CASE STUDY

Improved port efficiency resulting in increased throughput and reduced demurrage

SOLO

Type
Port Operations

Module
Operational

The Customer

A world leader in the production of commodities including iron ore, coal, gold, copper, diamonds and bauxite. Primary business focus lies on extraction of minerals, but with significant operations in refining, especially of bauxite and iron ore.

The Problem

Our client sought to minimise their port operating costs and maximise production tonnes shipped. With up to ten big ships coming into port every week, effective management of berthing and loading schedules is critical. Ships without a berth can accrue daily penalties of up to A$20,000, upset production at the mine, and delay delivery to customers. Managing the berth order and ship loader allocation to maximise port efficiency given tidal, loading and vessel constraints is a very complex planning problem.

The Solution

Polymathian deployed SOLO, an online decision support tool based on exact mathematical optimisation techniques resulting in:

- Optimal solutions produced in minutes not hours
- Planning teams able to confidently and quickly react to dynamic vessel schedule changes and environmental constraints
- “What-if” scenario testing capability, such as:
  - What impact does staff availability have on operations?
  - What happens if the vessel size mix at the port was changed?
  - What happens if port rules were varied?

The Challenges

The port is river-based and therefore tidally constrained

The port receives vessels of differing sizes with differing loading constraints

Daily complex manual planning took several hours

Limited ability to react to changes in vessel schedules

Ships without a berth can accrue daily penalties of up to A$20,000

The Value

$M+
Multi-million dollar uplift in revenue

Savings
Significant reduction in demurrage

Throughput
Significant increase to tonnes released from port

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