

CASE STUDY

Exceptional outcomes for bauxite operation using automation and optimisation

ORB

Type
Surface Mining

Module
Strategic

The Customer

Our client is one of the world's largest metals and mining operators with a primary focus on mineral extraction, particularly for bauxite and iron ore.

They operate a world-class bauxite operation that exports over 30 million tonnes annually to both domestic and international markets.

The Problem

Every quarter an operational plan for the next 5 years needs to be created. This plan has to meet production targets and conform to a range of product and mining constraints. Given the 2D nature of the planning problem which affords some flexibility, it needs to result in a practical mining sequence.

Solutions often took weeks to produce making it difficult to know if they had even achieved close to optimality.

The Solution

Polymathian designed and implemented an online mine planning optimisation tool, ORB to alleviate the challenges faced by the planning teams. The automation capability of ORB dramatically reduced the time required to produce plans and provided full coverage of all operations leading to a substantial increase in NPV. This was something no other tool on the market was able to do.

The Challenges

Customer product specific grade conformance needed to be met.

Product and mining constraints including:

- Product blend
- Block precedence
- Mining sequence practicality
- Haul truck and haul road capital expenditure
- Customer contractual obligations

Plans often took weeks to produce, making optimality uncertain.

The Value



5%

Improvement to asset NPV



40%

Improvement in mining practicality



9%

Improved product specific grade conformance

