UX/UI Case Study On Ocean Freight E2E Experience

A Shipment Delay Management System

Transparent Delay Management and Connecting Stakeholders with Updated ETA

Mumbai —●— Dubai

By Kavyasree A

Problem

Assumptions

Stakeholder Mapping

Storyboarding

Persona Creation

Journey Mapping

UI Design

Problem Context

The cargo ship "OCIAN GLORY" is carrying a shipping container of textiles from Mumbai to Dubai via ocean freight. During transportation there is an engine failure on the ship. Due to the mechanical failure, the entire shipment is delayed- by 2 days. The vessel also contains multiple shipments from multiple customers. A signal needs to be communicated to the respective ports and both the buyer and seller of the goods about the delay.

Engine
Failure Cause

+2 Days
Delay Duration

5
Affected Stakeholders

Challenges

- **Delayed Decision-Making:** Without timely, clear information, stakeholders can't make contingency plans quickly.
- **Lack of End-to-End Visibility:** The full journey of the shipment from origin to destination is not presented in a unified, accessible way.
- **Manual Follow-ups:** Operations teams spend time chasing confirmations and sending repeated updates, which increases stress during incident handling.

Solution

- Right Information → Right Persona → Right Time
- AI integrated Single source of truth for updates (no conflicting info from different channels).
- Multi-platform touch points (desktop dashboard for operations, mobile app for customers).

Project Assumptions

1 Incident Trigger

- Mechanical failure (engine breakdown) is detected
- The delay classification is quoted “Major”

2 Communication Framework

- Receives the incident alert from captain and repair crew.
- Notifying In-House Mechanics
- Communication to is multi-channel (push notification, email, in-app alert, optional SMS for critical stakeholders). reason for delay, ETA change.

3 Action Steps

- Updates the dashboard with immediate action required.
- Mechanics start working.
- Calculates the revised ETA using repair time estimates, weather conditions and distance to next port, with help of AI.
- Buyers/Sellers Receive notification with updated ETA and can acknowledge update or suitable decision can be made.

4 Resolution

- Repairs completed onboard; vessel resumes voyage.
- Final stakeholder communication sent: “Incident Resolved & Vessel Back on Route.”

Factors to calculate the ETA: Issue diagnosing time, Vessel's Current Position & Speed, Weather condition, Route traffic, Port Availability

Stakeholder Mapping

Operations Manager

Goals

- Monitor all vessels
- Manage delays
- Coordinate responses

Pain Points

- Information overload
- Multiple systems
- Time pressure

Captain & Repair crew

Goals

- Diagnose and resolve technical issues efficiently
- Coordinate support

Pain Points

- Unexpected technical breakdowns
- Time pressure
- Unpredictable weather/sea conditions

Buyers

Goals

- Track shipment
- Plan inventory
- Meet deadlines

Pain Points

- Lack of visibility
- Delayed updates
- Financial impact

Freight Forwarder

Goals

- Coordinate logistics
- Minimize costs
- Customer satisfaction

Pain Points

- Complex coordination
- Cost overruns
- Multiple parties

Port Authority

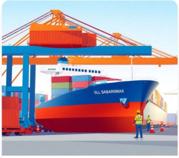
Goals

- Manage berth allocation
- Optimize port operations
- Safety compliance

Pain Points

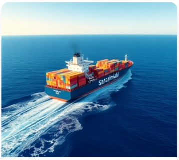
- Schedule changes
- Resource allocation
- Congestion management

Story Boarding



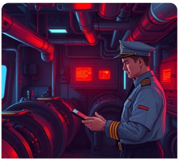
Departure preparation

At Mumbai port, the **seller** loaded textiles into the OCIAN GLORY cargo ship, and final preparations are made for its departure on **August 01** to dubai



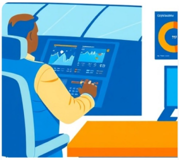
Departed From Mumbai Port

The ship started sailing smoothly, expecting the journey progressing exactly as planned. ETA expected is **August 10.**



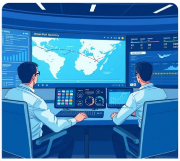
Engine Failure Alert

Unfortunately, a critical issue occurred, the ship got stuck in the midway of the sea on **August 08** . After 3 hours of issue diagnosing Captain confirmed engine failure and Identified **48 hrs** as repair time.



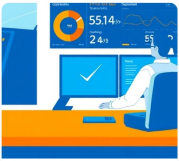
Crisis Communication

The **captain** updates the **Operations Manager**, about the issue. After diagnosing, engine failure confirmed and 48 hours as repair duration. **48 hrs delay** noted. Time to take necessary actions.



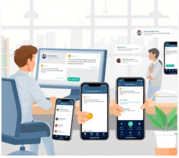
Port Authority Coordination

Operations Manager contacts Dubai **Port Authority** via system to check port availability to reschedule arrival.



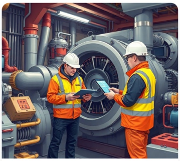
Weather & Traffic Analysis

Operations Manager Check sea traffic patterns & weather conditions for **Aug 10.** Shows favorable conditions,



Stakeholder Notifications

Operations team sends delay updates to **freight teams** and other **direct buyers**. Mobile push notifications



Engine Repairs Underway

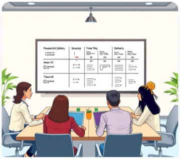
Repair crew working. **Captain** documents repair progress, uploading status updates to central tracking

But unfortunatley the next available slot is **75 hrs** later.

indicates no further delay than repair time and port availability.

delivered, Shipment delayed by **75hrs** due to engine issue.

system.



Revised Planning Session

Freight teams conduct emergency planning meetings. planing revised delivery schedules and contingency plans for **75 hrs** delay.

Voyage Resumed

OCIAN GLORY resumes journey. **Captain** confirms journey resumes notification to **OP manager.** Update to port authority & stakeholders on revised ETA ie, **Aug 13**.

Successful Arrived at Dubai

Arrived at Dubai port on **Aug 13.** Unloading the containers and Planing for Warehouse transfer.

Persona 1: Captain/ Repair Crew

Captain Rajesh Kumar

Ship Captain & Chief Engineer

Global Maritime Logistics

Goals & Motivations

- ✓ Ensure crew safety during technical emergencies
- ✓ Minimize vessel downtime through quick repairs
- ✓ Maintain clear communication with shore operations
- ✓ Protect cargo and vessel integrity

Frustrations & Pain Points

- ⊗ Limited spare parts inventory on board
- ⊗ Pressure from shore operations for quick fixes
- ⊗ Managing crew stress during extended delays
- ⊗ Weather constraints affecting repair work

Professional Background

28 years at sea, Master Mariner license, Chief Engineer certification. Managed 150+ voyages across Indian Ocean routes. Expert in engine diagnostics and emergency repairs.

Engine Systems

Crisis Management

Crew Leadership

Responsibilities

- Coordinate repairs with crew
- Monitor engine performance and diagnostics
- Report status updates to operations center

Preferred Channels

System Dashboard

Satelite Phone

Expert with marine electronics, satellite communication, and diagnostic systems

Persona 2: Operations Manager

Sarah Chen

Senior Operations Manager

Global Maritime Logistics

Professional Background

15+ years in maritime logistics, managing 200+ vessels across Asia-Pacific routes. MBA in Supply Chain Management. Certified in Port Operations and Maritime Law.

Maritime Operations
Crisis Management

Goals & Motivations

- Minimize delay impact on customer relationships
- Maintain 99% communication accuracy with stakeholders
- Ensure regulatory compliance across all ports
- Optimize operational efficiency during crisis

Needs

- Real-time vessel tracking and alerts
- Automated ETA calculation and updates
- Multi-stakeholder communication tools
- Comprehensive incident documentation

Frustrations & Pain Points

- Manual coordination across multiple systems
- Repetitive stakeholder queries during delays
- Inconsistent data between tracking systems
- Time-consuming manual ETA calculations
- Delayed incident documentation and reporting

Preferred Channels

- Dashboard
- Mobile Alerts
- Email Reports
- Direct Calls

Expert with maritime software, dashboards, & mobile systems

Persona 2: Direct Buyer

Ahmed Al Rashid

CEO & Procurement Manager

Al Rashid Trading LLC

Professional Background

Founded import/export business 8 years ago, specializing in textiles and consumer goods from Asia. Manages $2M+ annual imports, serves 50+ retail customers across GCC region.

Import/Export
Retail Supply Chain

Goals & Motivations

- Maintain reliable supply chain for retail customers
- Minimize financial impact from delivery delays
- Keep customers informed and satisfied
- Plan inventory and cash flow effectively

Needs

- Instant delay notifications on mobile
- Clear ETA updates with confidence levels
- Business impact assessment tools
- Direct communication with shipping company

Frustrations & Pain Points

- Learning about delays from customers first
- Vague or inconsistent delay information
- Difficulty calculating business impact
- Lost sales from inventory stockouts
- Time-consuming communication chains

Preferred Channels

- Mobile Push
- Email Updates
- WhatsApp
- Phone (Critical)

Comfortable with mobile apps, prefers simple and intuitive interfaces

User Journey Mapping

Ship Captain

Managing SSL SABARIMALAI engine failure crisis

	1 **Incident Detected**	2 **Impact Assessment**	3 **Communication Triggered**	4 **Monitoring & Follow-up**	5 **Post-event Report**
User Actions	• Engine failure detected	• Conducts engine tests • Verifies all systems operational • Confirms failure	• Reports to operations manager • Notifies port authority Dubai • Briefs crew on situation • Requests repair assistance	• Coordinates with Dubai port • Reviews repair procedures • Manages crew safety protocols • Updates repair progress	• Supervises repair operations • Monitors safety procedures • Provides regular updates • Manages crew schedules
Emotions	😨 Concerned & Alert	😐 Alarmed & Focused	😰 Urgent & Responsible	😐 Cautious	🙂 Determined & Vigilant
Pain Points	• Thorough testing takes time • Pressure to resume quickly • Documentation requirements	• Pressure to make quick decisions	• Multiple communication channels needed • Sometimes Uncertainty about repair timeline	• Availability of in house repair crew	• Constant safety monitoring needed • Repetitive status reporting
Opportunities	• AI-powered engine monitoring • Predictive failure alerts	• AI-based ETA recalculation based on repair time, traffic and weather calculation	• AI-based Priority escalation to immediate action plans.		

Operations Manager

Managing SSL SABARIMALAI engine failure incident and stakeholder communication

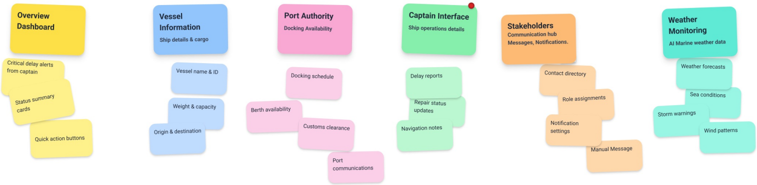
	1 **Incident Detected**	2 **Impact Assessment**	3 **Communication Triggered**	4 **Monitoring & Follow-up**	5 **Post-event Report**
User Actions	• Receives alert notification from captain. • Reviews vessel status dashboard	• Analyzes situation and schedule impact • Checks port availability in Dubai to reschedule ETA	• Initiates stakeholder & freight notification • Schedules automated updates	• Tracks repair progress hourly • Updates ETA as repairs advance • Responds to stakeholder queries • Coordinates with port authority	• Logs incident details and resolution
Emotions	😨 Concerned & Alert	😐 Focused & Analytical	🙂 Confident & Proactive	😐 Waiting & Monitoring	🙂 Relieved & Reflective
Pain Points	• Multiple alert systems creating noise • Delayed notification from vessel • Unclear severity assessment	• Manual calculation of delays • Fragmented data across systems • Port availability unclear	• Time-consuming individual contacts	• Repetitive stakeholder questions • Uncertain repair timeline	• Limited performance insights
Opportunities	• Unified alert dashboard • AI-powered severity prediction	• AI Automated impact assessment • AI Integrated port scheduling • AI Real-time ETA calculation	• Stakeholder preference management	• AI chatbot for common queries • AI Predictive repair completion	• Real-time performance dashboards

Buyer

Managing delivery impact and customer relationships during SSL SABARIMALAI delay

	1 Incident Detected	2 Impact Assessment	3 Communication Triggered	4 Monitoring & Follow-up	5 Post-event Report
User Actions	• Receives push notification • Opens mobile tracking app • Reads delay announcement • Checks new ETA details	• Calculates business impact • Searches for alternatives	• Contacts internal sales team • Notifies affected customers • Updates delivery schedules	• Updates customers regularly	• Receives final ETA confirmation • Confirms delivery arrangements
Emotions	😟 Worried & Surprised	😰 Anxious & Calculating	😔 Disappointed & Proactive	😤 Frustrated & Vigilant	😌 Relieved & Satisfied
Pain Points	• Sudden unexpected notification	• Uncertainty about customer impact	• Difficult customer conversations	• Constant manual checking required	• Extended uncertainty period

Delay Management Brainstorming



Overview Dashboard
- Critical delay alerts from captain
- Status summary cards
- Quick action buttons

Vessel Information
Ship details & cargo
- Vessel name & ID
- Weight & capacity
- Origin & destination

Port Authority
Docking Availability
- Docking schedule
- Berth availability
- Customs clearance
- Port communications

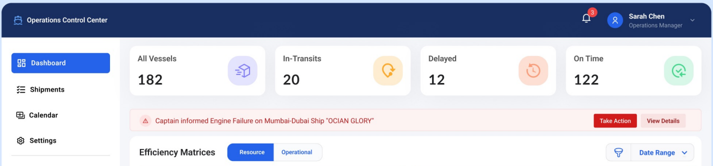
Captain Interface
Ship operations details
- Delay reports
- Repair status updates
- Navigation notes

Stakeholders
Communication hub
Messages, Notifications.
- Contact directory
- Role assignments
- Notification settings
- Manual Message

Weather Monitoring
AI Marine weather data
- Weather forecasts
- Sea conditions
- Storm warnings
- Wind patterns

Operation Manager Dashboard UI

Dashboard



Operations Control Center

3

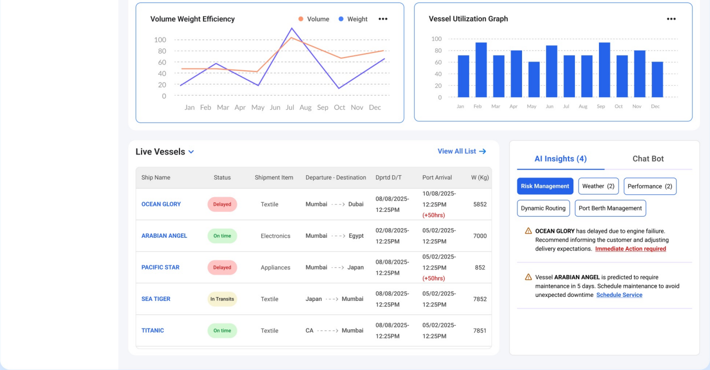
Sarah Chen
Operations Manager

- Dashboard
- Shipments
- Calendar
- Settings

All Vessels	In-Transits	Delayed	On Time
182	20	12	122

⚠ Captain informed Engine Failure on Mumbai-Dubai Ship "OCIAN GLORY"

Efficiency Matrices



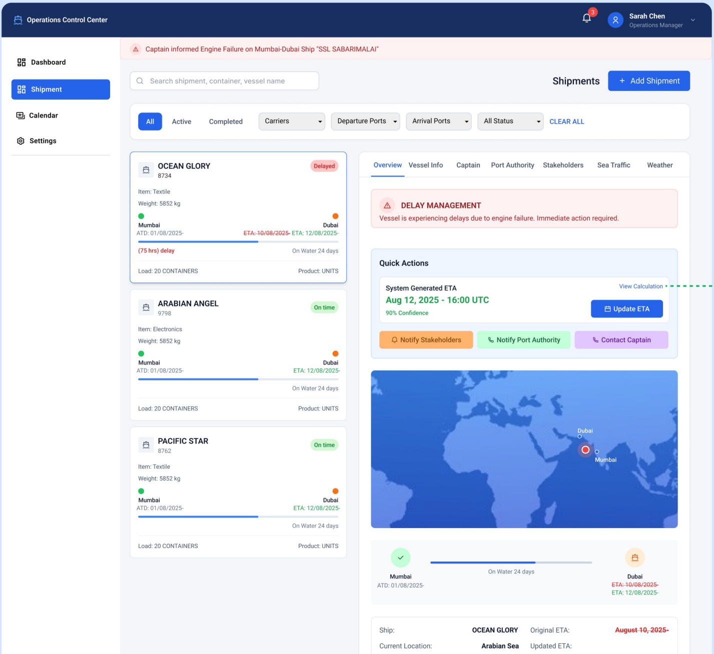
Ship Name	Status	Shipment Item	Departure - Destination	Dprtd D/T	Port Arrival	W (Kg)
OCEAN GLORY	Delayed	Textile	Mumbai - - -> Dubai	08/08/2025- 12:25PM	10/08/2025- 12:25PM (+50hrs)	5852
ARABIAN ANGEL	On time	Electronics	Mumbai - - -> Egypt	02/08/2025- 12:25PM	05/02/2025- 12:25PM	7000
PACIFIC STAR	Delayed	Appliances	Mumbai - - -> Japan	08/08/2025- 12:25PM	05/02/2025- 12:25PM (+50hrs)	852
SEA TIGER	In Transits	Textile	Japan - - -> Mumbai	08/08/2025- 12:25PM	05/02/2025- 12:25PM	7852
TITANIC	On time	Textile	CA - - - - -> Mumbai	08/08/2025- 12:25PM	05/02/2025- 12:25PM	7851

⚠ **OCEAN GLORY** has delayed due to engine failiure. Recommend informing the customer and adjusting delivery expectations. Immediate Action required

⚠ Vessel **ARABIAN ANGEL** is predicted to require maintenance in 5 days. Schedule maintenance to avoid unexpected downtime Schedule Service

- Summarized AI Insights based on weather, Risk Management, Route traffic, Port availability etc.
- AI Chat Bot for quick assistance for common quries.

Shipment



⚠ Captain informed Engine Failure on Mumbai-Dubai Ship "SSL SABARIMALAI"

OCEAN GLORY Delayed
8734
Item: Textile
Weight: 5852 kg
Mumbai — Dubai
ATD: 01/08/2025- ~~ETA: 10/08/2025-~~ ETA: 12/08/2025-
(75 hrs) delay — On Water 24 days
Load: 20 CONTAINERS — Product: UNITS

ARABIAN ANGEL On time
9798
Item: Electronics
Weight: 5852 kg
Mumbai — Dubai
ATD: 01/08/2025- ETA: 12/08/2025-
On Water 24 days
Load: 20 CONTAINERS — Product: UNITS

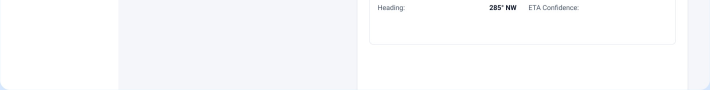
PACIFIC STAR On time
8762
Item: Textile
Weight: 5852 kg
Mumbai — Dubai
ATD: 01/08/2025- ETA: 12/08/2025-
On Water 24 days
Load: 20 CONTAINERS — Product: UNITS

⚠ **DELAY MANAGEMENT**
Vessel is experiencing delays due to engine failure. Immediate action required.

System Generated ETA
Aug 12, 2025 - 16:00 UTC
90% Confidence

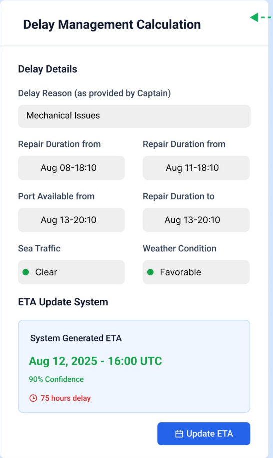
Mumbai
ATD: 01/08/2025-
On Water 24 days
Dubai
~~ETA: 10/08/2025-~~
ETA: 12/08/2025-

Ship:	OCEAN GLORY	Original ETA:	~~August 10, 2025-~~
Current Location:	Arabian Sea	Updated ETA:	



Heading: **285° NW** ETA Confidence:

View Calculation



Delay Management Calculation

Delay Details

Delay Reason (as provided by Captain)

Mechanical Issues

Repair Duration from	Repair Duration from
Aug 08-18:10	Aug 11-18:10
Port Available from	Repair Duration to
Aug 13-20:10	Aug 13-20:10
Sea Traffic	Weather Condition
● Clear	● Favorable

ETA Update System

System Generated ETA

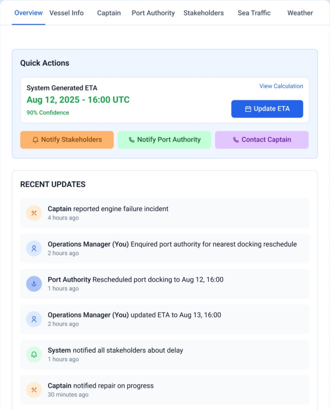
Aug 12, 2025 - 16:00 UTC

90% Confidence

75 hours delay

- Revised ETA is calculated based on the Repair duration, Port availability, Sea traffic, Weather condition.

Overview After Progress



Quick Actions

System Generated ETA

Aug 12, 2025 - 16:00 UTC

90% Confidence

RECENT UPDATES

Captain reported engine failure incident
4 hours ago

Operations Manager (You) Enquired port authority for nearest docking reschedule
2 hours ago

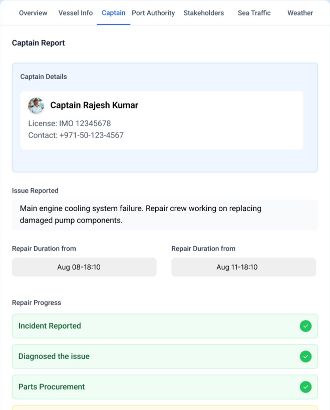
Port Authority Rescheduled port docking to Aug 12, 16:00
1 hours ago

Operations Manager (You) updated ETA to Aug 13, 16:00
2 hours ago

System notified all stakeholders about delay
1 hours ago

Captain notified repair on progress
30 minutes ago

Captain Informantion



Captain Report

Captain Details

Captain Rajesh Kumar

License: IMO 12345678
Contact: +971-50-123-4567

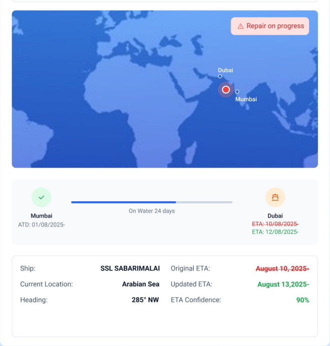
Issue Reported

Main engine cooling system failure. Repair crew working on replacing damaged pump components.

Repair Duration from	Repair Duration from
Aug 08-18:10	Aug 11-18:10

Repair Progress

- Incident Reported ✓
- Diagnosed the issue ✓
- Parts Procurement ✓

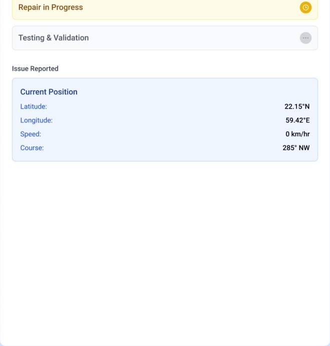


✓ **Mumbai**
ATD: 01/08/2025-

On Water 24 days

Dubai
~~ETA: 10/08/2025-~~
ETA: 12/08/2025-

Ship:	**SSL SABARIMALAI**	Original ETA:	~~**August 10, 2025-**~~
Current Location:	**Arabian Sea**	Updated ETA:	**August 13,2025-**
Heading:	**285° NW**	ETA Confidence:	**90%**



Repair in Progress

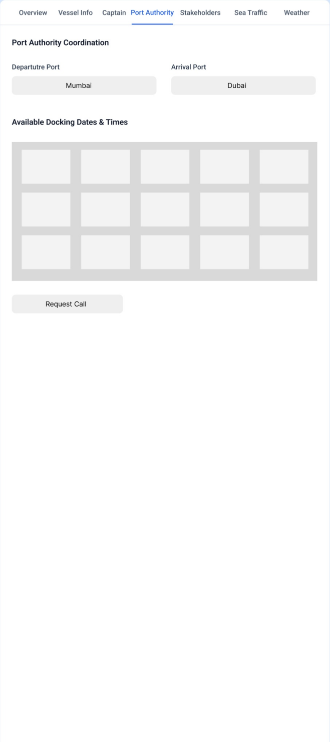
Testing & Validation

Issue Reported

Current Position

Latitude:	22.15°N
Longitude:	59.42°E
Speed:	0 km/hr
Course:	285° NW

Port Authority Info. Wireframe

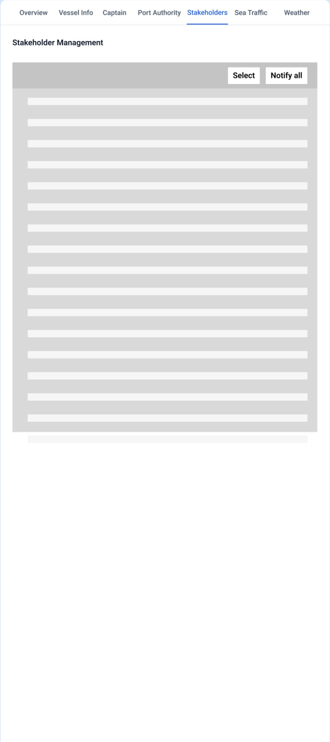


Port Authority Coordination

Departutre Port	Arrival Port
Mumbai	Dubai

Available Docking Dates & Times

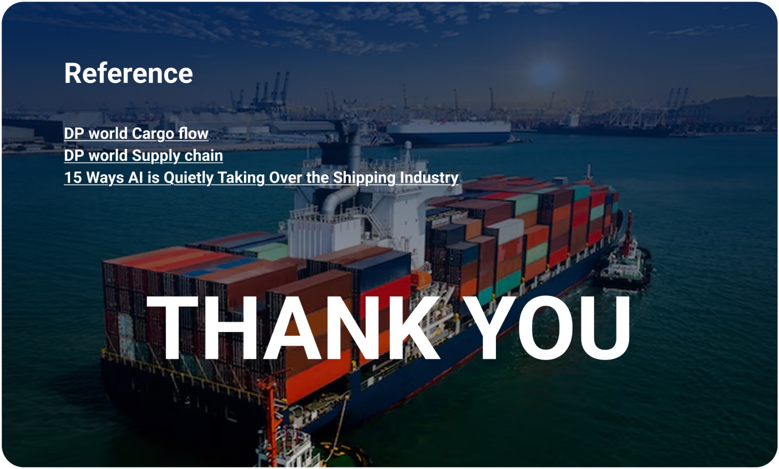
Stakeholders Info. Wireframe



Stakeholder Management

- The Port Authority's information and communications are managed here.

- A list of stakeholders, such as the freight team and direct buyers, along with their preferred notification channels (SMS, Email), can be managed here.



Reference

[DP world Cargo flow]
[DP world Supply chain]
[15 Ways AI is Quietly Taking Over the Shipping Industry]

THANK YOU