CASE STUDY

Reducing vessel demurrage and operational risk for global bauxite value chain

SOLO

Type
Vessels

Module
Tactical

The Customer

Our client is one of the world's largest metals and mining corporations with a primary focus on extraction of minerals as well as significant operations in refining, particularly for bauxite and iron ore.

The Problem

Our client sought to automate their planning processes to produce an optimised six-week shipping schedule across their bauxite value chain in Southeast Asia. They wanted the capability to scale and react to changes within the supply chain as/when they occur. Given the operational scope and complexity, effectiveness of planning efforts had previously been limited by manual and time-consuming processes.

The Solution

Polymathian designed and developed SOLO, an online decision support tool based on exact optimisation techniques, resulting in:

- the ability to produce an optimised plan within an hour
- high-level detailed plans for every vessel, including what is loaded and unloaded at each port, to better identify excess capacity in berthing and stockpiling
- plans that can be re-optimised multiple times a day to easily test the impact of changes and evaluate 'what-if' scenarios such as:
  - what if new vessel classes are allowed to transport more shipments?
  - how do port supply dedication rules impact demurrage?
  - what is the impact of removing some vessels from the managed fleet?

The Challenges

Operational complexity across a value chain consisting of multiple mine sites and refineries, as well as up to 50 vessels to be scheduled.

Planners face multiple constraints and complex decisions to ensure:

- stock levels remain within acceptable bounds
- export shipments are delivered on time
- effective utilisation of fleet
- excess capacity identified

The Value

Re-purpose
Excess shipping capacity

Savings
Significant reduction in demurrage

Training
Ability to use the tool as a training platform

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