Presentation to Medcruise General Assembly
GUIDELINES FOR CRUISE TERMINALS
The World Association for Waterborne Transport Infrastructure (PIANC) is an international organization, in which professionals around the world join forces to provide expert advice on cost-effective, reliable and sustainable infrastructures to facilitate the growth of waterborne transport.

Established in 1885, PIANC continues to be the leading partner for government and the private sector in the design, development and maintenance of ports, waterways and coastal areas.
The terms of reference were set up by the Maritime Commission of PIANC in 2012 and they can be summarized as follows:

- Port development planned according to the new requirements of the cruise industry
- Accurate investigation of functional design of cruise terminals and facilities
- Preliminary audit phase, technical visits on cruise terminals, confrontation of experiences rules and regulations and best practices
- Members of the group of different disciplines
- A useful report to countries with significant tourist attraction
PIANC Working Group 152 comprises members around the world representing various disciplines: port facility managers, port terminal designers, port security experts and cruise-line managers.

These are:
- Mr. David Pino (Spain) – Chairman of WG152
- Mr. Tor Hellesen (Norway)
- Mr. Gary Ledford (USA)
- Mr. Andrew Pedrick McTigue (USA)
- Mr. Arie Mol (Netherlands)
- Mr. Jorge Nasarre (Spain)
- Mr. Don Oates (USA)
- Dott. Roberto Perocchio (Italy)
- Ms. Carla Salvadó (Spain) – Secretary of WG152
PIANC WG 152 was set up in summer 2013 and has met 4 times, once in Barcelona (2013), once in Palma of Mallorca (2014) and twice in Miami (2014, 2015).

Constant and fluent communication with all members has been crucial for the success of the report.

- The guideline was presented to the MarCom Committee in Brussels last February with great success,
- Final document has been released in July 2016. (www.pianc.org)

Several MarCom WG’s are mentioned in this document:
- MarCom WG33: “Guidelines for the design of fenders systems”
- MarCom WG121: “Harbour approach channels – design guidelines”
- MarCom WG158: “Masterplans for the development of existing ports- Technical guidelines”
- MarCom WG180: “Guidelines for protecting berthing structures from scour caused by ships”
Contents of the guideline

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Objectives of the Guideline

- Provide a technical guideline for assisting the development of cruise port facilities based on the newest trends of cruise ships and industry.

- The guideline covers all areas involved in the operation of a cruise ship:
  - waterside drivers
  - apron area
  - terminal building
  - ground transportation area
  - financial aspects
  - security
The cruise industry has experienced incredible growth over the past decade.

There has been an increase in the number of cruise shipping lines and in their fleets (the number and size of the ships).

In this evolving market context it is fundamental that port development can be carefully planned, with specific up-to-date cruise terminals and other cruise berthing facilities.
Cruise Industry Outlook

- Cruise tourism – **fastest growing sector** of tourist industry

- **Economic impact** of $119.19 billion + 940,000 jobs (CLIA, 2014)

- **Main Cruise destinations**: Caribbean (37%), Mediterranean (20%), North Europe (11%), Australia (6%)

- **Main Cruise companies**: Carnival (48%), RC (24%), NCL (11%), MSC (5%)
Cruise Industry Outlook

- Fleet of **389 cruise** vessels and plus 41 being ordered
- Trend for **mega-cruises** (+5,000 pax)
- Ports have developed an interest in advancing their cruise activities

*Figure 2.5: Cruise ship classification (PIANC WG 152, 2015)*
Planning a cruise terminal

• Location of the terminal in accordance with the master plan

• Provision for **different spaces** inside the cruise terminal:

![Diagram of a cruise terminal](image)

• Types of terminals:
  1. **Home port (turnaround)**
  2. **Port of call (transit)**
  3. **Interporting**
Waterside Design Drivers

Design of the waterside infrastructure

In order to design the waterside infrastructure, several considerations must be determined:

- Vessel characteristics.
- Use of facility as home port or Port of call
- Operational conditions (storm events)
- Navigation and berthing
- Number and size of vessels, etc.
Cruise vessels have continued to grow in all dimensions for over 40 years.

Following graphs identify the range of vessels being delivered over the past 15 years:

- **Gross Tonnage** has increased by 120% up to 110,000 GT
- **Average Cruise Passengers** has increased by 138% up to 3,100 pax
- **Average Length Overall** has increased by 50% up to 300 m
Cruise ships are frequently classified by size, associated with a particular commercial cruise line and not a more general industry-wide characterization.

Example of cruise line: Royal Caribbean

<table>
<thead>
<tr>
<th>ROYAL CARIBBEAN</th>
<th>GRT</th>
<th>LOA (m) (ft)</th>
<th>Draught (m) (ft)</th>
<th>Beam (m) (ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sovereign class</td>
<td>73,192</td>
<td>268.32 m (880 ft)</td>
<td>7.85 m (25.75 ft)</td>
<td>32.20 m (106 ft)</td>
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<tr>
<td>Vision class</td>
<td>78,340</td>
<td>279.00 m (915 ft)</td>
<td>7.90 m (25.92 ft)</td>
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<td>Radiance class</td>
<td>90,090</td>
<td>293.20 m (962 ft)</td>
<td>8.50 m (27.89 ft)</td>
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<td>Voyager class</td>
<td>137,276</td>
<td>311.12 m (1,020 ft)</td>
<td>9.10 m (29.86 ft)</td>
<td>38.60 m (127 ft)</td>
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<tr>
<td>Freedom class</td>
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<td>8.80 m (28.87 ft)</td>
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<td>347.17 m (1,139 ft)</td>
<td>8.82 m (28.94 ft)</td>
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<td>Oasis class</td>
<td>225,282</td>
<td>360.00 m (1,181 ft)</td>
<td>9.32 m (30.57 ft)</td>
<td>47.00 m (154 ft)</td>
</tr>
</tbody>
</table>
Waterside Design Drivers

Aspects to be defined are:

- **Vessel characteristics** (dimensions, tonnage, overhanging decks, etc.)
- **Navigation and berthing** (channels, turning basins, prevailing winds, sea level in port-tides, weather conditions, wave and current, berth length, etc.)

Overhanging decks – Oasis class

Turning basins

Berth length
Waterside Design Drivers

Aspects to be in the QUAY defined are:

- **Mooring systems** (configuration, bollard types, load capacities)
- **Fender systems** (configuration, fender types, load capacities)
- **Structural factors** (tidal variations-draught, clearance under keel, load capacities)
- **Protection from propeller erosion**
The apron is a fenced/secure area with access control at all entry/egress points.

**Home ports**: up to 30.00 m  
**Ports of call**: up to 22.00 m

Apron area provides space for operations of stevedoring (line-handling, baggage movement, processing of wastes), **provisioning**, emergencies, etc.

![Luggage loading](image1)

![Vessel provisions](image2)
Apron Area – Vessel doors

Doors with a variety of functions depending on the users in the apron area

- Provisioning door
- Luggage door
- Utility door

Legend:
1. Passenger & crew doors
2. Provisioning doors
3. Luggage doors
4. Utility doors (bunker, fresh water, garbage, etc.)
Apron Area - Gangways

There are several alternatives designs for gangways:

**Fixed gangway**: cost effective solution with a limited number of passenger doors

**Fixed telescoping gangway**: fixed at the building and adjustable to match vessel door

**Mobile adjustable gangway**: not fixed either the building or vessel end

**Design considerations**: width of the pier, gangway geometric design, minimum walkway clearance (2 m), disable persons (max 8%), minimize obstructions to the apron service area, stability during storm events, fully covered, construction materials, etc.
Demand for utility services at cruise vessel is considerable and impacts wharf design:

- Potable water
- Communications
- Bunkering
- Sewage & biosolids
- Garbage
- Ballast water
- Power – cold ironing
- Potential future considerations – LNG
Cruise terminals can be divided into **four categories** based on their use, longevity, adaptability and relationship within a context of adjacent development:

- **Temporary terminal**: initial stage with minimal needs – a building is not required
- **Convertible building**: other primary use of the building
- **Purpose-built terminal**: address the full needs and functionality of a cruise
- **Mixed-use terminal**: adds other uses like shopping and commercial areas.
Cruise terminal building

**Programme** – size and location of spaces in a cruise terminal

**Flow diagram** – definition of embarkation & disembarkation routes

**Building levels:**

<table>
<thead>
<tr>
<th>Ground Level</th>
<th>Area(m²)</th>
<th>Room Name</th>
<th>Area(m²)</th>
<th>Room Name</th>
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<tbody>
<tr>
<td>Room Name</td>
<td></td>
<td>Room Name</td>
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<td>Room Name</td>
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<tr>
<td>Baggage Screening</td>
<td>250</td>
<td>WC</td>
<td>4</td>
<td>WC</td>
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<td>Data / Comm</td>
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<td>4</td>
<td>WC</td>
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<tr>
<td>Mechanical</td>
<td>16</td>
<td>Porters</td>
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<td>Guardia Civil</td>
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<td>Cleaning Staff</td>
<td>17</td>
<td>Cleaning Staff</td>
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<tr>
<td>Detention Room</td>
<td>13</td>
<td>Provisions Warehouse</td>
<td>114</td>
<td>Provisions Warehouse</td>
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<tr>
<td>Post Screen Area</td>
<td>283</td>
<td>Warehouse</td>
<td>9</td>
<td>Warehouse</td>
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<tr>
<td>Embarkation Lobby</td>
<td>466</td>
<td>WC</td>
<td>28</td>
<td>WC</td>
</tr>
<tr>
<td>Port Police</td>
<td>29</td>
<td>Warehouse</td>
<td>7</td>
<td>Warehouse</td>
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<tr>
<td>Medical</td>
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<td>Bag Lay down</td>
<td>3045</td>
<td>Bag Lay down</td>
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<td>Mechanical / Elec</td>
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<td>Control Room</td>
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<td>Security Office</td>
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<td>Generator</td>
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<td>Terminal Operators Suite</td>
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<td>Main Electrical</td>
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<td>Transit PAX Exit</td>
<td>62</td>
<td>WC</td>
<td>5</td>
<td>WC</td>
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<tr>
<td>Crew</td>
<td>50</td>
<td>WC</td>
<td>5</td>
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<table>
<thead>
<tr>
<th>Level 1</th>
<th>Room Name</th>
<th>Area(m²)</th>
<th>Room Name</th>
<th>Area(m²)</th>
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<tbody>
<tr>
<td>Room Name</td>
<td>Elect/Comm</td>
<td>20</td>
<td>Bar Warehouse</td>
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<td>Health Sanitary</td>
<td>13</td>
<td>WC</td>
<td>66</td>
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<tr>
<td>Ship Agent</td>
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<td>13</td>
<td></td>
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<tr>
<td>Ship Agent</td>
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<td>Check-in Fitting Room</td>
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<td>Staff Dining</td>
<td>13</td>
<td>Check-in Supervisor</td>
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<tr>
<td>Warehouse</td>
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<td>Overall Lounge Seating</td>
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<tr>
<td>Chiller/AHU/Mech Zone</td>
<td>308</td>
<td>Retail Zone</td>
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<td>Immigration Offices</td>
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<td>A-Pass / Immigration</td>
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<td>Conference Room</td>
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<tr>
<td>Immigration Screening</td>
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<td>Elec / Comm</td>
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<td></td>
</tr>
<tr>
<td>Terrace</td>
<td>250</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Single storey  Multi-storey
Spaces inside a Cruise Terminal – Embarkation

- **Entry:** some will have a pre-queue for security
- **Bag drop:** includes area for baggage to be queued, processed through x-rays
- **X-ray luggage scanners:** Minimum 2 (when <3,000 pax) to maximum 4 (>5,000 pax)
- **Security:** linear arrangement of lanes, x-rays machines for luggage, security arcs, security staff and port police. Lanes of 12 x 3 m. Minimum of 2 Inspection lines (when <1,000 pax) to a maximum of 6 (>5,000 pax).
- **Ticketing (Check-in):** linear arrangement of counters. (recommended of 50 counters – 3 to 5 minutes per counter)
- **Waiting area:** ample seating and circulation area
- **Boarding corridor:** last element of the terminal building (1.5 -6 m)
- **Gangway:** critical link for passengers between ship and terminal
Spaces inside a Cruise Terminal – Disembarkation

- **Gangway**: critical link for passengers between ship and terminal
- **Boarding corridor**: separate the embarking & disembarking flow
- **CIQP**: Customs, immigration, quarantine and police spaces. Each country has its own regulatory criteria.
- **Baggage lay down**: largest place of the building. Color coded grouping. Required space (0.5 -1 m² per pax). Sophisticated method - via carrousels (min. 2)
- **Customs**: Include processing counters, office and other program elements described in CIQP.
- **Meet & greet**: A place to meet. Last space in the terminal before exiting.
Cruise transit terminal

Cruise transit terminals

Open space

- **Protected area with tent:** security, customs, … 0,25 – 0,5 m²/pax
- **Toilets:**
- **Flow barriers** initial stage with minimal needs – a building is not required

**GTA: Space of** 1-2 m²/pax with buses, taxis, parkin.
Ground transportation area (GTA)

Space next to the terminal building and the quay operational area where passengers arrive from all modes of transport.

Following spaces are required:

- **Coaches Park**: for shuttle and tour buses
- **Taxi ranks**: with walkway to pedestrians of a width of at least 1.5 m
- **Kiss and ride**: short stay parking area for people accompanying the passengers
- **Parking**: for employees, ship agents, porters and all people working
When calculating the spaces required in the GTA area, the following issues should be considered:

- Type of cruise vessel operations
- Port-city distance
- Transport systems available
- Other factors – local, regional and environmental considerations

For a first approach, a mobility study will be necessary.
A recommended process to **dimension modal spaces** of a cruise terminal could be as follows:

1. Number of passengers in the Peak Hour

2. Modal distribution (%) (passengers per modal transport)

3. Vehicles per modal transport

4. Spaces required per modal transport
Financial aspects – Business plan

Business plan

- Must provide a **long-term vision** of the cruise activity, **establish the goals** to be achieved and **describe the strategy** to be followed to achieve these goals.

- Should include the **identification** of the **main actors** involved:

  - Port authority
  - Government
  - Terminal operator
  - Concessionaire
  - Others
  - Cruise line

- Related to the **Marketing plan** & the **Port master plan**.
# Financial aspects – Costs and Source of revenue

## Cost and investment

### Infrastructure
- Marine infrastructure: channel, basin, dock.
- Land-side of the terminal: land, pavement, terminal building, gangways, etc
- GTA logistics infrastructure: makes a significant contribution to the wellbeing of the pax

## Operating & maintenance
- Operating costs
- Maintenance
- Fees

## Source of revenue
- Cruise passenger head tax/tariff
- Harbour dues and fees
- Revenues from providing ship services like water, collection of sewage and waste, etc
- Licenses for buses, taxis, water taxis, booths and shops
- Renting of land for shops and food and beverages
- Crew facilities including phone and internet services
- Security fees per passenger.
- Parking fees (particularly at a home port).
Security

- Cruise ports must comply with the security regulation:
  - SOLAs CHAPTER XI-2 and the ISPS Code (IMO), December 2002

- It is also necessary to take into consideration the European regulations (EU Regulation 725/2004, EU Directive 2005/65, EU Regulation 324/2008) in European ports and the American regulations for US ports.

- Cruise lines also have their own requirements (CVSSA 2010)

- Port facility assessment plan
THANK YOU
FOR YOUR ATTENTION