAL



APL office



Porto de Lisboa

**LIQUID BULK TERMINAL**



Tagus Estuary Natural Reserve



Porto de Lisboa



Tagus Estuary Natural Reserve



Porto de Lisboa





### CARGO

### TOURISM

### OTHERS

#### CRUISES

#### RECREATIONAL BOATING

RECREATIONAL  
BOATING

SPORT

MARITIM  
TOURISM



CONTAINERS



SOLID BULK



CRUISES



RECREATIONAL BOATING



RIVER PASSENGERS



BREAKBULK



LIQUID BULK



CRUISE TERMINAL



SPORT



FISHING



RO-RO



INLAND WATERWAY  
TRAFFIC



NEW CRUISE TERMINAL



MARITIME TOURISM

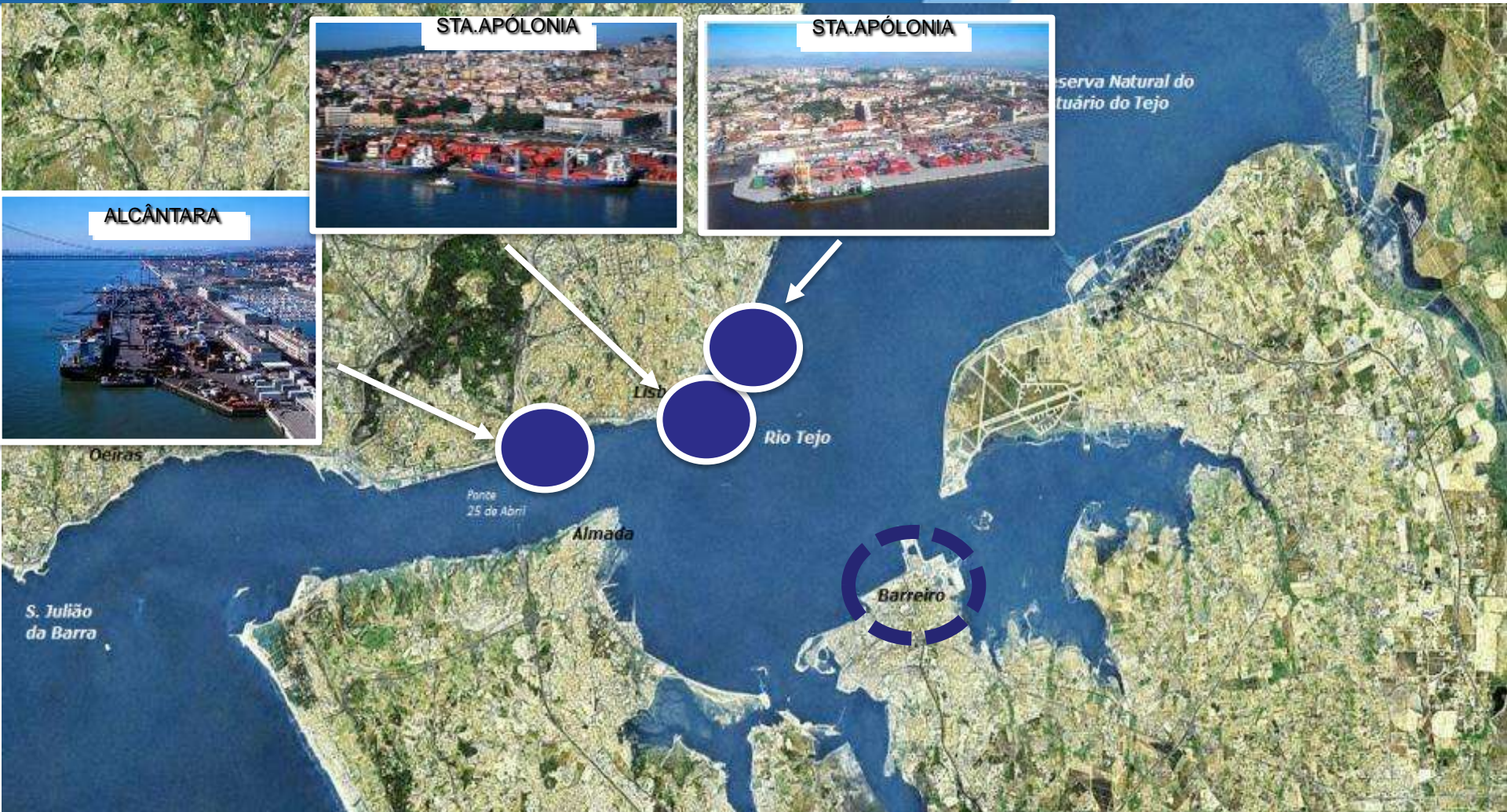


LEISURE

# CONTAINER TERMINALS



Administração  
Porto de Lisboa



**2013: 545.899 TEU (5.465.000 Tons)**  
**Total capacity: 900.000 TEU**



# SOLID BULK TERMINALS



# LIQUID BULK TERMINALS



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2013: 1.616.000 Tons



# CRUISE TERMINALS



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**Alcântara Cruise Terminal**



**Lisbon Cruise Terminal -  
LCT A**



*Reserva Natural do  
Estuário do Tejo*

**Cruise  
Terminals  
Area**



**Lisbon Cruise Terminal  
- LCT B**



**Rocha Cruise Terminal**



Oeiras

S. Julião  
da Barra

Ponte  
25 de Abril

Almada

Rio Tejo

Lisboa

# YACHTING FACILITIES



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## A lot of (Geo)Work to do





# Why?





Some area is or is not under the APL Jurisdiction

I need a map ..

Where is...?

Identification of available spaces for certain uses

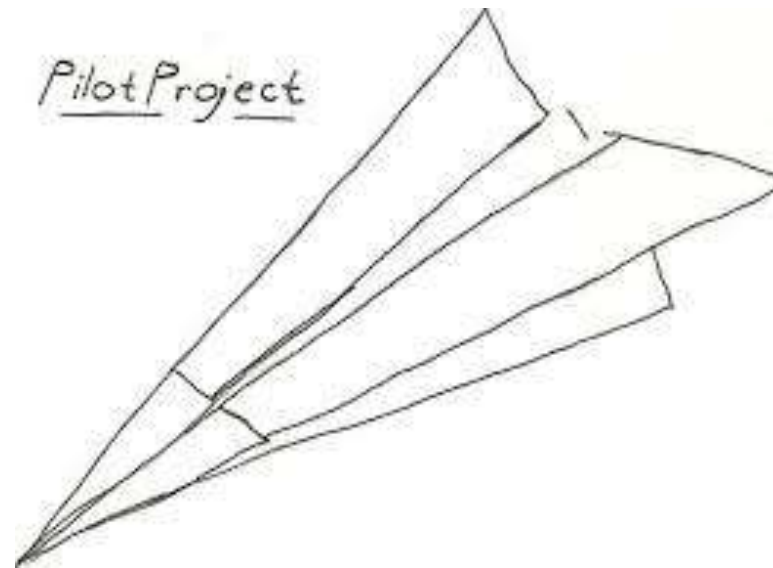
Projects linked with a specific area or building

Who is in that building ?



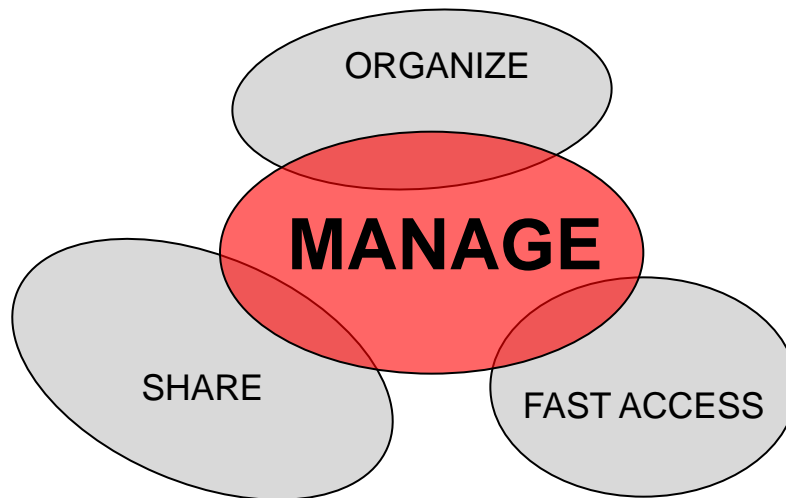


In cooperation with Intergraph, we decided to implement a **Pilot Project**, in an area representative of the reality of the Port, in terms of uses and occupation and needs for data capture and update

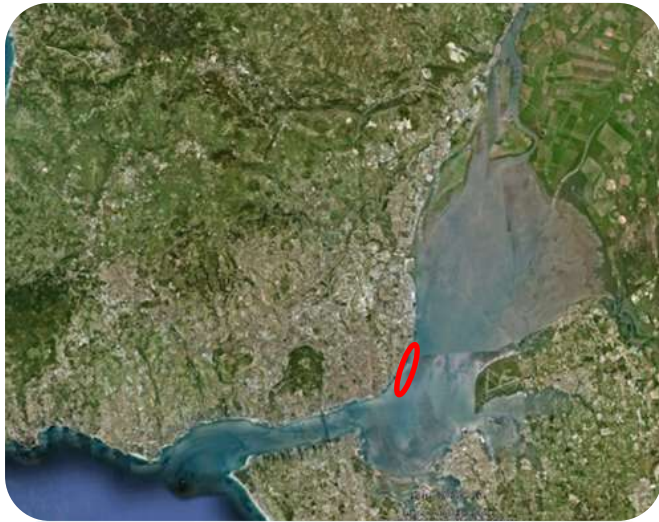


## GOALS

- **ORGANIZE** the existing geospatial information for that area
- **SHARE** and turn it available to the internal services
- **FAST ACCESS** and easy way, using a WebGIS solution



In a way to identify the suitability and feasibility of the system as a corporate tool to support the daily operations, promote the efficiency of the services and contribute to making better decisions.



**Why** THIS Pilot Project area?

**LISBON - Between Jardim Tabaco and Santa Apolónia**



## USES

CONTAINER TERMINALS  
CRUISE TERMINALS  
YACHTING FACILITIES  
SERVICES  
COMMERCE  
CAR PARKS  
RESTAURANTS  
ETC.

IN  
THE  
SAME  
PLACE

## METHODOLOGY

### MEETINGS WITH ALL DEPARTMENTS

- WHAT DATA THEY NEED
- WHAT DATA THEY HAVE
- OTHER NEEDS AND EXPECTATIONS
- ONE INTERLOCUTOR WAS APPOINTED



### WEEKLY MEETINGS



- ✓ Participation
- ✓ Motivation
- ✓ Assets for services
- ✓ Confidence
- ✓ Cooperation

# PILOT PROJECT



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WE START TO INPUT ALL DATA AS WE CAN



WATER NETWORKS, ENERGY PIPELINES, TOPOGRAPHICAL MAPS, DOCK FENDERS AND MOORING BOLLARDS LOCATIONS, AGREEMENTS IN PDF, TRASH CONTAINERS LOCATIONS, JURISDICTION LINES, ORTHOPHOTOMAPS, OLD MAPS, ETC

# GIS PILOT PROJECT - FINAL RESULT

AREA



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Porto de Lisboa  
Atlantic meeting point

The screenshot displays a GIS web application interface. At the top, there is a navigation bar with a search field containing '1: 16743' and a language dropdown menu set to 'Idioma do navegador'. Below this is a toolbar with various GIS tools. The main map area shows an aerial orthophotomap of the Port of Lisbon, with several colored overlays representing different data layers. Labels on the map include 'Arroios', 'Penha de França', 'Beato', 'São Vicente de Fora', and 'Santa Maria Maior'. A scale bar at the bottom right indicates distances up to 1200 meters. On the left side, there is a 'Conteúdo do mapa' (Map Content) panel with tabs for 'Temas', 'Fontes de dados', and 'Categorias'. The 'Categorias' tab is active, showing a list of categories with checkboxes: 'Jurisdição e Domínio', 'Divisão Administrativa', 'Ocupação', 'Serviço Público e Equipamentos', 'Ordenamento do Território', and 'Cartografia - Ortofotomapas'. Below this is a 'Configurações' (Settings) panel and a 'Janela de enquadramento' (Frame window) showing a zoomed-in view of the map's extent. On the right side, there is a 'Mapa Inicial' (Initial Map) dropdown menu. Two black arrows point from the text labels on the right to the map content: one points to the colored overlays and the other points to the 'Conteúdo do mapa' panel.

ORTHOPHOTOMAPS  
VECTORIAL DATA  
BING MAPS  
OLD MAPS

LAYERS

# GIS PILOT PROJECT - FINAL RESULT

## CITY RESTRICTION PLANS LAYER

1: 18394

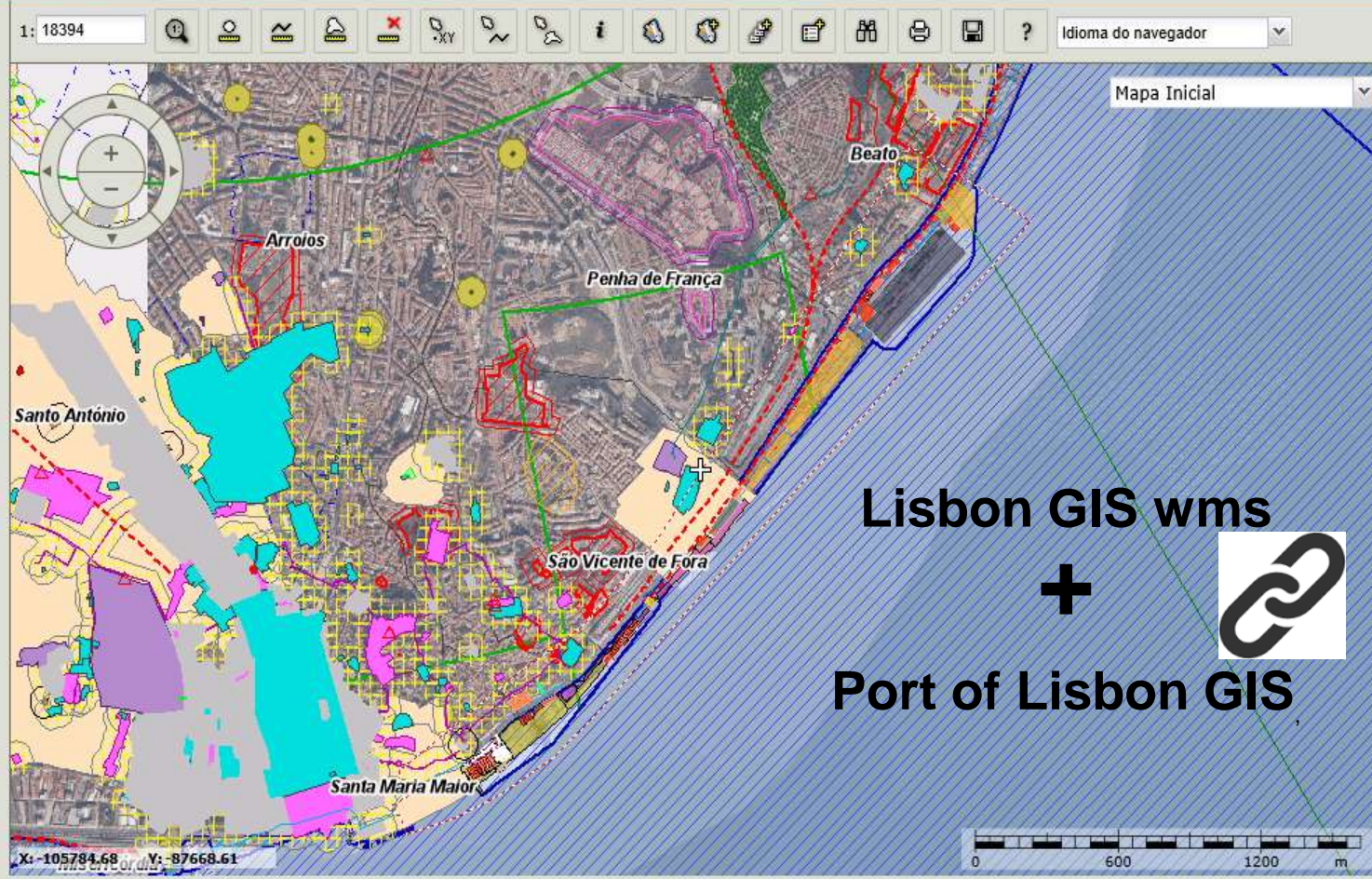
Conteúdo do mapa

Temas Fontes de dados Categorias

- Jurisdição e Domínio
- Divisão Administrativa
- Ocupação
- Serviço Público e Equipamentos
- Ordenamento do Território
- Projectos
  - Plano Director Municipal
    - Planta de Condicionantes
    - Planta de Ordenamento
- Cartografia - Ortofotomapas

Configurações

Janela de enquadramento



Lisbon GIS wms  
+  
Port of Lisbon GIS



# GIS PILOT PROJECT - FINAL RESULT

## OCUPATION INFORMATION LAYER

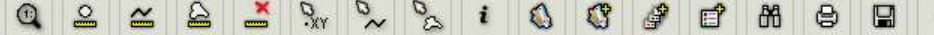


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Porto de Lisboa  
Atlantic meeting point

1: 1881



Idioma do navegador

### Conteúdo do mapa

Temas Fontes de dados Categorias

- Jurisdição e Domínio
- Divisão Administrativa
- Ocupação
  - Concessões
  - Licenças
  - Livre
  - Edifícios
- Serviço Público e Equipamentos
- Ordenamento do Território
- Cartografia - Ortofotomapas

### Configurações

#### Janela de enquadramento





# GIS PILOT PROJECT - FINAL RESULT

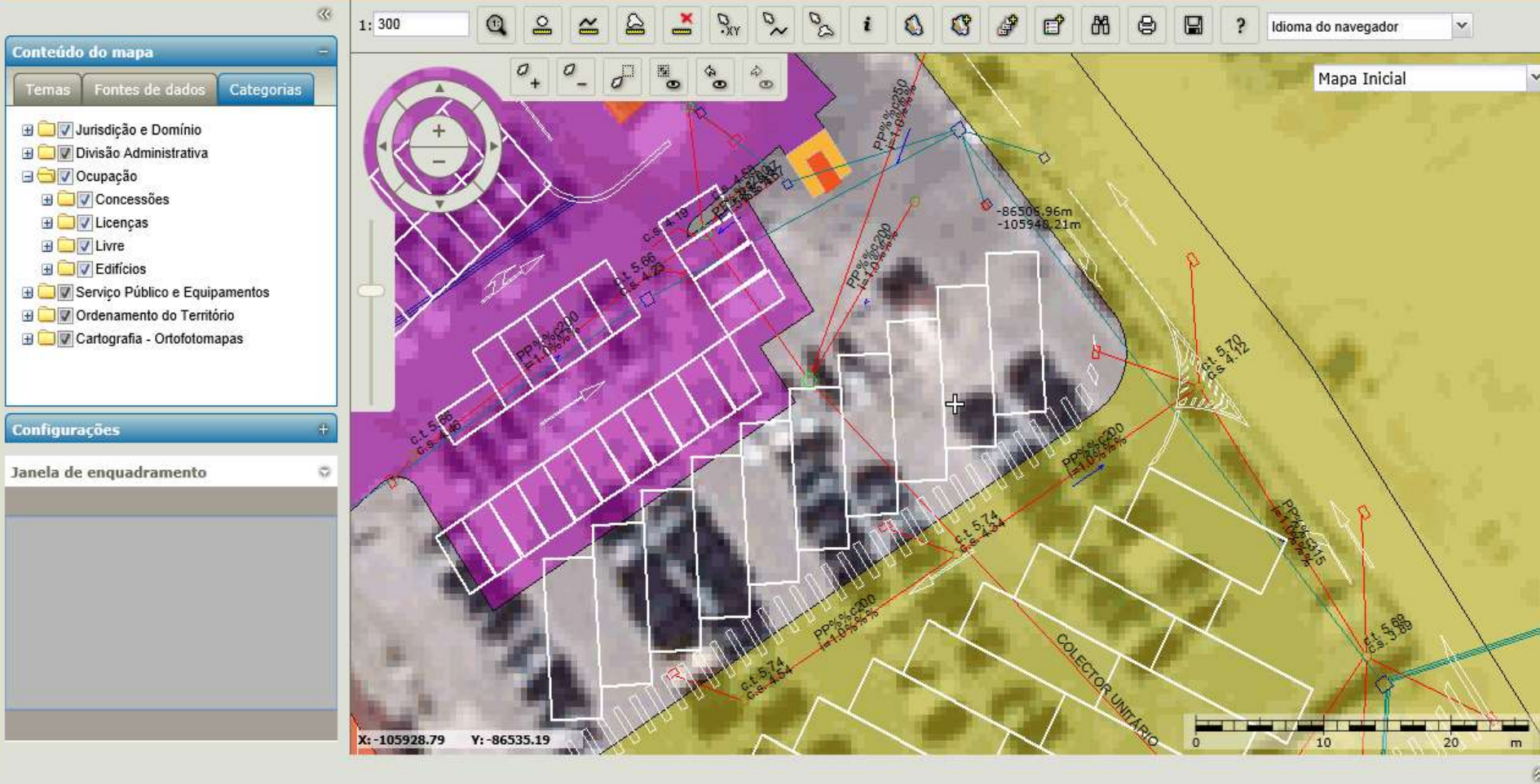
## WATER AND ENERGY NETWORKS LAYER



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# GIS PILOT PROJECT - FINAL RESULT

## PORT USE AREAS LAYER

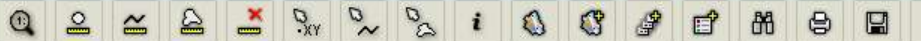


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Atlantic meeting point

1: 7554



Current browser language

Mapa Inicial

### Map Content

Layers Data Sources Categories

- Jurisdição e Domínio
  - Domínio Público
  - Jurisdição
  - Áreas de Uso Portuário
    - Toponímia
    - Áreas de Uso Portuário
    - Limite de Terminal
- Divisão Administrativa
- Ocupação
- Serviço Público e Equipamentos
- Ordenamento do Território
- Cartografia - Ortofotomapas

### Settings

### Overview











Penha de França

Terminal de Contentores de  
Santa Apolónia

Terminal Multipurpose de Lisboa

X: -104534.69 Y: -86139.19



- We tried to respond to all requests from all involved departments 
- Problem: lack of information in some areas 
- Useful to identify data update needs in some key areas 
- opportunities to acquire and update information 
- Very useful: The database platform structure is now ready for the future 
- Only step by step we can respond to all requests 
- We concluded that we were too ambitious. 
- All APL employees are now self-conscious of the importance of geospatial information 

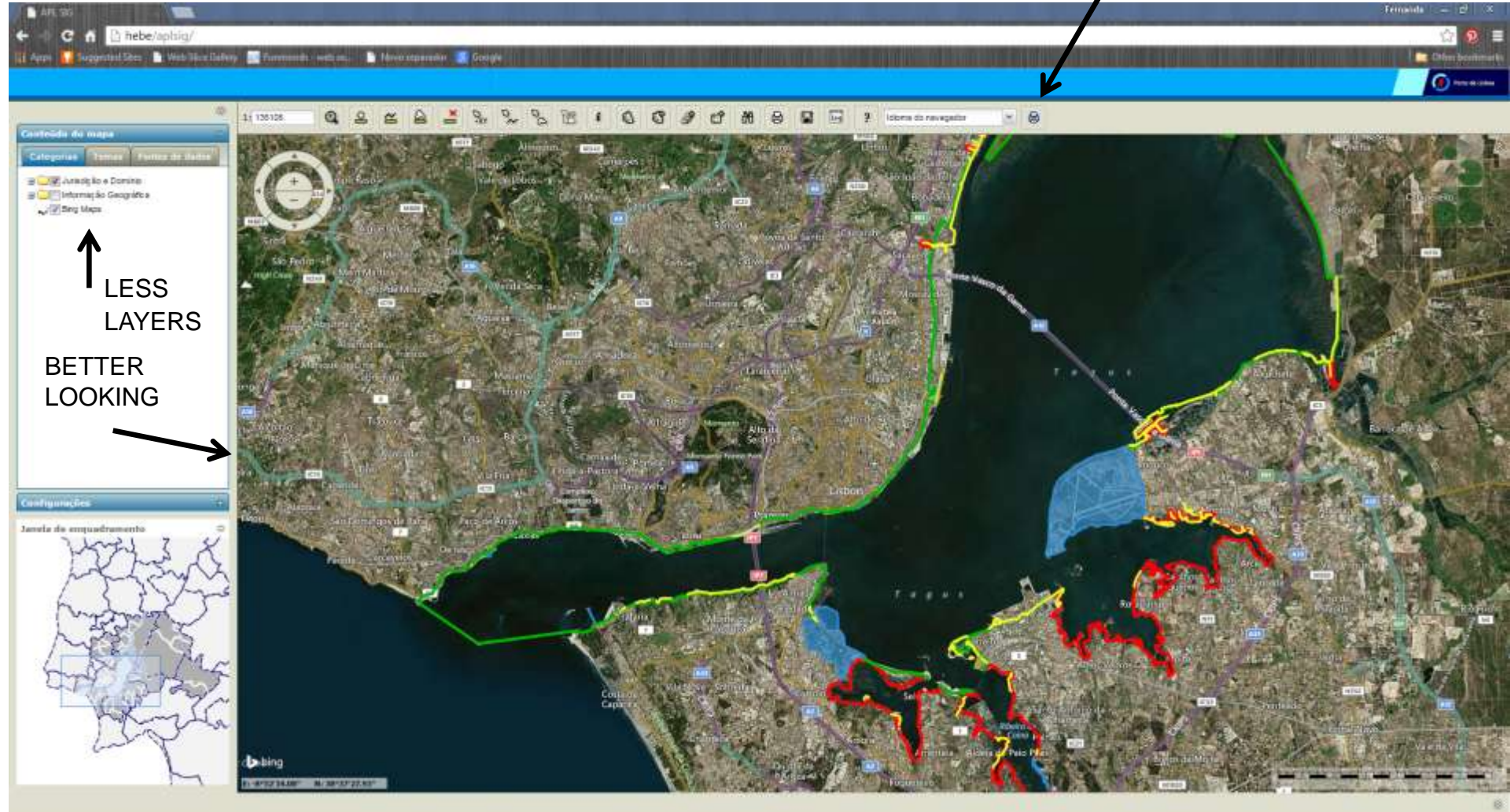
# WHAT WE DID AFTER



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We redesigned and simplified the project

PRINT & PDF MAPS OPTION



↑  
LESS  
LAYERS  
BETTER  
LOOKING  
→



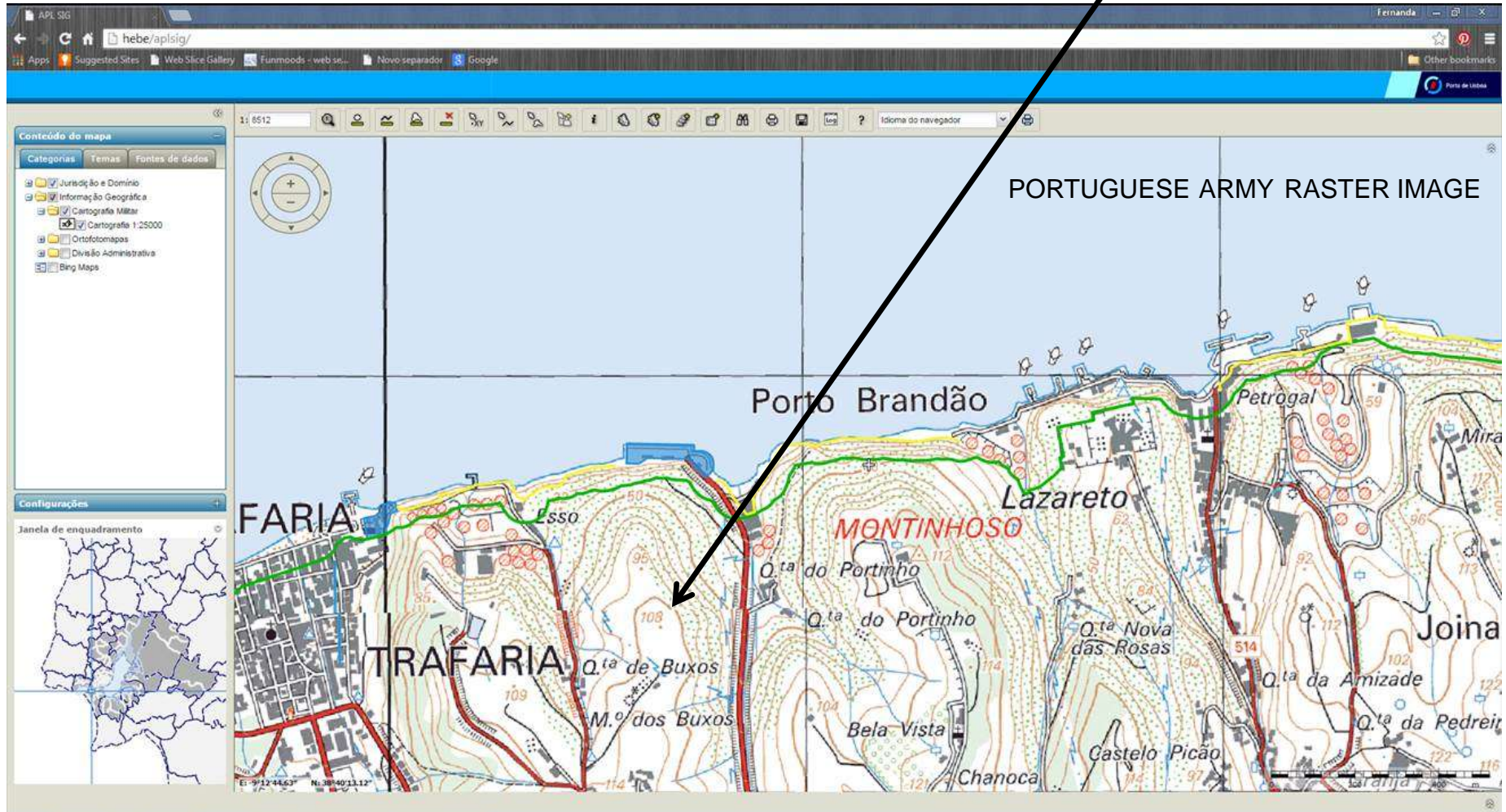
# WHAT WE DID AFTER



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**LESS** IS MORE

REPLACE BASE MAPS



PORTUGUESE ARMY RASTER IMAGE



- All departments are using the GIS system;
- The GIS system is a good corporative tool to support the daily port operations;
- The system promotes the efficiency of the services and contributes to better decisions;
- The departments demand more geospatial information;
- The final balance is positive.

## SOFTWARE / HARDWARE

- GeoMedia Desktop Essentials 2013
  - GeoMedia Professional
- GeoMedia WebMap Essentials 2013
  - GeoMedia WebMap Publisher
  - Geospatial Portal 2013
- Oracle Database 11g
- Windows Server 2008





## VOLVO OCEAN RACE



ROUND THE WORLD

LISBON

MAY 25 – 7 JUNE



The biggest regatta around the world and one of the world's top three nautical events is back to Lisbon

During 14 days of stopover in the village, there will be a program of free activities, from fairs, exhibitions, concerts and other events, all regarding a major theme, the sea.

It will be possible to get in touch with the seven teams and respective boats.

## VOLVO OCEAN RACE LISBON RACE VILLAGE

ENTRADA LIVRE

### EXHIBITION AREA

- 1 **Pavilhão Volvo**  
Espaço à sombra e ao abrigo do Volvo no Village e um ponto de encontro.
- 2 **Product & Activation Deck**  
Espaço à sombra e ao abrigo do Volvo no Village e um ponto de encontro.
- 3 **Simulador de Estacionamento Volvo**  
Desafio às últimas forças físicas e mentais e um teste de 400 metros ultrarresistente.
- 4 **Loja Oficial AVIRO**  
Uma seleção exclusiva para todos os membros do Volvo Ocean Race.
- 5 **Brompton Bike Port**  
Espaço para a troca de bicicletas e peças de reposição.
- 6 **Exibição do barco Volvo Ocean 65**  
Conheça o novo Volvo Ocean 65, o maior e mais poderoso barco de 65 metros de comprimento.
- 7 **Exposição de Imagens Maersk Line**  
Maersk e um espetáculo de imagens que mostram o mundo por 70 dias de viagem.
- 8 **Volvo Pedal Vehicles**  
Conheça os carros e bicicletas elétricos para crianças da Volvo.
- 9 **Insefáveis**
- 10 **Jogo de tabuleiro gigante CP Kids**
- 11 **Calone de Fotografias**
- 12 **Paredes de Escalada**
- 13 **Graffiti ao vivo**
- 14 **Exposição de Carros Clássicos Volvo**
- 15 **Ativação Volvo Portugal**
- 16 **Pavilhão Brunel**
- 17 **Espectáculo Escritório em Alto Mar**  
Espectáculo único de entretenimento e educação baseado no alto mar, com duração de 40 minutos.
- 18 **Pavilhão SCA**  
Conheça o sistema de propulsão a vela SCA e aprenda como usar a vela no vento.
- 19 **Pavilhão Vestas Wind**  
Experimente todo o Poder do vento e tudo o que ele pode fazer.
- 20 **Tamango dos Veladores**  
Conheça os veladores e os veladores experientes de vela. Venha experimentar todo o vento.
- 21 **Escã Gigante**
- 22 **Troféu & Escã de LED**  
Troféu para o vencedor e o lugar do vencedor no momento da competição em alta tensão de LED.
- 23 **Pontão**  
Vá ao barco Volvo Ocean 65 atracado no Lido de S. Domingos.

### ACTIVITIES AREA

- 24 **The Boatyard**  
Um espaço de praia e festa de água, no qual todos os visitantes podem relaxar e desfrutar das vistas.
- 25 **Palco Principal**
- 26 **Espaço do mar DGPM**
- 27  **Mercado Português**
- 28  **Samsung Business Lounge**
- 29  **Bateria de Vela - Tema Incógnita**
- 37 **Área de Manutenção de Barcos**
- 38 **TV Local**
- 39 **Centro de Acreditação**
- 40 **Centro de Voluntários**
- 41 **Centro de Imprensa**
- 42 **Test Drive Volvo**
- 43 **Volvo Ocean Race Academy**
- 44 **Zona de Restauração**
- 45 **Centro Médico**
- 46 **Centro de Informações**
- 47 **Son Alto**
- 48 **Taxi WC**

### TEAM AREA

- 30 **Team Vestas Wind**
- 31 **Team Alvimedica**
- 32 **Team SCA**
- 33  **Abu Dhabi Ocean Racing**
- 34 **MAPFRE**
- 35 **Dongfeng Race Team**
- 36 **Team Brunel**

Confira os visitantes e os patrocinadores do evento.



# VOLVO OCEAN RACE LOCATION



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MORE INFO VISIT [www.volvoceanrace.com/en/public/schedule.html#lisbon](http://www.volvoceanrace.com/en/public/schedule.html#lisbon)



**Thank you for your attention !!**



**Porto de Lisboa**



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