

## **Case Study: “Solving intermodal connection problems”**

Port Med is a rapidly growing Mediterranean port located near a dense urban area. It handles 2.5 million TEUs annually and serves as a key node in the European-Asian trade corridor. Despite its strategic location and multimodal potential, the port is plagued by chronic inefficiencies in its intermodal connections.

Recent audits revealed:

- Long truck queues at terminal gates
- Underutilized rail links despite proximity to national freight corridors
- Poor coordination between maritime schedules and inland transport
- Rising pressure from environmental groups and local residents over emissions and noise

The port authority has launched a task force to address these issues, and your team has been appointed as external consultants to diagnose the problems and propose actionable solutions.

Port Med is losing competitiveness due to poor intermodal integration. Your mission is to:

- Identify the root causes of intermodal inefficiencies
- Propose short-term and long-term solutions
- Balance operational performance with environmental and social constraints

### **Key Challenges to Solve**

#### **1. Infrastructure Misalignment**

- Rail terminal is located 3 km from the main container yard, requiring truck shuttles
- Barge terminal operates only 3 days a week due to staffing shortages
- Road access is limited to two congested urban highways

#### **2. Scheduling Conflicts**

- Ships often arrive outside planned windows, disrupting inland transport coordination
- Rail operators complain about unpredictable container availability
- Truckers face long wait times due to manual gate processing

#### **3. Stakeholder Friction**

- Terminal operators blame shipping lines for poor communication
- Local government demands a 20% reduction in truck traffic within 2 years
- Shippers are reluctant to switch from road to rail due to reliability concerns

### **Goals to reach**

Prepare a strategic diagnostic and solution plan addressing:

## **Root Cause Analysis**

- Use tools like fishbone diagrams or flow mapping to identify systemic issues
- Prioritize problems based on impact and urgency

## **B. Solution Design**

- Propose infrastructure upgrades or redesigns
- Recommend digital tools (e.g., real-time scheduling platforms, automated gate systems)
- Suggest policy incentives to shift cargo to rail and barge

## **C. Sustainability & Community Impact**

- Design a green logistics strategy to reduce emissions
- Propose a stakeholder engagement plan to build trust and cooperation

## **D. Performance Metrics**

- Define KPIs to measure success (e.g., modal share, dwell time, emissions)
- Create a dashboard concept for ongoing monitoring

## **Report at the end**

- A team presentation simulating a pitch
- A written report (max 2,500 words) with a phased action plan
- A stakeholder matrix showing interests, influence, and engagement strategies

## **Challenge**

Simulate a disruption scenario: a cyberattack disables the port's scheduling system for 72 hours. How would your intermodal strategy adapt?

# **Group Simulation Exercise: *Crisis at Port Med***

## **Overview**

Port Med is facing a logistics crisis. A surge in container traffic, combined with outdated infrastructure and poor modal coordination, has led to severe congestion, missed rail connections, and rising public pressure over emissions and noise. The port authority has called an emergency stakeholder summit to resolve the crisis and redesign the intermodal strategy.

You will simulate summit, with each student representing a key stakeholder.

The goal: negotiate a shared action plan to improve intermodal connectivity, reduce environmental impact, and restore operational efficiency.

- 1- Stakeholders to identify 1 for each student (7 to find)
  - You receive your brief after identifying your stakeholder identity
- 2- Make assumption of missing information to solve problems
- 3- NEGOCIATION : A list of non-negotiables and trade-offs
- 4- To solve
  - Modal share targets
  - Infrastructure investments
  - Digital coordination tools
  - Environmental commitments
  - Crisis response protocols
- 5- Draft a joint action plan with agreed KPIs and timeline to be realistic

## **Port Med : Quantified Flows & Commodity Breakdown**

### **Annual Throughput Overview, suggest modal shares**

#### **Mode of Transport Volume (TEUs) Share of Hinterland Traffic**

Deep-Sea Shipping

Rail Freight

Inland Barge

Trucking

**Goal by 2030:** Shift modal shares to 35% rail, 15% barge, and reduce trucking to 50%.

### **Commodity Breakdown by Mode**

<b>Commodity Type</b>	<b>% of Total Volume</b>
Consumer Electronics	22%
Automotive Components	18%
Agricultural Products	15%
Chemicals & Liquids	12%
Fashion & Apparel	10%

<b>Commodity Type</b>	<b>% of Total Volume</b>
Machinery & Equipment	8%
Food & Beverages	8%
Construction Materials	7%

## **Flow Map Concept (Layout)**

Port Med s divided into five operational zones :

1. **Berth Zone (South)**
  - 12 deep-sea berths
  - 3 barge docks
  - Adjacent container yard
2. **Container Yard (Central)**
  - 6 stacking blocks
  - Reefer zone for perishables
  - Automated guided vehicle lanes
3. **Rail Terminal (North-East)**
  - 6 rail tracks
  - Connected via shuttle corridor to yard
  - Linked to national freight corridor
4. **Truck Gate Zone (West)**
  - 10 OCR lanes
  - Smart appointment system
  - Bypass route to avoid urban congestion
5. **Logistics Park & Dry Port (North)**
  - Warehousing, cross-docking
  - Customs clearance
  - Value-added services (e.g., packaging)