



NATIONAL TECHNICAL UNIVERSITY OF ATHENS
DEPARTMENT OF CIVIL ENGINEERING
LABORATORY OF HARBOUR WORKS

PORT SERVICES, INFRASTRUCTURE AND EQUIPMENT FACILITATING CRUISE LOGISTICS

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**«Digitization in the Maritime Sector: The creation of a
supply chain platform for the cruise industry»**

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CRUISE LOGISTICS

NEW SHIPS AND DRY DOCKING

- Machinery
- Furniture
- Life boats etc
- Moving and staging equipment for onboard entertainers
- Inbound and outbound supply

TURNAROUND TRIPS

- Food and beverage etc
- Fresh water
- Bunkering
- Crew mail collection and distribution
- Supplies for the on board shops
- Ship waste
- Inbound and outbound supply



FUNCTIONS BEFORE DURING AND AFTER CRUISE TRIP RELATED TO LOGISTICS

- Sea freight, air freight, train freight, truck freight
- Supply chain visibility for both dry and temperature-controlled cargo, including inventory visibility
- Food and beverage, hotel, and technical supplier management
- **Warehousing** and distribution of all food and supplies (including dry, temperature-controlled, and high value)
- Purchase order management
- On board shops procurement and coordination
- Equipment (moving and staging) for onboard entertainers
- Coordination of goods for turnaround days
- Emergency supplies, spares
- Logistics management for ship repairs in dry dock and getting new ships into the water



FUNCTIONS BEFORE DURING AND AFTER CRUISE TRIP RELATED TO THE PORT

- Inbound and outbound supply management
- Shiplside and pier-side deliveries
- Pier coordination
- Vessel offloading/reverse logistics
- Luggage management
- Passengers
- Crew mail collection and distribution



PORT

PORT MANAGEMENT

- Port Authority
- Terminal operators
- Services providers

PORT FACILITIES

- Infrastructures
- Equipment
- Services



PORT ABILITY TO PROVISION SHIPS

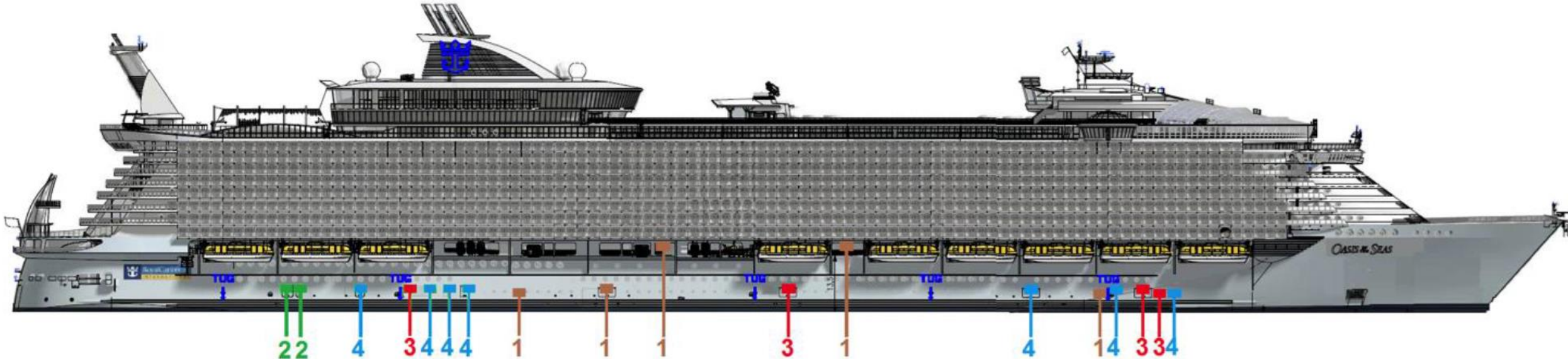
A ports ability to provision ships is based mainly on:

- Tides
- Pier height vs shell door
- Available space on the pier.



DOORS OF A CRUISE SHIP

OASIS OF THE SEAS



22

4

3

4

4

4

1

1

1

3

1

4

14

3

3

4

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

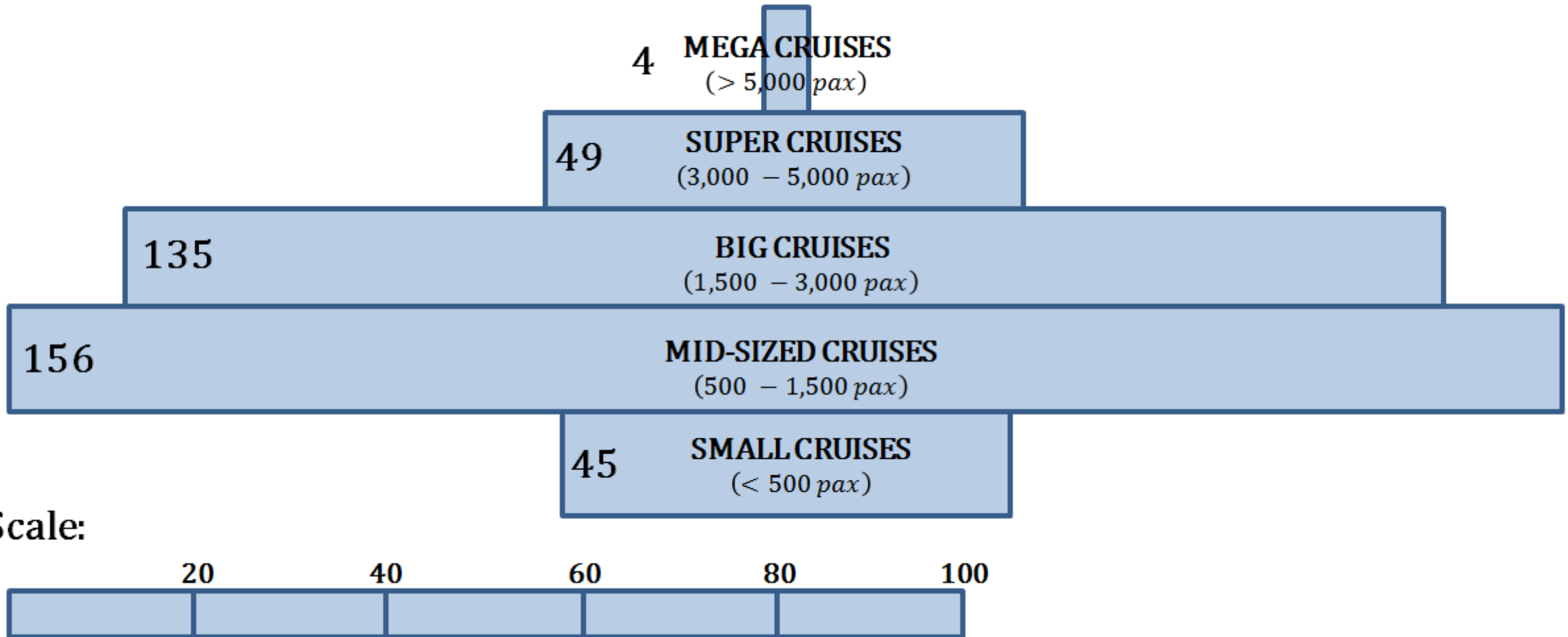
PROVISIONS FOR 10 days Trip

- 850 kg of coffee
- 3,300 kg of cheese
- 1,000 new light bulbs
- 30 replacement TVs
- 10,272 rolls of toilet paper

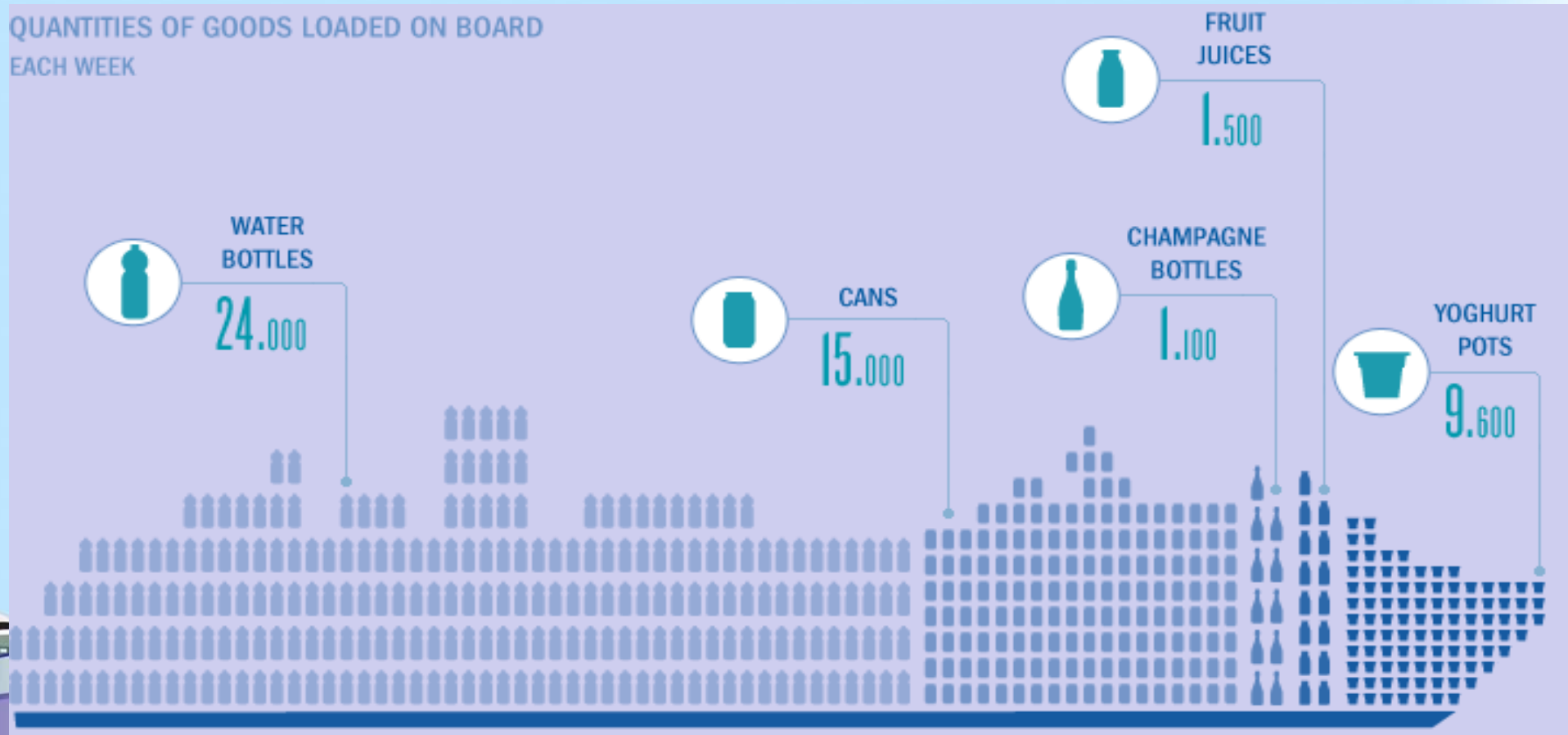
CRUISE SHIP	PASSANGERS	CREW
LUXURY	1	1
STANDART	1	0.3



Cruise ship classification



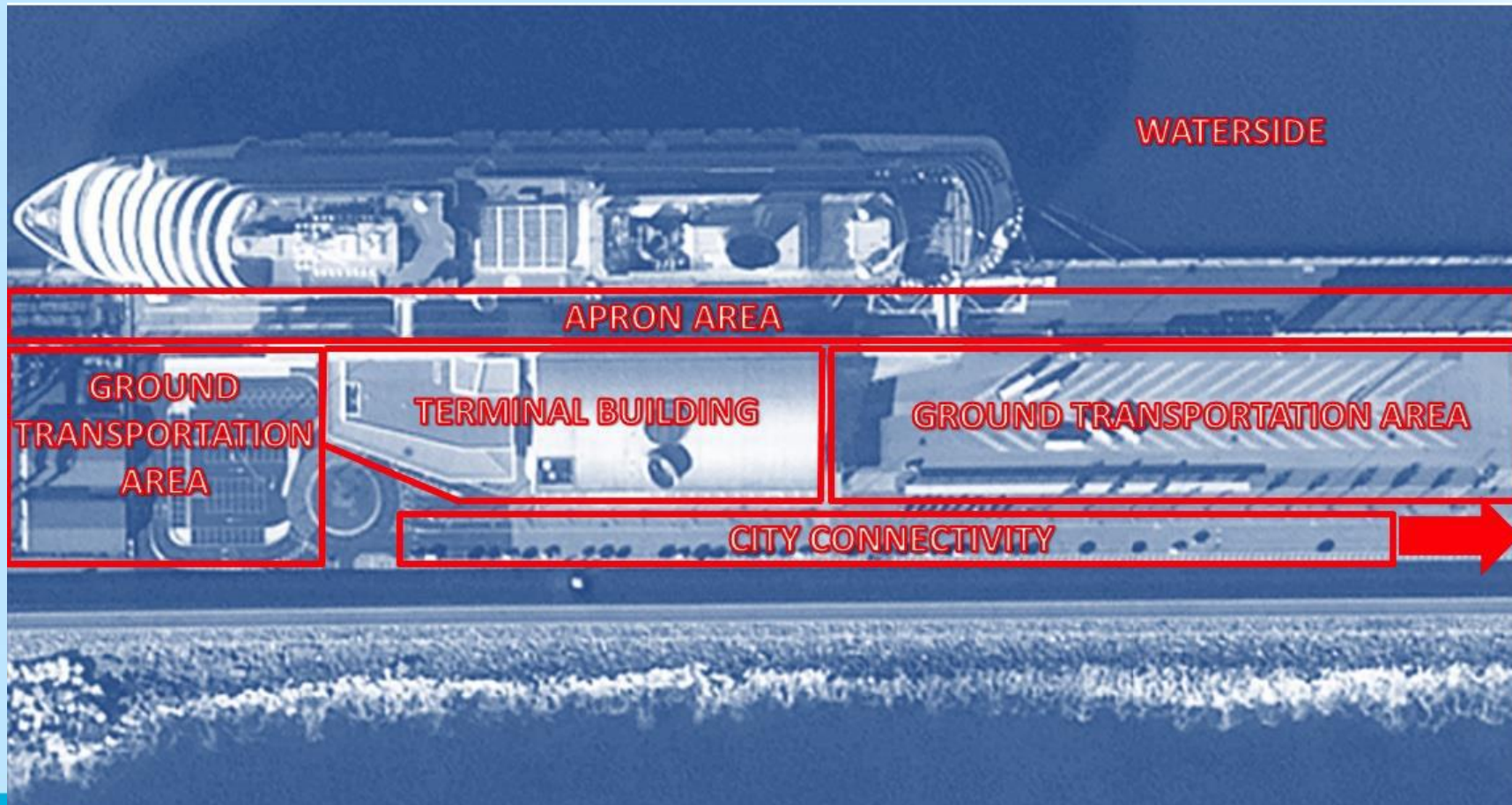
PROVISIONS



European Directive on waste (Reduction, Re-use, Recycling) and MARPOL Annex V.



Different areas involved in the operation of a cruise ship



(Port of Barcelona, 2015)

PORT INFRASTRUCTURES

- Sea side
- Quay walls – berths
- Apron area
- Buildings
 - Cruise terminals
 - Warehouses
- Ground Transportation Area (GTA)



APRON AREA

- Existing Piers: 6.0-9.0 m
- Home Port: ~ 30.0 m
- Port of call: 12.0-22.0 m



(Port of Miami, 2015)

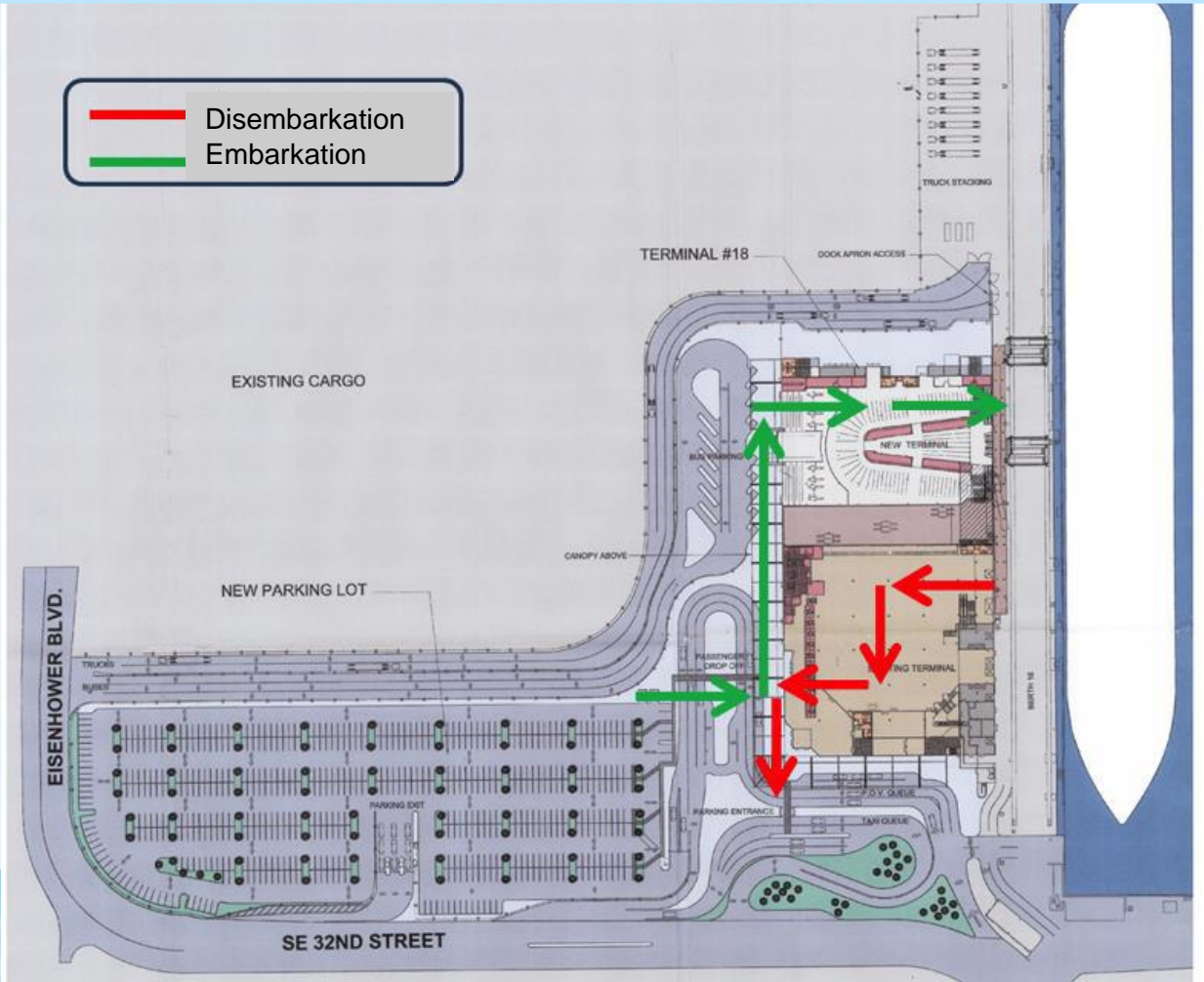
For home port facilities: 8-12
hours embarkation
/disembarkation

OPERATIONS IN THE APRON AREA

- Stevedoring services including line-handling, baggage movement, utility connections
- processing of waste streams from the vessel.
- Provisioning – access for vehicular circulation, parking, unloading, and access for load/unload equipment (typically forklifts). ~ 20-40 Trucks
- Emergency vehicle access.
- Provision for site-specific needs such as police, customs, and terminal-tenant operations-control vehicles



CRUISE TERMINAL BUILDING



Source: PIANC WG 152, 2015)

CRUISE TERMINAL BUILDING

- Entrance
- **Baggage drop-off, X-Ray Luggage Scanners**
- Waiting area
- Tickets, control, etc
- Restaurants, malls etc
- **Staff offices**
- Special spaces
- **Embarkation/Disembarkation**



WAREHOUSES

Not necessary in the port area. Value added for the port

- Inventories
- Dry storage
- Temperature-controlled supplies
- High value items



GROUND TRANSPORTATION AREA (GTA)

- Close to the Terminal Building
- Connected to the public transportation system (roads, train, airport)
- Clarify and if possible separate disembarkation and embarkation flows
- Clear signs for pedestrians and vehicles
- Good coordination between operational staff from the ship, the GTA and traffic police, if any



GTA

SUB AREAS

- Coach Park
- Taxi Ranks
- Short term Parking (Kiss and Ride)
- Long Term Parking
- Regional and Local Connectivity

Technical Requirements

- Paving
- Signs and Marking
- Area Lighting
- Canopies



EQUIPMENT

- Gangways
 - Fixed Gangway
 - Fixed Telescoping Gangway
 - Mobile Adjustable Gangways
 - Other types
- Forklifts – gears
- Barges
- **Fenders barges**
- X-rays



Gangways



Fixed gangways



Fixed telescoping gangway



Mobile Adjustable gangways



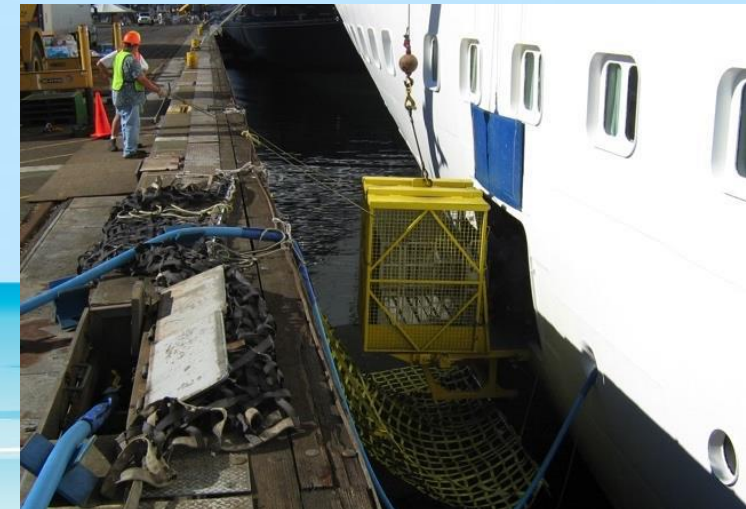
Other gangway

LIFTS etc



Source: PIANC WG 152, 2015)

EQUIPMENT



SECURITY



Source: PIANC WG 152, 2015)

PORT SERVICES related to logistics

- Bunkering (by providers)
- Ship waste collection (By providers)
 - Oily wastes
 - Sewage
 - Garbage
- Fresh Water
- Ballast Water
- Electricity (cold ironing)



BUNKERING BURGERS





Liquid waste





Solid Waste



Fresh Water

It has been estimated that a 3,500 PAX vessel can use approximately 750 - 800 m³ of fresh water per day or 5,5 million m³ during a 7-day excursion.

Most of this water demand is provided through on-board desalination systems.

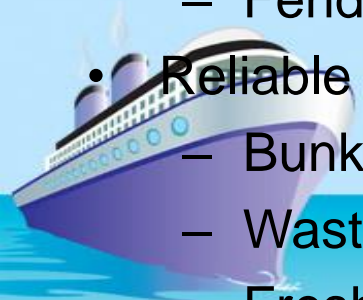
- However, it is not uncommon for modern cruise vessels to take on approximately 550 to 750 m³ of water while at the pier.
- To accomplish this, a fresh-water capacity of at least 25 tph per hose is recommended.



CONCLUSION

To facilitate the procedure of the procurements of a cruise ship are needed by the port side especially:

- Space in the apron area
- Well organized space in the Cruise Terminal Building
- Well organized space in GTA
- Fast procedures
- Services to the crew
- Environmental friendly policy
- Special equipment like:
 - Gangways
 - Lifts
 - Fender barges etc
- Reliable providers of port services as:
 - Bunkering
 - Waste reception facilities
 - Fresh water



TO SUCCEES

Coordination between all stakeholders

- Port Authority
- Terminal operator
- Port Services providers
- Logistics providers
- Ship companies



QUESTIONS?

THANK YOU FOR YOUR ATTENTION!



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