



## Atlantic Stakeholders Platform Conference

Session:  
*Best Practices in the Sustainable  
Development of the Ports*

**WORKING ON “SMART-PORT” CONCEPT**



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Sistema de Gestión certificado respecto a las normas:



- ISO 9001: Gestión de la Calidad
- ISO 14001: Gestión Ambiental
- UNE 166002: Gestión de la I+D+i

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## About IAT

- ✓ **Innovation and Technology Centre**
- ✓ Created in 1989
- ✓ **Non profit** foundation
- ✓ Recognized as being **of public interest**
- ✓ 130 employees
- ✓ Sited in Andalusia (Spain), Mexico, Chile and South Africa.



### Main Expertise Areas:



Energy



Logistics



Processes Improvement



Environment



Advanced Management

## Where are we?



### With projects in:

Portugal, France, United Kingdom, Ireland, Belgium, Holland, Italy, Germany, Greece, Finland, Sweden, Denmark, Poland, Bulgaria, Malta, Czech Republic, Lithuania, Austria, Luxemburg, Croatia, Bosnia, Slovenia, Turkey, Algeria, Egypt, Morocco, Ethiopia, Uganda, Tanzania, Jordan, Cyprus, Mexico, Chile, Brasil, Argentina, Colombia, Bolivia, Peru, Ecuador, Dominican Republic, Jamaica, Trinidad and Tobago, Panama, Venezuela and Costa Rica.

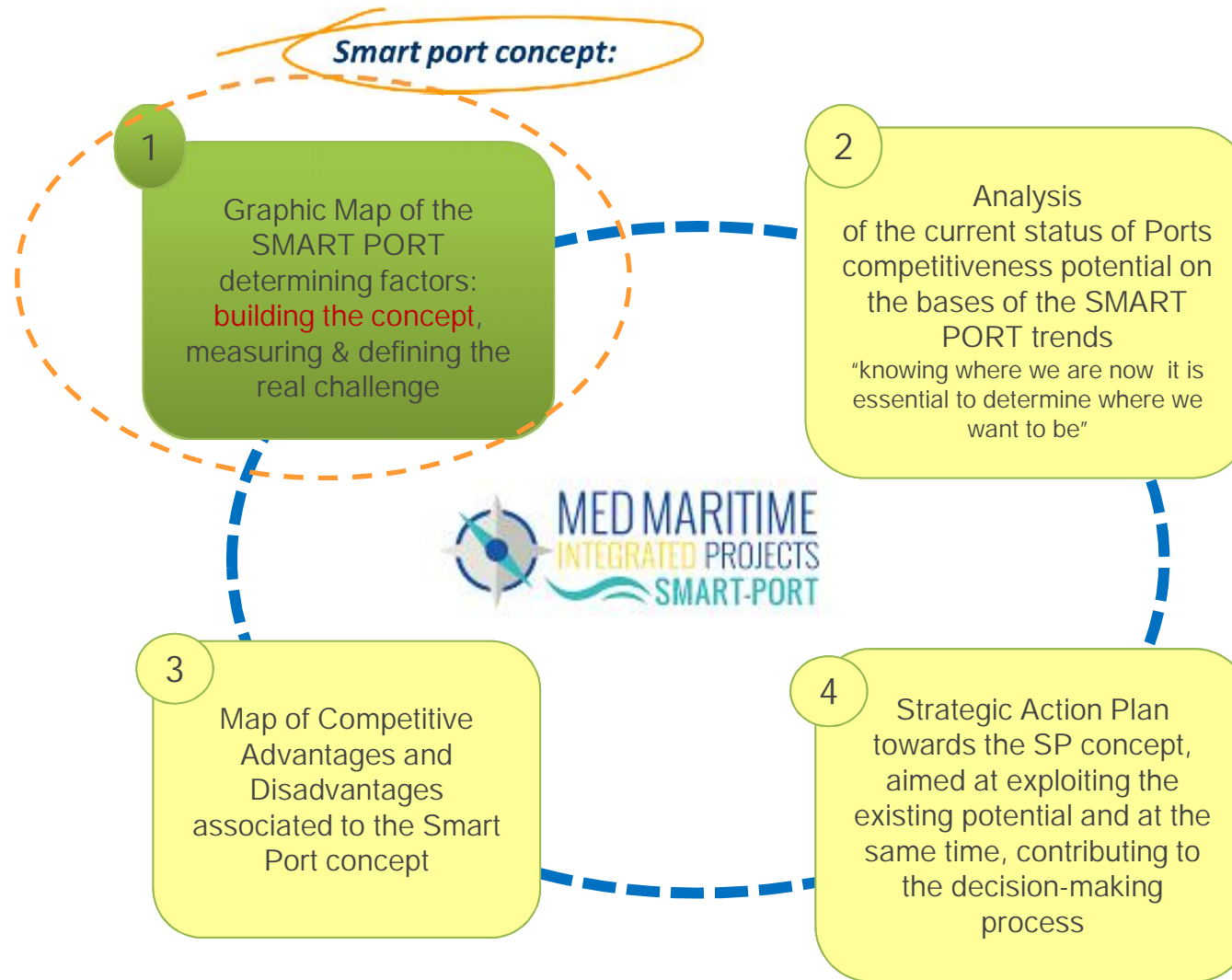
## Our Main References in Projects in Ports



**Smart port concept:**



# The smart-port concept. Process



***The smart-port concept.  
What is a SMART PORT?***

***“Smart Port” Concept is based on the “Smart City” Concept.***

- **Intelligent, green and integrated transport** (H2020 Programme).
- **Efficient and competitive** (through **technologies, automation** and application of tools as VSM).
- **Energy efficiency** (including renewable resources).
- **Driving force for the socio-economic development** of their city or region.
- **Resource-efficient, respectful with the environment, secure and seamless** for the benefit of citizens, the economy and society.



***Integration of different management areas to add value to the blue economy  
(Blue Growth Strategy)***



## *The smart-port concept. General scheme*

The methodology used to define the smart-port concept has been based on:

- Bibliography (> **74 references**)
- Partners and stakeholders (> 20 different organizations).

**3 areas, 23 criteria and 68 key performance indicators-** KPIs- (not linked to confidential or not-published data) have been defined.

The smart-port concept: oriented towards **easily measurable criteria & KPIs** by using information and data that it is **usually published by companies** (sustainability reports social responsibility report, etc.)

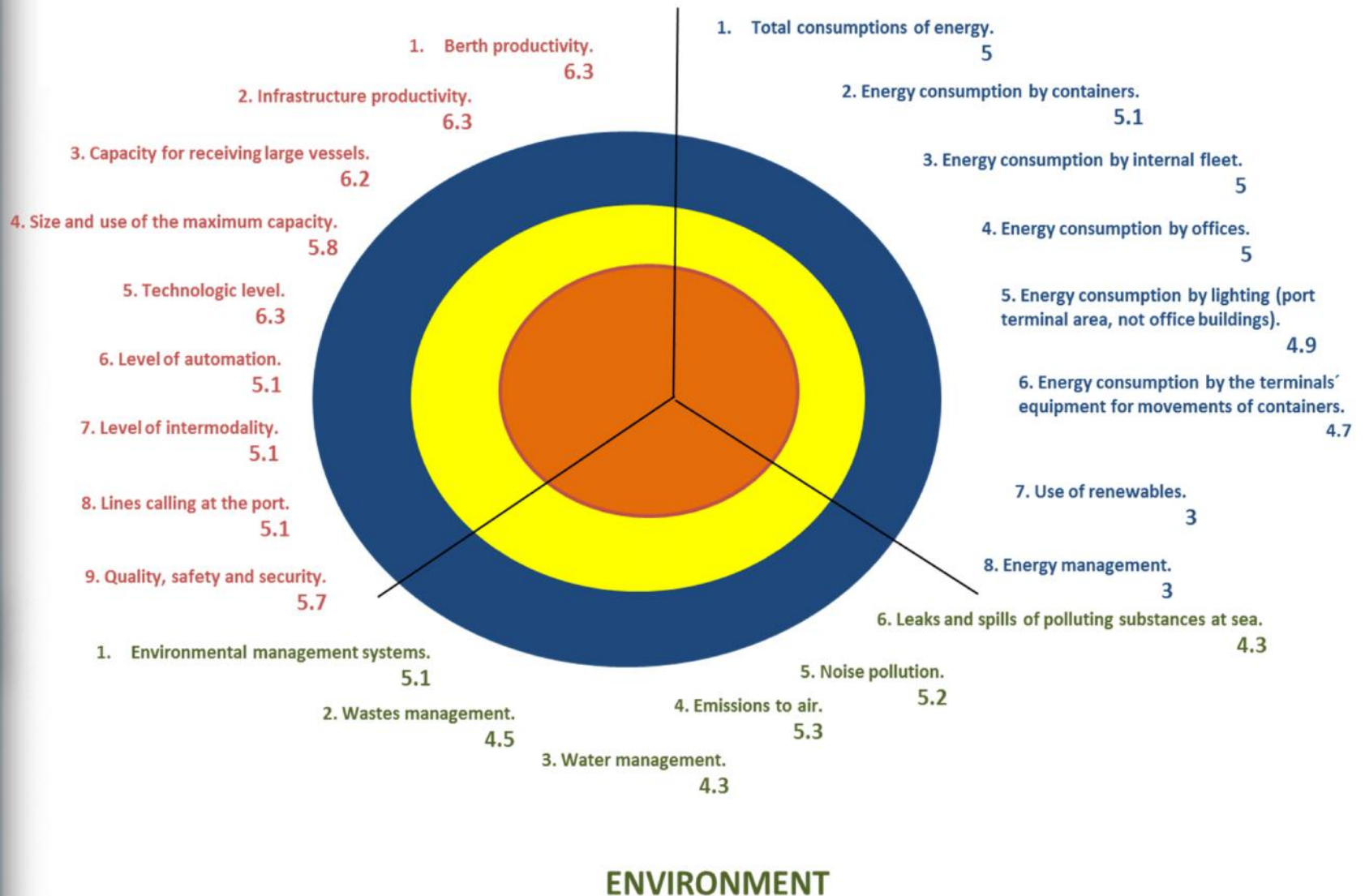




# The smart-port concept. Graphic Map of Factors

## OPERATIONS

## ENERGY CONSUMPTION



## Smart port concept:

## Highlights

- Port Authorities and Port Community **do not have a clear, exhaustive and updated overview of Smart Port's KPIs**, with the exception of the operational KPIs.
- Available data are often detected with different protocols, unit of measure, based on different time-scales and frequencies. -> **Difficulty to compare ports.**
- Previous considerations become more and more significant **regarding environmental and energy KPIs.**
- **ISO 14001 mainly & EMAS III** are the most used standards to ensure the environmental management.
- The improvement of the environmental management is boosted by networks as **ECOPORTS** or **IAPH** (Air quality and Greenhouse Gas Tool Box, very focused in LNG).



- There is **not enough control about energy consumption level** in ports.
- In general, Port Authorities **do not have enough information about the energy management of the terminals** operators and others private operations, **in order to establish a global energy management** in Port Area.
- **Huge possibilities of implementation & integration of renewable energies into ports facilities** in order to cover partially or totally their energy demand.
  - It will depend on port infrastructure, total energy demand, characteristics of the facilities, number of TEUS, etc.
- Some examples are:
  - **Wind technology**: off-shore or installed in the terminal area to supply electricity to cranes, electric forklifts, reefers, etc.
  - **Small wind**: integrated in buildings to cover the energy needs of office buildings, garage facilities or to charge electric cars or bus of the internal fleet in case that exists).
  - **Photovoltaic technology**: integrated in buildings to cover the energy needs of office buildings, garage facilities or to charge electric cars or bus of the internal fleet in case that exists).
  - **Biodiesel**: to supply fuel to internal fleet.
  - **Marine technologies**: wave and tidal energy conversion to supply electricity to cranes, electric forklifts, reefers, etc.

- Based on the next quantitative experience through measuring the SmartPort's KPIs, we should be able to **identify** ideas and opportunities to **develop innovation actions through projects in consortium**, in order to advance in Smart Port Concept in **Atlantic Area**, probably in the next fields:
  - Operational Synchronization and Optimization in real time
  - Dynamic Simulation
  - Energy Efficiency
  - Environmental Improvements
  - ....
- Keep working on related issues with Smart Port Concept, in order to integrate another important (and difficult to measure) factors, especially in Social Impacts.
- Keep working on Standarization Bodies in order to transfer this concept and experiences in the best way.

***Thank you!***



**Innovation and Technology**

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