VUUMA COLLABORATIONS | CLARIFYING COMPLEXITY

ACCELERATED OPERATIONAL SYSTEMS CAPABILITY IN THE MINING

SiMINE @MandelaMiningPrecinct

MANDELA MINING PRECINCT
MINDS FOR MINES

OVERVIEW

SiMINE is a physical mining simulation which represents the complete mining value chain with its full organizational structure. The goal of this simulation is to teach the importance of Operational Systems Capability to maximise performance when running a mining operation with complex interconnected activities, processes, technologies and people.

This case study focuses on a recent simulation program with a major South African mining house. 30 delegates from various roles within the organisation operated the mine for 20min to see how they perform.

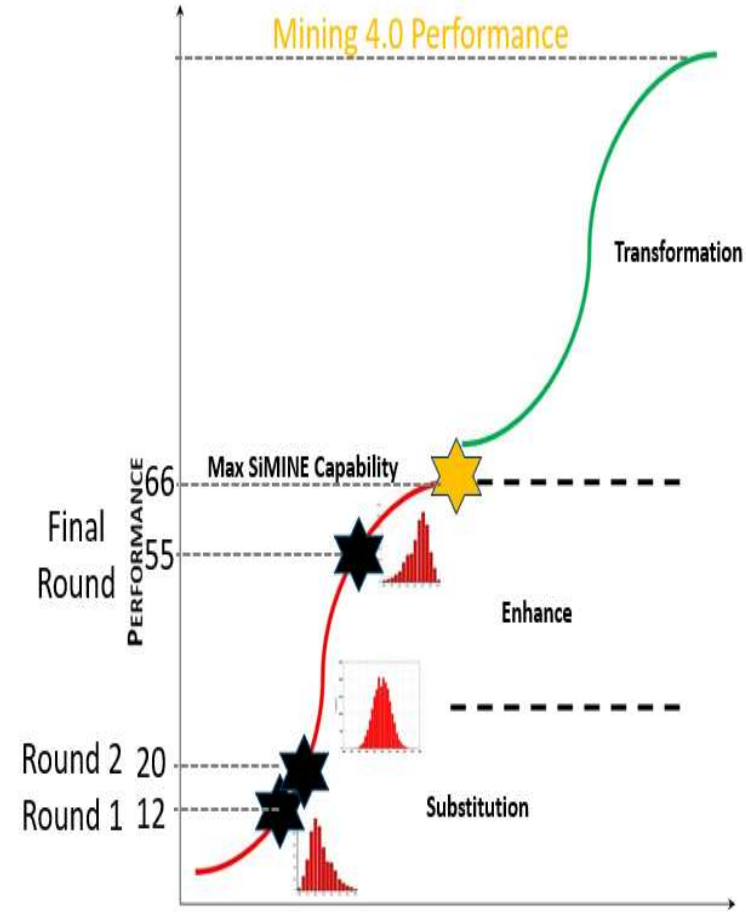
THE CHALLENGE

After the first round of the simulation, delegates achieved a low production output of only 12 units delivered to the customer. They are asked to brainstorm initiatives to improve performance, but these initiatives usually tend to require higher capital investment. During the second round the initiatives are implemented but results in a very small increase of production output to 20 units delivered to the customer.

The same conclusion from previous simulation programs is reached - a low level of ‘systems thinking’ is understood in the mining industry which limits operational performance.

> Technology is the easy part. Change management of people and developing their skills to build an agile organisation of the future is the real challenge.

THE APPROACH



Before the final round of the simulation, the delegates were made aware that the mining operation can achieve 66 units of production without any further capital investment. The importance of a focused strategy and a clear plan to maximise performance is highlighted. The delegates were/are taken through a full Operations Systems Capability tool set which needs to be applied in a systematic approach to maximise the performance of a mining operation:

- Understanding flow
- Impact of variability on flow
- System constraints
- Root Cause Analysis
- Data analysis
- Systems capability through a Digital Twin
- Management levers
- KPI'S
- Levels of work

Delegates were then given the opportunity to apply what they have learned in the final round – a production output of 58 units delivered to the customer was achieved.

THE OUTCOME

Implementing a 'systems thinking' approach to the simulation demonstrated the true Operational Systems Capability of the mining operation. This highlighted the importance to develop the internal capabilities of an organisation to effectively manage and direct the business towards value creation.

A framework is therefore developed for an integrated organisation with mature Operational Systems Capability:

- Information architecture
- Defined levels of work
- Clearly defined KPI'S
- Work management and routines
- Organisational learning

As an organisation is building their Operation Systems Capability, it can incrementally add value and transform its operating model in the future.