The Smart Port model at the Port of Barcelona

Jordi Torrent
Strategy Director
Barcelona Port Authority

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The Port of Barcelona’s mission

“To contribute to the competitiveness of the customers of the Port by providing efficient services responding to their needs for maritime transport, land transport and logistics services.”

- Competitiveness of shippers, industries, logistics operators & shipping lines
- Attraction of new industries & distribution centers
Who are our clients?

- Shippers
- Logistics Operators
- Shipping Lines
- Citizens of Barcelona
Location of Port of Barcelona customers and hinterland

Strategic corridors
- Iberian North Western
- Iberian Central
- Southern France
- Central European
- Motorways of the Sea with Maghreb
- Motorways of the Sea with Italy

Intermodal terminals connected to the port by rail (containers and vehicles)
- Port of Barcelona customers and hinterland

Containers, finished vehicles and trailers
- Port currently connected to the port by Motorways of the Sea

- Lisbon
- Kornwestheim
- Ludwigsfeld
- Marckolsheim
- Tanger-Med
- Nador
- Oran
- Algiers
- Tarragona
- Porto Torres
- Civitavecchia
- Monzón
- Barcelona
- Bilbao
- Vigo
- Pamplona
- Vitoria
- Bilbao
- Albacete
- Valladolid
- Ávila
- Zaragoza
- Villafria
- Monzón
- Toulouse
- Perpignan
- Bordeaux
- Dourges
- Saarbrücken
- Ludwigshafen
- Kornwestheim
- Antwerp
- Paris
- Lyon
- Livorno
- Genoa
- Savona
- Civitavecchia
- Porto Torres
- 600 km
- 1,200 km
- Barcelona
- Madrid
- Tarragona
- 600 km
- 1,200 km

Hinterland
- Intermodal terminals
- Port of Barcelona

Strategic corridors
- Iberian North Western
- Iberian Central
- Southern France
- Central European
- Motorways of the Sea with Maghreb
- Motorways of the Sea with Italy
Leading international brands have theirs distribution centers in Barcelona

<table>
<thead>
<tr>
<th>National</th>
<th>Regional</th>
<th>Worldwide</th>
</tr>
</thead>
<tbody>
<tr>
<td>IKEA</td>
<td>AMAZON</td>
<td>INDITEX</td>
</tr>
<tr>
<td>In ZAL Barcelona they have 2 logistics warehouses: a dry one of 44,000 m² and a cold one of 17,000 m².</td>
<td>New logistics center of 63,000 m² in El Prat de Llobregat (Barcelona). The center will be part of its European network and is scheduled to open in autumn 2017.</td>
<td>From its logistics center in Tordera (Barcelona) distributes some of its brands worldwide and from ZAL Barcelona only its shops in Barcelona.</td>
</tr>
<tr>
<td>Carrefour</td>
<td>Schneider Electric</td>
<td>SEAT Nissan</td>
</tr>
<tr>
<td>Their factories are in Barcelona from where they distribute their cars by road, rail and sea, all over the world.</td>
<td>Integrated logistics centre in Sant Boi del Llobregat (greater area of Barcelona).</td>
<td>New logistics centre in Barcelona with 70,000 m² of warehouses handling most of the company’s internationals flows. “The proximity to the port was a decisive factor in choosing the location of our new logistics park”.</td>
</tr>
<tr>
<td>LIDL</td>
<td>HONDA Logistics</td>
<td>MANGO</td>
</tr>
<tr>
<td>Logistics platform for the Iberian Peninsula in Moncada i Reixac (Barcelona) and a warehouse of 36,000 m² in ZAL Barcelona.</td>
<td>Factory &amp; logistics centre in Santa Perpetua de la Mogoda (Barcelona) for distributing Spain &amp; Portugal &amp; Morocco</td>
<td>New logistics centre in Barcelona with 70,000 m² of warehouses handling most of the company’s internationals flows. “The proximity to the port was a decisive factor in choosing the location of our new logistics park”.</td>
</tr>
</tbody>
</table>
What do they request from a port?

CUSTOMERS
- Resilience
- Reliability
- Speed
- Transparency
- Cheap

CITIZENS
- Employment
- Sustainable development
Competitive logistics chain through the Port of Barcelona

China  Container ship arrives at the Port of Barcelona. Containers are unloaded and transferred to the train (Sunday 01:00)

Barcelona

Sunday
08:00
Container ship arrives at the Port of Barcelona.

06:00
Cargo train leaves the Port destination Madrid

Madrid

Sunday
16:00
Cargo train arrives to Azuqueca intermodal terminal (Guadalajara, Madrid)

18:00
Trucks pick up containers and transport them from the terminal to the nearby distribution centre in Madrid

World

Monday
10:00
From the distribution center the pieces of clothing are shipped throughout the world

Updated March 2019
Port of Barcelona strategy

European & Mediterranean logistics hub in order to serve our clients located in Spain, France, Italy, Portugal and North Africa

Expansion of the Port and Logistics areas
Largest part completed
New investments: Hutchison & Carnival, Grimaldi, Salamanca group...

Improved connectivity with hinterland and foreland
Hinterland strategy
Direct services with Far East with excellent transit time

Efficiency in the provision of services
Port services
3rd most productive port in Europe
JOC's Port Productivity Report 2014
Port de Barcelona

LOGISTICS
- Real-time information
- Traceability
- Automation and robotisation
- Physical and technological integration infrastructure
- Efficiency and predictability
- Seamless freight transport
- Smart maintenance
- Non-intrusive inspection

MOBILITY
- Connected vehicle
- Sustainable transport
- Autonomous transport
- Intermodality and syncromodality
- Smart traffic management
- Mobility management
- Connected infrastructure roads and rails
- Advanced parking

GOVERNANCE
- Transparency
- e-Administration
- Security
- Cybersecurity
- Business models
- Digital platform
- Enabling tech
- Strategy and management

ENVIRONMENT
- Circular economy
- Pollution reduction
- Waste management
- Energy efficiency
- Energy production
- Water management
- Alternative fuels
- Biodiversity

PEOPLE
- Port city
- Passengers
- Port heritage
- Diversity
- Social cohesion
- Nautical cluster
- Training and knowledge

ECONOMY
- Economic impact
- Competitiveness
- Employment
- Routes and connections
- Open innovation
- Cost reduction
- Financing

Port de Barcelona
SMART PORT - Technological vision

- PERIMETER INTRUSION SENSORS
- SMART TRAFFIC MANAGEMENT
- MARINE ENVIRONMENT SENSORS
- CONNECTED EMERGENCY SERVICES
- DIGITAL INFORMATION
- TELECOMMUNICATIONS INFRASTRUCTURE
- VIDEO ANALYTICS
- PASSenger GUIDANCE
- AUTOMATION
- BIG DATA
- CYBERSECURITY
- SMART PARKING
- CLIMATE AND POLLUTION SENSORS
- WORKPLACE MOBILITY
- SMART BUILDINGS
- SMART MAINTENANCE

Adequate legislation
Established processes and procedures
Digital training
SMART PORT - Some examples
Smart traffic management

PMS (PORT MANAGEMENT SYSTEM): related to the Maritime Control Tower, it manages maritime traffic and calling operations.
SMART PORT: Some examples
Smart port access

25,000 Vehicles per day
# SMART PORT: Some examples

Smart port access

## ACCESS TO PORT TERMINALS: Information about waiting time for entering to terminals and operation time inside port terminals

| Terminals | Resum Terminals | 09:00-09:20 del dia 2016-12-02
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BEST</strong></td>
<td>Time (in minutes) to access the terminal</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Number of trucks visiting the terminal in the last 20’</td>
<td>19 / 263</td>
</tr>
<tr>
<td></td>
<td>Number of trucks visiting the terminal accumulated</td>
<td></td>
</tr>
<tr>
<td><strong>APM (TCB)</strong></td>
<td>Time (in minutes) to access the terminal</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>Number of trucks visiting the terminal in the last 20’</td>
<td>21 / 294</td>
</tr>
<tr>
<td></td>
<td>Number of trucks visiting the terminal accumulated</td>
<td></td>
</tr>
</tbody>
</table>
SMART PORT: Some examples
Smart port access

BCN PORT BOOKING SYSTEM: reservation of a time slot to drop off or pick up a container in port terminals (in operation since September 2018)
SMART PORT: Some examples

Smart security

+180 Cameras
SMART PORT: Some examples

- Meteorology
- Sea & NOx surveillance
- CO2
- Weather stations
- Navigation radars
SMART PORT: Some examples
## SMART PORT: Some examples

<table>
<thead>
<tr>
<th>Service</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Railway stations</td>
<td>9</td>
</tr>
<tr>
<td>Trains per week</td>
<td>90</td>
</tr>
<tr>
<td>Surveillance cameras</td>
<td>+180 Surveillance cameras</td>
</tr>
<tr>
<td>Vehicles per day</td>
<td>25,000</td>
</tr>
<tr>
<td>Port calls per year</td>
<td>9,000</td>
</tr>
<tr>
<td>Railway terminals</td>
<td></td>
</tr>
<tr>
<td>Telecommunications services</td>
<td></td>
</tr>
<tr>
<td>Fibre optics network</td>
<td></td>
</tr>
<tr>
<td>Links to the network</td>
<td></td>
</tr>
<tr>
<td>Siding</td>
<td></td>
</tr>
<tr>
<td>Railway Infrastructure</td>
<td></td>
</tr>
</tbody>
</table>
Port Links

Build on-line your container transport chain through the Port of Barcelona
With all updated information about maritime and land transport services

Select
Type of container
20’, 40’ or 45’

Hinterland location
Bergerac (France)

Foreland port
Yantian (China)

Import or export?
Import

Inland mode: truck or rail
Rail

Rail service
TP Nova Barcelona-Bordeaux
121 km road haulage Bergerac-Bordeaux terminal

Maritime service
JADE/AE-11
Port Links

+ Information about port passage through Barcelona: transit time, Efficiency Network, taxes and tariffs
+ Possibility of enter your transport costs

Free access on line [http://www.portdebarcelona.cat/port-links](http://www.portdebarcelona.cat/port-links)
Where are we going?
From a technological perspective....